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Cases, lighting, Tripods & High Directional are also in **USAR/Extrication**

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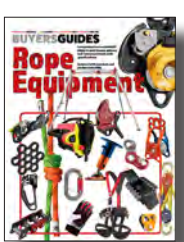
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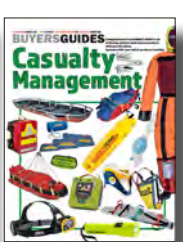
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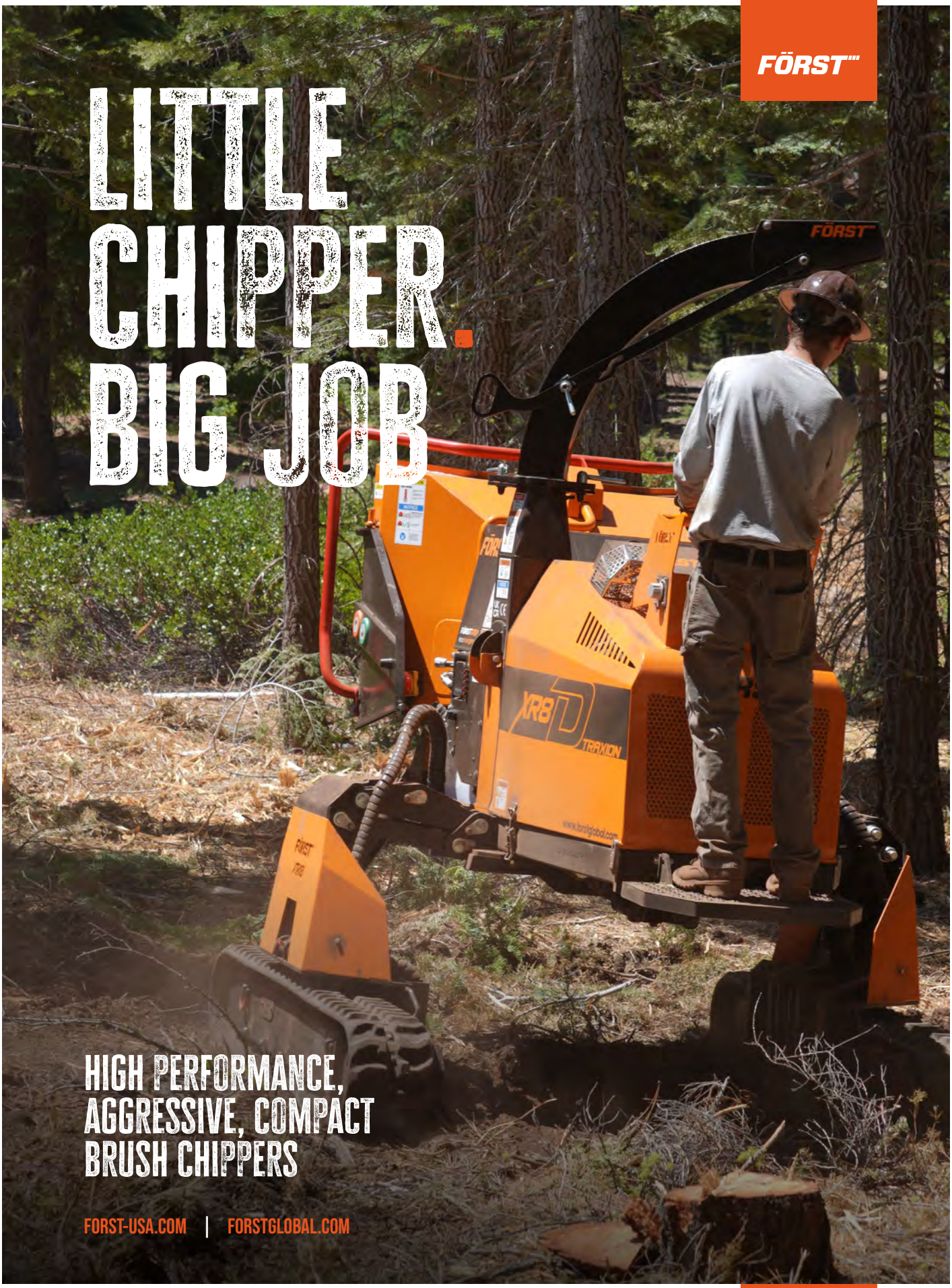


Welcome to our **BUYERSGUIDES.** These are free to all as a page-turning pdf or you can download a regular PDF by clicking on the cloud icon. Many of these GUIDES originally appeared in our print magazines so have been updated and **will continue to be updated every month**. The same link that you used 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. **PART 2 in early 2025 see next page**

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).
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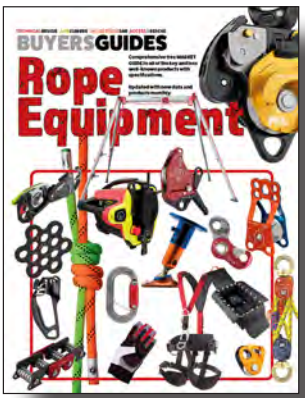
ARBORIST EQPT pt2

From Q2 20254 we begin to add the following product groups to this BUYERSGUIDE:

Batteries
Chainsaws
Blowers
Chippers
Hand Saws
Chainsaw Boots
Chainsaw Trousers
Friction Savers
Slings

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DRAFT IN Q3 2025

KEY TO TABLES:

CONVERSION RATE USED Q3 '24= 1.31 US$ to the GBP£
1.19 Euro€ to the GBP£
0.91 Euro€ to the US$

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. Software, slings and bags are in purple, safety/PPE is in green & Tools/Machinery are in Orange.

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We might be biased, but generally speaking, our advertisers represent the very best of equipment supply and production in the very specialist sectors that we serve. The majority of companies advertising in these **BUYERSGUIDES** have been with us in the print-magazines for many years and in some cases many decades- these are not fly-by-night manufacturers and stockists, they are names you can trust. In a world full of cheap options and unknown brands- (especially on Amazon/AliBaba) and where it can be very difficult to spot great Chinese products from blatant Chinese or russian knock-offs, it is vital to know that your safety equipment can be trusted.

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ARBORTEC FORESTWEAR							Bags, Protective Clothing, Pulleys
ARBPRO ITALY							Pulleys, Foot Ascenders, Bags, Protective Clothing, Winches
ARS ANDERSON RESCUE SOLUTIONS							Pulleys, Bags
AT-HEIGHT UK							Pulleys, Winch/Descender, Carabners
BLUEWATER ROPES							Pulleys, Ropes, Prusik Cord
CMC							Swivel Carabiners, Pulleys, Ascenders, PCDs, Descenders, Swivels, Rig Plates, Tool Hooks, , Ropes, Bags
EYOLF							Pulleys, Rig Plates, Tool Hooks, Harnesses
EDELRID							Pulleys, Ascenders, PCDs, Descenders, Swivels, Rig Plates, Tool Hooks, Ropes,Bags, Harnesses, Helmets, spikes
EDER WINCHES							Winches, Power Ascenders
FORST GLOBAL							Chippers (compiling 2025)
FTC TREE							Impact Pulleys, Ropes, Spikes, Bags
HARKEN /SMC							Powered Ascenders, Pulley Carabiners, Pulleys, Ascenders, PCDs, Swivels, Rig Plates, Tool Hooks, High Directionals
HUSQVARNA							Tool Hooks, Bags, Carabiners
KONG ITALY							Impact Pulleys, Pulleys, Ascenders, PCDs, Descenders, Swivels, Rig Plates, Tool Hooks, Bags, Harnesses, Helmets, Gloves
LYON EQUIPMENT							Bags, Tripods, High Directionals
MARLOW ROPES							Rope
NRS RESCUE							Rafts, Short Boards, Drysuits
PETZL							Pulleys, Ascenders, PCDs, Descenders, Swivels, Rig Plates, Tool Hooks, Bags, Harnesses, Helmets, Gloves, Bags
PMI ROPE							Ropes, Bags, Gloves
ROCK EXOTICA							Pulleys, Ascenders, PCDs, Descenders, Swivels, Rig Plates, Tool Hooks, High Directionals
SINGING ROCK							Pulleys, Ascenders, PCDs, Descenders, Swivels, Rig Plates, Tool Hooks, Ropes, Harnesses, Helmets, Bags, Gloves
SKYLOTEC inc Actsafe & Climbing Technology							Pulleys, Ascenders, PCDs, Descenders, Swivels, Rig Plates, Tool Hooks, Ropes, Bags, Harnesses, Helmets, Gloves
STIHL							Harnesses, Helmets
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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 (right) 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.



ABOVE/RIGHT: the *Notch Cargo* can be used flat, spread or angled





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, Rock Exotica's Transporter* and the newest model, *Notch's Swinger* (pic above-right) which has a locking gate that opens outwards and inwards. (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 *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). 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 vigorous manoeuvring you undertake on the rope. A lighter-duty plastic model will break more











UPDATED Jul '25



readily when overloaded so is less of a hang-up risk than the heavier-duty models which can carry a small elephant. Some models have had the keeper on the nose 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 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



IMAGES NOT TO SCALE **COSTS**: Any £$€ shown in burnt orange are currency conversions only and will not include shipping, import duty or tax. Alu Alu = aluminium or aluminium Alloy								
MANUFACTURER	BLACK DIAMOND	BUCKINGHAM	BUCKINGHAM	CAMP	CAMP	CMI	CMI	
MODEL VARIANT	Ice Clipper ---	2402G ---	BuckCarrier 2402B	Hub ---	Kilo ---	Shembiner ---	Shembiner XL ---	Shen
ORIGIN								
COST (inc VAT/Tax)	£10 $12 €11	£9 $11 €10	£45 $56 €55	£9 $13 €11	£31 $43 €36	£31 $36 €34	£42 $48 €46	£55
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	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"	12 4.
FITS to WEB SIZE...	≥60mm ≥2.4"	≥50mm ≥2"	≥50mm ≥2"	≥45mm ≥1.75"	≥45mm ≥1.75"	≥50mm ≥2"	≥50mm ≥2"	≥
LOCKING STANDARD	-	-	-	-	-	-	-	
MATERIAL FRAME **GATE**	Plastic Stainless Steel	Polymer Polymer	Alu Alu	Plastic Stainless Steel	AluStainless Steel	Alu	Alu	
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			Web at prev
WEBSITE	blackdiamondequipment.com	buckinghammfg.com	buckinghammfg.com	camp.it	camp.it	cmigearusa.com	cmigearusa.com	cmig

HARNESS TOOL CARRIERS



a more secure, semi-permanent fixing to the harness. DMM's *Parking Lot* (pic-left) 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 have included *Grivel's CarryAbiner* even though it is 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 we could include virtually every snap-gate carabiner in the world! ISC now has the NESSIE left, which is for managing lanyards rather than hardware and 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 specifically produced DuPont product.

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: the physical space between the nose and the spine through which you can fit an item - bent gates will 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: those that simply slot over the top are not as limited as those like the *Vault* or *Camp's Kilo* that have a definite containment area. Rubber keepers are also 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. STANDARD: generally none except where the hook is a modified carabiner but ANSI/ISEA 121-2018 – Dropped Object Prevention Solutions will become common.











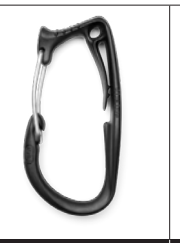


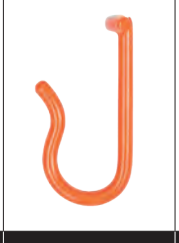
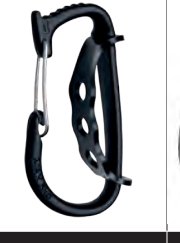






CMI	COURANT	COURANT	DMM	DMM	DMM	DMM	EDELRID	EDELRID
nbiner XLS	Honos sm	Honos lg	Mega Vault	Vault Lock	Vault Wire	Micro Vault	SM Clip 719070001380	SM Clip 3R 744150000170
5 $70 €65	£8 $11 €9	£17 $22 €18	£65 $81 €75	£46 $57 €61	£35 $45 €47	£21 $25 €26	£7 $10 €8	£9 $12 €11
60g 4oz	35g 1.2oz	82g 2.9oz	126g 4.5oz	72g 2.5oz	61g 2.15oz	22g 0.8oz	24g 0.85oz	41g 1.45oz
n/a	5kg 11lb	15kg 33lb	30kg 66lb	30kg 66lb	30kg 66lb	30kg 66lb	5kg 11lb	5kg 11lb
31mm 1.22"	20mm 0.8"	37mm 1.5"	46mm 1.8"	20mm 0.8"	23mm 0.9"	12mm 0.5"	25mm 1"	33mm 1.3"
1 x 76mm .75 x 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"
≥50mm ≥2"	≥45mm ≥1.75"	≥45mm ≥1.75"	≥45mm ≥1.75"	≥45mm ≥1.75"	≥45mm ≥1.75"	≥45mm ≥1.75"	≤50mm ≤2"	≤95mm ≤3.7"
-	-	■	■	■	-	■	-	- -
Alu	Glass Fibre Plastic Stainless Steel	Glass Fibre Plastic Stainless Steel	Alu Alu	Alu Alu	Alu Stainless Steel	Alu Alu	Plastic Stainless Steel	Nylon Stainless Steel
tachment plate ents rotation						fixes with bolts	Made from recycled rope. Rubber web keeper	Web slot kept closed with rubber keeper
gearusa.com	mycourant.com	mycourant.com	dmmwales.com	dmmwales.com	dmmwales.com	dmmwales.com	edelrid.com	edelrid.com

IMAGES NOT TO SCALE COSTS: Any £$€ shown in burnt orange are currency conversions only and will not include shipping, import duty or tax. Alu Alu = aluminium or aluminium Alloy								
MANUFACTURER	EYOLF	GRIVEL	HONEYWELL	HONEYWELL	HUSQVARNA	HUSQVARNA	ISC	
MODEL VARIANT	Hake	Carryabiner	Chainsaw hook	Ch'saw hook Lg	Carry Hook	Chainsaw Hook	Nessie TC100	
ORIGIN								
COST (inc VAT/Tax)	£15 $18 €16	£13 $19 €15	£51 $50 €49	£40 $50 €46	£15 $18 €16	£12 $17 €15	£24 $30 €28	£2
WEIGHT	56g 2oz	63g 2.2oz	260g 9.2oz	190g 6.7oz	25g 0.9oz	65g 2.3oz	52g 1.8oz	
MAX LOAD	n/a	100kg* 220lb	20kg 44lb	20kg 44lb	5kg 11lb	n/a	10kg 22lb	
GATE CLEARANCE	33mm 1.3"	27mm 1.75"	50mm 2"	54mm 2.1"	20mm 0.8"	60mm 2.4"	13mm ½"	
DIMENSIONS	110 x 43mm 4.3 x 1.7"	120 x 75mm 4.7 x 3"	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"	?	17 6
FITS to WEB SIZE...	≤80mm ≤3.15"	≤45mm ≤1.75"	45mm 1.75"	Any	≤45mm ≤1.75"	≤80mm ≤3.15"	≤50mm ≤2"	
LOCKING STANDARD	-	- CE, UIAA	-	-	-	-	-	
MATERIAL FRAME GATE	Alu	Hot-forged alu Stainless Steel	Alu Alu	Alu Alu	Glass Fibre Plastic Stainless Steel	Plastic Stainless Steel	Polymer	
NOTES	lanyard/accessory hook holes=7mm	a fully rated carabiner modified as a tool carrier. *Max Load=10% of Gate-Open strength		slides into web loop via hook-nose first		Intended for forestry rather than arb. Also loop-hook version	For LANYARDS Also Blue, Green or Lime colours	Atta loo
WEBSITE	eyolf.ca	grivel.com	sps.honeywell.com	sps.honeywell.com	husqvarna.com	husqvarna.com	iscwales.com	

IMAGES NOT TO SCALE COSTS: Any £$€ shown in burnt orange are currency conversions only and will not include shipping, import duty or tax. Alu Alu = aluminium or aluminium Alloy								
MANUFACTURER	PROTEKT	PROTEKT	REECOIL	ROCK EMPIRE	ROCK EXOTICA	ROCK EXOTICA	SINGING ROCK	SIN
MODEL VARIANT	TU300	AY100	Drill-Grab	Helper	Transporter	TransporterXL	Porter	P
ORIGIN								
COST (inc VAT/Tax)	£5 $7 €8	£5 $8 €6	£11 $13 €12	£6 $8 €7	£85 $81 €100	£94 $90 €110	£7 $12 €8	£1
WEIGHT	80g 2.8oz	31g 1oz	40g 1.4oz	28g 1oz	95g 3.4oz	142g 5oz	32g 1.13oz	
MAX LOAD	50kg 110lb	25kg 55lb	Hook 5kg 11lb Eye*3.5kg 7.7lb	5kg 1.1lb	23kg 50 lb	23kg 50 lb	5kg 11lb	
GATE CLEARANCE	27mm 1"	23mm 0.9"	45mm 1.75"	18mm 0.7"	32mm 1.25"	48mm 1.9"	23mm 0.9"	
DIMENSIONS	112 x 50mm 4.4 x 2"	110 x 50mm 4.3 x 2"	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"	14 5
FITS to WEB SIZE...	T=35mm 1.4" wide	≤60mm ≤2.4"	≤45mm ≤1.75"	≤45mm ≤1.75"	≤50mm ≤2"	145mm 5.7"	≤75mm 3"	
LOCKING STANDARD	- -	- -	- -	- -	■	■	- -	
MATERIAL FRAME GATE	Steel	Plastic Stainless Steel	Plastic	Plastic Stainless Steel	Alu Alu	Alu Alu	Plastic Stainless Steel	Stai
NOTES	Top T-section retains hook within loop		* Lanyard eye for chainsaw or tool being used			180kg MBS	rubber web keeper	1 Intro
WEBSITE	protekt.com	protekt.com	reecoil.com	rockempire.com	rockexotica.com	rockexotica.com	singingrock.com	singi

HARNESS TOOL CARRIERS



KONG	NLG	NOTCH	NOTCH	OMEGA PACIFIC	PETZL	PETZL	PETZL	PETZL
Owl	Airpark 101717	Cargo	Swinger 64350	Deputy+	CARITOOL Sml	CARITOOL Lg	CARITOOL Evo	Interfast
4 $29 €27	£24 $29 €27	£24 $30 €28	£84 $94 €100	£30 $36 €34	£7 $9 €7	£14 $20 €16	£12 $15 €14	£ 12 $15 €14
68g 2.4oz	45g 1.5oz	140g 4.9oz	136g 4.8oz	108g 3.8oz	25g 0.9oz	75g 2.6oz	40g 1.4oz	55g 1.9oz
10kg 22lb	10kg 22lb	10kg 22lb	20kg 44lb	22.7kg 50lb	5kg 11lb	15kg 33lb	5kg 11lb	5kg 11lb
17mm 0.7"	55mm 2.1"	26mm 1.02"	26mm 1.02"	26mm 1.02"	20mm 0.8"	45mm 1.75"	120mm 4.73"	>6mm >0.25"
72 x 92mm 2.8 x 3.6"	100 x 60mm 4 x 2.4"	150 x 90mm 5.9 x 3.54	137 x 70mm 5.4 x 2.75	116.3 x 65mm 4.57 x 2.55"	114 x 54mm 4.5 x 2.13"	142 x 80mm 5.6 x 3.15"	146 x 74mm 5.75 x2.9"	85 x 45mm 3.4 x 1.75"
Any	≤50mm ≤2"	≤45mm ≤1.76"	≤50mm ≤2"	≤45mm ≤1.76"	≤45mm ≤1.75"	≤45mm ≤1.75"	Any	≤60mm ≤2.4"
-	-	-	■	-	-	-	-	■ ANSI/ISEA
Alu Alu	Nylon	Plastic Stainless Steel	Alu Alu/Stainless Steel	Alu Alu	Glass Fibre Plastic Stainless Steel	GlassFibre Plastic GFP/ Stainless Steel	Glass Fibre Plastic Stainless Steel	Nylon Nylon
aches to eyes/ ops with snap carabiners		Folds to a single hook or for storage	Gate opens outwards and inwards. Large chainsaw eye	+ is a colour variant. Cost is $10 more			Fixes with elastic cord	hinged backplate traps belt webbing
kong.it	neverletgo.com	notchequipment.com	notchequipment.com	rocknrescue.com	petzl.com	petzl.com	petzl.com	petzl.com



GING ROCK	SKYLOTEC	SKYLOTEC	TREEHOG	TREERUNNER	TREERUNNER	TREERUNNER	TEUFELBERGER	TEUFELBERGER
Porter XL	CT Hammer Lodge	CT Truck	TH1045	ChSaw Folding	ChainSaw Hook	ChSaw Steel	Sky Hook 7080262	Sky Hook Open 7080264
1 $16 €14	£10 $13 €12	£9 $11 €10	£11 $14 €13	£37 $47 €43	£34 $42 €39	£40 $50 €46	£36 $46 €40	£29 $35 €33
80g 2.8oz	19g 0.7oz	20g 0.7oz	31g 1oz	114g 4oz	260g 9.2oz	200g 7oz	108g 3.8oz	100g 3.5oz
20kg 44 lb	5kg 11lb	5kg 11lb	5kg 11 lb	20kg 44 lb	20kg 44 lb	>20kg >44 lb	30kg 66 lb	30kg 66 lb
40mm 1.6"	25mm 1"	25mm 1"	23mm 0.9"	30mm 1.2"	50mm 2"	30mm 1.2"	30mm 1.2"	30mm 1.2"
83 x 86mm 3.6 x 3.4"	101 x 43mm 4 x 1.8"	108 x 55mm 4.25 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"	75 x 60mm 3 x 2.4"	75 x 60mm 3 x 2.4"
≤75mm 3"	≥45mm ≥1.75"	≥45mm ≥1.75"	≤50mm 2"	≤80mm 3.15"	≤80mm ≤3.15"	≤50mm ≤2"	≤45mm ≤1.76"	≤45mm ≤1.76"
- -	- -	- -	- -	- -	- -	- -	- -	- -
Plastic nless Steel	Nylon Nylon	Nylon Stainless Steel	Plastic Stainless Steel	Alu Alu	Alu Alu	Alu Stainless Steel	Alu Stainless Steel	Alu Stainless Steel
100kg MBS duced in 2024	rubber web keeper. Climbing Technology (Italy) owned by Skylotec	rubber web keeper. Climbing Technology (Italy) owned by Skylotec		can be fixed with bolts				
ingrock.com	skylotec.com	skylotec.com	treehog.co.uk	grube.de	grube.de	grube.de	teufelberger.com	teufelberger.com

UPDATED May '25

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/Harken* now has the newest range with their *Origin* plates with angular holes rather than round. The *Origin TT* below is now branded only as Harken and 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 including David Drivers excellent *X-Rigging* rings but we have ***NOT*** included them here even though you can attach multiple carabiners because there's not much 'organising'. But we have now added 'textile' anchors like the *Notch Backbone* (right), and *HexaRope's Hexa Ring* and

Images in this introduction NOT to scale







HandsUp (right) which are basically knot replacements to save you time rather than rigging organisers. There are rigging organisers incorporated into carabiners like this *Grivel Vlad, and* into pulleys like *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



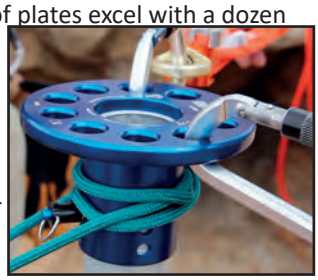
it's own capacity of 45kN is exceeded. You must treat that MBS figure as the maximum total load that can be **TRANSMITTED** through the plate **via the main collection eye** - therefore, in the 45kN example, if you had 6 eyes evenly connecting to ONE central collection eye, each of those eyes should 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/Harken* 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. *Rockstar* superseded the *UFO*.

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. If they're surrounded



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





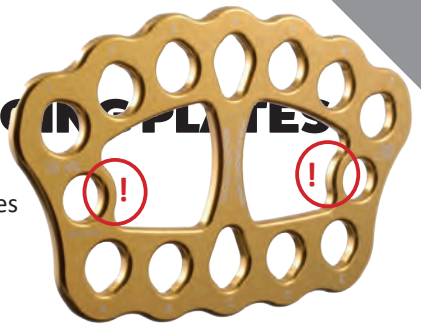
simultaneously. It is again, all about pre-planning and systematic loading rather than winging it, so the UFO wasn't really a 'rig-&-forget' tool. However, smart cookies that they are, R.E. introduced the Rockstar in 2013 to take over from the UFO and it has fewer 'walls' to impede the carabiner hang 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



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.



STANDARDS

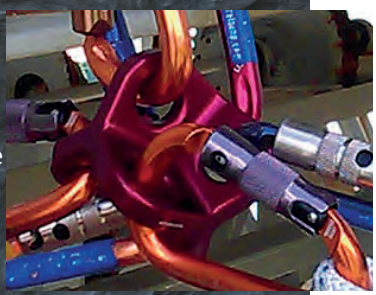
European standards that are

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 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* (right) . 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 *Neptune*, 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. The French *HexaRing* (top-right) is more of a rope protector and is intended to provide a heavy-duty smooth surface for dropping heavy wood sections (anchor/whoopie on the outside, lowering rope thru the middle). Despite the high MBS, is NOT for human loads and, like the Notch Bone and Hands-UP is more of a knot replacement than a true organiser.





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 open-able). 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 increase the 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.

ORIGIN TT SYNCHRONIZES TTRS DEVICES SO COMPLETELY,

THEY FEEL CONJOINED.

The first time you rig an Origin TT rigging plate in a rope rescue system you will be reminded exactly why the first letter in TTRS is twin. This plate's two independent locking pins allow both multi-purpose devices to mount directly–without an interloping carabiner. This links and coordinates their operation for a safer, more efficient system and a smoother ride for the person at the end of the line.

Most of us aren't called upon to do a high-angle rope rescue every week—or even every month. But the day will come. Why not be ready to rig the most fully-controlled, fully-redundant system when it does?

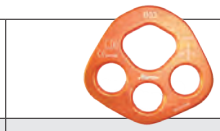
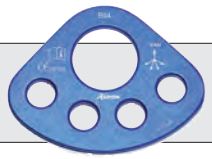
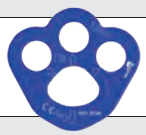


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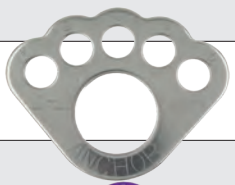
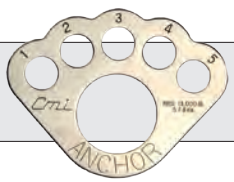
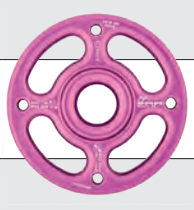
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£$€=Currency conversion only - no tax/shipping etc.
MBS/MBL Min Break Load approx 10x WLL Working Load Limit
LARGE EYES= largest round /shaped hole - NB: may be cosmetic!
ALU = Aluminium Alloy. ~ = Approximate
● =OK but not ideal

	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	10m 0.4
	B80	ANPEN		£27* $32* €31*	182g 6.4oz	Alu	10m 0.4
	B130	ANPEN		£82* $99* €94*	452g 15.9oz	Alu	9.5m 0.4
	THRP1	ARBORTEC/ TREEHOG		£17 $21 €20	93g 3.3oz	Alu	10m 0.4
 	THRP2	ARBORTEC/ TREEHOG		£30 $37 €35	240g 8.5oz	Alu	10m 0.4
	THRP3	ARBORTEC/ TREEHOG		£50 $65 €58	500g 1.1lb	Alu	10m 0.4
	RIG-IT 728 AR03B-R+L	AUSTRIALPIN		£50 $65 €59	242g 8.5oz	Alu	10m 0.4
	RIG-IT 3-2-5 AR05B-D+L	AUSTRIALPIN		£63 $83 €75	358g 12.6oz	Alu	10m 0.4
	RIG-IT 728 AR08B-Y+L	AUSTRIALPIN		£94 $123 €112	644g 1.4lb	Alu	10m 0.4
 	AirPort4	BEAL		£31 $38 €35	92g 3.25oz	Alu	8m 0.3
	AirPort8	BEAL		£47 $58 €54	188g 6.6oz	Alu	10m 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	12m 0.4
	MultiAnchor12 126902	CAMP		£105 $130 €100	590g 1.3 lb	Alu	12m 0.4

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.
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
mm 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
nm 4"	140 x 126mm 5.5 x 5"	CE UIAA	60kN 13488lbf	22mm 0.86"	52mm 2"	5 +1	-	-		austrialpin.at
nm 4"	188 x 126mm 7.4 x 5"	CE UIAA	60kN 13488lbf	22mm 0.86"	52mm 2"	9 +1	-	■		austrialpin.at
nm 4"	328 x 126mm 13 x 5"	CE UIAA	60kN 13488lbf	22mm 0.86"	52mm 2"	16 +1	-	■		austrialpin.at
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

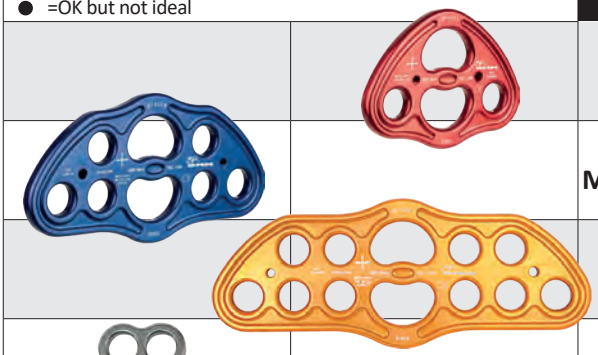
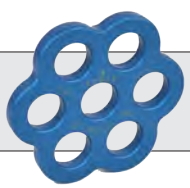
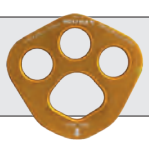
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MBS/MBL Min Break Load approx 10x WLL Working Load Limit
LARGE EYES= largest round /shaped hole - NB: may be cosmetic!
ALU = Aluminium Alloy. ~ = Approximate
● =OK but not ideal

	MODEL	COMPANY	ORIGIN	COST	WEIGHT	MATERIAL	PLA DEP
	Micro Anchor Plate 300623	CMC		£33 $42 €38	74g 2.6oz	Alu	8.2r 0.3
 	Anchor Plate 30061	CMC		£61 $79 €71	204g 7.4oz	Alu	6.7r 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	9.5r 0.37
	RigPlat1	CMI		£78 $101 €90	190g 6.7oz	Aircraft Alu	9.5r 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	9.5r 0.3
	Neptune	CMI		£125 $163 €145	363g 0.8lb	Aircraft Alu	41m 1.62
	Focus	CONTERRA		£35 $45 €40	270g 9.5oz	Alu	8.9r 0.3
	Anchor Multiplier Small	COURANT		£20 $24 €22	93g 3.3oz	Alu	9.8r 0.3
	Anchor Multiplier Med	COURANT		£32 $39 €37	202g 7oz	Alu	9.5r 0.3
	Anchor Multiplier Large	COURANT		£67 $81 €76	422g 1 lb	Alu	10m 0.3
	Hub Small	DMM		£131 $160 €118	260g 9.2oz	Alu	* <20 <0 .
	Hub Large	DMM		£191 $290 €240	550g 1.2 lb	Alu	* <20 <0 .
	X Small Bat Plate	DMM		£30 $38 €40	37g 1.3oz	Alu	8m 0.3

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
m 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

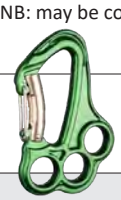
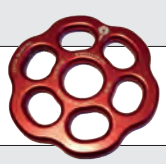
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LARGE EYES= largest round /shaped hole - NB: may be cosmetic!
ALU = Aluminium Alloy. ~ = Approximate
● =OK but not ideal

	MODEL	COMPANY	ORIGIN	COST	WEIGHT	MATERIAL	PLA DEP
	Small Bat Plate	DMM		£51 $30 €65	159g 5.5oz	Alu	10r 0.3
	Medium Bat Plate	DMM		£66 $66 €85	247g 8.6oz	Alu	10r 0.3
	Large Bat Plate	DMM		£80 $95 €104	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
	Tris	GRIVEL		£12 $14 €13	39g 1.4oz	Alu	10r 0.3
	Four	GRIVEL		£14 $17 €16	55g 1.9oz	Alu	10r 0.3
	Nine	GRIVEL		£19 $23 €22	149g 5.3oz	Alu	10r 0.3

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"	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"	174x85mm 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
mm 9"	60 x 60mm 2.4 x 2.4"	CE	29kN 6519 lbf	19mm 0.75"	19mm 0.75"	3	●	-		grivel.com
mm 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
mm 9"	104mm 4.1"	CE	30kN 6744 lbf	19mm 0.75"	25mm 1"	8 +1	●	-	Concave profile, Individually marked	grivel.com

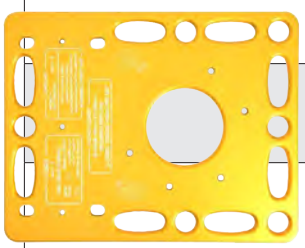
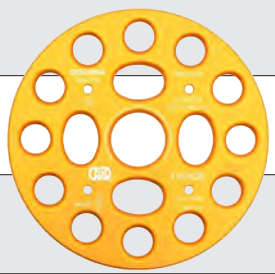
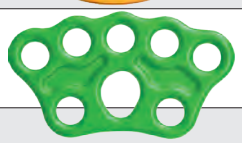
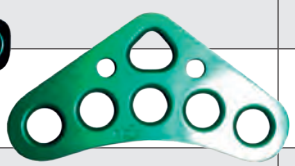
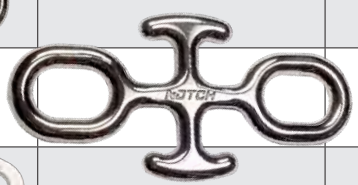
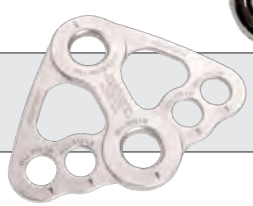
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MBS/MBL Min Break Load approx 10x WLL Working Load Limit
LARGE EYES= largest round /shaped hole - NB: may be cosmetic!
ALU = Aluminium Alloy. ~ = Approximate
● =OK but not ideal

	MODEL	COMPANY	ORIGIN	COST	WEIGHT	MATERIAL	PLA DEP
	Vlad	GRIVEL		£33 $40 €35	90g 3.2oz	Alu	-
	Shuttle	GRIVEL		£19 $18 €17	86g 3oz	Alu	10m 0.3
	Origin TT	HARKEN		£270 $250 €320	521g 18.4oz	Alu & Stainless Steel	12.7 0.5
	Hands Up Sml HX02282	HEXAROPE		£0 $0 €27	136g 0oz	SUS316 Stainless Steel alloy	-
	Hands Up Med HX02283	HEXAROPE		£0 $0 €44	252g 0oz	SUS316 Stainless Steel alloy	-
	Hands Up Lg HX02284	HEXAROPE		£0 $0 €72	487g 0oz	SUS316 Stainless Steel alloy	-
	HexaRing Med HX06448	HEXAROPE		£0 $0 €83	185g 0oz	Alu 7075-T6	-
	HexaRing Lg HX06449	HEXAROPE		£0 $0 €116	400g 0oz	Alu 7075-T6	-
	HexaRing XL HX06450	HEXAROPE		£0 $0 €0	634g 0oz	Alu 7075-T6	-
	Small Rigging Plate RP300	ISC		£20 $30 €22	93g 3.3oz	Alu	9.8 0.3
	Med Rigging Plate RP310	ISC		£29 $45 €37	202g 7oz	Alu	9.5 0.3
	Large Rigging Plate RP320	ISC		£78 $103 €93	422g 14.8oz	Alu	10m 0.3
	Small Halo RP302	ISC		£41 $54 €49	118g 4.1oz	Alu	7.8 0.3
	Med Halo RP303	ISC		£50 $70 €80	221g 7.8oz	Alu	9.8 0.3
	Large Halo RP304	ISC		£79 $106 €94	337g 11.9oz	Alu	12.8 0.5
	3-Rig	KONG		£23 $28 €26	95g 0oz	Alu	10m .39
	4-Rig	KONG		£27 $34 €32	150g 0oz	Alu	10m 0.3

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.
	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
mm 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
mm 5"	190x114mm 7.5 x 4.5"	CE NFPA G UKCA	45kN 10116lbf	n/a	n/a	4 +3	-	-		harken.com/safetyandrescue
	75 x 12mm 00 x 0"	not PPE	39kN 8993 lbf	15mm 0.6"	-	1 +hooks	-	-	Knot replacement (cinching) plate for impact lowering for 9-12mm rope	hexarope.com
	90 x 15mm 00 x 0"	not PPE	60kN 13488 lbf	19mm 0.75"	-	1 +hooks	-	-	Knot replacement (cinching) plate for impact lowering for 9-12mm rope	hexarope.com
	124 x 18mm 00 x 0"	not PPE	96kN 00lbf	25mm 1"	-	1 +hooks	-	-	Knot replacement (cinching) plate for impact lowering for 9-12mm rope	hexarope.com
	89 x 41mm 00 x 0"	not PPE	200kN* 0lbf	27mm 1"	32.2mm 0"	1*	■	-	*Designed for impact lowering. Max recommended rope 12mm *Rim-style outer for rope/sling loop	hexarope.com
	115 x 51mm 00 x 0"	not PPE	300kN* 0lbf	35mm 1.4"	41.6mm 0"	1*	■	-	*Designed for impact lowering. Max recommended rope 16mm. *Rim-style outer for rope/sling loop	hexarope.com
	130 x 55mm 00 x 0"	not PPE	400kN* 0lbf	38.2mm 1.5"	45mm 0"	1*	■	-	*Designed for impact lowering. Max recommended rope 20mm. *Rim-style outer for rope/sling loop	hexarope.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.	iscwales.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.	iscwales.com
mm 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
mm 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
mm 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 5"	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
mm 9"	96 x 76mm "	CE	36kN 8093 lbf	20mm 0.75"	24mm 0.95"	3 +1	●	-	Stronger version-replaced the Tris	kong.it
mm 9"	125.5 x 90mm "	CE	36kN 8093 lbf	20mm 0.75"	32mm 1.25"	4 +1	●	-	Stronger version-replaced the Poker	kong.it

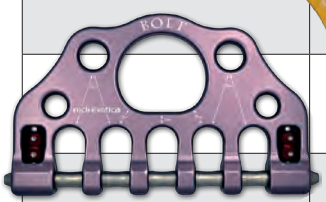
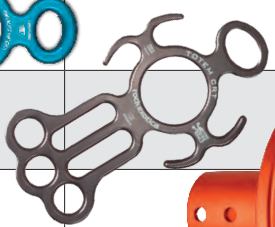
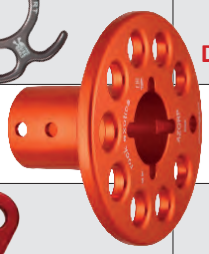
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MBS/MBL Min Break Load approx 10x WLL Working Load Limit
LARGE EYES= largest round /shaped hole - NB: may be cosmetic!
ALU = Aluminium Alloy. ~ = Approximate
● =OK but not ideal

	MODEL	COMPANY	ORIGIN	COST	WEIGHT	MATERIAL	PLA DEP
	Full	KONG		£34 $42 €39	90g 3.2oz	Alu	10m 0.3
	Rally	KONG		£38 $40 €36	180g 6.3oz	Alu	10m 0.3
	Rally Bent	KONG		£24 $36 €30	180g 6.3oz	Alu	10m 0.3
	BigRig	KONG		£243 $302 €280	1.5kg 3.3lb	Alu	10m 0.3
	DiscoRig	KONG		£68 $86 €74	390g 13.75oz	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
	Backone Mini 36681	NOTCH		£50 $66 €60	640g 1.47lb	plated 4130 Steel	~20 ~0
	Backbone 35174	NOTCH		£78 $89 €93	1.7kg 3.85lb	plated 4130 Steel	30m 1.2
	Hec	ONBOARD SYSTEMS		n/a	1.75lb 0.8kg	Stainless Steel	n/
	Paw S	PETZL		£26 $32 €29	60g 2.1oz	Alu	6m 0.2
	Paw M	PETZL		£46 $55 €54	210g 7.4oz	Alu	6m 0.2
	Paw L	PETZL		£72 $83 €83	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

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"	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
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
mm "	169 x 104mm 6.65 x 4.1"	CE	20.8kN 46000lbs	-	~27mm 0"	2 +hooks	-	-	Knot replacement (cinching) plate & impact lowering for 9-12mm rope	notchequipment.com
nm 2 "	295 x 133mm 10.75 x 5.25"	CE	20.8kN 46000lbs	-	~41mm 0"	2 +hooks	-	-	Knot replacement (cinching) plate & impact lowering for 9-12mm rope	notchequipment.com
a	n.a	FAA	3.56kN 800lbf	n/a	n/a	6 +2	-	-	specialist item for military and civil aircraft industries (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

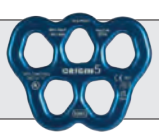
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MBS/MBL Min Break Load approx 10x WLL Working Load Limit
LARGE EYES= largest round /shaped hole - NB: may be cosmetic!
ALU = Aluminium Alloy. ~ = Approximate
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	MODEL	COMPANY	ORIGIN	COST	WEIGHT	MATERIAL	PLA DEP
 	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	10 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
	Anchor Plate 3:5	ROCK EMPIRE		£39 $49 €46	240g 8.5oz	Alu	10 0.3
	Anchor Plate 5:8	ROCK EMPIRE		£70 $87 €82	500g 1.1 lb	Alu	10 0.3
	Tri Rig RP1	ROCK EXOTICA		£20 $34 €40	51g 1.8oz	7075 Alu	8.9 0.3
	Penta Plate RP2	ROCK EXOTICA		£59 $55 €63	108g 3.8oz	7075 Alu	8.9 0.3
	Se7en RP3	ROCK EXOTICA		£66 $74 €95	376g 13.3oz	7075 Alu	9.7 0.3
	Bolt RP5	ROCK EXOTICA		£124 $155 €145	489g 1.07 lb	Alu + St Steel pin	12 0.4
	Rock Star RP22	ROCK EXOTICA		£125 $140 €178	209g 7.4oz	Alu	11.3 0.4
	Totem F10	ROCK EXOTICA		£40 $48 €45	128g 4.5oz	Alu	10 0.3
  	Totem CRT DISCONTINUED	ROCK EXOTICA/ RICH CARLSON		£40 $48 €46	278g 9.8oz	Alu	12 0.4
	AZORP	ROCK EXOTICA		£281 $343 €897	1400g 3 lb	7075 Alu	12 0.4
	SMALL RS015	SAR PRODUCTS		£20 >$27 >€24	93g 3.3oz	Alu	9.8 0.3
	MEDIUM RS016	SAR PRODUCTS		£29 $38 €34	202g 7oz	Alu	9.5 0.3
	LARGE RS017	SAR PRODUCTS		£61 $80 €71	422g 14.8oz	Alu	10 0.3

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 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
mm 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
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	-	-	V5 Discontinued	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

images approximately to scale
£$€=Currency conversion only - no tax/shipping etc.
MBS/MBL Min Break Load approx 10x WLL Working Load Limit
LARGE EYES= largest round /shaped hole - NB: may be cosmetic!
ALU = Aluminium Alloy. ~ = Approximate
● =OK but not ideal

	MODEL	COMPANY	ORIGIN	COST	WEIGHT	MATERIAL	PLA DEP
	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
	Rigging Plate 1/3 RK713BB00	SINGING ROCK		£38 $30 €27	65g 2.3oz	Alu	6m 0.2
	Rigging Plate 3/5 RK714BB00	SINGING ROCK		£50 $75 €65	145g 5.1oz	Alu	8m 0.3
	Rigging Plate 7/5 RK717BB00	SINGING ROCK		£70 $115 €85	285g 10oz	Alu	10r 0.3
	Cheese Plate S	SKYLOTEC		£48 $34 €55	75g 2.6oz	Alu	6m 0.2
	Cheese Plate L	SKYLOTEC		£95 $116 €90	160g 5.6oz	Alu	7m 0.2
	Genesis	SLACK-TECH		£78 $95 €90	304g 10.7oz	Alu	20m 0.8
	NFPA Mini	SMC/HARKEN		£26 $31 €30	79g 2.8oz	Alu	9m 0.3
	Origin 5	SMC/HARKEN		£27 $33 €31	113g 4oz	Alu	9.5 0.3
	NFPA Large	SMC/HARKEN		£47 $57 €54	323g 11.4oz	Alu	12.7 0.5
	Origin 8	SMC/HARKEN		£45 $55 €52	264g 9.3oz	Alu	12.7 0.5
	Vector	SMC/HARKEN		£39 $47 €45	168g 5.9oz	Alu	12.7 0.5
	Tree Angel	TREE CLIMBING JAPAN		£114 $90 €85	420g 14.4oz	Alu	12.7 0.5
	TF-CD404	TREE-FORCE		£25 $35 €33	240g 8.5oz	Alu	10r 0.3
	Mini Rigger 1012	YATES		£41 $50 €47	130g 4.7oz	6061 T6 Alu	10r 0.3
	Rescue Rigger 1015	YATES		£46 $56 €53	243g 8.6oz	6061 T6 Alu	10r 0.3

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"	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
m 5"	100 x 82mm 4 x 3.25"	CE	36kN 8093lbf	20mm 0.75"	26mm 1"	3 +1	-	-	Individually marked	singingrock.com
m 3"	153 x 88mm 6 x 3.5"	CE	50kN 11240lbf	20mm 0.75"	26mm 1"	7 +1	-	-	Individually marked	singingrock.com
mm 8"	226 x 94mm 8.9 x 3.7"	CE	55kN 11240lbf	19mm 0.75"	32mm 1.26"	10 +2	-	-	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
nm 8"	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	-	■	DISCONTINUED small eye height 27mm Large eye height 30mm	harken.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	-	-	SMC now owned/branded by HARKEN	harken.com
mm 5"	178 x 135mm 7 x 5.3"	NFPA "G"	50kN 11240 lbf	25mm 1"	57mm 2.25"	5 +1	-	■	DISCONTINUED individually numbered small eye height 36mm	harken.com
mm 5"	169 x 99mm 6.6 x 3.9"	CE NFPA G UKCA	50kN 11240 lbf	20mm 0.8"	25mm 1"	5 +3	-	-	SMC now owned/branded by HARKEN	harken.com
mm 5"	105 x 116mm 4.15 x 4.16"	NFPA G	48kN 10791 lbf	18mm 0.72"	46mm 1.8"	6 +1	-	-	DISCONTINUED as a separate item individually numbered Small eye width 31mm	harken.com
mm 5"	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

UPDATED Jan '25

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.

LIFE SUPPORT SWIVELS



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	£51 $70 €60	£44 $50 €48	£65 $0 €0	£50 $64 €60	£104 $180 €118	£46 $54 €52	£81 $120 €95	£111 $194 €126
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 Alu	Alu	Alu	Alu	Alu St Steel	Allu, Steel, St Steel	Alu, Steel, St Steel	Alu, Steel, St 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	dimb-art.de	beal-planet.com	blackdiamondequipment.com	camp.it	camp.it	camp.it	camp.it	camp.it

Images NOT to Scale						
MANUFACTURER	DMM	DMM	DMM	EDELRID	EDELRID	EDELRID	EDELWEISS	FIXE CLIMBING
MODEL VARIANT	Nexus Bow-D SW470	Nexus D-D SW480	Nexus Bow-Bow SW490	Cupid -	Conecto -	Vortex -	SWR -	SW1 590
ORIGIN								
COST	£86 $120 €108	£86 $120 €108	£86 $120 €108	£85 $107 €90	£50 $60 €63	£52 $62 €56	£40 $45 €45	£30 $0 €0
WEIGHT	103g 3.6oz	95g 3.4oz	110g 3.9oz	105g 3.7oz	155g 5.5oz	88g 3.1oz	88g 3.1oz	154g 5.5oz
MAX LOAD	26kN 5845lbf	26kN 5845lbf	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"	16mm 0.6"	20-30mm 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"	97 x 35mm 3.8 x1.4"	108 x 48mm 4.25 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	CE	CE	
MATERIAL	Body Milled Alu	Body Milled Alu	Body Milled Alu	Hot forged Alu	Hot forged Alu	Alu	Alu	Alu
OTHER COLOURS/ NOTES	Black	Black	Black	Replaced Conecto. Gate open-ing=12mm	DISCONTINUED			
WEBSITE	dmmwales.com	dmmwales.com	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 Alu	Machined Alu	Machined Alu	Machined Alu	Titanium	Hot forged Alu	Hot forged Alu	Body Milled Alu	Body Milled Alu	Body Milled Alu
		*max bar size 20mm/0.8"	Green/Silver. Blue/Silver		Black	Black	Black	Black	Black
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	£64 $69 €63	£76 $85 €80	£58 $69 €63	£81 $102 €85	£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	Alu	Alu	Alu	Alu	Alu	Alu	Alu	Alu	Alu
*max bar size < 25mm/1"				Black		no bearings so Does not rotate once loaded	14mm gate	*max bar size 23mm/0.9"	
sionclimb.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-B	SwivaEye C82 A	SwivaBiner C81 A
ORIGIN								
COST	£85 $90 €104	£65 $75 €90	£60 $73 €90	£77 $73 €86	£84 $80 €98	£156 $190 €180	£110 $99 €113	£120 $109 €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 , Steel	Machined Alu	Machined Alu	Machined Alu	Machined Alu	Stainless Steel	Machined Alu	Machined Alu
OTHER COLOURS/ NOTES		DISCONTINUED	Rotator Small discontinued			non-black S2S version discontinued	*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 -			
1050 $1060 €1375	£36 $55 €38	£44 $50 €46	£62 $68 €65	£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	Alu	Alu	Hot forged Alu	Hot forged Alu	Forged Alu	Forged Alu			
*20kN max reading. *inc batteries	4kN swivelling limit	*max round bar size 23mm/0.9"	Black dimbingtechnology.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

MULTISCENDERS

HYBRID ASCENDER/DESCENDER MECHANICAL FRICTION DEVICES



This Guide deals with stand-alone hardware for ascending/descending/Work positioning and since its first publication in **ARBCLIMBER**#10 in 2017 the only real changes are the establishment of the *RopeRunner* (opposite) and *Akimbo* (above-right) as market leaders alongside the *Zig Zag and Richard Mumford's XF* version of the *Hitch Hiker*. This has now led to *Buckingham*'s (*Buck-Tree*) *Throttle* (bottom-right) as the newest design on the market which is a variation on the *Akimbo*. The more traditional and modern equivalent systems utilise a prusik cord and some associated hardware like the *Hitch Climber, Rope Wrench, HitchHiker* etc. and proponents will say that these are better systems. They are certainly cheaper and generally lighter. *FTC* has introduced the *Freexion* below but it's *ISC* in Wales that has probably done most to enhance Kev Binghams original *Wrench* concept with various tether adjuncts enabling SRS working with their adjustable cam *Apex* and their *Squirrel* and *Chipmunk* tethers.



The systems above-right are typical of a current prusik system utilising either a Bachmann's or Klemheist or, in this case the highly favoured Valdotain Tresse. They have a *Rope Wrench* and *Apex* attached to stiffened 'tethers' and both are straddling a *HitchClimber* pulley attached to your rope bridge or main hard-point connection. The *Wrench* diverts load away from the hitch and makes it easier to control as an SRT/SRS rather than MRS/DdRT system. The whole system is relatively inexpensive but it's quite an expansive set up and takes time to set up and/or change around relative to the subject of this Guide, multiscenders. Above is *Petzl*'s answer to the *Wrench*, the *Chicane* and you can see how both options require the same amount of supporting kit and length items to create a more efficient ascent system. For a multiscender to be more efficient than simply foot-locking the rope around your boot ***you'll need a foot and/or knee ascender*** but at its most basic level, the hardware we're talking about here is all that you attach to your harness. You can use it to get into the tree, get out of the tree and work around the tree while you're in the canopy.

Then there is the eternal question of SRT/SRS versus DdRT/MRS. DdRT uses two ends of the same rope and so gets a 2:1 advantage which makes taking in during ascent easier, it also makes descent mode more controllable. In contrast it could be said to be less efficient than SRT because you have to pull twice the amount of rope to move the same distance you do with SRT. Fight it out amongst yourselves. Some of these devices will do both SRT and DdRT admirably and the *Wrench* of course mitigates load in an SRS system to allow use of what would otherwise be MRS devices.

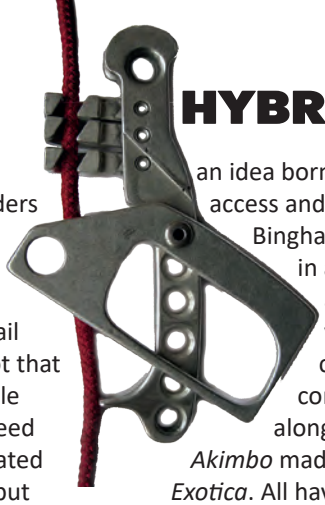
As a definition, 'Hybrid' is not strictly accurate as the term could equally be applied to a few other items of rope hardware that fit more than one usage category like the *CMC MPD* as a descender/lowering/progress capture device or *SMC Advance HX* and *Petzl Traxion*s as pulley/progress capture devices, but are in no way similar to the 'Hybrids' in this article which are used routinely as combination ascender/descenders and for work positioning . Even that definition is a little misleading because *Petzl*'s *GriGri, Notch's Glide*, the *Taz Love* and indeed many autolocking descenders can be used for progress-capture and therefore as a make-shift ascender as well as descender and for work positioning due to their easy take-in of slack (slack-tending). But they won't tend slack automatically when you pull them up the rope. Nope, you are required to physically pull the tail/trail-rope through those devices as you ascend which is one of two



HYBRIDS MULTI[illegible]ENDERS



NEW in 2025 ART Blackbird





things that sets them apart from multiscenders and you wouldn't use them in place of a prusik-hitch ascending system which is the Holy Grail that multiscenders aspire to. Not that it has ever been acceptable to descend at speed using unmitigated rope prusiks but that's what a lot of old-timers did (do?). The safer option is to switch to a dedicated ascender so really, the 'Holy Grail' is to effectively replace an ascender or prusik hitch system AND a descender with one device and these are more accurately described as 'multiscenders'. Incidentally, it might seem like the concept but we were discussing them in UK caving circles back in the early eighties. Not forgetting of course that pretty much everything we do in SRT, including the original commercial development of autolock descenders by *Petzl* with the *STOP*, stems from caving. However, some devices highlighted in this article may have more to do with the original *Jumar*s than the *Stop* descender, take a look at the silver ascender above-middle, from an Iranian climbing group that credits this device as the fore-runner of the iconic yellow *Swiss Jumar* so is presumably from midway through the last century - does that chain link style grip look familiar?

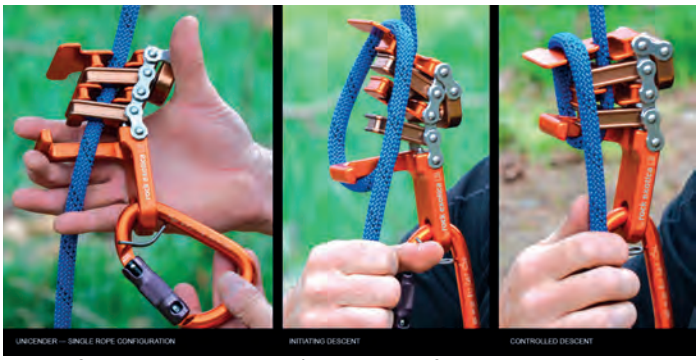
In terms of development of the artificial prusik we should probably credit *ART* with that because their original *LockJack* has been around for a good many years. I remember picking one of the early versions up from the lads at *Royal Kew Gardens* Arb section back in the nineties and it's still hung in my workshop but it didn't look anything like the slick *SpiderJack 3.0* you see top-right. It has taken a long time between Hubert Kowalewski's first model and now to kick-start the development of 'artificial prusiks' and that has everything to do with the dramatic switch from traditional tree climbing methods with rope-on-rope systems to 'technical' climbing using an ever widening array of hardware and sophistication. Once companies from the technical ropes arena like *DMM, Petzl, Rock Exotica, ISC* etc. got involved, expansion and development mushroomed. And yet.... When you look at the hybrids in this Guide it's perhaps a little surprising that not only are there not many, but the majority, starting with *ART* but later typified by Morgan Thompson's *Unicender* and Kev Bingham's *RopeRunner* have been developed within the arb industry before being taken on by the metal wizards. Admittedly, in the case of the *Unicender,* which, for many years was the only such device available, it was an obvious and short route from Morgan's original idea to his namesake's company taking on development and production but nevertheless it was still an idea born outside of the rope access and rescue mainstream. Kev Bingham's *RopeRunner* is available in a US version made by *CMI* and the sumptuous *Pro* version by *Notch* and this has clearly become a popular competitor to the *ZigZag* along with Jamie Merrit's *Akimbo* made by *Rock Exotica*. All have gone from garage prototype to an 'elite' level of production and perhaps Gordon Svedberg's *Bulldog* devices and *Climbing Innovation's XF* will go the same way but it hadn't really made much of an inroad between the original version of this article in 2017 and this 2025 update. As of 2025 the key models remain the *Petzl's ZigZag*, *Rope Runner* and the *Akimbo* (and possibly now the *Throttle*?) with very worthy though less 'mass'-market models in the form of the *Unicender* and *ART's SpiderJack* and *LockJacks* representing the arb industries break out into dedicated technical rope hardware rather than borrowing from the rope access & rescue fields. Following in *ART*'s footsteps the *ZigZag* has most closely followed doubled rope technique (DdRT) and the traditional



functioning of a closed-loop/split-tail prusik systems. This is in contrast to the *Rope Runner* and *Akimbo* which are firmly SRT oriented but the *Throttle* bucks the trend, so to speak, because it has added eyes that DO allow easier MRS use. The *ZigZag* failed to achieve universal acceptance before the new kids on these block arrived and this was partly exacerbated by its inability to permit mid-rope attachment and to an early mishap and recall which spooked the market. It's fair to say that the *ZigZag* missed its original window which might have made it as universally common in the arb world as the *GriGri* became in the sport climbing world.



All of the devices in this Guide appeal to the techies and repel the traditionalists. Techies are the shiny-metal fetishists who will always be happy to buy and experiment with anything new that weighs more than a traditional prusik and is...well....shiny. And for most of these devices you need to be a bit of a techie because they're not for beginners. Any thoughts of making life



easier for those who weren't overly proficient with traditional methods could result in an early visit to the ER. Take a look at *Unicender*'s various control functions in the pictures overleaf. Once you're used to them and especially if you've used a range of other technical devices it all comes together quite easily. Novices on the other hand should cut their teeth on rope prusik systems first and especially using the *Rope Wrench* which was Kev Bingham's revelation in diverting part of the load away from the knot (or indeed any compact multiscender) and making them much easier to control. Outside of Germany there has been a preponderance of 'chain-link' style devices since this is the primary way for metal to function in a similar way to a prusik. The *Unicender* is a chain link, *Zig-Zag* is a chain link, *RopeRunner* and *Bulldog Bone* are sideways chain-links and *Akimbo/Throttle* are alien chain links. The Germans on the other hand, in the guise of those complex metal artisans *ART*, have continued to evolve their original *RopeJack* with the *SpiderJack* and now have a cross between the *Akimbo* and *Rope Runner* called the *Blackbird*. Their existing range might look intimidatingly complex but all five current *ART* DdRT devices are actually quite straightforward modifications to the *LockJack*'s original locking mechanism enhanced by various handles and casings and *Dyneema* (in the case of *LockJack 2.1*). Their function is as smooth as their design curves, in fact, the slack tending on *ART* devices is so efficient that the *SpiderJack3* has a secondary lock that you can engage (black handle in the pic on the previous page). This is not to prevent slippage, but to prevent rope take-in when moving around the canopy. Even without the weight of trail-rope beneath the *Lockjack* it will self-tend so efficiently that you might be at your required work position and simply adjust your hips for comfort, only to find that *LockJack* has shortened more rope and put you slightly out of position! Hence the extra locking position - brilliant when you have to add a feature because your device is TOO efficient. *SpiderJack3* also added a pulley for more efficient redirection of the trail rope when limb-walking and was orientated to make it easier to use with left or right hand.

The one thing we can say for sure about ALL hybrid devices is that they must squeeze the rope between two metal elements somewhere along the line. Whether that's in a camming action, a simple squeeze or a moving chain link where the hole's alignment alters the friction, it means that there are varying degrees of friction within your system that also affect:

1) how well it functions as an ascender, and allied with this...
2) how efficient it is in NOT losing progress and efficiency to drop-back
3) how forgiving the start-stop function is
4) how easily it switches between modes

The ground-breaking *LockJack*s seemed to suffer more than others with wear to 'metal components' which, to be fair, can be replaced easily enough but in their second version they introduced that rather odd second rope-contact point made of wood (the brown section in the *SpiderJack2* picture top-left) . It just shows that you can't beat natural materials and in this case the robust nature of a tough hardwood adds a second friction brake to mitigate wear on the original metal cam/pins. In fact, the wood is really the primary friction plate since it's the first contact point and climbers proficient with its use can apply finite levels of friction such that spectacular fliers of dozens if not hundreds of feet are possible. Proficiency is the key to smooth starts on *LockJack*s but the *Zig Zag* and *Akimbo* have an action that seems to give much gentler transition from stopped to moving (in descent) mode. Certainly far smoother than the *Unicender* and *RopeRunner* which take more getting used to (although *Akimbo* can be far more difficult to adjust). This is not surprising with the *Zig-Zag* or Lockjacks since they are DdRT devices (unless the *ZigZag* is used with the *Chicane* SRT adjunct) but *Akimbo* functions this way on single rope which may yet become the favoured route in the arb industry. The *Akimbo* also exhibits minimal drop back in ascent mode, something the *Unicender* is also adept at but others struggle with. You can get used to working with drop-back but it's better when there isn't much. ART's latest offering the Blackbird may show that the Akimbo/RopeRunner style devices are taking the lead against Lockjacks? More on the new Blackbird soon.

WARNING: Unlike every other area of rope access & rescue, arborism generates a lot of home/garage modifications of existing products. Just like a car, ANY modification voids the warranty and any certification.

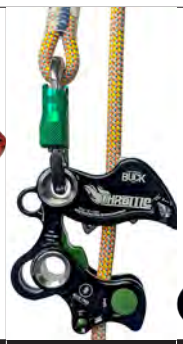
SEE ALSO **ARBCLIMBER** #21 for detailed discussion of Multiscenders in comparison with enhanced DdRT systems and SRT Descenders. **BUYERS GUIDE** to **ROPE EQPT** has Autolocking Descenders. NB: *ART* **devices** seem to have a wider variety of weights quoted for them than any other piece of hardware. The weights we show represent them actually having been weighed.


rock exotica
GEAR FOR THE Z AXIS
akimbo
For Stationary Rope / Moving Rope Systems — Made in USA
The AKIMBO is a versatile, mid-line attachable friction device that allows climbers to ascend and descend stationary or moving rope systems without needing tools or changing equipment.
Learn more at:
www.rockexotica.com
*Only use ropes approved by Rock Exotica. Consult user manual or website for details.
Patented
CE

Images NOT to Scale
Prices £$€ in burnt orange are currency conversions only & do not inc shipping, import duty or tax
COST: ~ & inc local tax/VAT
WLL: If no WLL is given by manufacturer we show a Max Load based on ~10:1 safety ratio **HYPHEN**- = not applicable
N/A = Not Available/not given.
● = OK but not ideal
~ = Approximate






MANUFACTURER	ART	ART	ART	ART	ART	BUCKINGHAM	CLIMBING INNOVATIONS	
MODEL VARIANT	Blackbird	Lockjack Basic (aka Sport)	Lockjack 2 (swivel)	SpyderJack 2.1 DyneemaVelcro	SpyderJack 3	Throttle	HitchHiker XF	Ro
ORIGIN								
COST	£550 $630 €548	£246 $410* €286	£280 $415 €315	£267 $395 €316	£406 $518 €425	£369 $500 €435	£230 $300 €250	
WEIGHT (System)	609g 1lb 9oz	268g 9.5oz	310g 11oz	281/241g 9.9oz/8.5oz	511g 1lb 1oz	535g 1lb 3oz	n/a	
MBS/MBL	TBAkN TBAlbf	23kN 5170lbf	23kN 5170lbf	16kN 3597lbf	25kN* 5620lbf	-	-	
WLL (Specific Ropes)	150kg 330lb	200kg 440lb	200kg 440lb	200kg 440lb	200kg 440lb	140kg 308lbf	<227kg* <500lb	
MIN Rope Diameter	11.2mm 7/16"	11mm 7/16"	11mm 7/16"	11mm 7/16"	11mm/12mm* 7/16"/½"	11mm 7/16"	9mm ⅜"	
MAX Rope Diameter	13mm ½"	13mm ½"	13mm ½"	13mm ½"	12mm/14mm* ½"/ 9/16"	13mm ½"	14mm 9/16"	
HEIGHT (System)	?-300mm -11.8"	150/220*mm 6/8.7"	150/220mm 6/8.7"	127/89*mm 5/3.5"	195/93mm 7.6/3.6"	TBA	150/230mm 6/9"	
SRT / SRS	■	-	-	-	-	■	■	
DRT /SRS	-	-	-	-	-	-	-	
DdRT / MRS	■	■	■	■	■	■	●	
ASCEND	■	■	■	■	■	■	■	
DESCEND	■	■	■	■	■	■	■	
ADJUST FRICTION	●	●	●	●	●	■	●	
MIDLINE ATTACH	■	■	■	-	-	■	■	
INTEGRAL SWIVEL	■	-	■	-	■	-	-	
ATTACH to CHEST	■	●	●	-	-	■	■	
STANDARDS (System)	EN 12841 B/C	CE	CE	CE	CE	ANSI	NO	
FRAME MATERIAL	Alu	Alu	Alu	Alu	Stainless Steel	Alu/StSteel	Alu/Steel	
RECOMMENDED ROPES **NOTES**	NEW in 2025 Two-person (rescue) capable in SRT mode	*imported by VSG/ Sherril so price of basic vs swivel seems to be higher than ££ equivalent. *system=with rope & knob. Fixed carabiner eye. All components replaceable . Approved for two person load	*system=with rope & knob. Swivel carabiner eye. All components replaceable. Approved for two person load	*difficult to say what is length and what is width! Available with Dyneema extender allows for quick carabiner change - deduct approx 40g for Velcro version. £228/$350/€280	*difficult to say what is length and what is width! All wearing parts are replaceable. Approved for two person load. *supplied with 3 cams which need to be swapped in for different rope sizes. *NB some stockists quoting 23kN- ART manual states 25kN. Add approx10% for laser-cut of your logo	NEW in 2025 Able to attach midline and operate on SRS and MRS systems (without requiring the use of tools) the *Throttle* has addressed some of the issues associated with other devices. See their website for a list of recommended ropes	runs on 24 strand & Kernmantle, requires 8-10mm cord for climbing hitch 2 versions - with and without captive eye. Works 180to90° website address is: climbing-innovations.com	E lo
WEBSITE	climb-art.de	climb-art.de	climb-art.de	climb-art.de	climb-art.de	buckinghammfg.com	see above	cm

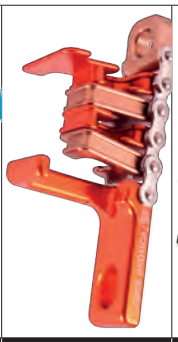
MECHANICAL FRICTION DEVICES












CMI/ SINGING TREE	GORDON SVEDBERG	NOTCH	NOTCH	PETZL	PETZL	ROCK EXOTICA	ROCK EXOTICA	ROPETEK
ope Runner	Bulldog Bone Adjustable	Rope Runner Pro	Rope Runner Vertec	Zig Zag	Zig Zag Plus	Akimbo	Unicender	HitchHiker 2
£289 $350 €333	£320 $385 €366	£376 $440 €395	£445 $495 €543	£228 $310 €205	£270 $370 €296	£410 $400 €490	£408 $400 €490	£245 $300 €280
246g 8.67oz	433g 14.4oz	425g 15oz	453g 15.9oz	365g 12.9oz	425g 15oz	261g 9.2oz	310g 10.9oz	275/545g 9.6oz/1.2lb
22.7kN 5103lbf	-	-	-	-	-	0kN 0lbf	31kN 6969lbf	25kN 5620lbf
125kg 275lb	<113kg <250lb	140kg 308lbf	130kg 286lbf	140kg 308lbf	140kg 308lbf	100/130kg 220/286lb	<545kg* <1200lb	<522kg* <1150lb
11mm 7/16"	10.5mm 7/16"	11mm 7/16"	11mm 7/16"	11.5mm 7/16"	11.5mm 7/16"	11.5mm 7/16"	11mm 7/16"	11.5mm 7/16"
13mm ½"	12mm ½"	13mm ½"	13mm ½"	13mm ½"	13mm ½"	13mm ½"	13mm ½"	13mm ½"
160 mm 6.3"	175mm 6.9"	158mm 6.2"	155mm 6.1"	115*-248/290mm 4.5*-7.9/"	127*258/300mm 5*-10.1/11.8"	85*-200mm 3.4*-7.9"	155mm 6.1"	105mm 4.15"
■	■	■	■	●*	●*	■	■	■
-	-	-	■	-	-	-	-	-
●	●	●	●	■	■	●	■	●
■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■
●	-	●	■	-	-	●	■	●
■	■	■	■	-	-	■	■	■
-	-	-	-	-	■	-	-	-
■	■*	■	■	■	■	■	■	■
CE	NO	CE	CE	CE ANSI	CE ANSI	CE	CE	NO
Alu /Steel	Alu/Steel	Alu	Alu	Alu/Steel	Alu/Steel	Alu	Machined Alu	Steel & Alu
N 1891 type A w stretch kern-mantle ropes	The BDB is constantly evolving and hard to keep track of - monitor @ surveyor on Treebuzz for more info (outside of Japan) . Image shows the Japanese made adjustable version. *via a tied cord loop	Centre chest attachment, smoother edges and drop-free mid-line rope attach	Tool-free friction adjustment. 7 friction settings. Centre chest attachment, smoother edges and drop-free mid-line rope attach	* height when in use EN 1891 type A low stretch kernmantle ropes * length with Chicane Cost=Add £168/$193/€174	* height when in use EN 1891 type A low stretch kernmantle ropes * length with Chicane Cost=Add £168/$193/€174	* height when in use Check website for list of specific ropes to use	*Load at which ropes slips thru SRT Barrel attachment available to improve frictional adjustment. Not officially sold in Europe.	*Load at which prusik slips $495 as system with cord. 24 strand and Kernmantle requires 8-10mm cord for climbing hitch *Comes with steel carabiner. Ropetek no longer supply cord but some stockists do.
igearusa.com	works-odsk.com	notchequipment.com	notchequipment.com	petzl.com	petzl.com	rockexotica.com	rockexotica.com	ropetek.com

UPDATED Sept '24

AUTOLOCKING, 2-WAY LANYARD/ FLIPLINE AJUSTERS

AKA **ROPE SHORTENERS**



ART's Ukrainian-supporting colours in their limited edition swivel positioner

For the purposes of tree work, we're defining a lanyard as connected to two load bearing elements of your harness (the Side-mounted D-Rings) but most will also function as a single attachment in the same way as a rappel/ ascending rope anchored above the climber. The important words here are '**TWO-WAY**' because virtually any ascender and in particular rope grabs can and are used as lanyard adjusters but they will only allow you to extend the length of lanyard when your weight is taken off the device. They are ascenders-only, not descenders. You can check out one-way adjusting rope grabs in the separate guide to ROPE GRABS from page __ or some of the Progress Capture Devices on page _ will also function as lanyard adjusters as will some Mobile Fall Arresters (see our ROPE EQUIPMENT BUYERS GUIDE). This guide relates to technical hardware but you can of course use the various prusiks to do a very similar job at a faction of the cost. *Teufelberger* introduced their *CE Lanyard* (*Hipstar Flex)* years ago when combination flipline/extended lanyards first started to appear and their rope/pulley/prusik combo subsequently led the market for quite some time but was fairly easy for others to copy and compete against. The rope itself is the key element and we would suggest that the specialist Aramid/Twaron/Technora ropes might be the best compromise between a wire-core and a regular rope in terms of abrasion resistance but these will all be personal choice. Remember though, none of these, even wire core, are cut-proof but clearly you stand a greater chance of survival with a wire core followed by the Aramid style fibre ropes followed by the thickest -ass rope you can find but the key lesson is to cut carefully and always have a back up. With that in mind, the longer rope lengths that make the type of two-way device we're dealing with in this guide so useful, means that you can use the tail as a second backup polestrap when moving up a spar or between trunks. The devices in this guide are really modified descenders or belay devices that will allow you to release rope (in SRT or doubled lanyard mode) in a controlled manner even when fully loaded - in effect you are performing a series of very short abseils/rappels whenever you adjust or increase the length out or simply pulling on the rope tail to take rope in. Consequently these can be used more for work positioning on longer rope lengths than simply a traditional, short pole-strap style lanyard - though they will do both jobs admirably. With the loaded descent capability they tend to be larger/bulkier than basic rope grabs.

You could also use a prusik as a two-way lanyard adjuster and any handled descender or indeed arborist-specific device like the *Akimbo* and *RopeRunner* but we're talking 'handily-sized'. Actually the *Akimbo* is handily -sized but it seems a bit like entering a *Masarati* into a donkey derby! There is also the small matter that, technically, **to meet the European standard as a Lanyard Adjuster the side plates need to be fixed** which is why so many come with ready-installed lengths of rope/lanyard. For some devices that might normally have swivel plate access to loading the rope this can simply mean that the swivel plate is now bolted but you can unbolt it to apply a new lanyard. *Notch's Glide* for instance has an Allen Key bolt on the silver rope-chamber cover for changing rope and/or adjusting the cam face to better fit the rope.



Although many of these devices will function admirably on a single rope in the same way as any abseil/ rappel device, the intention is for the rope to be doubled as it extends from one pole strap D-ring - passes around your anchor branch (or via a friction-saver) and back to your adjuster on the opposite pole-strap D-ring. With longer lengths of rope/lanyards the climber is able to limb-walk and manoeuvre around the work area with enhanced stability - think of a tripod and the stability afforded when compared to working away from the vertical line of a single point attachment



Flip-lines or pole-straps are shorter than the newer generation of working rope lanyards and may also have a wire core to prevent being cut through by your chainsaw. Standards for use on rope do not include wire-core rope which are effectively wire cable with a braided sheath allowing camming devices to work but not in the same way as they do on a fibre core rope which compresses under load and improves grip. In contrast a wire-core rope will only compress for the thickness of the braided sheath.

Some devices **NOT included** here that crop up in the Belay Devices Guide in the ROPE EQUIPMENT BUYERS GUIDE which you might otherwise expect to be included here include the *Mad Rock Lifeguard* and *Safeguard, Beal Birdy, Anpen P15* and *Edelweiss Kinetic* because they require a degree of dynamic

ROPE SHORTENERS



arrest so are not truly hands-off auto-locking as required of a lanyard adjuster. The *GriGri* and *GriGriPlus* only because the *Grillon* is a more compact version, the russian Ice *Rock Gnome* and *Krok Fedor* because they're...well....russian and therefore persona non-grata during the current bizarre period of invasion of a neighbouring democracy. The *ISC D2* because, like the *Petzl GriGri* it's a little bulky compared to *ISC's* dedicated lanyard adjuster the *RAD*. We have left in the *Taz Lov2* because, although it is quite bulky, it is a true multi-role device. The *Trango Vergo* is a belay device and usually precluded because, like the *Birdy* etc. it requires a dynamic brake assist and therefore not truly auto-locking but the *Vergo* has a more positive brake override. It also only just made it due to it's small diameter rope range (the reason many tactical and bailout devices also didn't make it in) but lanyard ropes can be anywhere between 10 and 13mm (½") so it's close enough.

ART, Petzl and *Notch Equipment* deserve special mention because they have bespoke products specifically engineered to be lanyard adjusters but of course, by default, this function makes them suitable for other tasks as you'll see in the list below. As usual *ART* have some beautifully over-engineered adjusters, one with a swivel, one without (top) which, like *Petzl's Zillon* opposite, are actually cut-down versions of their larger climbing device. *Notch Equipment* have the interesting *Glide* (right) specifically designed to fit easily in the hand and align with the direction of operation in a slimline (and swivelling) package. The rope access plate is removed with an Allen key. Finally *Petzl*'s bespoke device is not the afore-mentioned *Zillon* but the smallest, cheapest, lightest and simplest device in our selection, the *Progress Adjust* (right). Sport climbers will recognise the principle of this as a camming frame that we see on some belay devices where the carabiner provides the spacer and the locking surface against which the rope is jammed by the frame. A little plastic accessory y helps to hold the carabiner in a set position rather than flopping around making it easier to clip.

The versatility of many of these adjusters as belay devices, descenders, progress capture and ascenders means that your humble adjustable lanyard can do so much:

1) Pole-Strap/Flip Line on a pole/trunk/spur
2) lateral Work positioning
3) vertical, single point work positioning
4) edge restraint (for access 7 rescue(
5) Quick-attach 2:1 tMA with device on target
6) Quick attach 3:1 tMA with device on self, pulley/link on target
7) Short Belay/lifeline
8) Ascent progression (ladder or via-ferrata style ascent)

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. As we often mention, the figures in this Guide are verified by the manufacturer but you will see different spec on some supplier websites and for some manufacturers that have rebadged a model. No idea why!

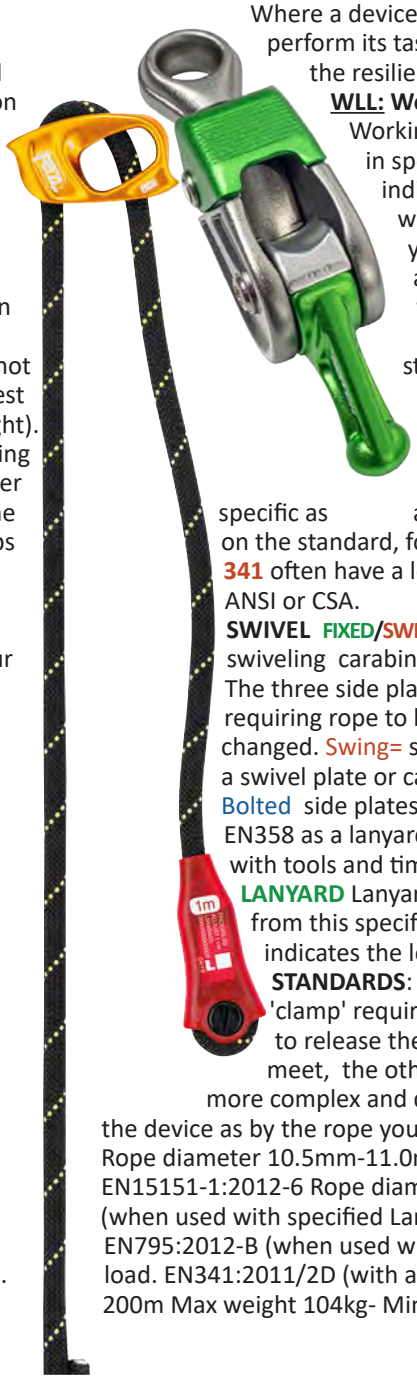
COST: Prices are a rough guide only - it can vary due to exchange rates, taxes etc. and we usually round the price up. Chinese devices may need import duty added.

WEIGHT: for the individual device in black and *including* the lanyard in burnt orange.

DIMENSIONS: of the device itself This is mainly given as height or length by width with some quoting the depth (or thickness) of the device. If only one figure is given it will be the longest height or length. This 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 showing the handle as Alloy (alu) or Steel may also have a comfort cover of rubber or plastic etc. Others like the Core use the entire body of the descender as a lever style handle.

MBL: Minimum Breaking Loads is a complex area when you have multi-role devices 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. Where a device actively squeezes the rope to perform its task the MBL may be more about the resilience of the rope in not breaking



WLL: Working Load Limit (Safe Working Load). Again, rarely used in sports devices. 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 but most will simply quote the standards requirement even if they can handle lower loads.

MAXIMUM 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.

SWIVEL FIXED/SWING/BOLTED: Swivel refers to a swiveling carabiner attachment - most are fixed. The three side plate options are fixed= always requiring rope to be fed or the lanyard cannot be changed. Swing= swing plate/cam. The device has a swivel plate or cam for easy loading onto rope. Bolted side plates as per the requirements of EN358 as a lanyard adjuster but can be unbolted with tools and time.

LANYARD Lanyard are the lengths available from this specific manufacturer - an asterisk indicates the length quoted in the COST.

STANDARDS: Aside from EN567 as a rope 'clamp' requiring at least two actions to release the rope which all of these meet, the other relevant standards are more complex and determined not so much by the device as by the rope you put in it. EN12841:2006-C Rope diameter 10.5mm-11.0mm Max weight 130kg. EN15151-1:2012-6 Rope diam 9.9mm-11.3mm. EN358:2018 (when used with specified Lanyard) Max weight 150kg. EN795:2012-B (when used with specified lanyard) 1-person load. EN341:2011/2D (with approved pre-threaded rope) 1x 200m Max weight 104kg- Min weight 40kg

Images NOT to Scale					
MANUFACTURER	**ABTECH**	**ANPEN**	**ART**	**ART**	**CAMP**
MODEL VARIANT	**ROPE RAT** ABRAT	**P15** -	**Positioner Basic** -	**Positioner 2 Swivel** -	**Druid Pro** 2P654
ORIGIN					
COST (inc Tax) **DEVICE-ONLY** **Inc. Integral LANYARD**	- £144* $177 €165	£111 $135* €125 -	£103 $165 €110 -	£125 $200 €140 -	£135 $220 €113 -
WEIGHT exc lanyard	346g 12.2oz	245g 8.6oz	175g 6.2oz	175g 6.2oz	280g 9.9oz
MAX LOAD- WLL MBS	191kg 16kN 420lb 3597lbf	250kg 16kN 551lb 3597lbf	200kg 23kN 441lb 5170lbf	200kg 23kN 441lb 5170lbf	200kg 12kN 441lb 2697lbf
ROPE RANGE Ø	11mm 7/16"	9.5-11mm 3/8 - 7/16"	11-13mm* 7/16 - 1/2"	11-13mm* 7/16 - 1/2"	10-11mm 3/8-7/16"
DIMENSIONS ht x w x depth	114 x 73 x 24mm 4.5 x 2.9 x 0.9"	140 x 50mm 5.5 x 2"	120 x 45 x 38mm 4.7 x 1.8 x 1.5"	135 x 45 x 38mm 5.3 x 1.8 x 1.5"	118 x 76 x 46mm 4.7 x 3 x 1.8"
SWIVEL FIXED/SWING/BOLTED	- ■	- ■	- ■	■ ■	■ ■
LANYARDS RELEASE UNDER LOAD	2*/5/10m ■	■	■	■	■
USES: PCD BELAY DESC ASC	-	■■■●	■●	■●	■■■■
FRAME CAM HANDLE	Alu S.Steel Alu	Alu Alu Plastic	Alu Alu Alu	Alu Alu Alu	Alu S.Steel Alu
STANDARDS (with lanyard)	CE ANSI	GA494-2004	CE ANSI	CE ANSI	CE
OTHER COLOURS		■	-	-	-
NOTES	Rebranded by many companies	*FOB China	*Change cam for wire core rope 12-13mm	*Change cam for wire core rope 12-13mm	Std Druid version has dbl
WEBSITE	abtechsafety.com	enanpen.com	smcgear.com	cmcpro.com	camp.it

IMAGES NOT to SCALE					
MANUFACTURER	**NOTCH**	**PETZL**	**PETZL**	**PETZL**	**RnR**
MODEL VARIANT	**Glide** 64055	**GrillonPlus** Grillon	**Zillon** -	**Progress Adjust-I** L044	**Renegade** P54
ORIGIN					
COST (inc Tax) **DEVICE-ONLY** **Inc. Integral LANYARD**	£123 $140 €131 -	- £126 $240 €155*	- £204 $260* €209	£66 $72 €66* -	- £123 $150 €140
WEIGHT inc Lanyard	206g 7oz	208g 7.3oz	570g 20oz	185g 5oz	140g 4.9oz
MAX LOAD- WLL MBS	- 23kN - 5170lbf	100-140kg n/akN 220-309lb n/albf	150kg n/akN 330lb n/albf	140kg n/akN 308lb n/albf	509kg 23kN 1124lb 5170lbf
ROPE RANGE Ø	11-13mm* 7/16 - 1/2"	11mm 7/16"	11mm 7/16"	11mm 7/16"	≤11mm ≤7/16"
DIMENSIONS ht x w x depth	140 x 90 x 33mm 5.5 x 3.5 x 1.3"	105 x 63 x 42mm 4.2 x 2.5 x 1.65"	100+ x 35mm 4+ x 1.4"	50 x 36mm 2 x 1.4"	85.5 x 44 x 31mm 3.4 x 1.7 x 1.2"
SWIVEL FIXED/SWING/BOLTED	■ ■	- ■	- ■	- ■	- ■
LANYARDS RELEASE UNDER LOAD	■	2*/3/4/5/10/15/20m ■	2.5*/4/5.5m ■	1*/2/3/4/5m ●	8'*, 12' ■
USES: PCD BELAY DESC ASC	●●	●■■●	■* ■*	●	●●
FRAME CAM HANDLE	Alu StSt Alu	Alu StSt Plastic	Alu StSt -	Alu - -	Alu Alu Alu
STANDARDS (with lanyard)	ASTM CE	CE ANSI CSA EAC UKCA	CE	CE ANSI CSA EAC UKCA	CE
OTHER COLOURS	■	■	■	■	-
NOTES	3 friction settings to cater for rope sizes		*As a DdRT device	can use dynamic rope	
WEBSITE	notchequipment.com	petzl.com	petzl.com	petzl.com	rocknrescue.com

ROPE SHORTENERS








	CMC	CMC	HEIGHTEC	GIBBS	ISC	KONG
	Capto 11 336011	Capto 13 336013	Piranha LA02	Klimair BiDirectional -	RAD RP815	Trimmer + Trimmer
	£296 $359 €341 -	£296 $359 €341 -	- £132* $161 €151	£104 $110 €103 -	£110 $165 €126 -	£72 $85 €81 -
	513g 1.13lb	508g 1.12lb	800g 1.76lb	156g 5.5oz	306g 10oz	120g 4.2oz
	- 36kN - 8093lbf	- 36kN - 8093lbf	125kg n/akN 276lb n/albf	454kg 22.2kN 998lb 5000lbf	104-150kg 16kN 230-331lb 3597lbf	509kg 23kN 1124lb 5170lbf
	10.5-11mm 7/16"	10-13mm 3/8-1/2"	10.5-11mm 7/16"	11-13mm* 7/16 - 1/2"	10.5-11mm 7/16"	≤10 11mm ≤3/8 7/16 2"
	150 x 70 x 31mm 5.9 x 2.75 x 1.2"	254 x 102 x 62mm 10 x 4 x 2.4"	108 x 61 x 26mm 4.25 x 2.4 x 1"	75 x 50 x 23mm 3 x 2 x 1"	112 x 73 x 34mm 4.4 x 2.8 x1.4"	85.5 x 44 x 31mm 3.4 x 1.7 x 1.2"
	-	-			-*	-
			2*/3/5/10/20m	-		1.3/2/3/4/5m
	Alu Alu -	Alu Alu -	Alu Steel Alu	Alu Alu -	Alu S.Steel Alu	Alu Alu Alu
	CE	CE	CE		CE	CE
	-	-	-	-		-
				*NOT for wire core rope	*converts between fixed and swing-cheek. Sprung handle	
	cmcpro.com	cmcpro.com	heightec.com	gibbsproducts.com	iscwales.com	kong.it







expansion column

	SAR PRODUCTS	SINGING ROCK	SKYLOTEC	TAZ	TRANGO	
	RAD P54D	SIR -	Lory Pro X A041	Lov 3 -	Vergo P51 SH	
	£110 $135 €126 -	£153 $190 €133 -	£107 $130 €147 €305*	£176 $275 €200 -	£82 $100 €94 -	
	307g 10oz	365g 12.9oz	390g 13.7oz	353g 12.4oz	195g 6.9oz	
	104-150kg 16kN 230-331lb 3597lbf	225 21kN 496 4721lbf	225 21kN 496 4721lbf	0 15kN 0 3372lbf	8 36kN 1798 8093lbf	
	10.5-11mm 7/16"	10-12mm 3/8-1/2"	11mm 7/16"	10-11mm 7/16"	8.9-10.7mm ≤1/2"	
	112 x 73 x 34mm 4.4 x 2.8 x 1.4"	134 x 71 x 35mm 5.3 x 2.8 x 1.4"	134 x 71 x 35mm 5.3 x 2.8 x 1.4"	140 x 95 x 50mm 5.5 x 3.75 × 2"	103 x 58 x 32mm 4 x 2.3 x 1.25"	
	-*	-	-	-	-	
			1.5*/2/3/5m			
	Alu StSt Alu	Alu StSt Plastic	Alu StSt Plastic	Alu StSt Plastic	Alu Cast St Plastic	
	CE	CE ANSI	CE DIN	CE	CE	
	-	-	-	-	-	
	*converts between fixed and swing-cheek. Sprung handle.	Standard Lory has panic brake				
	sarproducts.com	singingrock.com	skylotec.com	taz3d.fr	trango.com	

UPDATED Jul '25

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.



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Images NOT to Scale ■ EN12278 as a PULLEY ■ EN12275 for SPORT ■ EN362 for WORK EAC=Eastern Europe/Russia UIAA =mountaineering UKCA=UK						
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 A5871C
ORIGIN						
COST (inc Tax/VAT)	£29 $37 €33	£31 $48 €36	£37 $50 €49	£34 $43 €39	£82 $107 €91	£85 $107 €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 5620lbf 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 ■ EN12278 as a PULLEY ■ EN12275 for SPORT ■ EN362 for WORK EAC=Eastern Europe/Russia UIAA =mountaineering UKCA=UK						
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)	£270 $340 €315	£228 $286 €263	£44 $51 €46	£35 $49 €40	£35 $41 €46	£40 $52 €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 4496lbf 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	harken.com	harken.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	
11	£87 $110 €96	£87 $110 €96	£90 $118 €122	£95 $120 €111	£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	
t	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	£36 $48 €45	£40 $52 €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	
2"	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	

PROGRESS CAPTURE PULLEYS/DEVICES



We originally called these 'Pulleys' but 'Devices' better describes this genre of equipment because so many are descenders/lowering devices rather than simply a pulley. '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 PCD or 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. *CMC*'s new *Capto* (pic top) for instance has a faceted cam to limit force applied to the rope but,despite the name and looking the part with a pulley sheave and cam, it's not actually intended to be a full time 1:1 PCP but instead an additional device to increase the MA of your existing system. *Petzl* meanwhile do have full time 1:1 PCPs and have revamped and brought back the *Mini Traxion* and the *Pro Traxion*, the latter as part of their *SPIN* family with a meaty swivel (pic left) The *CMC MPD*, *Harken Clutch, ASAP RD2* and *Petzl Maestro* are examples of what are effectively descenders incorporating a pulley sheave/wheel hence their inclusion in this guide and they would function well with an ancillary device like the *Capto* to increase MA and progress-capture (eg. in place of the rope grab as shown at the top of p51). The majority of devices however, are designed to be used in one-direction for hauling such that release of the cam would result in dropping the load unless mitigated by incorporation of a descender or friction bollard, again this isn't the case with the *MPD, Clutch, RD2* and *Maestro* with their one-way pulley wheel and it's also not the case with one or two other, more conventional designs where the sheave only rotates in one direction like the 'D' version of the *Petzl Spin* swivel pulley.



One type of device we <u>*haven't*</u> included is the integrated load arresters typified by the *Rollgliss 350* (left) and *ISC RALF*. 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 *CMC's CSR2* because it is 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* range.

PROGRESS CAPTURE ...LLEY DEVICES



The apparent reintroduction of the *Wallhauler* may be 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 by *Rock Empire*. These later evolved into a one piece housing typified by the *ISC model on the right. SRTe's models were swallowed up and discarded when they were bought by DB-Sala/Rollgliss* and then *3M* as the largest company in our sector but 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) Next came the second group, we're calling ***integrated compact*** models. At the smallest end of things are the *Petzl Micro-Traxion (above) ,* Skylotec/*CT RollN'lock, Edelrid Spoc , Kong Duck* (left) and the second newest model *CAMP's Turbolock* (left) 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 *Harken SMC HX* (below) and the *Petzl Pro Traxion* (opposite) at around 300g they're a faction the weight of a *Wallhauler* or descender but over three times heavier than the *Micro-Traxion* (NB: the *Mini-Traxion* has been updated and reintroduced). While these are not three times stronger they are more geared to heavy duty and long-hauling and in fact the *Pro Traxion* has been overtaken in the 'humongous' category by its cousin the *Petzl Twin Release* which we'll discuss shortly. As pioneers of this genre *Petzl*'s term '*Traxion*' is often used to describe all such devices ala '*Hoover*'. Harken's *SMC Advance Tech HX* (left) 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* deserve







praise as designs that weren't simply variations on a theme as most of the '*Wall-Hauler*' style are. Also new since the original guide are a couple of 'plumpers' , *Petzl*'s unimaginatively named *Twin-Release* and (on the right) *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. *More on these shortly.*



3. DESCENDER PCDs





We originally listed these as ***oddities*** but with *CMC/Harken*'s *Clutch (above) and ASAT's RD2 (right) joining CMC's original MPD (above) and Petzl's Maestro (shown top right in the hauling mode)* 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 *Petzl*'s *Twin-Release* (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. Pulley efficiency on the descender-style devices, while very good for a hybrid, is definitely lower than *Petzl*'s true pulley derivative the *Twin-Release (right)*.





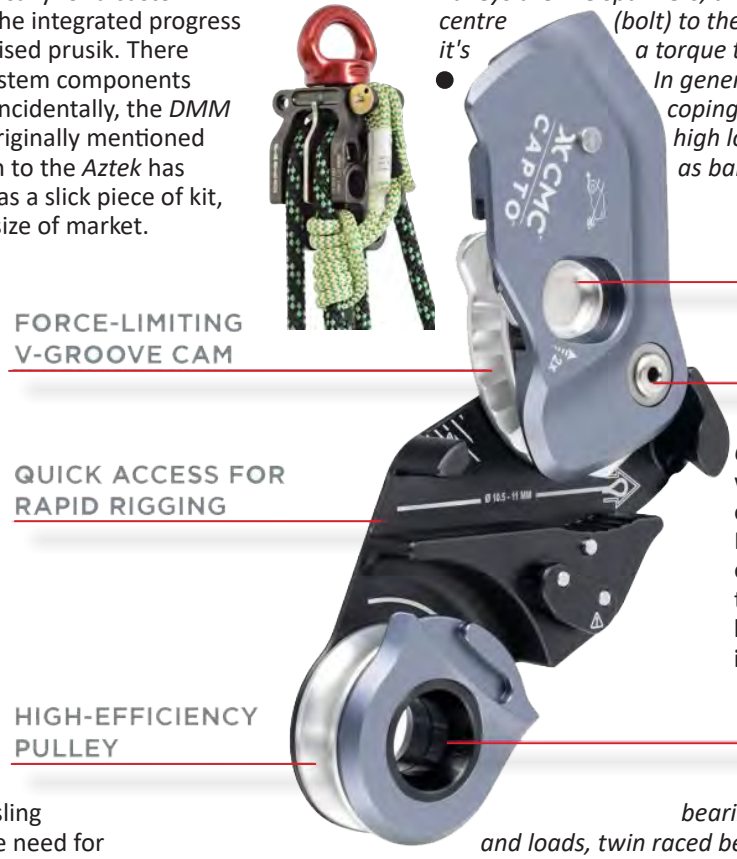
4. ODDITIES. The final group of oddities starts with the aforementioned *Petzl Twin Release* which we're starting a petition to rename to the *Walrus*. We call it that because it's big, flabby and unwieldy in the hand but



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* (left) 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 requiring they not be included, that won't change any time soon but they're certainly interesting. The *Traction-Shackle* (top) 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.



CMC's Capto (left) shows inner workings that will be familiar to users of technical descender, belay and PCD products. As the newest device on the market these are the features that *CMC* felt to be game-changers **but remember that this is not intended to be a stand-alone PCD** .

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

"*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 (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.*

PROGRESS CAPTURE PULLEYS/DEVICES

- *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.

MBS/MBL as a pulley: 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 WLL of 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 being damaged by the cam. 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 the progress capture capabilities than simply as a pulley. 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 **MBS or MBL as a 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 is 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 incorporate 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
COSTS: Approx in tax. £$€ shown in burnt orange are currency conversions only.
N/A = info Not Available/not given
WT: Device Only
STANDARDS: CE = EN 567, CE=Machinery Directive Only
PC = Progress Capture.
USES: ●●● = OK but NOT IDEAL








SPECIFICATIONS	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 -
	ORIGIN						
	COST	£106 $130* €122	£118 $145* €136	£386 $474 €443	£44 $53 €46	£110 $185 €120	£950 $890 €1083
	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 5/16-½"	8-13mm 5/16-½"	10.5-11mm 13/32-7/16"	8-11mm 5/16-7/16"	8-13mm 5/16-½"	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"
	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
	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/Bela **CE version not
	WEBSITE	en.anpen.com	en.anpen.com	asatsafe.com	beal-planet.com	camp.it	cmcpro.com

PROGRESS CAPTURE PULLEYS/DEVICES













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 4 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 ainless Steel ceted 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*	
pulley mode but ay 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

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STANDARDS: CE = EN 567,
CE=Machinery Directive Only
PC = Progress Capture.
USES: ●●● = OK but NOT IDEAL








	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
SPECIFICATIONS	ORIGIN						
	COST	£172 $211 €197	£203 $249 €233	£65 $75 €70	£44 $53 €46	£151 $186 €174	£155 $191 €178
	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"
	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
	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

PROGRESS CAPTURE PULLEYS/DEVICES

							
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
ainless Steel Nylon ainless 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 uman 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

IMAGES NOT TO SCALE
COSTS: Approx in tax. £$€ shown in burnt orange are currency conversions only.
N/A = info Not Available/not given
WT: Device Only
STANDARDS: CE = EN 567, CE=Machinery Directive Only
PC = Progress Capture.
USES: ●●● =OK but NOT IDEAL








SPECIFICATIONS	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
	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	
	MAX 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 height/length x width x depth	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%	
	MAIN EYE Ø	13.5mm 0.5"	13.5mm 0.5"	15mm 0.6"	30mm 1.2"	30mm 1.2"	20mm 0.75"	
	SECONDARY 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	●	●	■	■	■	■	
	ALSO USE as PULLEY ASCENDER DESCENDER	■ - -	■ - -	■ - -	● ● ■	● ● ■	■ ● -	
	STANDARDS: CE: PULLEY CE: ASCENDER ADJUST/ DESCENDER MACHINARY	UIAA CE CE	UIAA CE CE	UIAA CE CE	NFPA-G EAC CE	NFPA-T EAC CE	UKCA NFPA CE	U
	OTHER COLOURS							
	NOTES							
	WEBSITE	kong.it	kong.it	kong.it	petzl.com	petzl.com	petzl.com	

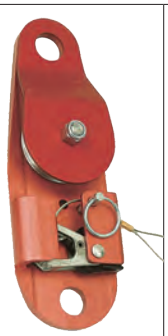
PROGRESS CAPTURE PULLEYS/DEVICES

							
PETZL	PETZL	PETZL	PETZL	PETZL	RESCUE TECHNOLOGY	RESCUE TECHNOLOGY	ROCK EMPIRE
icro Traxion P53	Mini Traxion NO 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
10kg 15kN 25lb 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

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WT: Device Only
STANDARDS: CE = EN 567, CE=Machinery Directive Only
PC = Progress Capture.
USES: ●●● = OK but NOT IDEAL













SPECIFICATIONS							
	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
	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/length x width x depth	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
USES & FEATURES	PULLEY EFFICIENCY	>90%	184%	n/a	n/a	84.1%	184%
	MAIN EYE Ø	24-30mm 1-1.2"	25mm 1"	22mm 0.9"	22mm 0.9"	22mm 0.9"	25mm 1"
	SECONDARY EYE Ø	-	25mm 1"	20mm 0.8"	20mm 0.8"	16mm 0.6"	25mm 1"
	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	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

PROGRESS CAPTURE PULLEYS/DEVICES

			
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 tainless Steel tainless 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	NFPA
■			
	* 11mm as a pulley	Designed for use with the UP pulleys system	
skylotec.com	skylotec.com	skylotec.com	smcgear.com



UPDATED Jan '25

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 partial 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 same 20mm sheave is shown as 30mm on other models-with the same size sheave. Use as large a diameter as possible because the tighter the bend on the rope the more it impacts the strength of the rope. If you are able to use a 4" or greater sheave you would lose none of the rope's in-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

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

Images NOT to Scale	expansion column							
MANUFACTURER		ART	CMI	CMI	CMI	DMM	DMM	DMM
MODEL VARIANT		Cocoon 5 -	RP141	RP151	MicroTrolley RP161RS	HitchClimber Eccentric pul500	Rigger pul400	Rigger be pul41
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
WEIGHT		177g 6.2oz	44g 1.5oz	113g 4oz	204/226g 7.2/8oz	176g 6.2oz	176g 6.2oz	198g 3.5oz
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 40k 1798 89
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"	7-14m 5/16-9/1
SHEAVE/TREAD Ø		30mm 1.2"	32mm 1.25"	32mm 1.25"	32mm 1.25"	28mm 1.1"	28mm 1.1"	28mm 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"	124x68x3 4.9 x2.7x
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
STANDARDS		CE	ANSI	?	CE	CE	CE NFPA	CE NF
OTHER COLOURS		-	-	-	-	■ ■ ■ ■	■	■
NOTES		rope feeds directly onto top pin			RS=removable axle/ sheave	For HitchClimber prusik system		
WEBSITE		climb-art.de	cmigearusa.com	cmigearusa.com	cmigearusa.com	dmmwales.com	dmmwales.com	dmmwales

regular round-bottom pulley, these can often stand on their flatter base. Some designs are more 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

extracted ARBORIST MICRO PULLEYS











expansion column

	DMM	ISC	NOTCH	OMEGA PACIFIC	PROTEKT	ROCK EXOTICA	SINGING ROCK	SKYLOTEC	
	HitchClimber Triple Attach pul100	Phlotich RP282BRBS	Rook x	Octavia -	TREE UP TU 421	Hydra P4	Miky RK806	CT Orbiter A 2P665	
€100	£55 $75 €65	£51 $75 €60	£111 $120 €154	£50 $60 €57	£23 $28 €26	£127 $120 €134	£33 $45 €38	£30 $43 €35	
g z	133g 4.7oz	145g 5oz	189g 6.7oz	166g 5.85oz	160g 5.6oz	189g 6.7oz	105g 3.7oz	104g 3.7oz	
N 92lbf	6 30kN 1349 6744lbf	- 30kN - 6744lbf	2.8 28kN 629 6295lbf	- 32kN - 4945lbf	5 25kN 1124 5620lbf	5 28kN 1124 6295lbf	- 28kN - 6295lbf	5 30kN 1124 6744lbf	
m "	≤14mm ≤9/16"	≤13mm ≤½"	≤13mm ≤½"	8-14mm 5/16-9/16"	≤13.5mm ≤17/32"	≤13mm ≤½"	≤13mm ≤½"	8-13mm 5/16-½"	
m "	28mm 1.1"	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"	
3mm x1.3"	94x68x33mm 3.7x2.7x1.3"	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"	
	■ - -	■ - -	- - -	■ - -	■ - -	- - -	- - -	■ - -	
	■	■	■	■	■	■	■	■	
	■	■	■	■	■	■	■	■	
			>90%			>90%	81%	80%	
StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu Alu	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	
PA	CE	CE UKCA	ANSI CE	CE	CE	CE	CE	CE	
	■	■ ■ ■ ■ ■	-	-	■ ■	-	■	-	
	For HitchClimber prusik system	For HitchClimber prusik system			Updated model'23			NB: this CT data differs from Skylotec's	
s.com	dmmwales.com	iscwales.com	notchequipment.com	omega-pacific.com	protekt.pl	rockexotica.com	singingrock.com	skylotec.com	

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.

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.





	STEIN Skywalker -	STEIN Skywalker Pro -	TEUFELBERGER Glide-Hitch -
	£40 $55 €48	£51 $75 €60	£42 $56 €47
	100g 3.5oz	145g 5oz	125g 4.4oz
	- 36kN - 8093lbf	- 30kN - 6744lbf	7 35kN 1574 7868lbf
	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"
	38mm 1.5"	42/30mm 1.6/1.2"	28.5/17mm 1.1/0.7"
	74x60x29mm 2x1.77x1.1"	97x69x34mm 3.8x2.7x1.3"	98x35x32mm 3.8x1.4x1.3"
	■ - -	■ - -	■ - -
	■	■	■
	■	■	■
	-		
	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt
	CE	CE UKCA	CE UIAA UKCA
	■	■	-
		For HitchClimber prusik system	For HitchClimber prusik system
	stein.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

	ARS ANDERSON RESCUE SOLUTIONS	ART	ART	AT HEIGHT JAMMY DESIGN	AUSTRIALPIN	BEAL	BEAL	BEAL	BEAL
ouble	Magna Double Becket	Link 2 -	Turnbase PSA -	PulleyOne P36	AL02B -	Transf'air Mini -	Transf'airf Fixe -	Transf'air FixeB -	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 ≤½"	≤11mm ≤7/16"	≤12mm ≤½"	≤13mm ≤½"	≤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

	CAMP	CAMP	CAMP	CAMP	CAMP	CAMP	CAMP	CAMP	CAMP
ATER Pulley 2	Andry 0108	Sphinx 2152	Sphinx Pro 2153	Tethys 2154	Tethys Pro 2155	Dryad 2156	Dryad Pro 2157	Naiad 2158	Naiad Pro 2159
€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 < ½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤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 $146158	£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

									
ingle 1	CMC Rescue dbl 300302	CMI RP101	CMI RP101	CMI RP102	CMI RP102D	CMI RC102	CMI RP103	CMI RP103BB	CMI 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 RP107	CMI RP108BB	CMI RP109	CMI RP110	CMI RP110	CMI RP110D	CMI RP111	CMI RP112
€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	AluNylonAlu	AluAluAlu	AluAluAlu	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"	≤12.7r ≤½"
SHEAVE/TREAD Ø	31mm 1.25"	60mm 2.4"	50mm 2"	50mm 2"	50mm 2"	50mm 2"	50mm 2"	50mr 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"	≤12.7r ≤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"	50mr 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	
56 €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 000lbf	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 €5
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 6500
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"	100x70x23m 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 St
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.co

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 2 pul110	Pinto Rig 2PUL120	Gyro pul230
ORIGIN								
COST (inc Tax) Conversion-only	£74 $90 €88	£16 $25 €16	£12 $17 €14		£55 $67 €64	£40 $65 €50	£72 $100 €80	£75 $93 €1
WEIGHT	188g 6.6oz	85g 3.4oz	110g 4.3oz		17g 0.6oz	117g 4.1oz	222g 6.4oz	225g 8.9oz
MAX LOAD- WLL MBS	- 38kN - 8543lbf	- 20kN - 4496lbf	- 22kN - 4946lbf		15kN 3372lbf	10 50kN 2248 11240lbf	10 50kN 2248 11241lbf	10 50kN 2248 11241
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"	95x45x32mm 3.7x1.8x1.3"	115x60x37mm 4.5x2.4x1.5"	97x68x31m 3.8 x 2.7 x 1.
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 St
STANDARDS	NFPA	CE	CE		CE	CE NFPA	CE NFPA	CE
OTHER COLOURS	-	-	-		■	■	■	
NOTES	centre eye=becket					replaced Pinto in 2024	replaced Rig in 2024	originally for 12r rope, uprated to
WEBSITE	cmigearusa.com	mycourant.com	mycourant.com		dmmwales.com	dmmwales.com	dmmwales.com	dmmwales.co

PULLEYS

	CMI RP157	CMI RP158	CMI RP159	CMI UP101	CMI UP102
					
52	£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
lbf	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"
m 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"	152x102x51mm 5.75x3.75x2"
	- -	- - -	- -	- -	- - -
	n/a	n/a	n/a	184%	184%
St	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
om	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com

	DMM Gyro PM PUL231	DMM Gyro PM Twin PUL241	EDELRID Turn 71789	EDELRID Easy 88906	EDELRID Run Down 88907
					
00	£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
lbf	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"
m .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%
St	Alu Alu StSt	Alu Alu StSt	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu
	CE	CE	CE	CE	CE
				-	-
mm 13	originally for 12mm rope, uprated to 13	originally for 12mm rope, uprated to 13			
om	dmmwales.com	dmmwales.com	edelrid.com	edelrid.com	edelrid.com



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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		Nov'23 recall corrected	Nov'23 recall corrected	bridge can be used as a textile becket		
WEBSITE	heightec.com	heightec.com	heightec.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.c

									
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
		■		■		■	■	■	■
		Introduced 2024 *Needle Bearing	Introduced 2024 *Needle Bearing	Introduced 2024					
pes.com	edelweiss-ropes.com	eyolf.ca	eyolf.ca	eyolf.ca	fixeclimbing.com	iusionclimb.com	iusionclimb.com	fusionclimb.com	fusionclimb.com

									
	ISC	ISC	ISC	ISC	ISC	ISC	ISC	ISC	ISC
dbl 0	Eiger Redirect RP031	Eiger m RP032	Eiger m dbl RP033	Eiger m dbl RP034	Rope Wrench RP281	Prusik sm RP060	Prusik sm RP060	Prusik sm dbl RP061	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 RP066
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.c

Images NOT to Scale								
MANUFACTURER	KONG	KONG	KONG	KONG	KONG	LRV8	NOTCH	OMEGA P
MODEL VARIANT	Swing Steel 994	Mini Twin Evo 0	Reflex 0	Extra-Roll 0	Twin 0	P3Ta	Micro P52	Revo -
ORIGIN								
COST (inc Tax) Conversion-only	£23 $30 €27	£61 $87 €72	£64 $0 €0	£47 $68 €57	£60 $87 €65	AU$185 $120	£26 $32 €31	£14 $16
WEIGHT	162g 5.7oz	171g 60oz	270g 9.5oz	245g 8.6oz	490g 1lb 1oz	486g 19oz	73g 2.56oz	52g 1.83
MAX LOAD- WLL MBS	- 30kN - 6744lbf	- 32kN - 7194lbf	- 26kN - 5845lbf	- 30kN - 6744lbf	- 50kN - 11240lbf	24 120kN 539526977lbf	- 31kN - 6900lbf	- 22k - 4945
MAX ROPE Ø	≤11mm ≤7/16"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	8-24mm 5/16-<1"	≤12.9mm ≤½"	≤12.7 ≤½
SHEAVE/TREAD Ø	40.5/27mm 1.6/1"	2x 35mm 2x 1.5"	60mm 2.4"	60mm 2.4"	2x 60mm 2x 2.4"	60/52mm 2.4/2"	33mm 1.3"	20mm 0.8"
DIMENSIONS ht x w x depth	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 29mm 6 x 3.1 x 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"	76 x 43mm 3 x 1.7"	67 x 45 x 2.6 x 1.8
PRUSIK TEND LOCK BECKET	- - -	■ - ■	- - ■*	- - -	- - ■	- - -	- - -	■ -
BUSHING BEARING PIN	■	■	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	87%	91%	96%	96%	96%	-	n/a	n/a
CHEEK SHEAVE AXLE	AluNylonStSt	Alu Alu StSt	Alu Alu StSt	Alu Alu* StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	AluNylo
STANDARDS	CE UIAA	CE UIAA	CE UIAA	CE EAC UIAA	CE UIAA	CE NFPA	ANSI	CE
OTHER COLOURS	□	■	-	■	■		■	-
NOTES	PHASING OUT		*Fully load-bearing double ended eyes	*Nylon sheave option discontinued		Remake of SRTe original		
WEBSITE	kong.it	kong.it	kong.it	kong.it	kong.it	lrv8.com.au	notchequipment.com	omega-paci









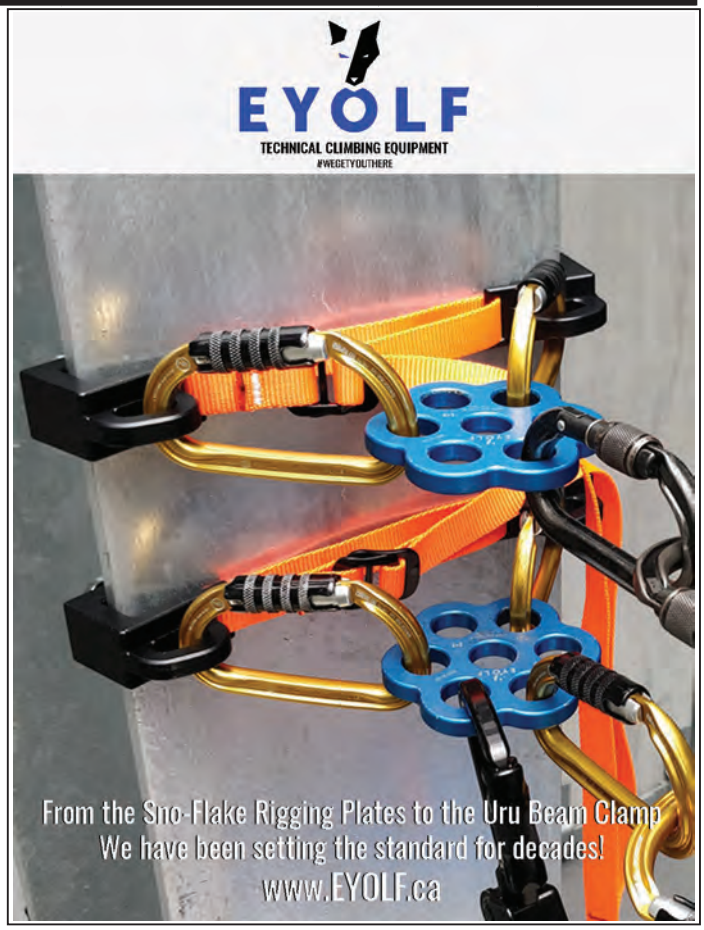


	ISC	ISC	ISC	ISC	ISC	KAILAS	KAILAS	KONG	KONG
lg	Prusik lg dbl RP067	Prusik lg dbl RP067	Prusik lg RP068	Prusik xl RP069	Double Rescue RP700701	Mini K010613	Rescue 0	Turbo Roll 0	Swing 993N(P)
€89	£84 $129 €120	£99 $151 €140	£53 $78 €72	£67 $107 €99	£67 $107 €99	£25 $30 €29	£71 $85 €79	£48 $25 €24	£0 $29 €23
g	818g 29oz	1.62kg 3.6lb	477g 1lb1oz	466g 16oz	660g 23oz	155g 5.5oz	367g 13oz	65g 2.3oz	120g 4.2oz
N 0lbf	- 70kN - 15736lbf	- 50kN - 11240lbf	- 70kN - 15736lbf	- 70kN - 15736lbf	- 3040kN - 67448992lbf	8 28kN 17986295lbf	8 50kN 179811240lbf	- 26kN - 5845lbf	- 30kN - 6744lbf
m	≤16mm ≤⅝"	≤16mm ≤⅝"	≤16mm ≤⅝"	≤20mm ≤¾"	10-13mm ²⁵⁄₆₄-½"	≤12mm ≤½"	7-13mm ⁹⁄₃₂-½"	≤11mm ≤⁷⁄₁₆"	≤11mm ≤⁷⁄₁₆"
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"	2x 67/55mm 2x 2.6/2.16"	26mm 1"	51mm 2"	40.5/27mm 1.6/1"	40.5/27mm 1.6/1"
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"	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"
	■ - ■	■ - ■	■ - ■	■ - -	■ - -	■ - -	■ - -	- - ■	- - -
	■ ■	■ ■	■ ■	■ ■	■	■	■	■	■
	■	■	■	■	■	■	■	■	■
	n/a	n/a	n/a	n/a	n/a	94%	94%	93%	87%
t StSt	Alu Alu StSt	StSt StSt StSt	Alu Alu StSt	Alu Alu StSt	Alu StSt StSt	Alu Alu StSt	S.Steel Alu	Alu Nylon StSt	AluNylonStSt
UKCA	CE NFPA UKCA	CE NFPA UKCA	CE NFPA UKCA	CE NFPA UKCA	CE NFPA UKCA	CE UIAA	CE NFPA	CE EAC	CE UIAA
	■	-	■	■	■	-	-		□
	Bushing option same spec as bearing		Bushing option same spec as bearing		700=1-way sheave			alloy red side plate version discontinued	Polished model=$21
com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	kailasgear.com	kailasgear.com	kong.it	kong.it






	PALM	PETZL	PETZL	PETZL
ACIFIC ce	Whitewater 12602	Mobile PO3	Fixe P05	Oscillante P02
€15	£35 $32 €31	£22 $28 €25	£23 $32 €24	£15 $23 €18
oz	90g 3.2oz	75g 2.6oz	90g 3.2oz	42g 1.5oz
N lbf	5 30kN 1124 6744lbf	5 15kN 1124 3372lbf	5 23kN 1124 5171lbf	4 15kN 899 3372lbf
nm	≤11mm ≤⁷⁄₁₆"	7-13mm ⁹⁄₃₂-½"	7-13mm ⁹⁄₃₂-½"	7-11mm ⁹⁄₃₂-⁷⁄₁₆"
n "		21mm 0.8"	21mm 0.8"	25mm 1"
28mm 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"
	■ - -	■ - -	- - -	- - -
	■	■	■	■
	■	■	■	■
	n/a	71%	71%	71%
nStSt	Alu Alu Alu	Alu Alu StSt	Alu Alu StSt	AluNylonAlu
	CE UIAA UKCA	CE UIAA UKCA	CE UKCA	CE UIAA UKCA
		-	■ ■	■
				Emergency pulley
fic.com	palmequipmenteurope.com	petzl.com	petzl.com	petzl.com



Images NOT to Scale								
MANUFACTURER	PETZL	PETZL	PETZL	PETZL	PETZL	PETZL	PETZL	PROCLI
MODEL VARIANT	Partner P52	Mini P59	Gemini P66	Jag P45	Rescue P50	Minder P60	Twin P65	USR-PFB-
ORIGIN								
COST (inc Tax) Conversion-only	£37 $55 €38	£48 $65 €52	£86 $95 €94	£64 $90 €55	£56 $68 €60	£72 $80 €70	£116 $194 €125	£13 $16
WEIGHT	56g 2oz	80g 2.8oz	135g 4.8oz	120g 4.2oz	185g 6.5oz	295g 10.4oz	450g 15.8oz	85g 3.5o
MAX LOAD- WLL MBS	4 15kN 899 3372lbf	5 23kN 1124 5171lbf	6 23kN 1349 5171lbf	6 22kN 1349 4945lbf	8 36kN 1798 8093lbf	8 35kN 1798 7868lbf	8 35kN 1798 7868lbf	- 22k - 4945
MAX ROPE Ø	7-11mm 9/32-7/16"	7-11mm 9/32-7/16"	7-11mm 9/32-7/16"	8-11mm 5/16-7/16"	7-13mm 9/32-1/2"	7-13mm 9/32-1/2"	7-13mm 9/32-1/2"	≤13m ≤1/2"
SHEAVE/TREAD Ø	25mm 1"	25mm 1"	2x 25mm 1"	2x 28mm 1.1"	46/38mm 1.8/1.5"	51mm 2"	2x 51mm 2"	32/21r 1.25/0.8
DIMENSIONS ht x w x depth	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 43mm 5.5 x 3.5 x 1.7"	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 3.2 x 1.7 x
PRUSIK TEND LOCK BECKET	- - -	■ - -	■ - ■	- - -	- - -	■ - -	■ - ■	- - -
BUSHING BEARING PIN	■	■	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	91%	91%	91%	91%	95%	97%	97%	n/a
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 UIAA UKCA	CE	CE NFPA	CE NFPA	CE NFPA UIAA UKCA	CE NFPA	CE NFPA	CE UIA
OTHER COLOURS	■	-	-	-	■	-	-	
NOTES				designed to be part of Jag mini-haul kit				
WEBSITE	petzl.com	petzl.com	petzl.com	petzl.com	petzl.com	petzl.com	petzl.com	usrigging.

Images NOT to Scale								
MANUFACTURER	RNR	RNR	RNR	RNR	RNR	RNR	RNR	RNR
MODEL VARIANT	Poseidon PMP 2"	Poseidon PMP 2"Double	Poseidon PMP 3"	Poseidon PMP 3"Double	Poseidon 2"	Poseidon 2"Double	Poseidon 4"	Poseid 4" Doub
ORIGIN								
COST (inc Tax) Conversion-only	£63 $77 €72	£75 $92 €86	£67 $82 €77	£99 $122 €114	£39 $48 €45	£64 $78 €73	£86 $106 €99	£141 $174
WEIGHT	210g 7.4oz	354g 12.5oz	374g 13.2oz	652g 1.44lb	204g 7.2oz	340g 12oz	703g 1.55lb	1270 2.8lb
MAX LOAD- WLL MBS	- 43kN - 9800lbf	- 62kN - 1400lbf	- 44kN - 9900lbf	- 61kN - 13900lbf	- 28.9kN - 6500lbf	- 40kN - 1100lbf	- 35.6kN - 8000lbf	- 60k - 1350
MAX ROPE Ø	≤13mm ≤1/2"	≤13mm ≤1/2"	≤13mm ≤1/2"	≤13mm ≤1/2"	≤13mm ≤1/2"	≤13mm ≤1/2"	≤16mm ≤5/8"	≤16m ≤5/8
SHEAVE/TREAD Ø	50mm 2"	2x 50mm 2x 2"	75mm 3"	2x 75mm 2x 3"	50mm 2"	2x 50mm 2x 2"	100mm 4"	2x 100 2x 4
DIMENSIONS ht x w x depth	100 x 23mm 4 x 3 x 0.9"	127 x 76mm 5 x 3"	152x100x23mm 6 x 4 x 0.9"	178 x 100mm 7 x 4"	100x70x23mm 4 x 2.75x0.9"	140x70x43mm 5.5x2.75x1.7"	203x114x28mm 8 x 4.5 x 1.1"	229x114x5 9 x 4.5 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 Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu
STANDARDS	-	-	-	-	-	-	-	-
OTHER COLOURS	-	-	-	-	-	-	-	-
NOTES								
WEBSITE	rocknarbor.com	rocknarbor.com	rocknarbor.com	rocknarbor.com	rocknarbor.com	rocknarbor.com	rocknarbor.com	rocknarbo

									expansion column
MB	PROCLIMB	PROCLIMB	PROCLIMB	PROTEKT	PROTEKT	PROTEKT	PROTEKT	PROTEKT	
-AU	USR-PMS-AU	USR-PSW-AU	USR-PTW-AU	TREE UP TU 420	TREE UP TU 430	TREE UP TU 431	TREE UP TU 440	TREE UP PL 101	
€15	£13 $16 €15	£13 $35 €15	£13 $45 €15	£26 $33 €30	£34 $42 €39	£40 $49 €45	£83 $101 €95	£78 $52 €48	
z	130g 5.1oz	247g 8.7oz	425g 15oz	120g 4.2oz	257g 9oz	470g 16.6oz	153g 5.4oz	450g 15.8oz	
N lbf	- 20kN - 4496lbf	5 30kN 1124 6744lbf	5 30kN 1124 6744lbf	5 25kN 1124 5620lbf	6 30kN 1349 6744lbf	6 30kN 1349 6744lbf	5 25kN 1124 5620lbf	5 30kN 1124 6744lbf	
m	≤11mm ≤7/16"	≤16mm ≤5/8"	≤16mm ≤5/8"	≤13.5mm ≤1/2"	≤15mm ≤5/8"	≤15mm ≤5/8"	≤10mm ≤25/64"	8-12mm* 5/16-1/2"	
mm 325"	37/25mm 1.5/1"	30.5mm* 1.2"	2x 30.5mm* 2x 1.2"	34/24mm 1.3/0.9"	60mm 2.4"	2x 60mm 2x 2.4"	30/22mm 1.2/0.9"	108mm 4.25"	
29mm 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"	122 x 80 x 38mm 4.8 x 3.1 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"	133 x 128 x 56mm 5.2 x 5 x 2.2"	
	■ - -	- - -	- - ■	- - -	- - -	- - ■	- - -	- - -	
	■	■	■	■	■	■	■	■	
	■	■	■	■	■	■	■	■	
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Zstl	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Nylon StSt	
AA	CE UIAA	CE* UIAA	CE*UIAA	CE	CE	CE	CE	CE	
	-			■ ■	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■	-	
		*Spec does not match scaling.	*Spec does not match scaling.	Updated model '23			<21mm Webbing on hidden load pin	*or 6mm cable	
com	usrigging.com	usrigging.com	usrigging.com	protekt.pl	protekt.pl	protekt.pl	protekt.pl	protekt.pl	
R	RNR	ROCK EMPIRE	ROCK EMPIRE	ROCK EMPIRE	ROCK EMPIRE	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA
on ble	Poseidon 3"Companion Dbl	Mini ZWP018	Small SS ZWP121	Big ZWP119	Big Double ZWP121	1.1" Mini P21	1.1" Mini Dbl P21D	1.5" Rescue P22	1.5" Rescue Dbl P22D
4 €163	£113 $139 €130	£24 $31 €28	£20 $25 €23	£41 $51 €47	£72 $89 €83	£55 $68 €64	£93 $115 €108	£61 $75 €70	£106 $130 €122
g o	737g 1lb 10oz	88g 3.5oz	130g 5.1oz	250g 9.8oz	440g 17.3oz	83g 2.9oz	141g 5oz	144g 5.1oz	254g 9oz
N lbf	- 53.4kN - 12000lbf	- 24kN - 5395lbf	- 20kN - 4496lbf	8 36kN 1798 8093lbf	8 36kN 1798 8093lbf	5 30kN 1124 6744lbf	8 36kN 1798 8093lbf	8 36kN 1798 8093lbf	8 36kN 1798 8093lbf
m	≤12.7mm ≤1/2"	≤12mm ≤1/2"	≤11mm ≤7/16"	≤13mm ≤1/2"	≤13mm ≤1/2"	≤11mm ≤7/16"	≤11mm ≤7/16"	≤13mm ≤1/2"	≤13mm ≤1/2"
mm "	2x 75mm 2x 3"	21mm 0.825"	37/25mm 1.5/1"	50mm 1.9"	2x 33mm 2x 1.3"	28mm 1.1"	2x 28mm 2x 1.1"	38mm 1.5"	2x 38mm 2x 1.5"
54mm 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"	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"	117 x 64 x 43mm 4.6 x 2.5 x 1.7"
	- - ■	- - -	■ - -	- - -	- - ■	■ - -	■ - ■	■ - -	■ - ■
	■	■	■	■	■	■	■	■	■
	■	■	■	■	■	■	■	■	■
	184%	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
StSt	Alu Alu StSt	Alu Alu Zstl	Alu Alu StSt	Alu Alu StSt	Alu StSt StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt
	NFPA*	CE	CE UIAA	CE UIAA	CE UIAA	CE UIAA	CE UIAA	CE UIAA	CE UIAA
	-	-	-	-	-	-	-	-	-
	*Not NFPA but exceeds test					Machined alloy	Machined alloy	Machined alloy	Machined alloy. 2"model discontinued
r.com	rocknarbor.com	rockempire.cz	rockempire.cz	rockempire.cz	rockempire.cz	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com

Images NOT to Scale								
MANUFACTURER	SINGING ROCK	SINGING ROCK	SINGING ROCK	SINGING ROCK	SKEDCO	SKEDCO	SKEDCO	SKYLO
MODEL VARIANT	Small RK800	Extra RK801	Extra+ RK808	Twin RK802	Micro Dbl 712M	3"Double 711	3" Double Bck 712	CT Orbi 2P66
ORIGIN								
COST (inc Tax) Conversion-only	£20 $30 €30	£37 $50 €33	£44 $55 €40	£64 $90 €72	£58 $71 €67	£145 $178 €167	£145 $178 €167	£55 $71
WEIGHT	92g 3.3oz	257g 9.5oz	276g 9.7oz	421g 14.9oz	113g 4oz	708g 1lb 9oz	737g 1lb 10oz	180 6.4
MAX LOAD- WLL MBS	- 22kN - 4946lbf	6 32kN 1349 7194lbf	6 32kN 1349 7194lbf	6 32kN 1349 7194lbf	6.2 31.1kN 1400 7000lbf	- 53.4kN - 12000lbf	- 53.4kN - 12000lbf	8kN 3 1798 71
MAX ROPE Ø	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤12.7mm ≤½"	≤12.7mm ≤½"	≤12.7mm ≤½"	≤13m ≤½'
SHEAVE/TREAD Ø	29mm 1.1"	56mm 2.2"	56mm 2.2"	2x 56mm 2x 2.2"	32mm 1.25"	2x 75mm 2x 3"	2x 75mm 2x 3"	19m 0.75
DIMENSIONS ht x w x depth	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 54mm 0 x 3.5 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 4.3 x 2.7
PRUSIK TEND LOCK BECKET	- - -	■ - -	■ - ■	■ - ■	- - ■	- - -	- - ■	- - -
BUSHING BEARING PIN	■	■	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	81%	94%	94%	94%	133.6%	184%	184%	96%
CHEEK SHEAVE AXLE	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	AluAluAlu	Alu Alu StSt	Alu Alu StSt	Alu Alu
STANDARDS	CE	CE	CE	CE	ANSI	NFPA*	NFPA*	CE UI
OTHER COLOURS	■	■	■	■	-	-	-	-
NOTES						*Not NFPA but exceeds test	*Not NFPA but exceeds test	
WEBSITE	singingrock.com	singingrock.com	singingrock.com	singingrock.com	skedco.com	skedco.com	skedco.com	skylotec

Images NOT to Scale				expansion column				
MANUFACTURER	SKYLOTEC	SKYLOTEC	SKYLOTEC		SMC	SMC	SMC	SM
MODEL VARIANT	Pollux -	Castor -	Castor Dbl -		Apex Direct 1.1 16501	Apex Direct 1.5 165110	CRX Crevasse RP030	Tiny Re RP03
ORIGIN								
COST (inc Tax) Conversion-only	£80 $104 €97	£75 $120 €111	£78 $125 €116		£93 $85 €79	£97 $89 €83	£17 $20 €19	£37 $45
WEIGHT	290g 10.2oz	310g 10.9oz	540g 19oz		122g 4.3oz	208g 7.3oz	52g 1.8oz	66 2.3
MAX LOAD- WLL MBS	- 36kN - 8093lbf	- 36kN - 8093lbf	- 48kN - 10791lbf		6 24kN 1349 5395lbf	9.5 38kN 2136 8543lbf	- 22kN - 4946lbf	- 26 - 584
MAX ROPE Ø	≤13mm ≤½"	≤13mm ≤½"	≤14mm ≤9/16"		≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13m ≤½'
SHEAVE/TREAD Ø	64/51mm 2.5/2"	64/51mm 2.5/2"	2x 64/51mm 2x 2.5/2"		38/28mm 1.5/1.1"	50/38mm 2/1.5"	30mm 1.2"	30m 1.2
DIMENSIONS ht x w x depth	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 60mm 6.7 x 3.1 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 3 x 1.75
PRUSIK TEND LOCK BECKET	- - -	- - ■	- - ■		■ ■ -	■ ■ -	■ - -	- -
BUSHING BEARING PIN	■	■	■		■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■		■	■	■	■
EFFICIENCY	-	-	-		-	-	-	-
CHEEK SHEAVE AXLE	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt		Alu Alu StSt	Alu Alu StSt	AluDelrin StSt	Alu Alu
STANDARDS	CE	CE	CE		CE UKCA	CE UKCA	CE	CE
OTHER COLOURS	■	■	■		-	-	■	-
NOTES					See Also Swivel Pulleys	See Also Swivel Pulleys		
WEBSITE	skylotec.com	skylotec.com	skylotec.com		smcgear.com	smcgear.com	smcgear.com	smcgear

									
TEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC
ter S 0	CT Dual 2P668	CT Orbiter M 2P664	CT Orbiter L 2P666	CT Orbiter H 2P667	CT Up Roll 2P671	CT Orbiter F 2P663	CT Orbiter D 2P661	CT Orbiter T 2P662	Darios -
1 €67	£26 $30 €20	£18 $30 €21	£94 $116 €99	£99 $121 €113	£52 $65 €58	£22 $30 €23	£66 $82 €74	£84 $104 €99	£72 $89 €82
g oz	123g 4.3oz	90g 3.2oz	445g 15.7oz	465g 16.4oz	115g 4oz	100g 3.5oz	215g 7.6oz	310g 10.9oz	100g 3.5oz
2kN 194lbf	5 30kN 1124 6744lbf	5 30kN 1124 6744lbf	12kN 45kN 269810116lbf	12kN 45kN 269810116lbf	5 30kN 1124 6744lbf	5 30kN 1124 6744lbf	8kN 32kN 1798 7194lbf	12kN 50kN 269811240lbf	- 30kN - 6744lbf
mm "	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	8-11mm 5⁄16-7⁄16"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤14mm ≤9⁄16"
m 5"	2x 19mm 2x 0.75"	19mm 0.75"	3x 39mm 3x 1.5"	3x 39mm 3x 1.5"	2x 25mm 1 x 1""	39mm 1.5"	39mm 1.5"	2x 39mm 2x 1.5"	44mm 1.7"
x 32mm 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"	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"
-	- - -	- - -	- - -	- - ■	- - ■	- - -	- - -	- - ■	- - -
	■	■	■	■	■	■	■	■	■
	■	■	■	■	■	■	■	■	■
%	80%	80%	96%	96%	90%	80%	96%	96%	-
StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt
AA	CE	CE UIAA	CE UIAA	CE UIAA	CE	CE UIAA	CE UIAA	CE UIAA	CE
	-	-	-	-	-	-	-	-	-
			Discontinued		designed for 'UP' pulley system				
.com	skylotec.com	skylotec.com	climbingtechnology.com	climbingtechnology.com	climbingtechnology.com	climbingtechnology.com	climbingtechnology.com	climbingtechnology.com	skylotec.com
									
C	SMC	SMC	SMC	SMC	SMC	SMC	SMC	SMC	
scue 0	Adv Tech Mate Dbl NFPA154801	JR (Jigger Rescue) 1590	JRB (with Becket) 15970	Micro 15300	Micro Double 15305	Swiftwater 147000	2" PMP NFPA1527	2" PMP Dbl NFPA1528	
5 €42	£85 $105 €98	£32 $39 €37	£35 $43 €41	£32 $39 €37	£85 $105 €98	£47 $58 €55	£65 $80 €75	£105 $130 €122	
g oz	154g 5.44oz	89g 3.2oz	94g 3.3oz	99g 3.5oz	164g 5.8oz	170g 6oz	179g 6.3oz	295g 10.4oz	
kN 5lbf	- 34kN - 7644lbf	- 22kN - 4946lbf	- 22kN - 4946lbf	- 22kN - 4946lbf	- 40kN - 8992lbf	- 34kN - 7644lbf	- 36kN - 8093lbf	- 46kN - 10341lbf	
mm "	7-12.5mm 9⁄32-½"	≤9mm ≤⅜"	≤9mm ≤⅜"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	
m "	2x 35mm 2x 1.37"	2x 30mm 2x 1.2"	2x 30mm 2x 1.2"	35mm 1.37"	2x 35mm 2x 1.37"	50mm 2"	50mm 2"	2x 50mm 2x 2"	
25mm 5 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"	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"	
-	■ - -	■ - -	■ - ■	■ - -	■ - ■	■ - -	■ - -	■ - ■	
	■	■	■	■	■	■	■	■	
	■	■	■	■	■	■	■	■	
	-	-	-	-	-	-	-	-	
StSt	Alu Alu StSt	AluNylonStSt	AluNylonStSt	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	
	NFPA	UIAA	UIAA	NFPA	NFPA	UIAA	NFPA	NFPA	
	-	■	■	-	-	-	■	■	
	Intended as part of AdvanceTech HX Kit								
r.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	SPIDER
MODEL VARIANT	2"RussAnderson NFPA1500	2"RussAnderson NFPA1505	3" PMP RP281	3" PMP Dbl NFPA1505	3"RA Single NFPS1510	4"RA Double NFPA15705	Highline -
ORIGIN							
COST (inc Tax) Conversion-only	£71 $87 €82	£50 $61 €57	£96 $117 €110	£142 $174 €163	£89 $109 €102	£200 $245 €230	£31 $38 €35
WEIGHT	244g 8.6oz	244g 8.6oz	354g 12.5oz	590g 20.8oz	454g 16oz	1142g 40.3oz	91g 3.2oz
MAX LOAD- WLL MBS	- 29kN - 6520lbf	- 29kN - 6520lbf	-38kN - 8543lbf	- 48kN - 10791lbf	- 51kN - 11465lbf	- 63kN - 14163lbf	4 20kN 899 4497lbf
MAX ROPE Ø	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤16mm ≤⅝"	24-26mmWEB 1-1.1"WEB
SHEAVE/TREAD Ø	50mm 2"	50mm 2"	75mm 3"	2x 75mm 2x 3"	75mm 3"	2x 100mm 2x 4"	25mm 1"
DIMENSIONS ht x w x depth	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"	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"
PRUSIK TEND LOCK BECKET	- - -	- - -	■ - -	■ - ■	- - -	- - ■	- - -
BUSHING BEARING PIN	■	■	■	■	■	■ ■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■
EFFICIENCY	-	-	-	-	-	-	
CHEEK SHEAVE AXLE	StSt Alu StSt	StSt Alu StSt	Alu Alu Alu	Alu Alu Alu	StSt Alu StSt	StSt Alu StSt	Alu Alu StSt
STANDARDS	NFPA	NFPA	NFPA	NFPA	NFPA	NFPA	NOT PPE
OTHER COLOURS	-	-	-	-	-	-	■
NOTES							Load transport only
WEBSITE	smcgear.com	smcgear.com	smcgear.com	smcgear.com	smcgear.com	smcgear.com	spider-slacklines.com

Images NOT to Scale							Expansion Column
MANUFACTURER	STEIN	TRANGO	TREEHOG	TREERUNNER	TREERUNNER	TREERUNNER	
MODEL VARIANT	Rope Wrench Pulley -	Rock Prodigy	Fixed Pulley THPUL1	Fixed Pulley 71-248	Small Pulley 71-247	Large Pulley 71-993	
ORIGIN							
COST (inc Tax) Conversion-only	£21 $26 €25	£13 $15 €14	£20 $25 €23	£15 $19 €17	£14 $18 €16	£22 $39 €36	
WEIGHT	76g 2.7oz	91g 3.2oz	91g 3.2oz	110g 3.9oz	116g 4oz	285g 10oz	
MAX LOAD- WLL MBS	- 36kN - 8093lbf	- 26kN - 5845lbf	- 22kN - 4946lbf	- 20kN - 4497lbf	- 20kN - 4497lbf	6 42kN 1349 6744lbf	
MAX ROPE Ø	≤13mm ≤½"	≤12mm ≤½"	≤13mm ≤½"	≤12mm ≤½"	≤12mm ≤½"	≤15mm ≤⅝"	
SHEAVE/TREAD Ø	32/22mm 1.6/0.9"	24/17mm 0.9/0.7"	21mm 0.825"	40/35mm 1.6/1.4"	40/35mm 1.6/1.4"	60mm 2.4"	
DIMENSIONS ht x w x depth	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"	82 x 35mm 3.1 x 1.4"	80 x 56mm 3.1 x 2.2"	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	n/a	n/a	
CHEEK SHEAVE AXLE	Alu Alu Alu	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	
STANDARDS	CE UKCA	CE	CE	CE	CE	CE	
OTHER COLOURS	■	-	-				
NOTES	won't rotate >200kg load						
WEBSITE	stein.com	trango.com	treehog.co.uk	grube.eu	grube.eu	grube.eu	

TANDEM PULLEYS

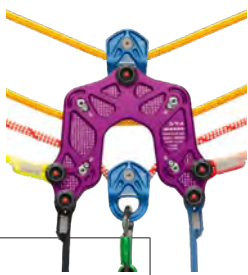
for Zip-Lines



UPDATED Jan '25

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. There are a number of other devices in the '**TROLLEY/CARRIAGES GUIDE** in **ROPE EQUIPMENT BUYERSGUIDE**. 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 have included Tandems in this **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) which is rarely the case for arborists using it for material handling unless it is a higher risk, higher load removal. 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. Most speed- lines are low-load, high speed affairs where multiple branches can be shifted out of the canopy using the now familiar speed-line kits with multiple pre-sewn slings with carabiners. Tandem pulleys are for more serious, high-load rigging using 13mm/½" low stretch rope.

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.



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 $0 €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
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

						
MANUFACTURER	CMI	CAMP	CAMP	DMM	EDELRID	ED
MODEL VARIANT	Trolley½ ⅝	Wing2 -	Flyte 3121	Keanu TR400	Rail 71791	
ORIGIN						
COST (inc Tax) Conversion-only	£231 $280 €266	£121 $160 €138	£0 $150 €82	£550 $700 €650	£70 $87 €80	£55
WEIGHT	648g 1lb 6oz	347g 12.2oz	280g 9.9oz	1698g 3lb 12oz	290g 13.8oz	
MAX LOAD- WLL MBS	- 62.3kN - 14000lbf	6 15kN 1349 3372lbf	10 20kN 2248 4497lbf	10 50kN 2248 11240lbf	0 25kN 0 5620lbf	179
MAX ROPE CABLE Ø	9-12.7mm 16mm ⅜-½" ⅝"	≤13 12mm ≤½ ½"	≤13 12mm ≤½ ½"	≤13 12mm ≤½ ½"	≤13 12mm ≤½ ½"	≤1
SHEAVE/TREAD Ø	2x 50mm 2x 2"	2x 26mm 2x 1"	2x 27mm 2x 1.1"	2x 38mm 2x 1.5"	2x 28mm 2x 1.1"	2
DIMENSIONS ht x w x depth	165 x 152 x 24*mm 6.5 x 6 x 1"	125 x 75 x 30mm 5 x 3 x 1.2"	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"	0 x 0mm 0 x 0"	78 x 1 3.1 x
BUSHING BEARING PIN	■	■	■	■	■	
CHEEKS - SWIVEL FIXED	■	■	■	■	■	
EFFICIENCY	n/a	n/a	n/a	n/a	90%	
CHEEK SHEAVE AXLE	StSt StSt StSt	Alu StSt StSt	Alu StSt StSt	Alu Alu StSt	Alu StSt StSt	Alu
STANDARDS	CE	CE	CE	CE	CE	
MAX SPEED	90mph 40m/s	45mph 20m/s	45mph 20m/s	-	-	33m
NOTES	depth does not include bolt *heads	DISCONTINUED Sprung gate. Hooks each end are to store backups during travel		Also in Purple. Modular sheaves, pins and rig plate		
WEBSITE	cmigear.com	camp.it	camp.it	dmmwales.com	edelrid.com	edel
Images NOT to Scale						
MANUFACTURER	KONG	KONG	PETZL	PETZL	PETZL	PE
MODEL VARIANT	MegaZip 91200ON00KK	Zip Evo Hook 826040400KK 826050400KK	Tandem P21	Tandem Speed P21 SPE	Reeve P21 SPE	Tree-Up
ORIGIN						
COST (inc Tax) Conversion-only	£250 $289 €285	£106 $125 €120	£46 $85 €43	£64 $100 €73	£180 $220 €207	£40
WEIGHT	1310g 2lb 14oz	440 470g 15.5 16.6 oz	195g 6.9oz	270g 9.5oz	650g 1lb 7oz	
MAX LOAD- WLL MBS	- 21kN - 4721lbf	- 22kN - 5000lbf	10 24kN 2248 5395lbf	10 24kN 2248 5395lbf	- 36kN - 8093lbf	4. 107
MAX ROPE CABLE Ø	12-16mm ½-⅝"	≤13mm ≤½"	≤13mm ≤½"	≤13 13mm ½ ½"	7-13mm 9/32- ½"	≤
SHEAVE/TREAD Ø	2x 55mm 2x 2.16"	2x 40mm 2x 1.6"	2x 21mm 2x 0.8"	2x 27.5mm 2x 1.1"	2x 38mm 2x 1.5"	2x 2
DIMENSIONS ht x w x depth	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"	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"	90 x 10 35.4
BUSHING BEARING PIN	■	■	■	■	■	
CHEEKS - SWIVEL FIXED	■	■	■	■	■	
EFFICIENCY	n/a	95%	71%	95%	95%	
CHEEK SHEAVE AXLE	Alu Steel StSt	Alu StSt StSt	Alu Alu StSt	Alu StSt StSt	Alu StSt StSt	Alu
STANDARDS	CE	CE	CE UIAA UKCA	CE UIAA UKCA	CE NFPA UKCA	
MAX SPEED mph m/s			22mph 10m/s	89mph 20m/s		
NOTES		Sprung safety gate for sheaves. Hook version (shown) avoids safety backup wear on wire cable				
WEBSITE	kong.it	kong.it	petzl.com	petzl.com	petzl.com	pr

www.arbclimber.com

TANDEM PULLEYS/TROLLEYS









ELWEISS	FIXE	FUSION CLIMB	FUSION CLIMB	ISC	KAILAS	KONG
	DB2 Cable 418	Advent GT Tactical FP-8160-SS-SILBLK	Tesa Speed FP-8154-7-BLU	ZipSpeed RP075	Trolley Double	Pamir Fast 94600(4/N)401KK
$68 €38	£75 $92 €86	£73 $89 €84	£52 $63 €59	£0 $0 €0	£105 $130 €120	£80 $100 €90
290g 13.8oz	291g 10.3oz	765g 1lb 11oz	311g 11oz	875g 1lb 14oz	372g 13.1oz	365g 12.9oz
3 30kN 8 6744lbf	10 20kN 2248 4497lbf	- 50kN - 11240lbf	10 24kN 2248 5395lbf	- 40kN - 8992lbf	12 26kN 2697 5845lbf	8 30kN 1798 6744lbf
3 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"	≤13,16 &20mm ≤½, ⅝ & ¾"	≤13 12mm ≤½ ½"	≤13 13mm ≤½ ½"
x 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"	2x 28mm 2x 1.1"	2x 37mm 2x 1.5"
08 x 36mm 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"	87 x 104 x 31mm 3.4 x 4.1 x 1.2"	86.5 x 113 x 29mm 3.4 x 4.5 x 1.1"
n/a	n/a	n/a	n/a	n/a	n/a	n/a
StSt StSt	Alu StSt StSt	StSt Alu StSt	Alu Alu StSt	Alu StSt StSt	Alu Alu StSt	Alu StSt StSt
CE	CE	CE	CE ANSI	CE	CE	CE
nph 15m/s	-		89mph 20m/s	69mph 30.8m/s		-
		Tactical version=Black		Also available with 13&16mm cable sheaves & 75mm/3" rope sheaves		Top-cap=finger protector. Also available in Blue
weisscom	fixeclimbing.com	fusionclimb.com	fusionclimb.com	iscwales.com	kailas.com	kong.it








ROTEKT	ROCK EMPIRE	SINGING ROCK	SKYLOTEC	SMC	SMC	
Dbl Transport CD101	Tandem ZWP120	Tandem RK803	CT Duetto 2P654	Shuttle 156302	Shuttle Extreme 156304	
$50 €46	£78 $97 €90	£65 $76 €71	£66 $75 €64	£58 $69 €65	£105 $128 €120	
250g 8.8oz	280g 9.9oz	290g 10.2oz	290g 13.8oz	162g 5.7oz	227g 8oz	
8 24kN 9 5395lbf	- 20kN - 4496lbf	5 25kN 1124 5620lbf	10 25kN 2248 5620lbf	- 26kN - 5845lbf	- 26kN - 5845lbf	
≤13mm ≤/₂"	≤13 12mm ≤½ ½"	≤13 12mm ≤½ ½"	≤13 12mm ≤½ ½"	≤13 13mm ≤½ ½"	≤13 13mm 1≤/₂ ½"	
x 28mm 2x 1.1"	2x 27mm 2x 1.1"	2x 28mm 2x 1.1"	2x 27mm 2x 1.1"	2x 35mm 2x 1.37"	2x 35mm 2x 1.37"	
03 x 36.5mm x 4 x 1.4"	83 x 108 x 28mm 3.3 x 4.2 x 1.1"	80 x 101mm 31.4 x 4"	80 x 100 x 33mm 3.2 x 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"	
n/a	n/a	n/a	90%	n/a	n/a	
StSt StSt	Alu StSt StSt	Alu StSt StSt	Alu StSt StSt	Alu StSt StSt	Alu StSt StSt	
CE			CE	-	-	
			-	-	-	
					Replaceable bearings. For high volume jobs	
otekt.pl	rockempire.com	singingrock.com	skylotec.com	smcgear.com	smcgear.com	

UPDATED Jul '25

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 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* with the US-only NFPA version but once *Petzl* 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 interesting variations on some elements of the *OmniBlock* design.

The ultimate in *Swiss-Army Knife* optimism is the *SwivaBiner* also 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 *Swivabiners* 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* (right) 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* (below-right) 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.

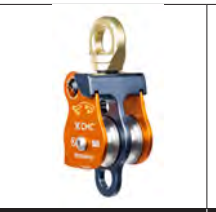
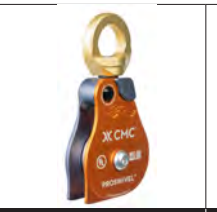
- Integrated swivel allows pulley to orient while reducing gain.
- Connect, install and remove rope with one hand.
- CNC machined for optimal weight & strength.



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	ASAT/ATHEIGHTUK	ASAT/ATHEIGHTUK	CMC	CMC	CMC	CMC
MODEL VARIANT	RP50 -	RP51 -	1.1 PMP Single 300434	1.1 PMP Double 300433	1.5 PMPSingle SS 300430	1.5 Single 300431
ORIGIN						
COST (inc Tax) Conversion-only	£96 $99 €112	£127 $132 €148	- $95 -	- $123 -	- $139 -	- $105 -
WEIGHT	305g 10.7oz	495g 1lb 1.5oz	140g 4.9oz	245g 8.6oz	331g 11.7oz	260g 9.2oz
MAX LOAD- WLL MBS	8 36kN 1798 8093lbf	8 36kN 1798 8093lbf	5 23kN 1124 8093lbf	7.25 30kN 1630 6744lbf	8 36kN 1798 8093lbf	8 36kN 1798 8093lbf
ROPE Ø	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"
SHEAVE/TREAD Ø	38mm 1.5"	38mm 1.5"	28mm 1.1"	2x 28mm 2x 1.1"	38mm 1.5"	38mm 1.5"
DIMENSIONS ht x w x depth	126 x 60 x 34mm 5 x 2.4 x 1.4"	154x 60 x 57mm 6 x 2.4 x 2.3"	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"
PRUSIK TEND LOCK BECKET	- ■ -	- ■ ■	■ ■ -	■ ■ ■	■ ■ -	- ■ -
BUSHING BEARING PIN	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■
EFFICIENCY	-	-	>90%	>90%	>90%	>90%
CHEEK SHEAVE AXLE	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu StSteel Alu	Alu Alu Alu
STANDARDS	CE	CE	CE	CE	CE	CE
OTHER COLOURS			-	-	-	-
NOTES	NEW for 2025	NEW for 2025			*steel cable≤12mm	
WEBSITE	atheightuk.com	atheightuk.com	cmcpro.com	cmcpro.com	cmcpro.com	cmcpro.com

Images NOT to Scale						
MANUFACTURER	NOTCH	PETZL	PETZL	PETZL	PETZL	PETZL
MODEL VARIANT	Rook x	Twin Release -	Spin S1 S1	Spin S1 Open 2P654	Spin L1 L1	Spin L2 dbl L2D
ORIGIN						
COST (inc Tax) Conversion-only	£111 $120 €114	£362 $440 €410	£58 $72 €66	£65 $75 €70	£90 $110 €100	£144 $175 €160
WEIGHT	189g 6.7oz	800g 1lb 12oz	145g 5.1oz	0g 0oz	290g 10.2oz	480g 1lb 9oz
MAX LOAD- WLL MBS	2.8 28kN 629 6295lbf	9 36kN 2023 8093lbf	5 23kN 1124 8093lbf	5 23kN 1124 8093lbf	6 36kN 1348 8093lbf	6 36kN 1348 8093lbf
ROPE Ø	≤13mm ≤½"	8-13mm 5/16-½"	7-11mm 9/32-7/16"	7-11mm 9/32-7/16"	8-13mm 5/16-½"	8-13mm 5/16-½"
SHEAVE/TREAD Ø	53mm 2.1"	2x 38-40*mm 2x 1.5"	25mm 1"	25mm 1"	38mm 1.5"	2x 38mm 2x 1.5"
DIMENSIONS ht x w x depth	112 x 63.5 x 33mm 4.6 x 2.5"	180 x 105 x 77mm 7 x 4.1 x 3"	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"
PRUSIK TEND LOCK BECKET	- - -	- ■ ■	- ■ -	- ■ -	- ■ -	- ■ ■
BUSHING BEARING PIN	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■
EFFICIENCY	>90%	95%	91%	91%	95%	95%
CHEEK SHEAVE AXLE	Alu Alu StSt	Alu StSt StSt	Alu StSt StSt	Alu StSt StSt	Alu StSt StSt	Alu StSt StSt
STANDARDS	ANSI CE	CE NFPA ANSI UKCA	CE NFPA UKCA UIAA	CE NFPA UKCA	CE NFPA UKCA	CE NFPA UKCA
OTHER COLOURS	-	■	■	■	■	■
NOTES		Integrated progress capture cam.*=faceted cam	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
WEBSITE	notchequipment.com	petzl.com	petzl.com	petzl.com	petzl.com	petzl.com

SV . PULLEYS



CMC	CMC	CMC	CMC	CMC	CMC	CMI
1.5 Double 300432	**2.0 PMP Single** 300437	**2.0 PMP Double** 300438	2.6 PMP Single 300436	1.1 PMP SwivaBiner 300435	1.1 PMP SwivaBiner 300439	**MicroTrolley** RP161RS
- $155 -	- $130 -	- $195 -	- $225 -	- $125 -	- $155 -	£91 $110/114 €105
411g 14.5oz	348g 12.3oz	591g 20.9oz	850g 29.9oz	200g 7oz	298g 11oz	204/226g 7.2/8oz
8 36kN 1798 8093lbf	8 36kN 1798 8093lbf	10 40kN 2248 8992lbf	20 80kN 4496 17984lbf	- 22kN - 4946lbf	- 22kN - 4946lbf	8.8 44kN 1980 9900lbf
≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"
2x 38mm 2x 1.5"	51mm 2"	2x 51mm 2x 2"	66mm 2.6"	28mm 1.1"	2x 28mm 2x 1.1"	32mm 1.25"
160 x 64 x 57mm 6.3 x 2.5 x 2.3"	148 x 76 x 32mm 5.8 x 3 x 1.3"	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"
-	-		-	-		- -
>90%	>90%	>90%	>90%	>90%	>90%	
Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu StSt
CE	-	CE	CE	CE	CE	CE
-	-	-	-	-	-	-
						RS=removable axle/sheave
cmcpro.com	cmcpro.com	cmcpro.com	cmcpro.com	cmcpro.com	cmcpro.com	cmigearusa.com



PETZL	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA
Spin L1D 1-way L2	**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
£168 $205 €190	£110 $98 €122	£150 $135 €162	£122 $105 €142	£100 $90 €87	£122 $105 €142	£150 $160 €190
425g 15oz	140g 4.9oz	245g 8.6oz	260g 9.2oz	303g 10.7oz	303g 10.7oz	411g 14.5oz
6 36kN 1348 8093lbf	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
8-13mm 5/16-½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"
38mm 1.5"	28mm 1.1"	2x 28mm 2x 1.1"	38mm 1.5"	38mm 1.5"	38mm 1.5"	2x 38mm 2x 1.5"
150x74mm 5.9 x 2.9"	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"
-	-		- -	- -	- -	-
93% one-way	>90%	>90%	>90%	>90%	>90%	>90%
Alu StSt StSt	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu StSteel Alu	Alu Alu Alu	Alu Alu Alu
CE NFPA UKCA	CE	CE	CE	CE	-	CE
					-	
Red warning mark. One way faceted sheave					DISCONTINUED	
petzl.com	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com

UPDATED Jul '25

w.res emagazines.com

Images NOT to Scale						
MANUFACTURER	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	RE / CMC
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	AZTEK P41 / 300321
ORIGIN						
COST (inc Tax) Conversion-only	£150 $134 €162	£225 $202 €263	£256 $235 €223	£135 $137 €150	£190 $170 €220	£105 $127 €121
WEIGHT	348g 12.3oz	591g 20.9oz	850g 29.9oz	140g 4.9oz	300g 10.5oz	226g 7.9oz
MAX LOAD- WLL MBS	8 36kN 1798 8093lbf	10 40kN 0lbf	20 80kN 4496 17984lbf	5 23kN 1124 5170lbf	7 28kN 1573 6295lbf	9 36kN 2023 8093lbf
MAX ROPE Ø	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	8mm 5/16"
SHEAVE/TREAD Ø	51mm 2"	2x 51mm 2x 2"	66mm 2.6"	28mm 1.1"	2x 28mm 2x 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"	104 x 50mm 4.1 x 2"
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 Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu
STANDARDS	-	CE	CE	CE	CE	CE
OTHER COLOURS	■	■	-	-	-	■ ■
NOTES						grey= quick release pin orange=side becket screw
WEBSITE	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com

Images NOT to Scale						
MANUFACTURER	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	SMC	SMC	SMC
MODEL VARIANT	Material Handling Omni 2.6 MHP55	Material Handling Omni 4.5 MHP58	Hydra P4	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	£127 $120 €134	£82 $99 €94	£87 $105 €100	£140 $169 €161
WEIGHT	850g 29.9oz	2.65kg 5.8lb	189g 6.7oz	190g 6.7oz	306g 10.8oz	478g 16.9oz
MAX LOAD- WLL MBS	20 100kN 4500 22500lbf	26.6 133.4kN 6000 30000lbf	5 28kN 1124 6295lbf	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"	≤13mm ≤½"
SHEAVE/TREAD Ø	75 66mm 2.95 2.6"	114 95mm 4.5 3.75"	53mm 2.1"	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"	112 x 63.5 x 33mm 4.4 x 2.5 x 1.3"	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%	>90%			
CHEEK SHEAVE AXLE	Alu Alu Alu	Alu Alu Alu	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt
STANDARDS	ASME	ASME	CE	CE NFPA UKCA	CE NFPA UKCA	CE NFPA UKCA
OTHER COLOURS	-	-	-	-	-	-
NOTES	non-human loads	non-human loads				
WEBSITE	rockexotica.com	rockexotica.com	rockexotica.com	smcgear.com	smcgear.com	smcgear.com

EDER Ascender EPC-240

With 36m/minute and a permissible payload of 240kg, the EDER Ascender is ready for any rescue job. The Ascender is powered by a powerful STIHL battery or 2-stroke engine.

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UPDATED Jun '25

IMPACT PULLEYS

aka RIGGING BLOCKS & DISMANTLING PULLEYS







ABOVE Left to right- approximately to scale: DMM Large Impact Block, ISC 3/4" medium and 5/8" small and DMM XS Impact Block. Top right (NOT to scale) the DMM Small Impact Block. Note the hollow spindle on the DMM which is also seen in the Arbortec and TreeUp models. This is for 3D rigging allowing a rope to pass through and redirect or reposition the pulley in free space away from the trunk or to allow a clear route past an obstruction post-arrest. Interestingly, in the TreeUp models the full screw closure is slightly weaker, or perhaps we should say less-strong than their identical pulley with a sprung half turn closure similar to the blue and red ISC pulleys above. ISC's newest model is shown top-right as the series 200 RP248 - the smallest of 3 sizes in a sleek new design.

Seldom do we see such a diversity of names or category titles for one product as we do for these heavyweights. Are they blocks or pulleys and are they snatch, impact, rigging or just plain ol' arborist? We're going to go with 'IMPACT' as a true description for what sets them apart from regular pulleys and the term PULLEY because that too is a more accurate modern description. I bet we still intersperse this article with 'Block' out of habit and because even DMM still use the term. But 'Block' is really an archaic term from days of huge wooden ships with giant canvas sails that were so heavy they could only be raised with the mechanical advantage afforded by a set of 'blocks' These didn't necessarily have moving sheaves, they might just have had a shiny wooden bar over which the rope ran with somewhat less efficiency than it would over a moving wheel. Nevertheless, with rope running over a couple of sets of such 'blocks' replete with shiny wood or proper revolving wooden wheels there was mechanical advantage enough to make hauling far easier than it would have been with a single rope from hand to load. So, 'PULLEYS' it is. You'll normally find Impact Pulleys separated from 'Climbing' gear in the catalogues and instead listed under the 'Rigging' sections but this too is a little misleading because virtually any large pulley can be used for rigging in the true sense of attaching and securing stuff to stuff for the purposes of doing stuff. The term 'ARBORIST' is a fair one because it's arborists rather than any other rope access area that has driven development of this hardware genre and the remarkable DMM Arborist Rigging Blocks that turned them from ugly, cast lumps into works of art. This guide is for pulleys that are specifically designed to have heavy lumps of wood dropped on them as a first line of arrest before being lowered to the ground, hence the term 'Impact'. It's this heavily abusive task that normally mandates that an impact pulley uses bushing rather than bearings because although bearings are more efficient due to there being less surface contact they don't like shock loading because the steel ball-bearing or 'needles' are effectively point-loaded and rammed into the inner face of the bearing housing and each other during impact. Nevertheless, needle may trump ball-bearings for this particular task with their longer contact area. You can of course use any of the IMPACT PULLEYS for regular rigging tasks but not only are they generally bigger and heavier, they may not be quite as efficient for regular high-speed rope running tasks as bearing pulleys, that's if you can even tell the difference.

WHAT DOES IT DO?

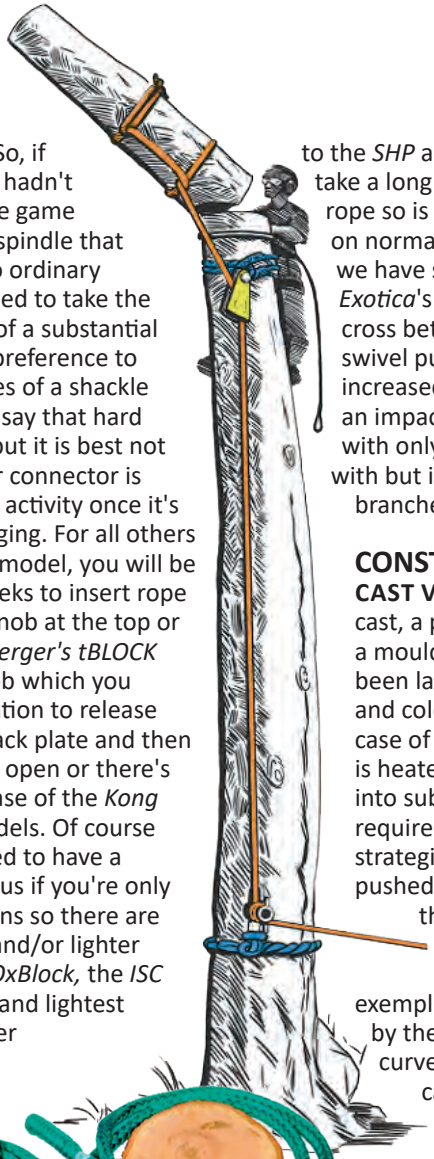
There are no hard and fast rules as to how best to utilise an impact pulley, there are numerous anchorage options and configurations and it is always best to minimise shock load by rigging above the cut so that the load can be tensioned and initially held rather than dropped. However, with no other options, the worst case scenario, in terms of highest loads is 'negative blocking/rigging' where the section being cut falls onto an anchor rigged below the cut-line, in climbing terms virtually a factor 2 fall. Current consensus is to anchor the impact pulley (or pulleys if using twin lowering), just below the intended cut using a large diameter anchor rope with a spliced eye, often called a 'dead-eye' sling but generically a topping or anchor strop because some are webbing. The eye is looped over the top anchor spindle/bollard on the pulley and then wrapped around the target tree in a tensionless or releasable hitch. The lowering rope runs through an anchored lowering device or deviation at the base of the tree, runs up to and through the impact pulley and is then tied to the section or branch to be dropped ensuring that it doesn't interfere with your intended cutting path and doesn't subsequently deflect towards the climber's feet/legs when it arrests the load. This is where a good ground crew will arrest with a degree of dynamic absorbency and downwards movement of the load to mitigate the shock loading at the top which can be sever enough to shake the climber off his stance. The arresting/lowering rope has to be tough, it has to be low stretch rather than dynamic which may be too elastic to arrest within an acceptable distance but with enough stretch to happily absorb the impact without having the characteristic of a wire cable. Rigging regs suggest the topping or anchor strop that attaches to the top spindle should be twice the capacity of the main







rigging rope. So, if the sheer bulk hadn't already given the game away it's this top spindle that tells you this is no ordinary pulley. It's designed to take the 'soft' anchorage of a substantial rope or a sling in preference to the unforgiving fixed curves of a shackle or carabiner. That's not to say that hard connectors can't be used but it is best not to and if used be sure your connector is NOT used for life-support activity once it's been used for impact-rigging. For all others except the *Straightpoint* model, you will be able to open the side cheeks to insert rope by either unscrewing the knob at the top or some, like *ISC and Teufelberger's tBLOCK* above, have a sprung knob which you turn a quarter or half rotation to release from a 'keyhole' on the back plate and then simply swivel the cheek open or there's the push-button release of the *Kong* and *Rock Exotica* models. Of course you won't always need to have a pulley the size of walrus if you're only dropping smaller sections so there are some very decent smaller and/or lighter designs like the afore mentioned *OxBlock,* the *ISC Mini* block, *FTC TREE Mini Eclipse 2* and lightest of all, the *CMI Mini Arborist Block*. Neither the *Kong Alby* or the *OxBlock* is a true impact pulley but they can handle light loads.





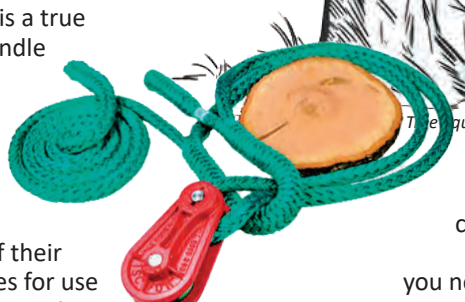
to the *SHP* and its top bobbin is designed to take a long Maillon Rapide rather than a rope so is narrower in diameter than those on normal impact pulleys. More recently we have seen the introduction of *Rock Exotica*'s *Downrigger* (right) which is a cross between an impact block and a swivel pulley with a one-way sheave for increased friction on lowering. This is not an impact block for large timber sections with only 300lbs of working load to work with but it will function nicely for smaller sections and branches.

CONSTRUCTION

CAST VERSUS FORGED. Originally, impact blocks were cast, a process where molten metal is poured into a mould. This has subsequently been largely replaced by hot and cold forging where, in the case of hot-forging, the metal is heated and then beaten into submission in the required shape, often with strategic placement of metal pushed into reinforced areas that need it most.



You can tell the forged models , as exemplified by *DMM* blocks, by their exceptionally smooth curves as this comparison of a cast and forged version of the same *ISC* pulley (above) shows. Forging is stronger and more forgiving that more 'brittle' casting. The edges of forged pulleys are a decent thickness and nicely rounded so they're very rope-friendly and in an impact you don't have to worry so much if your rope comes off-line.



NON-ARBORIST BLOCKS

There are many 'Impact Blocks' sold for use with 4-WD vehicles and they look pretty tough but the nature of their construction with steel sheaves for use with wire rope and steel cheeks isn't very forgiving on the rest of your gear. One of the off-road pulleys is called an *ARB 9000* but it doesn't mean 'arborist', it's the name is derived from the owners initials. In truth, many of these would probably do the job you want but is 'probably' good enough? Go for the blocks in this Guide that are marketed specifically to arborists and you won't go far wrong.

PLATE - on the other hand has relatively sharp edges so you need to be careful that the rope feeds in and out properly and doesn't cross the plate. These are much easier and cheaper to produce than forged and they're plenty strong enough but they're again not as forgiving as forged models. They're not 'sharp' in the knife-edge sense but being hard and thin and maybe with some burrs if they're not looked after properly they can seem that way to a rope impacting the edge at several hundred pounds/kilos of force. The Kong Alby (top left) and I*SC SHP (left) and Flame* pulley on the next page are examples of plate construction.

ISC produce a **shear reduction pulley (**below) which we haven't included in this Guide since it's not intended for impact loading but you may want to know more about it because there ARE situations where this might be handy. It has all the appearance of a regular stainless steel cheek impact block . That's not a slip of the tongue, this actually is 'block' because the sheave is fixed and if it doesn't rotate it's certainly not a 'pulley' . The idea is to impart friction rather than minimise it as a pulley does so you can see where this might actually be applicable to a dynamic arrest situation? It's not unlike the *Notch AFB* (far right) in this regard but minus the extra-wrap options. However, the *AFB* is NOT designed for negative rigging impact loads. Back



MILLED produces the strongest metal per ounce because it is a single, solid block that has bits shaved and drilled and milled off of it until you're left with the desired shape. In fact it's not necessarily stronger because heat treating strengthens metals but there are less likely to be imperfections in such a process which is often undertaken by a robotic process that should be exactly the same each time. *Rock Exotica* are the masters of milled products and we originally had one of their material-handling pulleys listed together with *Buckingham's OxBlock* which they also make





UPDATED Jun '25

(see next paragraph) but, like the new *R.E. Downrigger*, with a swivel rather than rigid bollard as the anchor point, these sail too close to the wind for the kind of abuse meted out in impact loading, so the two RE 'material-handling' models (right) and *Downrigger* and other sheer reduction pulleys will get their own guide and in the meantime are included in the **Swivel Pulley Guide** on page 86.



ISC has a colour coding for their various sheaves and anchor bollards - all anchors are red and sheaves are: Grey for 1/2", Orange for 5/8", Green for 3/4". Not entirely sure why they didn't simply colour -code the main side cheeks for the rope size instead of just the sheaves so that any Blue ISC pulley is for half inch, any red is for 7/16"/11mm etc? Currently a Blue *ISC* pulley could be a 3/4" or a 5/8" until or unless you notice whether it's a green or orange sheave. These multi-coloured *Arbortec/TreeUp* pulleys (top-right) aren't colour-coded for size or strength either, they're just prettier.

SOMETHING DIFFERENT

We mentioned the *Rock Exotica*-made *OxBlock* from *Buckingham* and the more delicate nature of a swivel for impact loading but this is also available with a shackle so we have included it. It is described as by *Buckingham* as a 'snatch-block' replacement with additional friction so will inevitably be used for impact loads but is not really designed for dynamic loading so make sure you stay below 2250 lb of force. It has ball bearings which is generally an indicator for lower impact loading. The idea of the extended shape is to wrap the trail rope around the spine of the carabiner-looking section at the bottom.



The name '*OxBlock*' stands out as one of only three named devices in our entire list. And we do like names rather than numbers and codes. First prize goes to *Climbing Technology* for their Grizzly, a name so good I might buy one just because it's called '*Grizzly*'. *ISC* has the aptly named *Flame* although we're hoping it just refers to the appearance of the holes in the cheeks and not and indication of the state of your rope after using the pulley. The other one is *Kong's Alby* which I'm not so sure about because I have an Uncle called *Alby* and I don't like to think of dropping huge lumps of wood on his face but we still salute the use of a name and not a code.

Talking of *ISC's Flame* (left) this is one you also see a variant of rebadged for *Stein*. It's a stainless steel plate construction but it has had a series of 'flame'-shaped cut outs which reduces weight and may inadvertently aid cooling - or maybe that was part of the cunning plan all along. *Climbing Technology* is now owned and rebranded by *Skylotec* so it's now the *Skylotec CT's Grizzly*. This has a few strategically placed holes as well and one of those even acts as a second stage release for the push-button opening.







StraightPoint in conjunction with *DMM* produce perhaps the most useful 'oddity' with an 80KN impact pulley with built-in load cell monitor (right) that sends data to your phone or other wi-fi device. What could be more useful in such high-stress loading with all the implications of rope and equipment damage than knowing what you've actually dropped. It's often the case that the first chunk is your indicator for everything that follows because you've had a sighter of the approximate load per foot but this device gives you an exact figure, time after time so that pretty soon you and your crew will become the world's top experts at predicting wood weight. What's more, just to add to this extra safety, the readings can be taken from a range of 700m/2300ft so you can stand at a very safe distance if you don't trust your climber's rigging skills. The only necessary drawback with this design is that the cheeks are fixed so rope has to be fed through and it's large and costs quite a lot.

IN THE FOLLOWING TABLES:

£$€ prices in burnt orange are a currency conversion only (no tax/duty/shipping)

Needle **bearings** have a solid black box ■ in the BEARING column, ball-bearings have an outline box □.

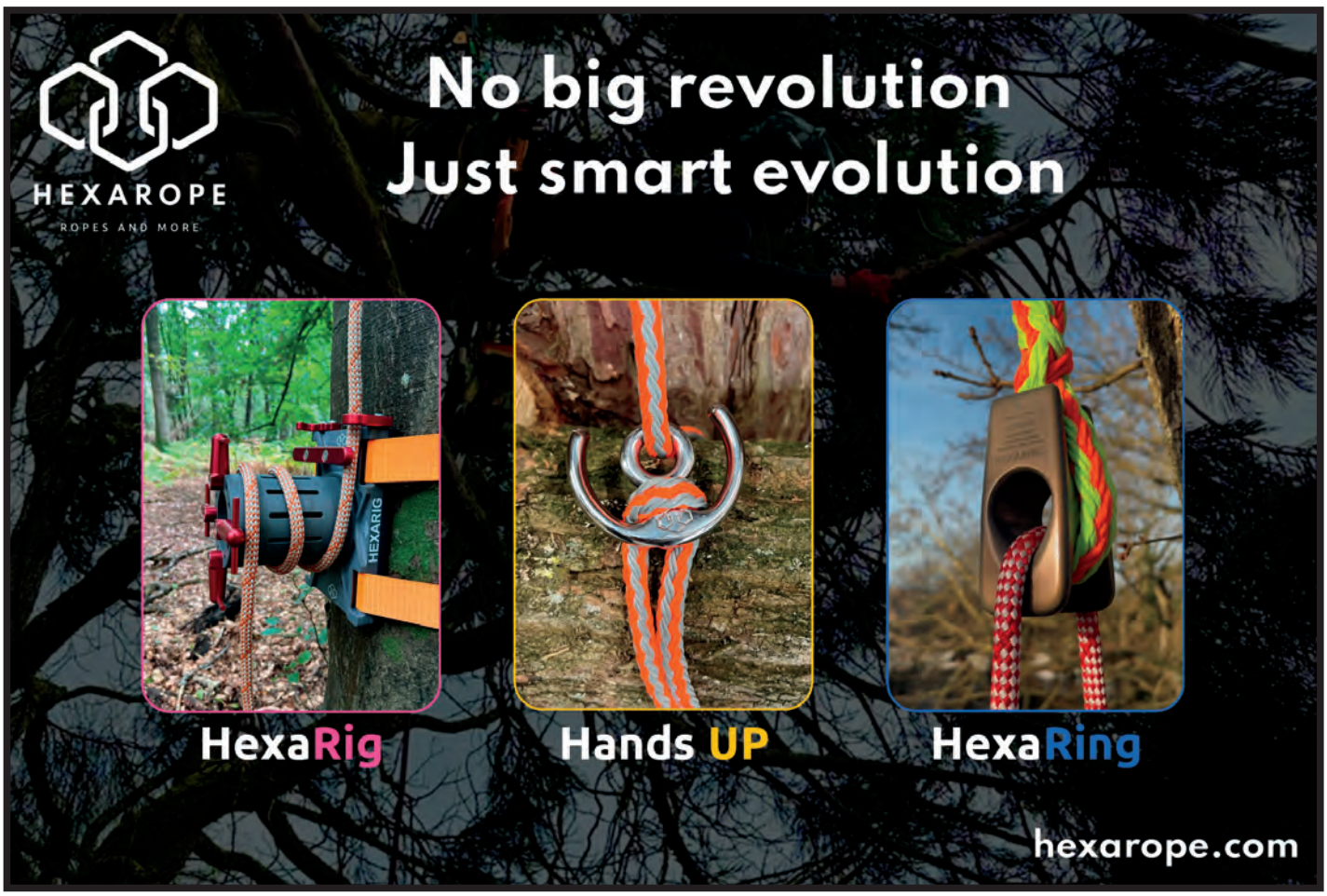
Some of the '**depth/thickness**' figures may or may not include the release button. Despite the obvious bulk of some release knobs some give depth as just the body of the pulley!

We've converted all **MBS** figures to force instead of mass - KiloNewtons and Lb Force to indicate the absolute maximum impact force that can (or can't) be sustained and switched all Working Load Limit figures to mass in Kg and lbs to give a better indication of the physical maximum weight of your lump of wood before you inflict it on the impact pulley given that there is some leeway with 7:1 up to 10:1 safety ratio to allow for the conversion back to force which would be a little higher than the figure we've shown for WLL mass. CMI give their own WLL mass but we've converted their original MBS mass to force.

In the **STANDARDS** column the CE generally refers to the Machinery Directive which is NOT applicable to PPE.

At the risk of stating the obvious, don't forget that the **WLL Working Load Limit** on the main sheave is the cumulative total of load on *each* side of the rope as it enters and exits the sheave.

TOP ANCHOR WIDTH is the distance between side plates so is the physical width that a rope or webbing can fit into. **TOP SHEAVE DIAMETER** refers to the top bollard or sheave and is the 'height' rather than the previous width.



IMAGES NOT TO SCALE

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N/A = info Not Available/not given

MAX ANCHOR WIDTH is the max rope or webbing you can fit on the top thimble













MANUFACTURER	ARBORTEC	ARBORTEC	ARBPRO	BUCKINGHAM	CMI	CMI
MODEL VARIANT	Treehog TH2040	Treehog TH2050	AP-RB01 -	OxBlock PM5062(clevis)	Mini Arb Block RP162	Small Arb B RP160
ORIGIN						
COST	£190 $236 €220	£190 $236 €220	£131 $162 €151	£600 $745 €695	£137 $169 €158	£198 $358 €
WEIGHT	1.36kg 2.86lb	1.4kg 3lb	880g 1.94lb	1.4kg 2.86lb	450g 1lb	1.3kg 2.95lb
MBS of Pulley	100kN 22,481lbf	100kN 22,481lbf	80kN 17,985lbf	44kN 10,000lb	97kN 21,900lbf	227kN 51,000lb
WLL	2039kg 4496lb	2039kg 4496lb	1600kg 3527lb	1100kg 2425lb	1422kg 3128lb	3312kg 7286 lb
MAX ROPE Ø	18mm <¾"	18mm <¾"	15mm 9/16"	16mm ⅝"	12.7mm ½"	19mm ¾"
TOP ANCHOR WIDTH	18mm <¾"	18mm <¾"	20mm ¾"	22mm 0.9"	22mm 0.9"	28mm 1 ⅛"
HEIGHT	175mm / 6.9"	175mm / 6.9"	185mm / 7.3"	260mm / 10.2"	102mm / 4"	140mm / 5.
WIDTH	105mm / 4.1"	105mm / 4.1"	95mm / 3.7"	65mm / 2,6"	57mm / 2.25"	76mm / 3
DEPTH	50mm / 2"	50mm / 2"	35mm / 1.4"	50mm / 2"	45mm / 1.75"	70mm / 2.7
CHEEK MATERIAL	Alu	Alu	Alu	Alu	Stainless Steel	Alu
SHEAVE MATERIAL	Alu	Alu	Alu	Alu	Nylon	Nylon
AXLE MATERIAL	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless St
CONSTRUCTION	Forged	Forged	Plate	Milled	Milled	Milled
BEARING/BUSHING	■	■	■	■	■	■
BUTTON	-	-	■	■	-	-
SPRUNG	-	-	■	■	-	■
SCREW	■	■	-	-	■	-
STANDARDS	ANSI CE	ANSI CE		CE		
OTHER CHEEK COLOURS	■ ■ ■	■ ■ ■		■		
TOP SHEAVE COLOUR	■	■	■	-	■	■
MAIN SHEAVE COLOUR	■	■	■	■	■	■
NOTES	Solid spindle/axle. 30kg lanyard eye. Sprung, half-turn cheek release. Full-turn screw cheek release	20mm spindle hole. 30kg lanyard eye. Sprung, half-turn cheek release. Full-turn screw cheek release	DISCONTINUED LIGHT IMPACT LOADS ONLY Gold anchor eye.	LIGHT IMPACT LOADS ONLY Carb spine=Friction post. . Spec for CLEVIS version - Swivel eye option		
WEBSITE	treehog.com	treehog.com	arbpro.com	buckinghammfg.com	cmigearusa.com	cmigearusa.c

SPECIFICATIONS

CHEEK RELEASE

IMPACT PULLEYS

							
	CMI	CMI	CMI	CMI	DMM	DMM	DMM
lock	5/8" Rig Block RP130	3/4" Rig Block RP131	3/4" Rig Block RP145	1" Rig Block RP146	XS Arb Impact P201	S Arb Impact P201	L Arb Impact -
£229	£177 $218 €205	£279 $345 €322	£134 $166 €155	£401 $497 €464	£330 $450 €399	£290 $400 €339	£450 $650 €569
	1.04kg 2.3lb	2.5kg 5.6lb	1.66kg 3.65lb	2.3kg 6.6lb	0.78kg 1.72lb	1.86kg 4.1lb	3.47kg 7.6lb
f	125kN 28000 lbf	178kN 40,000lbf	125kN 28,000lb	302kN 68,000lbf	100kN 22,480lbf	200kN 44,961lbf	300kN 67,443 lbf
	1818kg 4000 lb	2597kg 5714lb	1818kg 4000lb	6169kg 13600lb	2039kg 4496lb	4078kg 8992lb	6118kg 13488lb
	16mm ⅝"	19mm ¾"	19mm ¾"	25mm 1"	16mm ⅝"	16mm ⅝"	20mm ¾"
	19mm ¾"	25mm 1"	25mm 1"	28mm 1 ⅛"	20mm ¾"	22mm 0.9"	27mm 1.06"
.5"	165mm / 6.5"	178mm / 7"	165mm / 6.5"	235mm / 9.25"	137mm / 5.4"	180mm / 7"	225mm / 8.85"
"	102mm / 4"	127mm / 5"	102mm / 4"	152mm / 6"	82mm / 3.3"	100mm / 4"	120mm / 4.7"
75"	45mm / 1.75"	63mm / 2.5"	63mm / 2.5"	76mm / 3"	55mm / 2.2"	80mm / 3.15"	97mm / 3.82"
teel	Alu Alu Stainless Steel Plate	Alu Alu Stainless Steel Plate	Alu Alu Stainless Steel Plate	Alu Alu Stainless Steel Plate	Alu Alu Stainless Steel Milled	Alu Alu Stainless Steel Hot Forged	Alu Alu Stainless Steel Hot Forged
	■	■	■	■	■	■	■
	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
	■	■	■	□	■	■	■
					CE	CE	ANSI CE
					■		
	■	■	■		■	■	■
	■	■	■	■	■	■	■
				cotter-pin locking closure	10mm Hollow spindle/ axle	Solid spindle/axle	Hollow spindle/axle
com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	dmmwales.com	dmmwales.com	dmmwales.com

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SPECIFICATIONS	**MANUFACTURER**	FTC TREE	FTC TREE	ISC	ISC	ISC	ISC
	MODEL VARIANT	MIni Eclipes 2 -	Eclipse 3 -	1/2" Compact/ Mini Block RP048	1/2" Rig Block RP051	5/8" Small Rig Block RP162	5/8"Med Block RP054
	ORIGIN						
	COST	£139 $172 €160	£184 $228 €212	£105 $201 €149	£168 $220 €199	£168 $220 €198	£202 $250
	WEIGHT	650g 1.43lb	1.04kg 2.3lb	490g 1.08lb	1.54kg 3.4lb	1.49kg 3.3lb	2.16kg 4.75lb
	MBS of Pulley	100kN 22,480 lbf	150kN 33,721lbf	85kN 18,000 lbf	100kN 22,480lbf	100kN 22,480lbf	150kN 33,721lb
	WLL	2039kg 4496lb	3059kg 6744lb	1700kg 3748lb	2039kg 4496lb	2039kg 4496lb	3312kg 7286 lb
	MAX ROPE Ø	16mm ⅝"	18mm <¾"	13mm ½"	13mm ½"	16mm ⅝"	16mm ⅝"
	TOP ANCHOR WIDTH	24mm <1"	26mm 1"	16mm ⅝"	19mm ¾"	25mm 1"	25mm 1"
	HEIGHT	189mm / 7.4"	189mm / 7.4"	125mm / 4.9"	190mm / 7.5"	190mm / 7.5"	230mm /
	WIDTH	65mm / 2.6"	93mm / 3.7"	76mm / 3"	99mm / 3.9"	99mm / 3.9"	124mm / 4
	DEPTH	65mm / 2.6"	65mm / 2.6"	75mm / 3"	108mm / 4.25"	108mm / 4.25"	108mm / 4.
	CHEEK MATERIAL **SHEAVE MATERIAL** **AXLE MATERIAL** **CONSTRUCTION**	Alu Alu Stainless Steel Plate	Alu Alu Stainless Steel Plate	Alu Alu Stainless Steel Forged	Alu Alu Stainless Steel Forged	Stainless Steel Nylon Stainless Steel Forged*	Alu Nylon Stainless S Forged*
CHEEK RELEASE	**BEARING/BUSHING**	■	■	■	■	■	■
	BUTTON	-	-	-	-	-	-
	SPRUNG	-	-	■	■	■	■
	SCREW	■	■	-	-	-	-
	STANDARDS	CE	CE	CE	CE	CE	CE
	OTHER CHEEK COLOURS			■			
	TOP SHEAVE COLOUR	■	■	■	■	■	■
	MAIN SHEAVE COLOUR	■	■	■	■	■	■
	NOTES	Dyneema lanyard to prevent locking pin loss	Dyneema lanyard to prevent locking pin loss	Red Anchor bollard Phasing out		*Older versions are cast	*Older version cast
	WEBSITE	ftc-tree.com	ftc-tree.com	iscwales.com	iscwales.com	iscwales.com	iscwales.co

IMPACT PULLEYS

Rig							
	ISC	ISC	ISC	ISC	ISC	ISC	ISC
	5/8" Flame RP056	3/4" Med Rig Block RP055	3/4" Large Rig Block RP057	200-Series Compact RP248	200-Series Small RP251	200-Series Med R255	200-Series Large RP257
€233	£132 $171 €162	£153 $270 €244	£198 $300 €280	£175 $240 €205	£210 $300 €249	£240 $340 €282	£444 $560 €513
	1.64kg 3.6lb	2.3kg 5.1lb	2.3kg 5.1lb	0.61kg 1.3lb	2.3kg 5.1lb	2.7kg 5.9lb	5kg 11lb
bf	100kN 22,480lbf	150kN 33,721lbf	200kN 44,962lbf	100kN 22,480lbf	250kN 67,422lbf	300kN 67,443lbf	380kN 85,257lbf
	2039kg 4496lb	3059kg 6744lb	4078kg 8992lb	2039kg 4496lb	5099kg 11240lb	6118kg 13488lb	7600kg 17085lb
	16mm ⅝"	19mm ¾"	19mm ¾"	14mm 9/16"	16mm ⅝"	20mm ¾"	26mm 1"
	25mm 1"	29mm 1.25"	29mm 1.25"	16mm ⅝"	25mm 1"		32mm 1¼"
9"	182mm / 7.2"	230mm / 9"	300mm / 11.8"	125mm / 4.9"	178mm / 7"	222mm / 8.7"	283mm / 11.1"
.9"	99mm / 3.9"	124mm / 4.9"	158mm / 6.2"	69mm / 2.7"	99mm / 4"	123mm / 4.8"	156mm / 6.15"
25"	57mm / 2.25"	108mm / 4.25"	*108mm / 4.25"	65mm / 2.6"	93mm / 3.7"	93mm / 3.7"	95mm / 3.7"
teel *	Alu Alu Stainless Steel Plate	Alu Alu Stainless Steel Forged	Alu Alu Stainless Steel Cast	Alu Alu Stainless Steel Hot Forged	Alu Alu Stainless Steel Hot Forged	Alu Alu Stainless Steel Hot Forged	Alu Alu Stainless Steel Hot Forged
	■	■	■	■	■	■	■
	-	-	-	■	■	■	-
	-	■	■	■	■	■	-
	■	-	-	-	-	-	■
	CE	CE	CE	CE UKCA	CE UKCA	CE UKCA	CE UKCA
					■	■	-
	■	■	■	■	■	■	■
	■	■	■	■	■	■	■
s are		*Older versions are cast	*Depth exc sprung release.				Hollow spindle/axle
om	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com

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	MANUFACTURER	KONG	NOTCH	NOTCH	NOTCH	SKYLOTEC	ROCK EXOT
	MODEL VARIANT	Alby -	1/2" Block 55352	5/8" Block -	3/4" Block -	CT Grizzly H279	Downrigg -
SPECIFICATIONS	ORIGIN						
	COST	£134 $170 €100	£135 $182 €160	£160 $220 €190	£210 $286 €245	£160 - €182	£280 $300 €
	WEIGHT	1.15kg 3.05lb	0.45kg 1lb	1.4kg 3.1 lb	1.55kg 3.49lb	914g 2lb	453g 1lb
	MBS of Pulley	50kN 11,240lbf	100kN 22481lbf	125kN 28101lbf	150kN 33,720 lbf	80kN 17,985lbf	31kN 7000lbf
	WLL	700kg* 1543lb*	2039kg 4496lb	2549kg 5620lb	3059kg 6744lb	1600kg 3527lbf	130kg* 300lb*
	MAX ROPE Ø main sheave	26mm 1"	13mm ½"	16mm ⅝"	19mm ¾"	15mm 9⁄16"	14mm 1"
	TOP ANCHOR WIDTH	28mm 1.1"	16mm ⅝"	25mm 1"	29mm 1⅛"	20mm ¾"	22 x 30mm 0.9-x1.2"
	HEIGHT	236mm / 9.25"	118mm / 4.7"	158mm / 6.2"	176mm / 7"	185mm / 7.3"	168mm / 6.(
	WIDTH	124mm / 5"	68mm / 2.7"	87mm / 3.4"	101mm / 4"	95mm / 3.7"	83mm / 3.25
	DEPTH	38.5mm / 1.5"	*62mm / 2.4"	*74mm / 3"	*78mm / 3"	35mm / 1.4"	*35mm / 1.4
	CHEEK MATERIAL SHEAVE MATERIAL AXLE MATERIAL CONSTRUCTION	Alu Alu Stainless Steel Plate	Alu Alu Stainless Steel Hot Forged	Alu Alu Stainless Steel Hot Forged	Alu Alu Stainless Steel Hot Forged	Alu Alu Stainless Steel Plate	Alu Alu Stainless St machined
CHEEK RELEASE	BEARING/BUSHING	■	■	■	■	■	■
	BUTTON	-	-	-	-	■	■
	SPRUNG	-	-	■	■	■	-
	SCREW	■	■	-	-	-	-
	STANDARDS		CE	CE	CE		CE
	OTHER CHEEK COLOURS	-	-	-	-	-	-
	TOP SHEAVE COLOUR						-
	MAIN SHEAVE COLOUR						
	NOTES	LIGHT IMPACT LOADS ONLY Older version is red.	Dyneema lanyard to prevent locking pin loss. *exc bolt head of approx 0.6"	DISCONTINUED Red Anchor bollard Phasing out. *exc bolt head of approx 0.6"	*exc bolt head of approx 0.6"	LIGHT IMPACT LOADS ONLY Not available in USA	*LIGHT IMPACT L ONLY *Not intended negative rigging - interface will fail *with swivel eye r as shown in ima above.
	WEBSITE	kong.it	notchequipment.com	notchequipment.com	notchequipment.com	skylotec.com	rockexotica.c

ICA	STEIN	STRAIGHTPOINT	TEUFELBERGER	TREEUP (PROTEKT)	TREEUP (PROTEKT)	TREEUP (PROTEKT)	TREEUP (PROTEKT)
er	SS-1H6056 -	LOAD CELL Impact Block RP054	t-BLOCK 7083229	Small TU400 TU401	Small TU402 TU403	Large TU404 TU405	Large TU406 TU407
							
345	£144 $179 €165	£3600>$5000€4163	£215 $335 €287	£116 $160 €132	£116 $160 €132	£168 $220 €192	£168 $220 €192
	1.55kg 3.49lb	6kg 13.2lb	1.6kg 3.52lb	1.36kg 2.86lb	1.4kg 3lb	2.3kg 5lb	2.5kg 5.5 lb
	100kN 22480lbf	60kN 13,488 lbf	225kN 50,582 lbf	100kN 22,481 lbf	100kN 22,481 lbf	100/125kN 22481/28101lbf	100/125kN 22481/28101lbf
	2039kg 4496lb	1224kg 2698 lb	4588kg 10116 lb	2039kg 4496lb	2039kg 4496lb	2039/2549kg 4496/5620 lb	2039/2549kg 4496/5620 lb
	16mm ⅝"	20mm ¾"	16mm ⅝"	18mm <¾"	18mm <¾"	<30mm <1.2"	<30mm <1.2"
n	25mm 1"	20mm ¾"	?	18mm <¾"	18mm <¾"	<30mm <1.2"	<30mm <1.2"
6"	182mm / 7.1"	348mm / 13.7"	167mm / 13.7"	176mm / 6.9"	176mm / 6.9"	238mm / 9.4"	238mm / 9.4"
5"	100mm / 3.9"	131mm / 5.16"	96mm / 5.16"	96mm /4.1"	96mm /4.1"	85mm / 3.4"	85mm / 3.4"
4"	37mm / 1.45"	89mm / 3.5"	76mm / 3.5"	81mm / 3.46"	81mm / 3.46"	115mm / 4.5"	115mm / 4.5"
eel d	Alu Alu Stainless Steel Plate	Alu StSteel Stainless Steel Milled	Alu Alu Stainless Steel Hot Forged	Alu Alu Stainless Steel Forged	Alu Alu Stainless Steel Forged	Alu Alu Stainless Steel Forged	Alu Alu Stainless Steel Forged
	■	■	■	■	■	■	■
	-	-	-	-	-	-	■
	■	■	■	-	■	■	■
	-	-	-	■	-	-	-
	CE	CE	CE	CE	CE	CE	CE
		-	-	-			
	■	■	■	■	■	■	■
	■	■	■	■	■	■	■
LOADS for swivel first.. otated age	Discontinued as STEIN but still available	Made by DMM. Integral wireless load cell monitor. Top screw-bolt to allow anchor sling attachment	Co Designed with FTC TREE of France. Teflon Bearing	20mm Hollow with option of half-turn or full unscrew release (401/403) Sold in the US as ESA	20mm Hollow with option of half-turn or full unscrew release (401/403) Sold in the US as ESA	30mm Hollow with option of half-turn or full unscrew release (405).	Solid spindle each with option of half-turn or full unscrew release (407).
om	steinworldwide.com	straightpoint.com	teufelberger.com	protekt.pl	protekt.pl	protekt.pl	protekt.pl

NON-HANDLED ASCENDERS & LEVER CAMS

CHEST ASCENDERS
HAND ASCENDERS
ROPE GRABS
EMERGENCY ASCENDERS

Petzl Croll 1975



Petzl Croll Lg 2025



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 120 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 2025



Clog/Wild Country 2023



Gibbs 1965



Gibbs 2023

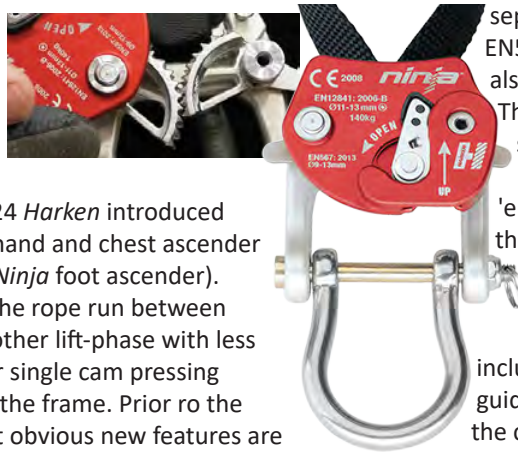


HAND ASCENDERS

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!)

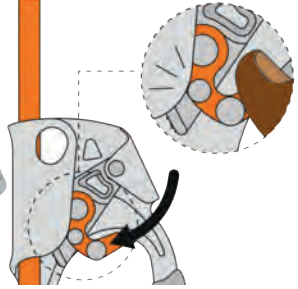


OTHER FEATURES...

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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/Pin:00mm, length of the bolt/pin
USES: ●=OK but not ideal
■=Leverage Cam (see p104)

	MODEL	COMPANY	ORIGIN	COST Currency conversion	WEIGHT	DIMENSIONS Width x Height x Depth	STANDARD
	Explorer Chest Retrofit	3M/ DBI SALA/ ROLLGLIS		$185 A$182	170g 6oz	104 x 65mm 4 x 2.6"	EN567 NFPA AS/NZS448
	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 EN12841
	Solo 2	CAMP		£60 $90 €75	95g 3.4oz	95 x 57 x 24mm 3.7 x 2.2 x 0.9"	EN567 EN12841 UIAA
	TurboChest	CAMP		£85 $90 €102	110g 3.9oz	94 x 59 x 39mm 3.7 x 2.3 x 1.5"	EN567 EN12841 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 EN12841
	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 EN12841
	Uni Cruiser	EDELRID		£60 $80 €57	126g 4.4oz	106 x 65 x 32mm 4.1 x 2.6 x 1.2"	EN567 EN12841
	Chest Cruiser	EDELRID		£57 $75 €55	162g 5.7oz	80 x 65 x 40mm 3.2 x 2.6 x 1.6"	EN567 EN12841

HAND & CHEST ASCENDERS

OS	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.
88	Extruded Alu Stainless Steel		11*-13mm 7/16 -1/2"	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 Stainless Steel		8-13mm 5/16 -1/2"	4kN 900lbf	18mm 0.7"	■	■	-	-	■	■	■ ■		alpidex.com
	Stamped Alu Alu		8-13mm 5/16 -1/2"	5kN 1124lbf	20mm 0.8"	■	■	■	-	■	■ ■ ■		Also a 12AA model but details are sketchy! *FOB China	en.anpen.net
B	Extruded Alu Stainless Steel		8-13mm 5/16 -1/2"	100kg 220lb	*15mm 0.6"	■	■	■	-	■	■		*15x18mm See also *Beal Tract Up* in PCP guide	pro.beal-planet.com
B	Stamped Alu Hardened Steel		8-13mm 5/16 -1/2"	140kg 308lb	14mm 0.5?"	■	-	■	■	-		■ ■		camp.it
B	Stamped Alu Hardened Steel		8-13mm 5/16 -1/2"	120kg 265lb	16mm* 0.6"	■	-	■	-	■	■ ■		Equipped with two patented rollers for a smooth interface with the rope. *17x16mm	camp.it
	Stamped Alu Stainless Steel		8-13mm 5/16 -1/2"	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
B	Stamped Alu Stainless Steel		8-13mm 5/16 -1/2"	100kg 220lb 4kN 900lbf	*15mm 0.6"	■	■	■	■	-		■	*29x15mm	productosclimax.com
	Stamped Alu Stainless Steel		10-13mm 3/8 -1/2"	100kg 220lb 6kN 1349lbf	19mm 0.75"	■	■	■	-	■	■		■=leverage cam	mycourant.com
B	Stamped Alu Stainless Steel		8-13mm 5/16 -1/2"	140kg 308lb	19mm 0.75"	■	■	-	-	■	■		■=leverage cam	cypherclimbing.com
B	Stamped Alu Stainless Steel		8-13mm 5/16 -1/2"	150kg 331lb	31x20mm 1.2x0.8"	■	■	-	■	■	■		Modular ascender, can be integrated into Chest Cruiser plate (becomes the Chest Cruiser)	edelrid.de
B	Stamped Alu Stainless Steel		8-13mm 5/16 -1/2"	150kg 331lb	29x5mm 1.1x0.2"	■	■	-	-	■	■		Component of Uni Cruiser. Modular ascender with adapter for various harnesses. Comes with webbing.	edelrid.de

images approximately to scale
COST: Approx & inc local tax/VAT
CURRENCY CONVERSION ONLY. * FOB China
WLL: Max Load based on approx 10:1 of MBS
/Pin:00mm, length of the bolt/pin
USES: ●=OK but not ideal
■=Leverage Cam (see p104)

	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
 	**InduVentral** W51630	**FIXE**		£42 $53 €48	190g 6.7oz	120 x 80 x 32mm 4.7 x 3.1 x 1.2"	EN567 EN12841B
	**Ninja** Ninja	**HARKEN**		£150 $190 €174	272g 9.6oz	121 x 76 x 37.5mm 4.75 x 3 x 1.5"	EN567 EN12841B
	**Compact** D41	**HEIGHTEC**		£51 $72 €60	160g 5.6oz	115 x 75 x 23mm 4.5 x 3 x 0.9"	EN567 EN12841B
	**Sync** D44	**HEIGHTEC**		£56 $70 €65	140g 4.9oz	95 x 75 x 25mm 3.7 x 3 x 1"	EN567 EN12841B
	**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
 	**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
	RP229	**ISC**		£51 $82 €59	130g 4.6oz	116 x 75 x 24mm 4.6 x 3 x 1"	EN567

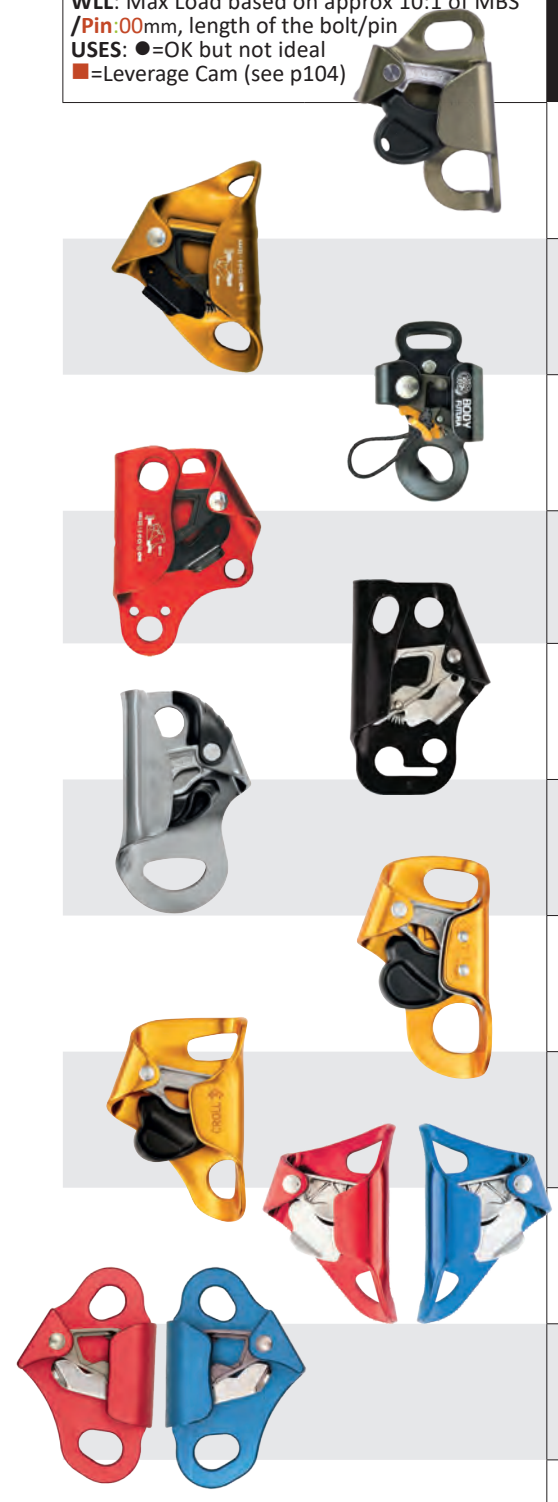


HAND & CHEST ASCENDERS

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 -1/2"	100kg 220lb	*15mm 0.6"	■	■	■	-	■	■		*15x18mm	edelweiss-ropes.com
Stamped Alu Alu		8-12mm 5/16 -<1/2"	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
Stamped Alu Cast Steel		9-13mm 3/8 -1/2"	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 3/8 -1/2"	100kg 220lb	15mm 0.6"	■	■	■	■	-		■		heightec.com
Stamped Alu ardened Steel		10.5-12mm 7/16-<1/2"	100kg 220lb	*<50mm <2"	■	■	■	-	■	■		*Fixes direct to chest harness webbing but can still be detached. Only sold with chest harness.	heightec.com
Stamped Alu ardened Steel		10-13mm 3/8 -1/2"	100kg 220lb	16mm 0.6"	■	■	■	-	■	■			heightec.com
Stamped Alu ardened Steel		8-13mm 5/16 -1/2"	100kg 220lb 5kN 1124lbf	*17mm 0.7"	■	-	-	-	■	■ ■		*17 x 21 mm Good luck finding this-see Kong for original model!	honeywellsafety.com
Stamped Alu tainless Steel		9-13mm 3/8 -1/2"	140kg 308lb 2.5kN 562lbf	*17mm 0.7"	■	-	■	-	■			Also rebadged by Checkmate, Stein, WestfallPro and others. *17 x 21 mm	iscwales.com



images approximately to scale
COST: Approx & inc local tax/VAT
CURRENCY CONVERSION ONLY. * FOB China
WLL: Max Load based on approx 10:1 of MBS
/Pin:00mm, length of the bolt/pin
USES: ●=OK but not ideal
■=Leverage Cam (see p104)



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
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
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
Modular 875	KONG		£42 $68 €44	170g 6oz	114 x78 x25mm 4.5 x 3 x 1"	NFPA-L EN567 UIAA
Ventral FA7001500	KRATOS SAFETY		£51 $64 €55	160g 5.6oz	115 x 75 x 21mm 4.5 x 3 x 0.8"	EN567
Basic B18BAA	PETZL		£53 $88 €55	85g 3oz	104 x 64 x 30mm 4 x 2.5 x 1.2""	EN567 EN12841B UIAA EAC
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
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
UltraLight CD201L/202L	PROTEKT		£31 $38 €35	135g 4.8oz	110 x75 x 30mm 4.4 x 3 x 1.1"	EN567
TREEUP CD201/202	PROTEKT		£35 $43 €40	220g 7.8oz	134 x 86 x 28mm 5.3 x 3.4 x 1.1"	EN567

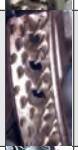
HAND/CHEST ASCENDERS

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
Stamped Alu ardened Steel		8-13mm 5/16 -½"	100kg 220lb 5kN 1124lbf	*17mm 0.7"	■	-	-	-	■	■ ■		*17 x 21 mm	kong.it
Extruded Alu ardened 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
Stamped Alu ardened 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
Stamped Alu Alu		10-12mm ⅜-<½"	4kN 899lbf 15kN 1686lbf	13mm 0.5"	■	-	-	■	■		■		kratossafety.com
Stamped Alu tainless Steel		8-11mm 5/16 -7/16"	140kg 308 lb	16mm* 0.6"	■	-	■	■	-		■	*28 x 16mm	petzl.com
Stamped Alu tainless Steel		8-11mm 5/16 -7/16"	140kg 308 lb	22mm 0.9"	■	-	■	-	■	■		stainless steel wear resistant plate fitted	petzl.com
Stamped Alu tainless Steel		8-13mm 5/16 -½"	140kg 308 lb	22mm 0.9"	■	-	■	-	■	■			petzl.com
Stamped Alu Steel		8-12mm 5/16 -<½"	4kN 899lbf	21mm* 0.8	■	-	-	-	■	■	■	21.8x23mm Also badged as Proverti	protekt.pl
Extruded 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

images approximately to scale
COST: Approx & inc local tax/VAT
CURRENCY CONVERSION ONLY. * FOB China
WLL: Max Load based on approx 10[illegible] of M
/Pin:00mm, length of the bolt/pi
USES: ●=OK but not ideal
■=Leverage Cam (see p104)

	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
 	**Chest**	**ROCK EMPIRE**		£48 $59 €54	163g 5.7oz	118 x 78 x 32mm 4.6 x 2.8 x 1.2"	EN567
	**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(?)
	**Chest**	**S-TEC**		£38 $48 €44	160g 5.6oz	118x80x30mm 4.6x3.1x1.2"	EN567
	**Chest Croll** RA009	**SAR PRODUCTS**		£54 $69 €63	130g 4.6oz	105x74x23mm 4.1x2.9x0.9"	EN567 EN12841B UIAA
	**Cam Clean**	**SINGING ROCK**		£47 $65 €54	125g 4.4oz	100x70x35mm 4x2.75x1.4"	EN567 EN12841B
	**Chest (AC30)**	**SKYLOTEC**		£45 $60 €57	140g 4.9oz	118x79x30mm 4.6x3.1x1.2"	EN567 EN12841B UIAA
	**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
	**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
	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

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

images approximately to scale
COST: Approx & inc local tax/VAT
CURRENCY CONVERSION ONLY. * FOB China
WLL: Max Load based on approx 10:1 of MBS
/Pin:00mm, length of the bolt/pin
USES: ●=OK but not ideal
■=Leverage Cam (see p104)





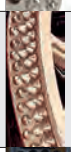







MODEL	COMPANY	ORIGIN	COST Currency conversion	WEIGHT	DIMENSIONS Width x Height x Depth	STANDARDS	A
Hoist (AB20)	SKYLOTEC (ANTHRON)		£62 $70 €67	150g 5.3oz	104 x 75 x 30mm 4.1 x 3 x 1.2"	EN567 EN12841B UIAA	S
Get Up H-210	SKYLOTEC		£101 $125 €115	123g 4.3oz	129 x 122 x 66mm 5 x 4.8 x 2.6"	EN567 EN12841B	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

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

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The job of an arborist is like no other. Accessing and moving through the branches of a tree requires unique skills, techniques and equipment. Petzl provides class leading equipment solutions so that teams like Canopée Verticale and Libert'Tree, shown here pruning a tree in Annecy, France, can be highly efficient in their work.



A tree care solution that includes a STRATO VENT helmet with a nape protector and VIZEN MESH face shield, EJECT friction saver, SEQUOIA harness, ZIGZAG PLUS and FLOW 11.6 mm rope. petzl.com

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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







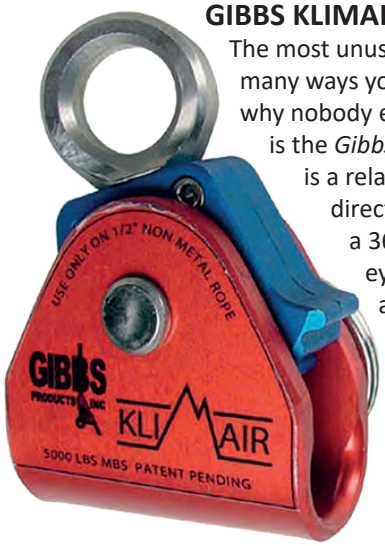
world it is now largely confined to the sports catalogue. See Emag#22 for discussion of the *Shunt*'s revised capabilities as of 2011. Despite the multi-roles it had when first introduced, the *Shunt* is now sold only as an abseil/rappel backup device. However, it can obviously still function as an ascender. 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

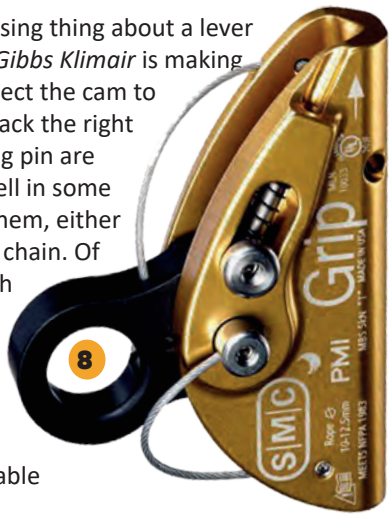


The most unusual model and in many ways you have to wonder why nobody else ran with this, is the *Gibbs Klimair*. This is a relatively small bi-directional model with a 360 degree swivel eye and removable axle-pin. Instead of mounting the cam eccentrically so that the cam will only allow rope to feed 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

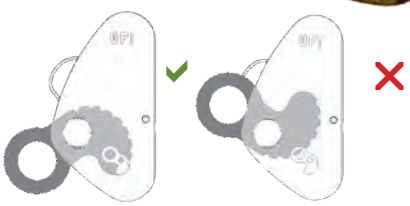


Don't be fooled by the delineation of Gibbs models into Sport, Rescue and Arborist models. Arborists usage will cross into all three Gibbs Categories so, apart from the *Klimair* and bolted models intended more for flip lines/lanyards, use the data in the tables to decide which model best suits your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



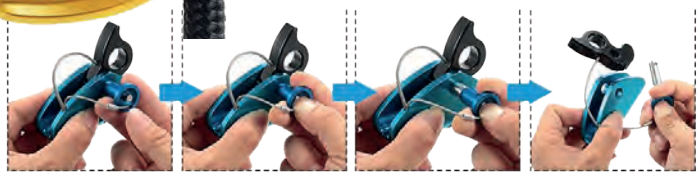
As just mentioned, the wire loop you see on most cams not only keeps the cam connected, it also acts as a spring to maintain enough load on the cam to hold it in position on the rope when not loaded. With no spring, the cam is effectively free-running and this means it doesn't have to be manually moved 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.





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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 98.....

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

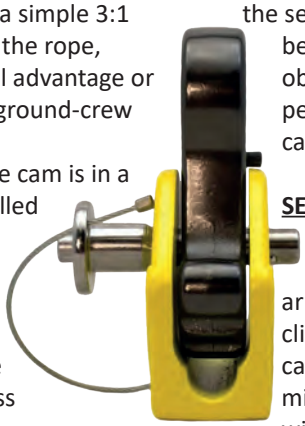
LANYARD ADJUST is LENGTH ADJUSTING for longer lanyards or FLIP LINE/POLE STRAP. Any camming device, whether it's an ascender or a descender or both, will function as a length adjuster on a lanyard or flip line. Here we are primarily concerned with flip-lines/pole straps because the longer work positioning 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



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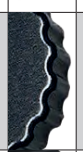
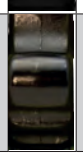
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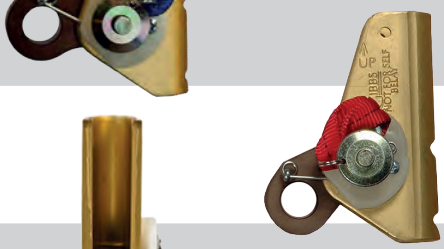
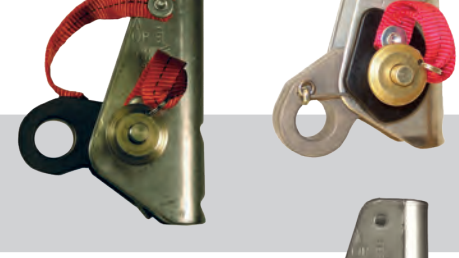
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CURRENCY CONVERSION ONLY. * FOB China
WLL: Max Load based on approx 10:1 of MBS
/Pin:00mm, length of the bolt/pin
USES: ●=OK but not ideal
■=Best Suited to this use

MODEL Product Code	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

ROPE GRABS

MATERIALS SHELL CAM	CAM	ROPE DIAM RANGE	WLL/ MBS	EYE DIAM	FIXED	DETACHABLE	SERIAL NO.	LANYARD ADJUST	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

images approximately to scale
COST: Approx & inc local tax/VAT
CURRENCY CONVERSION ONLY. * FOB China
WLL: Max Load based on approx 10:1 of MBS
/Pin:00mm, length of the bolt/pin
USES: ●=OK but not ideal
■=Best Suited to this use

	MODEL Product Code	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

MATERIALS SHELL CAM	CAM	ROPE DIAM RANGE	WLL/ MBS	EYE DIAM	FIXED	DETACHABLE	SERIAL NO.	LANYARD ADJUST	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

images approximately to scale
COST: Approx & inc local tax/VAT
CURRENCY CONVERSION ONLY. * FOB China
WLL: Max Load based on approx 10:1 of MBS
/Pin:00mm, length of the bolt/pin
USES: ●=OK but not ideal
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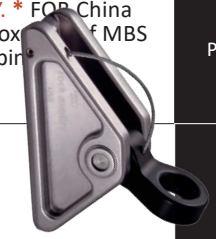


MODEL Product Code	COMPANY	ORIGIN	COST	WEIGHT	DIMENSIONS Width x Height x Span-Frame/Pin	STANDARD
Mini Ropegrab RP209	**ISC**		£65 $94 €82	180g 6.4oz	65 x 85 x 32/62mm 2.6 x 3.4 x 1.3/2.4"	EN353-2
Ropegrab RP205	**ISC**		£67 $93 €85	302g 10.6oz	99 x 98 x 40/67mm 3.9 x 3.9 x 1.6/2.6"	EN567
Ropegrab RP204	**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

ROPE GRABS

MATERIALS SHELL CAM	CAM	ROPE DIAM RANGE	WLL/ MBS	EYE DIAM	FIXED	DETACHABLE	SERIAL NO.	LANYARD ADJUST	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

images approximately to scale
COST: Approx & inc local tax/VAT
CURRENCY CONVERSION ONLY. * FOR China
WLL: Max Load based on approx[illegible] MBS
/Pin:00mm, length of the bolt/pin
USES: ●=OK but not ideal
■=Best Suited to this use

MODEL Product Code	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

ROPE GRABS

MATERIALS SHELL CAM	CAM	ROPE DIAM RANGE	WLL/ MBS	EYE DIAM	FIXED	DETACHABLE	SERIAL NO.	LANYARD ADJUST	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 bu[illegible] enough details a[illegible]	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

images approximately to scale
COST: Approx & inc local tax/VAT
CURRENCY CONVERSION ONLY. * FOB China
WLL: Max Load based on approx 10:1 of MBS
/Pin:00mm, length of the bolt/
USES: ●=OK but not ideal
■=Best Suited to this use

MODEL Product Code	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

S	MATERIALS SHELL CAM	CAM	ROPE DIAM RANGE	WLL/ MBS	EYE DIAM	FIXED	DETACHABLE	SERIAL NO.	LANYARD ADJUST	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

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HANDLED ASCENDERS







TOP: CAMP TurboHand Pro with additional guide/eye reinforcement at the bottom and rope deviation roller at the top. MIDDLE: The original Swiss Jumar but this very model is still on the Australian 3M/DBI Sala website rebadged as a Rollgliss 'rope-gripping handle'! Opposite Page: Top- The spacious CMI Expedition Twin. Below that is the moden version of a Jumar (doubled in this case) by Swiss Rescue but may already be discontinued. LEFT: Petzl Ascentree double handled, double cam ascender with custom-built frame as distinct from bolting two regular ascenders together.

Unusually for the history of SRT development, it wasn't the cavers we have to thank for handled ascenders it's mountaineers; this time in the guise of the mythical Swiss *Jumar.* Ascender development actually stems from a handled version before being pared down to the hand, chest and foot variants. *Jumar* was years ahead of its time and is a design that wouldn't look out of place today (inset pic right). The original versions from the 60's were grey but after some failures resulting from weakness in the bottom eye and subsequently the frame when the eye was removed, this evolved into the much tougher, vivid yellow signature colour of the so-called *Jumar 79* after its year of introduction. This became my first handled ascender and they served me well for a decade even while experimenting with others. *Jumar* cornered the market to such an extent that they did a 'Hoover' and turned themselves into a verb, to Jumar or Jumaring as a more precise description of using a mechanical device to climb a rope. 'Ascending' has become the modern generic term but this could equally describe my Great Grandad taking 3 days to get up a flight of stairs. *Swiss-Rescue* continued to produce a newer version of the *Jumar* and fountain-of-all-knowledge Doc Storrick has a double rope version but I'm not sure if this is a home-made conversion since it uses a single bolt through the middle of two handles (pic opposite) but we couldn't find any contacts or details on *Swiss Rescue/Pewatec*'s website so we're guessing they're no longer produced. If they are still produced someone needs to have a word about their marketing, it sucks but it's clear that this model shares a lot of ancestry with *Protekt's Proverti* you're interested. Next on the icon list was the '*Clog*', another Denny Moorhouse invention and the first of the plate metal rather than cast and extruded models. He incorporated a wider hand opening to better fit a gloved hand and an ergonomic plastic grip. I'm not entirely sure that the *Jumar* can have pre-dated the *Clog* by much since this too was born in the 60's and carried on until '85 when *ClogWales* was bought by *Wild Country.* Denny then continued the good fight with *ISC* and its own iconic modern ascenders. I used both *Jumars* and *Clogs* for a few years with the *Jumar* hand profile being considerably smaller than the *Clog*. Both *Kong* and *Petzl* launched into the fray in the 80's, *Kong* with some revolutionary ideas including their '*Cam Clean*' chest and hand ascenders and *Petzl* with their market-leading handled *Expedition* ascender. I was, by then, an avid *Petzl Stop* user but I bypassed the *Petzl Expedition* in favour of *CMI's Ultrascenders* and then to *SRTe*'s Explorer (now *3M/Sala* and may be discontinued) both of which I used throughout the 90s and noughties. Both are ultra hard-wearing, heavy duty ascenders. Not that I'm overweight and likely to tax a standard ascender (at least not back then) but we often pushed the envelope beyond their design and certified loading so it was just more prudent to go with the highest strength options. I haven't yet changed from my trusty *SRTe* system but I do like the *CAMP Turbo* model pictured here and will probably make a last kit-switch to those for what's likely to be my last set of gear before I start trying to beat Great Grandad's stair-ascending record.

IT'S ALL ABOUT TECHNIQUE

The traditional, and most basic ascending system, pioneered in mountaineering is often called a *Jumar* system later modified into the *Texas Rig*. The *Texas Rig* uses two handled ascenders (or two bootlaces if you're James Bond). One will be attached to a footloop via a length of rope or webbing a few feet long, the other will be attached direct to the sit section of your harness. There should also be a web or rope link between the footloop ascender and the harness as a backup safety in the event of failure or slippage on the harness ascender. In contrast, true Jumaring as used by mountaineers was seen by many to be an etrier (tape ladder) attached to each ascender - it might look cumbersome but it gives a great range of options.

If we put aside double rope ascenders discussed separately overleaf, most arborists currently use a single handled ascender together with a foot ascender (or floating knee system) and/or a chest ascender. Chest ascenders are the more common rope access and caving system while foot ascenders are

HANDLED ASCENDERS





more common in arb work. Many will use a hybrid auto-locking descender as a second ascender; it creates more drag than a regular ascender but allows rapid changeover from ascent to descent when manoeuvring around a canopy. Whichever system you use, there is one important scientific principal to consider - centre of gravity. If you sit on the floor with your feet out in front of you and you try to stand up what do you do first? On a Saturday night you might simply try to lunge your backside and upper body upwards while your feet are still out in front and wonder why you've smacked unceremoniously back down (everyone else will know why). On a work day, you would bring you feet inwards and as far under your backside as possible before attempting to stand. Foot ascenders can mitigate some degree of poor technique but on the whole, smoothness of progress and conservation of effort is best when you get your centre of gravity right over your feet and you have smooth upward progress of the ascenders WITHOUT pulling the handle out at an angle - keep them straight or they will catch and stall your progress. Everyone should first learn to ascend with a basic Jumar or Texas system because if you can do that efficiently every other ascending system is a piece of cake. On the other hand, if you only ever ascend on something like a full Mitchell 3-phase system with top ascender, chest roller, knee-cam, foot ascender and weird bits of elastic you might come a cropper if you ever need to do a James Bond and use your bootlaces to escape certain death. Don't say we didn't warn you.

OTHER HANDLED ASCENDER FEATURES

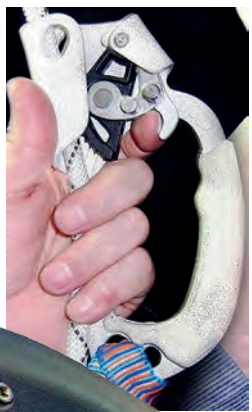
That obvious top eye has traditionally been used to clip a carabiner serving three purposes:

1) an added safety to stop the cam enclosure 'unfurling' allowing the cam to invert under high load but these days mitigated by other design features

2) to clip a carabiner around the rope thus ensuring the ascender cannot detach completely

3) as a hauling aid or to anchor for use in a haul system.

Otherwise, a sprung safety catch now stops the cam from opening wide enough to release the rope. The catch can also be disengaged and parked (CAM-PARK in our tables) by clipping open on the cam enclosure to make it easier to get on and off the rope. However, if it clicks to the disengaged position too easily during use you could be in for a scary drop. You rarely downclimb by releasing the safety catch and should instead press or 'thumb' the cam where sideways and/or downward pressure from your thumb or finger on the cam itself is enough to release the rope but it will then 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 pic above right shows *Black Diamond's Index* with a cam that can be 'thumbed' from both sides; thumb in the normal way and your index finger on the back face, hence the name.



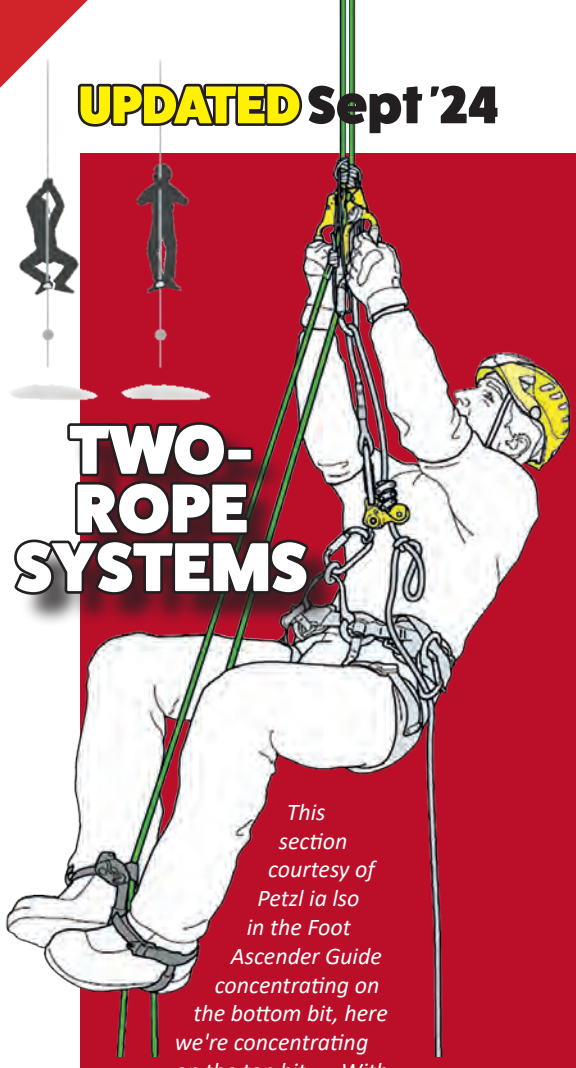
Even more unusual is a supremely Russian answer to a problem you didn't even know existed- what to do when you want to downclimb but are using a right handed ascender as a left handed ascender.....add an extra curved hook thingy to allow you to push the cam off the rope with your trigger-finger. This picture also shows the traditional tie off for webbing by larks-footing the bottom eye(s) as mentioned below.



The *CMI Twin* (pic right) has a pip-pin keeping the cam from opening until you depress the end of the



TWO-ROPE SYSTEMS



This section courtesy of Petzl ia lso in the Foot Ascender Guide concentrating on the bottom bit, here we're concentrating on the top bit.....With the modern emphasis on safety using double ropes, this system, courtesy of Petzl, uses con-joined hand ascenders (backed up with prusiks and attached to the ZigZag for easy direction reversal) and a pair of foot ascenders in a conventional sit-stand method which could become the norm or it may remain on the peripheries of systems actually being used. This system helps complicate the DRT/DdRT and SRT/MRS discussion elsewhere in this issue (as it was in issue 13) because it could be that this climber is on a Doubled Rope or DdRT where the rope is simply looped over a branch or through a ring(s) on a cambium saver. Or it could be a Double Rope or DRT using two separately anchored ropes. Of course if you really want to get fussy this could be the same rope with two terminations tied in the middle and attached to the same or two separate anchors - does that make it Single Rope Technique because it's one rope and if it's DdRT isn't that defined as MRS or Moving Rope System in the new terminology? But this one is Stationary? In fact, if this is a doubled rope that isn't tied off and the foot ascenders are con-joined in the old inch-worm style, the rope will indeed be stationary. But if two separate foot ascenders are used , a DdRT rope NOT anchored at the top will actually move a little with each step with some small degree of mechanical advantage - so back to an MRS then? My head still hurts from the last time we mentioned all this.



pin and remove it while the *Kong Trender* (pic left) has a carbine hook attached to a short wire to similarly stop the cam disengaging. On both these models, the pin/carbine hook are in addition to the normal cam safety catch that you see on other ascenders and the *Kong* even has a debris trap above the cams so these seem like quite extraordinary measures. I can't remember if these were on the very first versions and one wonders if there was unintentional cam opening on the first versions that prompted installation of these backups? Nevertheless, for arborists and the greater risk of debris from above opening or jamming the cam, these are reassuring extra measures.



The holes at the bottom are for a carabiner or *Maillon* and usually connect to a footloop. There is often a second hole which can be used to attach a cowstail which would otherwise need to be clipped into the carabiner in a single-hole ascender. In the original *Jumar* designs webbing was wrapped around the frame rather than trusting to a single eye which, in early stamped models was also pretty thin and not so nicely finished as the modern stamping affords. Nevertheless there is no doubt that if you were connecting direct to webbing the strongest option would be the extruded frame models with their wide cross-section rather than the thin plate of a stamped frame. The old *SRTe Explorer* (now S*ALA/Rollglis* and unfortunately virtually gone from the market) had a reinforcing ring on one of its two bottom eyes. This not only strengthens the eye and prevents wear, it also makes the eye more textile-friendly for those connecting their foot loop or cow's-tail direct to the ascender without a *Maillon*/carabiner. The extra material around the eye on the *CAMP TurboHandPro* shown in our titles is a stainless rope guide but has a secondary function as reinforcement of the eye; this model also has a roller to allow deviated rope-entry (left) when inverting the ascender as a haul cam. This picture also nicely illustrates the other main use for the bottom eye we were just discussing.

CHINESE & RUSSIAN MANUFACTURE

Hard to track down and verify are most Russian companies though we have kept *KROK* in. Like Israel they often develop their own incredibly unique and interesting products but unfortunately also copy competitor products far too closely. Currently Russia is a sanctioned state so you couldn't buy their stuff even if you wanted it but there may come a time when their current bizarre dictatorship collapses or is overthrown and they return to a normal democratic state. China is an ongoing problem for us because so many prominent companies in the access and rescue sectors buy in Chinese products to rebadge as their own. We have only recently started including Chinese companies under their own names because some have transparent and comprehensive website and can be contacted for information most notably *Anpen, ASAT*. But no sooner had we included *Xinda* products in a previous guide than they were seriously called out by trading standards in the US and Europe for having helmets that were virtually ALL mislabelled as meeting standards that they absolutely did not and it doesn't get any more dangerous than that. In this GUIDE we can be fairly sure that the companies have satisfied themselves of the quality and standards adherence but we remain a little bit sceptical because companies like *Lixada, Magideal, GM, New Doar, SOB* and *Xinda* are difficult to track down. We've cautiously included the *Xinda* model because it is well spec'd but don't take that as an endorsement.

HANDLES & ERGONOMICS



Given the amount of load you'll be applying to the handle it's important that this fits nicely in the hand even with a glove on; provides appropriate grip and remains comfortable when you apply load for a sustained period. The first thing you'll need to ascertain is whether your hand will actually fit comfortably in the gap provided. You will see a number of models with quite prominent finger indents rather than a uniformly round handle grip. Compare the *Climbing Technology* and *ISC* handles above right with the more conventional *Black Diamond* handle above Left.. If they fit your hand then these will offer both comfort and enhanced purchase and efficiency, particularly noticeable when pushing up when you're tiring. The top protrusion is the most pronounced feature on many models and acts in a similar fashion to the hilt of a sword; it stops your hand sliding up the handle and has your index and middle fingers nestled either side as per the picture on the left However, in true Goldilocks tradition, if your hand is a little too large or too small these prominent ridges can be uncomfortable. Try the grip in your stockist - some may even give you the opportunity to apply some weight on rope which is worth doing and comparing. Just because a handle has no Loch Ness monster curves doesn't necessarily mean it's not as good. Many purists will swear by the cleaner lines of a smooth handle and in the case of the *BD Index* top-left, the black inner face is a more tactile material than simply a smooth plastic so they might argue that they provide just as much grip as the green ISC handle above, just in a different way.



Other quirkyness in handles comes from *Beal/Edelweiss's HandsUp/A16* (left) which carries on where *Kong*'s now discontinued *ProCave* (right) started with a 'shelf' to allow your second hand to be used on the same ascender hence there is no left hand version. *Black Diamond*'s now discontinued *N-Force* (top-right) had a pivotal attachment to the cam at the top and bottom of the handle. This was another innovation first used by Kong in the early eighties and then dispensed with so it's odd that *BD* felt it had enough merit to make a return









HANDLED ASCEN

but it does impart a proportionally higher load on the rope so that means it will grip all kinds of rope well but equally may mean you have to be more careful about imparting a shock load as the forces will multiply at the cam-rope interface. This may explain why it is no longer made? Inadvertent force is something you have to beware of with all toothed cams but this could be something as seemingly benign as sitting back too hard on reset.



Grivel's A&D (right) has a built in brake bar rack allowing you to use a carabiner as the brake bar to create a descender making quite sure that your cam is in the locked-the-hell-outa-the-way mode. This would certainly be the quickest changeover option but is clearly aimed at mountaineers rather than arb or industry. However, f you had to have a handled ascender, it's useful to have one that could do this.

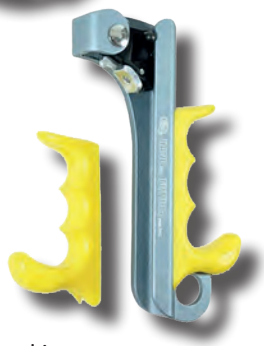


Climbing Technology have their double ascender mentioned opposite but they also have the QuickRoll (below-right) which is their Quick Up ascender with an integrated pulley. (*KROK have one too but we haven't included it, they're lucky we included the DoubleCam given how close both models are to both CT originals!*) This is for immediate creation of a mechanical advantage system when added to a descender or a pulley. The pulley itself isn't rated for human loading in the same way as the rest of the ascender even though it takes up to a creditable 2kN loading. You really have to treat it as a separate entity that doesn't improve personal safety because it's doing a different job - like a vanity mirror in your vehicle's sun-visor - it doesn't get mentioned in the NCAP safety-in-a-crash ratings but it's handy for checking your hair.





Yet another one from *Kong* - they certainly don't sit around procrastinating do they - is the *Futura* which is one of the smallest designs on the market because it has an external handle unlike every other model in this guide which has an enclosed frame. This means the size of hand is not limited in any way but has also allowed Kong to give you a swap-out handle with different finger sizing for a better fit. .



DOUBLES







You could create your own double rope ascender quite easily by gerry-rigging two handled ascenders back-to-back with some strong cable-ties and a couple of carabiners. Since there is no specific standard for a double rope descender and your two single ascenders are still operating in their certified role this might, unusually, not contravene any standards or safety issues. With a carabiner or maillon linking the two at the bottom they cannot separate and a sturdy cable-tie or two can withstand any tendency to slide apart if one is loaded while the other isn't. Some companies have pretty much done just this but they have at least used bolts and rivets that are absolutely secure.

So a commercially available double ascender can mean one of four things:

- double cams on an otherwise single handled ascender like the *Miller/Komet (left)* and *CMI* models below left
- Double cams with two handles which are two con-joined ascenders like the six examples far right, four of which are side-by-side and intended ONLY to be used with 2 ropes. The *Petzl* and *Fusion* use custom frames rather than a joining bracket.
- Single cam on a double handle like the *CMI Expedition* and *KROK* on the right. These are unique and are really a fully grown version of what the Beal Hands Up and Kong Caver aimed with their extra shelf for your second hand.















It is more unusual for both *CMI* and *Komet* (above left), in the new guise of *Honeywell,* to have opted for double cams on a single handed ascender. *CMI's Twin* has the ability to move both cams with one 'trigger' finger via a split ring which seems a little bit of an afterthought in terms of design but does nevertheless do the trick. Both of the Italian models have opted to have a debris shield on top of the cams - this is to stop ingress of hard material or vegetation that might stop the cams from closing properly - a possibly catastrophic scenario. Odd that this isn't found on EVERY ascender since all have this same failure potential and particularly during tree climbing.



The top eye mentioned earlier as a means of stopping cam inversion and for clipping the ascender to the rope so that it cannot completely detach is still present though unlikely to be necessary if you have two opposing cams engaged simultaneously. However this eye can also be used to anchor the ascender when used as part of a haul system or to haul it up or along a rope during reset.

The Ascender standard En567 is carried out on single rope so it's a little misleading in terms of the side-by-side models (top 4 pics above)intended to be used on two ropes at all times whereas the back-to-back models can still be used more easily as single rope ascenders. Petzl had this to say about the CE listed in theirs (and CT's) entry: *the Ascentree is not EN567 or 12841 as Petzl do not consider that ascenders used on a 'doubled rope' can fall within the current EN standards. These standards are written for devices used on a single rope, which is clearly not how they are used. To test on a single rope would not be representative and could give false data. Petzl have carried out their own testing in realistic scenarios and offer the product knowing that it has an appropriate level of performance for the techniques illustrated in the product instructions.*

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. You will be able to spot a number of rebadged items in these tables. as usual there are two or three key Chinese companies that make for several US and European companies.

COST: approximate, rounded up and inclusive of local taxes which are generally from 10% and more often 20% in Europe

WEIGHT: for a single ascender except the double versions obviously which still count as a single ascender

DIMENSIONS: Width x Height x Depth/thickness but this last one is not always given - the thickest part will generally be the cam enclosure but occasionally it may be the handle if it is moulded into something akin to a joystick handle on one of those stuffed toy grabbing cranes at an amusement arcade. Also note that this figure can vary from reality of they don't include protruding rivet heads etc.

MATERIALS: When we say 'Alloy' we mean Aluminium Alloy unless otherwise specified.

STANDARDS: for CE these fall into two categories EN567 is the main ascender standard to which all single rope models in this list meet and shown as 'CE' . This is the also standard that the rope diameter ranges meet - usually 8-13mm. There is also EN12841 type B for rope adjusters which also takes in a number of hybrid and descent/fall arrest devices and this requires a slightly larger diameter rope as the lower limit - usually around 10mm. Some of these ascenders meet that standard but a handled/toothed ascender really only has two jobs - ascending and pulling!

ROPE DIAM RANGE: It is best to always use the millimetre sizes in ALL of our MARKET GUIDES because the fractional inch equivalents are just too widely spaced. 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 only 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 for any models meeting CE is based on EN567; other uses meeting EN12841- B will require a rope that is at least 2mm larger in diameter.

WLL: 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. This was a problem with early stamped models and is now mitigated by a small button or 'crease' in the frame which stops the cam from flipping upwards under high load resulting in an unstoppable downward slide - on that ascender at least - this is why some systems like the Texas Rig, tie the second ascender to the first ascender via a harness tie-in. Incidentally, Skylotec/Anthron and the Russian KROK quote 15, 20 and 18kN (the KROK website figures are different to model images) as a breaking strength of the frame and 4kN as a Working Load Limit which presumably DOES NOT account for rope failure. ***Some of these ascenders list a Working Load Limit of 100kg/220lb which is probably simply a nod to minimum standards requirements but, for a fully kitted climber is way too low for operational requirements in a work/rescue environment. These have a huge safety margin to the actual MBS but you could still have insurance problems if something goes wrong and you are deemed to be applying, let's say a 120kg load to an ascender showing 100kg as the working load limit?***

The **MBS** figure is largely irrelevant as it refers to the strength of the frame, or to be more exact the eyes at each end. If you were to use the frame 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. For those that meet EN12841-B there is a minimum 100kg requirement so this might be the figure quoted for WLL here even though it may be capable of a higher working load.

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.

ANTI CAM-INVERT: This is now a custom-incorporated button or pinch of frame material to stop the cam 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.

TWIN ROPES ONLY: The double ascenders that use two single rope ascenders connected side by side to facilitate twin rope working are imbalanced if you only use one rope and are designed specifically to be used on two ropes simultaneously at all times. You can use just one rope but it's cumbersome and the ascender will tend to fall to the unweighted side when you take your hand off it.

DOUBLE ROPES: The ability to operate on two ropes simultaneously. Those ascenders without a black square in the TWIN-ONLY column will operate just as easily on one rope, they're just a little heavier and bulkier than usual.

COLOURS: different model colours are separated by a comma. A forward slash/ indicates two (or more) colours on one model. Most companies make their left had and right hand in two specific colours and for a while we thought the original Petzl colour scheme of Gold for right, Blue for left, might become an industry wide norm. But no, it's now a veritable rainbow of colours, usually with a different colour for each but some use the same colour and many offer just black for both left and right for the tactical and theatre markets. The left hand ascender colour is shown in burnt orange.

IMAGES NOT TO SCALE
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Prices in £$€= Currency Conversion ONLY
WLL: May be Max Load based on approx 10:1
N/A: info Not Available/not given
COLOURS =Body colour.

























MODEL	COMPANY	ORIGIN	COST	WEIGHT	DIMENSIONS Width x Height x Depth
Explorer	3M/ DBI SALA/ ROLLGLIS		£117 $127 A$200	386g 13.6oz	212 x 88 x 30mm 8.3 x 3.5 x 1.2"
Move Up	ALPIDEX		£31 $39 €35	240g 8.5oz	205 x 103 x 27mm 8 x 4.2 x 1.1"
A11/A10 (A14)	ANPEN		£70 $86 €80	136g 4.8oz (210g 7.4oz)	205 x 93mm 8 x 3.7"
HA-R/L	AT HEIGHT		£52 $90 €77	225g 7.9oz	205 x 101mm 8 x 3.7"
Hands Up	BEAL		£63 $79 €72	265g 9.3oz	235 x 110 x 35mm 9.25 x 4.3 x 1.4"
Index	BLACK DIAMOND		£80 $85 €91	200g 7oz	188 x 90 x 28mm 7.4 x 3.5 x 1.1"
Turbohand	CAMP		£52 $90 €77	185g 6.5oz	185 x 95 x 22mm 7.3 x 3.7 x 0.9"
Turbohand-Pro	CAMP		£97 $120 €102	198g 7oz	185 x 95 x 22mm 7.3 x 3.7 x 0.9"
Expedition EXPASC	CMI		£107 $123 €112	273g 10oz	208 x 106 x 35mm 8.2 x 4.2 x 1.4"
Ultrascender ULT01R	CMI		£102 $136 €125	270g 9.5oz	188 x 76 x 29mm 7.4 x 3 x 1.12"
Mini Ultrascender ULT502	CMI		£88 $79 €73	170g 6oz	127 x 76 x 29mm 5 x 3 x 1.12"

HANDLED ASCENDERS

Eyes being added in'25

MATERIALS SHELL CAM GRIP	CAM	STANDARDS	ROPE DIAM RANGE	WLL/ MBS	TOP EYE BOTTOM EYE	CAM -PARK	ANTI CAM-INVERT	COLOURS LEFT	COLOURS RIGHT	NOTES	WWW.
Extruded Alu Stainless Steel Plastic		CE NFPA AS/NZ	10.5-13mm 13/32 -½"	600kg* 1323lbf	00mm 00" 00mm 00"	■	■	■ ■	■ ■	NB: Originally also a 16mm version in red. Previously SRTe.and may be DISCONTINUED. *600kg is to cam-failure	3m.com.au
Stamped Alu Steel Plastic/Rubber		CE	8-13mm 5/16 -½"	120kg 265lb	00mm 00" 00mm 00"	■	■	■	■		alpidex.com
Stamped Alu Steel Plastic/Rubber		CE	8-13mm 5/16 -½"	5kN 1124lbf	00mm 00" 00mm 00"	■	■	■ ■	■ ■	A14=More substantial handle and plastic covered cam release	en.anpen.net
Stamped Alu Steel Rubber		CE	9-13mm 3/8 -½"	100kg 220lb	00mm 00" 00mm 00"	■	■	■	■		atheightuk.com
					00mm 00" 00mm 00"						Expansion row
Stamped Alu Steel Rubber		CE	8-13mm 5/16 -½"	100kg 220lb	00mm 00" 00mm 00"	■	■	*	■	*single ascender only, not a pair. Comfort grip on cam enclosure when gripped with second hand	pro.beal-planet.com
Stamped Alu Steel Plastic/Rubber	n/a	CE	8-13mm 5/16 -½"	n/a	00mm 00" 00mm 00"	■		■	■	previous models grey	blackdiamondequipment.com
Stamped Alu Hardened Steel Rubber		CE EAC	8-13mm 5/16 -½"	120kg 265lb	00mm 00" 00mm 00"	■		■ ■	■ ■		camp.it
Stamped Alu Hardened Steel Rubber		CE EAC	8-13mm 5/16 -½"	120kg 265lb	00mm 00" 00mm 00"	■		■ ■	■ ■		camp.it
Stamped Alu Hardened Steel Plastic		NFPA*	9-16mm 3/8-5/8"	17.8kN 4000lbf	00mm 00" 00mm 00"	■	■	■	■	Hard-coated cam with lifetime warranty, *Also an NFPA version available +$10	cmigearusa.com
Extruded Alu Hardened Steel Rubber		NFPA*	9-16mm 3/8-5/8"	20.4kN 4600lbf	00mm 00" 00mm 00"	■		■ ■	■ ■	Hard-coated cam with lifetime warranty *NFPA version +$10	cmigearusa.com
Extruded Alu Hardened Steel None		NFPA*	9-16mm 3/8-5/8"	20.4kN 4600lbf	00mm 00" 00mm 00"	■		■ ■	■ ■	Hard-coated cam with lifetime warranty *NFPA version +$10	cmigearusa.com

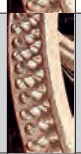
IMAGES NOT TO SCALE
COST: Approx & inc local tax/VAT
Prices in £$€= Currency Conversion [illegible]
WLL: May be Max Load based on ap[illegible]tio
N/A: info Not Available/not given



MODEL	COMPANY	ORIGIN	COST	WEIGHT	DIMENSIONS Width x Height x Depth
Hand Cruiser	EDELRID		£54 $85 €65	201g 7.1oz	188 x 103 x 34mm 7.4 x 4 x 1.3"
AS16	EDELWEISS		£57 $70 €48	240g 8.5oz	235 x 110 x 35mm 9.25 x 4.3 x 1.4"
Capitan/ (Capitan Industry)	FIXE		£38 $65 €42	270g 9.5oz	200 x 90 x 35mm 7.9 x 3.5 x 1.4"
Beklim (Voltron)	FUSION		£54 $65 €60	175g 6.2oz	191 x 89 x 27mm 7.6 x 3.6 x 1"
A1	GRIVEL		£47 $70 €49	247g 8.7oz	203 x 98 x 35mm 8 x 3.9 x 1.4"
A&D	GRIVEL		£59 $80 €54	261g 9.2oz	203 x 98 x 35mm 8 x 3.9 x 1.4"
Pulsar D40	HEIGHTEC		£51 $84 €76	240g 8.5oz	195 x 91 x 29mm 7.7 x 3.6 x 1.1"
Single	HONEYWELL MILLER/KOMET		£99 $123 €98	225g 7.9oz	193 x 90 x 25mm 7.6 x 3.5 x 1"
RP220	ISC		£93 $105 €95	130g 4.6oz	218 x 82 x 32mm 8.6 x 3.2 x 1.3"
RP221 Ultrasafe	ISC		£105 $110 €100	183g 6.5oz	218 x 82 x 32mm 8.6 x 3.2 x 1.3"

Eyes being added in '25

HANDLED ASCENDERS

MATERIALS SHELL CAM GRIP	CAM	STANDARDS	ROPE DIAM RANGE	WLL/ MBS	TOP EYE BOTTOM EYE	CAM -PARK	ANTI CAM-INVERT	COLOURS LEFT	COLOURS RIGHT	NOTES	WWW.
Stamped Alu Stainless Steel Rubber		CE UIAA	8-13mm 5/16 -½"	140kg 308lb	43 x 21mm 1.7 x 0.8" 35 x 15mm 1.8 x 0.6"	■	■	■	■		edelrid.de
Stamped Alu Hardened Steel Plastic		CE	8-13mm 5/16 -½"	100kg 220lb	00mm 00" 00mm 00"	■	■		■	single ascender only, not a pair.	edelweiss-ropes.com
Stamped Alu Steel Rubber		CE UIAA	8-12mm 5/16 -½"	20kN 2039lbf	00mm 00" 00mm 00"	■	■	■ ■	■ ■	As far as we can tell, the *Industry* has a slightly different cam and cam safety - less aggressive teeth perhaps?	fixeclimbing.com
Stamped Alu Steel Plastic		CE	8-13mm 5/16 -½"	2kN 450lbf 100kg 220lb	15mm 0.6" 26 x 16mm 1 x 0.6"	■	■	■ ■	■ ■	NB: carbon Fibre pattern not actually made of carbon-fibre.	fusionclimb.com
Stamped Alu Steel Plastic		CE UIAA	8.3-13mm 5/16 -½"	20kN 2039lbf	00mm 00" 00mm 00"	■	-	■	■		grivel.com
Stamped Alu Steel Plastic		CE UIAA	8.3-13mm 5/16 -½"	n/a	00mm 00" 00mm 00"	■	-	■	■	Ropes from 7.3-13mm for descent	grivel.com
Stamped Alu Hardened Steel Nylon		CE	9-13mm ⅜ -½"	100kg 220lb	15mm 0.6" 15mm 0.6"	■	■	■	■		heightec.com
Stamped Alu Hardened Steel Plastic		CE NFPA	8-13mm 5/16 -½"	100kg 220lb 5kN 1124lbf	00mm 00" 00mm 00"	■	■	■	■		honeywellsafety.com
Extruded Alu HardenedSteel Plastic		CE	9-13mm ⅜ -½"	140kg 308 lb 2.5kN 562lbf	00mm 00" 00mm 00"	■	-	■	■		iscwales.com
Extruded Alu HardenedSteel Plastic		CE	9-13mm ⅜ -½"	140kg 308lb 2.5kN 562lbf	00mm 00" 00mm 00"	■	■	■	■	Ultrasafe version has cam arc restiction/Anti-cam-invert pin	iscwales.com
											Expansion Row
											Expansion Row

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N/A: info Not Available/not given
COLOURS =Body colour.

MODEL	COMPANY	ORIGIN	COST	WEIGHT	DIMENSIONS Width x Height x Depth
Futura Hand/ Futura Hand Tactical	KONG		£70 $85 €75	125g 4.4oz	140 x 88 x 24mm 5.5 x 3.5 x 1"
Lift/ Lift Tactical	KONG		£49 $72 €51	225g 7.9oz	193 x 90 x 25mm 7.6 x 3.5 x 1"
FA 70 003 00 FA 70 002 00	KRATOS SAFETY		£82 $102 €60	220g 7.8oz	206 x 95.5 x 35mm 8.1 x 3.8 x 1.4"
Ascension	PETZL		£58 $100 €66	165g 5.8oz	190 x 90 x 26mm 7.5 x 3.5 x 1"
Proverti CD211/212	PROTEKT		£37 $46 €42	280g 9.9oz	207x100x28mm 8.1x3.9x1.1"
Ultralight CD211L/212L	PROTEKT		£40 $50 €45	205g 7.2oz	190 x 93 x 24mm 7.5 x 3.7 x 1"
RE Ascender	ROCK EMPIRE		£48 $60 €54	220g 7.8oz	203 x 98 x 35mm 8 x 3.9 x 1.4"
Clean Cam	SAR PRODUCTS		£60 $82 €75	216g 7.6oz	189 x 90 x 32mm 7.5 x 3.5 x 1.3"



Eyes being added in '25

HANDLED ASCENDERS

MATERIALS SHELL CAM GRIP	CAM	STANDARDS	ROPE DIAM RANGE	WLL/ MBS	TOP EYE BOTTOM EYE	CAM -PARK	ANTI CAM-INVERT	COLOURS LEFT	COLOURS RIGHT	NOTES	WWW.
Extruded Alu HardenedSteel Rubber		CE	8-13mm 5/16 -½"	n/a	00mm 00" 00mm 00"	■	■	■ ■	■ ■	two different sized grips available	kong.it
Stamped Alu HardenedSteel Plastic		CE NFPA	8-13mm 5/16 -½"	100kg 220 lb 5kN 1124 lbf	00mm 00" 00mm 00"	■	■	■ ■ ■	■ ■ ■		kong.it
Stamped Alu Steel Plastic		CE	10-12mm 25/64-½"	20kN 2039 lbf	00mm 00" 00mm 00"	■	-	■	■	002=Black 003 = Green	kratossafety.com
Stamped AluStainless Steel Plastic/Rubber		CE EAC NFPA	8-13mm 5/16 -½"	140kg 308 lb	00mm 00" 00mm 00"	■	-	■	■ ■	All -black version is two or three ££€ more	petzl.com
Extruded Alu Steel Plastic		CE UIAA	9-13mm ⅜-½"		00mm 00" 00mm 00"	■	-	■	■	Older right hand models were blue. Proverti is a wholly owned subsidiary of Protekt	protekt.pl
Stamped Alu Steel Plastic		CE	8-13mm 5/16 -½"	100kg 220 lb	00mm 00" 00mm 00"	■	■	■	■		protekt.pl
Stamped Alu Steel Plastic		CE	8-12mm 5/16 -½"	4kN 899lbf	00mm 00" 00mm 00"	■	■	■	■	Discontinued by RE but many rebadged versions inc Lixada, GM. Newdoar, Climbtech, Xinda, Grivel and Fixe	rockempire.cz
Stamped Alu Stainless Steel Soft Nylon		CE UIAA	8-13mm 5/16 -½"	140kg 308lb	00mm 00" 00mm 00"	■	■	■	■ ■		sar-products.com



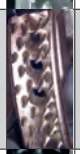
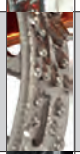
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N/A: info Not Available/not given
COLOURS =Body colour.



MODEL	COMPANY	ORIGIN	COST	WEIGHT	DIMENSIONS Width x Height x Depth
SA203	S.E.PEAK		£37 $45 €42	184g 6.5oz	191 x 89 x 27mm 7.6 x 3.6 x 1"
Lift	SINGING ROCK		£59 $70 €59	190g 6.7oz	192 x 90 x 34mm 7.6 x 3.5 x 1.3"
Lift Fix	SKYLOTEC (ANTHRON)		£62 $70 €67	216g 7.6oz	203 x 91 x 34mm 8 x 3.6 x 1.3"
CT Quick'Up+	SKYLOTEC		£66 $82 €75	215g 7.6oz	190 x 90 x 33mm 7.5 x 3.5 x 1.3"
CT Quick Roll	SKYLOTEC		£101 $120 €110	255g 9oz	190 x 95 x 35mm 7.5 x 3.7 x 1.4"
RB17	SOB		£28 $34* €32	210g 2.4oz	200 x 90 x 26mm 7.9 x 3.5 x 1"
Jumar	SWISS RESCUE/ PEWATEC		n/a	250g 8.8oz	183 x 85 x 28mm 7.3 x 3.3 x 1.1"
Passport	TRANGO		£53 $65 €60	219g 7.4oz	194 x 86 x 27mm 7.6 x 3.3 x 1"
71-257/8	TREERUNNER		£41 $44 €40	200g 7oz	190 x 90 x 25mm 7.5 x 3.7 x 1"
H-SS02	XINDA (BINGFENG OUTDDOR)		£53 $65 €60	210g 7.7oz	190 x 90 x 25mm 7.5 x 3.7 x 1"

Eyes being added in '25

HANDLED ASCENDERS

MATERIALS SHELL CAM GRIP	CAM	STANDARDS	ROPE DIAM RANGE	WLL/ MBS	TOP EYE BOTTOM EYE	CAM -PARK	ANTI CAM-INVERT	COLOURS LEFT	COLOURS RIGHT	NOTES	WWW.
Stamped Alu Stainless Steel Plastic		CE	8-13mm 5/16 -½"	2kN 450lbf 140kg 308lb	15mm 0.6" 26 x 16mm 1 x 0.6"	■	■	■ ■ ■	■ ■ ■ ■ ■		sepeak.net (often difficult to access)
Stamped Alu Stainless Steel Plastic		CE UIAA	8-13mm 5/16 -½"	120kg 265 lb 12kN 2698 lbf	00mm 00" 00mm 00"	■	-	■	■		singingrock.com
Stamped Alu Steel Rubber 'cork' compound		CE NFPA	9-13mm 3/8-½"	4kN 899lbf 18kN 4047 lbf	00mm 00" 00mm 00"	■	■		■ ■	Skylotec Germany owns Anthron Slovenia	skylotec.com
Stamped Alu Steel Plastic/Rubber		CE	8-13mm 5/16 -½"	140kg 308lb	00mm 00" 00mm 00"	■	■	■	■		climbingtechnology.com
Stamped Alu Steel Plastic/Rubber		CE	8-13mm 5/16 -½"	140kg 308lb	00mm 00" 00mm 00"	■	■	■	■		climbingtechnology.com
Stamped Alu Steel Plastic		CE	8-13mm 5/16 -½"	100kg 220lb	00mm 00" 00mm 00"	■	■	■	■	optimum rope=10-13mm [*arborists reported cam-rope interface problems with the SOB foot ascender - beware!*]	chinasob.com
Extruded Alu Steel Plastic		CE*	9-13mm 3/8-½"		00mm 00" 00mm 00"	■	-	■	■	DISCONTINUED ?	swiss-rescue.de
Stamped Alu Steel Plastic		CE	8-13mm 5/16 -½"	4kN 899lbf	15mm 0.6" 14mm 0.6"	■	■	■	■	purple Left colour discontinued	trango.com
Stamped Alu Steel Plastic		CE	8-13mm 5/16 -½"	100kg 220lb	00mm 00" 00mm 00"	■	■	■	■		grube.de
Stamped Alu StainlessSteel Rubber		CE UIAA	8-12mm 5/16 -½"	150kg 3lb	00mm 00" 00mm 00"	■	-	■ ■ ■	■ ■ ■ ■		xindaoutdoor.com
											Expansion Row
											Expansion Row

IMAGES NOT TO SCALE
COST: Approx & inc local tax/VAT
Prices in £$€= Currency Conversio
WLL: May be Max Load based 1 ratio
N/A: info Not Available/not gi
COLOURS =Body colour.










MODEL	COMPANY	ORIGIN	COST	WEIGHT	DIMENSIONS Width x Height x Depth
A10 AB	ANPEN		£107 $130 €120	540g 19.4oz	205 x 155mm 8 x 6.1"
Expedition Double	CMI		£172 $213 €196	369g 13oz	208 x 178 x 35mm 8 x 7 x 1.4"
Expedition Twin	CMI		£211 $258 €237	432g 15oz	208x106x51mm 8.2x4.2x2"
Double	HONEYWELL MILLER/KOMET		£150 $186 €170	550g 19.4oz	220x180x50mm 8.7x7x2"
Trender	KONG		£180 $240 €205	550g 19.4oz	220x180x50mm 8.7x7x2"
Ascentree	PETZL		£132 $250 €175	330g 11.6oz	190x175x51mm 7.5x6.9x2"
SA-205D	S.E.PEAK		£78 $97 €88	390g 13.7oz	195 x 165 x 50mm 7.7 x 6.5 x 2"
CT QuickArbor H	SKYLOTEC		£125 $200 €165	500g 17.6oz	160x220mm 6.3x8.7"

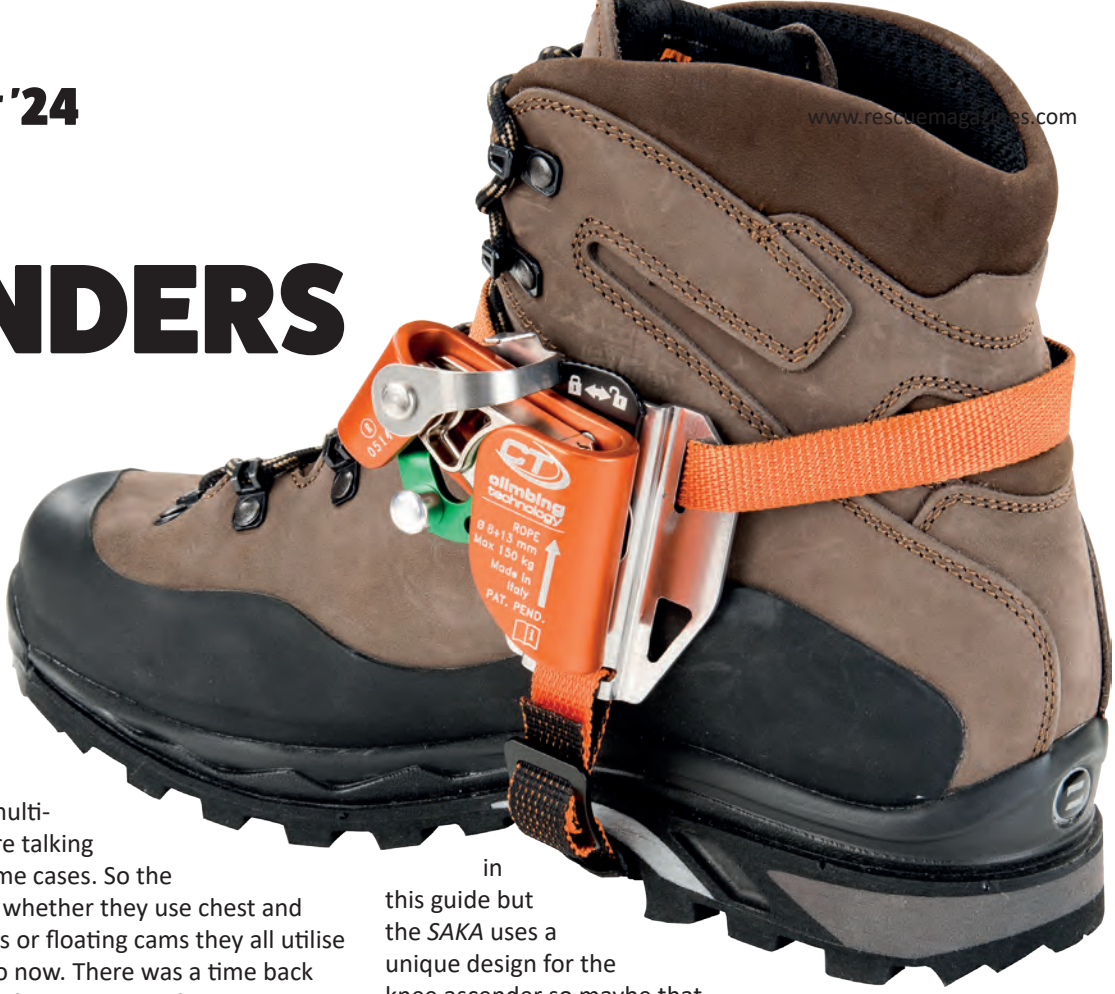
TWIN CAM & TWIN HANDLED ASCENDERS

MATERIALS SHELL CAM GRIP	CAM	STANDARDS	ROPE DIAM RANGE	WLL/ MBS	TWIN ROPES ONLY	DOUBLE &/or SINGLE ROPE	CAM -PARK	ANTI CAM-INVERT	COLOURS LEFT	COLOURS RIGHT	NOTES	WWW.
Stamped Alu Steel Plastic		CE	8-13mm 5/16 -1/2"	5kN 1124lbf	-	■	■	■	■/■	■/■		en.anpen.net
Stamped Alu Hardened Steel Plastic		-	9-16mm 3/8-5/8"	15.1kN 3400lbf	-	■	■	■	■	■	Hard-coated cam with lifetime warranty	cmigearusa.com
Stamped Alu Hardened Steel Plastic		-	9-16mm 3/8-5/8"	14.7kN 3300lbf	-	■	■	■		■	Hard-coated cam with lifetime warranty	cmigearusa.com
Stamped Alu Hardened Steel Plastic		CE UIAA	11-13mm 7/16 -1/2"	100kg 220lb	-	■	■	■		■/■		honeywellsafety.com
Stamped Alu HardenedSteel Plastic		CE UIAA	11-13mm 7/16 -1/2"	100kg 220 lb	-	■	■	■	■/■	■/■	debris ingress protection plate	kong.it
Stamped Alu Stainless Steel Plastic/Rubber		CE*	8-13mm 5/16 -1/2"	140kg 308 lb	■	-	■	■	■	■	Not EN567	petzl.com
Stamped Alu Stainless Steel Plastic		CE	8-13mm 5/16 -1/2"	140kg 308lb	■	-	■	■	■ ■	■ ■	Beklim Double discontinued by Fusion. S.E.Peak is Shanghai Leideer Trading Co but hard to pin down their own website - they use Amazon & Alibaba shops	sepeak.net (may be difficult to access)
Stamped Alu Steel Plastic/Rubber		CE	10-13mm 3/8 -1/2"	140kg 308lb	■	-	■	■	■	■	Cam cover protects from debris ingress. No depth given as the two ascenders are angled	skylotec.com
												Expansion Row
												Expansion Row
												Expansion Row 2x Russian Krok models temporarily excluded

www.rescuemagazines.com

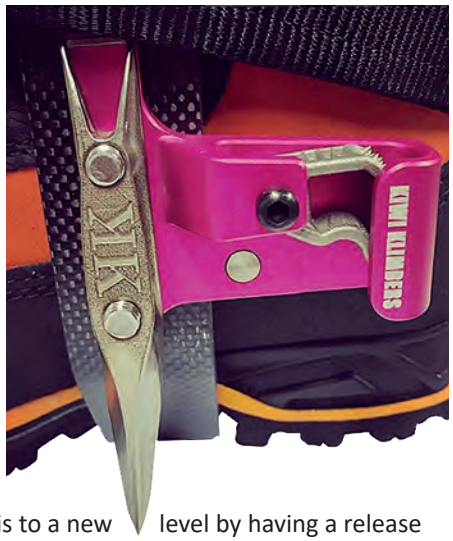
UPDATED Sept '24

FOOT ASCENDERS



Once again we have cavers to thank for inventing a genre of hardware that has only recently been pushed on to the next level of development by the impetus of arborists. Rope walking systems were developed for long single and multi-pitch ascents in caving and we're talking well over a thousand feet in some cases. So the systems had to be efficient and whether they use chest and knee combinations, chest rollers or floating cams they all utilise a foot ascender. At least they do now. There was a time back in the dark ages of 70s caving before dedicated foot ascenders when the venerable *Jumar* hand ascender - perhaps the original mechanical ascender and the reason many still use the term 'Jumaring' generically - was unceremoniously strapped to a metal bar in a kind of double stirrup formation known as a *Mar-Bar.* This was used in a sit-stand or inchworm ascending method in combination with a top ascender. It had largely seen its day by the eighties but oddly was revived for a time by *Buckingham* using *CMI Ultrascenders* and sold to arborists. It does have the advantage of being an incredibly simple and forgiving technique if all you want to do is get from point A to point B in a vertical straight line and it may well still be used to good effect by some arborists and cavers. But for the most part the *Mar-Bar* was superseded by a dedicated foot ascender which strapped to the boot with a web harness. But not always as a simple cam with a minimalist cam enclosure. I remember using a French design for a while in the early nineties, or thereabouts, that had a metal platform angling under the boot sole. This was 'bent' at right angles from the rest of the cam frame and sat snugly in front of the heel offering decent support. It's not a million miles away from an arborist spur/gaff and it's a little surprising that a similar design doesn't still exist. Probably an engineering issue with that bent heel section flexing too much and eventually cracking? Instead we now have a whole host of cams-with-boot-harness and their latest guise as direct-to-boot mounts or direct-to-spur/gaff mounts. Concurrently with foot ascenders has been the development of 'floating' cam systems at the knee like *HAAS* and *SAKA* where one leg may have a proprietary foot ascender while the other has a modified chest or foot ascender located at the knee and connected to a foot loop with a semi-rigid strap.. We haven't included these knee ascenders in this guide but the *SAKA* uses a unique design for the knee ascender so maybe that will end up being modified as new brand of foot ascender rather than use the Skylotec/*CT* model as they do now. All of these latter designs have been uniquely developed by and for arborists so it's nice to be giving something back to the cavers who don't generally have enough of a market share to drive sophisticated development.

This isn't an instructional article on how to climb so we do assume a basic knowledge of climbing using a foot ascender(s). But just to clarify the basics, the current norm for arb-work climbing is a foot ascender married to your 'descent' system to capture progress. As you stand up on the foot ascender (straighten your leg) you pull the tail rope through your descender/hybrid device, sit back/load your device and start again but not as slowly as this sentence took to write. Efficiency can be improved using an additional ascender, chest ascender etc. and various drag attachments to help self tail (pull slack rope through your devices.) The more efficient and quicker ascent systems may not include a descent-capable device at all since this causes increased friction. Now the foot ascender and its associated systems are all about efficiency. Efficiency in terms of using less energy, increasing speed and not being limited to a simple straight line ascent before having to switch equipment. Foot ascenders are the start point for most current arb systems. Arborists want to be able to get into and move around the canopy so foot ascenders also became smaller and less obtrusive. The *Petzl Pantin* was, for a long time, the market leader until it had issues with rope's falling out when the cam jammed open but its back now and hunting for top spot against a whole load of other models. Some retain the simplicity of the earliest models with a simple eye to clip a carabiner and



stop the cam opening during ascent and releasing your rope and some are a lot more technical like the *Camp Turbo* with its integral rollers and the Notch Jet-Step with its double cams, of which, more later. Most designs now have a safety cam to prevent rope coming out and some, like the *ISC Stryder* take this to a new level by having a release knob long enough to be kicked on and off with your boot - no more pesky bending to engage or disengage.

And then came bolt-on models. These will directly attach to either your boot or your spurs/spikes/gaffs. These have advantages over a webbing harness of NOT coming loose during work and being quicker and easier to put on and take off. In the case of spikes, some, like the *KiwiKlimber*s above, are semi-permanently bolted on- not that you can't take them off but it requires tools and isn't the intention so when you're not using the ascender - it's still there. Luckily it's not very obtrusive and remains the sturdiest of all foot ascender options. Latterly *CAMP* have joined the spike party with their *TurboSpike*. The *CT* model has an intermediate mounting plate (right) between the spike and the ascender (left) which is designed to resist the rotational forces that you would get when applying weight during the 'stand' phase. Again, a little bulky but it needs to be to provide a firm fix.

The midway option between direct attachment and harness attachment is a harness with an intermediate plate (right) . This seems a little superfluous, after all, you could just attach a CT foot ascender directly to the harness but this plate has a considerably smaller profile than the ascender so the ability to remove the ascender leaving just the plate means you can leave the harness on your boot with less concerns of hindrance hile walking or driving. Finally for this genre you could buy the plate separately and bolt it on to your own boots but don't come crying to us when the side of your boots rip out. We're guessing that ArbPro and CT have firm grounds to choose the specific boots they have to take a plate or lug fixing not to mention plenty of testing.

IT'S ALL ABOUT TECHNIQUE

All ascenders require good technique to operate efficiently and foot ascenders are no exception. You might think that having the ascender strapped to your foot absolves you of the need to do anything but 'walk' up the rope with an exaggerated high knee action. But you'll quickly find out that poor technique, poor posture and fatigue can all cause you to align the rope to



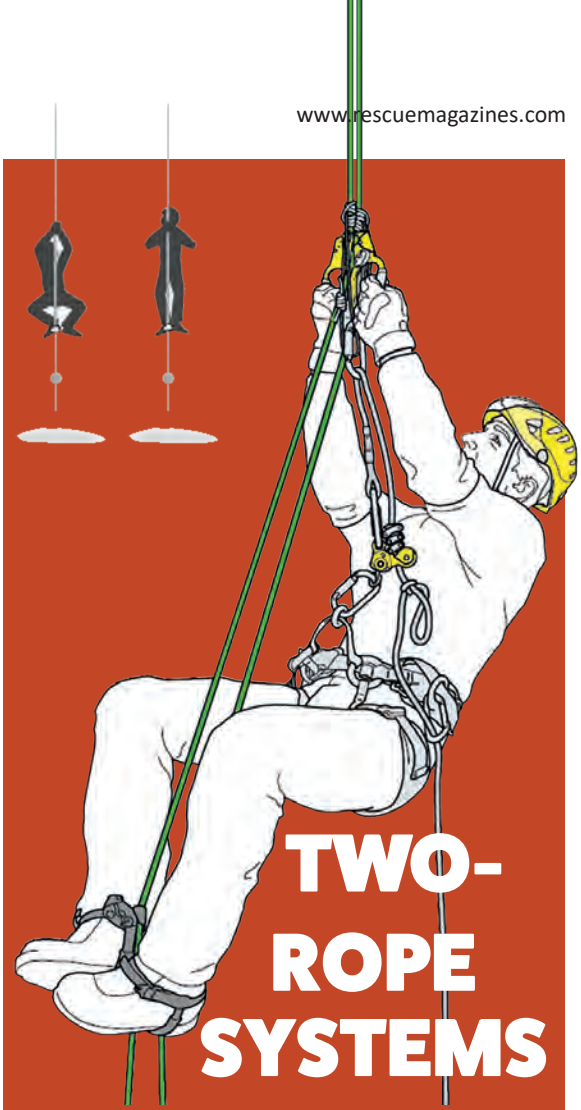




the cam badly and either increase drag or decrease traction. In fact, if you angle your foot enough some cams may not engage at all and your foot could slip until the correct angle is regained. Some climbers in other rope work sectors take advantage of this anomaly to be able to reposition downwards, something that would normally require you to release the cam and keep it clear of the rope for the duration of the downward movement. Slight angling of the cam and indeed the entire ascender is why many have a specific left and right and the tendency to drag the cam or inadvertently jam it open is why you need to stick to the prescribed cam orientation as well as aspire to good technique. The trick is to figure out how your particular cam wants to work. Some cams are more aggressive than others particularly European models that evolved from caving or mountaineering where wet, muddy and icy ropes need to be contended with. *Petzl, Camp, Kong* and *CT* all tend to have quite aggressive teeth and these will bite through ice and mud but can catch the threads of larger weave arb ropes. *ISC* and *CMI* cams are less aggressive teeth patterns, slightly broader and shorter while the *Ninja* and *Jet-Step* uses rope-friendly ribs. Notice how the *Petzl* cam (above right) has a mud/water ejecting slot and more downward facing teeth while the *ISC* cam's (right) are more perpendicular and slightly multi-directional, this probably makes it more forgiving of poor directional loading but you can see how it might clog and freeze more easily in snow and ice.

While performance on specific ropes will vary and durability over time will vary, one thing you can say about the majority of these designs is that they are quite similar - you can't really get too far away from a toothed or ribbed cam and a metal cam enclosure albeit that some are rolled /stamped sheet metal while one or two are much bulkier but stronger milled or extruded alloy. **Some have an extended cam release knob that enables you to use your foot to 'kick' off the cam but this can also be a snag hazard if you're not used to it**. The majority are anodized, one or two like the *Russian Krok* and *CMI* are powder-coated. The cam lock/unlock is a feature that differs from model to model with some dispensing with it altogether in favour of the original, rather cumbersome carabiner eye while others have both. Two models that do stand out however are the *Notch Jet-Step* and *Harken Ninja (below),* basically the same kit, different colour. They have two cams but are quite specifically for a single rope with the rope sandwiched between the two cams instead of against a cam enclosure wall. The silver section at the top is a rope guide. This is the only ascender in our list to have a ribbed instead of toothed cam and the manufacturer claims this will grip wet, muddy and icy ropes. Certainly there's less to clog up and trap debris and ribbed cams are well tried and tested by such rope-industry giants as *Rock Exotica* and *Gibbs.* This sandwich-style cam design might be familiar to yachtsmen and indeed its pedigree is *Harken* so quality is pretty much assured. It has a lighter spring than normal





TWO-ROPE SYSTEMS

Above: With the modern emphasis on safety using double ropes this system from Petzl using con-joined hand ascenders and a pair of foot ascenders in a conventional sit-stand method could become the norm or it may remain on the peripheries of systems actually being used. This system helps complicate the DRT/DdRT and SRT/MRS discussion elsewhere in this issue because it could be that this climber is on a Doubled Rope or DdRT where the rope is simply looped over a branch or through a ring(s) on a cambium saver. Or it could be a Double Rope or DRT using two separately anchored ropes.

Of course if you really want to get fussy this could be the same rope with two terminations tied in the middle and attached to the same or two separate anchors - does that make it Single Rope Technique because it's one rope and if it's DdRT isn't that defined as MRS or Moving Rope System in the new terminolgy? But this one is Stationary? In fact, if this is a doubled rope that isn't tied off and the foot ascenders are con-joined in the old inch-worm style, the rope will indeed be stationary. But if two separate foot ascenders are used , a DdRT rope NOT anchored at the top will actually move a little with each step with some small degree of mechanical advantage - so back to an MRS then? My head hurts.

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so self-tending of an unloaded tail of rope is a little easier (ie. doesn't try to drag unloaded rope as you raise your foot).

SUMMARY OF FOOT ASCENDER TYPES:

1) BOOT HARNESS FOOT ASCENDER

The majority of models in our list come with a pre-threaded and stitched webbing harness. Some have fixed elements particularly the stirrup section that goes under the sole but most adjust both around the boot and under the boot.



2) DIRECT TO BOOT ASCENDER

ArbPro have pioneered this one with the *Cervino Wood Quickstep* able to have the *ArbPro* foot ascender directly connected to lugs without the need for a web harness/strapping. Currently this is the only such model.



3) INTERMEDIATE BOOT-PLATE ASCENDER

This can be fixed directly to the boot, effectively giving you the same as 2) above except with a little more bulk but most often the plate will be attached to a web harness/strapping and you attach the ascender to that. The big advantage of a harness-with-plate is that the ascender can be removed without having to take the entire harness off your boot so you can walk around or drive unhindered.



4) DIRECT TO SPUR/GAFF ASCENDER

Your climbing spikes are already a bulky item so what's a few extra ounces/grams? Directly fixed ascenders make this whole assembly a versatile option and there's no chance of inefficiency caused by a slackening web harness. Currently three options; KiwiKlimbers are directly bolted while CT use an intermediate plate and CAMP uses a strap and bolts (right).



4) DOUBLE CAM





ASCENDER (for single rope)

Aside from the Edelrid Cruisers these are the two newest arrivals, the virtually identical *Notch Jet Step* in green and the *Harken Ninja* in red. They have a dual cam arrangement providing grip to both sides of a ***single rope*** strand. A rope guide above ensures that the rope runs through the middle of the cams. Grip should be the best but they are bulkier than many might like. Definitely worth investigating.



In the following TABLES,
Foot ascenders ARE NOT PPE so the usual life safety ***STANDARDS*** don't apply.
We've used the term '***MAX LOAD***' rather than the more usual WLL or SWL because the manufacturers have used differing terms but this is the Working load limit not MBS.
'***ANTI CAM-INVERT***' refers to a cam restraint or cam safety at the top &/or bottom that stops it opening wide enough to release the rope.
CRAB EYE is a carabiner hole which can act as a safety catch with a crab clipped in.
CAM-PARK means the cam can be locked in the open position so as not to contact the rope.

KNEE-CAM SYSTEMS

Something of an adjunct to foot ascenders,but one of the still rising systems so it deserves a separate mention, is the floating knee cam exemplified by Michael Frankhauser's HAAS (Velox version pictured) and Richard Mumford's SAKA (far right). Nothing new about the concept of a floating knee cam because, as we've mentioned on numerous occasions we've been using similar systems in caving since well into the last century and ironicaly the original caving ascender -maker Petzl have now entered the fray with their own system. The difference with the HAAS/SAKA is incorporation of bungy/elastication and stiffening to improve the operation. Basically this might replace the foot ascender if you're using your regular descent device or one leg might use a conventional foot ascender while the other leg uses this knee cam attached to a stiffened tether with a foot loop on the end. The knee cam has a clip or elastic bungy on top clipped to your harness which allows variable step length and drags the cam up to help capture progress while you move the foot ascender up or tend the trail rope through your descent or hybrid device. There seems to be some bizarre patent issues going on at the moment between the Weaver owned HAAS and SAKA with the SAKA drawing the short straw. It's hard to see how a concept that is simply a modification of something that's been around for decades, albeit with a useful improvement, can lay claim to a broad patent that stops further development by others. Perhaps Padget and Smith should have patented the original floating knee cam concept back in the 1980s!



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DEPTH: = material thickness WLL/Max Load: If not given by manufacturer we use Max Load as 10:1 safety ratio
COLOURS: =Body colour ☐=Option
○●● = OK BUT NOT IDEAL

MODEL	COMPANY	ORIGIN	COST	WT inc strap	SHELL	CAM	
A13	ANPEN		£41 $50 €46	136g 4.8oz 170g 6oz	Stamped Alu	Cast Steel	
QuickStep	ARBPRO		£85 $106 €95	130g 4.6oz	Stamped Alu	Cast Steel	
Turbo-Foot Evo Turbo Spike	CAMP		£81105 $99131 €92110	97g 3.4oz 135g 4.8oz	Stamped Alu	Cast Steel	
Foot Ascender	CMI		£90 $110 €102	320g 11.2oz 324g 11.4oz	Extruded Alu	Cast Steel	
Foot Cruiser	EDELRID		£55 $83 €60	142g 5oz 160g 5.6oz	Stamped Alu	Cast Steel	
Tree Cruiser	EDELRID		£65 $93 €65	134g 4.7oz	Stamped Alu	Cast Steel	
Ninja	HARKEN		£102 $114 €112	136g 4.8oz 177g 6.2oz	Stamped Alu	Cast Steel	
Stryder RP227X	ISC		£51 $87 €80	130g 4.6oz 202g 7.1oz	Stamped Alu	Stainless Steel	
Spikescender 2	KIWI KLIMBER		£152 $188 €173	n/a	Alu	Titanium	
Futura	KONG		£59 $90 €67	72g 2.5oz 130g 4.6oz	Stamped Alu	Stainless Steel	

FOOT ASCENDERS

DIMENSIONS Width x Height x Depth	ROPE DIAM RANGE	MBS	MAX LOAD	RIGHT LEFT	Anti Cam Invert	Carabiner Eye	Cam Park	Inc Foot Harness	Fits to Spurs	Fits to Boot Plate	COLOURS LEFT	COLOURS RIGHT	NOTES	WWW.
72 x 51mm 2.8 x 2"	8-13mm 5/16 -½"	4.9kN 1102lbf	140kg 308lb	■ ■	-	■	■	■	-	-	■	■ ■		en.anpen.net
83 x 65mm 3.3 x 2.6"	8-13mm 5/16 -½"	-	150kg 330lb	■ ■	■	-	■	□	■	■	■	■	Fits direct to ArbPro QuickStep Boots with adapter plate or separate adapter for spurs ($60) or universal web boot harness	arbpro.it
67 x 69 x 25mm 2.6 x 2.7 x 1"	8-13mm 5/16 -½"	-	150kg 330lb	■ ■	■	■	■	■	■	-	■	■	Non-Evo version precludes the safety lock. Rollers in the rope channel reduce friction.Turbo Spike version fits direct to Distal spikes	camp.it
80 x 56 x 32mm 3.1 x 2.2 x 1.3"	9-16mm 3/8 -5/8"	3.5kN 800lbf	-	■ ■	■	-	■		-	-	■	■	ANSI Hard-coated cam	cmigear.com
82 x 62 x 37mm 3.3 x 2.6"	8-13mm 5/16 -½"	-	-	■ ■	■	■	■	■	-	-	■	■	green cam safety cover is removable	edelrid.com
127 x 80 x 45mm 5 x 3.2 x 1.8"	8-13mm 5/16 -½"	-	-	■ ■	■	-	■		■	-	■	■	Fits to the Edelrid Talon Spurs green cam safety cover is removable	edelrid.com
83 x 74 x 27mm 3.3 x 3 x 1.1"	8-13mm 5/16 -½"	-	150kg 330lb	■ ■	-	-	-	■	-	-	■	■	Rope guide above cams	harken.com
75 x 52 x 28mm 3 x 2 x 1.1"	8-13mm 5/16 -½"	2.5kN 562lbf	140kg 308lb	■ ■	■	-	■	■	-	-	■	■	Extended (removable) cam safety allows kick-release of cam	iscwales.com
75 x 36 x 74mm 3 x 1.4 x 3"	10-12.5mm 25/64 -½"	6kN 1348lbf	150kg 331lb	■ ■	■	-	-		■	-		■ ■ ■ ■ ■	Versions Can be retro-fitted to KK Carbons or Distel / Gecko, Notch, Buck, Baslin Stein, Climbright & Edelrid spurs/gaffs. Cam safety is a 'button that can be pushed in to load rope	kiwiklimbers.com
78 x 57 x 25mm 3.1 x 2.2 x 1"	8-13mm 5/16 -½"	-	150kg 330lb	■ ■	-	■	-	■	-	-	■	■	metal boot stirrup prevents torsional rotation-greater efficiency	kong.it

images NOT to scale COST: Approx & inc local tax/VAT
DEPTH: = material thickness WLL/Max Load: If not given by manufacturer we use Max Load as 10:1 safety ratio
COLOURS: =Body colour ☐=Optio
○●● = OK BUT NOT IDEAL

MODEL	COMPANY	ORIGIN	COST	WT inc strap	SHELL	CAM	
Jet-Step	**NOTCH EQUIPMENT**		**£91 $110 €110**	**136g 4.8oz 195g 6.9oz**	**Stamped Alu**	**Plated Steel**	
Pantin BO2CL/RA	**PETZL**		**£60 $85 €63**	**55g 1.9oz 85g 3oz**	**Stamped Alu**	**Stainless Steel**	
Foot Lift RK807BX0L/P	**SINGING ROCK**		**£47 $60 €52**	**120g 4.2oz 161g 5.6oz**	**Stamped Alu**	**Cast Steel**	
CT Quick Step A	**SKYLOTEC**		**£65 $85 €74**	**130g 4.6oz 165g 5.8oz**	**Stamped Alu**	**Stainless Steel**	
CT Quick Step S	**SKYLOTEC**		**£62 $80 €66**	**125g 4.4oz 155g 5.5oz**	**Stamped Alu**	**Stainless Steel**	
CT Quick Tree	**SKYLOTEC**		**£64 $84 €69**	**130g 4.6oz**	**Stamped Alu**	**Stainless Steel**	
Django	**STEIN**		**£63 $113 €75**	**130g 4.6oz 198g 7oz**	**Stamped Alu**	**Stainless Steel**	
SA207	**S.E PEAK**		**£30 $36* €33**	**115g 4oz 156g 5.5oz**	**Stamped Alu**	**Cast Steel**	
SUT	**SUNTEK**		**£28 $33* €31**	**84g 3oz 116g 4.1oz**	**Stamped Alu**	**Cast Steel**	
Pro Foot Ascender	**XINDA/ SOB**		**£0 $0 €0**	**90g 3.2oz 135g 4.7oz**	**Stamped Alu**	**Cast Steel**	

FOOT ASCENDERS

DIMENSIONS Width x Height x Depth	ROPE DIAM RANGE	MBS	MAX LOAD	RIGHT LEFT	Anti Cam Invert	Carabiner Eye	Cam Park	Inc Foot Harness	Fits to Spurs	Fits to Boot Plate	COLOURS LEFT	COLOURS RIGHT	NOTES	WWW.
80 x 73 x 27mm 3.2 x 3 x 1.1"	**8-13mm 5/16 -½"**		**152kg 337lb**	-	-	-	■ ■	■	-	-	■	■	**Rope guide above cams**	notchequipment.com
64 x 45 x 23mm 2.5 x 1.8 x 0.9"	**8-13mm 5/16 -½"**		**150kg 331lb**	□*	-	□*	■ ■	■	-	-	■	■	*Pantin* is now on perhaps its 3rd or 4th variant. *optional plastic Safety catch screws into cam to provide rope safety and cam-off option (£6)	petzl.com
72 x 54 x 30mm 2.8 x 2.1 x 1.2"	**8-13mm 5/16 -½"**		**120kg 264lb**	■	-	■	■ ■	■	-	-	■	■	Stainless steel back plate	singingrock.com
73 x 51 x 27mm 3.3 x 2.6 x 1.1"	**8-13mm 5/16 -½"**		**150kg 331lb**	■	-	■	■ ■	■	-	-	■	■	**Speleo version 'S' is 10g lighter with harness**	Skylotec.com
73 x 51 x 27mm 3.3 x 2.6 x 1.1"	**8-13mm 5/16 -½"**		**150kg 331lb**	■	-	-	■ ■	■	-	-	■	■	**Same as QSA but is a Caver's minimalist version with no safety catch**	Skylotec.com
73 x 65 32mm 3.3 x 2.6 1.3"	**8-13mm 5/16 -½"**		**150kg 331lb**	■	-	■	■ ■	□	■	-	■	■	**Has an integrated back plate for mounting to adapter. Requires separate adapter for spurs ($60/€45) or harness for boots ($26/€24)**	skylotec.com
75 x 52 x 25mm 3 x 2 x 1"	**8-13mm 5/16 -½"**	**2.5kN 562 lbf**	**140kg 308lb**	-	-	■	■ ■	■	-	-	■	■	Made by ISC Wales Extended (removable) cam safety allows kick-release of cam	steinworldwide.com
73 x 47 x 27mm 2.9 x 1.85 x 1.1"	**8-13mm 5/16 -½"**		**140kg 308lb**	-	■	■	■ ■	■	-	-	■ ■ ■		*FOB China	n/a
64 x 70 x 24mm 2.5 x 2.8 x 1"	**8-13mm 5/16 -½"**		**150kg 330lb**	■	■	■	■ ■	■	-	-	■	■	BEWARE: This copy of a CAMP Turbo may list a CE but foot ascenders DO NOT comply with PPE standards. ***FOB China**	n/a
75 x 47 x 25mm 3 x 1.85 x 1"	**8-13mm 5/16 -½"**		**150kg 331lb**	-	■	-	■ ■	■	-	-	■ ■ ■	■ ■	***FOB China** One of many Chinese models with the same design under under various names, New Doar,Camnal & Wildken	xindaoutdoor.com

UPDATED Jun '25

FIXED & FLYING BOLLARDS

for LOWERING



Tricky to know what to call this product guide as there are so many different terms. We're looking at two types of heavy duty lowering devices and since they both have a cylinder of metal at their core we've gone with bollard rather than capstan. The lighter option is typified by the *Port-A-Wrap* as a metal tube with some rope tie-off or control posts and one or two eyes with which to secure it to the base of a tree. Since this may be rigged so as to sit a few inches or even a few feet away from the tree it is termed 'FLYING' 'FLYING CAPSTAN' or 'FLOATING'. The *RC200* in this picture (below) is actually rigged as a fixed bollard as all *Port-A-Wrap*s can be with a *Whoopie* sling and some creative rigging. The term 'BOLLARD' is used universally to describe a static metal tube of material with a smooth surface around which rope can be wrapped to increase friction and arrest and hold a load or the rope can be unwrapped to decrease friction and begin lowering a load. This could be interchanged with 'CAPSTAN' or 'WINDLASS' but to be more accurate these involve rotation rather than being static.

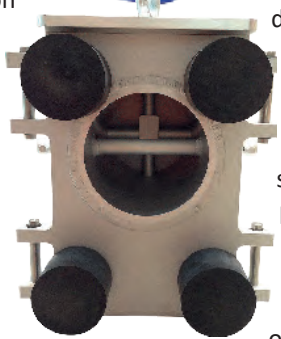




Back to a static bollard and a good ground crew will estimate the number of wraps relevant to the load being held/lowered and this will be hand-held or tied off initially and then slowly released through a gloved hand to provide the required speed of lowering. Only when you are new to a device or the load has been underestimated will you need to alter the initial lowering set-up by adding or removing entire wraps otherwise the lowering work can be achieved by taking off a locking loop and then altering the contact angle between rope and pins as the rope feeds through your gloved hands. In fact, a skilled ground crew can add a degree of force mitigation to alleviate impact forces to the climber by allowing some run-through to create a more dynamic arrest than a dead-stop.

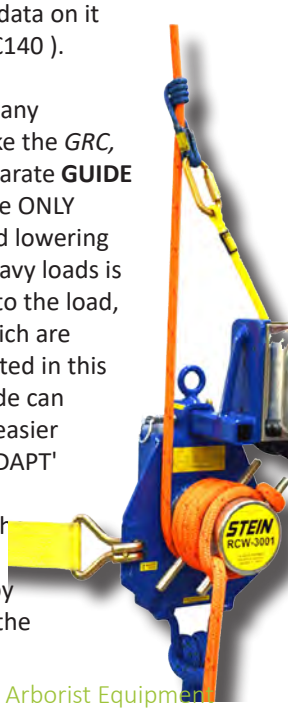
The same function applies to our second and heavier option which is a 'FIXED' bollard with a large tube mounted (welded) to a backing plate with the whole assembly anchored firmly to the tree's trunk usually with ratchet straps.

Many have rubber feet or the option of rubber feet to protect the bark from inevitable damage during tensioning and arrest/lowering. In the *Stein* model (left) this consists of two large rubber blocks rather than the four separate feet of this *ArbPro* model below it but either way, you need to have a fairly level surface to sit the back plate on so that it can't rock under load and loosen its retaining straps. Interestingly, the *Arbpro* models now discontinued, quoted a lower WLL with rubber feet than without, probably due to compression forces on the rubber.



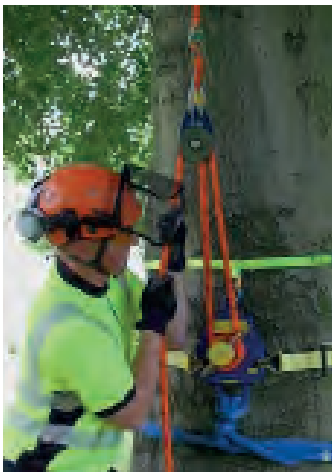
For dismantling jobs you would be able to cut a flat section into the bark with your chainsaw or if you don't like the client, there are plates with teeth or serrations which dig into the bark to provide a firm fixing (see pic of orange Obermeier Forst Technik model bottom left which isn't in our tables because we couldn't get any data on it other than cost being around €140).

Just to be clear, this guide does NOT include any rotating capstan/drum style fixed winches like the *GRC, Hobbs* or *Harken* devices, they are in the separate **GUIDE to Hand Winches**. The tables in this guide are ONLY devices which perform heavy-duty arrest and lowering *not* raising and in fact the job of arresting heavy loads is generally left to Impact blocks rigged closer to the load, (as in our diagram from *Wesspur* above), which are only then lowered on the kinds of devices listed in this article. Some of the fixed bollards in this guide can be retro-fitted with a winch to make raising easier (pic right), this is indicated by the 'WINCH-ADAPT' column. None of the devices listed in this GUIDE includes a winch or raising option in the price and data but most can be retro-fitted with at least a rope & pulley raising system by attaching it to the top eye as can be seen in the



LOWERING BOLLARDS





picture on the left showing the same Stein model but instead of a winch we have a 2:1 mechanical advantage pulley incorporated to assist with raising or tensioning. One model, the *Transformeur* (right) from *FTC TREE* in France, is a fully modular system allowing one or two bollards to be fixed to a back plate and then a winch to also be added. This is possibly the most versatile system we have yet seen although it's not cheap at €3500 for the complete system including bombproof case, ratchets and straps, winch, 2x bollards (which can be used independently) and a back plate with replaceable rubber feet. You can buy each component separately starting with just one bollard and building on that so it may well cover just about every scenario you can come up with.



AUTO-LOCKING LOWERING DEVICES



One key type of 'Flying/Floating' lowering device NOT included here because the sheave or 'drum' rotates is an alternative you may also want to consider. It's the now tried and trusted *CMC MPD*. This should never be as robust as any of the bollards in this guide because it has mechanically interfacing components but with a working load limit of round 4000kg/ 8800lb which is limited by the becket MBS of 29kN rather than the wheel, it can deal with the vast majority of daily jobs. It has the added advantage of being easily incorporated into a more efficient raising system than the bollards would offer and it's quite compact. Just don't look too closely at the price (several hundred Dollars) , that's why the boss insists on you sticking with a Port-A-Wrap.

PORT-A-WRAPS

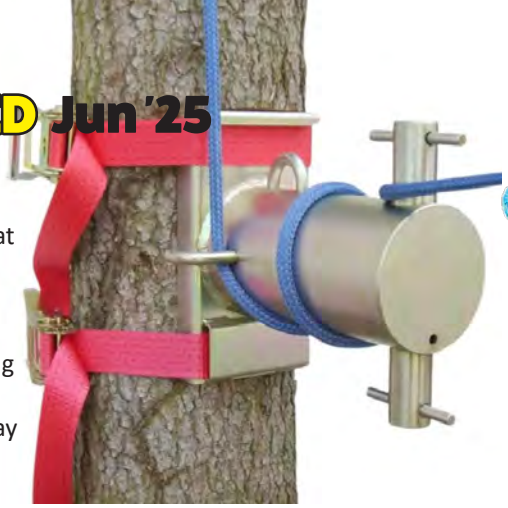
The term *Port-A-Wrap* is, of course a product name that has come to describe this whole genre. Indeed, most of the companies making and selling them actually use '*Port-A-Wrap*' in the name so somebody at *Buckingham* must have slipped up on patent or trade name registering. The concept is simple and comes from the ancient art of wrapping rope around the tree's trunk or a branch to provide enough friction to arrest and lower a branch, section or entire trunk. As a manufactured device though, this concept probably has mountain rescue to thank because I'm pretty sure the tube style lowering device was in play back in the 50's and 60's at least. We're not laying claim to anything but in the late 80's we adapted the idea of the *Thor Anchor*, a metal 'tree' substitute bolted to Mt. Thor in the US for long lowers/ raises, to create a 4" diameter *Thor Tube*. This was about two feet long and was rigged as a flying anchor (through the tube itself) to give us the maximum strength of rope possible for heavy arrest and lowering so I suppose it was a giant version of a *Port-A-Wrap*. So giant, that if we still had it today we'd probably be arrested for manufacturing a pipe bomb. But the principle is the same and wrapping your rope around the widest diameter smooth surface possible will always offer the maximum residual rope strength and be the simplest option for lowering a heavy weight whether it incorporates a manufactured device or a Eucalyptus trunk. The main reason for switching to bespoke devices is continuity of performance and minimising damage to either the target tree or an adjacent tree. *HexaRope*'s *Hexarig* below is the latest model providing a whopping 4.7" diameter tube in machined aircraft alloy so there are no welds. Aluminium is lighter but steel and stainless steel in particular are tougher even if the aluminium is coated. Mud is the killer. Heavy woods like Eucalyptus will seriously tax your metal especially in sandy/ sandstone areas where the ropes will pick up abrasive particles and you will find wear points that will accelerate renewal which is why this *Hexarig* can have the tube reversed when it starts to show wear.



Aside from the obvious tube of metal there are posts sprouting from the main cylinder/ tube for redirecting and tying off the lowering rope s well as anchor eyes top and bottom. *WesSpur*'s neat size comparison at the top shows the difference between the mini and the X-large *Buckingham* models. We call them flying or floating rather than fixed but in reality the basal tie off tends to be so firm as to be akin to a fixed system but it will function remote from the target tree if required. One of the two eyes on the standard offset oval models is used to anchor it to the tree (usually the longest eye) while the other eye can have a hauling system attached or you



can make the device truly fixed by using that to anchor it as well. The friction posts act as redirects allowing the ground crew to stand well away from the danger (drop) zone and still control the arrest and lower.

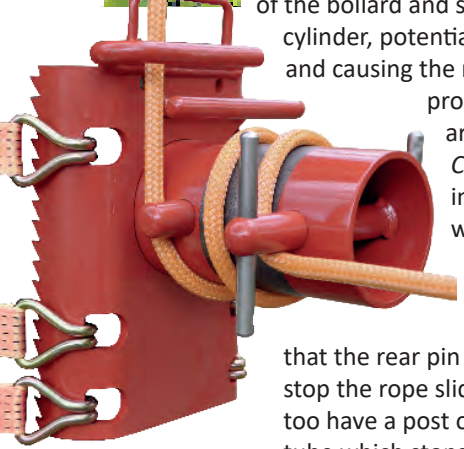


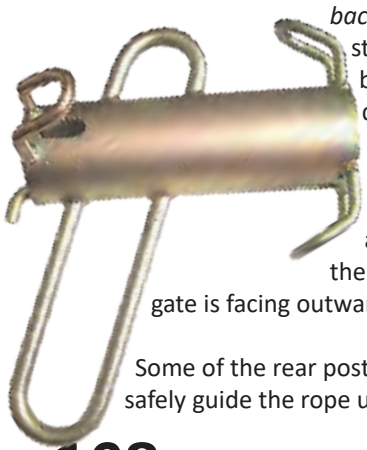
PINS, POSTS & GUIDES

The forward posts are for redirect and tie-off so that you can lock off the load and move away. On some bollards you'll notice the posts have additional 'T' pins through them, often removable. These stop the rope from coming off the redirect or lock-off posts. However, there will be times when you may actually want to flick the rope off the pin to adjust lowering tension while standing clear of the drop-zone, hence the ability to remove some of them as with this German *Obilasser* model (above).



Posts at the rear of the cylinders are primarily rope-guides and on some models are curved or bent while on larger models there are dedicated open 'hook' style guides which allow the rope to pass easily into them. Both the post and the hook will guide the vertical section of rope onto the rear of the bollard and stop it sliding forward on the cylinder, potentially overlaying other strands and causing the rope to jam and impede rope progress. Hook-style guides are most clearly seen in this *Courant Hulk* guide (left and in the *Treerunner* model (left) with top guides on the left *and* the right depending on which side of the drum you want the rope to enter. Note that the rear pin also acts as a rope guide to stop the rope sliding forward. *Port-A-Wrap*s too have a post or two set at the rear of the tube which stops the rope sliding off the *back* of the cylinder. Still another style of *Port-A-Wrap* exemplified by the *Stein RC1000* and the now discontinued and oddly asymmetric *ISC* models (large version shown left) has closed eyes which can be used as rope guides by connecting a carabiner into the eye and then the rope - make sure the carabiner gate is facing outwards towards the ground crew.





Some of the rear posts are shaped or bent to more safely guide the rope upwards or into the bollard



but, as with straight posts which will also function as redirects, we have listed them as 'rope guides' in our columns. ie. a standard *Port-A-Wrap* will have 2 friction posts and 1 rope guide which could also be deemed a third friction or redirect post. In the case of the larger Stein models the difference in function between the four available posts is blurred as the rear two are set proportionally further forward than most models so they operate more as friction/redirect posts than rear rope guides. We listed them as friction posts but they will direct rope upwards at the rear albeit at more of an angle than most.

ODDITIES.....

Courant Hulk (above) Talking of posts and rope guides, the aptly named *Courant Hulk* doesn't actually have any conventional tie-off or redirect posts but it does have three shaped rope guides to vary the rope exit position and therefore the friction imparted by the 4 bollards. The *Hulk* is truly unique in this selection because it has taken the cylinder/tube or bollard, cut it into four slices and bolted them back onto the backing frame. Where others have the rope wrapped a few times around the bollard this has a single pass around each section as it would if the cylinder were a whole bollard! The bollards, or more accurately in this case, non-revolving sheaves, can be rotated to a new fixed position so that wear is spread more evenly around the bollard otherwise it would be the same area receiving wear each use while other areas of the drum get none at all. Once worn you can simply buy replacement sheave.





Notch 6-Pack: The newest device and obviously owes at least some inspiration to the Hulk. it has 6 fixed bollards and 10 friction settings via 2 entry and 2 hook-shaped exit fairleads. Like the Hulk, this is large at almost 2 feet long but offers a versatile lowering option

LOWERING BOLLARDS

Jail Brake: The Jail Brake (right) is a wildly different design to standard 'bobbins' and has been around for a few years so is well tested and is also based on a principle we're familiar with from rescue - the friction created by weaving rope through bars like a Rack or captive eyes like the *Whaleltail* and *Goldtail,* albeit that the *Jail Brake* is 3 or 4 times larger. *CMI* now produces the *Goldtail* as a descender but we may well include it in this guide if *CMI* think it's appropriate - it's certainly up to the task because we were using one for light impact lowering 35 years ago. The Jail Brake's have huge heat sink at almost 2 feet long for the 7R&HD versions with the latter (pic right) able to handle twice the load at 2272kg/5000lb with many friction variations.



McDermott Crown Brake

In the midst of all this sometimes sophisticated equipment is the assumption that you have sufficient and sufficiently experienced ground crew to operate these devices. Smaller owner-operators in particular will be familiar with having to run lowering operations from the crown while ground crew wrestle large limbs to a suitable landing point. Jim McDermott came up with a device he anchored with him near the cutting point using the top double 'T' bar and maybe the stabilising bar inside the cylinder. The lowering rope is then threaded through the holes and tied off during cutting. Once arrested the climber does the lowering. You might wonder why you couldn't simply use a smaller *Port-a-Wrap* (although this isn't a small device). Well, you could but the *MCB* is directional in that rope can only exit on the down/underside of the cylinder. We're guessing the top eyes are enclosed to ensure the rope doesn't jump out during untended arrest. This was sold by *Wesspur* but now discontinued.





IN THE FOLLOWING TABLES:.....

COST: Approximate. Includes local taxes but can vary due to exchange rates, other taxes etc. We generally round up the cost to the nearest Pound£, US Dollar$ or Euro€

ORIGIN: Is the country of the company selling the item which is not necessarily the same as the origin of the product itself since so many items are 're-badged'. Where we know the manufacturing origin is different here is an inset flag.

MAX DIMENSIONS: Usually the height (inc top eye) and the width but in some cases, like *Port-a-Wrap*s, it will be the depth of the cylinder and that may also be case for some fixed bollards.

MAX ROPE DIAMETER Given by the manufacturer. This should be dictated by the diameter of the cylinder maximising the bend radius but also by the gap at the rear rope guide.

MBS and **WLL** - is the Maximum Breaking Strength. This figure isn't given by everyone in the arb sector, many preferring to stick with a Working Load Limit or Safe Working Load WLL/SWL. However, you could work this figure back to a maximum breaking strength by multiplying the WLL by 7 the usual safety ratio in the arb sector although *ProClimb* quote 5:1, Buckingham have the *Port-a-Wrap III* Medium with a 6:1 ratio and the XL with a 10:1 ratio. We list the MBS in units of force as KiloNewtons and Pounds Force and WLL in terms of weight as Kilograms and Lbs but they are broadly comparable figures ie. 50kN isn't quite 5000kg, it's 5099kg, close enough for you to be able to work out the load limits are and stay well clear of them.

A solid black square ■ in the **Anchor Strap** column indicates that the device comes complete with the necessary strapping (whether you want it or not!)
An outline square ☐ in the **Anchor Strap** column indicates that bespoke strapping is available as an option.

TRUNK GRIPS refers to hard/aggressive teeth or serrations that bite into the bark to find a purchase.

RUBBER BARK PROTECTION refers to protective feet or in the case of *Port-a-Wrap*s, a rubber cap to protect bark from damage during lowering operations.

ANCHOR STRAP: some companies supply their device with anchor straps, often ratchet straps for the larger models and *whoopie* slings for the smaller *Port-a-Wrap*s.

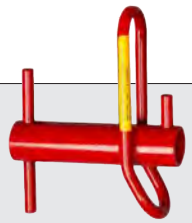
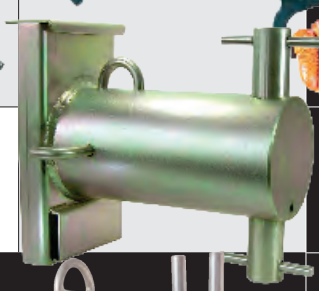
WINCH ADAPT: a black square here means that the device can be retrofitted with a winch.

TIE-OFF/CONTROL POSTS: The number of posts available to maintain wraps on the cylinder and redirect the entry rope to allow the ground to stand in the safest position for lowering eg. not directly beneath the limb/section being cut. This does NOT include the rear-most posts which are listed under **ROPE GUIDES. ROPE GUIDES** will also include specific hook-style guides which you can see in each products picture.

TOP/BOTTOM ANCHOR EYE refers to a load bearing eye located on the the top for clipping in a raising/tensioning system or on the bottom as an ancillary anchor point, often for a Whoopie sling style anchor.

Among the models we haven't included in our tables is the *Obermeier Forst Technik* model mentioned earlier because details are so scant. We have not included the Russian brand *KROK* because they're russian and face a copyright issue with one of their models (not shown) but the bulk of their equipment looks pretty unique. We haven't included another prolific russian brand *VTT* but they have at least 4 devices including a fixed bollard with a detachable handle for pre-tensioning which looks like a smaller version of the *Stein Dual* model. More on these in a post-war update once russia returns to its senses. The *Notch AFB* and *McDermott Crown Brake* appear to be discontinued but if that subsequently changes we will update this guide.

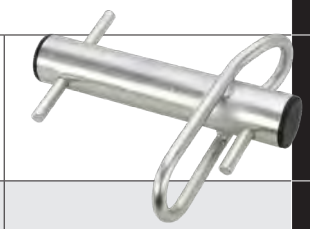
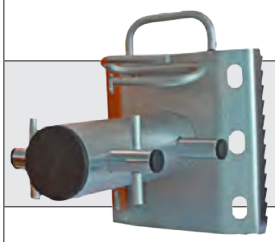
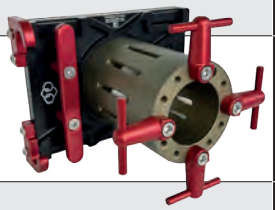
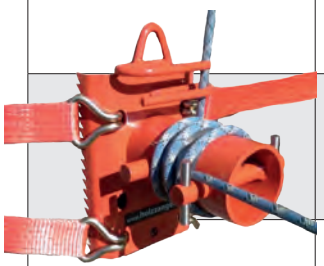
Images Approximately to Scale
COST: Approx & inc Tax/VAT
£$€ - Currency Conversion Only
MAX DIMENSIONS: usually height x width but depth of tube if that's greater
WLL/Max Load: normally based on 7:1 to 10:1 of the MBS N/A: info Not Available/not given

	MODEL	COMPANY	ORIGIN	COST inc tax	WEIGHT exc straps	MATERIALS	DI
	Mini Bollard	ART		£234 $286 €268	2.6kg 5.7lb	Stainless Steel	30 1
 	Port-A-Wrap Mini/ Rescue Mini 601	BUCKINGHAM		£160 $210 €170	0.9kg 2lb	Nickel-plated Steel	14 5
 	Port-A-Wrap III Medium 601	BUCKINGHAM		£190 $225 €220	1.8kg 4lb	Nickel-plated Steel	18
	Port-A-Wrap III Large	BUCKINGHAM		£200 $243 €240	3.2kg 7lb	Nickel-plated Steel	24 9
	Port-A-Wrap XL	BUCKINGHAM		£300 $350 €350	8.3kg 18lb	Nickel-plated Steel	33 1
 	LCD	CMI		£660 $657 €775	7.66kg 16.9lb	Stainless Steel	305 12
	Hulk	COURANT		£310 $399 €352	4.3kg 9.5lb	Alloy Bollards Stainless Steel posts, HT & Coated Steel Back Plate	30 1
 	Rigging Bollard SIlver	FREEWORKER		£222 $312 €292	7.1kg 15.6lb	Stainless Steel	30 1
	Obilasser	FREEWORKER		£354 $465 €405	8.55kg 18.9lb	Galvanised Steel, Stainless pins	30
 	Micro	FTC TREE		£336 £400 €385	1.7kg 3.75lb	Aluminium	22 8
	Mini	FTC TREE		£540 $706 €620	3.6kg 7.9lb	Aluminium	34 1

LOWERING BOLLARDS

MAX MENSIONS	BOLLARD Ø	MAX ROPE Ø	MBS	WLL (Max Working Load)	FLYING	FIXED	TRUNK GRIPS	RUBBER BARK PROTECTION	ANCHOR STRAP(s)	WINCH ADAPT	TIE-OFF/ CONTROL POSTS	ROPE GUIDES	TOP/BOTTOM ANCHOR EYE	NOTES	WWW.
00 x 206mm 1.8 x 8.1"	90mm 3.5"	14mm 9/16"	-	1000kg 2204lb	-	■	■	-	-	-	2	2	■ ■		climb-art.de
40 x165mm .5" x 6.5"	33.5mm 1.32"	12.7mm ½"	31kN 7000 lbf	450kg 1000lb	■	-	-	-	-	-	2	1	■ ■	Price is for polished. Black powder-coated also available Red with integral Tenex rope for RESCUE = $250.	buckinghammfg.com
4 x 228mm 7.25 x 9"	48mm 1.9"	16mm ⅝"	53kN 12000lbf	907kg 2000lb	■	-	-	-	-	-	2	1	■ ■	Also available as black powder-coated	buckinghammfg.com
1 x 280mm 9.5" x 11"	61mm 2.4"	18mm ¾"	53kN 12000lbf	907kg 2000lb	■	-	-	-	-	-	2	1	■ ■	Also branded as 'ArborMax 601LN'	buckinghammfg.com
30 x 55mm 13" x 14"	89mm 3.5"	22mm ⅞"	6.7kN 60000lbf	2720kg 6000lb	■	-	-	-	-	-	2	1	■ ■		buckinghammfg.com
x 305 x 15mm 2 x 12 x 6"	?	19mm ¾"	-	2720kg 6000lb	-	■	-	-	■	-	4	2	■ -	LCD=Lowering Control Device	cmigearusa.com
00 x 330mm 11.8 x 13"	60mm 2.36"	14mm 9/16"	25kN 5620lbf	500kg 1102lb	■	-	-	-	-	-	-	3	■ ■	Sheaves/bollards can be rotated to even out wear or replaced	mycourant.com
00 x 160mm 1.8 x 6.3"	112mm 4.4"	16mm ⅝"	-	500kg 1102lb	-	■	-	-	□	-	2	2	■		freeworker.de
5 x 160mm 12 x 6.3"	140mm 5.5"	19mm ¾"	-	1400kg 3086lb	-	■	-		□	-	2	2	■	Removable pins	freeworker.de
4 x 163mm 8.8 x 6.4"	75mm 3"	14mm 9/16"	36.2kN 8819 lbf	800kg 1764lbf	-	■	-	■	■	-	2	2	■ ■	Comes with storage box and 9m ratchet strap	ftc-tree.com
40 x 120mm 3.2 x 4.7"	100mm 4"	16mm ⅝"	49kN 11023lbf	1000kg 2204lbf	-	■	-	■	■	■	2	2	■	Comes with storage box and 9m ratchet strap	ftc-tree.com

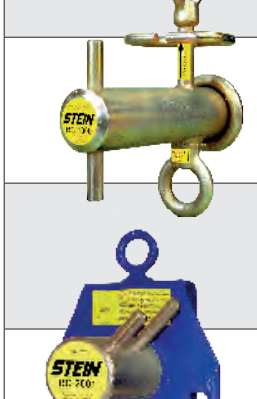
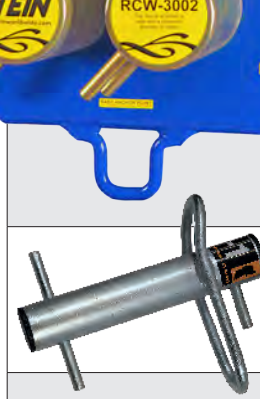
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	MODEL	COMPANY	ORIGIN	COST inc tax	WEIGHT exc straps	MATERIALS	DI
	Flying Capstan H2611	HARKIE		£149 $195 $163	1.92kg 4.2 lb	Galvanised Steel	26
	Heavy Duty Capstan H2621	HARKIE		£302 $395 $346	6.45kg 14.2 lb	Galvanised Steel	33 13
	Hexarig HX02648	HEXAROPE		£1300 $1680 €1320	5.9kg 13 lb	Machined Alu 7075-T6	25 13
	AbseilPoller	HOLZZANGEN (DONHAUSER)		£90 $115 €105	8kg 17.6lb	Powder-coated Steel	28
	Jail Brake 5R	JAIL BRAKE		£382 $499 €455	2.7kg 6lb	A356 Alloy	431 17
	Jail Brake 7R	JAIL BRAKE		£500 $599 €635	3.6kg 8lb	A356 Alloy	559 22
	Jail Brake HD	JAIL BRAKE		£611 $799 €728	3.6kg 8lb	6061 Aluminium	559 22
	Port-A-Wrap Medium	NOTCH		£169 $208 €195	1.9kg 4.25lb	Stainless Steel	17
	Port-A-Wrap Large	NOTCH		£185 $230 €215	3.3kg 7.25lb	Stainless Steel	23 9
	6-Pack	NOTCH		£292 $400 €340	17kg 37.4lb	Friction-coated Carbon Steel	530 x 21

LOWERING BOLLARDS

MAX MENSIONS	BOLLARD Ø	MAX ROPE Ø	MBS	WLL (Max Working Load)	FLYING	FIXED	TRUNK GRIPS	RUBBER BARK PROTECTION	ANCHOR STRAP(s)	WINCH ADAPT	TIE-OFF/ CONTROL POSTS	ROPE GUIDES	TOP/BOTTOM ANCHOR EYE	NOTES	WWW.
5 x 230mm 10.4 x 9"	75mm 3"	14mm 9/16"	50kN 11240lbf	1000kg 2204lb	■	-	-	■	-	-	3		■ ■	Comes with storage bag	harkieglobal.com
5 x 300mm 3.2 x 11.8"	75mm 3"	14mm 9/16"	50kN 11240lbf	1000kg 2204lb	-	■	■		■	-	4	1	■	Comes with storage bag	harkieglobal.com
0 x 180mm 3.2 x 11.8"	120mm 4.7"	14mm 9/16"	75kN 16860lbf	1500kg 3300lb	-	■	-	■	■	-	4	2	■	Comes with storage case and ratchhet straps. No welds/weakpoints. Air vents for cooling. Main bollard reversible to spread wear.	hexarope.com
0 x 230mm 11 x 9"	102mm 4"	19mm 3/4"	-	2000kg 4408lbf	-	■	■		□	-	4	2	■	direct from manufacturer	holzzangen.de
x 102 x 114 x 4 x 4.5"	38mm 1.5"	19mm 3/4"	36kN 8267lbf	750kg 1500lb	■	-	-	-	-	-	5*	2	■ ■	*Note the 'Bollards' are effectively acting as tie-off/ Control posts.	jailbrake.net
x 102 x 114 x 4 x 4.5"	38mm 1.5"	19mm 3/4"	55kN 12522lbf	1136kg 2500lb	■	-	-	-	-	-	7*	2	■ ■	*Note the 'Bollards' are effectively acting as tie-off/ Control posts.	jailbrake.net
x 102 x 114 x 4 x 4.5"	38mm 1.5"	19mm 3/4"	111kN 25000lbf	2272kg 5000lb	■	-	-	-	-	-	7*	2	■ ■	Solid, machined block of aluminium. *Note the 'Bollards' are effectively acting as tie-off/ Control posts.	jailbrake.net
8 x 236mm 7 x 9.3"	40mm 1.6"	14mm 9/16"	88.9kN 20000lbf	897kg 1978lb	■	-	-	■	-	-	2	1	■ ■	Tree protection cap on tube-end	notchequipment.com
4 x 287mm .2 x 11.3"	61mm 2.4"	19mm 3/4"	88.9kN 20000lbf	897kg 1978lb	■	-	-	■	-	-	2	1	■ ■	Tree protection cap on tube-end	notchequipment.com
405 x 180mm 1 x 16 x 7"	?	19mm 5/8"	50kN 11240lbf	1000kg 2200lb	-	■	-	■	■	-	6+2	2	■ ■	**New in 2025** meets ANSI Z133. Scannable tracking chip 12mm min rope	notchequipment.com

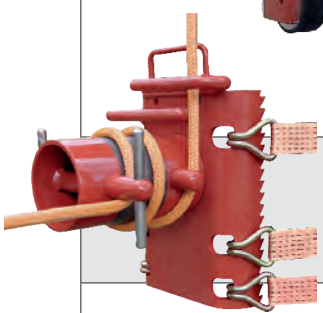
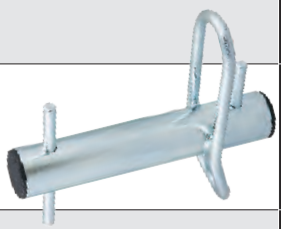
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	MODEL	COMPANY	ORIGIN	COST inc tax	WEIGHT exc straps	MATERIALS	DI
	Floating Friction Device LD750	STEIN		£162 $212 €00	3.6kg 7.9lb	Aluminium	22 8
	Floating Friction Device LD1000	STEIN		£198 $260 €000	3.6kg 7.9lb	Aluminium	24 9
	Floating Friction Device LD1250	STEIN		£234 $307 €280	4.4kg 9.75lb	Aluminium	24 9
	RC1000	STEIN		£240 $200* €287	3.6kg 7.9lb	Plated Steel	24 9
	RC2000	STEIN		£282 $240* €337	6.2kg 13.7lb	Plated Steel	28 11
	RC2001	STEIN		£450 $560 €537	5.8kg 12.8lb	Plated & powder-coated Steel	18 7
	RC(W)3001	STEIN		£660 $930 €787	13.3kg 29lb	Plated & powder-coated Steel	27 10
	RC(W)3002	STEIN		£1020 $1095 €1216	26kg 57.3lb	Plated & powder-coated Steel	41 16
	SMB1000	STEIN		£298 $399 €356	4.4kg 9.7lb	Plated & powder-coated Steel	31 1
	TH LD1	TREEHOG		£126 $165 €151	1.92kg 4.2lb	Galvanised Steel	26
	TH LD2	TREEHOG		£300 $395 €358	7.3kg 16lb	Galvanised Steel	37 14

LOWERING BOLLARDS

MAX MENSIONS	BOLLARD Ø	MAX ROPE Ø	MBS	WLL (Max Working Load)	FLYING	FIXED	TRUNK GRIPS	RUBBER BARK PROTECTION	ANCHOR STRAP(s)	WINCH ADAPT	TIE-OFF/ CONTROL POSTS	ROPE GUIDES	TOP/BOTTOM ANCHOR EYE	NOTES	WWW.
20 x 250mm 3.7 x 9.8"	51mm 2"	13mm ½"	-	750kg 1653lb	■	-	-	■	-	-	2	2	■ ■	Inc removable / replaceable protection rubber cap Steel version (Inverta-Wrap) discontinued	steinworldwide.com
45 x 300mm .7 x 11.8"	61mm 2.4"	14mm 9/16"	-	1000kg 2204lb	■	-	-	■	-	-	2	2	■ ■	Inc removable / replaceable protection rubber cap	steinworldwide.com
45 x 300mm .7 x 11.8"	74mm 2.9"	16mm ⅝"	-	1250kg 2755lb	■	-	-	■	-	-	2	2	■ ■	Inc removable / replaceable protection rubber cap	steinworldwide.com
45 x 300mm .7 x 11.8"	61mm 2.4"	14mm 9/16"	-	1000kg 2204lb	■	-	-		-	-	2	1	■ ■	US$ price less than GB£	steinworldwide.com
35 x 370mm 1.2 x 14.6"	76mm 3"	16mm ⅝"	-	2000kg 4409lb	■	-	-		-	-	4	1	■ ■	US$ price less than GB£	steinworldwide.com
35 x 325mm .3 x 12.8"	76mm 3"	16mm ⅝"	-	2000kg 4409lb	-	■	-	■	-	■	4	-	■ ■		steinworldwide.com
75 x 480mm 0.8 x 18.9"	115mm 4.5"	19mm ¾"	-	3000kg 6614lb	-	■	-	■	-	■	4	-	■ ■	(W) refers to winch capable adapation, this is otherwise the same model previously listed as 'RC'.	steinworldwide.com
10 x 480mm 6.1 x18.9"	115mm 4.5"	19mm ¾"	-	3000kg 6614lb	-	■	-	■	-	■	8	-	■ ■	Winch piggybacks to lowering line temporarily bypassing (not replacing) the lowering bollard.	steinworldwide.com
10 x 210mm 2.2 x 8.3"	73mm 2.9"	14mm 9/16"	-	1000kg 2204lb	-	■	-	■	■	-	4	1	■ ■	(W) refers to winch capable adapation, this is otherwise the same model previously listed as 'RC'.	steinworldwide.com
65 x 230mm 10.4 x 9"	75mm 3"	12mm ½"	30kN 6744lbf	600kg 1323lb	■	-	-	■	-	-	2	1	■ ■	Comes in zip-up canvas bag	arbortec.com
70 x 385mm 4.6 x 15.2"	75mm 3"	14mm 9/16"	50kN 11240lbf	1000kg 2204lb	-	■	-	■	■	-	2	4	■	comes in PVC pack	arbortec.com

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	MODEL	COMPANY	ORIGIN	COST inc tax	WEIGHT exc straps	MATERIALS	DI
	TH LD3	TREEHOG		£305 $400 $365	6.45kg 14.2lb	Galvanised Steel	33 13
 	TH LD5 3.0T	TREEHOG		£440 $540 €505	5.8kg 12.8lb	Stainless Steel	25
	Port-A-Wrap (71-817)	TREERUNNER		£195 $236 €220	2.6kg 5.7lb	Stainless Steel	25 9
	P500 (71-879)	TREERUNNER		£280 $321 €335	5.8kg 12.8lb	Powder-coated Steel	32 1
	Poller Classic (71-818)	TREERUNNER		£255 $334 €310	9.1kg 20lb	Powder-coated Steel	30 11
	P3000 (71-877)	TREERUNNER		£455 $595 €459	16kg 35.3lb	Powder-coated Steel	47 1
	Port-A-Wrap-TU200	TREE-UP (PROTEKT)		£115 $150 €138	1.92kg 4.2lb	Galvanised Steel	26
	Port-A-Wrap TU201	TREEUP (PROTEKT)		£105 $137 €125	2.32kg 5.1lb	Stainless Steel	26 10
	Port-A-Wrap TU100	TREEUP (PROTEKT)		£274 $336 €315	7.3kg 16lb	Galvanised Steel	37 14
	Port-A-Wrap TU110	TREEUP (PROTEKT)		£254 $312 €291	6.45kg 14.2lb	Galvanised Steel	33 13
	Ultralight TU101	TREEUP (PROTEKT)		£367 $450 €421	5.8kg 12.8lb	Stainless Steel	25 9

LOWERING BOLLARDS

MAX DIMENSIONS	BOLLARD Ø	MAX ROPE Ø	MBS	WLL (Max Working Load)	FLYING	FIXED	TRUNK GRIPS	RUBBER BARK PROTECTION	ANCHOR STRAP(s)	WINCH ADAPT	TIE-OFF/ CONTROL POSTS	ROPE GUIDES	TOP/BOTTOM ANCHOR EYE	NOTES	WWW.
35 x 300mm 13.2 x 11.8"	75mm 3"	14mm 9/16"	50kN 11240lbf	1000kg 2204lb	-	■	■	-	■	-	2	3	■	May be discontinued comes in PVC pack	arbortec.com
50 x 200mm 9.8 x 7.9"	75mm 3"	14mm 9/16"	150kN 33721lbf	3000kg 6614lb	-	■	-	■	■	-	2	3*	■	*Top anchor eye is designated as a rope guide by manufacturer.Comes in PVC pack	arbortec.com
60 x 310mm 9.8 x 12.2"	60mm 2.36"	18mm 3/4"	-	1000kg 2204lb	■	-	-	-	-	-	3	-	■ ■		grube.de
320 x 220mm 12.6 x 8.7"	76mm 3"	16mm 5/8"	-	500kg 1102lb	-	■	-	■	□	-	4	2	■ ■		grube.de
300 x 380mm 11.8 x 14.9"	76mm 3"	16mm 5/5"	-	500kg 1102lb	-	■	-	-	□	-	3	2	■		grube.de
370 x 380mm 18.5 x14.9"	140mm 5.5"	20mm 3/4"	-	3000kg 6613lb	-	■	■	-	□	-	4	2	■		grube.de
265 x 230mm 10.4 x 9"	75mm 3"	14mm 9/16"	50kN 11240lbf	1000kg 2204lb	■	-	-	■	-	-	3	-	■ ■	Comes with storage bag Also available in Yellow.	treeup.pl
260 x 282mm 10.2 x 11.1"	108mm 4.25"	20mm 3/4"	50kN 11240lbf	1000kg 2204lb	■	-	-	■	-	-	3	-	■ ■		treeup.pl
370 x 385mm 14.6 x 15.1"	75mm 3"	14mm 9/16"	50kN 11240lbf	1500kg 3306lb	-	■	-	■	■	-	4	1	■	Comes with storage bag. Also available in Yellow with dome-top capstan	treeup.pl
335 x 300mm 13.2 x 11.8"	75mm 3"	14mm 9/16"	50kN 11240lbf	1500kg 3306lb	-	■	■		■	-	4	1	■	Comes with storage bag. Also available in Yellow with dome-top capstan.	treeup.pl
250 x 200mm 9.8 x 7.9"	75mm 3"	14mm 9/16"	150kN 33721 lbf	3000kg 6613lb	-	■	-	■	■	-	4	1*	■	*Top anchor eye is designated as a rope guide by manufacturer (with carabiner?)	treeup.pl

magazines.com

HAND-POWERED ROPE WINCHES

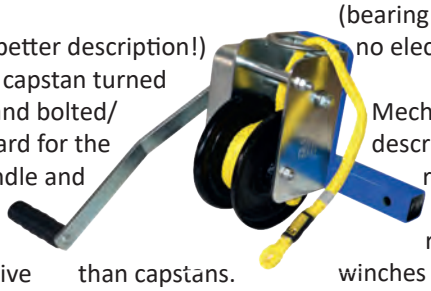
including COMBINATION WINCH/BOLLARDS



Handled winches that use ROPE instead of wire cable, do a similar job of lowering to the static bollards we covered in the last MARKET GUIDE and are of two distinct types:

1) CAPSTAN WINCHES which are cotton-reel'-shaped bollards stolen from yachting via the market leader, Harken Industrial shown in the picture on the left. They often have a lovely shiny surface around which several wraps of rope can absorb friction and lower some substantial weights to the ground in a controlled manner. Specific arborist models have a longer drum able to use more wraps and/or larger ropes In the case of the ubiquitous Harken 46 model, it will take 5 wraps of half inch rope.

2) HAND WINCHES (for want of a better description!) which are basically the gearing of a capstan turned sideways into a flat metal housing and bolted/pinned above a standard static bollard for the purposes of PULLING rope via a handle and an appropriate number of wraps rather than just lowering. These are less efficient but far less expensive than capstans.



The difference between a winch and a static bollard as we featured in last issue's GUIDE is that they have a handle and some cogs connected to the inside of the capstan to offer varying degrees of mechanical advantage allowing you to *lift* heavy weights as well as lower. This GUIDE focuses only on manual devices but you may obviously wish to consider powered winches - battery in particular seems to be the way things are going and prices aren't actually a lot different, in fact, many are considerably cheaper than some of these finely engineered models with their Harken Capstans fit for a millionaire's yacht. The clincher will often be the sheer brute competence and reliability of manually operated winches, no fuel/power to worry about, no inadvertent application of power when you didn't want it (bearing in mind that most don't have protective clutches) and no electronics to go wrong on a cold or hot day.

Mechanical advantage, in the case of capstan winches, is described by the gear ratio or alternatively by the power ratio which both relate to the movement of a gearing mechanism when compared to the distance the load is raised. More on this later. There are many capstan winches covering every industry and one or two rescue models but they are mostly NOT applicable to arborist work purely because they can't be adequately mounted to a trunk for a stable lowering and raising position.

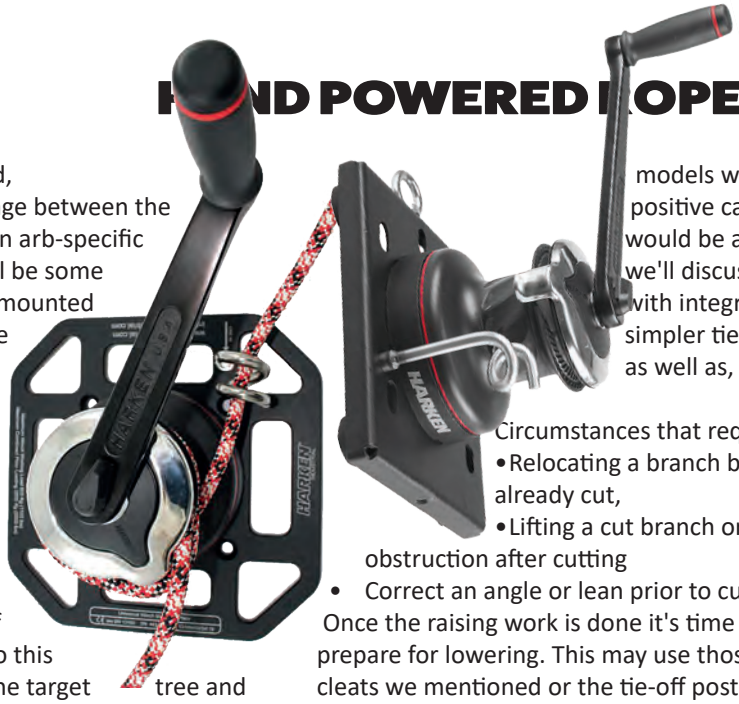


On the left is the original arborist winch with steel back plate, the *Hobbs* which is still going strong after nearly 40 years in the form of the *H2* version [pic courtesy of *Blair's Arborist Eqpt* in MD] while on the right is an engineered alloy model from *Arbpro* Italy using a modular back plate and yachting quality capstan together with guides and a cam above that have evolved to meet the specific needs of arborists.

Specific arborist models were pioneered by Ed Hobbs in 1980 with the novel idea of mounting a capstan to a base-plate and side-mounting it to a tree trunk using ratchet straps. Ratchet straps were part of the original idea rather than simply tensioned rope and this continues to be the simplest, fastest and most secure option. That first *Hobbs* design had a bespoke straight handle rather than the modern yacht-evolved modified Z-shape. The *Hobbs* also demonstrate the key arborist requirement which is a quite specifically designed backing plate able to grip the trunk and remain in a stable position during wincing or lowering. These days rubber pads are used to protect the bark and with a much broader backing plate and heavier securing straps they tend not to have the serrated teeth we discussed in the Bollards guide. In this Guide we have also included a rescue model from *Skyhook* and *Harken*'s own model (opposite-top) which both have universal back plates designed to fit, amongst other things, telegraph poles which is as difficult as it gets because it's much easier to get a secure purchase on a broader trunk, especially if you can cut a level mount into the trunk. Aside from *FTC TREE*'s fine Italian *Anta*l winch, the *Harken* capstan is a common theme for most of the capstan winches in this GUIDE which is testament to the quality and reverence within the industry. The *Protekt Tree Up* model



HAND POWERED ROPE WINCHES



which we think has been discontinued, (right) for instance was a clear marriage between the slick Harken capstan and Protekt's own arb-specific base plate with rubber feet. There will be some die-hards who swear by their vehicle mounted drum winch for various aspects of tree work, but....different animal entirely, different skill-set and vast scope for failure. Were we discussing winches with the sole job of pulling we could probably include virtually anything including the multitude of drum winches and even the venerable Tirfor winch which invariably uses wire cable and will do a sterling job of pulling over leaners. They would all do this from an anchor point far away from the target tree and often with direct connection to the load rather than via a redirect.

RAISING & LOWERING

The style of winch we're discussing could still be said to take some of the skills necessity out of the hands of ground crew; no setting up of pulley systems, no tying of knots even. It will always be secured to the base of a tree so as long as your crew can pick a good site (not too close to the ground and not directly in an impact area), you're sorted. The winch will almost always be attached to the target tree or very close to it and the rope (NOT WIRE CABLE) will be redirected to the load branch or trunk section via a snatch or impact block/pulley. The ground crew stand to one side when lowering in the same way as the static bollards and use a handle to wind the bejesus out of the rope when raising. Because the loads can be quite high you must ensure that you are adequately capturing the progress you make after the manic winding. Capstans generally have their own progress capture (called **Self-Tailing** or, more appropriately, CAPTIVE self-tailing which is a pair of gripping 'lips' at the top of the capstan which will hold the rope if you have enough turns to absorb the weight. You can see this most clearly in the Sterling Rope ad a few pages on where the Harken capstan is shown in profile with the two gripping surfaces and the silver coloured rope guide and in the GRCS pic overleaf. This works best on the largest rope in the winch's range and may be augmented or replaced in some



models with an altogether more positive cam which, in yachting, would be a jamming cleat which we'll discuss shortly, while those with integral bollards can use their simpler tie-off posts instead of, or as well as, the cleat or cams.

Circumstances that require raising include

- Relocating a branch being cut or that is already cut,
- Lifting a cut branch or trunk over an obstruction after cutting
- Correct an angle or lean prior to cutting

Once the raising work is done it's time to lock off the load and prepare for lowering. This may use those integral camming cleats we mentioned or the tie-off posts but remember that a cam would require you to take load off before it will release the rope for lowering so you're either going to need that winch again to take in enough rope to release the cam or you might have one like the Arbpro (pictured opposite with the Hobb) or the ATD by Arboteam (below left) which have a small handle on the cam to release the cam and transfer load to your lowering bollard/capstan which you will have taken in firmly.

Tie-off posts are the same as you always have with a bollard, a few sturdy wraps and a strong hand grasp as you gently unwrap until the load comes on and remains manageable. With capstan winches this then becomes a self-tailing action where several wraps wound around the shiny surface allow one person to hold the load and gently run the rope through gloved hands to lower. *FTC TREE* provide these handy figures for the load holding ability of a new 12mm rope when wrapped around their mini-bollard with the operator(s) feeling a weight/ resistance on the rope of around 30-40kg/67-90lb:

3/4 turn	**= 75 daN / 77kg / 169 lb**
1 3/4 turns	**= 200 daN / 204kg / 450 lb**
2 3/4 turn	**= 470 daN / 479kg / 1057 lb**
3 3/4 turn	**= 1000 daN /1020kg / 2248 lb**

For the lowering function we can pretty much use exactly the same description as we did for fixed-location static bollards last time and add in the new winch stuff , how's this for lazy.....:
After flying and fixed or static bollards our third and heaviest lowering option is a winch with a large ROTATING DRUM driven by a crank handle. The winch is mounted (bolted, pinned or welded) to a backing plate with the whole assembly anchored firmly to the tree's trunk with ratchet straps. Many have rubber feet or the option of rubber feet to protect the bark from inevitable damage during tensioning and arrest/lowering. You need to have a fairly level surface to sit the back plate on so that it can't rock under load and loosen its retaining straps. Interestingly, a number of models quote a lower WLL with rubber feet than without, probably due to compression forces on the rubber and pushing the plate further out from the trunk, so it's fair to assume that the same should be the case for ANY model with the option of rubber feet. Nevertheless a solid flat surface is best so for dismantling jobs you would be able to



cut a flat section into the bark with your chainsaw. Alternatively, for dismantling operations or if you don't like the client, there are plates with teeth or serrations which dig into the bark to provide a firm fixing though we haven't seen this with winches which all have flat back plates.
Once you add raising into any equation the forces multiply considerably because there's a whole load of friction to take into account that you don't have with lowering. This is why the Working Load Limit is higher for the capstan or bollard in lowering than it is for the capstan and/or cleat in raising and then you may also need to reduce the load in your calculation for rubber feet depending on what the manufacturer has quoted.

It won't have escaped your notice that, not only are these systems quite expensive, they're also pretty big and heavy. So much so, that you could be into back-injury' territory if you didn't lift it into place correctly. Were it not for the fact that the biggest and heaviest systems like the *GRCS* (below & now owned by *Harken*), come in two, three or four separate parts - usually the back plate, the capstan, a handle/windlass, and a cleat and/or a lowering bollard. Notable exceptions to the comment on being heavy are the more rescue oriented models from *Skyhook* and *Harken Industrial* and the newest winch on the market the *ODSK Elephant* (inset below-right) all of which are less than 10kg/22 lbs. Well, OK, *Krok*'s heavy duty steel *Ilya* and *Tree-Up*'s *TU120* were also very close at 10.2kg each but otherwise, the rest in this list are pretty heavy. Jeez.

Note that our figures are for the Capstan/winch version NOT the interchangeable rigging bollard (where there is one) unless specifically listed as such. Rope capacity diameters for instance, are often a couple of mil larger for the bollard than they are for the capstan. A noticeable exception to this is the *FTC TREE Transformeur* which might sound very heavy at 43kg but that includes two, count 'em, two bollards AND the winch on the same assembly all of which can be removed from the plate as required - you could for instance have just one bollard on the back plate or none at all and the weight would go down accordingly. The Stein 3002 also offers two bollards but these are fixed so the basic weight of the unit is quite high at 42kg but the 15kg winch attachment is easily separated.

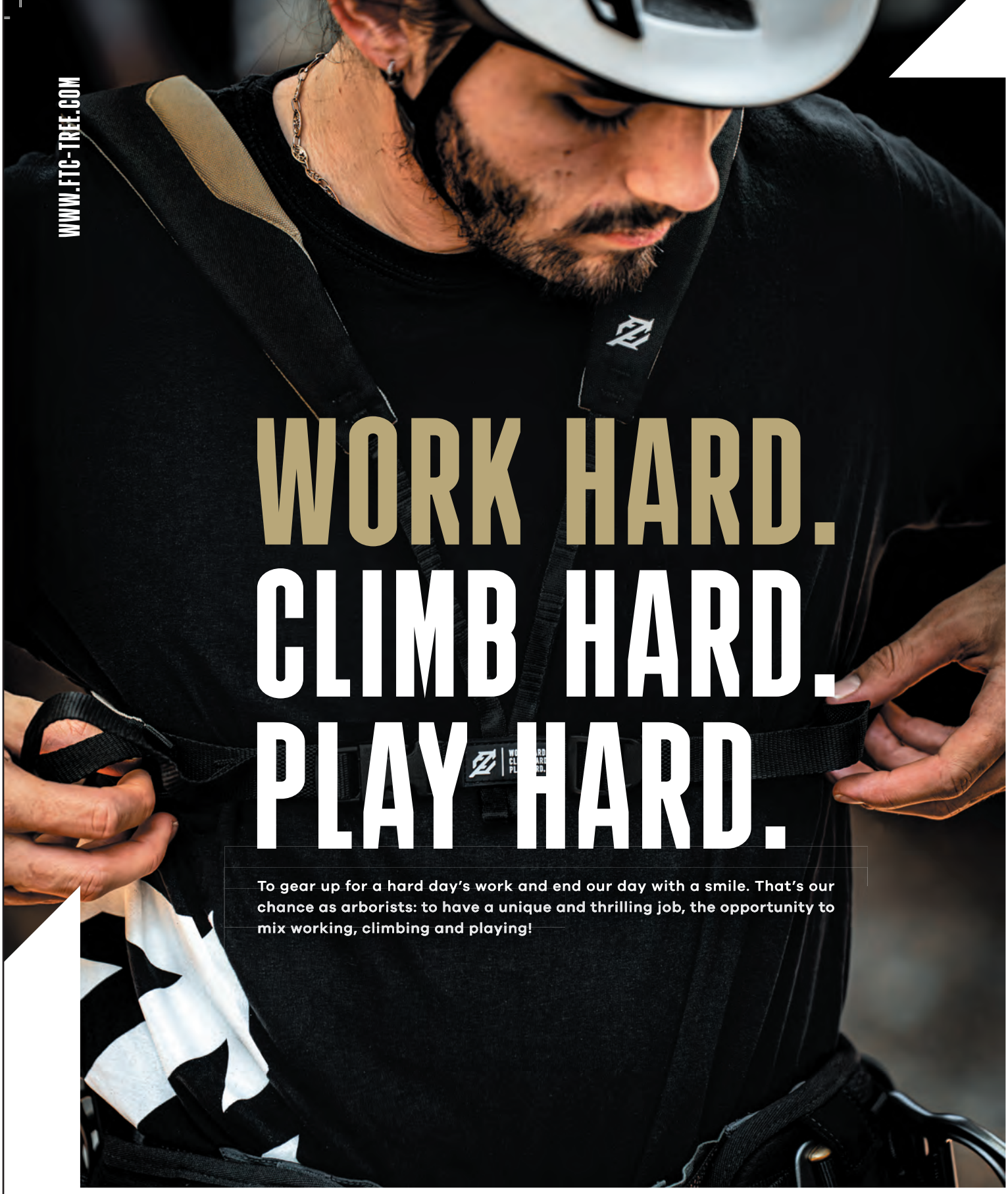


GEAR RATIO versus POWER RATIO :

We're listing this as **MA** or **MECHANICAL ADVANTAGE** which correlates to the Power ratio. While the actual gear ratio on, for instance a Harken winch may be 2:1 and 6:1 as it is on the Rigger 500, this actually translates to the much higher 'Power' ratio of 13:1 and 40:1. You calculate the 'Power' ratio by dividing the handle length by the ***Drum Radius*** (not diameter) and multiplying that by the gear ratio. Not sure how that works if you choose to measure the handle in millimetres? This power ratio figure is obviously starkly different to the gear ratio so make sure you are talking the same language when comparing 'Ratios' . For two speed winches the low ratio winding direction is often one way, while the higher ratio is in the opposite winding direction. This gearing principle is the same throughout the world of mechanical devices from watches to cars - you drive a small cog which engages with a bigger cog, maybe several cogs with the effect that the shorter revolutions of the small cog causes you to wind quite furiously while it engages teeth to teeth with the larger cog rotating much more slowly which in turn may be engaging and driving even larger cogs until it connects with the thing being driven, in this case a heavy load. There's always a trade off in effort and in this case its an increased number of turns to achieve the same aim. In capstans, the cogs sit horizontally in the larger section of the 'cotton reel' in the base. In the case of arborist methodology, this means they sit vertically but in the capstan's original yachting mode it would be sat flat to the deck winding horizontally. The flat, drum winches that attach to the top of some bollard devices like the Stein models, are oriented, and intended to be used, vertically.

DRILL ADAPTERS

Where the handle is detachable it is often possible to use a power drill and adapter to drive the winch. Harken winches in particular have a universal star-shaped bit (pic-top) that will fit any drill and any Harken winch. This saves on what can be a manic winding action in high ratio. You can use the drill to do most of the donkey work and then switch back to hand-winding for finite control when you need it. This adaptation came from yachting because of the repetition and from rescue because extremely long raises might be needed in the mountains (picture opposite), certainly far higher than we ever see in arb work but in an environment where time literally is money, it can speed up the job no end on consecutive raises and lowerings. If you have the spare cash after having stumped

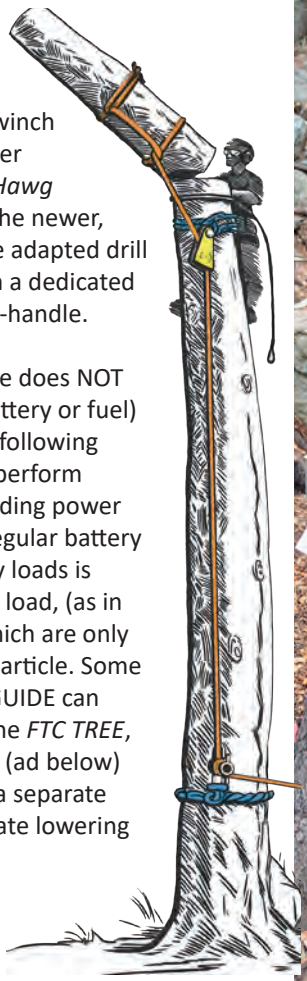

WWW.FTC-TREE.COM
WORK HARD.
CLIMB HARD.
PLAY HARD.
To gear up for a hard day's work and end our day with a smile. That's our chance as arborists: to have a unique and thrilling job, the opportunity to mix working, climbing and playing!
FTC TREE

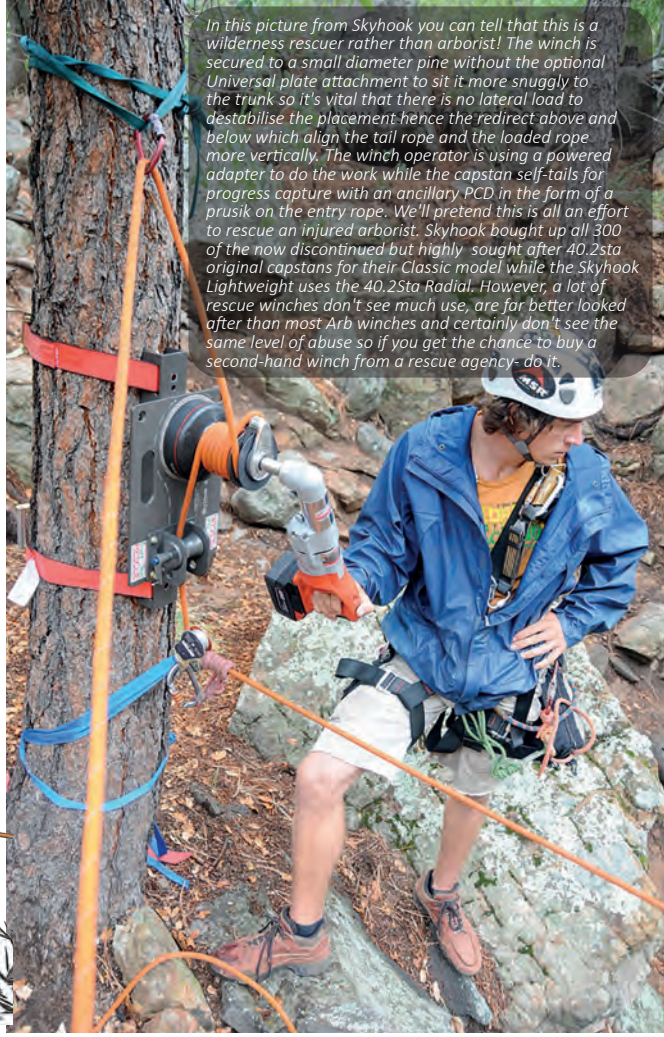


UPDATED Mar '25

up four figures for your winch system you might consider *Milwaukee*'s $300 *Hole Hawg* (opposite-top) which is the newer, ergonomic version of the adapted drill shown opposite but with a dedicated right angle head and top-handle.

Just to be clear, this guide does NOT include any powered (battery or fuel) winches, they are in the following GUIDE The tables in this Guide are devices which perform heavy-duty lowering <u>and</u> raising using manual winding power albeit that some can augment this action with a regular battery power drill. The job of dynamically arresting heavy loads is generally left to Impact blocks rigged closer to the load, (as in our diagram on the right courtesy of *Wesspur*), which are only then lowered on the kinds of devices listed in this article. Some of the fixed bollards we included in the previous GUIDE can be retro-fitted with a drum winch for raising like the *FTC TREE*, *Stein* and *KROK* models. *Stein* (top) and *FTC TREE* (ad below) are unique in this selection because they can use a separate winching rope allowing you to rig up to two separate lowering ropes AND a raising rope at the same time.





In this picture from Skyhook you can tell that this is a wilderness rescuer rather than arborist! The winch is secured to a small diameter pine without the optional Universal plate attachment to sit it more snuggly to the trunk so it's vital that there is no lateral load to destabilise the placement hence the redirect above and below which align the tail rope and the loaded rope more vertically. The winch operator is using a powered adapter to do the work while the capstan self-tails for progress capture with an ancillary PCD in the form of a prusik on the entry rope. We'll pretend this is all an effort to rescue an injured arborist. Skyhook bought up all 300 of the now discontinued but highly sought after 40.2sta original capstans for their Classic model while the Skyhook Lightweight uses the 40.2Sta Radial. However, a lot of rescue winches don't see much use, are for better looked after than most Arb winches and certainly don't see the same level of abuse so if you get the chance to buy a second-hand winch from a rescue agency- do it.



SAFE OPERATING TECHNIQUE

The standard bollard devices are solid lumps of metal that you are very unlikely to damage in a controlled lowering even if it gets sideswiped by the section being lowered. However, a winch has extraneous components that are much more susceptible to damage - the handle for instance if left in and the side cheeks on a drum winch or the top lip and control surfaces on a capstan. These are expensive as well so it's best to ensure that you position it so that it is offset and the lowered section comes down to one side. In the case of the *ATD* and the *Smartwinch* (above), the integral bollard provides a protective shroud for the capstan but if the handle is in place on either the capstan or, in this case, the web tensioner, this would still be a weak-point. Don't forget to factor in that your load may start out in a controlled lower but end up in freefall should an operator or component fail.

A key factor in positioning your winch offset to the load is the fact that the operator will need to stand directly adjacent to the winch to wind the handle and so could be in the danger/drop zone. Also bear in mind that raising adds forces to the system that make it a more dangerous operation with greater scope for component failure at the rigging or even the rope itself than lowering imparts. When lowering, the operator will typically stand a minimum of 6ft-2m from the lowering device, often much more and will ALWAYS wear gloves.

Good technique requires the operators to use the appropriate number of wraps to hold the load and when arresting a falling branch or section to do so dynamically allowing enough rope to run though gloved hands so that impact forces are minimised. If the load comes to a sudden arrest because you've wrapped too may turns around the bollard or capstan the impact forces will magnify considerably and could adversely affect ANY of the components including the rope and the winch if that is being used is a lowering bollard.

Ensure that the wraps are regular and do not over-lap or override each other - this can make your job harder at best and can be extremely dangerous at worst. Some of the *Harken* winches have moulded diagonal grooves which help guide each turn of rope in the right place.

HAND POWERED ROPE WINCHES

IN THE FOLLOWING TABLES:.....

COST: Approximate. Includes local taxes but can vary due to exchange rates, other taxes etc. We generally round up the cost to the nearest Pound£, US Dollar$ or Euro€ **Simple currency conversions are shown in orange** for reference - they are lower than the actual price because it does not take into account import duty, shipping or tax.
ORIGIN: Is the country of the company selling the item, not necessarily the same as the origin of the product itself which is shown as an inset flag where we know.

MAX DIMENSIONS: Height and the width of the base plate but in some cases, a third figure will be the depth of the winch or bollard. These should be excluding handle but we think some of the submitted figures have strayed!

CAPSTAN DIAMETER: The wider the sheave on a pulley the more residual strength is available in the rope - it's all about avoiding tight radius bends and it's the same with a winch, the wider the capstan diameter the better it is for your rope - The magic figure is 4"/100mm, this is the diameter at which you will lose virtually NO strength in your rope due to bending fibres.

MA RATIO: Mechanical Advantage expressed as a ratio. As already discussed this is the input power to ultimate drive that you create rather than the gearing ratio of the cogs. Invariably a figure on quality capstans around the 40:1 mark in high ratio and around 12:1 or low ratio. We have rounded the figures because to be accurate the Harken 46 is 11.7:1 & 46.5:1 not 12:1 and 46:1 as we have shown.

MAX ROPE DIAMETER: Given by the manufacturer. This should be dictated by the diameter of the cylinder maximising the bend radius and the number of wraps you can fit but also by the gap at the rear rope guide. Oddly, many of these DO NOT correspond to the capstan manufacturer's own recommended diameters. In some cases this may be because they are quoting the bollard capacity rather than the capstan (for winches that have both options).

MBS and **WLL:** ... is the Maximum Breaking Strength and in the case of all these winches refers to the LOWERING mode NOT RAISING mode which would be considerably less and best factored into your calculations using the maximum Working Load (WLL) for raising shown in orange in the WLL column. MBS isn't given by everyone in the arb sector, many preferring to stick with a Working Load Limit or Safe Working Load WLL/SWL because it's often dictated by the webbing rather than the actual device (like the *Hobbs*) . We list the MBS in units of force as KiloNewtons and Pounds Force and WLL in terms of weight as Kilograms and Lbs but they are broadly comparable figures ie. 50kN isn't quite 5000kg, it's 5099kg, close enough for you to be able to work out the load limits and stay well clear of them. These figures are for NON-HUMAN LOADS. CE standards require a separate rating for rescue/human-riding which is just over half of the WLL of these winches. However, it is quite obvious that none of these winches has a problem with the physical weight of a casualty, it's just a question of being tested to specific standards which the rescue winches in this list would additionally need to adhere to.



MODULAR: means that the base plate can be separated from the winch and/or bollard =the majority of models in this guide.

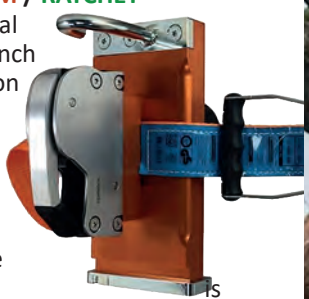
ANCHOR STRAPS: A solid black square ■ indicates that the device comes complete with the necessary strapping (whether you want it or not!). An outline square ☐ indicates that bespoke strapping is available as an option.

TRUNK GRIPS Hard/aggressive teeth or serrations that bite into the bark to find a purchase- shown as a black square ■

RUBBER BARK PROTECTION: refers to protective feet to protect bark from damage during lowering operations. None of the models here appears to offer teeth/serrations in the same way as some of the static bollards did but virtually all of those with rubber pads can have them removed to leave you with the basic metal plate which, of course, is stronger than with rubber feet but you are more likely to damage the bark.

TIE-OFF/CONTROL POSTS: Refers ONLY to bollards rather than the winch and is only relevant here for models that have an integrated bollard like the *Smartwinch* or where the bollard is attached to the plate simultaneously with the winch as with the *Transformeur.* Such posts help to maintain wraps on the cylinder and direct the entry rope to allow the ground to stand in the safest position for lowering eg. not directly beneath the limb/section being cut.

PROGRESS CAPTURE - SELF-TAIL / CAM / RATCHET



A black square ■ indicates an integral 'jamming' action on the top of the winch drum called self-tailing and common on *Harken* models.
An orange square ■ indicates an add-on camming option like this from *Arbpro* Italy and the black one below from *ATD*.
A Green square ■ indicates a simple ratchet cam where a cog-like wheel is stopped from going backwards by some form of 'catch'. This is typical on the *Stein* models.

ROPE GUIDES: Also known as **FAIRLEADS**. This includes specific hook-style guides and spiral pig-tails which make sure the rope enters and leave the winch drum in the correct alignment.



TOP/BOTTOM ANCHOR EYE: refers to a load bearing eye located on the top for clipping in a raising/tensioning system or on the bottom as an ancillary anchor point, often for a *Whoopie* sling style anchor.

Among the models we haven't included in our tables is the *Harken 200 Riggers Winch* because the base plate is too small for arb work - it is intended as a portable light-load-lifting/hauling winch for remote deployment. Krok are omitted but in the hope that russia returns to sanity at some point and rejoins the normal world so we can again list Krok and we have precluded another russian brand *VTT* for lack of contacts rather than sanctions on russia - they have a model with a detachable handle for pre-tensioning which looks like a smaller version of the *Stein Dual* model.



A classic example of where raising is necessary prior to lowering. This is *ODSK*'s *Elephant winch* from Japan using the ubiquitous Harken capstan and an alloy frame with a trio of unique, machined rope guides which double as friction posts. In this picture the winch is secured to a standing tree used as the anchor from which to raise a faller that is entangled in its branches. This is storm damage from a busy year of typhoons in 2018 and you have little say on where the tree ends up. On another day (with that impact block above the winch), this could have been a congested work area in which a cut section has to be 'unpicked' from an adjacent tree and raised, using the winch, before it can be lowered. It may be an optical illusion but doesn't it look like the ratchet strap on the winch is squeezing the life out of that trunk?

ARBORIST'S ADVANTAGE

YOU ARE PACKING IN DECADES OF DEPENDABILITY

Developed by Greg Good and manufactured by Harken, the GRCS is the backcountry at height lifting and control system you can pack in to handle equipment and limbs to and from the canopy. The GRCS secures a self-tailing winch to the tree trunk via its ratchet-tightened steel mounting plate. GRCS. Trust decades of experience to control the heaviest loads.



LEARN MORE ABOUT GRCS TREE MOUNT SYSTEM

Made In Wisconsin, USA

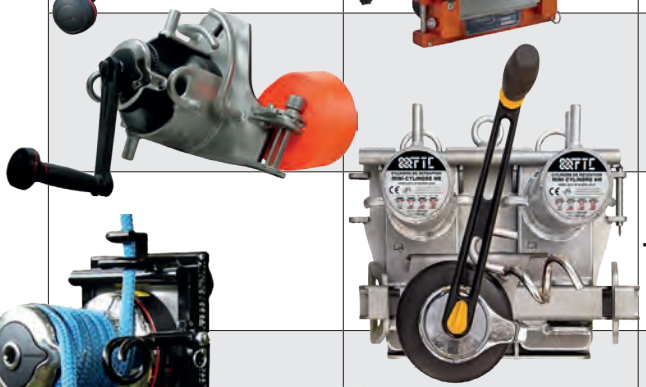
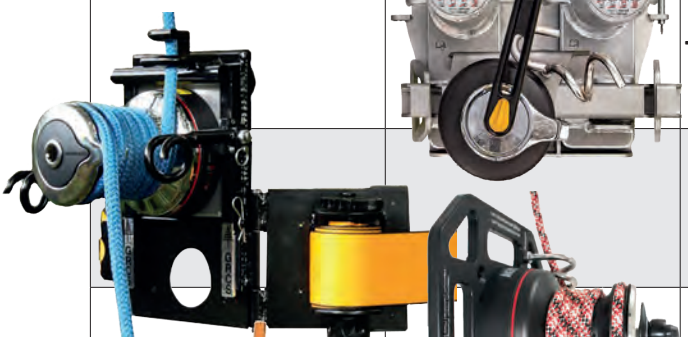
Dead lift rating of 3,000 lbs

Kit comes with the two-speed winch mounted on the plate. Also includes 254 mm aluminum SpeedGrip lock-in winch handle B10ASG

HARKEN™

harken.com

IMAGES NOT TO SCALE
COST: Approx & inc VAT/Taxes £$€=Currency conversion
MAX DIMENSIONS: height x width x Depth
MBS: In lowering mode.
WLL/Max Load: normally based on 7:1 - 10:1 of the MBS.
N/A info Not Available/not given

	MODEL	COMPANY	HARKENN TYPE	ORIGIN	COST inc tax £$€ Currency conversion only	WEIGHT exc straps	MATERIALS BASE PLATE CAPSTAN	
	ATD Winch	ARBOTEAM	46		£4255 $5525 €4873	30.3kg 67lb	Steel Aluminium	48 18
	LD1	ARBPRO	40		£2223 $2910 €2500	21.3kg 47lb	Steel Stainless Steel	60 2
	LD2	ARBPRO	46		£3176 $4154 €3570	26kg 57lb	Alloy Alloy	60 2
	SmartWinch	CPR INNOVATIONS BV	46		£3180 $3885 €3640	23kg 51lb	Stainless Steel Stainless Steel	51 2
	Transformeur	FTC TREE	-		£3775 $4610 €4320	43kg 95lb	Alloy Stainless Steel	4
	GRCS	HARKEN	46		£2890 $3500 €3285	38.5kg 85lb	Alloy &Steel Stainless Steel	36 1
	Traction Winch 500	HARKEN	40		£1850 $2150 €2200	7kg 15.4lb	Alloy Aluminium	29 11.4
	H2 (Hobbs)	K&R Products	-		£2386 $2520 €2735	26.3kg 58lb	Steel Aluminium	48 1
	Elephant	ODSK/ TAKASHI OSAKA	40		£1074 $2210 €2032 ¥330000	7.6kg 16.75lb	Alloy Aluminium	28 11

HAND POWERED ROPE WINCHES

MAX DIMENSIONS exc handle	CAPSTAN Ø	MA RATIOS	CAPSTAN ROPE Ø	MBS	WLL Max Load for RAISING LOWERING	MODULAR	RUBBER TRUNK GRIPS	ANCHOR STRAP	includes BOLLARD	PROGRESS CAPTURE SELF-TAILCAMRATCHET	TIE-OFF/ CONTROL POSTS	ROPE GUIDES	TOP/BOTTOM ANCHOR EYE	NOTES	www.
0x370x330mm .9 x 14.5 x 13"	100mm 3.9"	12:1 46:1	14-16mm 9/16-5/8"	-	1300kg* 2866lb 2000kg 4400lb	□		1	□	■ ■		7	■	* WLL for hard securing of back plate. Rubber mounting max= 800kg. Cost inc carbon-plastic Case	arboteam.it freeworker.de
0x300x250mm 24 x 12 x 10"	140mm 5.5"	13.5:1 40:1	12-14mm 1/2-9/16"	48kN 10791 lbf	800kg 1764lb 1000kg 2200lb	■	■	3	■	■ ■		2	■	MBS is when used with optional cam. 140mm diam Bollard weighs 11kg	arbpro.it
0x350x250mm 24 x 14 x 10"	150mm 5.9"	12:1 46:1	12-19mm 1/2-3/4"	73.5kN 16535 lbf	1200kg 2645lb 1500kg 3306lb	■	■	3	■	■ ■		4	■	MBS is when used with optional cam. 150mm diam Bollard weighs 5kg	arbpro.it
0x350x250mm 20 x 14 x10"	101mm 4"	12:1 46:1	8-14mm 5/16-9/16"	70kN 15736 lbf	1300kg 2866 lb 700kg 1575 lb	□	■	1	□		2	3	■	Integral bollard protects capsatn. Straps are tightenend using the winch handle in the riht-hand webbing pin.	cprinnovations.com
450 x 370mm 18 x 14.5"	93mm 3.7"	20:1 43:1	10-16mm 3/8-5/8"	100kN 22481 lbf	816kg 1798lb 2040kg 4500lb	■	■	2	■ ■	■	0-4	2-6	■	All components can be purchased separately. Model shown includes 2x Bollards and case.	ftc-tree.com
0x230x250mm 4.1 x 9 x 10"	100mm 3.9"	12:1 46:1	<19mm <3/4""	91.6kN 20592 lbf	907kg 2000lb 1360kg 3000lb	■	■	■	■	■		3	■	NB: Now owned by Harken. Base plate is hinged for greater stability on a curved surface.	harken.com
0x290x369mm 4 x 11.4 x 14.5"	80mm 3.5"	13.5:1 40:1	8-12mm 5/16-1/2"	25kN 5620 lbf	500kg 1102lb					■		1	■ ■	Also available is a smaller, lighter Rigger 200 but not marketed to arborists	harken.com
3x436x236mm 9 x 19 x 9.3"	*75-152mm 3-6"	16:1	12-19mm 1/2-3/4"	>89kN >20000 lbf	1360kg 3000lb		■	■	□	■	1	2	■	The original arborist lowering device with raising capability. *Has a highly tapered capstan	blairsae.com
9x250x240mm 1.4 x 10 x 9.5"	80mm 3.5"	13.5 40:1	12mm 1/2"	>40kN >8992 lbf	400kg 881lb		■	■		■	3*	3*	■ ■	Guides designed as 'hyperbars that double as tie-off posts	works-odsk.jp
															Expansion Row

IMAGES NOT TO SCALE
COST: Approx & inc VAT/Taxes £$€=Currency conversion
MAX DIMENSIONS: height x width x Depth
MBS: In lowering mode.
WLL/Max Load: normally based on 7:1 - 10:1 of the MBS.
N/A info Not Available/not given



MODEL	COMPANY	HARKENN TYPE	ORIGIN	COST inc tax £$€ Currency conversion only	WEIGHT exc straps	MATERIALS BASE PLATE CAPSTAN
Classic/Basic	SKYHOOK	40		£3135 $3950 €3610	9.3kg 20.5 lb	Alloy Aluminium
Lightweight/ Multi-Mission	SKYHOOK	40		£3045 $3840 €3510	7.9kg 17.5 lb	Alloy Aluminium
RCW3001	STEIN	-		£1078 $1400 €1350	29kg 64 lb	Steel Steel
RCW3002	STEIN	-		£1415 $1730 €1625	41.7kg 92 lb	Steel Steel



HAND POWERED ROPE WINCHES

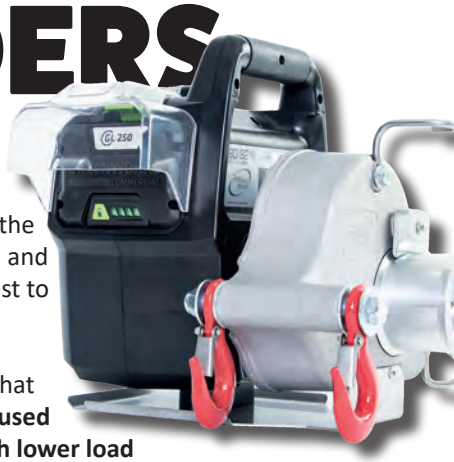
MAX DIMENSIONS exc handle	CAPSTAN Ø	MA RATIOS	CAPSTAN ROPE Ø	MBS	WLL Max Load for RAISING LOWERING	MODULAR	RUBBER TRUNK GRIPS	ANCHOR STRAP	includes BOLLARD	PROGRESS CAPTURE SELF-TAILCAMRATCHET	TIE-OFF/ CONTROL POSTS	ROPE GUIDES	TOP/BOTTOM ANCHOR EYE	NOTES	www.
8x254x235mm 0 x 10 x 9.25"	80mm 3.5"	13.5:1 40:1	11-13mm 7/16-1/2"	-	500kg 1100 lb	■				■		1	■ ■	Price includes (and requires) 'Universal' back plate for efficient attachment to trunks.	skyhookrescue.com
?	80mm 3.5"	13.5:1 40:1	11-13mm 7/16-1/2"	-	500kg 1100 lb	■				■		1	■ ■	Lightweight shown attached to accessory H-plate. Bottom anchor eyes on guide roller frame.	skyhookrescue.com
275xmm 11 "	115mm* 4.5"	5.4:1	8mm 5/16"	-	681kg 1501 lb 3000kg 6614 lb	■		■	□	■	2	2	■ ■	* No capstan - this is the Bollard diameter. Winch has separate 8mm raising rope	steinworldwide.com
365xmm 14.4 x "	115mm* 4.5"	5.4:1	8mm 5/16"	-	681kg 1501 lb 3000kg 6614 lb	■		■	□	■	2 x2	2 x2	■ ■	* No capstan - this is the Bollard diameter. Winch has separate 8mm raising rope	steinworldwide.com



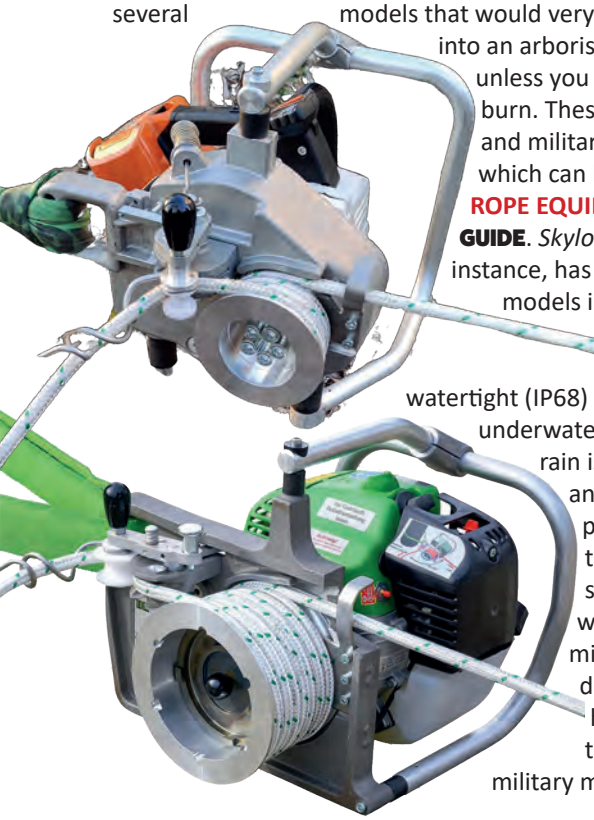
POWERED ROPE WINCHES/ASCENDERS

(no wire-rope winches)

Independently anchored, fibre rope winches



A few years ago powered rope winches might only have consisted of a handful of small petrol/gas powered models that were effectively a chainsaw or brushcutter engine attached to a capstan. Now, we not only have a wider range of specifically designed petrol capstan winches like the Portable Winch Co. range, we also have a whole heap of battery powered models that use a rotating grip or jaw instead of a capstan. All such models can use any length of rope within their operating limits - often limited by temperature in the case of battery power. We need to say straight away that the number of battery winches is artificially bolstered by the meteoric rise of powered ascenders because they can all be used for ascending a rope AND as a conventional but light-duty winch because it's the same job - hauling a weight on a rope. There is really only one dedicated battery rope winch of note, the PCW3000-Li, the rest are either wire-rope models which we'll discuss shortly, or powered ascenders that can be used as a winch, dragging a suitably sized rope through its cleated circular 'jaw' instead of around a large capstan while fixed to an anchor. Within the battery genre there are now several models that would very rarely make it into an arborist inventory at all unless you have money to burn. These are the rescue and military spec models which can be found in the **ROPE EQUIPMENT BUYERS GUIDE**. *Skylotec/Actsafe* for instance, has 5 or 6 military models including a SEAL model which is completely watertight (IP68) , even operating underwater. So, while heavy rain is no hindrance to any winch, whether petrol or battery, they do have saturation limits which these overtly military model don't. Skylotec have balanced these overt military models with their new utitlity ICX model using the Husqvarana battery platform and therefore of particular interest to arborists.



We must stress once more, that **battery powered ascenders used as winches have a very much lower load capacity than petrol/gas/battery dedicated winches.** Powered ascenders will NOT drag logs across the ground because the actual load will vary so wildly as it snags on differing substrates and obstructions. Powered ascenders are for more precise hauling operations either within the tree or on a highline/zipline where your rigging skills can mitigate the loads to within required margins. Taking a winch into the canopy to anchor it would be unheard of if it weren't for the fact that you may have already used it to ascend into the canopy instead of having to haul it into position as a dead-weight. But when grunt is the primary requirement, a dedicated winch, whether gas or battery, will have, on average, around 7 or 8 times MORE hauling power than a battery-powered ascender and can cope just fine with dragging heavy weights through the forest. One last thing to consider is operating temperature. Petrol/gas can do weird things in extreme cold and extreme heat but you deal with it all the time with your chainsaws so a winch just demands the same care and attention and will function OK in extreme temperatures. Those of you who have switched to battery chainsaws and work in very low or very high temperatures will have noticed that they are not so forgiving. Power drops off below freezing (that's 0 degrees centigrade not the Fahrenheit scale which freezes at 32 degrees and boils at some other unmemorable number). You may see as much as a 15% power reduction. The same is true of high temperatures with a similar percentage reduction. A good rule of thumb is that if it's a comfortable temperature for you to work in, it will be comfortable for battery powered tools. Take it as a reason to tell the boss it's too hot or too cold to be working safely if your battery tools are playing up.

Powered winches are generally employed to do a different job to the manually operated capstan winches. The manual capstans allow for precise taking in of slack over small distances during limb removal, to take in slack in preparation for a cut and to arrest the fall of cut sections in conjunction with a suitable snatch block before lowering your branch or



ABOVE: Germany's Grube/Eder 1800 model and above it their new 1200 battery version using a readily available Stihl36v battery. Note the black knob on the left is sprung or sometimes screw-threaded and is to allow installation of the rope into a redirect. The knob inside the capstan allows it to be changed or replaced.
TOP RIGHT: Canada's Portable Winch Co. has a battery model, the PCW3000-Li, using a Briggs&Stratten/Cramer 82v battery .

POWERED ROPE WINCHES/ASCENDERS

trunk section to the ground in a controlled manner. Powered winches on the other hand are generally in it for the long-haul, literally. They're for repetitive lifting and dragging or where speed is important or for winching/hauling long distances. Battery models do offer more precise handling with variable speeds from 0 to Way-too-fast, so skilled operators can quickly learn to use them as easily as a manual capstan and probably get the job done a lot faster. However, don't forget that a number of the manual capstans and in particular any that use a *Harken* capstan can use a power-drill attachment for winding instead of the handle and this too would speed up the job. Petrol/gas powered winches mostly use a full capstan around which you wind a number of turns of rope as in the *Grube* model opposite while battery powered ascenders use a single turn of rope grasped within a jaw-like 'cog'. The multi-wrapped capstan offers conventional lowering where more turns = more friction but the battery ascenders use reverse drive of the motor to enable lowering so this is not a design function for heavy loads and they most certainly should NOT be subjected to any kind of shock load, something you might get away with on a manual capstan winch though still not recommended. If the loads are within lowering limits, some battery ascenders actually recharge during lowering so if you have a mixed bag of lowering and raising you can get extended battery life from a powered ascender which otherwise has considerably less longevity than a liquid-fuel driven winch.



Main Pic: Acstafe's Powered ascenders, whether petrol like this PMX or the battery-drivenACX (inset) , can operate as 'light-duty' winches as well as moving a human load up or down a rope buy direct attachment.
Right: The Japanese *Kenz* models are not yet available outside of Japan but the AWAh Z2R inset pics right. These are smaller than all others as a consequence of using an electric drill to do the work something we've seen in rescue with the Skyhook listed in our manual winches Guide. This means that your 'motor' is a readily available and considerably cheaper alternative to a bespoke battery.

CAPTIVE DRUM WIRE & ROPE WINCHES

It's ironic than an article on winches doesn't include the world's biggest name in winches, *WARN*. Warn Industries concentrates on vehicle-mounted, wire rope winches. It does have two models that might be useful for arborists because they use rope; the battery driven *Pullzall* and the 500lb Drill winch. Both have integrated wire or synthetic rope on a captive drum but only have a very short working length UNLESS you piggyback it to another rope system to give you the reach you require to get to the target tree, branch or section. Your working range will still be fairly limited since it is only what is wound onto the internal drum. The *Pullzall* (pic below right) has 15ft of wire or fibre rope. Its pull capacity is 1000lb@5.6ft/min but it will only do this for about 150ft on a full charge. Of more use to arborists is *Docma's L55* series using 80m of 5mm rope/cord. This sounds like a very small diameter but it can haul up to 1260kg assuming NO friction and, as with all pulleys, more if you add a 2:1. The 2 *Docma* models are currently the only captive rope on drum models that we have included and are intended more for forestry but can be carried in their own back-pack.



As with manual capstan winches, some powered winches can be anchored directly to the target tree and remotely controlled using the tail of the rope but it's an expensive bit of kit if you hit it with a log!



This next section on pulling, raising and lowering has some of the same info as the manual capstan winch GUIDE except where there are differences when using electric or petrol/gas power.





The diagram above, courtesy of *Eder Maschinbau*, shows a typical pulling/dragging operation where the pulley on the load significantly reduces the load experienced by all of the components which would otherwise be overloaded at 3.6tonnes. The load is never halved by the travelling pulley, to do that it would need to be 100% efficient with no friction and the second anchor would have to be rigged so that it was directly in line with main anchor.

PULLING, RAISING & LOWERING

The terms 'Pulling' and 'Raising' are both the same and different. For the purposes of this article, pulling implies horizontal 'dragging' of the target tree, either to assist in felling it by pulling against its angle of lean or an opposing wind force or to physically drag it across the ground from the felling site to the vehicle or log-stack as in the diagram on the left. Raising also requires the rope to be 'pulled' but the load will invariably be off the ground and were it not connected to the winch would freefall to the ground. Circumstances that require raising include:

- Relocating a branch being cut or that is already cut,
- Lifting a cut branch or trunk over an obstruction after cutting
- Correct an angle of lean on branches or sections that are off the ground on the target tree, prior to cutting

Once the raising work is done it's time to lock off the load and prepare for lowering. This may use those an integral cam, some form of tie-off post for the raising rope or in the case of powered ascenders the rope is permanently grasped and a direction change from raise to lower in initiated by the flip of a switch or button. Remember that a cam would require you to take load off before it will release the rope for lowering so you're either going to need that winch again to take in enough rope to release the cam or you might piggyback a small pulley system to allow the load transfer. Tie-off posts are the same as you always have with a bollard, a few sturdy wraps and a strong hand grasp as you gently unwrap until the load comes on and remains manageable. With capstan winches this then becomes a self-tailing action where several wraps wound around the shiny surface allow one person to hold the load and gently run the rope through gloved hands to lower. *FTC TREE* provide these handy figures for the load holding ability of a new 12mm rope when wrapped around their 100mm mini-bollard with the operator(s) feeling a weight/resistance on the rope of around 30-40kg/67-90lb:

3/4 turn	**= 75 daN / 77kg / 169 lb**
1 3/4 turns	**= 200 daN / 204kg / 450 lb**
2 3/4 turn	**= 470 daN / 479kg / 1057 lb**
3 3/4 turn	**= 1000 daN /1020kg / 2248 lb**

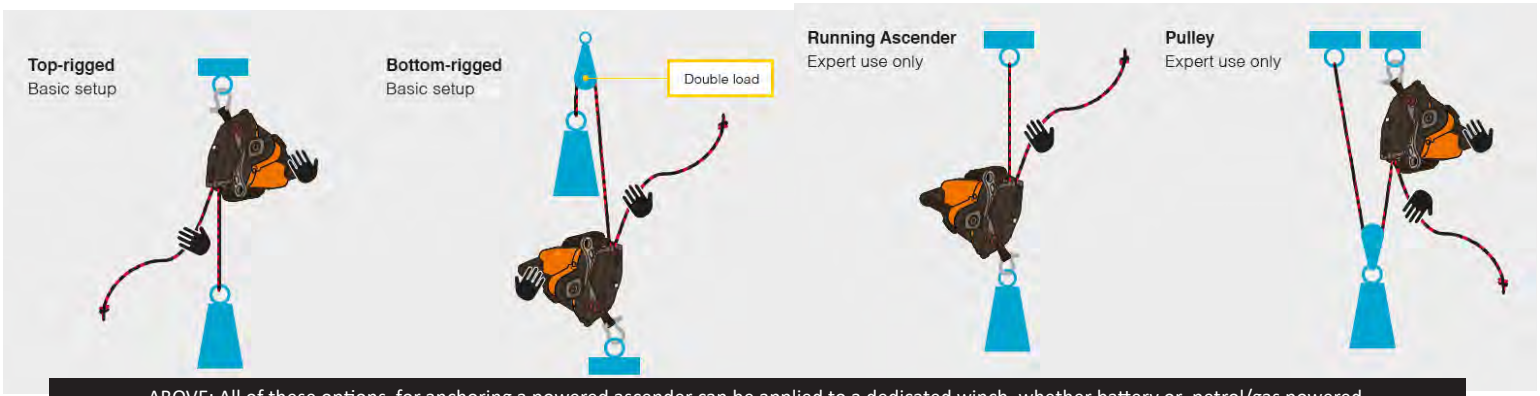
The styles of winch we're discussing could still be said to take some of the skills necessity out of the hands of ground crew; no setting up of pulley systems, not even knot-tying and the powered ascender style of winch doesn't even require the 'feel' of tension on the trail rope for expert control - you just press the trigger/button/throttle and raise or lower away. Your winch will always be secured to the base of a tree, a vehicle or other suitable anchor. Unlike a manual capstan designed primarily as a lowering device that can do a bit of raising, powered winches are designed for raising/pulling with a bit of lowering. They are therefore not generally connected to the target tree but rather an appropriate anchor adjacent the target tree. If used for lowering cut sections/branches, the rope (NOT WIRE CABLE) will be redirected to the load branch or trunk section via a snatch or impact block/pulley. Powered winches often have a built in redirect and sturdy rope guides. If you look at the main title picture you can see that the rope is entering the capstan at a 90 degree angle thanks to the pulley redirect and spring-like rope guide but this entry angle can often be adjusted as required. One of the reasons that some petrol/gas-powered winches are not used on their side, attached to the target tree, is the fuel and maybe oil feed which may have a tendency to spill or not flow efficiently. However engines like the Honda GX35 and 50 are designed to work in any orientation (like a chainsaw) as are most, if not all, of the winches in this GUIDE. The *Grube/Eder 500* also shown on the title page has rubber-lined feet and anchor eyes that specifically allow it to be attached to the target tree in the same was as the manual capstans. The PCH1000 has an optional rigid mounting plate that anchors to the target tree or anchor tree/pole keeping the winch levelled while providing an integral redirect.

Instead of winding manically on a handle when raising or pulling, the powered winch operator has only to use a throttle, trigger or button to initiate movement. However, there are two things to note

1) make sure that you take in slack and initiate lift with the trigger/throttle in a controlled manner not like a teenager over-revving a motorcycle and wheelying up the road as if he meant to do it.

2) Just as you do with a descender, maintain contact and control of the trail rope as it enters/exits the capstan or drum/grip. This also means ensuring the correct number of wraps if it's a capstan and ensuring that there are no kinks or knots in the

POWERED ROPE WINCHES/ASCENDERS



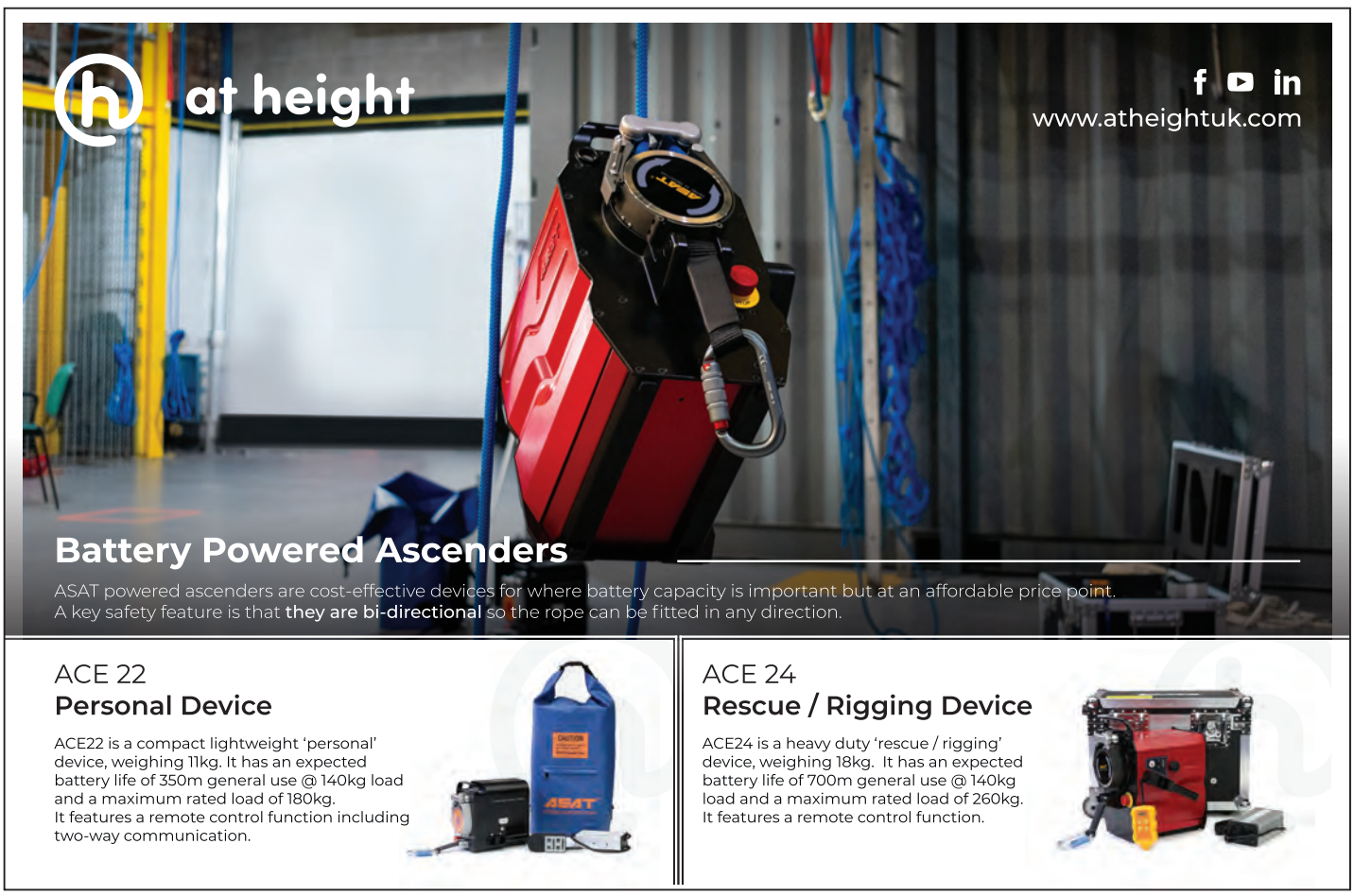
ABOVE: All of these options for anchoring a powered ascender can be applied to a dedicated winch, whether battery or petrol/gas powered. However, petrol/gas models shown below in Portable Winch Co.'s diagrams, are primarily designed to be used on or near the ground in a horizontal orientation. You could therefore look at the Actsafe diagrams above as if rigged horizontally as well as vertically. The principle of halving the load (theoretically) using a pulley on the load, holds true for all types of winch/powered ascender. Remember, this halves the load to the winch but requires twice as much rope and takes twice as long to take in than direct connection to the load. More importantly it SIGNIFICANTLY increases the load at the pulley and deviation anchor.

rope to jam things up - a powered device is far, far less forgiving than a manual winch in this respect, in fact prospectively, catastrophically so.

WHAT COULD POSSIBLY GO WRONG?

The rope could snap! Most winches have no mechanical clutch mechanism to mitigate the powerful pulling action should a jam occur . Most will cut out if loaded to the maximum or overloaded but that's not much consolation with the more powerful models. For capstan models your rope handling skills around the capstan are therefore important. You should have hold of the trail rope at all times and have enough wraps on the drum so that if you release tension on the rope the wraps will start to run under load. This acts as your safety 'clutch' should the load jam or be heavier than expected and heavier than your safety margins were anticipating. As you take in on the trail rope, it tightens the wraps on the drum causing it to grip and start taking in. If it slips continuously you need an extra wrap.

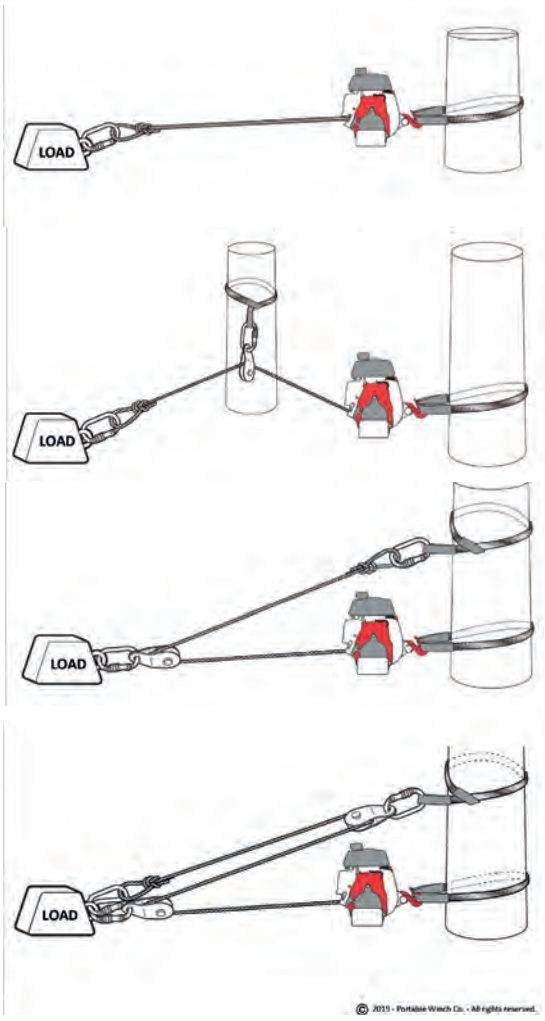
Clearly, you cannot allow a knot or kink to enter the winch or capstan from either direction. If you see or feel a potential obstruction in the rope you will need to immediately stop taking in and ensure the load remains secured if it is off the ground. You may need to employ a secondary, manual pulley



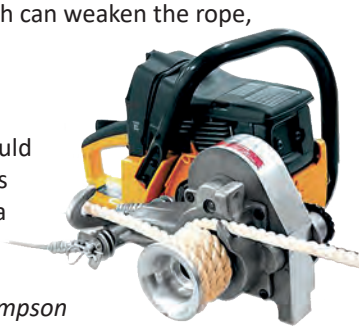
system to hold the load in order to clear an obstruction between the capstan or rope grip and the load. Of course, if you were using the winch to correct a felling angle, then tension needed to be maintained throughout and any necessity to stop taking in could be disastrous. Should have checked the rope thoroughly before starting the winch!

Many winches are supplied with an anchor sling and some, like the *Portable Winch Co*., have two swivel hooks spaced across the front of the winch instead of the single attachment eye that most have. This demands that you DO NOT take an extra 'wrap' of the sling around the anchor (2.right) because, once loaded you may end up with only one leg of the sling and therefore one hook, taking the load and the winch being off-centre in terms of rope feed.

Pulling can look the same as raising except in one key element - progress-capture. Two models from *Portable Winch Co. (PCH1000 and PCH2000*) quote two different figures; one for pulling and one for raising. Here is why; when pulling a load horizontally, the engine has the chance to ramp up to its maximum capacity and therefore pull heavier weights. Whereas, when raising a load from mid air, the engine has to provide all its power at this very instant in order to keep raising the load. Those two lifting winches are equipped with a progress-capture cam that is integrated into their frame. It is designed to hold the load during resetting or if the tail of the rope has been accidentally released. In this last case, there will necessarily be an aggressive compressing action from the progress-capture, which can weaken the rope, but at least, the load and workers will be safe.

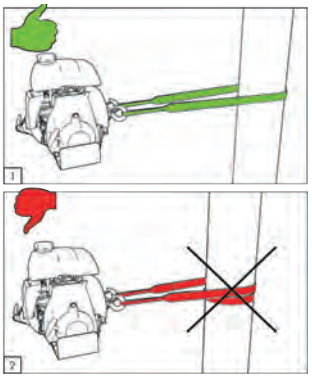


CHAINSAW WINCH ADAPTERS



Unlike the drill adapters mentioned earlier which could help drive many of the manual rope capstan winches instead of using the handle, only one winch utilises a full-time drill and that is a wire-rope model from *Warn* with 227kg/500lb capacity using 30ft of cable and is not included here. There are some, like the *Simpson CS-CW* that is a winching unit powered by your chainsaw, as long as that chainsaw has a 3/8" drive sprocket and is less than 57cc. It weighs only 4kg/9lb not surprisingly, since it doesn't have an engine, and costs around $700. So it's not a massive saving over some of the less expensive winches in our list but if you're dragging wood in remote areas and already have to carry a chainsaw it makes your overall travel weight much less.

SAFE OPERATING TECHNIQUE



The standard bollard devices are solid lumps of metal that you are very unlikely to damage in a controlled lowering even if it gets side-swiped by the section being lowered. However, a winch has extraneous components that are much more susceptible to damage - the fuel tank or battery and switches/ triggers for instance. These are expensive as well so it's best to ensure that you position it so that the winch is offset and the lowered section comes down to one side. Don't forget to factor in that your load may start out in a controlled lower but end up in freefall should an operator or component fail.

A key factor in positioning your winch offset to the load, is the fact that the operator may need to stand directly adjacent to the winch to control it and so could be in the danger/drop zone. Also bear in mind that raising adds forces to the system that make it a more dangerous operation with greater scope for component failure at the rigging or even the rope itself than lowering imparts. When lowering, the operator will typically stand a minimum of 6ft-2m from the winch, often much more and will ALWAYS wear gloves. In the case of electric ascenders there is often a remote control option and this really can mitigate a lot of the hazards in handling heavy loads.

Good technique requires the operators to use the appropriate number of wraps to hold the load and when lowering too fast, to reduce speed dynamically allowing enough rope to run though gloved hands so that impact forces are negated. If the load comes to a sudden arrest because you've wrapped too may turns around the capstan the impact forces will magnify considerably and could adversely affect ANY of the components including the rope and the winch.

Ensure that the wraps are regular and do not over-lap or override each other - this can make your job harder at best and can be extremely dangerous at worst. Some capstans have moulded diagonal grooves which help guide each turn of rope in the right place.

POWERED ROPE WINCHES/ASCENDERS



Powered ascenders like the *Skylotec/Actsafe, Ronin, Ropetek* and *Eder* models can revolutionise your tree work, they not only get you up and down much more efficiently and with minimal effort, they can all be used as light-duty winches which you can anchor and control from the canopy if necessary. ***For full discussion of Powered Ascenders see*** ROPE EQPT **BUYERS GUIDE**.

On the *Ronin* model (left) you can see the obvious anchor eyes top and bottom which can be used to anchor the device before pulling rope through or paying out/lowering under power. This is a key difference between powered ascenders and capstan winches, capstans take in under power and lower by hand, whereas ascenders maintain grip on the rope and power both ways. As always with battery power there is no noise or fumes during operation and control is much more finite enabling a skilled operator to tweak lifting and lowering operations within fine margins. None of them are as powerful as petrol/gas winches however and none should be used for dragging because of the excessive spikes in load that can occur. Bravely in the face of the battery onslaught, German winch company *EDER* followed *Skylotec/Actsafe* and *RopeTek* in creating a gas/petrol powered human-riding ascender, the *Power Climber* that now has a battery model that, usefully for arborists, uses *Stihl AP* batteries. Stealing a march on *Eder* was *Skylotec/Actsafe*'s *ICX* ascender (pic bottom left) a co-development with *Husqvarna* using their battery platform which, like the *Stihl* platform, is used for pro chainsaws, blowers, trimmers etc. making even wider use of your specific battery. This seems like the obvious way to go rather than bespoke batteries that only fit the powered ascender and are not readily available from your local hardware store. The *ICX* also has powered, rather than just inertia, descent.

We have included ONLY models costing less than (approx) £15K/$20K. Our Guide to Power Ascenders in the ROPE EQPT **BUYERS GUIDE** includes many other models and variants with higher load capacities, greater water ingress protection and in some cases submersible, aimed at rescue and military/govt agencies. They include *Atlas Devices* (which we had previously included in the first version of this Guide in **ARBCLIMBER**#16 but they haven't yet brought out a model aimed at the utility market) and more of the *KOPARS* South Korean range that is interesting if not rather 'boxy' .
The *Kenz* models mentioned on page 191 were new for 2023/24 and use a regular (quality brand) power drill as the driver. Currently only available in Japan but watch this space. The similar Chinese model by AWAH reviewed in TECHNICAL**RESCUE** #84 proved to be very good and has now been added to our tables along with AtHeightUK's DW2 /3.
Ronin has a smaller, intergrated battery model, the *TL*, with less range than the *Lift* but smaller and lighter and they also have a new materials-handling model not for humans which stands out in its white livery (Inset pic far top-left).
Finally there are four Chinese ranges - *ASAT* we are familiar with as a rope equipment manufacturer, *Petro Steel* -not so much. They appear to be an agri-chemical company with fingers in many mechanical pies but these are decidedly affordable if not a little too good to be true. However as a portable winch rather than for life-support - they may be worth investigating. The more capable *Mode* model seems to have some connection with *Petro-steel* but there is some litigation on copyright infringement going on. BOTH CAPSTAN AND ASCENDER STYLE WINCHES REQUIRE THE TRAIL/TAIL ROPE TO BE CONTROLLED IN-THE-HAND AT ALL TIMES DURING RAISING AND LOWERING.





LEFT: By far the cheapest alternative for powered ascending and/or winching is a stand-alone one-way ratchet hauling 'pulley' that accepts a regular high-power drill onto its drive axle to provide a powered ascending capability. See TR84 for review of the *AWAH Z2R*. This has now been joined by more Pro-oriented *Z3 and Fire-rescue version the Z3FIRE. AtHeightUK now has the DrillWinch 2 and 3 (pic left)* This is a slightly much smaller, *Harken Clutch*-style device with more conventional descender capabilities alongside the drill-driven ascending/winching capability.



Previous Page: *Ronin*'s *Lift* was the first to try and make powered ascenders available to the masses with smaller, well priced devices. Above-: *Ronin*'s *Non HEC Lift* for material handling rather than human transport
Now *Skylotec*'s Actsafe iCX (pic-below) and the *EderPowerClimber (pic left)* are fighting back with models that use 'off-the-shelf' *Stihl* and *Husqvarna* batteries used in professional grade chainsaws, blowers and power tools.





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.
MAX DIMENSIONS CAPSTAN DIAMETER: Height by width by depth but not necessarily in that order! **For the capstan,** it's all about avoiding tight radius bends and the wider the capstan diameter the better it is for your rope The magic figure is 4"/100mm, this is the diameter at which you will lose virtually NO strength in your rope due to bending fibres.
SOUND LEVEL (LWA): Liquid-fuel engines have similar sound levels to chainsaws and the levels quoted my 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.
ROPE DIAMETER: Given by the manufacturer as range but the optimum size is often in the middle. Some 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.
WLL & HAUL (ASCEND) 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. **Speeds will also be altered using different size capstans.** Hauling rope in is the same whether you're dragging a log, lifting a branch or ascending the rope. The difference is in the degree of interference that might increase load and severely reduce the speed and load figures quoted. Dragging along the ground obviously imparts a lot more friction than a person ascending the rope. Similarly a little more friction is imparted with every deviation of the rope, this might be quite efficient over a bearing pulley or quite inefficient directly over a branch.
SPEEDS/VARIABLE: Most capstan winches have one set speed. This can be altered by gripping the rope or changing the capstan diameter but some have 2 speeds and battery powered winches using a 'trigger' or throttle can have finite control from zero to top speed so that you can make smooth starts/restarts
HUMAN-RIDING: Obviously all powered ascenders are intended for human transport but despite their increased capacity only very few winches are suitably certified.
POWERED ASCENDERS are listed separately but with the same parameters as the regular winches apart from extra battery information, **CONTROLLED DESCENT SPEED** and **RESCUE-CAPABLE** in terms of a two-person load. It's fair to say that in a dire emergency you could do the maths on the max load on any winch and decide if its worth the risk Winches have **PROGRESS CAPTURE** to indicate some form of rope cam at the rope entry point preventing drop back during hauling and/or at end of hauling operation - something POWER ASCENDERS all have.
LOWERING: ■ = manual control with a capstan, ■ =Lowering under power as a reverse of ascending/hauling.

POWERED ROPE WINCHES/ASCENDERS

Images NOT to Scale

COSTS: Approx & inc local tax/VAT £$€ shown in burnt orange are currency conversions only & do not inc shipping, import duty or tax

WLL: If no WLL is given by manufacturer we show a **Max Load** based on approx 10:1 safety ratio

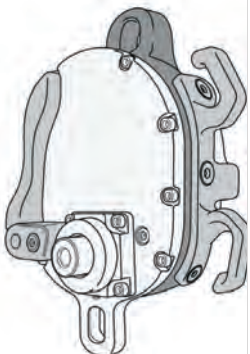
N/A = info Not Available/not given.

●= OK but not ideal

☐☐☐= Option







COMING SOON



	MANUFACTURER	ASAT	ASAT	ATHEIGHTUK	ATHEIGHTUK
	MODEL VARIANT	ACE24 -	ACE22 -	Drill Winch Basic DW2	Drill Winch Pro DW3
	ORIGIN				
	COST	£5680 $9400 €8945	£7000 $8500 €8085	£995 $1245 €TBA	£ 1495 $1870 €TBA
	POWER BATTERYPETROL/GAS	■	■	■	■
	WEIGHT inc battery/fuel BATTERY ONLY	18 3.4kg 39.6 7.5lb	10.5 2kg 32 4.4lb	2 (+Drill & Battery 3)kg 11.8 (+Drill & Battery 6.6)lb	1.5 (+Drill & Battery 3)kg 3.3 (+Drill & Battery 6.6)lb
	MATERIALRESCUEWINCH	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
	STOP/GO CONTROL	Dial	Dial	Power Drill Trigger	Power Drill Trigger
	WLL (Overload cut-out)	260kg 572lb	180kg 396lb	50-200kg 110-440lb	200kg 440lb
	DIMENSIONS BATTERY-ONLY	30x23x35cm 11.8 x 9.1 x 13.8" n/a	26x16x24cm 10 x 6.3 x 9.4" n/a	19.5 x 13.7 x 8.9cm 7.7 x 5.4 x3.5" Any Hi-torque Drill	16 x 12 x 8.5cm 6.3 x 4.7 x 3.3" Any Hi-torque Drill
	Specfic/Any Rope Ø	11mm EN1891A 7⁄16" EN1891A	11-12mm 7⁄16"	8-11mm 3⁄8 -7⁄16"	10.5-11mm 5⁄16 -7⁄16"
	RANGE on 1 charge/tank	300m 984ft*	400m 1312ft*	~200m 656ft	~200m 656ft
	ASCENT SPEED Metres/feet/minute	0-30 m/min 0-98.4ft/m	0-30 m/min 0-98.4ft/m	0-15*m/min 0-50ft/min	0-15*m/min 0-50ft/min
	DESCENT SPEED Metres/feet/minute	0-40m 0-98.4ft/m	0-40min 0-131ft/m	0-fast - manual	0-fast - manual
	ENGINE/BATTERY POWER	48v Lithium 7.5Ah	44v Lithium 5Ah	ANY - spec for Erbauer 18v Lithium ion >5Ah	ANY - spec for Erbauer 18v Lithium ion >5Ah
BATTERY	**RECHARGE TIME** ON DESCENT	60min ■	<60min ■	~30min	~30min
BATTERY	**REMOTEAPP CONTROL RANGE**	☐150m 492ft -	☐150m 492ft -	-	-
BATTERY	**ON-BOARD CHARGE STATUS**	■	■	☐	☐
FEATURES	**ANCHOR TOP** BOTTOM	1 1	1 1	1 1	1 1
FEATURES	**NOISE/SOUND LEVELS**	70dB	70dB	<70dB	<70dB
FEATURES	**EMERGENCY IMPACT STOP**	■ -	■ -	NO	NO
FEATURES	**NO-POWER DESCEND**	■	■	■-only	■-only
FEATURES	**TEMP RANGE °C/°F**	-30to60°C -10to120°F	-20to60°C -4to120°F	Defined by power drill	Defined by power drill
FEATURES	**IP RATING**	56 -	54 -	Defined by power drill	Defined by power drill
FEATURES	**MID/ END ROPE FEED**	■	■	■	■
FEATURES	**WARRANTY** GOVT ONLY	6-12months	6-12months	12months	12months
FEATURES	**CARRY CASE** c/w ROPE	■ ☐	■ ☐	☐ -	☐ -
FEATURES	**STANDARDS**			Machinery Directive 2006/42/EC Annex 4	Machinery Directive 2006/42/EC Annex 4
	NOTES	*@150kg NB: Combination of ascent and descentt increases duration to 700m/2296ft	*@120kg NB: Combination of ascent and descentt increases duration to 400m/1312ft	NEW in 2025 Excludes power drill. Inc carry case & 8mm hex keys *Does not power-down-manual descent only	NEW in 2025 Excludes power drill. Inc carry case & 8mm hex keys *Does not power-down-manual descent only
	WEBSITE	asatsafe.com atheightuk.com	asatsafe.com atheightuk.com	atheightuk.com	atheightuk.com

Images NOT to Scale
COSTS: Approx & inc local tax/VAT £$€ shown in burnt orange are currency conversions only & do not inc shipping, import duty or tax
WLL: If no WLL is given by manufacturer we show a **Max Load** based on approx 10:1 safety ratio
N/A = info Not Available/not given.
●= OK but not ideal
□□□= Option









	MANUFACTURER	AWAH	AWAH	EDER	EDER
	MODEL VARIANT	Z2R EPC130	Z3 PROF EPC130	PowerClimber EPC130	PowerClimber EPC240
	ORIGIN				
	COST	£1200 $1500 €1400	£00 $1800 €00	£3560 $4325 €4100	£3960 $4850 €4570
	POWER BATTERY PETROL/GAS	■	■	■	■
	WEIGHT inc battery/fuel BATTERY ONLY	2.37 (+Drill & Battery 3)kg 5.2 (Drill & Battery 6.6)lb	2.3 (+Drill & Battery 3)kg 5 (Drill & Battery 6.6)lb	11.2kg 24.6lb	10.3kg 22.7lb
	MATERIAL RESCUE WINCH	■ ■ ■	■ ■ ■	■ - ■	■ ■ ■
	STOP/GO CONTROL	Power Drill Trigger	Power Drill Trigger	Throttle	Throttle
	WLL (Overload cut-out)	200kg 441lb	200kg 441lb	130kg 286lb	240kg 528lb
	DIMENSIONS BATTERY-ONLY	20 x 10.6 x 10cm 8 x 4.2 x 4" Any 120-160Nm Drill	20 x 10.6 x 10cm 8 x 4.2 x 4" Any 120-160Nm Drill	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" -
	Specfic/Any Rope Ø	9-11mm ⅜ -⁷⁄₁₆"	10-11mm ⁵⁄₁₆ -⁷⁄₁₆"	11-12.9mm ⁷⁄₁₆-½"	11-12.9mm ⁷⁄₁₆-½"
	RANGE on 1 charge/tank	175-300m 574-984ft*	175-300m 574-984ft*	240m	240m
	ASCENT SPEED Metres/feet/minute	0-<60m/min* 0-<196ft/min*	0-<60m/min* 0-<196ft/min*	0-30*m/min 0-98ft/min	0-24-36*m/min 0-78-118ft/min
	DESCENT SPEED Metres/feet/minute	30-120m/min 98-328ft/min or MANUAL	0-Fast - Manual	18m/min 59ft/min	18m/min 59ft/min
	ENGINE/BATTERY POWER	18-48v Lithium* min 4Ah optimum 8Ah	18-48v Lithium* min 4Ah optimum 8Ah	Honda GX50 2stroke 47.9cc / 2Hp	Kawasaki TJ53 2stroke 53.2cc / 2.68Hp
BATTERY	**RECHARGE TIME ON DESCENT**	<90mins*	<90mins*	-	-
BATTERY	**REMOTE APP CONTROL RANGE**	-	-	-	-
BATTERY	**ON-BOARD CHARGE STATUS**	□	□	-	-
FEATURES	**ANCHOR TOP BOTTOM**	1 1	1 1	1 1	1 1
FEATURES	**NOISE/SOUND LEVELS**	92dB	92dB	97dB	>97dB
FEATURES	**EMERGENCY IMPACT STOP**	NO	NO	- -	- -
FEATURES	**NO-POWER DESCEND**	■-only	■-only	■	■
FEATURES	**TEMP RANGE °C/°F**	-15to45°C 5to113°F	-15to45°C 5to113°F	-20to40°C -4to104°F	-20to40°C -4to104°F
FEATURES	**IP RATING**	Defined by power drill	Defined by power drill	55	55
FEATURES	**MID/ END ROPE FEED**	■	■	■	■
FEATURES	**WARRANTY GOVT ONLY**	12months	12months	12months	12months
FEATURES	**CARRY CASE c/w ROPE**	□ -	□ -	- ■	- ■
	STANDARDS	XF494 Fire Service- China	XF494 Fire Service- China		
	NOTES	*Uses any brushless Pro Power drill to drive(figs based on MilwaukeeM18)-min 4Ah but 5-8Ah preferable. *@118kg with 5.5Ah battery. Z2=non rescue version Discontinued	*Uses any brushless Pro Power drill to drive(figs based on MilwaukeeM18)-min 4Ah but 5-8Ah preferable. *@118kg with 5.5Ah battery. Z3FIRE with swivel - see ROPE EQPT BUYERSGUIDE	*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
	WEBSITE	awah.cn	awah.cn	edertools.com grube.de	edertools.com grube.de

POWERED ROPE WINCHES/ASCENDERS

	EDER	HARKEN	HARKEN	K1PARS	MODE
					
	PowerClimber EPC240-11B	**Lokhead Power Hauler** PWRS-G.COMPACT	**Lokhead Power Hauler** PWRS-B.COMPACT	**KEA-HB-W1/S1**	**Spider Pro** -
	£4500 $5750 €5205	£4550 $5750 €5250	£5690 $7175 €6560	n/a	£5995 $7300 €6950
	■	■	■	■	■
	10.5 1.77kg 23.1 3.9lb	13.5kg 29.8lb	21.6 3.6kg 47.5 7.9lb	13.5/13kg 29.7/28.6lb	14.3 00kg 31.5 00lb
	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■
	Throttle	Trigger	long-Trigger & lever*	Throttle	Throttle
	240kg 528lb	273kg 600lb	300kg 661lb	250/120kg 551/264lb	200kg 440lb
	30 x 40 x 30cm 11.8 x 15.75 x 11.8" -	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 24 x 30cm 17.7 x 9.5 x 12" -	33x 26.5x 26.7cm 13x10.4x10.5" 00cm 00"
	11-mm ½"	10-12.7mm 5⁄16-½"	10-12.7mm 5⁄16-½"	10-12.7mm 5⁄16-½"	10.5-13mm typeA 5⁄16-½"
	TBA	600m 1968ft*	550m 1804ft*	600/550m 1968/1804ft*	330m 1082ft*
	0--36*m/min 0-118ft/min	0-11-15m/min 0-36-49ft/min	0-13.5m/min 0-44.3ft/min	0-13.5m/min 0-44.3ft/min	≤22m/min 72ft/min
	18m/min 59ft/min	0-14m/min 0-46ft/min	0-14m/min 0-46ft/min	0-72m/min 0-236ft/min	37m/min 121ft/min
e	36v Stihl AP300S 7.2Ah or AP500 8.8Ah	Honda GX35 4stroke 35.8cc	50.4v Lithium ion 9Ah	Honda GX35 4stroke 35.8cc	36v Lithium-ion 5Ah
	75-150mins	-	270min	-	150min
	-	-	- -	☐100m/328ft* -	100m/328ft ■
	■	-	■	-	■
	1 1	1 1	1 1	1 1	1 1
	104dB	81.3/96.2dB	80/90dB	81.3/96.2dB	>97dB
	TBA	■ -	■ -	- -	■ -
	■	■	■	■	■
	-10to50°C -10to120°F	-5to40°C 23to104°F	-10to50°C -10to120°F	-5to40°C 23to104°F	-20to50°C -4to122°F
	>X4	55	54	55	54
	■	■	■	■	■
	24months (batteries)	24months	24months	n/a	n/a
	- ■	■ ☐	■ ☐	☐ ☐	■ ☐
	RESCUE-capable version *36m/min@130kg Supplied with 100m Beal 11 or 12.9mm rope +£300 for 12.9mm	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=speed version *@100kg/328lb *Hybrid device with electronic interface -optional remote control. See ROPE EQPT BUYERS GUIDE for K1PARS battery models	*@90kg/198lb
	edertools.com grube.de	harkenindustrial.com	harkenindustrial.com	k1pars.co.kr	modepowerascender.com

Images NOT to Scale
COSTS: Approx & inc local tax/VAT
£$€ shown in burnt orange are currency conversions only & do not inc shipping, import duty or tax
WLL: If no WLL is given by manufacturer we show a **Max Load** based on approx 10:1 safety ratio
N/A = info Not Available/not given.
●= OK but not ideal
□□□= Option









	MANUFACTURER	PETRO STEEL	PETRO STEEL	ROPETEK	RONIN
	MODEL VARIANT	Pesco Smart Spider PSJ120-11	Pesco Smart Spider PSJ120-8	Wraptor HD	Lift PN2805-11
	ORIGIN				
	COST	£865 $1050 €1000	£825 $1000 €950	£3032 $3200 €3500	£3960 $3830 €4565
	POWER BATTERYPETROL/GAS	■	■	■	■
	WEIGHT inc battery BATTERY ONLY	12.5kg integral 27.5lb integral	11.5kg integral 27.5lb integral	10.9kg - 24lb -	11 2.7kg 24 6lb
	MATERIALRESCUEWINCH		■ - ■	■ - ■	■ ■ ■
	STOP/GO CONTROL	Rocker Button	Rocker Button	Throttle	Thumbwheel
	WLL	≤ 140kg 309lb	≤ 120kg 265lb	141kg 310lb	182kg(272kg-2-person) 400l (600lb-rescue-only)
	DIMENSIONS BATTERY-ONLY	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" -	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	12-14mm ½-9/16"	12-14mm ½-9/16"	11-16mm 7/16-5/8"	11.5-13mm 7/16-½"
	RANGE on 1 charge/tank	600m 787ft*	500m 787ft*	approx 227m 500ft	244m 800ft* or 15mins
	ASCENT SPEED Metres/feet/minute	≤11m/min ≤36ft/min	≤8/min ≤26ft/min	0-30m/min 0-100ft/min	0-27.4m/min 0-90ft/min
	DESCENT SPEED Metres/feet/minute	11m/min 36ft/min	8/min 26ft/min	18m/min 59ft/min	0-45.7m/min 0-150ft/min
	ENGINE/BATTERY POWER	36v Lithium-ion 20Ah	36v Lithium-ion 15Ah	Honda GX35 4stroke 35.8cc	28v Lithium-ion 3.5Ah
BATTERY	RECHARGE TIME ON DESCENT	240-360min	N/A	-	90min
BATTERY	REMOTEAPP CONTROL RANGE	■ -	■ -	-	91m/300ft -
BATTERY	ON-BOARD CHARGE STATUS	■	■	-	■
FEATURES	ANCHOR TOP BOTTOM	- 1	- 1	1 1	1 1
FEATURES	NOISE/SOUND LEVELS	n/a	n/a	89dB	n/a
FEATURES	EMERGENCY IMPACT STOP	■ ■	■ ■	- -	- -
FEATURES	NO-POWER DESCEND	■	■	■	■
FEATURES	TEMP RANGE °C/°F	-20to50°C -4to122°F	-20to50°C -4to122°F	-20to40°C -4to104°F	-20to49°C -4to120°F
FEATURES	IP RATING	N/A	N/A	56 -	54 -
FEATURES	MID/ END ROPE FEED	■	■	■	■
FEATURES	WARRANTY GOVT ONLY	n/a	n/a	n/a	12months
FEATURES	CARRY CASE c/w ROPE	- ■	- ■	- ■*	■ □
FEATURES	STANDARDS			-	CE ANSI
	NOTES	*@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.Cost+45%! *Comes with 59m/150ft of rope for US orders only. Price inc CMI Ropewalker	*+800ft descent @91kg/200lb Hot-swap batteries $380 ea. Price includes wireless remot control, battery, charger, hard case w/foam. MBS >2272kg/5000lb
	WEBSITE	smart-spider.com	smart-spider.com	ropetek.com	roninpowerascender.com

POWERED ROPE WINCHES/ASCENDERS







	RONIN	RONIN	SKYLOTEC	SKYLOTEC	SKYLOTEC
	Titan Lift (TL)	Non-HC Lift	Actsafe ACX POA-001	Actsafe ICX POA-030	Actsafe PMX POA-006
	£3050 $4735 €3512	£3960 $3830 €4565	£15320 $22780 €14450	£6750 $8550 €7865	£9200 $11200 €8650
	8.6 2.3kg 19 5lb	11 3kg 24 6.6lb	13 2.5kg 28.9 5.5lb	7.4 1.31kg 16.3 2.9lb	21kg - 28.7lb -
		-		*	
	Thumbwheel	Thumbwheel	Throttle	Thumbwheel	Throttle
b	182kg(272kg-2-person) 400lb (600lb-rescue-only)	182kg(272kg-2-person) 400lb (600lb-rescue-only)	220kg 485lb	185kg 407lb	250kg 551lb
	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"	33 x 28 x 27cm 13 x 11 x 11" 30 x 12 x 11cm 12 x 4.7 x 4.3"	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"	49 x29 x 28cm 19.3 x 11.4 x 11.1" -
	11.5-13mm 7/16-½"	11.5-13mm 7/16-½"	11mm 7/16"	11mm 7/16"	11-12.9mm 7/16-½"
	244m 800ft*	244m 800ft*	550m 1965ft*	230m 754ft*	750m 2460ft
	0-27.4m/min 0-90ft/min	0-27.4m/min 0-90ft/min	0-24m/min 0-78ft/min	0-24m/min 0-78ft/min	1-17m/min 3.3-56ft/min
	0-68m/min 0-150ft/min	0-68m/min 0-150ft/min	0-25m/min 0-82ft/min	1-24m/min 3.3-78ft/min	1-18m/min 3.3-59ft/min
	48v Lithium-ion 3Ah	28v Lithium-ion 3.5Ah	56.1v Lithium n/a Ah	Husqvarna 36v Lithium 5.2Ah	Honda GX35 4stroke 35.8cc
	120min	120min	90min	80/90min -	-
	91m/300ft* -	91m/300ft -	150m 492ft		-
					-
	1 1	1 1	1 1	- 1	1 1
	n/a	n/a	76dB	n/a	89dB
	-	- -	-	-	- -
	-20to49°C -4to120°F	-20to49°C -4to120°F	-20to40°C -4to104°F	-10to40°C 14to104°F	-20to40°C -4to104°F
	54 -	54 -	55	55	56
	12months	12months	12months -	12months -	12months
	CE ANSI	CE	CE ANSI	CE	CE
	*+800ft descent @91kg/200lb Hot-swap batteries $470 ea. Hands-free braking. 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	Replacement battery £3212/$3900/€2100 * @100kg/220lb optional rechargeable driver as power source	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/220lb
	roninpowerascender.com	roninpowerascender.com	skylotec.com	skylotec.com	skylotec.com

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

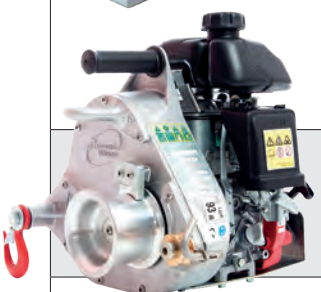
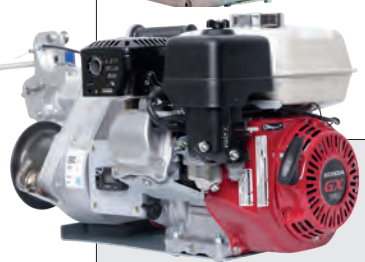
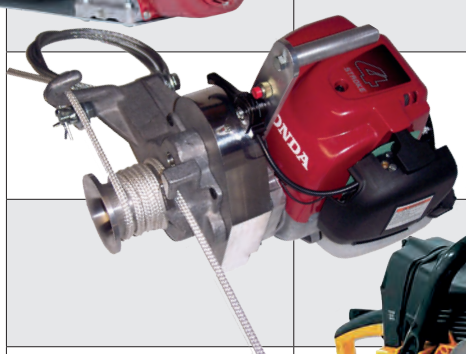
IMAGES NOT TO SCALE
COST: Approx & inc VAT/Taxes
height x width x Depth
WLL/PULL SPEED: Direct to load-No Mechanical advantage
SPEEDS Engine speeds as a number, VARIABLE
LOWERING: Manual lowering = ■
Powered lowering ■

MODEL	COMPANY	ORIGIN	COST inc tax currency conversion only	WT	MAX DIMENSIONS CAPSTAN
VF80 Bolt	DOCMA		£1380 $1783 €1500	10.5kg 23lb	346 x 350 x 253mm 13.6 x 13.8 x 10" 65mm 2.56"
VF105 Red Iron	DOCMA		£1500 $1938 €1615	10.5kg 23lb	346 x 350 x 253mm 13.6 x 13.8 x 10" 65mm 2.56"
VF900-4 Nippon	DOCMA		£1500 $1850 €1695	10.85kg 24lb	350 x 350 x 290 mm 13.8 x 13.8 x 11.4" 51mm 2"
VF155 Auto	DOCMA		£1780 $2120 €2060	25kg 51.4lb	595 x 360 x 360cm 3.4 x 14.2 x 14.2"
VF155 Auto-4	DOCMA		£2150 $2600 €2463	25.35kg 55.8lb	595 x 385 x 360cm 3.4 x 15.1 x 14.2"
Manual Ultralight VF155	DOCMA		£1600 $2000 €1850	20.5kg 55lb	560 x 360 x 360cm 22 x 14.2 x 14.2"
Nordforest 400 Powerwinch 400	EDER /GRUBE		£1554 $1900 €1450	13kg 28.7lb	340x420x350mm 13.4x16.5x13.8" 51mm 2"
Nordforest 400-1 Powerwinch 400-1	EDER /GRUBE		£1254 $1792 €1600	13kg 28.7lb	370 x 330 x 340mm 14.6 x 13 x 13.4" 80mm 3.15"
Powerwinch 500	EDER		£1512 $1792 €1600	8.5kg 18.7lb	330 x 290 x 360mm 13 x 11.4 x 14" 65mm 2.56"
Powerwinch 1200	EDER		£1554 $1792 €1600	13kg 28.6lb	370 x 330 x 340mm 14.5 x 13 x 13.4" 80mm 3.15"
Powerwinch 1200 B	EDER		£1800 $2000 €1850	13kg 28.6lb	400 x 308 x 340mm 15.7 x 12.1 x 13.4" 80mm 3.15"

POWERED ROPE WINCHES

POWER SOURCE BATTERY PETROL/GAS	ROPE Ø	MAX SOUND LEVEL	IP	STANDARDS	WLL PULL SPEED Both =Max for direct single line pull no-drag	SPEEDS/VARIABLE	REMOTE CONTROL	HUMAN-RIDING	PROGRESS CAPTURE	LOWERING	DURATION & NOTES	WWW.
Al-Ko Solo 2-stroke 50.8cc	10-12mm ⅜-½"	112db	IP44	CE	815kg 26m/min 1797lb 85ft/min	1	-	-	-	■	thermal treatments to extend component life: adaptable acceleration and braking from the operator.	docma.it
Al-Ko Solo 2-stroke 50.8cc	10-12mm ⅜-½"	112dB	IP44	CE	1050kg 20m/min 2315lb 66ft/min	1	-	-	-	■	thermal treatments to extend component life: adaptable acceleration and braking from the operator.	docma.it
Honda GX50 4-stroke 48cc	10-12mm ⅜-½"	98dB	IP44	CE	865kg 14m/min 1907lb 46ft/min	1	-	-	-	■	thermal treatments to extend component life: adaptable acceleration and braking from the operator.	docma.it
Al-Ko Solo 2-stroke 50.8cc	80m/262ft 5mm 1/4"	112dB	IP44	CE	1485kg 20m/min 3267lb 59ft/min	1	-	-	-	-	Automatic rope rewind when unloaded	docma.it
Honda GX50 4-stroke 48cc	80m/262ft 5mm 1/4"	105dB	IP44	CE	1260kg 19m/min 2772lb 59ft/min	1	-	-	-	-	Automatic rope rewind when unloaded	docma.it
Al-Ko Solo 2-stroke 50.8cc	80m/262ft 5mm 1/4"	112dB	IP44	CE	1485kg 20m/min 3267lb 59ft/min	1	-	-	-	-		docma.it
Kawaski TJ53 2-stroke 65cc	8-10mm 5/16-⅜"	115dB	IP44	CE	400kg 29m/min 882lb 95ft/min	1	-	-	-	■	DISCONTINUED still available while stocks last	eder-maschinenbau.de grube.de
Active 6.5 2-stroke 3.3 KW /4.5 HP	8-10mm 5/16-⅜"	115dB	IP44	CE	400kg 40m/min 882l 131ft/min	1	-	-	-	■		eder-maschinenbau.de grube.de
Honda GX35 4-Stroke 35.8cc 1KW / 1.3HP	8-12mm 5/16-½"	106dB	IP44	CE	500kg 12m/min 1102lb 40ft/min	1	-	-	-	■	Rubber grip feet allow direct tree attachment	eder-maschinenbau.de grube.de
Active 6.5 2-stroke 62cc 3.3KW / 4.5 HP	8-10mm 5/16-⅜"	115dB	IP44	CE	1200kg 14m/min 2646lb 46ft/min	1	-	-	-	■		eder-maschinenbau.de grube.de
36v Li-ion Stihl Battery 7.2 or 8.8Ah 1.7kW	8-10mm 5/16-⅜"	n/a	IPX4	CE	1200kg 13m/min 2646lb 42ft/min	1	-	-	-	■		eder-maschinenbau.de grube.de

IMAGES NOT TO SCALE
COST: Approx & inc VAT/Taxes
height x width x Depth
WLL/PULL SPEED: Direct to load-No Mechanical advantage
SPEEDS Engine speeds as a number, VAR
LOWERING: Manual lowering =
Powered lowering

	MODEL	COMPANY	ORIGIN	COST inc tax currency conversion only	WT	MAX DIMENSIONS CAPSTAN
	Nordforest/ Powerwinch 1800	EDER /GRUBE		£2394 $2860 €2550	14kg 30.1lb	385 x 365 x 325mm 15.15 x 14.4 x 12.8" 130mm 5.12"
 	PCW3000	PORTABLE WINCH CO.		£1559 $1460* >€1300	9.5kg 20lb	350 x 289 x 261mm 13.8 x 11.4 x 10.3" 76mm 3"
	PCW3000-Li	PORTABLE WINCH CO.		£1320 $1540* >€1373	9.5kg 21lb	308 x 316 x 309mm 12.1 x 12.4 x 12.2" 76mm 3"
	PCW4000	PORTABLE WINCH CO.		£2159 $1950* >€2150	12kg 26.5lb	420 x 300 x 285mm 16.5 x 11.75 x 11.25" 76mm 3"
	PCW5000	PORTABLE WINCH CO.		£2400 $1800* >€1605	16kg 35lb	371 x 366 x 366mm 14.6 x 14.4 x 14.4" 57mm or 85mm 2.25" or 3.35"
	PCW5000 HS (High Speed)	PORTABLE WINCH CO.		£2711 $2000 €3130	16kg 35lb	371 x 366 x 366mm 14.6 x 14.4 x 14.4" 57mm or 85mm 2.25" or 3.35"
	PCH1000	PORTABLE WINCH CO.		£3600 $2900 $2975	19kg 42lb	505 x 366 x 366mm 20x14.4x14.4" 57mm or 85mm 2.25" or 3.35"
	PCH2000	PORTABLE WINCH CO.		£4600 $3700 €5300	34.5kg 76lb	560 x 483 x 356mm 22 x 19 x 14" 108mm 4.25"
	SP1-CW	SIMPSON		£990 $1200 €1150	8.2kg 18lb	305 x 380 x 205mm 12 x 15 x 12" 64mm 2.5"
	SP2-CW	SIMPSON		£1100 $1300 €1250	8.2kg 18lb	305 x 380 x 205mm 12 x 15 x 12" 64mm 2.5"
	CS-CW	SIMPSON		£660 $800 €760	4.1kg 9lb + Chsaw	178 x 203 x 127mm 7 x 8 x 5" + size of saw 64mm 2.5"

POWERED ROPE WINCHES

POWER SOURCE BATTERY PETROL/GAS	ROPE Ø	MAX SOUND LEVEL	IP	STANDARDS	WLL PULL SPEED Both =Max for direct single line pull no-drag	SPEEDS/VARIABLE	REMOTE CONTROL	HUMAN-RIDING	PROGRESS CAPTURE	LOWERING	DURATION & NOTES	WWW.
Active 6.5 2-stroke 62cc 4.5 HP	12-14mm ½-9/16"	115dB	IP44	CE	1800kg@12m/min 3968lb@79ft/min	2	-	-	-	■	2 -speeds also 900kg@ 24m/min	eder-maschinenbau.de grube.de
Honda GX35 4-Stroke 35.8cc	10mm* ⅜"	108dB	IP44	CE	700kg 10m/min 1543 lb 33ft/min	1	-	-	-	■	*10mm / 3/8" rope ensures that 3 to 4 wraps are possible. With a 12mm fewer wraps are possible. *price inc 50m rope & rigging eqpt.	portablewinch.com
80/82v Li-ion Battery 1KW	10mm* ⅜"	n/a	IPX3	CE	1000kg 11.6m/min 2200 lb 38ft/min	3	-	-	-	■	*10mm = 3 to 4 wraps are possible. 12-16mm = fewer wraps. Uses Briggs&Stratton or Cramer batteries.*price inc 50m rope & rigging eqpt.	portablewinch.com
Honda GHX50 4-stroke 50cc	10mm* ⅜"	105dB	IP44	CE	1000kg 13.4m/min 2200 lb 44ft/min		-	-	■	■	Improved Integral Progress Capture Cam on '23 model. *10mm/ 3/8" rope = 3 to 4 wraps possible. 12mm= fewer wraps. *price inc 50m rope & rigging eqpt.	portablewinch.com
Honda GHX50 4-stroke 50cc	10-13mm ⅜-½"	105dB	IP44	CE	1000kg 12m/min 2200 lb 40ft/min	2*	-	-	-	■	*price inc 50m rope & rigging eqpt. Optional 85mm capstan increases peed to 18m/min / 60ft/min	portablewinch.com
Honda GHX50 4-stroke 50cc	10-13mm ⅜-½"	105dB	IP44	CE	350kg 36m/min 771 lb 118ft/min	2*	-	-	-	■	$2119 with rope/rigging kit. Optional 85mm capstan increases peed to 18m/min / 60ft/min	portablewinch.com
Honda GHX50 4-stroke 50cc	12-13mm ½"	105dB	IP44	CE M3 (ISO)	775kg 12m/min 1710lb 40ft/min LIFT 250kg/550lb*	2*	-	-	■	■	Certified for INDUSTRIAL use Optional 85mm capstan increases speed to 18m/min / 60ft/min	portablewinch.com
Honda GX160 4-stroke 160cc	12-13mm ½"	100dB	IP44	CE M3 (ISO)	1150kg 20m/min 2535lb 66ft/min LIFT 450kg/992lb	1	-	-	■	■	Certified for INDUSTRIAL use M3 is an industrial rating from M1toM6 indicating the hours of use versus the degree of loading	portablewinch.com
Honda GX35 4-Stroke 35.8cc	8-10mm 5/16-⅜"	108dB	IP44	-	907kg 6.7m/min 2000lb 22ft/min		-	-	-	■	Same as SP2-CW with GX35 motor. 5 year warranty	capstanropewinch.com
Honda GX50 4-Stroke 50cc	8/10mm 5/16-⅜"	105dB	IP44	-	1088kg 6.7m/min 2398lb 22ft/min		-	-	-	■	Same as SP1-CW with GX50 motor. 5 year warranty	capstanropewinch.com
Battery or Petrol/gas chainsaw less than 57cc	8-10mm 5/16-⅜"	Depends on C'Saw	Depends on C'Saw	-	1136kg 7.6m/min 2500lb 25ft/min	■	-	-	-	■	Attaches to your chainsaw via a 3/8" drive sprocket. 5 year warranty	capstanropewinch.com

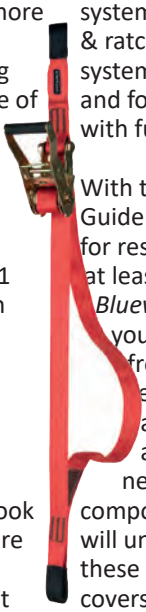
MINI HAULING KITS >2.5kg/5lb



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 top right) as did *Troll*'s latter day owners *Miller/ Dalloz* (now *Honeywell Miller*) but we haven't included that because none of the components are theirs and their websites are 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 *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

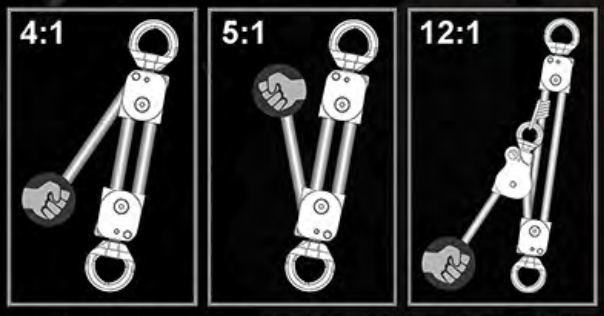
COLOR CODED

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

COST: INC local taxes/VAT . £$€ shown in burnt orange are currency conversions only & do not inc shipping, import duty or tax

KIT: CE = Captive Eye, PC = Progress 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 '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 locations can make this impractical.













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	£190 $230 €215	£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	20 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 DF
NOTES							
WEBSITE	capitalsafety.com	bluewaterropes.com	camp.it	camp.it	cmcrescue.com	edelrid.com	ha

MINI HAULING KITS










ARKEN	HARKEN	HEIGHTEC	HEIGHTEC	ISC	KONG	KONG	KONG
urchase System N2624/.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 ¼"	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
arken.com	harken.com	heightec.com	heightec.com	iscwales.com	kong.it	kong.it	kong.it

Images NOT to Scale
COST: INC local taxes/VAT . £$€ shown in burnt orange are currency conversions only & do not inc shipping, import duty or tax
KIT: CE = Captive Eye, PC = Progress 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 '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 locations can make this impractical.








MANUFACTURER	LYON EQUIPMENT	PETZL	PMI/SMC	PMI/SMC	ROCK EXOTICA	SAR PRODUCTS	PR
MODEL VARIANT	Cas. Pick-Off Hoist LCH	Jag P044AA..00..01..02	Adv-Tech Haul System KT36158	Jr Haul System KT36128	Aztek Pro P41	Casualty Pulley System P0001	Res Sy
ORIGIN							
COST (for min size option)	£319 $417 €380	£232 $370 €230	£581 $721 €696	£281 $348 €336	£541 $440 €590	£252 $330 €301	
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	- 34kN - 7643lbf	- 34kN - 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"	
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	BERRY	BERRY	CE		
INCLUDED ITEMS NOTES	DISCONTINUED *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 1 2x*
WEBSITE	lyon.co.uk	petzl.com	pmirope.com	pmirope.com	rockexotica.com	sarproducts.com	sarp

MINI HAULING KITS



SAR RODUCTS	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	STEIN	STERLING ROPE	STERLING ROPE
scue Pulley ystem P0002	Mini Haul System SET-337-23	CT Up-You-Go H251 & 2K117	CT Lifty 2K114	CT Lifty 6 2K115	5:1 Hauler Kit SS-8160110020	Pocket Hauler Kit KTPHAULERB	Aztek Elite Arbor KTAZTEKA
n/a	£588 $600 €547	£237 $296 €252	£335 $366 €325	£365 $386 €355	£270 $440 €310	£319 $390 €359	£526 $650 €630
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"
30m/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 xsingle pulley, CE carabiners	Cord,pouch, 1x triple pulley 1x triple with cam, 2x CE carabiners Bag NB: 3:1 (SET-302-40) is not a mini system	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

UPDATED Feb '25

ARBORIST 10.5-13.5mm CLIMBING ROPES

NB: PRICES BEING UPDATED Q1 '25



L to R: *Petzl Flow, Edelrid Woodpecker, C.A.M.P Frazon (new in '24)), Cousin Atrax, Sterling Scion, Edelrid X-P*e*

There was a time, mostly in the last century, when a climbing rope for tree work meant 12mm, 3-strand nylon....white when new, grey as old underpants once used a bit and quite elastic compared to modern ropes, in fact 'climbing' ropes can be a misleading term because for the entire sport and industrial sectors, climbing means dynamic (shock-absorbing following multiple FF2 falls) whereas these are mostly low stretch that should aim to stay below FF0. We are seeing a move towards calling the kernmantle SRT ropes 'access' ropes as distinct from climbing implying that SRT/SRS is starting to be differentiated from 'climbing'.

Back to the old days and If you were posher, you might stump up for the less elastic multiplait rope (8 strand) ...also white, maybe with a red or blue fleck if you lived in Monaco or the Hamptons. These days, most of that old laid stuff has been given to the Orang Utan enclosure at the local Zoo and instead the tree world is at the forefront of producing ropes so bright they make your eyes bleed. You can still buy 3-strand as an arborist rope but in the main, arborists now have three distinct choices at the top-end of climbing ropes:

- DOUBLE BRAID (**DB**) also known as BRAID on BRAID,
- 12,16, 20 & 24 STRAND BRAID
- KERNMANTLE (**KM**).

As usual, metric gives us a much better defined size than imperial with its overly long and imprecise measurements where 7/16" can be anything from 10.5 to 11.7mm. Climbing ropes are around 11mm (7/16") to 13mm (1/2") with a modern trend towards 11.7-11.8mm ropes specifically designed for use in hybrid (descender/ascender) hardware which we'll discuss shortly. There are some ropes listed as 'suitable for climbing arborists' at 10mm and even 9mm but they're too thin for most devices, difficult to handle and more for special tasks like zip lines so, for the purposes of this guide we've only included **10.5 to 13.5mm** ropes but **we will expand this to include 10mm**.

If you don't want to use your climbing rope for a zipline and rigging ropes are too big, take a look at our guide to low stretch kernmantles for SRT that are also suitable for highlines in the ROPE EQUIPMENT **BUYERS**GUIDE

USES

Simply put, uses are..... climbing up, in and around a tree.... and perhaps ziplines and rigging if you didn't have any rigging line or have more money than sense. There is a lot of nonsense talked about the relative merits of braided ropes as compared to kernmantle with some making the rather ludicrous statement that arb ropes have to be tougher than rock/mountain climbing ropes because they're being used in trees. I can assure you that there ain't no amount of tree contact that is going to be more aggressive than a 90 degree concrete, granite or sandstone edge; wood and bark is, in contrast, a walk in the park for most static kernmantle ropes. In fact the toughest rope in this guide is probably the Sterling Tech12, with Technora sheath. Largely aimed at special forces operations, their cut resistance (and heat-resistance) is of particular use to arborists. Virtually every kernmantle rope in our ROPE EQUIPMENT **BUYERS**GUIDE could have been in this guide to Arborist Climbing Ropes but we'll stick to only those kernmantles actively marketed to arborists. Of course this does mean that companies are free to interpret what is and isn't suitable - Bluewater for instance, have most of their ropes listed while Petzl only has two despite having several other ropes that are just as suitable as many that are listed in this GUIDE. The difference is in the handling and knot-tying characteristics since kernmantle is often far stiffer than braided ropes. But not that stiff. I remember reading an article on arborist ropes a few years back that mentioned something about not being able to tie knots in kernmantle which will come as a huge shock to the rope access and rescue community. It also pointed out correctly that Kevlar ropes don't fare too well when bent over a tight radius but don't let that colour your perception of the modern Aramid and Twaron mixed fibre ropes which are much more capable and are daily being bent over small descender cams, carabiners and pulley wheels. The key differences are that KM static and low stretch ropes tend to be less dynamic than braided. This is better when you're ascending and descending when 'bounce' equates to inefficiency but it's not so forgiving in a fall. Otherwise it comes down to personal preference and historical allegiances. We have a differentiation in these tables between SRT (SRS*) and DdRT (MRS) and the manufacturers have dutifully ticked one or the other but this is somewhat misleading because any of the more flexible kernmantles can (and are) used in a doubled (DdRT) or moving rope system (MRS). With the exception of the really hard wearing ropes like *HTP*, *KMIII Max, Patron Plus* (not included) and *PMI MaxWear* I would have ticked all other kernmantles as DdRt and SRT. The same cannot be said for

*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.

ARBORIST CLIMBING ROPES

some braided ropes which are very much softer and not all take to SRT (or more particularly the hardware involved) so kindly. Try ropes, try your mate's ropes and if they let you, try in the shop but remember, it's a personal thing so one person's brilliant will be another person's rubbish.

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 manufacturers' 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 working arb rope - they are NOT the same. In the arb world and in our tables, 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. Most, if not all 24-strands are found in our next class of rope; the Double Braids. The outer cover may be woven 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.

BRAID-on-BRAID or **DOUBLE BRAID** are best sellers in the arb industry (or at least the favourites since the best sellers may well still be an industrial bulk purchaser taking several hundred miles of 3-strand). These ropes are either the 16-strand or equally highly coloured 24-strand double braids. Double braids have a woven outer cover and a woven inner which shares the load. In fact, in some cases the sheath and the core are more or less the same thing so you will see sheath percentages in these tables at up to 80%of the total load bearing capacity of the 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 latest rope from Marlow is the Typhoon (right) at 12.2mm with a 16-plait sheath over a multi-twisted core so technically it's a kernamantle with the handling of a double braid. 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 is not marketed in any way as an arborist rope by Tendon but if you can put up with the stiffer handling and increased cost we see no reason why you can't have a more cut-resistant rope. It's not as heavy as you might expect at only a couple of grams per metre more than Aramid.



Low profile eyes like this Teufelberger DrenaLINE are designed to be able to pass through of thread-thru hardware like the Petzl ZigZag.

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.

11.4-11.8 Ropes for Hybrid Devices

The best range for hybrid hardware is from 11.4mm or 9/20" to 11.8mm or 15/32" - let's just call it 0.46". This is give or take a mm or two because there are11.2 and 11.9 ropes that work well. You might have noticed that virtually all of the new climbing ropes in the past few years have been within this magic diameter band. We had the *Cousin Trestec 11.6mm Atrax* on the cover of issue 10 in 2016 and our last three reviews have been the 11.7 & 11.8mm *Teufelberger DrenaLINE & Xstatic, FTC TREE's 11.7mm Argiope* (now *Evo* and *Edelrid's 11.7 Woodpecker.* This sounds European driven but the writing was on the wall several years back when *Sterling, Bluewater* and *New England Ropes/Teufelberger* started to produce 11.5mm ropes for the access and rescue markets to bridge the gap between the standard 11mm and the US Fire service requirement for heavier duty 13mm ropes. You'd think that might be 12mm since it's smack in the middle but it still needed to be accessible to the plethora of technical hardware without stepping up to completely different models necessary for the 13mm ropes. Ditto arborists who, in the past decade, have seen a steady shift from prussic systems to hardware-based systems. After a generation of using 12mm 1/2" ropes, the switch to SRT/ SRS, which most suited 11mm ropes, led to a similar realisation that the crossover hardware from rescue and access didn't really like the much fatter and softer traditional arb ropes but equally most arborists don't really want 10.5mm 'string'. What they wanted was something that would work for BOTH and the 11.7/11.8mm diameters fit that bill. *Yale* immediately stepped up with their 11.7mm *XTC24* ropes and simultaneously kicked off (or joined) an odd trend among US arb rope manufacturers to produce the same rope as if each colour is a different model. Not sure if that's genius or annoying. *Teufelberger* has just the one *Tachyon* in 5 different colourways while *Yale, Samson*, and *All Gear* have what looks like several options for an 11.7mm rope but it's the one model in different colours. These ropes all have the advantage of being the diameter that most future hardware will be designed for (give or take a few mm).

Most of these new hybrid-compatible ropes are intended specifically to be used with hardware - that means some form of constant camming or compressing of the rope which can cause ropes with a looser or coarser braid (sheath) to milk so that you can end up with a whole load of sheath hanging off the end of your rope or a concertina effect as the extra sheath runs up against an end termination. Tighter braids will grip the core more firmly and be less inclined to milk but this is virtually always at the expense of handling and knotability - they're simply stiffer. It's worth noting that the use of sewn terminations is for anchoring only, they're not designed to be used as an end-stop termination to stop you abseiling off the end. Most will be fine but you'll notice that the softer,smaller eyes like *Petzl FLOW* and *Teufelberger's spLIFE FTC TREE's SlimTECH, Courant's Japora, Cousin's Atrax* and *Edelrid's Woodpecker* shown in the titles are actively designed to go through devices so they're no use as an end-stop! This ability to feed a spliced end through a device like the *Petzl* ZigZag may just influence the design of future devices which might otherwise have avoided the threading option in favour of more complicated opening systems. The *ZigZag* probably





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has the smallest rope-path so if your rope can get through this it might be quicker to thread mid-line attachable devices like *Akimbo, Unicender* and *RopeRunner* than fiddling about opening them. In the rope images on these intro pages you can see the differences in bulk between the high-strength sewn eyes like the Sterling Scion in blue and the *Teufelberger drenaLIN*E shown above threaded through a *Petzl ZgZag*. *FTC TREE*'s second type of splice on *Argiope* (title pic) is sealed beneath a protective black plastic cover which protects the rope marking and helps differentiate the two ends of a double spliced rope. Perhaps the most unusual termination is on *Edelrid's Woodpecker* which is basically a length of webbing sewn onto the rope with a gap at the top for an eye. This has a quoted minimum breaking load of 15kN and *Edelrid* say it is the lowest bulk yet available. Genius.

DEFINITIONS & TABLE CATEGORIES

MATERIALS for arb ropes tend to be the opposite of the rest of the rope industry in that polyester is the dominant material with nylon only getting a look-in because of the increase in kernmantle sales. Nylon or Polyamide 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. Polyester can withstand abuse from Nylon's nemesis acid which doesn't tend to be a consideration for 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 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 *Sterling* ropes obviously think so since they have 2 or 3 such ropes in their arborist line-up. 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. Teufelberger's Platinum is currently Green for polyester and blue for nylon with both of their orange Access-Abor ropes being polyester.

MBL is Minimum Breaking Load (or MBS -Minimum Breaking Strength) and this may be given in kiloNewtons (kN), kilograms (kg), pounds (lbs) or lbs of force (lbf). 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 in ARBCLIMBER unless we really have to because it's a misleading figure that should never have become standard use. An average is NOT the worst-case scenario figure - the rope could and by definition, has, failed at a lower figure. When dealing with life-support equipment base your calculations on the ***minimum*** that it will fail (Minimum Breaking Load) and you won't go far wrong 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 assum 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 : an indication of the strength reduction of tied knots over sewr or spliced terminations which retain much greater strength. For instance *Courant's Komora* 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. Arborists didn't take much notice of such terminology until there started to be more crossover with kernmantle access and rescue ropes but it's still not a defining term even though elongation percentages should be. We're showing 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 in blue used mostly in Europe is for Static Elongation at 50 to150kg loading over a set time period. The third figure in burnt orange is the US norm for stretch at 136kg/300lbs and this is much more indicative of a climber's body mass. Finally we've included the US ANSI Z133 driven figure of 540lb in green, 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, chainsaw 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 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!

IN THE FOLLOWING TABLES.....:

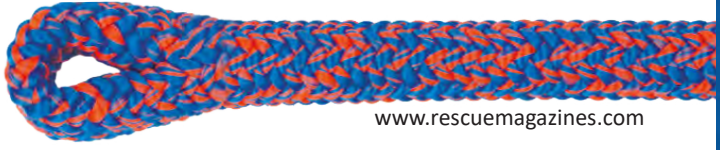
The data in these tables is always ridiculously difficult to compile because there is so much conflicting information even within the same company with catalogues or websites saying one thing and the stockists saying another. In the end we've had the various companies sign off their own listings but 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! Some of the data we list in our rescue titles is not listed here - the US tends not to quote the NUMBER OF FALLS or a KNOTTED BREAKING STRENGTH. The latter because of the arb preference for sewn or spliced terminations. Surprisingly these are often weaker than the knotted figure. *Teufelberger's spLIFE* is stronger than the *Slaice* it replaced which, for instance, came in at 16.5kN on the 35kN *drenAline* but 18kN in a knot. The advantage of any splice is much lower bulk than a knot and many can be fed through hardware but there can still be a significant strength loss. The number of Factor 1 falls is rarely quoted in arb so we've omitted it but it can be a telling figure. A large number of falls may mean the rope is more elastic which is obviously safer in a fall but increases 'bounce' during ascending and is generally less abrasion resistant.

COST: Some manufacturers do not give a retail price, in which case we list an approximate retail price based on their key distributors. Not all ropes are sold by the metre invariably because of pre-sewn/spliced eyes so they are sold in set lengths. We've used the cost of the shortest length sold, added 10% and rounded up to get a price. By-the-metre/foot, is the most expensive way to buy rope so these may not be exact but they give you a rough idea. Prices are per metre and **per foot** as an additional US $Dollar figure. All prices **EXCLUDE Splices/ Sewn eyes** which add around £15/$20/€17 unless otherwise stated. We usually round the prices up but if it seems a little precise it will be a manufacturers stated retail cost. We also now show a straight currency conversion in burnt-orange £$€ - this NOT an accurate cost because it precludes import duty and bulk shipping but it again gives you a rough idea for comparison. If the cost is *not* shown in burnt orange it means it is actually sold for that price in either the US, Europe or the UK. We will update and upgrade (accuracy) of prices throughout the year to try and keep pace with any larger fluctuations.

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: Arborist ropes tend to be primarily Polyester sheath with a polyester or nylon core. 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. Polyester reduces stretch in the sheath and increases durability to some extent. Nylon absorbs more water than Polyester but is stronger when wet and provides more elasticity so it's often





used for the core material.

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. However, we're not sure how much notice to take since the *Argiope* at 1. is far easier to tie than *DrenaLINE* at 0.6? *SherrillTree* offer a different guide with a 1 to10 scale where 10 is excellent knotability - this is shown in burnt orange.

NUMBER OF FALLS: This is a category more commonly seen in dynamic ropes but none of these lower-stretch ropes are truly static - they will all stretch to some degree and some provide an indication of the number of factor 1 falls your rope can take before it needs to be retired because the elasticity is compromised.

SHEATH CONSTRUCTION: This is expressed as the number of carriers/threads used to construct the outer 'jacket' or braid. The lower the number, the more flexible the rope will be. Most of the ropes in this category are 24-braid and are **DB** or double braids meaning 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. Kernmantle (**KM**) is technically any rope with a sheath over a separate core but is more usually a single 32 or 48 carrier sheath over parallel core fibres with less stretch than traditional arb ropes. One manufacturer describes a *Double Braid Kernmantle* which we would term **DB** rather than **KM**.

SPLICEABLE: indicates whether the rope can be se spliced or hand-spliced shown as black square ■, whether it is available with a pre-spiced eye ■ or a sewn eye ■.

SUITABLE FOR:.....

HYBRID HARDWARE indicates a particular suitability fo use with hybrids and descenders beyond the norm for all these ropes. This means 1) that it will fit key devices 2) that the sheath won't milk or bunch under compression 3) that the rope stays quite round and doesn't 'squash' and 4)it maintains these attributes through its life. NB: **ALL of the ropes in this GUIDE can be used for abseiling, ascending, hauling and even ziplines** but some do it better than others and with greater safety margins eg. ***toothed ascenders are best with 32-48 carriers rather than the knobblier 12-16 carriers.*** Equally, all can be used for climbing using Stationary or Moving ropes but again with varying degrees of effectiveness.

Many splices and compact sewn eyes can be **FED THROUGH HARDWARE** but there's a significant strength loss.

SRT/SRS/DRT & **DdRT/MRS:** generally speaking Single and Double Rope Technique (now called SRS- Stationary Rope Systems) require low stretch rope for which kernmantle semi-static and static ropes are perfect. The more supple 32 and 24 strand double braid can also do that job well 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 '**HYBRID HARDWARE**' 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. Most arb ropes used a much coarser braid, in fact a braid covering a braided core hence Double Braid and this is anything from 12 and 16 to 24. More recently, as SRT/SRS took hold, the Kernmantle norms for 32 carrier sheaths has provided greater abrasion resistance and inhibits ingress of dirt and debris with its tighter weave. Traditional arb constructions provide a much softer feel and easy knot tying and though less abrasion resistant, trees are far more forgiving than rock, metal and concrete.

NB: **MODEL NAMES** often differentiate the colour options - eg. *ALL GEAR* & *YALE* ropes - each named rope denotes a specific colour and only that colour.

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



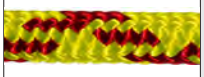
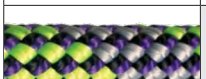
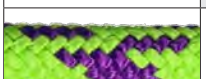
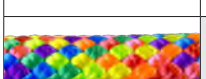
Rope Tech Gloves

A PERFECT FIT FOR EVERY GRIP

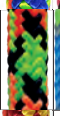
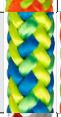
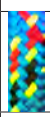
Ultra-lightweight design: 0.221 lbs
7 sizes: XXS, XS, S, M, L, XL, XXL
Materials: synthetic leather, cowhide, spandex

IMAGES NOT TO SCALE
COST: excludes eyes unless specified in NOTES. INCLUDES local taxes/VAT. £$€=Currency Conversion If not sold by m/ft, price is shortest length x10% & rounded up.

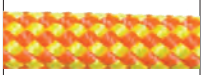
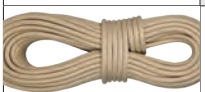
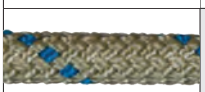
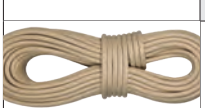
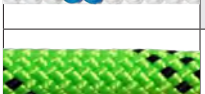
●=OK but not ideal
DB=Double Braid
KM=Kernmantle
Tying 10=hardest to tie

	MODEL Product Code	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	NUMBER OF FALLS EASE of TYING Sherrill Rating	SHEATH OUTER STRANDS	SPLICEABLE PRE-SPLICED PRE-SEWN
	**Arborist 32str KM** Crossfire	ALLGEAR		£2.75 $3.44 $1.05 €3.15	11 7/16"	89g 6.1lb	Polyester Nylon	ANSI		32 KM	■
	**Arborist 32str KM** Finish Line, Blue Finish-Line, Red Finish Line,	ALLGEAR		£2.90 $3.60 $1.10 €3.30	11 7/16"	89g 6.1lb	Polyester Nylon	ANSI		32 KM	■
	**Arborist 32str KM** Tower Line	ALLGEAR		£2.90 $3.60 $1.10 €3.30	11 7/16"	89g 6.1lb	Polyester Polyester	ANSI		32 KM	■
	**Arborist 24str*** Rocketline, Ramborista Purple Haze, Blue Craze, CherryBomb, Sunburst	ALLGEAR		£3.40 $4.25 $1.30 €3.90	11.2 7/16"	89g 6.1lb	Polyester Polyester	ANSI		24/12 DB	■■
	**Arborist 24str*** CherryBomb2, Inferno, BlueCraze2, MardiGras2, Atlas	ALLGEAR		£4.30 $5.40 $1.65 €4.95	11.8 15/32"	89g 6.1lb	Polyester Polyester	ANSI	-	24/12 DB	■ ■■
	**Arborist 32str KM** TowerLine	ALLGEAR		£2.90 $3.62 $1.10 €3.30	12.7 ½"	99g 6.7lb	Polyester Polyester	ANSI		32 KM	■
	**Arborist 24str*** Neolite II, SafetyLite II	ALLGEAR		£3.05 $3.85 $1.18 €3.50	12.7 ½"	112g 7.5lb	Polyester Polyester	ANSI		24 DB	■■
	**Arborist 16str*** Bazooka, Neolite, SafetyLite	ALLGEAR		£3.25 $4.10 $1.25 €3.75	12.7 ½"	112g 7.5lb	Polyester Nylon	ANSI		16	■ ■■
	**Arborist 12str*** Forestry Pro Glo, Forestry Pro	ALLGEAR		£3.10 $3.90 $1.20 €3.60	12.7 ½"	109g 7.3lb	Polyester Polyester	ANSI		12	■ ■■
	**Endurance** Aya, LuckyLine	ATLANTIC BRAIDS		£2.70 $3.10 $1.00 €3.10	11.1 7/16"	89g 6lb	Polyester Nylon	n/a		32 KM	■
	**GripFlex-24**	ATLANTIC BRAIDS		£2.70 $3.10 $1.00 €3.10	11.7 29/64"	98g 6.6lb	Polyester Polyester	ANSI	0.37	24 DB	■ ■
	**Antidote** Fusion, Fury, Formula	ATLANTIC BRAIDS		£2.35 $2.95 $0.90 €2.70	11.8 ½"	n/a	Polyester Polyester	n/a		24 DB	■
	**GripFlex-16**	ATLANTIC BRAIDS		£2.80 $3.40 $1.10 €3.30	12.7 ½"	112g 7.5lb	Polyester Nylon	n/a		16	■
	**Endurance**	ATLANTIC BRAIDS		£2.70 $3.10 $1.00 €3.10	12.7 ½"	118g 7.9lb	Polyester Nylon	n/a		32 KM	■
	**GripFlex-12**	ATLANTIC BRAIDS		£2.70 $3.10 $1.00 €3.10	13 ½"	134g 9lb	Polyester Polyester	n/a		12	■
	**Dynastat**	BEAL		£2.40 $3.10 $1.00 €2.75	10.5 13/32"	75g 5lb	Nylon Nylon/Vectran	CE A*	0.82	16 KM	■

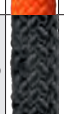
ARBORIST CLIMBING ROPES

SUITABLE FOR			MINIMUM BREAKING LOAD/STRENGTH				ELONGATION %		OTHER COLOURS					NOTES	WWW.
EYE CAN THREAD THRU HARDWARE	HYBRID HARDWARE	SRT/SRS MRS/DdRT	MBL MINIMUM Break Load Spliced Sewn Knotted	ABL AVERAGE Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %							
-	-	■	35.2kN 7920lbf	39.1kN 8800lbf			15%							Model names equates to colour options.	allgearinc.com
-	-	■	31.2kN 7020lbf	39.1kN 7800lbf			3%							*Model names equates to colour options.	allgearinc.com
-	-	■	27.2kN 6120lbf	30.3kN 6800lbf			3%							*Model names equates to colour options.	allgearinc.com
■	-	■	-	28kN 6300lbf			3%							*Model names equates to colour options.	allgearinc.com
■	■	■■	-	29.8kN 6700lbf	-		4.9%	-						*Model names equates to colour options. Atlas discontinued	allgearinc.com
-	-	■	32.8kN 7380lbf	26.7kN 8200lbf			3%								allgearinc.com
-	■	■■	-	34.7kN 7800lbf			n/a							*Model names equates to colour options.	allgearinc.com
-	-	■	33.4kN 7500lbf	40.9kN 9200lbf			3%							*Model names equates to colour options.	allgearinc.com
-	-	■	29.2kN 6570lbf	36.5kN 7300lbf			3%							*Model names equates to colour options.	allgearinc.com
-	■	■	37.5kN 8300lbf	4000kg 8800lb			7%								atlanticbraids.com
-	-	■■	-	30.5kN 6850lbf 27.5kN 6180lbf	0.4%		2.3%	45%							atlanticbraids.com
-	-	■	31.1kN 7000lbf	5170kg 11400lb			n/a	n/a						Status being established Seems widely available but not listed by ATL - Also 11.1 & 12.7mm	atlanticbraids.com
-	-	■	-	40.9kN 9200lbf			n/a	n/a							atlanticbraids.com
-	-	■	48kN 10600lbf	5170kg 11400lb			7%	n/a							atlanticbraids.com
-	-	■	-	3040kg 6700lb			n/a	n/a							atlanticbraids.com
-	-	■	25kN 6744lbf 16/19kN 3597/4271lbf	-	0%	0.8%	2%	44%						DISCONTINUED *Conforms to Semi-static (EN1891)and Dynamic (EN892) Standards	bealplanet.com

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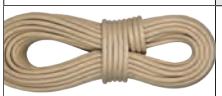
	MODEL Product Code	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	NUMBER OF FALLS EASE of TYING Sherrill Rating	SHEATH OUTER STRANDS	SPLICEABLE PRE-SPLICED PRE-SEWN
	Industrial	BEAL		£3.60 $3.20 $1.15 €2.90*	11mm 7/16"	74g 5lb	Polyester Nylon	CE A	-	32 KM	■
	Biloba	BEAL		£3.60 $4.50 $1.35 €4.10	11.5mm 7/16"	89g 6 lb	Polyester Nylon	CE A	-	DB	■
	Ginko	BEAL		£3.55 $4.50 $1.40 €4.10	12mm ½"	92g 6.1lb	Polyester Nylon	CE A	-	DB	■ ■
	Bonsai	BEAL		£3.75 $4.75 $1.55 €4.30	13mm ½"	100g 7.3lb	Polyester Polyester	CE A ANSI	-	DB	■
	Baobab	BEAL		£4.75 $6.00 $1.85 €5.45	13.5mm ½"	89g 6 lb	Polyester Nylon	CE A	-	DB	■
	Armortech	BLUEWATER		£6.75 $8.50 $2.60 €7.80	10.5mm 27/64"	76g 5.1lb	Technora/ Polyester Nylon	ANSI	-	32 KM	■
	Assaultline/ BWII+	BLUEWATER		£3.35 $4.20 $1.28 €3.85	10.5mm 27/64"	78g 5.2lb	Polyester Nylon	CE A NFPA	-	32 KM	■
	Protac	BLUEWATER		£3.35 $4.22 $1.30 €3.85	10.5mm 27/64"	72g 4.8lb	Polyester Nylon	CE B	-	32 KM	-
	SpecStatic	BLUEWATER		£3.25 $4.10 $1.25 €3.75	10.5mm 27/64"	88g 6 lb	Polyester Polyester	NFPA ANSI	-	32 KM	-
	Armortech	BLUEWATER		£6.80 $8.60 $2.70 €7.85	11mm 7/16"	91g 6lb	Technora/ Polyester Nylon	ANSI	-	32 KM	■
	DGR	BLUEWATER		£3.10 $3.90 $1.20 €3.60	11mm 7/16"	85g 5.7lb	Polyester Nylon	NFPA ANSI	-	KM	-
	Pro G	BLUEWATER		£3.70 $4.65 $1.42 €4.25	11mm 7/16"	92g 6.2lb	Polyester Nylon	NFPA	-	48 KM	-
	Protac	BLUEWATER		£3.50 $4.40 $1.35 €4.05	11mm 7/16"	80g 5.44lb	Polyester Nylon	CE A NFPA UIAA	-	32 KM	-
	Safeline	BLUEWATER		£3.76 $4.75 $1.45 €4.35	11mm 7/16"	88g 5.86lb	Polyester Nylon	CE A NFPA UIAA	-	16 KM	■
	Assaultline/ BWII+	BLUEWATER		£3.00 $3.80 $1.15 €3.50	11.4mm 7/16"	89g 6.1lb	Polyester Nylon	CE A NFPA UIAA	-	32 KM	■

ARBORIST CLIMBING ROPES

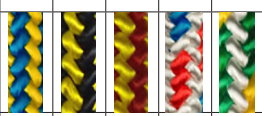
SUITABLE FOR			MINIMUM BREAKING LOAD/STRENGTH				ELONGATION %										
EYE CAN THREAD THRU HARDWARE	HYBRID HARDWARE	SRT/SRS MRS/DdRT	MBL MINIMUM Break Load Spliced Sewn Knotted	ABL AVERAGE Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %	OTHER COLOURS					NOTES	WWW.
-	■	■■	34kN 7643lbf 19.5/24kN 4384/5395lbf	-	1.1%	0.8%	2.1%	36%						Also 10.5 & 12mm versions - see Rope Eqpt BUYERS GUIDE. White costs 4% less	bealplanet.com
■	■	■■	30.3kN 6812lbf 18/18kN 4047/4047lbf	-	2.8%	0	3.8%	44%							bealplanet.com
-	-	■	27kN 7399lbf 16/22kN 3597/4945lbf	-	2.8%	0	4%	69%						sheath & core bonded	bealplanet.com
-	-	■	34kN 7643lbf 18/25kN 4047/5620lbf	-	4.5%	0	4.2%	61%						sheath & core bonded	bealplanet.com
-	■	■	30kN 6744lbf 19/23kN 4271/5171lbf	-	2%	0	5%	82%						Unicore Rope, sheath and core bonded. Discontinued?	bealplanet.com
-	■	■	35.5kN 8000lbf	-	0%	-	3.2%	48%*						Teflon-coated, double sheath-*+core sheath. Technora over polyester sheathed nylon Up to 934 deg F	bluewaterropes.com
-	■	■	28.9kN 6500lbf	-	-	-	3.8%	-							bluewaterropes.com
-	■	■	31.5kN 7081lbf	-	-	-	3.1%	50%							bluewaterropes.com
-	■	■	27.1kN 6092lbf	-	-	-	2.6%	47%						Specially designed for mechanical devices	bluewaterropes.com
-	■	■	37.1kN 8331lbf	-	0%	-	3.6%	53%*						Teflon-coated, double sheath-*+core sheath. Technora over polyester sheathed nylon Up to 934 deg F	bluewaterropes.com
-	■	■	33.5kN 7541lbf	-	-	-	3.4%	48%							bluewaterropes.com
-	■	■■	40.5kN 9107lbf	-	-	-	3.1%	42%							bluewaterropes.com
-	■	■	35.2kN 7913lbf	-	-	-	1.2%	51.6%							bluewaterropes.com
-	■	■	35.9kN 8061lbf	-	-	-	2.7%	46%							bluewaterropes.com
-	■	■	32.9kN 7399lbf	-	1.9%		2.9%	53%							bluewaterropes.com

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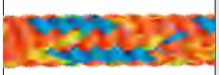
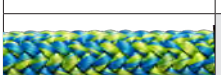
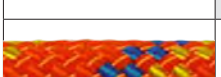
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KM=Kernmantle
Tying **10**=hardest to tie

	MODEL Product Code	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	NUMBER OF FALLS EASE of TYING Sherrill Rating	SHEATH OUTER STRANDS	SPLICEABLE PRE-SPLICED PRE-SEWN
	**Armortech**	**BLUEWATER**		£7.55 $9.50 $2.90 €8.70	11.5mm 7/16"	97g 6.55lb	Technora/ Polyester Nylon	ANSI	-	32 KM	■
	**Technora Assaultline**	**BLUEWATER**		£3.25 $4.05 $1.20 €3.70	11.5mm 7/16"	92g 6.2lb	Technora Polyester	NFPA	-	32 KM	■
	**SpecStatic**	**BLUEWATER**		£3.45 $4.35 $1.35 €4.00	11.5mm 7/16"	100g 7.3lb	Polyester Polyester	NFPA ANSI	-	32 KM	-
	**Armortech**	**BLUEWATER**		£8.75 $11.00 $3.50 €10.00	12mm ½"	98g 6.55lb	Technora/ Polyester Nylon	ANSI	-	32 KM	■
	**Safeline** White Safeline	**BLUEWATER**		£4.35 $5.50* $1.70* €5.05	12.5mm ½"	108g 8.21lb	Polyester Nylon	CE A NFPA ANSI UIAA	-	16 KM	■
	**Protac**	**BLUEWATER**		£4.05 $5.10 $1.60 €4.70	13mm ½"	114g 8.41lb	Polyester Nylon	CE A NFPA UIAA	-	32 KM	
	**Armortech**	**BLUEWATER**		£9.10 $11.50 $3.60 €10.50	13mm ½"	127g 8.51lb	Technora/ Polyester Nylon	NFPA ANSI	-	32 KM	■
	**Assaultline/ BWII+**	**BLUEWATER**		£3.05 $3.80 $1.15 €3.50	13mm ½"	89g 6.1lb	Polyester Nylon	CE A NFPA	-	32 KM	■
	**SpecStatic**	**BLUEWATER**		£4.00 $5.00 $1.55 €4.60	13mm ½"	137g 10.1lb	Polyester Polyester	NFPA ANSI	-	32 KM	-
	**Arbor Boss 24**	**BUCCANEER ROPE CO**		n/a	11mm 7/16"	92g 6.2lb	Polyester Polyester	-	-	24 DB	-
	**Abor Boss 16** O-Glow, Blue Thunder, Black Thunder, Red Thunder, Patriot, Green&Ylw	**BUCCANEER ROPE CO**		£2.00 $2.50 $0.75 €2.30	12mm ½"	112g 7.5lb	Polyester Polyester	-	-	16 DB	-
	**Arbor Boss 12**	**BUCCANEER ROPE CO**		n/a	12mm ½"	112g 7.5lb	Polyester Polyester	CI	-	12 DB	-
	**Frazen** 2817	**CAMP**		£00 $00 $00 €00	12.2mm ½"	105g 7.5lb			<5		
	**Bulwark Safety X** Semi-Static	**COASTLINE CORDAGE**		£2.25 $2.80 $0.85 €2.60	11mm 7/16"	82g 5.5lb	Polyester Nylon	NFPA	-	32 KM	-
	**Bulwark Safety X** Semi-Static	**COASTLINE CORDAGE**		n/a	12mm ½"	98g 6.7lb	Polyester Nylon	NFPA	-	32 KM	-
	**Rebel**	**COURANT**		£2.40 $3.90 $1.20 €2.75	11mm 7/16"	88g 5.9lb	Polyester Nylon	NFPA ANSI	1.18	32 KM	-

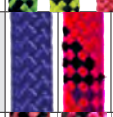
ARBORIST CLIMBING ROPES

SUITABLE FOR			MINIMUM BREAKING LOAD/STRENGTH				ELONGATION %				NOTES	WWW.
EYE CAN THREAD THRU HARDWARE	HYBRID HARDWARE	SRT/SRS MRS/DdRT	MBL MINIMUM Break Load Spliced Sewn Knotted	ABL AVERAGE Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %	OTHER COLOURS			
-	■	■	32.1kN 7216lbf	-	0%	-	1.9%	53%*			Teflon-coated, double sheath-*core sheath= 39.4%. 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%	-	5.3%	53%*			Teflon-coated, double sheath-*core sheath= 39.4%. Technora over polyester sheathed nylon Up to 934 deg F	bluewaterropes.com
-	-	■	44.4kN 9983lbf	-	-	-	2.2%	45%			*White with red or blue thread is a whopping 20% cheaper than these figures	bluewaterropes.com
-	-	-	43.4kN 9840lbf	-	-	-	2%	46%				bluewaterropes.com
-	■	■	49.8kN 11203lbf	-	0%	-	2.5%	53%*			Teflon-coatd, double sheath-*core sheath= 39.4%. 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
-	■	■	-	16kN 3600lbf	-	-	-	-				bucrope.com
-	-	■	-	31.1kN 7000lbf	-	-	-	-			also available as 5/8" 16mm see rigging ropes	bucrope.com
-	-	■	-	29.8kN 6700lbf	-	-	-	-			also available as 5/8" 16mm see rigging ropes	bucrope.com
					0.2		2.4%					camp.it
-	■	■	37.92kN 8294lbf	-	-	-	2%	-			note that 2 different spec sheets exist for these ropes with different spec.	coastlinegroup.ca
-	■	■	49.56kN 10927lbf	-	-	-	n/a	-			note that 2 different spec sheets exist for these ropes with different spec	coastlinegroup.ca
-	■	■	33kN 7419lbf 23kN 5171lbf	-	2.2%	0	2.5%	41%				cordescourant.com

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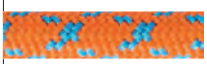
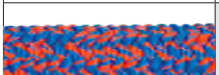
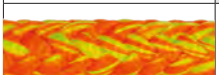
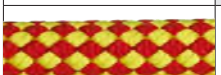
	MODEL Product Code	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	NUMBER OF FALLS EASE of TYING Sherrill Rating	SHEATH OUTER STRANDS	SPLICEABLE PRE-SPLICED PRE-SEWN
	**Squir v2**	COURANT		£2.20 $3.77 $1.15 €2.82	11.5mm 7/16"	91g 6.1lb	Polyester Nylon	CE A	0.74	32 KM	-
	**Komora**	COURANT		£4.25 $6.00 $1.83 €4.90	11.7mm 7/16"	94g 6.3lb	Polyester Nylon	CE A	0.82	16	■
	**Kalimba**	COURANT		£5.00 $6.20 $1.90 €5.60	11.9mm 29/64"	100g 6.7lb	Polyester Nylon	CE A ANSI	0.6	24 DB	■
	**Kanopa**	COURANT		£4.40 $5.55 $1.70 €5.05	12.1mm ½"	103g 6.2lb	Polyester Nylon	CE A	0.87	16	■ ■
	**Rush**	COUSIN- TRESTEC		£2.05 $2.60 $0.80 €2.30	11mm 7/16"	74g 5lb	Nylon Nylon	CE A	1.1	32 KM	
	**Atrax**	COUSIN- TRESTEC		£3.65 $4.75 $1.45 €4.75	11.6mm 7/16"	102g 6.9lb	Polyester Polyester	CE A	1.03	24 DB	■ ■
	**Black Widow**	COUSIN- TRESTEC		£4.25 $5.40 $1.65 €4.55	12.2mm ½"	105g 7lb	Polyester Polyester	CE A	0.7	16 DB	■
	**Lignum**	COUSIN- TRESTEC		£4.10 $5.50 $1.70 €4.60	12.5mm ½"	115g 7.7lb	Polyester Polyester	CE A	0.9	24 DB	■
	**Response LSK**	DONAGHYS		£2.30 $3.10 $0.95 €2.75	11mm* 7/16"	91g 6.1lb	Polyester Nylon	CE A ANSI	1.18	32 KM	-
	**Response XT**	DONAGHYS		n/a	11mm* 7/16"	91g 6.1lb	Nylon Nylon	CE A ANSI	1.18	32 KM	-
	**Cougar Arbor Access**	DONAGHYS		£3.40 $4.40 $1.35 €3.80	11.7mm 29/64"	93g 6.25lb	Polyester Polyester	CE A ANSI	10	24 DB	■ ■
	**NRG**	DONAGHYS		£3.40 $4.40 $1.35 €3.80	12mm ½"	108g 7.2lb	Nylon Nylon	CE A ANSI	-	24 KM	-
	**Tango StatX** Yellow, Blue	DRAYER		£3.00 $3.60 $1.10 €3.30	11.5mm 7/16"	100g 6.7lb	Polyester Nylon	CE A	0.74	32 KM	■
	**Tango Vision** Fox, Flash	DRAYER		£3.10 $3.90 $1.20 €3.50	12.8mm ½"	104g 7lb	Polyester Nylon	CE A	-	16	■
	**Tango Ergo** Brasil	DRAYER		£3.30 $4.20 $1.30 €3.80	13.5mm 35/64"	106g 7.1lb	Polyester Nylon	CE A	-	24 DB	■
	**PowerStatic II**	EDELRID		£3.20 $4.10 $1.25 €3.30	11mm 7/16"	81g 5.4lb	Nylon Nylon	CE A	0.9	24 KM	■

ARBORIST CLIMBING ROPES

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EYE CAN THREAD THRU HARDWARE	HYBRID HARDWARE	SRT/SRS MRS/DdRT	MBL MINIMUM Break Load Spliced Sewn Knotted	ABL AVERAGE Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %	OTHER COLOURS	NOTES	WWW.
-	■	■	30kN 6744lbf 21kN 4721lbf	-	2.7%	0	2%	43%		Pink Dragon version is a limited edition for breast Cancer Awareness	cordescourant.com
■	■	■■	30kN 6744lbf 19kN 4271lbf	-	1%	0	2.5%	68%		most don't sell with a splice eye which adds around $20/£15. Some stockist list as 11.8mm	cordescourant.com
■	■	■■	35kN 7868kN 23kN 5171lbf	-	1%	0.1%	1.8%	57%			cordescourant.com
■	-	■	31kN 6969lbf 23.5kN 5283lbf	-	2.8%	0.4%	2.8%	67%		Captive rope marker within splice. Japora/Ozora discontinued	cordescourant.com
-	■	■	34.1kN 7666lbf >15kN 3372lbf	-	2.5%	0.3%	1.8%	39%			cousin-trestec.com
■	■	■■	30.7kN 6902lbf >15kN 3372lbf	-	0.5%	0	2.8%	55%			cousin-trestec.com
■	-	■■	30.1kN 6767lbf >15kN 3372lbf	-	0.2%	0	2.4%	58.8%			cousin-trestec.com
■	■	■	34.6kN 7778lbf >15kN 3372lbf	-	0.1%	0	3.1%	61.6%		Lignum red is a *Freework-er* (germany)special	cousin-trestec.com
-	■	■	31.9kN 7171lbf >15kN 3372lbf	34.3kN 7711lbf	0.3%	2.6%	3.2%	51%		'*Response LSK*' name also used by 2 competitors. Also in black, white with yellow/blue fleck *Actual test diam=11.4mm	donaghys.com
-	■	■	31.9kN 7171lbf >15kN 3372lbf	34.3kN 7711lbf	-	-	3.2%	51%		XT uses heat-set Nylon core. *Actual test diam=11.4mm	donaghys.com
■	■	■	28kN 6300lbf	-	1.5%	0	<3.0%	n/a			donaghys.com
■	■	■	35.2kN 7868lbf	-	-	-	-	n/a			donaghys.com
-	■	■	46.4kN 10431lb	-	2.7%	0	1.2%	43%			drayer.de
-	■	■■	36kN 8093lb	-	-	-	2.2%	n/a			drayer.de
-	-	■	36.7kN 8260lbf	-	-	-	<2.2%	n/a			drayer.de
-	-	■■	29kN 6520lbf 17kN 3822lbf		0.2%		4.3%	61%		Thermo-shield coating.	edelrid.de

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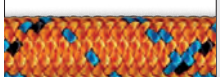
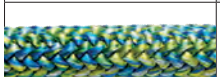
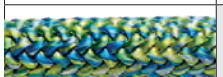
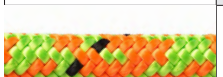
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	MODEL Product Code	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	NUMBER OF FALLS EASE of TYING Sherrill Rating	SHEATH OUTER STRANDS	SPLICEABLE PRE-SPLICED PRE-SEWN
	**Woodpecker**	EDELRID		£4.90 $5.90 $1.80 €5.55	11.7mm 29/64"	95g 6.3lb	Polyester Nylon	CE A ANSI	1.0	24 KM	■
	**Bucco**	EDELRID		£3.50 $4.40 $1.35 €4.00	11.8mm 15/32"	96g 6.4lb	Polyester Nylon	CE A ANSI	-	32 KM	■
	**X-P*E** Bahamas, Aruba, Seychelles	EDELRID		£3.75 $3.90 $1.20 €4.30	12.3mm ½"	118g 7.9lb	Polyester Polyester	CE A	0.8 10	16	■
	**Jacamar**	EDELRID		£4.60 $6.30 $1.95 €5.70	12.5mm ½"	108g 7.2lb	Polyester Nylon	CE A ANSI	-	24 DB	■
	**Silva-Tex 24 Light**	ENGLISH BRAIDS		n/a	10.5mm 13/32"	79g 5.3lb	Nylon Nylon	CE A	-	24 KM	-
	**Silva-Tex 24**	ENGLISH BRAIDS		£3.55 $4.50 $1.40 €4.05	11.5mm 7/16"	93g 6.2lb	Polyester Nylon	CE A	0.9	24 DB	■ ■
	**Silva-Tex 16**	ENGLISH BRAIDS		n/a	12.4mm ½"	131g 8.8lb	Polyester Polyester	CE A	-	16 KM	-
	**Silva-Tex 16HD**	ENGLISH BRAIDS		n/a	12.7mm ½"	114g 7.7lb	Polyester Nylon	CE A	-	16 KM	-
	**Argiope Evo** Blue, Berry	FTC TREE		£4.05 $5.15 $1.60 €4.65	11.7mm 29/64"	103g 6.9lb	Polyester Polyester	CE A	0.7	16	■ ■
	**Nigma**	FTC TREE		£3.20 $4.00 $1.25 €3.60	12mm ½"	105g 7lb	Polyester Polyester	CE A	1	24 DB	■ ■
	**Argiope** Acid	FTC TREE		£4.50 $5.50 $1.70 €5.00	12.1mm ½"	104g 7lb	Polyester Nylon	CE A	0.87	16	■ ■
	**GeoStatic NE**	GLEISTEIN		£2.40 $3.00 $1.00 €2.70	10.5mm 13/32"	67g 4.5lb	Polyester Polyester	CE A	-	32 KM	■
	**GeoArbor Lizard** Golden Viper	GLEISTEIN		£2.70 $3.50 $1.10 €3.10	11mm 7/16"	82g 5.5lb		CE A	-	DB	■
	**GeoArbor Twin**	GLEISTEIN		£4.00 $5.00 $1.55 €4.50	12mm ½"	90g 6lb	Nylon Nylon	CE A	-	24 DB	-
	**GeoTwin Gemini X**	GLEISTEIN		£5.20 $6.55 $1.85 €6.00	12mm ½"	100g 6.7lb	Polyester Polyester	CE A	-	24 DB	■ ■
	**GeoArbor Cougar** Cobia, Barracuda	GLEISTEIN		£4.75 $5.90 $1.85 €5.35	12mm ½"	88g 5.9lb	Polyester Polyester	CE A	-	16 KM	■ ■

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■	■	■■	25kN 5620lbf 16kN 3597lbf	-	0	-	2.1%	55%						Web-eye termination is virtually the same diameter as rope.	edelrid.de
-	■	■	40kN 8992lbf 22kN 4946lbf	-	0.8%	-	1.9%	47%						Made from recycled yarn	edelrid.de
-	-	■	25kN 5620lbf 23/16kN 5171/3597lbf	-	-	-	2.2%	65%						red/yelw is 'highlight' a Freeworker exclusive colour	edelrid.de
-	-	■	33kN 7400lbf 18.9kN 4249lbf	-	1.2%	-	2.4%	56%						Sheath is 100% recycled material	edelrid.de
-	-	■■	22.4kN 5036lbf	-	2.5%	-									englishbraids.com
■	-	■■	31.6kN 7104lbf 25.6kN 5755lbf	-	2.5%	-	2.8%	49%						Model sometimes listed by stockists as 11.7	englishbraids.com
-	-	■	30.4kN 2960lbf 24.1kN 5418lbf	-	0	-	-	-							englishbraids.com
-	-	■■	37.4kN 8408lbf 25.4kN 5710lbf	-	0	-	-	-							englishbraids.com
■	■	■■	28.9kN 6497lbf 22.12kN 4973lbf	-	1%	0%	2.8%	68%						Original Berry colour discontinued.*Evo* replaces previous version which had nylon core	ftc-tree.com
■	■	■■	35kN 7868lbf 21.9kN 4923lbf	-	1.4%	0%	3.4%	55.7%							ftc-tree.com
-	-	■	34kN 7643lbf 15kN 3372lbf	-	2.8%	0.4%	2.4%	67%							ftc-tree.com
-	-	■	28.8kN 6474lbf 15kN 3372lbf	-	0.6%	0%	2.9%	56.3%							gleistein.com
■	-	-	33kN 7419lbf	-	1.5%	4.5%	4.3%	54%						Has water-repellant treatment	gleistein.com
-	-	■	34.2kN 7693lbf	-	1.6%	0%	3.4%	52%							gleistein.com
-	-	■	32kN 7194lbf 30.6kN 6879lb	-	-	-	2%	-						Sport version (yachting) has mottled sheath - black mixed with red, blue, green or white.	gleistein.com
-	-	■	29.4kN 6609lbf	-	1.7%	0%	2.6%	69%						Cobia and Barracuda appear to be discontinued?	gleistein.com

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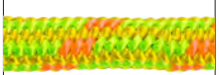
	MODEL Product Code	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	NUMBER OF FALLS EASE of TYING Sherrill Rating	SHEATH OUTER STRANDS	SPLICEABLE PRE-SPLICED PRE-SEWN
	Trojan	HARKIE		£3.15 $4.00 $1.25 €3.65	11.7mm 29/64"	105g 7lb	Polyester Polyester	CE A	-	24 DB	■
	Warrior	HARKIE		£3.15 $4.00 $1.25 €3.65	12mm ½"	109g 7.3lb	Polyester Polyester	CE A	-	16	■
	Climbing Rope	HUSQVARNA		£7.00* $8.90 $2.71 €8.10	11.5mm 7/16"	94g 6.3lb	Polyester Nylon	CE A ANSI	-	24 DB	■ ■
	Climbing Rope	HUSQVARNA		£5.10 $6.60 $2.00 €6.00	11.8mm 15/32"	96.5g 6.5lb	Polyester Nylon	CE A ANSI	-	32 KM	■
	Stryka	HUSQVARNA		£4.50 $5.50 $1.70 €5.10	11.5mm 7/16"	92.4g 6.2lb	Polyester Nylon	CE A ANSI		24 DB	■
	Kalix	HUSQVARNA		£4.75 $6.00 $1.85 €5.50	12.9mm ½"	118g 7.9lb	Polyester Nylon	CE A ANSI		16	■
	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		£3.25 $4.00 $1.25 €3.50	11.5mm 7/16"	100g 6.7lb	Polyester Nylon	CE A	-	32 DB	■
	Safe Vision (Reef)	LIROS		£3.70 $4.65 $1.45 €4.25	11.8mm 15/32"	82g 5.5lb	Polyester Nylon	CE A	0.7	24 DB	■ ■■
	Safe Vision	LIROS		£4.50 $5.50 $1.70 €5.00	12.8mm ½"	102g 6.8lb	Polyester Nylon	CE A		24 DB	■ ■■
	Maverick	MARLOW ROPES		£6.00 $7.50 $2.30 €7.00	11.5mm 7/16"	93g 0lb	Polyester Nylon	CE A UKCA	- -	24 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	■ ■■
	Venom	MARLOW ROPES		£3.55 $4.90 $1.50 €4.10	11.8mm 15/32"	89.7g 6lb	Nylon Nylon	CE A UKCA	0.6	24 DB	■ ■■
	Vesper	MARLOW ROPES		£4.45 $5.60 $1.70 €5.10	11.8mm 15/32"	107.9g 7.2lb	Polyester Polyester	CE A UKCA	1.0	24 DB	■ ■■
	Typhoon	MARLOW ROPES		£TBA $TBA $TBA €TBA	12.2mm ½"	110g 7.2lb	Polyester Polyester	CE A UKCA		16 KM	■ ■
	Gecko2 Blue Ocean*	MARLOW ROPES		£4.55 $5.75 $1.80 €5.30	13mm ½"	125.4g 8.4lb	Polyester Polyester	CE A UKCA ANSI	0.8	16	■ ■■

ARBORIST CLIMBING ROPES

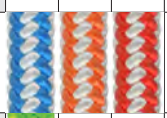
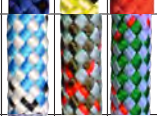
SUITABLE FOR			MINIMUM BREAKING LOAD/STRENGTH				ELONGATION %						
EYE CAN THREAD THRU HARDWARE	HYBRID HARDWARE	SRT/SRS MRS/DdRT	MBL MINIMUM Break Load Spliced Sewn Knotted	ABL AVERAGE Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %	OTHER COLOURS				NOTES	WWW.
■	-	■ ■	28.8kN 6474lbf 15kN 3372lbf	-	0.6%	0	2.9%	56.3%						harkieglobal.com
■	-	■ ■	27.7kN 6227lbf 15kN 3372lbf	-	0.35%	0	2.6%	60%						harkieglobal.com
-	■	■ ■	24kN 5395lbf 18/18kN 4047/4047lbf	-	<5%	-	2.2%	58%					*price includes one spliced eye - not available without	husqvarna.com
-	■	■ ■	35kN 7868lbf 18/20kN 4047/4496lbf	-	-	-	2.3%	42%						husqvarna.com
-	■	■ ■		34kN 7643lbf	-	-	3.8%	-						husqvarna.com
-	-	■	36.7kN 8260lbf 24kN 5395lbf	28.9kN 6497lbf	-	-	4.6%	-						husqvarna.com
-	■	■	34kN 7643lbf 22kN 4946lbf	-	-	0%	3.8%	46%						liros.com
-	■	■	46.4kN 10431lbf	-	-	-	1.5%	54%					may be discontinued?	liros.com
-	■	■ ■	37kN 8318lbf 29/24kN 6520/5395lbf	-	-	-	2.5%	54%					Branded as 'Reef' by Honey Brothers UK. Listed as 12mm by some	liros.com
-	-	■ ■	45kN 10116lbf 33/30kN 7400/6744lbf	-	-	-	2.2%	51%					Listed as 13mm by some	liros.com
■	■	■ ■	35kN 7868lbf 18.8/22.9kN 4226/5148lbf	35.7kN 8025lbf 23.3kN 5148lbf	0	-	2.5%	52%					New for 2024	marlowropes.com
-	■	■	-	36.8kN 8273lbf 18.9/20.6kN 4249/6755lbf	0	-	1.2%	55.6%					ABL Sewn= 27.8kN 6250 lbf	marlowropes.com
■	■	■ ■	-	33.5kN 7531lbf 17.7/26.2kN 3979/5890lbf	4.5%	0	3.7%	42%					ABL Sewn= 28.3kN 6362 lbf	marlowropes.com
■	■	■ ■	-	20.7kN 4654lbf 16.4/20.3kN 3686/4563lbf	0	-	2.2%	52%					ABL Sewn= 24.9kN 5597 lbf Electric pink is a *RockNRescue (USA)* special.	marlowropes.com
■	■	■	32.8kN 7868lbf 19.1/22.9kN 4293/5148lbf	20.7kN 4654lbf			1.5%	76%					New for 2024	marlowropes.com
■	-	■	-	32.1kN 7216lbf 18.4/28.3kN 4136/6362lbf	0	0	1.5%	73%					*Uses recycled blue-Ocean yarn ABL Sewn= 27kN 6069 lbf	marlowropes.com

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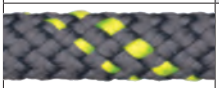
●=OK but not ideal
DB=Double Braid
KM=Kernmantle
Tying 10=hardest to tie

	MODEL Product Code	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	NUMBER OF FALLS EASE of TYING Sherrill Rating	SHEATH OUTER STRANDS	SPLICEABLE PRE-SPLICED PRE-SEWN
	Dragon	NOTCH		£3.40 $4.25 $1.30 €3.90	11.1mm 7/16"	81g 5.4lb	Polyester Nylon		5	32 KM	
	Banshee	NOTCH		£3.30 $4.00* $1.25* €3.75	11.7mm 7/16"	95g 6.4lb	Polyester Nylon	-	10	24 DB	■ ■
	Ogre	NOTCH		£3.25 $3.95 $1.20 €3.70	12mm ½"	113g 7.6lb	Polyester Polyester		9	12 KM*	■ ■
	Sasquatch	NOTCH		£2.50 $3.00 $1.00 €2.80	12.8mm ½"	112g 7.5lb	Polyester Nylon		9	16	■ ■
	Response LSK	NOVABRAID		n/a	11.7mm 29/64"	107g 7.2lb	Polyester Nylon	CE A ANSI	-	48 KM	■
	Arborist 24 Yellow Jacket	PELICAN ROPE		£3.30 $4.00 $1.20 €3.75	11mm 7/16"	83.5g* 5.6lb	Polyester Nylon			24	■ ■■
	Arborist Pro	PELICAN ROPE		£3.60 $4.40 $1.35 €4.10	11.8mm 15/32"	119g 8lb	Polyester Nylon			24	■
	Tree Viper	PELICAN ROPE		£3.80 $3.45 $1.05 €3.25	11.8mm 15/32"	84.8g 5.7lb	Polyester Nylon	CE A ANSI	-	24	■■
	Arborist 16	PELICAN ROPE		£3.10 $3.75 $1.15 €3.50	12.7mm ½"	125g 8.4lb	Polyester Nylon			16	■ ■■
	FLOW (mk2)	PETZL		£4.30* $5.35 $1.65 €5.30	11.8mm 15/32"	103g 6.8lb	Polyester Polyester	CE A ANSI	-	24 DB	■ ■
	CONTROL (mk2)	PETZL		£4.10 $5.00* $1.65* $5.70	12.5mm ½"	115g 7.7lb	Polyester Polyester	CE A ANSI	-	24 DB	■ ■
	Access Pro	PMI		£3.40 $4.15 $1.30 €3.90	11mm 7/16"	84g 5.6lb	Polyester Nylon	CE A NFPA	1.1	32 KM	
	EZ Bend 11	PMI		£3.30 $4.00 $1.25 €3.75	11mm 7/16"	80g 5.4lb	Nylon Nylon	CE A CI NFPA ANSI BERRY	0.9	16 KM	
	Extreme Pro	PMI		£3.30 $4.00 $1.25 €3.75	11mm 7/16"	100g 6.7lb	Polyester Nylon	ANSI NFPA		32 KM	■
	Patriot	PMI		£4.20 $5.20 $1.60 €4.85	11mm 7/16"	80g 5.4lb	Nylon Nylon	CE A CI NFPA ANSI BERRY	0.9	16 KM	-
	Isostatic 11.5	PMI		£4.00 $4.50 $1.40 €4.20	11.5mm 7/16"	96g 6.4lb	Polyester Polyester	ANSI NFPA		32 KM	-

ARBORIST CLIMBING ROPES

SUITABLE FOR			MINIMUM BREAKING LOAD/STRENGTH				ELONGATION %				NOTES	WWW.
EYE CAN THREAD THRU HARDWARE	HYBRID HARDWARE	SRT/SRS MRS/DdRT	MBL MINIMUM Break Load Spliced Sewn Knotted	ABL AVERAGE Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %	OTHER COLOURS			
	■	■	39.1kN 8800lbf	-	-	-	1.6%	51%			*Notch* transitioning ropes back to Sterling	notchequipment.com
■	-	■	37.1kN 8340lbf 28kN 6300lbf	-	-	-	2.1%	54%			Semi-reflective Gold fleck thread. *Notch* transitioning ropes back to Sterling	notchequipment.com
		■	29.8kN 6700lbf	-	-	-	1.6%	98%			*Not a conventional kernmantle but is unusual in being a 12-braid sheath over a parallel fibre core	notchequipment.com
■		■■	35kN 7868lbf	-	-	-	3.4%	72%			*Notch* transitioning ropes back to Sterling	notchequipment.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
-	-	■	31.1k 7000lbf 24kN 5400lbf	-	-	-	5%	-			*conflicting wt data on some sites & data sheets	pelicanrope.com
■	■	■	31kN 7000lbf 24kN 5400lbf	-	-	0	-	-				pelicanrope.com
■	■	■■	-	28kN 6300lb	-	-	-	-				pelicanrope.com
-	-	■	32.4k 7150lbf 24kN 5400lbf	-	-	-	-	-				pelicanrope.com
■	■	■■	27kN 6000lbf 15/15kN 3372/3372lbf	-	-	-	2.7%	53%			*Only available with eye Mk1=11.6mm, mk2=Better compatibility with ZigZag	petzl.com
■	■	■	30kN 6744lb-f15/19kN 3372/4271lbf	-	-	-	3.1%	62%			*Only available with eye(s) FF 0.3 Impact force 5.2kN. 8x FF1 falls	petzl.com
-	-	■	31.1kN 7000lbf	-	1.8%	1.6%	7.2% 3.4% 5.8%	49.7%				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%	-			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

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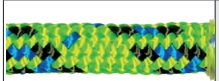
	MODEL Product Code	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	NUMBER OF FALLS EASE of TYING Sherrill Rating	SHEATH OUTER STRANDS	SPLICEABLE PRE-SPLICED PRE-SEWN
	**EZ Bend 12.5**	**PMI**		£4.30 $5.30 $1.65 €5.00	12.5mm ½"	107g 12.74lb	Nylon Nylon	CE CI ANSI NFPA	-	16 KM	-
	**Isostatic 13**	**PMI**		£4.75 $6.00 $1.80 €5.55	13mm ½"	125g 8.4lb	Polyester Polyester	ANSI NFPA	-	32 KM	-
	**Mercury CE**	**SAMSON ROPE**		£3.00 $3.75 $1.15 €3.50	11mm 7/16"	89g 6lb	Polyester Nylon	CE A	8	32 KM	-
	**V-24** Cool, Hot	**SAMSON ROPE**		£3.00 $3.75 $1.15 €3.50	11mm 7/16"	85g 5.9lb	Polyester Nylon	CE B	-	24 DB	■ ■
	**Velocity** Cool, Hot **Velocty SD***	**SAMSON ROPE**		£3.20 $3.95 $1.20 €3.65	11mm 7/16"	83g 5.6lb	Polyester Nylon	CE A	10	24 DB	-
	**Predator** **Predator-X**	**SAMSON ROPE**		£3.40 $4.25 $1.35 €3.90	11mm 7/16"	83.5g 5.6lb	Polyester Nylon	-	-	24 DB	■ ■
	**HyperStatic**	**SAMSON ROPE**		£2.70 $3.60 $1.10 €3.30	11.3mm 7/16"	106g 7.1lb	Polyester Polyester	-	-	32 KM	-
	**HyperStatic**	**SAMSON ROPE**		£2.90 $3.65 $1.15 €3.35	11.7mm 29/64	106g 7.1lb	Polyester Polyester	-	-	32 KM	-
	**Hyperclimb** Hot,Cool	**SAMSON ROPE**		£2.70 $3.30 $1.00 €3.10	11.7mm 29/64"	97g 6.5lb	Polyester Polyester	-	-	24 DB	-
	**Voyager** **Voyager SD*** Cool, Tangent	**SAMSON ROPE**		£3.65 $4.45 $1.35 €4.00	11.8mm 15/32"	97g 6.5lb	Polyester Nylon	-	10	24 DB	■ ■■
	**ArborFreak** **ArborFreak SD*** Pine, Danube, Redwood	**SAMSON ROPE**		£3.10 $3.90 $1.20 €3.30	12mm ½"	115g 7.7lb	Polyprop/ Polyester Nylon	-	-	16	■ ■
	**V-24** Cool, Hot	**SAMSON ROPE**		£3.25 $4.05 $1.30 €3.75	12mm ½"	100g 6.7lb	Polyester Nylon	CE A	-	24 DB	■ ■
	**True...** Blue, White	**SAMSON ROPE**		£2.65 $3.30 $1.00 €3.05	12mm ½"	131g 8.8lb	Polyester -	-	-	12	-
	**Arbor-Plex** Ascender	**SAMSON ROPE**		£2.10 $2.55 $0.80 €2.35	12mm ½"	101g 6.88lb	Polyprop/ Polyester -	-	-	12	-
	**Ascender**	**SAMSON ROPE**		£2.65 $3.30 $1.00 €3.05	12mm 15/32"	109g 7.3lb	Polyester Nylon	-	10	16	■ ■■

ARBORIST CLIMBING ROPES

SUITABLE FOR			MINIMUM BREAKING LOAD/STRENGTH				ELONGATION %					
EYE CAN THREAD THRU HARDWARE	HYBRID HARDWARE	SRT/SRS MRS/DdRT	MBL MINIMUM Break Load Spliced Sewn Knotted	ABL AVERAGE Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %	OTHER COLOURS	NOTES	WWW.
			-	-	-	-	-	-		Also in solid black	pmirope.com
-	-	■	45.9kN 10319lbf	-	-	0	1.44-2.2% 1.2%	-			pmirope.com
-	■	■	38.25kN 8600lbf	-	-	-	3.7%	-		Heat stabilised nylon core	samsonrope.com
	■	■	28kN 6294lb	-	-	-	2.9%	-		CE=Unspliced only	samsonrope.com
	■	■	-	33kN 7400lb 27kN 6000lb	-	-	3%	-		*with DRY treatment to restrict water uptake.	samsonrope.com
	■	■	-	27kN 6000lb	-	-	2.1%	-			samsonrope.com
-	■	■	28.5kN 6400lb	-	-	-	1.2%	-		Very tough, low stretch rope more suited for rescue or ziplines	samsonrope.com
-	■	■	-	30.25kN 6800lb	-	-	1.2%	-		Very tough, low stretch rope more suited for rescue or ziplines	samsonrope.com
-	■	■■	32kN 7193lbf	28.9kN 6500lbf	-	-	1.6% 1.3%	50%		Sold by Bartlett as the green Antidote.	samsonrope.com
■	■	■	43kN 9667lbf	41.8kN 9400lbf 36kN 8000lbf	-	*	3% 1.99%	50%		Sold by Bartlett as the green BioHazard. *with DRY treatment to restrict water uptake	samsonrope.com
-	-	■■		36.28kN 8157lbf	-	-	3%	-		*with DRY treatment to restrict water uptake. Replaced *ARBORMASTER*	samsonrope.com
-	■	■	32kN 7193lbf	-	-	-	2.9%	-		CE=Unspliced only *there is a slight difference between kg/lb and KN/lbf	samsonrope.com
-	-	■	32.5kN 7306lbf	-	-	-	2.6%	-			samsonrope.com
-	-	■	32kN 7100lbf	-	-	-	3%	-		Ascender has 50% green fleck $1/ft	samsonrope.com
-	-	■■	-	29kN 6800lbf	-	-	2.1%	-			samsonrope.com

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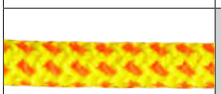
	MODEL Product Code	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	NUMBER OF FALLS EASE of TYING Sherrill Rating	SHEATH OUTER STRANDS	SPLICEABLE PRE-SPLICED PRE-SEWN
	Hyperstatic	SAMSON ROPE		£4.00 $5.00 $1.54 €4.60	12.5mm ½"	121g 8.1lb	Polyester Polyester	-	-	32 KM	-
	Vortex Vortex SD*	SAMSON ROPE		£3.40 $4.25 $1.30 €3.90	12.7mm ½"	113g 7.6lb 7.9lb	Polyester Nylon	-	10	24 DB	■ ■
	V-16 Hot,Cool	SAMSON ROPE		£3.40 $4.25 $1.30 €3.90	12.8mm ½"	110g 7.4lb	Polyester Nylon	CE A	-	16	-
	V-24 Cool, Hot	SAMSON ROPE		n/a	13mm ½"	112g 7.5lb	Polyester Nylon	CE A	-	24 DB	■ ■
	PREDATOR PREDATOR-X	SAMSON ROPE		n/a	13mm ½"	119g 8lb	Polyester Nylon	-	-	24 DB	■ ■
	IVY Silver Ivy, Tango Ivy, Midnight Ivy	SAMSON ROPE SHERRILL TREE		£3.05 $3.80 $1.15 €3.50	11.7mm ½"	102g 6.8lb	Polyester Polyester	-	10	24 DB	■ ■
	Tilia L0460	SINGING ROCK		£4.00 $4.40 $1.35 €3.95	11.5mm 7/16"	90g 6lb	Polyester Nylon	CE A UIAA	-	KM	■ ■
	Cougar LSK	SOUTHERN ROPES		£1.55 $2.00 $0.60 €1.80	11.7mm 29/64"	93g 6.25lb	Polyester Polyester	CE A ANSI	10	24 DB	■ ■
	HTP addiction	STERLING		£4.00 $4.75 $1.45 €4.60	11mm 7/16"	97g 6.5lb	Polyester Polyester	ANSI NFPA	8	32 KM	■
	Work Pro	STERLING		£3.90 $4.60 $1.45 €4.50	11mm 7/16"	83.5g 5.6lb	Polyester Nylon	CE A ANSI NFPA	8	KM	-
	TriTech	STERLING		£11.00 $13.10 $4.00 €12.00	11mm 7/16"	96g* 6.5lb	Technora/ Spectra Nylon	CE A ANSI NFPA	-	KM	■
	Scion Arbor	STERLING		£3.60 $4.75 $1.45 €4.50	11.5mm 7/16"	91g 6.2lb	Polyester Nylon	CE A ANSI	10	24 DB	■ ■
	Work Pro	STERLING		£4.40 $5.40* $1.65* €5.10	12.5mm ½"	110g 7.4lb	Polyester Nylon	CE A ANSI NFPA	7	KM	-
	HTP	STERLING		£4.95 $6.10* $1.90* €5.75	12.5mm ½"	119g 8lb	Polyester Polyester	ANSI NFPA	-	32 KM	■
	Tech HTP 11	STERLING		£8.50 $10.00 $3.30 €9.85	11mm 7/16"	88g 5.9lb	Technora Nylon	CE A NFPA	-	32 KM	-
	Scion Arbor	STERLING		£4.20 $5.30 $1.60 €4.90	12.5mm ½"	107g 7.2lb	Polyester Nylon	CE A ANSI	10	24 DB	■ ■

ARBORIST CLIMBING ROPES

SUITABLE FOR			MINIMUM BREAKING LOAD/STRENGTH				ELONGATION %				NOTES	WWW.
EYE CAN THREAD THRU HARDWARE	HYBRID HARDWARE	SRT/SRS MRS/DdRT	MBL MINIMUM Break Load Spliced Sewn Knotted	ABL AVERAGE Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %	OTHER COLOURS			
-	■	■	32kN 7200lbf	-	-	-		-				samsonrope.com
-	-	■■	46kN 10341lbf	36kN 8000lbf	-	-	3%	-			*with DRY treatment to restrict water uptake	samsonrope.com
-	■	■■	36kN 8093lbf	-	-	-	3%	-				samsonrope.com
-	■	■	-	33kN 7418lbf	-	-	2.9%	-			CE=Unspliced only	samsonrope.com
-	■	■	-	36.5kN 8200lbf	-	-	2.1%	-				samsonrope.com
-	-	■■	29kN 6520lbf	-	-	-	1.3%	-				samsonrope.com sherrilltree.com
■	■	■■	30kN 6744lbf 18/15kN 4047/3372lbf	-	1%	0.5%	3%	-				singingrock.com
■	■	■	28kN 6300lbf	-	1.5%	0	<3.0%	-			See also ROPE EQPT BUYERS GUIDE for Response LSK ropes	southernropes.com
-	■	■	30.5kN 6856b	-	-	-	3.4% 1.9%	-			Also available in White with black fleck. Addiction=special colour	sterlingrope.com
-	-	■■	36kN 8092lbf	-	-	0.9%	3.6%	-				sterlingrope.com
-	-	■	37kN 8140lbf 24.1kN 5418lb	-	-	0.9%	2.8% 1.9%	-			cut-resistant twin sheath- for lanyard climbing/ flip-lines rather than full length climbing rope. *approx	sterlingrope.com
■	■	■■	30kN 6744lbf 25.5kN 5732lbf	-	3.8%	0.3%	3.8% 1.5% 4%	-				sterlingrope.com
-	■	■■	45kN 10116lbf	-	-	-	2.2%	-			*white rope= less 8%	sterlingrope.com
-	-	■	40.4kN 9081lb	-	-	-	2.6% 1.1%	-			*white rope= less 8%	sterlingrope.com
-	■	●■	40.1kN 9014lbf	-	-	-	3.6%	-			Cut & heat resistant	sterlingrope.com
■	■	■■	32kN 7193lbf 27.2kN 5732lbf	-	-	0.5%	4.2% 1.7%	-			Element=DISCONTINUED	sterlingrope.com

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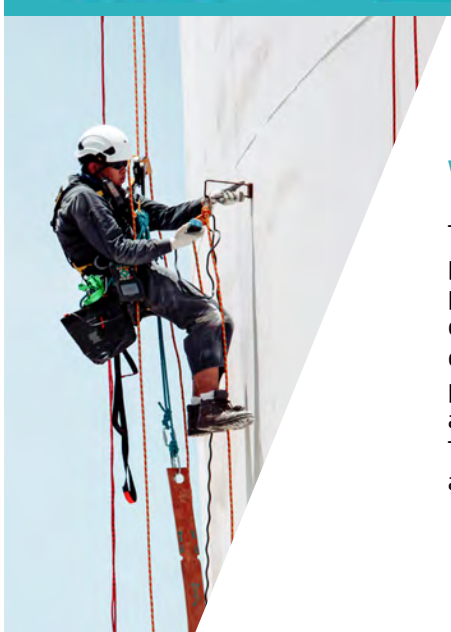
●=OK but not ideal
DB=Double Braid
KM=Kernmantle
Tying 10=hardest to tie

	MODEL Product Code	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	NUMBER OF FALLS EASE of TYING Sherrill Rating	SHEATH OUTER STRANDS	SPLICEABLE PRE-SPLICED PRE-SEWN
	**ACR-24** Acuda, Mantra, Outback	**STEIN**		£4.40 $5.50 $1.75 €5.10	11.7mm 29/64"	98g 6.6lb	Polyester Nylon	CE A	-	24 DB	■ ■
	**ACR-16** Scorpius, Utility	**STEIN**		£5.45 $6.75 $2.05 €6.35	12.4mm ½"	98g* 6.6lb	Polyester Polyester	CE A	-	16 KM	■ ■
	**Timber Evo**	**TENDON (LANEX)**		£2.70 $3.60 $1.15 €3.20	11mm 7/16"	88g 5.91b	Polyester Nylon	CE A	-	24 DB	■ ■
	**Timber Evo**	**TENDON (LANEX)**		£2.80 $3.55 $1.10 €3.25	11.5mm 7/16"	90g 6lb	Polyester Nylon	CE A	-	24 DB	■ ■
	**Timber Evo**	**TENDON (LANEX)**		£3.80 $4.85 $1.50 €4.40	12.5mm ½"	104g 7 lb	Polyester Nylon	CE A	-	24 DB	■

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VERTICAL WORLDS

The trade show serves as the perfect meeting place for climbing and bouldering halls, fall protection, rope access technique, high ropes courses, rescue and aid organizations and tree care. As a platform for international vertical professionals, this year's trade fair will once again offer a diverse mix of Expo, DEMO + TEST AREAS, expert lectures and networking, as well as trends and innovations.



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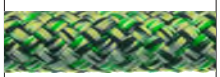
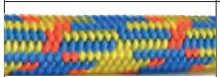
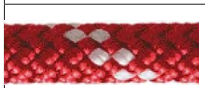
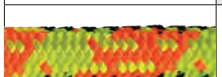
ARBORIST CLIMBING ROPES

SUITABLE FOR			MINIMUM BREAKING LOAD/STRENGTH				ELONGATION %				NOTES	WWW.
EYE CAN THREAD THRU HARDWARE	HYBRID HARDWARE	SRT/SRS MRS/DdRT	MBL MINIMUM Break Load Spliced Sewn Knotted	ABL AVERAGE Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %	OTHER COLOURS			
■	■	■■	>22kN 4946lbf 15/15kN 3372/3372lbf	-	-	-	-	-			MBL Sewn= 15kN 3372lbf	steinworldwide.com
■	-	■	25kN 5620lbf 15/15kN 3372/3372lbf	-	-	-	-	-			* 12.4mm 16 braid =same wt as 11.7mm 24DB MBL Sewn= 15kN 3372lbf	steinworldwide.com
-	-	■■	30kN 6744lbf	18kN 4047lbf	0.7%	0	3.1%	57%			Embedded RFID chip	mytendon.com
-	■	■■	30kN 6744lbf	18kN 4047lbf	1%	-	3%	54%			Evo replaced the original 'Timber green' Embedded RFID chip	mytendon.com
-	-	■■	39kN 8598lbf	22kN 4946lbf	0.6%	0	3%	48%			Embedded RFID chip	mytendon.com
												expansion row
												expansion row



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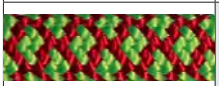
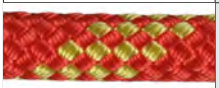
	MODEL Product Code	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	NUMBER OF FALLS EASE of TYING Sherrill Rating	SHEATH OUTER STRANDS	SPLICEABLE PRE-SPLICED PRE-SEWN
	KMIII KMII Max	TEUFELBERGER /MAXIM		£3.60 $4.40 $1.35* €4.15	10.5mm 13/32"	84g 5.65lb	Polyester Nylon	CE A NFPA	7	32 KM	
	Platinum Arbor Access	TEUFELBERGER		£4.50 $7.00 $2.15 €5.75	10.5mm 13/32"	78g 5.2lb	Polyester Nylon	CE A	0.80	32 KM	■
	Chameleon	TEUFELBERGER		£2.40 $3.20 $1.00 €2.80	10.5mm 13/32"	72g 4.84lb	Nylon Nylon	CE A		32 KM	-
	Chameleon	TEUFELBERGER		£2.60 $3.40 $1.10 €3.10	11mm 7/16"	75g 5.04lb	Nylon Nylon	CE A		32 KM	-
	Patron Tree Access	TEUFELBERGER		£2.65 $3.40 $1.10 €3.00	11mm 7/16"	75g 5.04lb	Nylon Nylon	CE A	0.51	32 KM	
	KMIII KMII Max	TEUFELBERGER /MAXIM		£4.25 $4.90 $1.50* €4.75	11mm 7/16"	91g 6.12lb	Polyester Nylon	CE A NFPA		32 KM	
	Fly Firefly, Dragonfly	TEUFELBERGER		£5.20 $5.30 $1.60 €6.00	11.1mm 7/16"	87g 5.9lb	Polyester Nylon	CE A ANSI	0.5 10	24 KM	■ ■■
	Tachyon Ash,Lava Surge,	TEUFELBERGER		£3.80 $4.90 $1.50 €4.50	11.5mm	94g 6.3lb	Polyester Nylon/ Polyester	CE A ANSI	0.64 10	24 DB	■ ■
	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		£3.50 $4.55 $1.40 €4.75	11.8mm 15/32"	96.5g 6.5lb	Polyester Nylon	CE A ANSI	0.8 7	32 KM	■
	Arbor Elite	TEUFELBERGER		£3.90 $5.00 $1.55 €4.55	12.7mm 1/2"	105.6g 7.1lb	Polyester Nylon	CE A	0.56	16	-
	Braided Safety Blue Ultra Vee, Hi Vee, T-Vee, White	TEUFELBERGER		£4.35 $5.80 $1.80 €5.30	12.7mm 1/2"	105.6g 7.1lb	Polyester Nylon	ANSI	0.56 10	16	■
	KMIII KMII Max	TEUFELBERGER /MAXIM		£4.50 $5.55 $1.75* €5.10	12.7/13mm 1/2"	117.5g 7.9lb	Polyester Nylon	CE A NFPA	-	32 KM	-
	Nebula/ Liana	TREEHOG BY ARBORTEC		£5.05 $6.40 $1.95 €5.90	11.8mm 15/32"	96.5g 6.5lb	Polyester Nylon	CE A	0.8 7	32 KM	■
	Static Climbing	TREERUNNER (GRUBE)		£3.00 $4.00 $1.25 €3.40	11mm 7/16"	80g 5.4lb	Polyester Nylon	CE A	-	32 KM	-
	Safe +	TREERUNNER (GRUBE)		£2.75 $3.50 $1.10 €3.15	11.5mm 7/16"	100g 6.7lb	Polyester Nylon	CE A	1.1	24 DB	-

ARBORIST CLIMBING ROPES

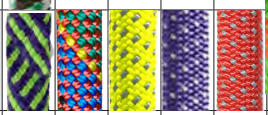
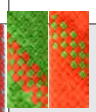
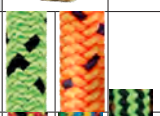
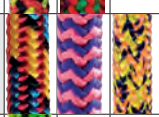
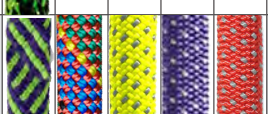
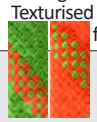
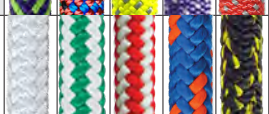
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EYE CAN THREAD THRU HARDWARE	HYBRID HARDWARE	SRT/SRS MRS/DdRT	MBL MINIMUM Break Load Spliced Sewn Knotted	ABL AVERAGE Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %	OTHER COLOURS	NOTES	WWW.
-	-	■	32.1kN 7215lbf	-	<5%		1.6% 1.4%	48%		KMIII Max has tighter, low friction sheath for improved descent. *White=$1.25/ft	teufelberger.com
-	■	■	28kN 6290lbf 23/15kN 5170/3372lbf	-	<5%	0	2%			intertwined sheath & core. '*Escalator*'=discontinued	teufelberger.com
-	-	■■	32kN 7190lbf 18/26kN 4047/5845lbf	-	4%	-	3%	46%		Same colours for both rope diameters. Ropes use recycled unused rope	teufelberger.com
-	-	■■	33kN 7415lbf 18/27kN 4047/6069lbf	-	4%	-	3%	35%		Same colours for both rope diameters. Ropes use recycled unused rope	teufelberger.com
-	-	■	32kN 7300lbf 18/27kN 4047/6069lbf	-	<5%	-	3%				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=$1.45/ft	teufelberger.com
■	■	■■	26.8kn 6035lbf 15/15kN 3370/3372lbf	-	<5%	-	1.6% 3%	57%			teufelberger.com
-	■	■■	24.45kN 5497lbf 21.85/24kN 4912/5395lbf	-	0.3%	-	2.2%	58%		Double Braid rope. Soft handling.	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 (€4.50/m)	teufelberger.com
-	-	■	25.8kn 5800lbf 23.5/24kN 5290/5400lbf	-	-	-	3%	79%			teufelberger.com
-	-	■	25.8kN 5800lb 23.5kN 5290lbf	-	<5%	-	3%	82%		Blue core shows through when sheath is abraded	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=$1.50/ft	teufelberger.com
■	■	■■	35kN 7868lbf 18/16.5kN 4047/3709lbf	-	<5%		2.3% 2.3%	58%			treehog.com
-	■	■	39kN 8767lbf	-	-	-	2.8%	-			grube.de
-	■	■	22kN 4946lbf	46kN 10341lbf	1.7%		1.5%	46%			grube.de

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Tying 10=hardest to tie

	MODEL Product Code	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	NUMBER OF FALLS EASE of TYING Sherrill Rating	SHEATH OUTER STRANDS	SPLICEABLE PRE-SPLICED PRE-SEWN
	**SafeVision**	TREERUNNER (GRUBE)		£3.90 $4.45 $1.35 €4.15	11.8mm 15/32"	82g 5.5lb	Polyester Nylon	CE A	0.6	24 DB	■
	**Picus**	TREERUNNER (GRUBE)		£3.60 $5.00 $1.55 €4.45	11.8mm 15/32"	96.5g 6.5lb	Polyester Nylon	CE A	0.8	32 KM	■
	**Static Climbing**	TREERUNNER (GRUBE)		£3.00 $3.75 $1.20 €3.40	12mm ½"	80g 5.4lb	Polyester Nylon	CE A		32 KM	-
	**Climbing**	TREERUNNER (GRUBE)		£4.25 $5.40 $1.70 €4.85	12mm ½"	117g 7.8lb	Polyester Nylon	CE A		24 DB	■
	**XTC-48** R.I.N.G.	YALE CORDAGE		£14.00 $16.00 $5.00 €15.00	10.5mm 13/32"	92.5g 6.2lb	Polyester/ Technora Nylon	ANSI		48 DB	■
	**XTC-24-CE** Blaze, Bandit	YALE CORDAGE		£4.50 $3.50 $1.10 €5.20	11mm 7/16"	89g 6lb	Polyester Nylon	CE B ANSI	10	24 DB	■ ■
	**XTC-48** Kernmaster Phantom x2, Explore, Scandere x3, Kernmaster Code x2	YALE CORDAGE		£4.40 $4.20 $1.30 €5.10	11mm 7/16"	82/97g 5.5/6.5lb	Polyester Nylon	ANSI		48 KM	■ ■
	**XTC-48** BiFrost	YALE CORDAGE		£3.10 $3.85 $1.20 €3.55	11mm 7/16"	90g 6.lb	Polyester Polyester	ANSI		48 KM	■
	**XTC-48** R.I.N.G.	YALE CORDAGE		£15.00 $18.50 $6.00 €17.00	11.5mm 7/16"	92.5g 6.2lb	Polyester/ Technora Nylon	ANSI		48 DB	■
	**XTC-24** Xylem, ArborMax Gator/Flame	YALE CORDAGE		£4.65 $4.10 $1.25 €4.60	11.7mm 29/64"	97g 6.5lb	Polyester Polyester	ANSI	10	24 DB	■ ■
	**XTC-24** Blue Moon,Focus, Prism, Arrow Frog,	YALE CORDAGE		£4.65 $4.10 $1.25 €4.60	11.7mm 29/64"	97g 6.5lb	Polyester Polyester	ANSI	10	24 DB	■ ■
	**XTC-24-CE** Sunburst, , BlueTongue, Calamine, Energize	YALE CORDAGE		£4.65 $4.10 $1.25 €4.60	11.7mm 29/64"	97g 6.5lb	Polyester Nylon	CE A ANSI	10	24 DB	■ ■
	**XTC-24-CE** Imori	YALE CORDAGE		£3.10 $3.90 $1.20 €4.00	12mm ½"	105g 7lb	Polyester Nylon	CE A ANSI		24 DB	■ ■
	**XTC-48** Kernmaster Phantom x2, Explore, Scandere x3, Kernmaster Code x2	YALE CORDAGE		£4.50 $4.50 $1.40 €5.20	13mm ½"	113g 7.6lb	Polyester Nylon	CE A ANSI		48 KM	■ ■
	**XTC-16** Fire, Spearmint, Plus Poseidon, Salamander	YALE CORDAGE		£3.00 $3.75 $1.15 €4.05	13mm ½"	112g 7.5lb	Polyester Nylon	CE A ANSI	10	16	■ ■
	**XTC-12** Buzzline	YALE CORDAGE		£2.10 $2.60 $0.80 €2.40	13mm ½"	100g 6.7lb 123g 8lb	Polyester	CE B ANSI	8	12	■

ARBORIST CLIMBING ROPES

SUITABLE FOR			MINIMUM BREAKING LOAD/STRENGTH				ELONGATION %							
EYE CAN THREAD THRU HARDWARE	HYBRID HARDWARE	SRT/SRS MRS/DdRT	MBL MINIMUM Break Load Spliced Sewn Knotted	ABL AVERAGE Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %	OTHER COLOURS					NOTES	WWW.
-	■	■	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
■	■	■■	34.5kN 7755lbf				2%							Tornado discontinued	grube.de
-	■	■	30kN 6730lbf				2.4%							Red inner braid highlights wear through the outer sheath	yalecordage.com
-	■	■		25kN 5600lbf			2.2%							CE = slightly more elongation than ANSI so better suited to MRS than SRS	yalecordage.com
-	■	■		31.6kN 7104lbf			3%							 Scandere uses higher tenacity sheath	yalecordage.com
-	■	■		30kN 6760lbf			1.5%								yalecordage.com
-	■	■		30kN 6730lbf			2.4%							Red inner braid highlights wear through the outer sheath	yalecordage.com
-	■	■■		29.5kN 6600lbf	-	0	1.4%	-						ANSI versions of XTC. Xylem for Pacific NW region. Arbormax Gator/ Flame unique to Baileys.	yalecordage.com
-	■	■■		29.5kN 6600lbf	-	0	1.4%	-						ANSI versions of XTC. Arbormax Gator/Flame unique to Baileys.	yalecordage.com
-	■	■■		29.5kN 6600lbf	-		1.4%	-						CE version of XTC Hedera, Poison Ivy, Poison Hivy, , Neon Ivy discontinued	yalecordage.com
-	■	■		28kN 6200lbf			2%							CE =slightly more elongation than ANSI . Texturised surface makes feel larger	yalecordage.com
■	-	■	36kN 7920lbf	40kN 8800lbf			3%							 Scandere uses higher tenacity sheath	yalecordage.com
-	-	■		28kN 6200lbf			1.4%							Fire, Posoidon & Salamander around 10% dearer eg.€4.40	yalecordage.com
-	-	■		26.7kN 6000lbf 33kN 7400lbf			1.5%							Single (hollow) braid with no core	yalecordage.com

UPDATED Sept '24

ARBORIST 12-18mm 1/2-3/4" Braided/MultiPlait RIGGING/ LOWERING ROPES



Also known as Bull ropes. We haven't included traditional 3-strand laid ropes - there are just too many and they do not have the same strength, handling and durability of a braided or even multiplait rope but they are a lot cheaper due to simpler construction and lack of colour options. We have a separate guide to high tenacity winch lines which are super-static, many of which can be used for general rigging. We have tried to include entire size ranges of the 'coloured' ropes where possible which might be 5 or even 6 sizes in some cases. Where the number of sizes offered is much larger, which is often the case with the simpler, cheaper white and solid colour multi-plaits, we have limited entries to a maximum of four mid- range ropes that are the 4 commonest sizes offered by European manufacturers:
12mm, 14mm 16mm and 18mm 1/2", 9/16" 5/8" and 3/4"
this gives a reasonable comparison across all brands but we have also included a column to indicate the number and range of other ropes in each series or family of ropes.

Lowering rope or Bull rope is often distinguished from rigging ropes in the USA but are interchangeable terms in other countries so we have differentiated between three distinct 'rigging' activities in the tables. General '**rigging**' and '**static lowering**' require pretty much the same characteristics - low stretch and robust sheath whereas '**impact lowering**' where the rope arrests a free-falling load, requires a greater degree of dynamic absorbency which can be achieved by the rope's own construction being more elastic or by judicious use of dynamic shock absorbency at the impact block and basal lowering devices - usually requiring a skilled ground crew:
• **CLIMBING** Some ropes can be used for both climbing and rigging and/or impact lowering **BUT only use for one or the other**, once a rope has been used for rigging and/or impact lowering it SHOULD NOT BE USED for CLIMBING. We have only listed climbing as a use if it is specifically listed as such by the manufacturer. Most rigging ropes are NOT PPE (for climbing).
• **STATIC RIGGING** 1) **ZIPLINES/Speedlines** very low stretch, where the branches and wood needs to be moved to a precise location away from the tree usually because of an obstruction or structure below or to make onward removal easier. ***Most winch lines in our separate guide suit static rigging tasks.***
2)**Restraint or directional CONTROL** lines where no impact force is applied and low stretch is again an advantage because you are trying to stop the tree falling in a certain direction.
• **LOWERING** lowering of a static load where no impact force has been applied and in technical rope terms a fall factor 0 has been applied eg. the rope is rigged ***and tensioned*** above the load so that it only has to contend with stretch caused by the load itself, not shock or impact force of an arrested falling load. Lowering can impart high frictional loading around branches if cambium/friction savers are not used.

All three of these activities often utilise technical hardware which the gnarlier ropes don't run so smoothly through hence a circle for 'OK but not ideal' in some 'Rigging' columns in the tables.
• **IMPACT LOWERING /NEGATIVE RIGGING** where larger diameter rope (usually >16mm 5/8" rope) is initially used as a fall arrest rope because the arrest point is below the cut rather than above it, typically when **sectioning down larger timber. The rope will be subjected to a shock load** as it arrests the weight of the falling timber. The amount of **shock imparted on the rope is determined by the length of rope available to arrest the falling section and the type of deviation hardware.** In climbing this is known as a fall factor and is given as a fraction of 0, or between 0 and 2 where Fall Factor 2 is the worst case scenario and the highest figure you can 'achieve'. FF0 is the usual situation in limb removal where the rope is anchored (or more usually deviated) above the limb and slack taken in so that when you cut the limb it doesn't actually 'fall' anywhere as much as 'stretch away' from the cut. It is always preferable to minimise the impact force, ie. make sure there is virtually no slack between the snatch block and the load but this is much more difficult when sectioning a trunk with no high directional anchor. Instead, the rope (if one is used at all) has to be anchored or deviated beneath the cut. In which case the section will fall a certain distance before being arrested and this will impart shock load. However, since most rigging has the section deviated through an impact or snatch block below the cut and controlled from ground level there is plenty of rope to help absorb the shock. The ground crew can also impart more absorbency by allowing a small amount of run (through gloved hands) before halting the fall of the load ie. dynamic braking.

Lowering ropes are often the poor relation to climbing ropes because they're generally less technical in construction and cheaper. But in fact many arb climbing ropes can be classed as 'utility' or multi-use and may be used as rigging OR climbing ropes, the *Beal Bonsai* and *All Gear's Forestry Pro* for instance. However, **the same rope should NEVER be used for both activities interchangeably**. Don't forget that virtually ALL static abseil ropes whether or not they are marketed to arborists will perform all rigging and static lowering jobs adequately but they will NOT take kindly to impact lowering where a degree of dynamic absorbency is preferable.

Many arborists will rightly treat their arb climbing rope like a fine piece of art taking ridiculous amounts of time to choose it, studying all the data and spec and other peoples reviews

RIGGING ROPES

until eventually buying some garishly coloured or conversely ultra camouflaged beauty that replaces your loved one on the comfy chair in front of the TV. But when it comes to rigging and lowering ropes it sometimes seems that any old rubbish will do, got an old climbing rope that you're not using anymore, excellent, I'll have that for lowering and rigging. But hold on there, if you're not happy that it's safe enough to climb on why would it be good enough for rigging? - the loads are much higher, the rope is working much harder and moving around and through tight jams a lot more and it gets thrown in the back of the truck with the wood chips and chainsaws while the pristine looking climbing rope sits up front and gets taken indoors to spend quality time with the family. It's not right is it.

Without wishing to bleat on too much, Dynamic or impact loading is the key thing to consider with rigging or lowering rope. Whenever you apply any load the rope will stretch to some degree and your rope remembers what you've done to it. Cast your mind back to when you first bought those chewing gum grey coloured underpants - they were firm and tight weren't they. Now after a year or seven of use they're so loose you need a belt to keep them up unless, like me you've expanded your stomach to accommodate the slackening of elastic. Your rope is broadly similar, its elasticity will reduce with age and over-use so that at some point you'll drop a section of timber on it and it will simply snap. Don't forget that ALL loading will stretch the rope fibres. If your rope is more static in construction (more parallel fibres) it will be even less receptive to shock loading and may fail earlier than the equivalent cabled (spiraled) construction.

Example 1 – We will use 5/8 diameter Yale Double Esterlon line rigged into a tree with a block in such a way that 25 ft. of line is required to arrest a 500 lb section of trunk falling 5 ft. From the Double Esterlon specification table and energy graph we will need its weight of 13.7 lbs/100 ft or .137 lbs/ft, its green working energy absorption maximum of 544 ft lb per lb of rope in use, and its maximum recommended working load of 3,400 lbs. First, we calculate the ft lbs of energy needed to arrest the 500 lb trunk section falling 5 ft. The simple equation of the weight multiplied by the fall will get the result within 1%, so.....

- 500 lb x 5 ft = 2500 ft lbs.

Next, we calculate the lines energy absorption capacity for a 25 foot length

- 25 ft x 544 ft/lb x .137 lb/ft = 1863 ft lbs.

From these two calculations we can see that in this scenario the maximum recommended energy absorption is exceeded by 637 ft lbs or 34% (2500 ft lbs / 1863 ft lbs). We can also estimate the load reached in the line multiplying the maximum recommended working load by 134% or

- 3400 x 1.34 = 4,556 lbs.

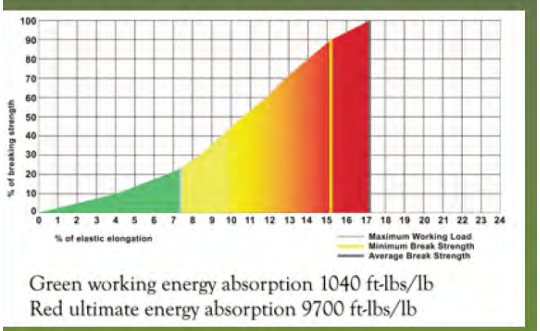
To illustrate the importance of energy capacity of ropes we will take a look at using a high energy absorption line.

Example 2 – We will substitute a 5/8 diameter Yale Polydyne. Same diameter, but very different energy capacity. Doing the same calculations with Polydyne's physicals we get the following:

- 500 lb x 5 ft. = 2,500 ft lbs. required
- 25 ft x 1040 ft/lb x .133 lb/ft = 3,458 ft lbs. capacity

In this case, we have reserve energy absorbing capacity of 958 ft lbs and the peak load in the line is estimated at:

- (2500/3458) x 3600 lbs = 2,602 lbs.



The more area in the stress strain graphs (green working and red ultimate) the higher the ropes ability to absorb dynamic loads.

ELONGATION. Is measured differently in Europe to North America but we have tried to be consistent with elongation at 10% of MBL where possible. Otherwise it is difficult to compare. If the rope is too elastic, your load would hit the ground before its fall is arrested. Not elastic enough and it may simply snap. This useful description (box above) from *Yale Cordage* should make your brain hurt but set you on the right track. For lowering and rigging tasks like ziplines, if you exclude the ultra low-stretch Dyneema etc. winch ropes (covered in a later guide) the toughest ropes are often the biggest ropes and by biggest we mean fat. But it's not quite as simple as choosing a rope thick enough to moor the *Titanic* just because it's going to last the longest. You've got to be able to afford to buy it, have a truck big enough to carry it and the manpower at the job site strong enough to move it to the tree. And then you've actually got to get it up the tree and weave it around all those fiddly crotches, pulleys and lowering devices. So maybe you're better off compromising some strength and girth for weight and flexibility. And if you're out of cash perhaps you will use that old climbing rope as a lowering rope after all but be really, really careful about how you use it and what size wood you load it with. Whatever else you skimp on, including the kid's education, don't skimp on that lowering rope. If it fails when you drop a big lump on it or are zip- lining a section over that conservatory you can kiss your insurance no-claims record and your reputation goodbye. And if you're really unlucky you may also need to deal with an injured colleague, customer, or worst still the customer's prize chihuahua. See, not worth skimping is it?

ROPE DIAMETER: Climbing ropes tend to be quite restrictive in range of diameters in order to facilitate easy handling and operation through dedicated pulleys and hardware. Around 11, 12 or 13mm (7/16"-½"). Rigging rope on the other hand can be anything from 5mm 3/16" to 64+mm 2½". Most arborists choose a general rigging rope of moderate diameter - 12, 13 or 14mm (½"-9/16") and a 'biggun' they bring out for heavy jobs of around 18/19mm to 25mm (3/4"-1") give or take a few mil or eighths. There is rigging and lowering hardware that is diameter- specific like snatch/Impact blocks/pulleys and Portawrap style lowering devices but they are far more forgiving of varying diameters than some of the technical climbing hardware. As for the true diameter of your rope, if there were some discrepancies between the manufacturers' description and what your ruler or calipers measures for climbing ropes, imagine what differences there will be in ropes ranging from 5mm to 64mm in diameter! Suffice to say that we can only quote the dimensions we're given but expect to find some half inch ropes (12.7mm) that are closer to 5/16" or even 5/8" (14 or 15mm) and expect this to enlarge over the age of the rope except for sections of rope that have been stretched to death. If your rope has sections that are thinner than when you bought it think about getting that moth-infested wallet out again.

MATERIALS for rigging ropes follow pretty much the same pattern as they do for climbing ropes with polyester as the dominant material. Polyester can withstand more abuse than nylon, resists acid better, has a slightly higher melting point (around 480° F or 249°C) and retains more strength when wet. Polyester dominates rigging ropes even though nylon has greater elasticity for the shock absorbency necessary for what we have called Impact lowering. **TREATED FIBRES** crops up with many of these ropes , normally as a surface



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coating that improves abrasion resistance (Marlow quote≤30% improvement) and water resistance. Most indicate that they will last the lifetime of your rope but don't hold your breath. Modern treatments are far superior to the coatings we had in the early days but anything that gets abraded for a living is going to wear off sooner or later.

HMPE (AKA UHMWPE & HPPE) crops up as a core material - it stands for High Modulus Polyethylene and is a super-strong, super static material (like Dyneema) that we see most in winch line. There are several other dual constructions generally with a polyester sheath and a nylon core to give an abrasion resistant outer and a more elastic core.

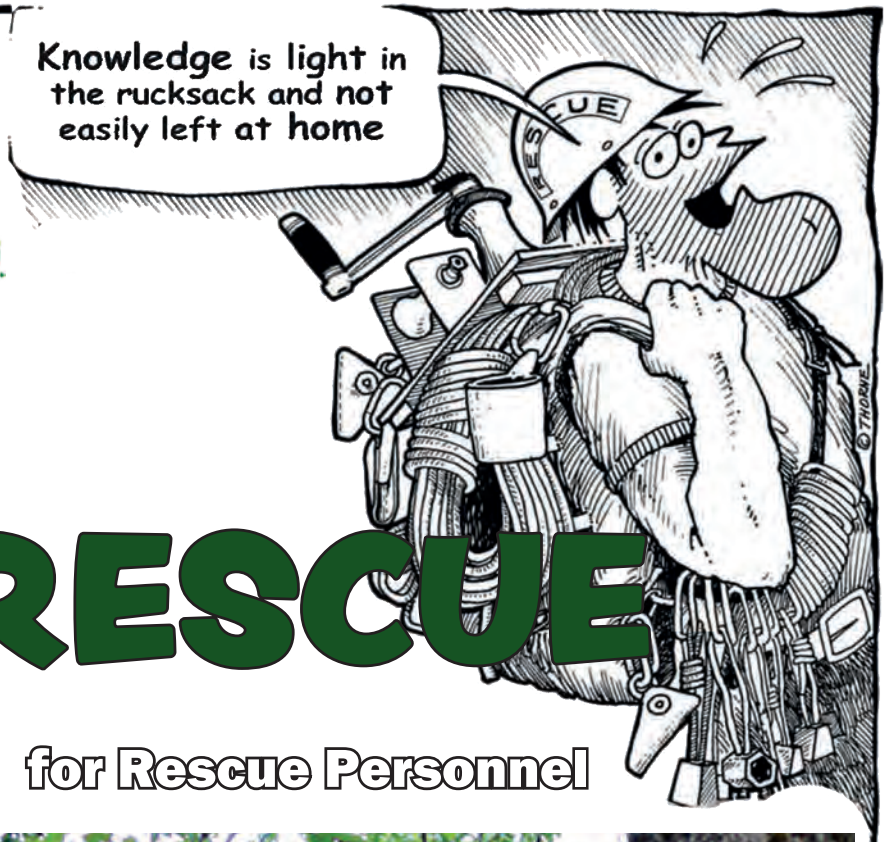
MBL is Minimum Breaking Load (or MBS -Minimum Breaking Strength). For lowering ropes that are going to be subjected to shock loading, the units of force KiloNewtons (roughly 1kN to 100kg and LB-Force (same as LBs) are more appropriate but for ease of calculations you can still simply think of them in terms of kg or lbs of mass. Working Load Limit (WLL) is a more appropriate figure for lowering ropes than it is for climbing rope which should only ever be carrying a single bodyweight and associated equipment. Rigging and lowering ropes in contrast may be carrying anything from a light branch to a half ton section of timber (or more!) and when you also factor in impact force there is good reason to have a figure for the maximum (static) weight that can be put on the rope. This figure will be a percentage of the Minimum Breaking Load and this varies with industry and manufacturer. It is usually a ratio between 5 and-12:1 for industrial applications or between 10:1 and 15:1 for life support applications. The tree industry seems to have settled on around 7:1 for non-life support activities. We have given the companies' quoted **WLL** if it's available or 7:1 if one is not quoted but if in doubt - simply apply your company's own required safety ratio to the MBL (not to the ABL or Average which is often an artificially higher figure) and remember that for dynamic or impact loads you will need to do some more complex calculations as we discussed earlier to determine whether your rope will actually be able to take the load your putting on it. Static load is radically different to the peak load caused when arresting a falling load.

COLOURS: rigging ropes tend to colour coordinate diameters to colours rather than having multiple colours under the same diameter as we see in climbing ropes. Very few offer colour options beyond a specific colour for a specific diameter plus maybe white/no colour.

We haven't given a **FLEXIBILITY** figure this time because the quality of handling is not as essential for rigging as it is for climbing when smaller diameter ropes have to interface with equally smaller proportioned hardware, prusiks and climbing systems. That's not to say that you want an iron re-bar of a rope for rigging and lowering but proportionally speaking the larger diameter ropes have more than enough working flex and tend not to stiffen like some climbing ropes.

The **STANDARDS** column could have been omitted from this set of tables since rigging and lowering doesn't come under personal protective standards but there is the European Machinery Directive EU 2006/42/EC which does cover some rigging ropes but this is largely applied to crane and hoist ropes. Those arb climbing ropes which are utilitarian enough to be included here with a marker in the 'Climbing' column will meet EN1891 for life support rope.

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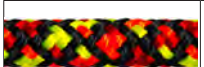
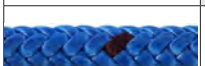
for Rescue Personnel



This rescue class is for fire and emergency services, not for arborists although many firefighters are also arborists. We employ techniques, rope and equipment that would be found on a special operations rescue truck in addition to regular tree access techniques and equipment.

www.ropesthatrescue.com

Images NOT to Scale
~ = Approximate
£$€ = Currency Conversion
Cost exc eyes, inc VAT/Tax
DB=Double Braid,
KM=KernMantle/Single Braid
HB=Hollow Braid
DS=Double Strand
□=Option.
●=OK but not ideal

	MODEL & Ø VARIANT	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot Currency conversion only	Ø mm Inches"	Other Ø in series	WEIGHT g/m lb/100'	CONSTRUCTI MATERIALS: SHEATH CORE
	Husky .5	ALLGEAR		£3.10 $3.70 $1.15 €3.70	13mm ½"	-	127g 8.5lb	Polyester Nylon
	Husky I	ALLGEAR		£4.00 $4.60 $1.45 €4.70	14mm 9/16"	-	164g 11lb	Polyester Nylon
	Husky II	ALLGEAR		£5.00 $5.20 $1.65 €5.50	16mm ⅝"	-	209g 14lb	Polyester Nylon
	Husky III	ALLGEAR		£6.00 $6.55 $2.00 €7.00	19mm ¾"	-	246g 16.5lb	Polyester Nylon
	Husky IV	ALLGEAR		£8.50 $10.40 $3.20 €10.30	22mm ⅞"	-	395g 26.5lb	Polyester Nylon
	Husky V	ALLGEAR		£9.75 $11.60 $3.60 €12.00	25mm 1"	-	574g 38.5lb	Polyester Nylon
	Husky Multi-Pro Raging Blue	ALLGEAR		£3.60 $4.50 $1.40 €4.30	13mm ½"	-	127g 8.5lb	Polyester Nylon
	Husky Multi-Pro Raging Red	ALLGEAR		£5.40 $6.50 $2.05 €6.30	16mm ⅝"	-	188g 12.6lb	Polyester Nylon
	Husky Multi-Pro Raging Orange	ALLGEAR		£6.55 $8.50 $2.65 €7.90	19mm ¾"	-	209g 14lb	Polyester Nylon
	Forestry Pro	ALLGEAR		£2.90 $3.60 $1.10 €3.40	13mm ½"	-	87g 5.8lb	Polyester Polyester
	Forestry Pro	ALLGEAR		£3.15 $3.90 $1.20 €3.70	16mm ⅝"	-	177g 11.85lb	Polyester Polyester
	Forestry Pro	ALLGEAR		£4.70 $5.85 $1.80 €5.50	19mm ¾"	-	239g 16lb	Polyester Polyester
	Wonder Rope	ALLGEAR		£2.60 $3.25 $1.00 €3.00	12.7 ½"	-	91g 6.1lb	Polyester Polyester
	Wonder Rope	ALLGEAR		£3.90 $4.90 $1.50 €4.55	16mm ⅝"	-	177g 11.9lb	Polyester Polyester
	PRO FORCE	ALL GEAR		£6.05 $7.65 $2.35 €7.10	13mm ½"	-	112g 7.5lb	Polyester HMPE
	PRO FORCE	ALL GEAR		£7.10 $9.00 $2.75 €8.35	14mm 9/16"	-	157g 10.5lb	Polyester HMPE
	PRO FORCE	ALL GEAR		£12.00 $15.00 $4.60 €14.00	16mm ⅝"	-	194g 13lb	Polyester HMPE

ARBORIST RIGGING ROPES

ON				SUITABLE FOR				MINIMUM/AVERAGE BREAKING LOAD/STRENGTH			ELONGATION				
TREATED FIBRES BONDED SHEATH	SHEATH BRAID /PLAIT	LIFE SUPPORT STAND-ARDS (only for multi-role ropes)	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	CLIMBING	LOWERING	IMPACT LOWER	STATIC RIGGING	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	@10% MBS @30% MBS @50%MBS @300lbf/136kg @540 lbf/245kg	OTHER COLOURS		NOTES	WWW.
■	DB		■■	-	■	■	●		46.7kN 10500lbf	2100lb 1890lb	7%				allgearinc.com
■	DB		■■	-	■	■	●		62.2kN 14000lbf	2800lb 2520lb	7%				allgearinc.com
■	DB		■■	-	■	■	●		86kN 19500lbf	3900lb 3510lb	7%				allgearinc.com
■	DB		■■	-	■	■	●		102kN 23000lbf	4600lb 4140lb	7%				allgearinc.com
■	DB		■■	-	■	■	●		142kN 32000lbf	6400lb 5760lb	7%				allgearinc.com
■	DB		■■	-	■	■	●		169kN 38000lbf	7600lb 6840lb	7%				allgearinc.com
■	DB		■■	-	■	■	●		46kN 10500lbf	2100lb 1890lb	7%				allgearinc.com
■	DB		■■	-	■	■	●		86kN 19500lbf	3900lb 3510lb	7%				allgearinc.com
■	DB		■■	-	■	■	●		102kN 23000lbf	4600lb 4140lb	7%				allgearinc.com
-	12 KM			■	■	■	■		32kN 7300lbf					red/ylw version still sold by some stockists	allgearinc.com
-	12 KM			-	■	■	■		48kN 11000lbf						allgearinc.com
-	12 KM			-	■	■	■		80kN 18000lbf						allgearinc.com
■	12 KM		■	-	■	■	■		32kN 7300lbf						allgearinc.com
■	12 KM		■	-	■	■	■		48kN 11000lbf						allgearinc.com
■	DB		■	-	■	-	■		82kN 18500lbf	3700lb 3300lb	0.5% 1%				allgearinc.com
■	DB		■	-	■	-	■		95kN 21500lbf	4300lb 3870lb	0.5% 1%				allgearinc.com
■	DB		■	-	■	-	■		137kN 31000lbf	6200lb 5580lb	0.5% 1%				allgearinc.com
															expansion Row

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DB=Double Braid,
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DS=Double Strand
□=Option.
●=OK but not ideal

	MODEL & Ø VARIANT	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot Currency conversion only	Ø mm Inches"	Other Ø in series	WEIGHT g/m lb/100'	CONSTRUCTI MATERIALS: SHEATH CORE
	Husky-12 Multi Pro 9.5	ALL GEAR		£5.70 $7.20 $2.20 €6.65	9.5mm ⅜"	-	120g 8lb	Polyester -
	Husky-12 Multi Pro 13	ALL GEAR		£6.75 $8.50 $2.60 €7.80	13mm ½"	-	120g 8lb	Polyester -
	Husky-12 Multi Pro 16	ALL GEAR		£8.40 $10.60 $3.25 €9.75	16mm ⅝"	-	228g 15.3lb	Polyester -
	Husky-12 Multi Pro 19	ALL GEAR		£14.25 $18.00 $5.50 €17.00	19mm ¾"	-	249g 16.7lb	Polyester -
	Husky-12 Multi Pro 25	ALL GEAR		£29.00 $37.00 $11.40 €34.00	25mm 1"	-	358g 24lb	Polyester -
	Husky-12 9.5	ALL GEAR		£2.30 $2.95 $0.90 €2.70	9.5mm ⅜"	-	70g 4.7lb	Polyester -
	Husky-12 13	ALL GEAR		£3.00 $3.70 $1.15 €3.40	13mm ½"	-	120g 8lb	Polyester -
	Husky-12 16	ALL GEAR		£4.40 $5.50 $1.70 €5.05	16mm ⅝"	-	209g 14lb	Polyester -
	Husky-12 19	ALL GEAR		£5.75 $7.00 $2.15 €6.45	19mm ¾"	-	228g 15.3lb	Polyester -
	Husky-12 25	ALL GEAR		£7.10 $9.00 $2.75 €8.25	25mm 1"	-	408g 27.3lb	Polyester -
	AB-Double (Barb) 13	ATLANTIC BRAIDS		£2.85 $3.60 $1.10 €3.30	13mm ½"	-	115g 8lb	Polyester Polyester
	AB-Double (Barb) 14	ATLANTIC BRAIDS		£3.25 $4.10 $1.25 €3.75	14mm 9/16"	-	155g 11lb	Polyester Polyester
	AB-Double (Barb) 16	ATLANTIC BRAIDS		£3.50 $4.40 $1.35 €4.05	16mm ⅝"	-	200g 13.5lb	Polyester Polyester
	AB-Double (Barb) 19	ATLANTIC BRAIDS		£5.15 $6.50 $2.00 €6.00	19mm ¾"	-	260g 17.8lb	Polyester Polyester
	AB-Double (Barb) 22	ATLANTIC BRAIDS		£7.75 $9.80 $3.00 €9.00	22mm ⅞"	-	390g 26lb	Polyester Polyester
	AB-Double Nylon 13	ATLANTIC BRAIDS		N/A	13mm ½"	18 sizes 6.5-64mm ¼-2½"	97g 6.5lb	Nylon Nylon
	AB-Double Nylon 14	ATLANTIC BRAIDS		N/A	14mm 9/16"	18 sizes 6.5-64mm ¼-2½"	142g 9.5lb	Nylon Nylon
	AB-Double Nylon 16	ATLANTIC BRAIDS		N/A	16mm ⅝"	18 sizes 6.5-64mm ¼-2½"	180g 12lb	Nylon Nylon

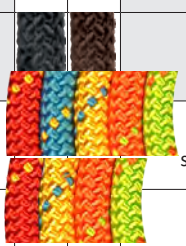
ARBORIST RIGGING ROPES

ON				SUITABLE FOR				MINIMUM/AVERAGE BREAKING LOAD/STRENGTH			ELONGATION				
TREATED FIBRES BONDED SHEATH	SHEATH BRAID /PLAIT	LIFE SUPPORT STAND-ARDS (only for multi-role ropes)	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	CLIMBING	LOWERING	IMPACT LOWER	STATIC RIGGING	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	@10% MBS @30% MBS @50%MBS @300lbf/136kg @540 lbf/245kg	OTHER COLOURS		NOTES	WWW.
■	12 HB		■■	-	■	■	■		26.7kN 6000lbf	-	4%				allgearinc.com
■	12 HB		■■	-	■	■	■		49kN 11000lbf	-	4%				allgearinc.com
■	12 HB		■■	-	■	■	■		71.2kN 16000lbf	-	4%				allgearinc.com
■	12 HB		■■	-	■	■	■		93.4kN 21000lbf	-	4%				allgearinc.com
■	12 HB		■■	-	■	■	■		142kN 32000lbf	-	4%				allgearinc.com
■	12 HB		■	-	■	■	-		26.7kN 6000lbf	-	7%			Used mainly for various types of slings	allgearinc.com
■	12 HB		■	-	■	■	-		49kN 11000lbf	-	7%			Used mainly for various types of slings	allgearinc.com
■	12 HB		■	-	■	■	-		71kN 16000lbf	-	7%			Used mainly for various types of slings	allgearinc.com
■	12 HB		■	-	■	■	-		93.4kN 21000lbf	-	7%			Used mainly for various types of slings	allgearinc.com
■	12 HB		■	-	■	■	-	32.9kN 7399lbf	178kN 40000lbf	-	7%			Used mainly for various types of slings	allgearinc.com
□	DB		■	-	■	-	■	40.5kN 9095lbf	47.6 kN 10700lbf	-					atlanticbraids.com
□	DB		■	-	■	-	■	50.3 kN 11300lbf	59.2 kN 13300lbf	-					atlanticbraids.com
□	DB		■	-	■	-	■	70kN 15725lbf	82.3kN 18500lbf	-					atlanticbraids.com
□	DB		■	-	■	-	■	76.4kN 17170lbf	89.9kN 20200lbf	-					atlanticbraids.com
□	DB		■	-	■	-	■	109.3kN 24565lbf	128.6kN 28900lbf	-					atlanticbraids.com
□	DB		■		■	■			36.9kN 8300lbf	-				Yellow fleck	atlanticbraids.com
□	DB		■		■	■			52kN 11700lbf	-				Yellow fleck	atlanticbraids.com
□	DB		■		■	■			67.6kN 15200lbf	-				Yellow fleck	atlanticbraids.com

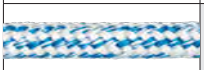
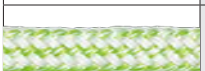
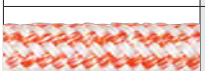
Images NOT to Scale
~ = Approximate
£$€ = Currency Conversion
Cost exc eyes, inc VAT/Tax
DB=Double Braid,
KM=KernMantle/Single Braid
HB=Hollow Braid
DS=Double Strand
☐=Option.
●=OK but not ideal

	MODEL & Ø VARIANT	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot Currency conversion only	Ø mm Inches"	Other Ø in series	WEIGHT g/m lb/100'	CONSTRUCT MATERIALS: SHEATH CORE
	**AB-Double Nylon** 19	ATLANTIC BRAIDS	🇨🇦	N/A	19mm ¾"	18 sizes 6.5-64mm ¼-2½"	202g 13.6lb	Nylon Nylon
	**AB-Double Poly** 13	ATLANTIC BRAIDS	🇨🇦	N/A	13mm ½"	19 sizes 5-64mm ¼-2½"	128g 8.6lb	Polyester Polyester
	**AB-Double Poly** 14	ATLANTIC BRAIDS	🇨🇦	N/A	14mm 9/16"	19 sizes 5-64mm ¼-2½"	155g 11lb	Polyester Polyester
	**AB-Double Poly** 16	ATLANTIC BRAIDS	🇨🇦	N/A	16mm ⅝"	19 sizes 5-64mm ¼-2½"	207g 13.9lb	Polyester Polyester
	**AB-Double Poly** 19	ATLANTIC BRAIDS	🇨🇦	N/A	19mm ¾"	19 sizes 5-64mm ¼-2½"	260g 17.8lb	Polyester Polyester
	**Bonsai** 13 BCSE13	BEAL	🇫🇷	£3.95 $5.20 $1.60 €4.70	13mm ½"	-	98g 6.6lb	Nylon Nylon
	**BWII+** 13	BLUEWATER ROPES	🇺🇸	£3.95 $4.85 $1.50 €4.55	13mm ½"	5 sizes 8-13mm 5/16-½"	124g 9.1lb	Polyester Nylon
	**Safeline** 12.5	BLUEWATER ROPES	🇺🇸	£4.45 $5.45 $1.70 €5.15	12.5mm ½"	4 sizes 9-15.5mm ⅜-⅝"	108g 8.2lb	Polyester Nylon
	**Safeline** 15.5	BLUEWATER ROPES	🇺🇸	£6.25 $7.70 $2.45 €7.25	15.5mm ⅝"	4 sizes 9-15.5mm ⅜-⅝"	164g 12.02lb	Polyester Nylon
	**Power Pull** 12	BUCCANEER ROPE CO	🇺🇸	n/a	12mm ½"	-	119g 8lb	Polyester Polyester
	**Power Pull** 14	BUCCANEER ROPE CO	🇺🇸	£3.15 $4.00 $1.25 €3.65	14mm 9/16"	-	157g 10.5lb	Polyester Polyester
	**Power Pull** 16	BUCCANEER ROPE CO	🇺🇸	£3.95 $5.00 $1.55 €4.50	16mm ⅝"	-	201g 13.5lb	Polyester Polyester
	**Power Pull** 18	BUCCANEER ROPE CO	🇺🇸	n/a	18mm ¾"		276g 18.5lb	Polyester Polyester
	**Tiger** 12	BUCCANEER ROPE CO	🇺🇸	n/a	12mm ½"	8 sizes 6-25mm ¼-1"	119g 8lb	Polyester Polyester
	**Tiger** 14	BUCCANEER ROPE CO	🇺🇸	n/a	14mm 9/16"	8 sizes 6-25mm ¼-1"	151g 10.1lb	Polyester Polyester
	**Tiger** 16	BUCCANEER ROPE CO	🇺🇸	n/a	16mm ⅝"	8 sizes 6-25mm ¼-1"	188g 12.6lb	Polyester Polyester
	**Tiger** 18	BUCCANEER ROPE CO	🇺🇸	n/a	18mm ¾"	8 sizes 6-25mm ¼-1"	268g 18lb	Polyester Polyester

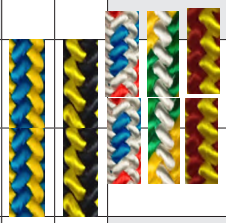
ARBORIST RIGGING ROPES

ION			SUITABLE FOR				MINIMUM/AVERAGE BREAKING LOAD/STRENGTH			ELONGATION					
TREATED FIBRES BONDED SHEATH	SHEATH BRAID /PLAIT	LIFE SUPPORT STANDARDS (only for multi-role ropes)	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	CLIMBING	LOWERING	IMPACT LOWER	STATIC RIGGING	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	@10% MBS @30% MBS @50%MBS @300lbf/136kg @540 lbf/245kg	OTHER COLOURS		NOTES	WWW.
☐	DB		■	-	■	■	-		101.8kN 22890lbf	-				Yellow fleck	atlanticbraids.com
☐	DB		■	-	■	-	■	44kN 10000lbf	52kN 11750lbf	-				Green fleck	atlanticbraids.com
☐	DB		■	-	■	-	■		59kN 13293lbf	-				Green fleck	atlanticbraids.com
☐	DB		■	-	■	-	■	69kN 15725lbf	82kN 18500lbf					Green fleck	atlanticbraids.com
☐	DB		■	-	■	-	■	76kN 17170lbf	89kN 20200lbf					Green fleck	atlanticbraids.com
	KM	CE-A	■	■	■	■	■	34kN 6743lbf		25kN 5620lbf	4.2%				beal-planet.com
	32 KM	CE A NFPA	■	●	■	-	■	44.4kN 9983lbf			3.9%				bluewaterropes.com
	16 KM	CE A NFPA ANSI UIAA	■	●	■	-	■	44.4kN 9983lbf			2.2%			White rope is slightly cheaper	bluewaterropes.com
	16 KM	NFPA	■	●	■	-	■	58.9kN 13237lbf			1.6%				bluewaterropes.com
■	DB		■	●	■	●	■	-	43.6kN 9800lbf						bucrope.com
■	DB		■	●	■	●	■	-	57.8kN 13000lbf						bucrope.com
■	DB		■	●	■	●	■	-	73.8kN 16600lbf						bucrope.com
■	DB			●	■	●	■	-	82.3kN 18500lbf						bucrope.com
			■■	-	■	■	■	-	44.5kN 10000lbf						bucrope.com
			■■	-	■	■	■	-	66.7kN 15000lbf					very difficult to find any Buccaneer ropes. stocked by very few arb stores	bucrope.com
			■■	-	■	■	■	-	80kN 18000lbf						bucrope.com
		CE	■■	-	■	■	■	-	106.7kN 24000lbf						bucrope.com

Images NOT to Scale
~ = Approximate
£$€ = Currency Conversion
Cost exc eyes, inc VAT/Tax
DB=Double Braid,
KM=KernMantle/Single Braid
HB=Hollow Braid
DS=Double Strand
□=Option.
●=OK but not ideal

	MODEL & Ø VARIANT	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot Currency conversion only	Ø mm Inches"	Other Ø in series	WEIGHT g/m lb/100'	CONSTRUCTION MATERIALS: SHEATH CORE
	Tiger Plus 12	BUCCANEER ROPE CO		n/a	12mm ½"	10 sizes 6-30mm ¼-1¼"	119g 8lb	Polyester HMPE
	Tiger Plus 14	BUCCANEER ROPE CO		n/a	14mm 9/16"	10 sizes 6-30mm ¼-1¼"	151g 10.1lb	Polyester HMPE
	Tiger Plus 16	BUCCANEER ROPE CO		n/a	16mm ⅝"	10 sizes 6-30mm ¼-1¼"	188g 12.6lb	Polyester HMPE
	Tiger Plus 18	BUCCANEER ROPE CO		n/a	18mm ¾"	10 sizes 6-30mm ¼-1¼"	268g 18lb	Polyester HMPE
	Arbor Boss 16 12	BUCCANEER ROPE CO		£2.00 $2.50 $0.75 €2.30	12mm ½"	-	112g 7.5lb	Polyester Polyester
	Arbor Boss 16 16	BUCCANEER ROPE CO		n/a	16mm ⅝"	-	161g 10.8lb	Polyester Polyester
	Bulwark SafetyX Semi-Static	COASTLINE CORDAGE		n/a	12.5mm ½"	4 sizes 8- 12.5mm 5/16 -½"	98g 6.7lb	Polyester Nylon
	Bulwark SafetyX Static	COASTLINE CORDAGE		n/a	12.5mm ½"	3 sizes 9.5- 12.5mm ⅜ -½"	112g 6.6lb	Polyester Polyester
	Cortex 12 790	COUSIN-TRESTEC		£2.95 $3.55 $1.10 €3.30	12mm ½"	-	108g 7.2lb	Polyester Polyester
	Cortex 14 790	COUSIN-TRESTEC		£3.40 $4.10 $1.30 €3.80	14mm 9/16"	-	154g 10.3lb	Polyester Polyester
	Cortex 16 790	COUSIN-TRESTEC		£3.75 $4.70 $1.50 €4.30	16mm ⅝"	-	202g 13.5lb	Polyester Polyester
	Lowering BraidLine 12	COUSIN-TRESTEC		£3.30 $4.10 $1.30 €3.80	12mm ½"	14 sizes 6-32mm ¼ -1 ¼"	105g 7lb	Polyester Polyester
	Lowering BraidLine 14	COUSIN-TRESTEC		£4.35 $5.40 $1.65 €5.00	14mm 9/16"	14 sizes 6-32mm ¼ -1 ¼"	136g 9.1lb	Polyester Polyester
	Lowering BraidLine 16	COUSIN-TRESTEC		£5.50 $6.80 $2.10 €6.30	16mm ⅝"	14 sizes 6-32mm ¼ -1 ¼"	178g 11.9lb	Polyester Polyester
	Lowering BraidLine 18	COUSIN-TRESTEC		£6.90 $9.00 $2.80 €8.00	18mm ¾"	14 sizes 6-32mm ¼ -1 ¼"	237g 15.9lb	Polyester Polyester
	Maona 12	COURANT		£2.10 $2.50 $0.76 €2.20	12mm ½"	-	112g 7.5lb	Polyester Polyester
	Maona 14	COURANT		£2.45 $3.30 $1.00 €3.00	14mm 9/16"	-	149g 10lb	Polyester Polyester
	Maona 16	COURANT		£2.70 $3.75 $1.15 €3.25	16mm ⅝"	-	184g 12.3lb	Polyester Polyester

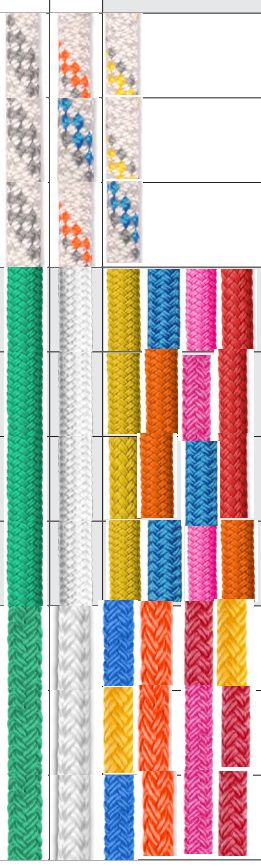
ARBORIST RIGGING ROPES

TREATED FIBRES BONDED SHEATH	SHEATH BRAID /PLAIT	LIFE SUPPORT STANDARDS (only for multi-role ropes)	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	SUITABLE FOR: CLIMBING	LOWERING	IMPACT LOWER	STATIC RIGGING	MINIMUM/AVERAGE BREAKING LOAD/STRENGTH: MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	ELONGATION @10% MBS @30% MBS @50%MBS @300lbf/136kg @540 lbf/245kg	OTHER COLOURS		NOTES	WWW.
	?		■	-	■	-	■	36.5kN 8205lbf	85.4kN 19200lbf						bucrope.com
	?		■	-	■	-	■	47kN 10566lbf						very difficult to find any Buccaneer ropes. stocked by very few arb stores	bucrope.com
	?		■	-	■	-	■	59kN 13263lbf	149.5kN 33600lbf						bucrope.com
	?		■	-	■	-	■	?	195.7kN 44000lbf						bucrope.com
	16 DB		-	■	●	●	●		31.1kN 7000lbf						bucrope.com
	16 DB		-	●	■	■	●		44.5kN 10000lbf						bucrope.com
	32 KM	NFPA	-	●	■	●	■	22kN 4956lbf		7.7kN 1724lbf	2%				coastlinegroup.ca
	32 KM	NFPA	-	●	■	-	■	44kN 9862lbf			1.8%				coastlinegroup.ca
	32 KM		-	●	■	-	■	36.5kN 8205lbf							cousin-trestec.com
	32 KM		-	●	■	-	■	47kN 10566lbf							cousin-trestec.com
	32 KM		-	●	■	-	■	59kN 13263lbf							cousin-trestec.com
	16 DB		■	●	■	■	●	29kN 6519lbf							cousin-trestec.com
	16 DB		■	●	■	■	●	44kN 9891lbf							cousin-trestec.com
	16 DB		■	●	■	■	●	59kN 13263lbf							cousin-trestec.com
	16 DB		■	●	■	■	●	78kN 17535lbf							cousin-trestec.com
	24 DB		■	-	■	■	■	37/40kN 8300/ 8999lbf		5.7kN 1281lbf					mycourant.com
	24 DB		■	-	■	■	■	48/52kN 10800/ 11700lbf		7.4kN 1660lbf					mycourant.com
	24 DB		■	-	■	■	■	62/68kN 14000/ 152000lbf		9.85kN 2201lbf					mycourant.com

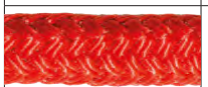
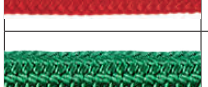
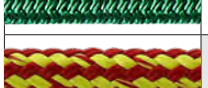
Images NOT to Scale ~ = Approximate	MODEL & Ø VARIANT	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot Currency conversion only	Ø mm Inches"	Other Ø in series	WEIGHT g/m lb/100'	CONSTRUCTION MATERIALS: SHEATH CORE
	**AKA** 12 MHD..ABC...	COURANT		£2.10 $2.50 $0.76 €2.20	12mm ½"	-	126g 8.44lb	Polyester Polyester
	**AKA** 14 MXD..ALC...	COURANT		£2.10 $2.50 $0.76 €2.20	12mm ½"	-	162g 10.85lb	Polyester Polyester
	**AKA** 16 MYD..ACC...	COURANT		£2.10 $2.50 $0.76 €2.20	12mm ½"	-	192g 12.8lb	Polyester Polyester
	**AKA** 18 MZD..AGC...	COURANT		£2.10 $2.50 $0.76 €2.20	12mm ½"	-	232g 15.5lb	Polyester Polyester
	SLR StableBraid 12	DONAGHYS		£000 $000 $000 €000	12mm ½"	-	122g 8.2lb	Polyester Polyester
	SLR StableBraid 14	DONAGHYS		£000 $000 $000 €000	14mm 9/16"	-	164g 11lb	Polyester Polyester
	SLR StableBraid 16	DONAGHYS		£000 $000 $000 €000	16mm 5/8"	-	208g 13.95lb	Polyester Polyester
	Rhino 14 (Yachtmaster XS)	DONAGHYS		£000 $000 $000 €2.46	14mm 9/16"	-	~150g ~10lb	Polyester Polyester
	Rhino 16 (Yachtmaster XS)	DONAGHYS		£000 $000 $000 €2.95	16mm 5/8"	-	0g 0lb	Polyester Polyester
	**Euro Rig** 12	ENGLISH BRAIDS		£000 $000 $000 €000	12mm ½"	-	0g 0lb	Polyester Polyester
	**Euro Rig** 14	ENGLISH BRAIDS		£000 $000 $000 €000	14mm 9/16"	-	0g 0lb	Polyester Polyester
	**Euro Rig** 16	ENGLISH BRAIDS		£000 $000 $000 €000	16mm 5/8"	-	0g 0lb	Polyester Polyester
	**Rig Tex 24** 12	ENGLISH BRAIDS		£4.80 $5.00 $1.55 €4.70	12mm ½"	7 sizes 10 - 24mm 3/8 -7/8"	117g 7.8lb	Polyester Polyester
	**Rig Tex 24** 14	ENGLISH BRAIDS		£5.60 $6.90 $2.20 €6.50	14mm 9/16"	7 sizes 10 - 24mm 3/8 -7/8"	156g 10.5lb	Polyester Polyester
	**Rig Tex 24** 16	ENGLISH BRAIDS		£7.15 $8.85 $2.80 €8.30	16mm 5/8"	7 sizes 10 - 24mm 3/8 -7/8"	195g 13lb	Polyester Polyester
	**Rig Tex 24** 18	ENGLISH BRAIDS		£000 $000 $000 €000	18mm ¾"	7 sizes 10 - 24mm 3/8 -7/8"	234g 15.7lb	Polyester Polyester
	**Rig Tex 12** 12	ENGLISH BRAIDS		£000 $000 $000 €000	12mm ½"	-	0g 0lb	Polyester -
	**Rig Tex 12** 14	ENGLISH BRAIDS		£000 $000 $000 €000	16mm 5/8"	-	0g 0lb	Polyester -
	**Rig Tex 12** 16	ENGLISH BRAIDS		£000 $000 $000€000	20mm ¾"	-	0g 0lb	Polyester -

ARBORIST RIGGING ROPES

ON				SUITABLE FOR				MINIMUM/AVERAGE BREAKING LOAD/STRENGTH			ELONGATION				
TREATED FIBRES BONDED SHEATH	SHEATH BRAID /PLAIT	LIFE SUPPORT STANDARDS (only for multi-role ropes)	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	CLIMBING	LOWERING	IMPACT LOWER	STATIC RIGGING	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	@10% MBS @30% MBS @50%MBS @300lbf/136kg @540 lbf/245kg	OTHER COLOURS		NOTES	WWW.
	24 DB		■	-	■	■	■	35/38kN 7868/ 8542lbf		5.4kN 1213lbf				Sheath=54%	mycourant.com
	24 DB		■	-	■	■	■	45/48kN 10116/ 10790lbf		6.85kN 1539lbf				Sheath=54%	mycourant.com
	24 DB		■	-	■	■	■	55/58kN 12364/ 3038lbf		8.28kN 1861lbf				Sheath=49%	mycourant.com
	24 DB		■	-	■	■	■	65/68kN 14612/ 15287lbf		9.71kN 2182lbf				Sheath=46%	mycourant.com
	- DB			-	■	●	■	35kN 7866lbf							donaghys.com
	- DB			-	■	●	■	44.2kN 9936lbf							donaghys.com
	- DB			-	■	●	■	55kN 12300lbf							donaghys.com
	24 DB		■	-	■	-	■	-	41.2kN 9259lbf						donaghys.com
	24 DB		■	-	■	-	■	-	61.78kN 9259lbf						donaghys.com
	32 KM			-	■	■	■	40.2kN 9040lbf	36.3kN 8100lbf		2.4%				englishbraids.com
	32 KM			-	■	■	■	48.5kN 10900lbf	43.7kN 9800lbf		2.4%				englishbraids.com
	32 KM			-	■	■	■	55.9kN 12560lbf	49.8kN 11100lbf		2.4%				englishbraids.com
	24 DB	CE		-	■	■	●	43kN 9666lbf			5%				englishbraids.com
	24 DB	CE		-	■	■	●	60kN 13488lbf			5%				englishbraids.com
	24 DB	CE		-	■	■	●	72.5kN 16298kN			5%				englishbraids.com
	24 DB	CE		-	■	■	●	75kN 16860kN			5%				englishbraids.com
■	12 HB	CE		-	■	■	●								englishbraids.com
■	12 HB	CE		-	■	■	●								englishbraids.com
■	12 HB	CE		-	■	■	●								englishbraids.com



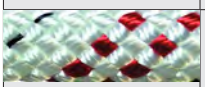
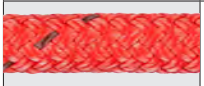
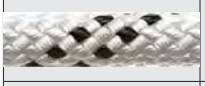
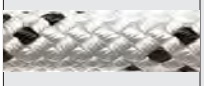
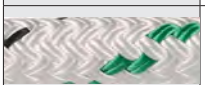
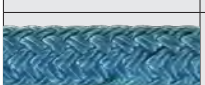
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	MODEL & Ø VARIANT	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot Currency conversion only	Ø mm Inches"	Other Ø in series	WEIGHT g/m lb/100'	CONSTRUCT MATERIALS: SHEATH CORE
	**Anaconda** 12	FTC TREE		£4.60 $5.35 $1.65 €4.85	12mm ½"	-	125g 8.4lb	Polyester Polyester
	**Anaconda** 14	FTC TREE		£5.25 $6.65 $2.10 €5.55	14mm 9/16"	-	175g 11.7lb	Polyester Polyester
	**Anaconda** 16	FTC TREE		£7.25 $8.80 $2.70 €7.30	16mm ⅝"	-	225g 15.1lb	Polyester Polyester
	**Anaconda** 18	FTC TREE		£8.15 $10.30 $3.15 €8.60	18mm ¾"	-	335g 22.4lb	Polyester Polyester
	**Katuali** 10	FTC TREE		£1.70 $2.20 $0.65 €1.80	10mm ⅜"	-	86g 5.7lb	Polyester Polyester
	**Katuali** 12	FTC TREE		£1.90 $2.35 $0.75 €2.00	12mm ½"	-	119g 8lb	Polyester Polyester
	**Katuali** 14	FTC TREE		£2.35 $3.10 $0.95 €2.50	14mm 9/16"	-	153g 10.2lb	Polyester Polyester
	**Katuali** 16	FTC TREE		£2.80 $3.55 $1.10 €2.95	16mm ⅝"	-	203g 13.6lb	Polyester Polyester
	**Katuali** 18	FTC TREE		£3.30 $4.00 $1.25 €3.45	18mm ¾"	-	256g 17.2lb	Polyester Polyester
	**Light Red** 16	GLEISTEIN		£2.95 $3.25 $1.00 €3.05	12mm ½"	-	83g 5.6lb	Polyester Polyester
	**Heavy Green** 16	GLEISTEIN		£4.95 $5.35 $1.65 €5.00	16mm ⅝"	-	170g 11.4lb	Polyester Polyester
	**HeftyFlex** 13 H2521	HARKIE		£3.55 $4.50 $1.40 €4.20	13mm ½"	-	n/a	?
	**HeftyFlex** 16	HARKIE		£4.26 $5.20 $1.60 €5.00	16mm ⅝"	-	n/a	?
	**HeftyFlex** 19	HARKIE		£6.10 $8.60 $2.65 €7.15	19mm ¾"	-	n/a	?
	**Safe Arb** 12	LIROS		£2.35 $3.00 $1.00 €2.70	12mm ½"	-	125g 8.4lb	Polyester Polyester
	**Safe Arb** 14	LIROS		£3.25 $4.05 $1.25 €3.80	14mm 9/16"	-	175g 11.7lb	Polyester Polyester
	**Safe Arb** 16	LIROS		£4.00 $5.00 $1.55 €5.30	16mm ⅝"	-	225g 15.1lb	Polyester Polyester
	**Safe Arb** 18	LIROS		£6.85 $8.50 $2.70 €8.10	18mm ¾"	-	335g 22.1lb	Polyester Polyester

ARBORIST RIGGING ROPES

ION				SUITABLE FOR				MINIMUM/AVERAGE BREAKING LOAD/STRENGTH			ELONGATION				
TREATED FIBRES BONDED SHEATH	SHEATH BRAID /PLAIT	LIFE SUPPORT STANDARDS (only for multi-role ropes)	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	CLIMBING	LOWERING	IMPACT LOWER	STATIC RIGGING	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	@10% MBS @30% MBS @50%MBS @300lbf/136kg @540 lbf/245kg	OTHER COLOURS		NOTES	WWW.
■	20 DB	CE	■■	-	■	■	●	45kN 10116lbf		6.4kN 1438lbf	6.5%				ftc-tree.com
■	20 DB	CE	■■	-	■	■	●	55kN 12364lbf		7.8kN 1753lbf					ftc-tree.com
■	20 DB	CE	■■	-	■	■	●	67kN 15062lbf		9,5kN 2136lbf					ftc-tree.com
■	20 DB	CE	■■	-	■	■	●	76kN 17085lbf		11kN 2473lbf					ftc-tree.com
	16 DB	CE	■■	-	■	■	■	29 30kN 6520lbf 6744lbf		4.1 4.3kN 922lbf 967lbf					ftc-tree.com
	16 DB	CE	■■	-	■	■	■	40 42kN 8992lbf 9442lbf		5.7 6kN 1281lbf 1348lbf					ftc-tree.com
	16 DB	CE	■■	-	■	■	■	52 55kN 11690lbf 12365lbf		7.4 7.8kN 1663lbf 1799lbf					ftc-tree.com
	16 DB	CE	■■	-	■	■	■	70 72kN 15737lbf 16186lbf		10 10kN 2248lbf 2248lbf					ftc-tree.com
	16 DB	CE	■■	-	■	-	■	78 86kN 17535lbf 19333lbf		11 12.2kN 2742lbf 2697lbf					ftc-tree.com
	24 DB	CE	■■	-	■	■	●	33kN 7418lb			4.3%				gleistein.com
	24 DB	CE	■■	-	■	■	■	67.7/75.2kN 15219lbf 16905lb			2.5%				gleistein.com
■	?		■■	-	■	■	■	45kN 10116lbf							harkieglobal.com
■	?		■■	-	■	■	■	70kN 15736lbf							harkieglobal.com
■	?		■■	-	■	■	■	85kN 19108lbf							harkieglobal.com
■	20 DB		■	-	■	■	●	45kN 10116lbf							liros.com
■	20 DB		■	-	■	■	●	55kN 12364lbf							liros.com
■	20 DB		■	-	■	■	●	67kN 15062lbf							liros.com
■	20 DB		■	-	■	■	●	76kN 17085lbf							liros.com

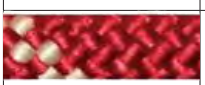
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	Draco 12	MARLOW	UK	£2.20 $2.70 $2.70 €2.60	12mm ½"		100.6g 6.75lb	Polyester Polyester
	Draco 14	MARLOW	UK	£2.45 $300 $3.00 €3.00	14mm 9/16"		130.4g 8.74lb	Polyester Polyester
	Draco 16	MARLOW	UK	£3.10 $3.85 $3.85 €3.70	16mm ⅝"		197g 13.21lb	Polyester Polyester
	Raptor Rigging 12	MARLOW	UK	£3.90 $4.85 $1.50 €4.60	12mm ½"		111g 7.44lb	Polyester Polyester
	Raptor Rigging 14	MARLOW	UK	£4.20 $5.25 $1.65 €5.00	14mm 9/16"		156g 10.43lb	Polyester Polyester
	Raptor Rigging 16	MARLOW	UK	£5.35 $6.65 $2.05 €6.30	16mm ⅝"		193g 12.94lb	Polyester Polyester
	Raptor Rigging 18	MARLOW	UK	£6.55 $8.15 $2.50 €7.70	18mm ¾"		232g 15.54lb	Polyester Polyester
	Marlowbraid 12	MARLOW	UK	£4.20 $5.25 $1.65 €5.00	12mm ½"	10 sizes 6-24mm ¼-15/16"	100g 6.71lb	Polyester Polyester
	Marlowbraid 14	MARLOW	UK	£5.95 $7.40 $2.30 €7.00	14mm 9/16"	10 sizes 6-24mm ¼-15/16"	145g 9.72lb	Polyester Polyester
	Marlowbraid 16	MARLOW	UK	£8.10 $10.10 $3.10 €9.50	16mm ⅝"	10 sizes 6-24mm ¼-15/16"	190g 12.74lb	Polyester Polyester
	Marlowbraid 18	MARLOW	UK	£9.10 $11.35 $3.50 €10.65	18mm ¾"	10 sizes 6-24mm ¼-15/16"	235g 15.76lb	Polyester Polyester
	Doublebraid 12	MARLOW	UK	£4.10 $5.40 $1.65 €4.90	12mm ½"	7 sizes 6-18mm ¼-¾"	111g 7.44lb	Polyester Polyester
	Doublebraid 14	MARLOW	UK	£6.10 $8.00 $2.45 €7.30	14mm 9/16"	7 sizes 6-18mm ¼-¾"	156g 10.43lb	Polyester Polyester
	Doublebraid 16	MARLOW	UK	£7.80 $10.20 $3.10 €9.30	16mm ⅝"	7 sizes 6-18mm ¼-¾"	193g 12.94lb	Polyester Polyester
	Doublebraid 18	MARLOW	UK	£8.30 $11.00 $3.40 €9.90	18mm ¾"	7 sizes 6-18mm ¼-¾"	232g 15.54lb	Polyester Polyester
	The Ape 12	PELICAN ROPE	US	£2.25 $2.80 $0.85 €2.60	12mm ½"	-	137g 9.2lb	Polyester Polyester
	The Ape 14	PELICAN ROPE	US	£2.80 $3.50 $1.08 €3.25	14mm 9/16"	-	157g 10.5lb	Polyester Polyester
	The Ape 16	PELICAN ROPE	US	£3.10 $3.90 $1.20 €3.60	16mm ⅝"	-	204g 13.7lb	Polyester Polyester

ARBORIST RIGGING ROPES

ON			SUITABLE FOR				MINIMUM/AVERAGE BREAKING LOAD/STRENGTH			ELONGATION				
TREATED FIBRES BONDED SHEATH	SHEATH BRAID /PLAIT	LIFE SUPPORT STANDARDS (only for multi-role ropes)	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	CLIMBING	LOWERING	IMPACT LOWER	STATIC RIGGING	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	@10% MBS @30% MBS @50%MBS @300lbf/136kg @540 lbf/245kg	OTHER COLOURS		NOTES	WWW.
	16 DB		■	-	■	●	■	35.2kN 7914lbf	38.4kN 8619lbf						marlowropes.com
	16 DB		■	-	■	●	■	49.4kN 11102lbf	54.9kN 12337lbf						marlowropes.com
	16 DB		■	-	■	●	■	74.1kN 16645lbf	81.9kN 18408lbf						marlowropes.com
■	24 DB		■■	-	■	●	■	38.7 43kN 9650lbf	42 46.7kN 10500lbf	5.5kN* 1240lbf*	5% 1.7%				marlowropes.com
■	24 DB		■■	-	■	●	■	49.1 54.6kN 12300lbf	53.5 59.4kN 13300lbf	7kN* 1590lbf*	5% 1.7%				marlowropes.com
■	24 DB		■■	-	■	●	■	58.8 65.3kN 14700lbf	63.8 70.9kN 15900lbf	8.4kN* 1890lbf*	5% 1.7%				marlowropes.com
■	24 DB		■■	-	■	●	■	64.3 71.4kN 16000lbf	69.8 77.6kN 17400lbf	9.2kN* 2060lbf*	5% 1.7%				marlowropes.com
-	16		■	-	■	-	■	40.2kN 9007lbf	43.7kN 9790lbf						marlowropes.com
-	16		■	-	■	-	■	49.3kN 11051lbf	53.6kN 12012lbf						marlowropes.com
-	16		■	-	■	-	■	65.2kN 14630lbf	72.8kN 16324lbf						marlowropes.com
-	16		■	-	■	-	■	92kN 20625lbf	100kN 22419lbf						marlowropes.com
-	24 DB		■■	-	■	■	■	43kN 9650lbf	46.7kN 10500lbf						marlowropes.com
-	24 DB		■■	-	■	■	■	54.6kN 12300lbf	59.4kN 13300lbf						marlowropes.com
-	24 DB		■■	-	■	■	■	65.3kN 14700lbf	70.9kN 15900lbf						marlowropes.com
	24 DB		■■	-	■	■	■	71.4kN 16000lbf	77.6kN 17400lbf						marlowropes.com
■	DB		■■	-	■	●	■	48.9kN 11000lbf							pelicanrope.com
■	DB		■■	-	■	●	■	62.3kN 14000lbf							pelicanrope.com
■	DB		■■	-	■	●	■	75.6kN 17000lbf							pelicanrope.com

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	The Ape 18	PELICAN ROPE		£3.90 $4.90 $1.50 €4.55	18mm ¾"	-	271g 18.2lb	Polyester Polyester
	The Ape 25	PELICAN ROPE		£7.25 $9.15 $2.80 €8.45	25mm 1"	-	529g 35.5lb	Polyester Polyester
	Matador 12	PELICAN ROPE		£2.65 $3.40 $1.05 €3.15	12mm ½"		116g 7.8lb	Polyester Nylon
	Matador 14	PELICAN ROPE		£3.15 $3.95 $1.21 €3.65	14mm 9/16"		172g 11.55lb	Polyester Nylon
	Matador 16	PELICAN ROPE		£3.90 $4.90 $1.50 €4.55	16mm ⅝"		293g 19.65lb	Polyester Nylon
	Matador 18	PELICAN ROPE		£5.00 $6.35 $1.95 €5.90	18mm ¾"		385g 25.8lb	Polyester Nylon
	Access Pro 11	PMI		£2.20 $2.70 $0.85 €2.55	11mm 7/16"	-	84g 5.6lb	Polyester Nylon
	Hudson Cl Pro EZ Bend11	PMI		£3.70 $4.20 $1.30 €3.95	11mm 7/16"	5 sizes 9-16mm ⅜-⅝"	80g 5.4lb	Nylon Nylon
	Hudson Cl Pro EZ Bend 12.5	PMI		£4.30 $5.30 $1.65 €5.00	12.5mm ½"	5 sizes 9-16mm ⅜-⅝"	104g 7lb	Nylon Nylon
	Hudson Cl Pro EZ Bend Unicore 12.5	PMI		£4.30 $5.30 $1.65 €5.00	12.5mm ½"	2 sizes 11-12.5mm 7/16-½"	107g 7.2lb	Nylon Nylon
	Hudson Cl Pro EZ Bend 16	PMI		£5.30 $6.60 $2.00 €5.00	16mm ⅝"	5 sizes 9-16mm ⅜-⅝"	145g 10.3lb	Nylon Nylon
	Hudson Cl Pro Max Wear/Pit Rope 11	PMI		£2.90 $3.60 $1.15 €3.40	11mm 7/16"	4 sizes 9-12.5mm ⅜-½"	83.46g 5.6lb	Nylon Nylon
	Extreme Pro Unicore 11	PMI		£3.15 $3.90 $1.25 €3.65	11mm 7/16"	2 sizes 11-12.5mm 7/16-½"	100g 6.7lb	Polyester Nylon
	Extreme Plus Unicore 12.5	PMI		£3.50 $4.20 $1.30 €3.95	12.5mm ½"	2 sizes 11-12.5mm 7/16-½"	113g 7.6lb	Polyester Nylon
	Opus 11	PMI		£1.90 $2.35 $0.75 €2.20	11mm 7/16"	-	85g 5.7lb	Nylon Nylon
	Dura-Shield General Use 12.5	PMI		£10.50 $13.10 $4.00 €12.30	12.5mm ½"	3 sizes 8-12.5mm 5/16-½"	110.9g 7.43lb	Technora Nylon
	Isostatic 11.5	PMI		£4.85 $6.00 $1.80 €4.55	11.5mm 7/16"	-	96g 6.4lb	Polyester Polyester
	Isostatic 13	PMI		£4.85 $6.00 $1.80 €4.55	13mm ½"	-	125g 8.4lb	Polyester Polyester

ARBORIST RIGGING ROPES

ON				SUITABLE FOR				MINIMUM/AVERAGE BREAKING LOAD/STRENGTH			ELONGATION				
TREATED FIBRES BONDED SHEATH	SHEATH BRAID /PLAIT	LIFE SUPPORT STANDARDS (only for multi-role ropes)	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	CLIMBING	LOWERING	IMPACT LOWER	STATIC RIGGING	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	@10% MBS @30% MBS @50%MBS @300lbf/136kg @540 lbf/245kg	OTHER COLOURS		NOTES	WWW.
■	DB		■■	-	■	●	■	35kN 21000lbf							pelicanrope.com
■	DB		■■	-	■	●	■	52kN 40000lbf							pelicanrope.com
■	DB		■	-	■	■	■	44.5kN 10000lbf							pelicanrope.com
■	DB		■	-	■	■	■	54.3kN 12200lbf							pelicanrope.com
■	DB		■	-	■	■	■	71.1kN 16000lbf							pelicanrope.com
■	DB		■	-	■	■	■	11.2kN 25000lbf							pelicanrope.com
-	32 KM	CI CE A NFPA-T		■	■	●	■	27kN 6066lbf			- 3%				pmirope.com
-	16 KM	CI. CE A NFPA-T ANSI BERRY		■	■	●	■	33.3kN 7480lbf			- 1%				pmirope.com
-	16 KM	CI. CE A ANSI NFPA-G		■	■	●	■	45.1kN 10145lbf			- 1%			Also in reflective, solid blue, black, red & OD	pmirope.com
■	16 KM	CI. CE A ANSI NFPA-G		■	■	●	■	44.5kN 10009lbf			3-4.4% 0.7%			**CI=Classic** Old Glory (shown) may cost more	pmirope.com
-	16 KM	CI CE A ANSI NFPA-G	■	●	■	●	■	69.1kN 16330lbf			3.6-4.8% 0.3%			Blue&Ylw colours=$.2.30/ft	pmirope.com
-	16 KM	CI. NFPA-T		●	■	●	■	32.4kN 7291lbf			- 1.5%			Pit rope =White stiffer than EZbend. data yet for 5mm version	pmirope.com
■	16 KM	CI NFPA-T ANSI BERRY		■	■	●	■	42.3kN 9521lbf			- 1.7%				pmirope.com
■	16 KM	ANSI. NFPA-G		■	■	●	■	46.4kN 10431lbf			- 1.3%				pmirope.com
-	40 KM	CI CE A ANSI NFPA-T		■	■	●	■	30.6kN 6871lbf			- 2.9%				pmirope.com
-	32 KM	CI NFPA		■	■	■	■	34.3kN 7703lbf			8.8% 2.5%			Cut resistant sheath	pmirope.com
-	32 KM	ANSI NFPA-T		●	■	-	■	32.2kN 7239lbf			1.44-2.2% 0.9%			Unicore =sheath bonded to core	pmirope.com
-	32 KM	ANSI NFPA-T		●	■	-	■	44.2kN 9944lbf			1.44-2.2% 2.1%			Unicore =sheath bonded to core	pmirope.com

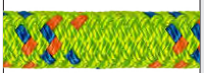
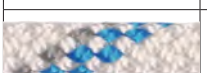
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●=OK but not ideal

	MODEL & Ø VARIANT	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot Currency conversion only	Ø mm Inches"	Other Ø in series	WEIGHT g/m lb/100'	CONSTRUCTI MATERIALS: SHEATH CORE
	Mountain Ape 12.7	ROCK'N ARBOR		£2.40 $2.95 $0.90 €0.00	12.7mm ½"	-	115g 8lb	Polyester Polyester
	Mountain Ape 14	ROCK'N ARBOR		£3.10 $3.80 $1.16 €0.00	14mm 9/16"	-	155g 11lb	Polyester Polyester
	Mountain Ape 16	ROCK'N ARBOR		£3.60 $4.45 $1.36 €4.20	16mm ⅝"	-	200g 13.5lb	Polyester Polyester
	Amethyst 12	ROCK'N ARBOR		£2.65 $3.25 $1.00 €3.10	12mm ½"	-	103g 6.9lb	Polyester Polyester
	Amethyst 16	ROCK'N ARBOR		£4.65 $5.70 $1.76 €5.35	16mm ⅝"	-	0g 0lb	Polyester Polyester
	Arbor Plex 12	SAMSON		£2.00 $2.45 $0.80 €2.30	12mm ½"	3 sizes 12.7-18mm ½-¾"	101g 6.8lb	Polyprop/ Polyester -
	Arbor Plex 16	SAMSON		£2.90 $3.60 $1.10 €2.75	16mm ⅝"	3 sizes 12.7-18mm ½-¾"	179g 12lb	Polyprop/ Polyester -
	Arbor Plex 18	SAMSON		£4.15 $5.15 $1.60 €4.85	18mm ¾"	3 sizes 12.7-18mm ½-¾"	241g 16.2lb	Polyprop/ Polyester -
	Nystron Coated 12	SAMSON		£3.00 $3.70 $1.15 €3.50	12mm ½"	13 sizes 9-48mm ⅜-2"	121g* 8lb	Polyester Nylon
	Nystron Coated 14	SAMSON		£3.70 $4.55 $1.40 €4.30	14mm 9/16"	13 sizes 9-48mm ⅜-2"	156g* 10.5lb	Polyester Nylon
	Nystron Coated 16	SAMSON		£4.30 $5.35 $1.65 €5.05	16mm ⅝"	13 sizes 9-48mm ⅜-2"	196g* 13.2lb	Polyester Nylon
	Nystron Coated 18	SAMSON		£5.50 $6.80 $2.10 €6.40	18mm ¾"	13 sizes 9-48mm ⅜-2"	270g* 18.1lb	Polyester Nylon
	StableBraid 12	SAMSON		£2.75 $3.40 $1.05 €3.20	12mm ½"	16 sizes 6-24mm ¼-1¾"	122g 8.2lb	Polyester Polyester
	StableBraid 14	SAMSON		£3.15 $3.90 $1.20 €3.70	14mm 9/16"	16 sizes 6-24mm ¼-1¾"	164g 11lb	Polyester Polyester
	StableBraid 16	SAMSON		£3.85 $4.75 $1.45 €4.45	16mm ⅝"	16 sizes 6-24mm ¼-1¾"	208g 14lb	Polyester Polyester
	StableBraid 18	SAMSON		£4.90 $6.05 $1.85 €5.70	18mm ¾"	16 sizes 6-24mm ¼-1¾"	268g 18lb	Polyester Polyester
	True Blue	SAMSON		£2.75 $3.40 $1.05 €3.20	12mm ½"		131g 8.8lb	Polyester -
	Tech HTP 11	STERLING		£8.90 $11.00 $3.40 €10.35	11mm 7/16"	-	95g 6.4lb	Technora Polyester

ARBORIST RIGGING ROPES

ON			SUITABLE FOR				MINIMUM/AVERAGE BREAKING LOAD/STRENGTH			ELONGATION				
TREATED FIBRES BONDED SHEATH	SHEATH BRAID /PLAIT	LIFE SUPPORT STAND-ARDS (only for multi-role ropes)	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	CLIMBING	LOWERING	IMPACT LOWER	STATIC RIGGING	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	@10% MBS @30% MBS @50%MBS @300lbf/136kg @540 lbf/245kg	OTHER COLOURS	NOTES	WWW.
□	DB		■	-	■	-	■	40.5kN 9095lbf	47.6 kN 10700lbf					rocknarbor.com
□	DB		■	-	■	-	■	50.3 kN 11300lbf	59.2 kN 13300lbf					rocknarbor.com
□	DB		■	-	■	-	■	70kN 15725lbf	82.3kN 18500lbf					rocknarbor.com
-	DB			●	■	●	■		39kN 8767lbf				Overload indicated by misaligned diagonal threads.	rocknarbor.com
-	12 HB		■	●	■	■	●	71kN 16000lbf						rocknarbor.com
-	12 HB		■■	●	■	■	●	23.5kN 5291lbf	26.6kN 6000lbf	5.3kN 1200lbf	3%			samsonrope.com
-	12 HB		■■	●	■	■	●		40kN 9000lbf	8kN 1800lbf	3%			samsonrope.com
-	12 HB		■■	●	■	■	●		53kN 12000lbf	10.6kN 2400lbf	3%			samsonrope.com
■	DB		■	-	■	■	●	39.5kN 8900lbf	46.7kN 10500lbf		2.4%		*Wt with coating	samsonrope.com
■	DB		■	-	■	■	●	49.8kN 11200lbf	58.7kN 13200lbf		2.4%		* Wt with coating	samsonrope.com
■	DB		■	-	■	■	●	61.8kN 13900lbf	72.5kN 16300lbf		2.4%		*Wt with coating	samsonrope.com
■	DB		■	-	■	■	●	87kN 19600lbf	10.2kN 2300lbf		2.4%		*Wt with ating	samsonrope.com
□	DB		■	-	■	-	■	39kN 8800lbf	46kN 10400lbf		1.1			samsonrope.com
□	DB		■	-	■	-	■	50kN 11300lbf	59kN 13300lbf		1.1			samsonrope.com
□	DB		■	-	■	-	■	61kN 13900lbf	72kN 16300lbf		1.1			samsonrope.com
□	DB		■	-	■	-	■	76kN 17300lbf	90kN 20400lbf		1.1			samsonrope.com
	12 HB		■	■	●	-	■		32kN 7300lbf	3.2kN 730lbf	2.6%			samsonrope.com
-	32 KM	NFPA ANSI		●	■	-	■	36kN 8090lbf			2.1%		Super-tough, cut & heat resistant tactical/rescue rope	sterlingrope.com

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	MODEL & Ø VARIANT	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot Currency conversion only	Ø mm Inches"	Other Ø in series	WEIGHT g/m lb/100'	CONSTRUCTI MATERIALS: SHEATH CORE
	Tech 11	STERLING		£8.50 $10.00 $3.30 €9.85	11mm 7/16"	-	88g 5.9lb	Technora Nylon
	Atlas 13	STERLING		£3.90 $4.90 $1.50 €4.55	13mm ½"	-	118g 7.9lb	Polyester Nylon
	Atlas 14	STERLING		£4.45 $5.60 $1.75 €5.20	14mm 9/16"	-	133g 8.9lb	Polyester Nylon
	Atlas 16	STERLING		£5.30 $6.70 $2.05 €6.20	16mm 5/8"	-	202g 13.5lb	Polyester Nylon
	Atlas 18	STERLING		£6.80 $8.40 $2.60 €7.90	18mm ¾"	-	258kN 17.3lb	Polyester Nylon
	Kraken 13	STERLING		£2.70 $3.30 $1.10 €3.10	12mm ½"	5 sizes 13-22mm ⅜-⅞"	130g 8.7lb	Polyester Polyester
	Kraken 14	STERLING		£3.20 $3.95 $1.25 €3.70	14.3mm 9/16"	5 sizes 13-22mm ⅜-⅞"	173g 11.6lb	Polyester Polyester
	Kraken 17	STERLING		£3.90 $4.80 $1.50 €4.50	17mm 5/8"	5 sizes 13-22mm ⅜-⅞"	221g 14.8lb	Polyester Polyester
	Kraken 19	STERLING		£4.75 $5.85 $1.80 €5.50	19.1mm ¾"	5 sizes 13-22mm ⅜-⅞"	275g 18.4lb	Polyester Polyester
	HTP (Rig) 11	STERLING		£4.00 $4.75 $1.45 €4.60	11mm 7/16"	5 sizes 9-16mm ⅜-5/64"	97g 6.5lb	Polyester Polyester
	HTP (Rig) 12	STERLING		£4.95 $6.10 $1.90 €5.75	12.5mm ½"	5 sizes 9-16mm ⅜-5/64"	119g 8lb	Polyester Polyester
	HTP (Rig) 16	STERLING		£5.35 $6.50 $2.10 €6.20	16mm 5/8"	5 sizes 9-16mm ⅜-5/64"	186g 12.5lb	Polyester Polyester
	Omega 12	STEIN		£3.05 $3.75 $1.20 €3.55	12mm ½"	-		Polyester Nylon
	Omega 14	STEIN		£4.35 $5.40 $1.65 €5.05	14mm 9/16"	-		Polyester Nylon
	Omega 16	STEIN		£4.90 $6.10 $1.90 €5.70	16mm 5/8"	-		Polyester Nylon
	Omega 20	STEIN		£7.65 $9.85 $3.00 €9.25	20mm ¾"	-		Polyester Nylon
	Timber Evo 12.5	TENDON		£3.60 $4.50 $1.45 €4.15	12.5mm ½"	3 sizes 11-12.5mm ¼-1¾"	104g 7lb	Polyester Nylon
	Timber 15	TENDON		£4.50 $5.20 $1.60 €4.80	15mm 5/8"	-	174g 11.7lb	Polyester Nylon

ARBORIST RIGGING ROPES

ON			SUITABLE FOR				MINIMUM/AVERAGE BREAKING LOAD/STRENGTH			ELONGATION				
TREATED FIBRES BONDED SHEATH	SHEATH BRAID /PLAIT	LIFE SUPPORT STANDARDS (only for multi-role ropes)	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	CLIMBING	LOWERING	IMPACT LOWER	STATIC RIGGING	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	@10% MBS @30% MBS @50%MBS @300lbf/136kg @540 lbf/245kg	OTHER COLOURS	NOTES	WWW.
-	32 KM	NFPA ANSI		■	■	●	■	40.1kN 9014lbf			3.6%		cut & heat resistant greater stretch than HTP rope	sterlingrope.com
-	32 DB		■■	-	■	■	■	48kN 10800lbf 40kN 9000lbf	51kN 11500lbf		0.9% 4.1%			sterlingrope.com
-	32 DB	ANSI	■■	-	■	■	■	61.2kN 18000lbf 49kN 11050lbf	61kN 13750lbf		0.8% 4.5%			sterlingrope.com
-	32 DB		■■	-	■	■	■	80kN 18000lbf 67.8kN 15250lbf	86.3kN 19400lbf		0.4% 4.5%			sterlingrope.com
-	32 DB		■■	-	■	■	■	80.7kN 18147lbf	100kN 22480lbf		0.3% 4.3%			sterlingrope.com
■	24		■■	-	■	●	■	47.9kN 10750lbf	56.4kN 12650lbf	5.6kN 1265lbf	1.8%		Previously sold as *Notch Kraken*	sterlingrope.com
■	24		■■	-	■	●	■	56.6kN 12700lbf	66.4kN 14900lbf	6.6kN 1490lbf	1.8%			sterlingrope.com
■	24		■■	-	■	●	■	70kN 15700lbf	82.5kN 18500lbf	8.2kN 1850lbf	1.8%			sterlingrope.com
■	24		■■	-	■	●	■	29.2kN 20000lbf	104,8kN 23500lbf	10.5kN 2350lbf	1.8%			sterlingrope.com
-	32 DB	ANSI NFPA	■	●	■	-	●	30.5kN 6856lbf		6.1kN 1371lbf	4%			sterlingrope.com
-	32 DB	ANSI NFPA	■	●	■	-	■	40.4kN 9081lbf		8.1kN 1820lbf	2%			sterlingrope.com
-	32 DB	NFPA	■	-	■	-	■	57.8kN 12993lbf	53kN 12000lbf	11.6kN 2495lbf	2.8%		'*RIG*'=*HTP* in Black/ Pink and White/ Pink	sterlingrope.com
	32 KM		■■	●	■	■	■	34.4kN 7738lbf	36.3kN 8160lbf		2.4%		May also be 10mm version with red fleck	steininternational.com
	32 KM		■■	-	■	■	■	48.5kN 10900lbf	43.7kN 9824lbf		2.4%			steininternational.com
	32 KM		■■	-	■	■	■	55.9kN 12560lbf	49.8kN 11195lbf		2.4%			steininternational.com
	32 KM		■■	-	■	■	■	75.5kN 16950lbf	68.6kN 15421lbf		2.4%			steininternational.com
	24 DB	CE A		■	■	■	●	39kN 8598lbf			3%		Embedded RFID chip	mytendon.com
	24 DB	CE A		-	■	■	■	61kN 13713lb						mytendon.com

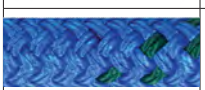
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	Sirius 12	TEUFELBERGER		£2.35 $3.50 $1.00 €3.10	12mm ½"		103g 6.92lb	Polyester Polyester
	Sirius 14	TEUFELBERGER		£2.85 $4.25 $1.25 €3.80	14mm 9/16"		151g 10.15lb	Polyester Polyester
	Sirius 16	TEUFELBERGER		£3.25 $5.10 $1.50 €4.20	16mm ⅝"		185g 12.43lb	Polyester Polyester
	Sirius 18	TEUFELBERGER		£6.45 $8.15 $1.80 €7.50	15.9mm ⅝"		227g 15.26lb	Polyester Polyester
	Sirius 20	TEUFELBERGER		£7.65 $9.65 $2.05 €8.90	19.1mm 13/16"		285g 19.16lb	Polyester Polyester
	tREX 11	TEUFELBERGER		£4.20 $5.00 $1.55 €4.80	11.1mm 7/16"	6 sizes 9.5-22mm ⅜-⅞"	98.2g 6.6lb	Polyester -
	tREX 13	TEUFELBERGER		£4.95 $5.90 $1.80 €5.55	12.7mm ½"	6 sizes 9.5-22mm ⅜-⅞"	129.4g 8.7lb	Polyester -
	tREX 16	TEUFELBERGER		£6.75 $7.50 $2.30 €7.15	15.9mm ⅝"	6 sizes 9.5-22mm ⅜-⅞"	203.8g 13.7lb	Polyester -
	tREX 19	TEUFELBERGER		£8.00 $9.50 $2.95 €8.35	19.1mm 13/16"	6 sizes 9.5-22mm ⅜-⅞"	267.8g 18lb	Polyester -
	Sta-Set	TEUFELBERGER		£4.95 $5.30 $1.65 €5.75	12.7mm ½"	6 sizes 12.7-25.4mm ½-1"	150g 10.1lb	Polyester Polyester
	Sta-Set	TEUFELBERGER		£5.50 $5.75 $1.75 €6.40	14.3mm 9/16"	6 sizes 12.7-25.4mm ½-1"	177g 11.9lb	Polyester Polyester
	Sta-Set	TEUFELBERGER		£5.00 $6.00 $1.85 €5.80	15.9mm ⅝"	6 sizes 12.7-25.4mm ½-1"	253g 17lb	Polyester Polyester
	Sta-Set	TEUFELBERGER		£5.95 $6.50 $2.00 €6.90	19.1mm 13/16"	6 sizes 12.7-25.4mm ½-1"	352.6g 23.7lb	Polyester Polyester
	Double Esterlon	YALE CORDAGE		£3.50 $3.20 $1.00 €4.10	13mm ½"	9 sizes 6-24mm ¼-15/16"	122g 7.8lbs	Polyester Polyester
	Double Esterlon	YALE CORDAGE		£4.00 $4.20 $1.30 €4.65	14mm 9/16"	9 sizes 6-24mm ¼-15/16"	164g 9.6lb	Polyester Polyester
	Double Esterlon	YALE CORDAGE		£5.40 $5.20 $1.60 €6.25	16mm ⅝"	9 sizes 6-24mm ¼-15/16"	208g 13.7lb	Polyester Polyester
	Double Esterlon	YALE CORDAGE		£5.80 $6.20 $1.90 €6.75	19mm ¾"	9 sizes 6-24mm ¼-15/16"	268g 16.7lb	Polyester Polyester

ARBORIST RIGGING ROPES

ON				SUITABLE FOR				MINIMUM/AVERAGE BREAKING LOAD/STRENGTH			ELONGATION					
TREATED FIBRES BONDED SHEATH	SHEATH BRAID /PLAIT	LIFE SUPPORT STAND-ARDS (only for multi-role ropes)	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	CLIMBING	LOWERING	IMPACT LOWER	STATIC RIGGING	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	@10% MBS @30% MBS @50%MBS @300lbf/136kg @540 lbf/245kg	OTHER COLOURS		NOTES	WWW.
	32 DB	CE	■■	●	■	■	■	30 35kN 6740lbf 7860lbf							teufelberger.com
	32 DB	CE	■■	●	■	■	■	44.2 52kN 9930lbf 11680lbf							teufelberger.com
	32 DB	CE	■■	●	■	■	■	53.5 63kN 12000lbf 14160lbf							teufelberger.com
	32 DB	CE	■■	●	●	■	■	65.4 66kN 14700lbf 17300lbf						designed primarily for whoopie slings	teufelberger.com
	32 DB	CE	■■	●	●	■	■	91kN 20500lbf						designed primarily for whoopie slings	teufelberger.com
■	12 HB		■■	-	■	■	■	30 34kN 6740lbf 7640lbf							teufelberger.com
■	12 HB		■■	-	■	■	■	39 44kN 8765lbf 9890lbf							teufelberger.com
■	12 HB		■■	-	■	■	■	59 66kN 13260lbf 14835lbf							teufelberger.com
■	12 HB		■■	-	■	■	■	81 91kN 18205lbf 20455lbf							teufelberger.com
■	24 DB		■■	-	■	■	■	32 37kN 7190lbf 8310lbf							teufelberger.com
■	24 DB		■■	-	■	■	■	47 42.2kN 10566lbf 9500lbf							teufelberger.com
■	24 DB		■■	-	■	■	■	55 65kN 12360lbf 14610lbf							teufelberger.com
■	24 DB		■■	-	■	■	■	74 87kN 16630lbf 19550lbf							teufelberger.com
□	24 DB		■■	-	■	■	■	43kN 9720lbf	48kN 10800lbf	9kN 2160lbf					yalecordage.com
□	24 DB		■■	-	■	■	■	53kN 11961lbf	59kN 13290lbf	11kN 2658lbf					yalecordage.com
□	24 DB		■■	-	■	■	■	68kN 15300lbf	75kN 17000lbf	15kN 3400lbf					yalecordage.com
□	24 DB		■■	-	■	■	■	83kN 18720lbf	92kN 20800lbf	18kN 4160lbf					yalecordage.com

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	MODEL & Ø VARIANT	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot Currency conversion only	Ø mm Inches"	Other Ø in series	WEIGHT g/m lb/100'	CONSTRUCTION MATERIALS: SHEATH CORE
	**Optimus** 10	YALE CORDAGE		£4.75 $6.00 $1.80 €5.55	10mm 5/16"	-	00g 4lb	Polyester -
	**Optimus** 13	YALE CORDAGE		£3.10 $3.90 $1.20 €3.60	13mm ½"	-	00g 9.2lb	Polyester -
	**Optimus** 16	YALE CORDAGE		£3.90 $4.90 $1.50 €4.55	16mm 5/8"	-	00g 11.7lb	Polyester -
	**Optimus** 19	YALE CORDAGE		£5.20 $6.55 $2.00 €6.05	19mm ¾"	-	00g 16lb	Polyester -
	**Optimus** 22	YALE CORDAGE		£4.75 $6.00 $1.80 €5.55	22mm ⅞"	-	00g 25lb	Polyester -
	**Polydyne** 12	YALE CORDAGE		£3.10 $3.90 $1.20 €3.60	12mm ½"	14 sizes 6-36mm ¼-1½"	113g 7.6lb	Polyester Nylon
	**Polydyne** 14	YALE CORDAGE		£4.15 $5.25 $1.60 €4.85	14mm 9/16"	14 sizes 6-36mm ¼-1½"	144g 9.7lb	Polyester Nylon
	**Polydyne** 16	YALE CORDAGE		£4.65 $5.90 $1.80 €5.45	16mm 5/8"	14 sizes 6-36mm ¼-1½"	198g 13.3lb	Polyester Nylon
	**Polydyne** 18	YALE CORDAGE		£5.95 $7.50 $2.30 €6.95	18mm ¾"	14 sizes 6-36mm ¼-1½"	250g 16.8lb	Polyester Nylon
	**Portland Braid** 13	YALE CORDAGE		£4.00 $4.90 $1.50 €4.60	13mm ½"	18 sizes 6-63mm ¼-2⅝"	118g 7.9lb	Polyester Polyester
	**Portland Braid** 14	YALE CORDAGE		£4.60 $5.65 $1.75 €5.30	14mm 9/16"	18 sizes 6-63mm ¼-2⅝"	149g 10lb	Polyester Polyester
	**Portland Braid** 16	YALE CORDAGE		£5.10 $6.45 $2.00 €5.95	16mm 5/8"	18 sizes 6-63mm ¼-2⅝"	194g 13lb	Polyester Polyester
	**Portland Braid** 18	YALE CORDAGE		£6.00 $7.60 $2.35 €7.00	19mm ¾"	18 sizes 6-63mm ¼-2⅝"	244g 16.4lb	Polyester Polyester
	**Yalex** 13	YALE CORDAGE		£2.60 $3.20 $1.00 €3.00	13mm ½"	17 sizes 6-50mm ¼-2"	125g 0lb	Polyester -
	**Yalex** 14	YALE CORDAGE		£2.95 $3.60 $1.10 €3.40	14mm 9/16"	17 sizes 6-50mm ¼-2"	153g 0lb	Polyester -
	**Yalex** 16	YALE CORDAGE		£3.40 $4.20 $1.30 €3.95	16mm 5/8"	17 sizes 6-50mm ¼-2"	173g 0lb	Polyester -
	**Yalex** 18	YALE CORDAGE		£4.75 $6.00 $1.80 €5.55	19mm ¾"	17 sizes 6-50mm ¼-2"	231g 0lb	Polyester -

ARBORIST RIGGING ROPES

ON			SUITABLE FOR				MINIMUM/AVERAGE BREAKING LOAD/STRENGTH			ELONGATION				
TREATED FIBRES BONDED SHEATH	SHEATH BRAID /PLAIT	LIFE SUPPORT STAND-ARDS (only for multi-role ropes)	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	CLIMBING	LOWERING	IMPACT LOWER	STATIC RIGGING	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	@10% MBS @30% MBS @50%MBS @300lbf/136kg @540 lbf/245kg	OTHER COLOURS		NOTES	WWW.
■	12 HB		■	●	■	-	■	24kN 5400lbf	26.7kN 6000lbf	5.3kN 1200lbf	1%				yalecordage.com
■	12 HB		■	-	■	-	■	54kN 12150lbf	60kN 13500lbf	12kN 2700lbf	1%				yalecordage.com
■	12 HB		■	-	■	-	■	00kN 17100lbf	00kN 19000lbf	17kN 3800lbf	1%				yalecordage.com
■	12 HB		■	-	■	-	■	100kN 22500lbf	111.2kN 25000lbf	22.2kN 5000lbf	1%				yalecordage.com
■	12 HB		■	-	■	-	■	144.1kN 32400lbf	160.1kN 36000lbf	32kN 7200lbf	1%				yalecordage.com
	24 DB		■■	-	■	■	-	44kN 9900lbf	49kN 11000lbf	9.8kN 2200lbf	3%				yalecordage.com
	24 DB		■■	-	■	■	-	60kN 13500lbf	66.7kN 15000lbf	13.3kN 3000lbf	3%				yalecordage.com
	24 DB		■■	-	■	■	-	75.7kN 17010lbf	84kN 18900lbf	17kN 3780lbf	3%				yalecordage.com
	24 DB		■■	-	■	■	-	104kN 23400lbf	115.7kN 26000lbf	23.1kN 5200lbf	3%				yalecordage.com
□	32 DB			-	■	-	■	44.5kN 10000lbf	40kN 9000lbf	8.9kN 2000lbf	1.1%				yalecordage.com
□	32 DB			-	■	-	■	55.4kN 12450lbf	49.8kN 11205lbf	11kN 2490lbf	1.1%				yalecordage.com
□	32 DB			-	■	-	■	67.5kN 15180lbf	60.8kN 13662lbf	13.5kN 3036lbf	1.1%				yalecordage.com
□	32 DB			-	■	-	■	84kN 18900lbf	75.7kN 17010lbf	16.8kN 3780lbf	1.1%				yalecordage.com
■	12 HB		■	-	■	-	■	61.5kN 13833lbf	68.4kN 15370lbf	13.7kN 3074lbf	1%				yalecordage.com
■	12 HB		■	-	■	-	■	75.5kN 16974lbf	83.4kN 18860lbf	16.8kN 3772lbf	1%				yalecordage.com
■	12 SB		■	-	■	-	■	83.7kN 18810lbf	93kN 20900lbf	18.6kN 4180lbf	1%				yalecordage.com
■	12 HB		■	-	■	-	■	108kN 24300lbf	120.1kN 27000lbf	24kN 5400lbf	1%				yalecordage.com

UPDATED Jun '25

ARBORIST climbing

PRUSIK/HITCH CORD

NB: PRICES BEING UPDATED Q3 '25





Probably the most misspelled word in climbing history the prusik is a hitch used for ascending, arresting and positioning. For many, the term 'Prusik' is just generic and these are now often referred to as Hitch cords because the hitch actually being used could be any number of variants:

- Klemheist
- Schwabisch
- Valdotrain Tresse
- Blakes Hitch
- Distal Hitch
- Michoacan
- Machard Tresse
- Tautline Hitch
- Bachman

They are often referred to as a 'knot' but are a hitch because they only function properly when loaded. With no weight applied they can be easily slid up or down a rope with holding power determined by the number of 'wraps' as well as the strength and relative diameters of the cord and main rope. It's highly likely that some type of grabbing hitch has been in use for centuries but since there is no firm evidence, its modern introduction is credited to mountaineer Karl Prusik in 1931. Although it was introduced as an ascending knot on climbing rope it has been used in arborism (has that term taken off yet?) from the get-go. In rescue it is most often used as a fall arrest hitch and for progress capture in pulley systems so tends to require at least three wraps rather than the traditional two wraps. Arborists too seem to have settled on three wraps as the norm but personal preference and applied or potential loadings will have a bearing on how many wraps you decide to use along with some trial and error to ensure that it actually works for your particular application.

Your climbing hitch is now more likely to have a sewn or spliced eye at each end than be a traditional circular loop. When buying your own lengths you either splice your eyes/loop or join the ends with a double or triple fisherman's. A number of cords are ONLY available as manufactured lengths rather than off the roll. Pre-made lengths can be anywhere between 13cm/5" to well over a metre/3ft. The average for an eye to/& eye length is around 75cm/30". There isn't actually a specific standard for arborist prusik cord even though it is considered to be PPE and should be CE marked in Europe so the closest appropriate standards are either for accessory cord (EN564 which has to be less than 10mm or it's classed as a rope), slings (EN566) or maybe even EN354 which is fall arrest lanyards that don't incorporate an energy absorbing element so are more accurately restraint/work positioning which could describe hitch cord. If they meet any of these as a cord or sewn/spliced item they are marked with a CE in our tables. Some manufacturers including Liros and Donaghys would prefer you opt for sewn items that meet EN566 (slings). 'Prusik cord' may infer its use as an ascending hitch like the Bluewater Dynamic Prusik below, but, not only are there plenty of other friction hitches in common use, there are a host of other applications including pulley systems, control lines and rigging. The traditional prusik hitch is created by wrapping a loop of cord through itself after passing (or wrapping) it around a standing rope. It is made using cord or small diameter rope that has been formed into an endless loop/sling or an eye-to-eye or double-ended sling. Some, including Jeff Jepson, also refer to these as 'double eye split tails'. It is generally preferable for hitch cord to be smaller in diameter than the rope onto which it is operating. However, in the arborist world, double eye or eye-to-eye or eye & eye slings are often used on like-sized ropes. In the old days it used to be like-sized laid rope on laid rope instead of the present day kernmantle or braided ropes and some still swear by this. Most eyes have moved towards stitched/sewn as the strongest option buy they are much bulkier than a spliced eye.

When considering diameters remember that for climbing, arborists will only ever be using their personal hitch with a single bodyweight whereas in rigging, emergency use and rescue use the prusik may be loaded far beyond a single bodyweight. Consequently, optimum load-holding is essential and this usually requires more wraps and optimum combinations of cord to main rope in terms of diameter and materials. These factors will vary from rope to rope and even with rope colours as dyes and coatings affect the load-holding ability of different combinations. Test your own combination of rope type and diameters before using in anger.

MATERIALS & CORD PROPERTIES

The cord used to create a hitch has evolved over the years into a specialist item and it's no longer acceptable to grab any old scrap from your chainsaw's discarded pull-cord to create a hitch. Tales of mountaineers and escaping pilots improvising with their boot laces will spur you on to continue what you were about to try because your cord is loads thicker than a bootlace but take it from me, some bone-fide hitch cord with 'prusik/hitch cord' written on the label will be much, much safer and easier to use. And don't think that all climber's accessory cord will do. They are often indistinguishable from dedicated prusik cord but with regular nylon sheath and core their

capacity to withstand the heat build up and wear associated with protracted rope-on rope contact will quickly show in your rope and in your wallet. There is no question that the strongest hitch cord is that which contains the specialist fibres and their derivatives - Aramid/Kevlar/Technora, Spectra/Dyneema and Vectran etc. Not only do they improve wear and heat resistance they also withstand chemical and acid contamination far, far better than standard polyester and in particular, nylon. Heat resistance for Technora (800F) and Vectran (620F) is much greater than Nylon (420F) and Polyester (480F) but it is a lot more expensive. Some cords in this list are over **£12./$16** a metre while the cheapest (non-heat resistant) cord is around **99p/$1.50 /m**. Back when you only saw Kevlar on sailing yachts we were often warned to avoid them because they were weak when knotted ie.. their strength reduced considerably when bent around a tight radius.

Be wary of holding onto your prusik cord too long - it takes more abuse than any other part of your safety equipment and you may be lucky to still have even 50% of its original strength when you finally retire it!

Nothing new there - all rope is significantly weaker when wrapped around a tight radius and we have always known that the knot is a particular weak point.

But there was talk of the fibres not being very resilient when it came to a regular bending cycle. Quite surprising when you consider how much stronger these fibres are in tensile than a regular nylon and polyester. Nevertheless, testing 20 years ago indicated that strength reduction in a knot using Aramid, Spectra and Vectran fibres was indeed greater than in equivalent nylon and we were all a bit wary. Luckily, things have progressed significantly and with all manufacturers now using cunning mixes of specialist fibres and testing to ensure that they are fit for purpose we're all a lot happier and more trusting. In fact, the bigger problem might now be that the specialist fibre cords are actually tougher than your main rope and it is therefore your main rope rather than your prusik that is more likely to fail in the event of a high load 'dynamic event'.



Right: *FTC TREE*'s *Phoenix* cord has now been replaced by the *Neon* and *Argon*

BRAKING

We have differentiated use into CLIMBING, BRAKING and HEAT RESISTANCE. All of the cords listed can be used for climbing/ascending in the usual way and of course the myriad of nylon climber accessory cords not listed here may also work adequately. However, as already mentioned, protracted professional use demands a more hardwearing construction and this is particularly the case with braking operations. Traditional braking actions that may have fallen to prusiks are now invariably handled by specialist hardware like Porta Wraps or descenders so the kind of dynamic load arrest that still sees prusiks being used in Rescue for secondary belaying actions are not widely used by arborists. But they are used and nothing stresses your cords and ropes like trying to slow or stop a moving heavy weight by gripping a rope with another rope. There is significant heat build up whenever rope rubs across rope such as occurs in regular prusiking/ascending and this will ALWAYS cause melting and degradation of surface rope fibres to some degree. For rock climbers or mountaineers using prusiks relatively infrequently and/or over short distances this heat build up and wear is not too much of a concern but for arborists spending all day sliding a prusik hitch up and down a rope, wear can be significant. This is part of the reason that in the pre-technical ropes era most prusiks were composed of the same 12mm (1/2") 3-strand or multiplait as the main rope. In contrast, tougher, modern prusiks are ideally around 60% the diameter of the rope they are braking on eg. 6mm cord on 9-10mm rope, 7mm cord on 10-10.5mm rope, 8mm cord on 11mm rope and 9mm cord on12mm or 1/2" rope.

NB: the EN standard for accessory cord only records whole figures - some cord may be 0.5mm larger than stated.

Braking also refers to progress capture in pulley systems. However, the loading in a pulley system is significantly less than in prusiks used on a rope connected directly to a load or a falling load in the case of belaying. Depending on where the prusik is located in a pulley system, most of the load is taken in the first two or three lengths of rope between the pulleys so that by the time the prusik kicks in to hold the load (while you reset your pulley system for another tug), the load is three, four or five times less. So this element of 'Braking' rarely, if ever loads the prusik more than regular climbing activities.

IN THE FOLLOWING TABLES:

COST is given per metre or US$ per foot in brackets and for manufactured eye to eye lengths (or sling if eye to eye is not an option). **A length in green has a length-specific weight also indicated in green.** Costs are usually the full retail price so you can often expect to pay less. To tie your own prusik loop you'll need double the ultimate length plus about 60cm/2ft for knots.

OFF-REEL: available in long lengths off the reel
1xEYE: Has one sewn or spliced eye on one end only
2xEYES: or EYEtoEYE or SPLIT-TAIL had an eye at each end of a single length of rope/cord.
SLING: a spliced or more usually sewn joint in an endless loop of rope.
BOUND LOOP: An endless sling with a sewn joint but with a movable collar or plastic sleeve that can constrict the eye size at one end to help keep it tight on its connector.
•**DIAMETER**: rope diameter conversions from inches to millimetres are a minefield with every company quoting something different because they are generally rounding down or rounding up. There are of course, precise conversion figures for each size (mm x 0.03937 = inches) but some of them don't

really roll off the tongue as you can see from the table below so if you notice a difference in our tables it might be where the manufacturer has converted differently and since we don't know whether they are working from inches or millimetres it's best to quote what they quote even though it means we may have both 9 and 10mm for instance quoted as being 3/8"- so long as you know that it isn't our poor mathematics. In reality 3/8" is closest to 9.5mm so it could quite reasonably be used for both 9 and 10mm ropes. Where only metric OR imperial is quoted you can check our handy conversion table.

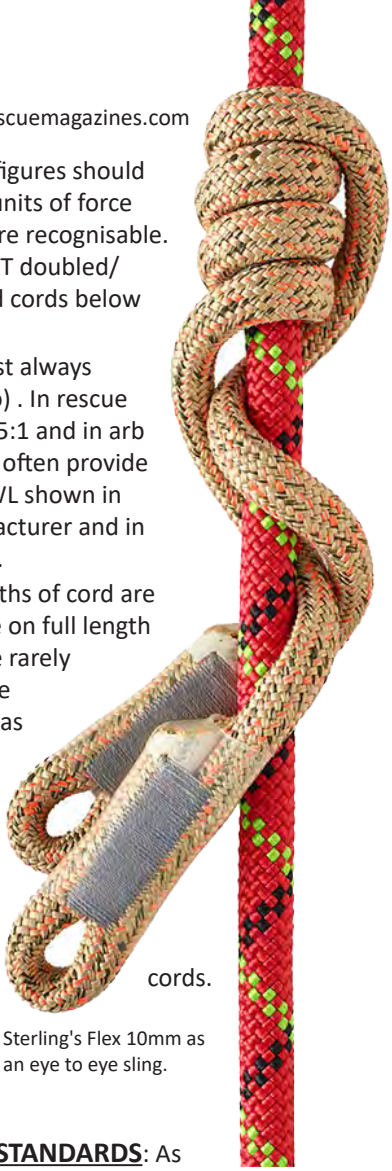
A solid circle ● in the '**SUITABLE FOR**' columns indicates that the cord is not totally suited to that role but it's OK. In the case of the HEAT-RESIST column you will only see the solid square for cord that is either predominantly sheathed in Technora or similar specialist fibre or there are such fibres mixed into not only the sheath but also the core. Any cord with a circle in this column will still be a very good bet for durability but those with a solid square will be the best in terms of heat-resistance. Don't forget though, this feature alone might not be your key requirement - you may be after a lighter more supple rope or simply less expensive as an initial outlay.

CONSTRUCTION: we show **KM** for Kernmantle, **DB** for Double Braid and **HB** for Hollow Braid or simply the thread count for some single braid cords. It used to be the case that Hollowbraid ropes were the weakest and least heat-resistant of cords but with the advent of Aramid/ Technora and Dyneema fibres there are now a number of hollowbraids that are as tough as wire rope! We have generally only shown cords that are actively marketed as arborist cord but there are a number of specialist cords used by firefighters and rescuers that cross the divide if you've got the spondooleys. You can already see from this list how many have incorporated fibres that were once the sole domain of fire-retardant ropes and these are not only heat-resistant they are extremely abrasion-resistant. However, they are virtually always a mixture of fibres because by themselves, some materials don't exhibit all of the necessary properties - for instance Kevlar has traditionally performed poorly in a knot and along with Dyneema couldn't be dyed so colours were introduced using an additional nylon or polyester thread. Where there are two fibres in the construction, The higher proportion fiber is listed first

MBL/ABL: As with all rope, some manufacturers only quote Average Breaking Load or ABL shown in burnt orange. We use the Minimum Breaking Load or MBL (or MBS where S =Strength) shown in black. These figures should more accurately be kN and lbf as units of force but the kg and lb equivalent is more recognisable. Figures are for tensile strength NOT doubled/ basket. NB: We have NOT included cords below 8kN/800kg/1800 lb in strength.

SWL or safe working load is almost always between4 & 15% (4:1 to 15:1 ratio) . In rescue it tends to be between 10:1 and 15:1 and in arb circles is often 7:1. Manufacturers often provide their own interpretation so the SWL shown in black is that quoted by the manufacturer and in burnt orange is the 7:1 equivalent.

ELONGATION for such short lengths of cord are not the consideration they may be on full length climbing and rigging ropes and are rarely quoted by manufacturers. We have therefore not included this unless as a special note such as Bluewater's dynamic rather than low-stretch cords.



Sterling's Flex 10mm as an eye to eye sling.

TRUE DIAMETER CONVERSIONS

mm	Precise inches	Closest Specific Fraction	Generic Fraction
5	0.1969"	13/64	3/16
6	0.2362"	15/64"	just under 1/4"
6.5	0.25"	1/4"	1/4"
7	0.2756"	9/32"	just over 1/4"
7.5	0.2952"	19/64"	even more than 1/4"
8	0.315"	5/16"	5/16"
9	0.3543"	23/64"	just under 3/8"
9.5	0.375"	3/8"	3/8"
10	0.3937"	25/64"	just over 3/8"
11	0.4331"	7/16"	7/16"
12	0.4724"	15/32	just under 1/2"
12.7	0.4999"	1/2"	1/2"
13	0.5118"	33/64"	just over 1/2"

STANDARDS: As usual there are several at play with the more specific European **CE** standards - EN 354 as a lanyard **EN 566** as a climbing sling and **EN 795 Type B** as portable anchor 'device'. Not yet a specific standard as prusik cord!? We've just left it as CE certified in black. CI,BERRY,ANSI and NFPA are all US 'standards' or compliance. **BERRY** is related to sourcing of all materials in the manufacture of the product and is most often associated with military products. **CI** is Cordage Institute and is a 'prestige' mark. **NFPA** is for the Fire-Rescue industry but is useful to the work sector because it demands high load capabilities. Quite expensive to attain though so unless the arb company also caters to rescue it may not be worth the cost. **ANSI** is the US industrial standard and more broadly applied than CE but in our sector indicates suitability to arborist work. **UKCA** is a UK-only pseudo standard as a separation from European CE and **EAC** pertains to eastern Europe and Russia. UIAA is the original rope-equipment prestige mark and relates to mountaineering equipment .

We have not included the many rigging prusiks not certified for life-support/climbing activities.



Introducing the new BlueWater Ropes

11mm Tech-G

CUT/ABRASION RESISTANT

The newest addition to BlueWater' ArmorTech rope series! Tech-G features a Technora® Aramid sheath with a core rope of polyester and nylon for the ultimate ease and predictability of handling. Tech-G remains round in mechanical devices even under extreme circumstances.



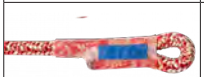
Dual Sheath for the ultimate in safety

UL Classified Life Safety Rope, NFPA 2500 (1983) - General Use

Minimum Breaking Strength:	8,992 lbf. (40.0 kN)
Certified Diameter:	11.0mm
Elongation @ 300 lbf.	4.3%
Elongation @ 600 lbf.	7.1%
Elongation @ 1000 lbf.	9.3%

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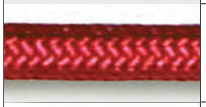
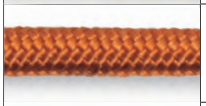
Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST COST per Metre /3.28ft US$ per Foot	STATE OFF-REEL 1x EYE 2xEYES SLING BOUND LOOP	EYE to EYE COSTS COST MANUFACTURED LENGTHS £$€ = Currency Conversion ONLY Specific Item Weight	SIZE Ø mm	WEIGHT WEIGHT g/m lb/100' ITEM	
	**Friction** 8	**ALLGEAR**		£5.15 $6.55 $2.00 €5.95	■■	66cm/26" £22 $28 €25 71cm/28" £23 $29 €26 76cm/30" £24 $30 €27 81cm/32" £25 $31 €28	8mm 5/16"	120g 8lb	Poly
	**Friction** 10	**ALLGEAR**		£5.35 $6.80 $2.10 €6.15	■■	66cm/26" £24 $30 €27 71cm/28" £25 $31 €28 76cm/30" £26 $32 €29 81cm/32" £27 $35 €30	10mm 25/64"	149g 10lb	Poly
	**TVP** 8	**ALLGEAR**		£6.50 $8.20 $2.50 €7.50	■■	66cm/26" £30 $38 €35 71cm/28" £31 $39 €36 81cm/32" £33 $42 €38	8mm 5/16"	89g 6.1lb	Tech
	**TVP** 9.5	**ALLGEAR**		£7.50 $9.50 $3.00 €8.50	■■	66cm/26" £31 $39 €36 81cm/32" £36 $45 €41	9.5mm 3/8"	116g 7.8lb	Tech
	**Prusik** 8	**ALLGEAR**		£6.50 $8.10 $2.50 €7.40	■	-	8mm 5/16"	42g 2.8lb	Tw
	**XS cord** 9 **XS9.1**	**ARBPRO**		£4.30 $7.90 $2.40 €8.25	■■	50cm/20" £26 $32 €29 60cm/24" £27 $33 €30 70cm/28" £28 $34 €31 120cm/47" £31 $39 €35	9.1mm 3/8"	65g 4.4lb	Pol
	**Volcano** 8 BV08	**BEAL**		- - - -	■	70cm/28" £35 $40 €34 90cm/35" £36 $42 €35	8mm 5/16"	70g 2.5oz	Poly
	**Volcano** 10 BV10	**BEAL**		- - - -	■	70cm/28" £37 $44 €36 90cm/35" £38 $46 €37	10mm 25/64"	n/a	Poly
	**Volcano** 12 BV12	**BEAL**		- - - -	■	70cm/28" £40 $48 €39 90cm/35" £42 $50 €41	12mm 1/2"	n/a	Poly
	**Hybrid** 7.5	**BLUEWATER**		£1.00 $4.00 $1.25 €1.15	■	-	7.5mm 5/16"	40g 2.7lb	Tech
	**VT** 7	**BLUEWATER**		- - - -	■	84cm/33" £27 $30 €29	7mm 9/32"	98g 3.5oz	
	**VT** 8	**BLUEWATER**		- - - -	■	84cm/33" £31 $30/34 €33	8mm 5/16"	n/a	
	**Dynamic Prusik** 6.5	**BLUEWATER**		£1.60 $2.00 $0.65 €1.80	■■	28cm/11" £11 $13 €12 51cm/20" £11 $14 €13 112cm/44" £13 $16 €15 173cm/68" £13 $17 €16	6.5mm 1/4"	26.3g 1oz	
	**Dynamic Prusik** 7	**BLUEWATER**		£1.80 $2.25 $0.70 €2.05	■■	46cm/18" £13 $16 €15 61cm/24" £13 $17 €16 173cm/68" £17 $21 €20	7mm 9/32"	35g 1.24oz	
	**Dynamic Prusik** 8	**BLUEWATER**		£1.95 $2.45 $0.75 €2.25	■■	46cm/18" £12 $15 €14 61cm/24" £15 $18 €17 76cm/30" £16 $20 €19	8mm 5/16"	39g 1.4oz	
	**Prusik** 6 293011/2	**CMC**		£2.05 $2.60 $0.80 €2.35	■	-	6mm 1/4"	27.9g 1.87lb	

COST: £$€ = Currency Conversion ONLY excludes eyes unless specified in NOTES. INCLUDES local taxes/VAT, Some are not so

ARBORIST HITCH CORD

CONSTRUCTION			STANDARDS	SUITABLE FOR			MINIMUM BREAKING LOAD		SWL/WLL					
MATERIALS: SHEATH CORE	SHEATH BRAID/ PLAIT	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	STANDARDS	CLIMBING	BRAKING	HEAT RESIST	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	OTHER COLOURS			NOTES	WWW.
ester/Technora Vectran	DB	■	ANSI	■	■	■	-	24kN 5400lbf	186kg 410lb					allgearinc.com
ester/Technora Vectran	DB	■	ANSI	■	■	■	-	28kN 6300lbf	186kg 410lb					allgearinc.com
nora/Vectran/ Polyester -	16	■ ■	ANSI	■	■	■	-	27.5kN 6200lbf	281kg 620lb					allgearinc.com
nora/Vectran/ Polyester -	12	■ ■	ANSI	■	■	■	-	44.48kN 10000lbf	454kg 1000lb					allgearinc.com
Polyester aron (Kevlar)	32 KM	■■	ANSI	■	■	●	24kN 5400lbf		245kg 540lb					allgearinc.com
yester/Kevlar Polyester	24 DB	■ ■■	ANSI	■	■	●	22kN 4945lbf		230kg 506lb				also 65, 75, 80 & 85cm	arbpro.it
yester/Aramid Nylon	KM	■	ANSI	■	■	●	18kN 4046lbf							bealplanet.com
yester/Aramid Nylon	KM	■	ANSI	■	■	●	22kN 4945lbf							bealplanet.com
yester/Aramid Nylon	KM	■	ANSI	■	■	●	18kN 4046lbf							bealplanet.com
nora/Polyester Nylon	32 KM	■	NFPA	■	■		19.7kN 4428lbf							bluewaterropes.com
Technora Polyester	24 DB	■ ■	ANSI	■	■	■	11.12kN 2500lbf							bluewaterropes.com
Technora Polyester	24 DB	■ ■	ANSI	■	■	■	19.5kN 4400lbf						black=$34	bluewaterropes.com
Nylon Nylon	32 KM	■	-	■	■		12.4 9.3kN 2800lbf 2100lbf						19.4% elongation @300lbs	bluewaterropes.com
Nylon Nylon	32 KM	■	-	■	■		17.7 10.4kN 4000lbf 2360lbf						17.9% elongation @300lbs	bluewaterropes.com
Nylon Nylon	32 KM	■	-	■	■		17.7 11.1kN 4000lbf 2500lbf						19.8% elongation @ 300lbs	bluewaterropes.com
Polyester Polyester	12	■	-	■	■		8kN 1798lbf							cmcpro.com

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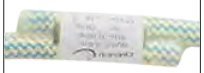
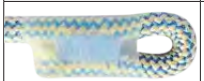
Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST COST per Metre /3.28ft US$ per Foot	STATE OFF-REEL 1x EYE 2xEYES SLING BOUND LOOP	EYE to EYE COSTS COST MANUFACTURED LENGTHS £$€ = Currency Conversion ONLY Specific Item Weight	SIZE Ø mm	WEIGHT WEIGHT g/m lb/100' ITEM	
	**Prusik 7** 293017/37	**CMC**		£2.40 $2.95 $0.90 €2.70	■	-	7mm 9/32"	75g 5lb	N
	**Prusik 8** 293018/38	**CMC**		£3.30 $2.70 $1.00 €2.70	■	-	8mm 5/16"	74g 5lb	
	**Prusik 9** 293039	**CMC**		£2.95 $3.75 $1.15 €3.40	■	-	9mm 3/8"	89g 6.1lb	
	**Aztek Prusik 6** 295001/2/12	**CMC**		- - - -	■	22.8cm/9" £00 $16 €00 106.6cm/42" £00 $24 €00	6mm 1/4"	55.8g 0oz	
	**Sewn/Bound Loop Prusik** 293083/86/383/386	**CMC**		- - - -	■■	46cm/18" £00 $21 €00 63.5cm/25" £00 $21 €00		48/62g 1.7/2.2oz	
	**Phoenix 8**	**COURANT**		£0 $4.85 $1.49 €0	■■	65cm/00" £00 $00 €00 70cm/00" £00 $00 €00 75cm/00" £00 $00 €00 80cm/00" £00 $00 €00 85cm/00" £00 $00 €00 90cm/00" £00 $00 €00	8mm 5/16"	0g 0lb	Poly
	**Phoenix Elipse 8** 1of2	**COURANT**		- - - -	■	40cm/00" £00 $00 €00 60cm/00" £00 $00 €00 80cm/00" £00 $00 €00	8mm 5/16"	0g 0lb	Poly
	**Phoenix Elipse 8** 2of2	**COURANT**		- - - -	■	120cm/00" £00 $00 €00 150cm/00" £00 $00 €00 200cm/00" £00 $00 €00	8mm 5/16"	0g 0lb	Poly
	**Phoenix 10**	**COURANT**		£0 $5.50 $1.70 €0	■■	65cm/00" £00 $00 €00 70cm/00" £00 $00 €00 75cm/00" £00 $00 €00 80cm/00" £00 $00 €00 85cm/00" £00 $00 €00 90cm/00" £00 $00 €00	10mm 25/64"	0g 0lb	Poly
	**Armadillo 10** CT2277	**COUSIN-TRESTEC**		£6.15 $7.80 $2.45 €7.05	■■	70cm/28" £00 $00 €00 90cm/35" £00 $00 €00	10mm 5/16"	59g 3.9lb	Poly
	**Armor-Prus Poly 8**	**DONAGHYS**		£0 $11.40 $3.50 €0	■■	70cm/28" £00 $00 €39 90cm/35" £00 $00 €41	8mm 5/16"	69g 4.6lb	Poly
	**Armor-Prus Poly 10**	**DONAGHYS**		£0 $0 $0 €0	■■	00cm/00" £00 $00 €00 00cm/00" £00 $00 €00	10mm 25/64"	78g 5.25lb	Poly
	**Armor-Prus Performance 8**	**DONAGHYS**		£0 $13.00 $4.00 €0	■■	00cm/00" £00 $00 €00 00cm/00" £00 $00 €00	8mm 5/16"	69g 4.6lb	Poly UH
	**Armor-Prus Performance 10**	**DONAGHYS**		£0 $16.40 $5.00 €0	■■	00cm/00" £00 $00 €00 00cm/00" £00 $00 €00	10mm 25/64"	78g 5.25lb	Poly UH
	**Tibor Loop 8** 8820804/5/602000	**EDELRID**		£0 $9.65 $2.95 €0	■■	40cm/00" £00 $00 €00 50cm/00" £00 $00 €00 60cm/00" £00 $00 €00	8mm 5/16"	0g 0lb	Poly Poly

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ARBORIST HITCH CORD

CONSTRUCTION			STANDARDS	SUITABLE FOR			MINIMUM BREAKING LOAD		SWL/WLL				
MATERIALS: SHEATH CORE	SHEATH BRAID/ PLAIT	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	STANDARDS	CLIMBING	BRAKING	HEAT RESIST	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	OTHER COLOURS	NOTES	WWW.
Nylon ylon/Vectran	16 KM	■	-	■	■	■	8kN 1798lbf		0kg 0lb			cmcpro.com
Polyester Nylon	32 KM	■	-	■	■		14kN 3147lbf		0kg 0lb			cmcpro.com
Polyester Nylon	32 KM	■	ANSI	■	■		15kN 3372lbf		0kg 0lb			cmcpro.com
Nylon Nylon	24 KM	■	CE	■	■		13kN 2922lbf		0kg 0lb		42"=blue only	cmcpro.com
		■		■	■		20kN 4496lbf		0kg 0lb		18"=Red 25"=Green	cmcpro.com
yester/Aramid Nylon	24 DB	■	CE	■	■	●	24kN 5280lbf		0kg 0lb			vertical-living.mycourant.com
yester/Aramid Nylon	24 DB	■	CE	■	■	●	24kN 5280lbf		0kg 0lb		Colour coded lengths 40cm-Black 60cm-Orange 80cm- Blue	vertical-living.mycourant.com
yester/Aramid Nylon	24 DB	■	CE	■	■	●	24kN 5280lbf		0kg 0lb		Colour coded lengths 120cm-Green 150cm-Red 200cm- Black	vertical-living.mycourant.com
yester/Aramid Nylon	16 DB	■	CE	■	■	●	28kN 6160lbf		0kg 0lb			vertical-living.mycourant.com
ester/Technora Nylon	32 DB	■	CE	■	■	●	22kN 4945lbf		0kg 0lb		0.76 knotability	bealplanet.com
ester/Technora Polyester	DB	■ ■	ANSI	■	■	●	23kN 0lbf		0kg 0lb			bealplanet.com
ester/Technora Polyester	DB	■ ■	?	■	■	●	32kN 0lbf		0kg 0lb			bluewaterropes.com
ester/Technora MwPE/Kevlar	DB	■ ■	ANSI	■	■	■	28kN 6160lbf		0kg 0lb			bluewaterropes.com
ester/Technora MwPE/Kevlar	DB	■ ■	?	■	■	■	43kN 0lbf		0kg 0lb			bluewaterropes.com
yester/Aramid yester/Aramid	16 KM	■	CE ANSI	■	■	■	18kN 4840lbf		0kg 0lb			edelrid.com

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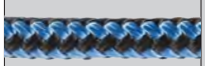
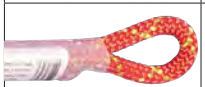
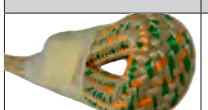
				COST	STATE	EYE to EYE COSTS	SIZE	WEIGHT	
Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot	OFF-REEL 1x EYE 2xEYES SLING BOUND LOOP	COST MANUFACTURED LENGTHS £$€ = Currency Conversion ONLY Specific Item Weight	Ø mm	WEIGHT g/m lb/100' ITEM	
	**Tibor 8 Open** 882070702000	**EDELRID**		£0 $9.65 $2.95 €0	■■	70cm/00" £00 $00 €00 75cm/00" £00 $00 €00 80cm/00" £00 $00 €00 85cm/00" £00 $00 €00 90cm/00" £00 $00 €00	8mm 5/16"	0g 0lb	Poly Poly
	**Tibor 10 Loop** 8820804/5/602000	**EDELRID**		- - - -	■	60cm/00" £00 $00 €00 70cm/00" £00 $00 €00	10mm 25/64"	0g 0lb	Poly Poly
	**Tibor 10 Open** 882070702000	**EDELRID**		- - - -	■	80cm/00" £00 $00 €00 90cm/00" £00 $00 €00	10mm 25/64"	0g 0lb	Poly Poly
	**Silva Prusik 9**	**ENGLISH BRAIDS**					9mm 3/8"	66.7g 0lb	
	**Prusik Pro 8**	**ENGLISH BRAIDS**					8mm 5/16"	44.8g 0lb	
	**Argon 8**	**FTC TREE**		£6.00 $8.00 $2.50 €6.85	■■	70cm/28" £26 $33 €29 90cm/35" £26 $33 €29	8mm 5/16"	47g 1.7oz	Tech
	**Néon 10**	**FTC TREE**		- - - -	■	70cm/28" £28 $36 €32 90cm/35" £28 $36 €32	10mm 25/64"	68g 2.4oz	Tech
	**Inco 10**	**GLEISTEIN**		- - - -	■	70cm/28" £00 $00 €00 80cm/31" £00 $00 €00 90cm/35" £00 $00 €00 100cm/39"£00 $00 €00	10mm 25/64"		Poly
	**Timber 8**	**LANEX (TENDON)**		£0 $3.90 $1.20 €0	■■	80cm/31" £00 $00 €00 100cm/39"£00 $00 €00 120cm/47"£00 $00 €00	8mm 5/16"	54.3g 3.65lb	Poly
	**Timber 10**	**LANEX (TENDON)**		£0 $5.00 $1.55 €0	■■		10mm 25/64"	73g	Poly
	**Safe Prusik 8/ Runner 8**	**LIROS**		£0 $0 $0 €0	■■	60cm/24" £16 $22 €20 75cm/30" £24 $32 €29 80cm/31" £00 $00 €00 90cm/35" £25 $33 €30 100cm/39"£00 $00 €00 110cm/43"£00 $00 €00 120cm/47"£00 $00 €00	8mm 5/16"		Pol
	**Safe Prusik XTR 9** 1of2	**LIROS**		£0 $0 $0 €0	■■	60cm/24" £16 $00 €00 70cm/28" £00 $00 €00 80cm/31" £00 $00 €00 90cm/35" £00 $00 €00 100cm/39"£00 $00 €00 110cm/43"£00 $00 €00 120cm/47"£00 $00 €00	9mm 3/8"	52g 3.5lb	Poly Dyn
	**Safe Prusik 9.1**	**LIROS**		£0 $0 $0 €0	■■	60cm/24" £00 $00 €00 75cm/30" £26 $34 €31 80cm/31" £00 $00 €00 90cm/35" £27 $36 €33 100cm/39"£00 $00 €00 110cm/43"£00 $00 €00 120cm/47"£00 $00 €00	9.1mm 3/8"		Pol
	**Safe Prusik 10**	**LIROS**		£0 $0 $0 €0	■■	60cm/24" £00 $00 €00 70cm/28" £00 $00 €00 80cm/31" £00 $00 €00 90cm/35" £00 $00 €00 100cm/39"£00 $00 €00 110cm/43"£00 $00 €00	10mm 25/64"		Pol

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ARBORIST HITCH CORD

CONSTRUCTION			STANDARDS	SUITABLE FOR			MINIMUM BREAKING LOAD		SWL/WLL					
MATERIALS: SHEATH CORE	SHEATH BRAID/ PLAIT	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	STANDARDS	CLIMBING	BRAKING	HEAT RESIST	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	OTHER COLOURS			NOTES	WWW.
yester/Aramid yester/Aramid	16 KM	■	CE ANSI	■	■	■	18kN 4840lbf		0kg 0lb					edelrid.com
yester/Aramid yester/Aramid	16 KM	■	CE ANSI	■	■	■	22kN 4945lbf		0kg 0lb					edelrid.com
yester/Aramid yester/Aramid	16 KM	■	CE ANSI	■	■	■	18kN 4840lbf		0kg 0lb					edelrid.com
														englishbraids.com
		■	CE				31.4kN							englishbraids.com
nnora/Polyster Nylon	32 KM	■	CE	■	■	●	18kN 4840lbf						75,80,85 & 110cm available soon. Phoenix Discontinued	ftc-tree.com
nnora/Polyster Nylon	16	■	CE	■	■	●	18kN 4840lbf						75,80,85 & 110cm available soon. Phoenix Discontinued	ftc-tree.com
ester/Technora Polyester	24	■	CE											gleistein.com
ester/Technora Polyester	KM	■	CE	■	■	●	22kN 4945lbf							mytendon.com
ester/Technora Polyester	KM	■	■	■	■	●								mytendon.com
yester/Aramid Polyester	20	■	CE	■	■	●	24kN 5390lbf							liros.com
yester/Aramid neema/Aramid	24	■	CE	■	■	■	23kN 5156lbf							liros.com
yester/Aramid Polyester	20	■	CE	■	■	●	28.6kN 6424lbf							liros.com
yester/Aramid Polyester	20	■	CE	■	■	●	22.2kN 4998lbf							liros.com

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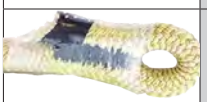
Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST COST per Metre /3.28ft US$ per Foot	STATE OFF-REEL 1x EYE 2xEYES SLING BOUND LOOP	EYE to EYE COSTS COST MANUFACTURED LENGTHS £$€ = Currency Conversion ONLY Specific Item Weight				SIZE ø mm	WEIGHT WEIGHT g/m lb/100' ITEM	N
	**Viper 8** KE1230/31 WKE010/1/2	**MARLOW ROPE**		- - -	■■	50cm/20" 60cm/24" 70cm/28"	€00 €00 €00	€00 €00 €00	€00 €00 €00	8mm 5/16"	56.9g 3.80lb	Poly Po
	**Viper II 8** KE1230/31 WKE250/1/2/3/4/5	**MARLOW ROPE**		- - -	■■	50cm/20" 60cm/24" 70cm/28" 80cm/31" 90cm/35" 100cm/39"	£00 £00 £00 £00 £00 £00	$00 $00 $00 $00 $00 $00	€00 €00 €00 €00 €00 €00	8mm 5/16"	49.9g 3.3lb	Poly
	**Boa 9** KE0352/4	**MARLOW ROPE**		£2.40 $3.20 $1.00 €2.90	■■	50cm/20" 60cm/24" 70cm/28"	€00 €00 €00	€00 €00 €00	€00 €00 €00	9mm 3/8"	66g 4.4lb	
	**Boa 9** Blue Ocean* KE0379/80	**MARLOW ROPE**		- - -	■■	50cm/20" 60cm/24" 70cm/28"	€00 €00 €00	€00 €00 €00	€00 €00 €00	9mm 3/8"	65.5g 4.4lb	Poly Poly
	**Wrap Star 8.1**	**NOTCH EQUIPMENT**		£10.55 $13.10 $4.00 €12.35	■■	70cm/28" 76cm/30" 81cm/32"	£22 £22 £22	$27 $27 $27	€26 €26 €26	9.1mm 3/8"	55.2g 3.7lb	Polye
	**Wrap Star 10.1**	**NOTCH EQUIPMENT**		£10.55 $13.10 $4.00 €12.35	■■	70cm/28" 76cm/30" 81cm/32"	£22 £22 £22	$27 $27 $27	€26 €26 €26	10.1mm 25/64"	60g 4lb	Polye
	**Bulldog 8**	**PELICAN ROPE**		- - - -	■	71cm/28" 76cm/30" 81cm/32"	£20 £22 £32	$24 $27 $39	€23 €26 €37	8mm 5/16"		Polye
	**Bulldog 10**	**PELICAN ROPE**		- - - -	■	71cm/28" 76cm/30" 81cm/32" 86cm/34"	£25 £26 £28 £29	$30 $32 $34 $35	€29 €31 €32 €33	10mm 25/64"		Polye
	**Technora Prusik 6**	**PELICAN ROPE**		- - -	■	-	-	-	-	6mm 1/4"	33.7g 2.2lb	
	**Technora Prusik 8.7**	**PELICAN ROPE**		- - -	■■	71cm/28" 76cm/30" 81cm/32"	£30 £33 £35	$37 $40 $43	€35 €38 €41	8.7mm 11/32"	56.5g 3.8lb	
	**Segment 8**	**PETZL**		- - -	■■					8mm 5/16"	43g 2.8lb	
	**Prusik 7** single or double stitch	**PMI**		£1.65 $2.00 $0.65 €1.90	■■	48cm/19" 66cm/26" 86cm/34" 173cm/68"	£12-20 £14-20 £15-20 £20	$15-25 $17-25 $18-25 $24-25	€14-24 €13-24 €17-24 €23-24	7mm 9/32"	58g 3.9lb	
	**Prusik 8** single or double stitch	**PMI**		£2.00 $2.45 $0.75 €2.35	■■	40cm/16" 50cm/20" 56cm/22" 66cm/26"	£13-20 £13-20 £13-20 £13-20	$16-25 $16-25 $16-25 $16-25	€15-24 €15-24 €15-24 €15-24	8mm 5/16"	39g 5.1 lb 75g 2.48oz	
	**Lumi-Line 7** CC070UG	**PMI**		£2.45 $3.00 $0.95 €2.85	■■	640cm/25'	£14	$17	€16	7mm 9/32"	29g 3.9lb 189g 6.7oz	
	**Eye & Eye VT 8**	**PMI**		- - -	■■	66cm/26" 71cm/28" 84cm/33"	£20 £20 £22	$24 $25 $27	€23 €24 €26	8mm 5/16"	?	Polye Poly
	**Tuff Cord 7**	**PMI**		£2.65 $3.30 $1.05 €3.15	■					7mm 9/32"	38g 10.86lb	

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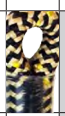
CONSTRUCTION			STANDARDS	SUITABLE FOR			MINIMUM BREAKING LOAD		SWL/WLL					
MATERIALS: SHEATH CORE	SHEATH BRAID/ PLAIT	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	STANDARDS	CLIMBING	BRAKING	HEAT RESIST	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	OTHER COLOURS			NOTES	WWW.
ester/Vectran lypropylene	24	■	CE UKCA	■	■	●		20.3N 4563lbf 27.2kN 6107lbf						marlowropes.com
ester/Vectran Vectran	24	■	CE UKCA	■	■	●		38.16kN 8578lbf 27.4kN 6159lbf						marlowropes.com
Polyester Polyester	16	■	CE UKCA	■	●			25.4kN 5710lbf 27.4kN 6159lbf						marlowropes.com
vester (rPET)* ester (rPET) *	16	■	CE UKCA	■	●			26kN 5842lbf 27.4kN 6159lbf					*Blue Ocean made from recycled polyester (rPET)	marlowropes.com
ester/Technora HMPE	24 DB	■		■	■	●	5560lbf						**See also ROPE LOGIC for 9.1mm version of Wrap Star**	notchequipment.com
ester/Technora HMPE	24 DB	■		■	■	●	6023lbf						same price as 8.1	notchequipment.com
ester/Technora Technora	KM	■		■	■	■	5400lbf							pelicanrope.com
ester/Technora Nylon	KM	■		■	■	●								pelicanrope.com
Technora Nylon				■	■	■	2900lbf							pelicanrope.com
Technora Nylon		■		■	■	■	6000lbf						Also available as Hip-Prusik Lanyard with integral hook /carabiner options	pelicanrope.com
Polyester Nylon	32 KM	■	CE NFPA UKCA	■	●		13.5kN							petzl.com
Nylon Nylon	KM	■	UIAA	■	●		10.7kN 2405lbf						Both versions are bound slings but Single stitch is more supple, easier to pack down	pmirope.com
Nylon Nylon	KM	■	UIAA	■	●		20kN 4496lbf						Both versions are bound slings but Single stitch is more supple, easier to pack down	pmirope.com
Nylon Nylon	KM		UIAA	■	●		10.7kN 2405lbf						Will glow in the dark for up to 10hrs after exposure to strong light source. 25' sewn cordelette	pmirope.com
ester/Technora /PP/Dyneema	32 KM	■		■	■	■		14.2kN 3192lbf						pmirope.com
Nylon Nylon	KM		CI	■	■		11kN 2473lbf						Suoer-tight sheath over lower stretch core 5.1%@300lb	pmirope.com

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Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST COST per Metre /3.28ft US$ per Foot	STATE OFF-REEL 1x EYE 2xEYES SLING BOUND LOOP	EYE to EYE COSTS COST MANUFACTURED LENGTHS £$€ = Currency Conversion ONLY Specific Item Weight	SIZE Ø mm	WEIGHT WEIGHT g/m lb/100' ITEM	
	ArmorPrus 8	ROPE LOGIC/ DONAGHYS		£10.20 $13.00 $4.00 €11.80	■■	60cm/24" £24 $30 €28 70cm/28" £24 $30 €28 76cm/30" £24 $30 €28 81cm/32" £24 $30 €28	8mm 5/16"	69g 4.6lb	Poly UH
	ArmorPrus 10	ROPE LOGIC/ DONAGHYS		£12.90 $16.40 $5.00 €14.85	■■	70cm/28" £26 $33 €30 76cm/30" £26 $33 €30 81cm/32" £26 $33 €30 90cm/35" £26 $33 €30	10mm 25/64"	78g 5.25lb	Poly UH
	EpiCORD 8	ROPE LOGIC/ TEUFELBERGER		-	■	60cm/24" £24 $31 €28 70cm/28" £25 $32 €29 76cm/30" £26 $33 €30 81cm/32" £27 $34 €31	9.3mm 3/8"	n/a	Poly Tech
	EpiCORD 10	ROPE LOGIC/ TEUFELBERGER		-	■	70cm/28" £27 $34 €31 76cm/30" £27 $34 €31 81cm/32" £27 $34 €31	10mm 25/64"	n/a	Poly Tech
	Ocean 8	ROPE LOGIC/ TEUFELBERGER		-	■	60cm/24" £23 $28 €26 70cm/28" £23 $28 €26 76cm/30" £23 $28 €26 81cm/32" £23 $28 €26	8mm 5/16"	n/a	Poly
	Ocean 10	ROPE LOGIC/ TEUFELBERGER		-	■■	60cm/24" £33 $42 €38 70cm/28" £33 $42 €38 76cm/30" £33 $42 €38 81cm/32" £33 $42 €38	10mm 25/64"	n/a	Poly
	Bee Line 8	ROPE LOGIC/ YALE		-	■	60cm/24" £19 $24 €22 66cm/26" £19 $24 €22 70cm/28" £19 $24 €22 76cm/30" £19 $24 €22 81cm/32" £19 $24 €22	8mm 5/16"	n/a	Tech
	Bee Line10	ROPE LOGIC/ YALE		-	■	76cm/30" £30 $38 €35	10mm 25/64"	n/a	Tech
	Veritas 8	ROPE LOGIC/ YALE		-	■	70cm/28" £22 $27 €25 76cm/30" £22 $27 €25 81cm/32" £22 $27 €25	8mm 5/16"	n/a	Tech
	Veritas 10	ROPE LOGIC/ YALE		-	■	70cm/28" £22 $27 €25 76cm/30" £22 $27 €25 81cm/32" £22 $27 €25	9mm 3/8"	n/a	Tech
	HRC 8	ROPE LOGIC/ TEUFELBERGER		-	■	60cm/24" £23 $28 €26 70cm/28" £23 $28 €26 76cm/30" £23 $28 €26 81cm/32" £23 $28 €26	8mm 5/16"	n/a	Tec
	Flex 8	ROPE LOGIC/ STERLING		-	■	70cm/28" £20 $25 €23 76cm/30" £20 $25 €23 81cm/32" £20 $25 €23	8mm 5/16"	n/a	Poly
	RIT 9	ROPE LOGIC/ STERLING		-	■	70cm/28" £20 $25 €23 76cm/30" £20 $25 €23 81cm/32" £20 $25 €23	9mm 3/8"	n/a	
	IceTail 8	ROPE LOGIC/ SAMSON		-	■	66cm/26" £19 $24 €22 70cm/28" £19 $24 €22 76cm/30" £19 $24 €22 86cm/34" £19 $24 €22	8mm 5/16"	n/a	Pol
	Wrap Star 9.1	ROPE LOGIC/ NOTCH		-	■	70cm/28" £23 $29 €27 76cm/30" £23 $29 €27 81cm/32" £23 $29 €27	9.1mm 3/8"	55.2g 3.7lb	Poly

COST: £$€ = Currency Conversion ONLY excludes eyes unless specified in NOTES. INCLUDES local taxes/VAT, Some are not so

ARBORIST HITCH CORD

CONSTRUCTION			STANDARDS	SUITABLE FOR			MINIMUM BREAKING LOAD		SWL/WLL					
MATERIALS: SHEATH CORE	SHEATH BRAID/ PLAIT	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	STANDARDS	CLIMBING	BRAKING	HEAT RESIST	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	OTHER COLOURS			NOTES	WWW.
yester/Technora MwPE/Kevlar	DB	■ ■	ANSI	■	■	■		28kN 6160lbf					Also available with pre-attached ISC ring	ropelogic.com
yester/Technora MwPE/Kevlar	DB	■ ■	ANSI	■	■	■		43kN 9400lbf						ropelogic.com
ester/Technora nora/Dyneema	32 KM	■	ANSI	■	■	■	24kN 5395lbf							ropelogic.com
ester/Technora nora/Dyneema	32 KM	■ ■	ANSI	■	■	■	40.8kN 9172lbf							ropelogic.com
yester/Aramid Polyester	32 KM	■ ■		■	■	●	18kn 4046lbf							ropelogic.com
yester/Aramid Polyester	32 KM	■ ■		■	■	●	25kn 5620lbf						Spliced version shown	ropelogic.com
nora/Polyester Vectran		■ ■		■	■	■	24kN 5400lbf	35.5kN 8000lbf	362kg 800lbf				also available as 'Old-School' version	ropelogic.com
nora/Polyester Vectran		■ ■		■	■	■		48.9kN 11000lbf	498kg 1100lbf					ropelogic.com
nora/Polyester Polyester		■ ■		■	■	●	24kN 5400lbf		2.4kN 540lbf				Uses recycled polyester fibres so colours vary	ropelogic.com
nora/Polyester Polyester		■ ■		■	■	●	23.2kN 5220lbf						spiced version shown. Uses recycled polyester fibres so colours vary	ropelogic.com
hnora/Nomex Vectran		■ ■		■	■	■	26.7kN 6000lbf	20kN 4500lbf					spliced version shown	ropelogic.com
ester/Technora Polyester		■		■	■	●	24.1kN 5418lbf							ropelogic.com
Twaron Polyester		■		■	■	●	31kN 6968lbf							ropelogic.com
yester/Aramid -		■		■	■	●		39.1kN 8500lbf	3.1kN 880lbf					ropelogic.com
ester/Technora HMPE	24 DB	■		■	■	●	24.4kN 5500lbf							ropelogic.com

ld by m/ft, price shown is a proportion of shortest length x10% & rounded up. SHEATH: DB=Double Braid, KM=KernMantle

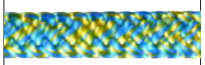
				COST	STATE	EYE to EYE COSTS	SIZE	WEIGHT	
Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot	OFF-REEL 1x EYE 2xEYES SLING BOUND LOOP	COST MANUFACTURED LENGTHS £$€ = Currency Conversion ONLY Specific Item Weight	Ø mm	WEIGHT g/m lb/100' ITEM	
	Prusik Cord 9	SAMSON		£2.35 $2.95 $0.90 €2.70	■	-	9mm ⅜"	61g 4.1lb	
	Bail Out 8	SAMSON		£10.75 $8.20 $2.50 €7.75	■■■		8mm 5/16"	0g 3lb	Ara Ara
	Bail Out XL 9	SAMSON		£8.50 $11.00 $3.50 €10.00	■		9mm ⅜"	0g 4.2lb	Ara Ara
	UltraTech 8	SAMSON		£0 $0 $0 €0	■■		8mm 5/16"	60g 4lb	Tech
	UltraTech 9	SAMSON		£5.40 $7.00 $2.20 €6.40	■■		9mm ⅜"	68g 4.6lb	Tech
	Ice Tail 8	SAMSON		£11.00 $13.25 $4.00 €12.00	■■	60cm/24" £24 $31 €29 70cm/28" £22 $28 €26 76cm/30" £22 $28 €26 81cm/32" £22 $28 €26	8mm 5/16"	46g 3.1lb	Pol
	Timber 8 W2608	SINGING ROCK		- - - -	■	75cm/30" £00 $00 €00 80cm/31" £00 $00 €00 85cm/33" £00 $00 €00 100cm/39" £00 $00 €00	8mm 5/16"	54.3g 3.65lb	Poly
	Prusik Sling 8 W2601R085	SINGING ROCK		- - - -	■	38cm/15" £11 $16 €13	8mm 5/16"	48g 1.7oz	Poly
	Timber 10 W2610	SINGING ROCK		- - - -	■	80cm/31" £00 $00 €00 85cm/33" £00 $00 €00 90cm/35" £00 $00 €00 100cm/39" £00 $00 €00	10mm 25/64"	73g	Poly
	Prusik Sling10 W2602Y085	SINGING ROCK		- - - -	■	38cm/15" £13 $19 €15	10mm 25/64"	70g 2.5oz	Poly
	Prusik Braid 6	SOUTHERN ROPES		£0 $0 $0 €0	■		6mm ¼"		
	Prusik Braid 7	SOUTHERN ROPES		£0 $0 $0 €0	■		7mm 9/32"		
	Prusik Braid 8	SOUTHERN ROPES		£0 $0 $0 €0	■		8mm 5/16"		

COST: £$€ = Currency Conversion ONLY excludes eyes unless specified in NOTES. INCLUDES local taxes/VAT, Some are not so

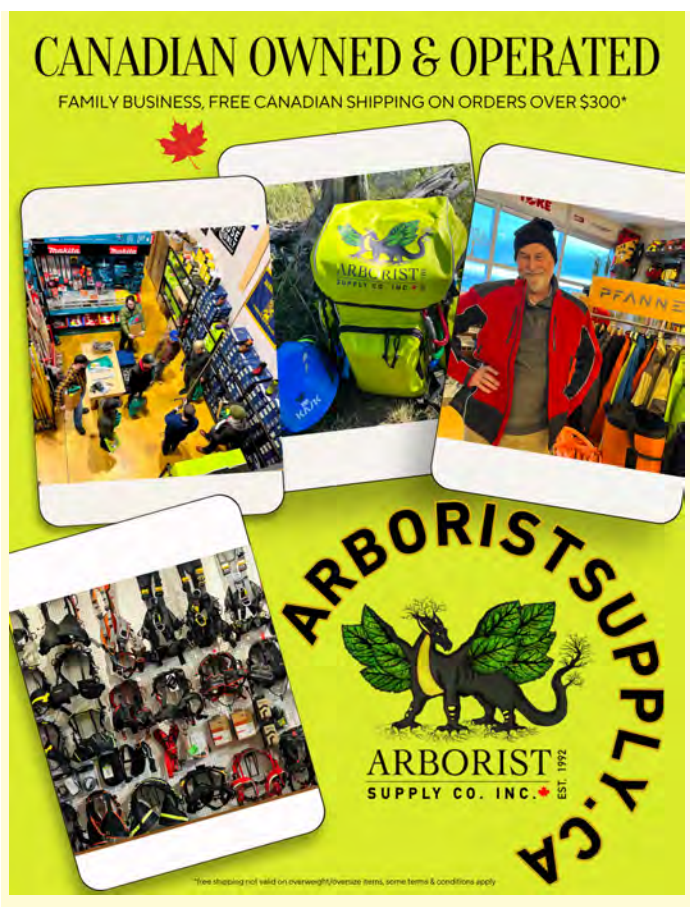
ARBORIST HITCH CORD

CONSTRUCTION			STANDARDS	SUITABLE FOR			MINIMUM BREAKING LOAD		SWL/WLL					
MATERIALS: SHEATH CORE	SHEATH BRAID/ PLAIT	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	STANDARDS	CLIMBING	BRAKING	HEAT RESIST	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	OTHER COLOURS			NOTES	WWW.
Polyester Polyester	DB	■		■	●			23kN 5000lbf	1.9kN 430lbf					samsonrope.com
mid (Technora) mid (Technora)	DB			■	■	■		19kN 4200lbf						samsonrope.com
mid (Technora) mid (Technora)	DB	■		■	■	■		24kN 5300lbf						samsonrope.com
Polyester nora (Aramid)	DB	■■		■	■	●		35kN 7800lbf						samsonrope.com
Polyester nora (Aramid)	DB	■■		■	■	●		45kN 10000lbf						samsonrope.com
yester/Aramid -	12 SB	■■■	ANSI	■	■	■		39.1kN 8500lbf	3.1kN 880lbf					samsonrope.com
ester/Technora Polyester	KM	■	CE	■	■	●	18kN 4046lbf							singingrock.com
ester/Technora Polyester	KM	■	CE	■	■	●	18kN 4046lbf							singingrock.com
ester/Technora Polyester	KM	■	CE	■	■	●	20kN 4496lbf							singingrock.com
ester/Technora Polyester	KM	■	CE	■	■	●	18kN 4046lbf							singingrock.com
Polyester Polyester	DB			■	■		7kN 1573lbf						*5mm also available*	southernropes.com
Polyester Polyester	DB			■	■		9.5kN 2137lbf						*5mm also available*	southernropes.com
Polyester Polyester	DB			■	■		12.5kN 2823lbf						*5mm also available*	southernropes.com

old by m/ft, price shown is a proportion of shortest length x10% & rounded up. SHEATH: DB=Double Braid, KM=KernMantle

Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST COST per Metre /3.28ft US$ per Foot	STATE OFF-REEL 1x EYE 2xEYES SLING BOUND LOOP	EYE to EYE COSTS COST MANUFACTURED LENGTHS £$€ = Currency Conversion ONLY Specific Item Weight	SIZE Ø mm	WEIGHT WEIGHT g/m lb/100' ITEM	
	Copious Atol 9	STEIN		£2.77 $3.77 $1.15 €3.30	■ ■ ■	50cm/20" £18 $28 €22 65cm/26" £18 $28 €22 70cm/28" £22 $31 €27 75cm/30" £22 $31 €27	9mm ⅜"		
	Copious Bee Line 10	STEIN		- - - -	■	75cm/30" £30 $33 €36 85cm/33" £30 $33 €36	10mm 25/64"		
	Copious A-Tec 9	STEIN		- - - -	■	65cm/26" £24 $33 €29 70cm/28" £24 $33 €29 75cm/30" £24 $33 €29 85cm/33" £24 $33 €29	9mm ⅜"		
	Copious P-Tec 9	STEIN		- - - -	■	75cm/30" £24 $33 €21 85cm/33" £24 $33 €21	9mm ⅜"		Poly
	HollowBlock2 6.8 HOLB	STERLING		£5.00 $6.50 $2.00 €6.00	■ ■	34cm/13.5" £20 $25 €23 48cm/19" £21 $26 €24	6.8mm 9/32"	1.8lb	
	RIT 8	STERLING		- - - -	■	60cm/24" £24 $31 €29 70cm/28" £22 $28 €22 76cm/30" £22 $28 €22 81cm/32" £22 $28 €22	8mm 5/16"		
	RIT 9	STERLING		£5.80 $7.50 $2.60 €6.90	■	70cm/28" £26 $34 €31 76cm/30" £26 $34 €31 81cm/32" £26 $34 €31 91cm/36" £26 $34 €31	9mm ⅜"	4.2lb	

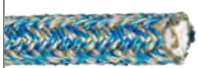




ARBORIST HITCH CORD

CONSTRUCTION			STANDARDS	SUITABLE FOR			MINIMUM BREAKING LOAD		SWL/WLL					
MATERIALS: SHEATH CORE	SHEATH BRAID/ PLAIT	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	STANDARDS	CLIMBING	BRAKING	HEAT RESIST	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	OTHER COLOURS			NOTES	WWW.
Polyester Polyester	16 SB	■■■	CE	■	■			22.5kN						steinworldwide.com
				■	■	■								steinworldwide.com
Polyester Polyester	24 DB	■	CE	■	■									steinworldwide.com
vester/Technora Polyester	24 DB	■	CE	■	■	●								steinworldwide.com
Twaron -	HB	■■		■	■	■	14 18.4kN 3147lbf 4136lb		1.4kN 314lbf				Off the reel as *RIT 900*	sterlingrope.com
Twaron Polyester	HB	■■		■	■	■								sterlingrope.com
Twaron Polyester	HB	■	ANSI	■	■	■	31kN 6968lbf						Off the reel as *RIT Response Search Rope*	sterlingrope.com



				COST	STATE	EYE to EYE COSTS	SIZE	WEIGHT	
Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST per Metre /3.28ft US$ per Foot	OFF-REEL 1x EYE 2xEYES SLING BOUND LOOP	COST MANUFACTURED LENGTHS £$€ = Currency Conversion ONLY Specific Item Weight	Ø mm	WEIGHT g/m lb/100' ITEM	
	Flex 8	STERLING		£5.50 $7.00 $2.60 €6.50	■■	70cm/28" £25 $32 €29 76cm/30" £25 $32 €29 81cm/32" £25 $32 €29	8mm 5/16"		Poly
	Flex 10	STERLING		- - - -	■	70cm/28" £26 $33 €30 76cm/30" £26 $33 €30 81cm/32" £26 $33 €30	8mm 5/16"		Poly
	HRC 8	TEUFELBERGER		- - - -	■■	60cm/24" £23 $28 €26 70cm/28" £23 $28 €26 76cm/30" £23 $28 €26 81cm/32" £23 $28 €26	8mm 5/16"	49.1g 3.3lb	Tec
	EPI 8	TEUFELBERGER		£9.30 $11.80 $3.60 €11.10	■■■	70cm/28" £22 $27 €25 76cm/30" £22 $27 €25 81cm/32" £22 $27 €25	8mm 5/16"	52.1g 3.5lb	Poly Tech
	EPI 9.3	TEUFELBERGER		£11.00 $14.00 $4.25 €13.00	■■■	70cm/28" £22 $27 €25 76cm/30" £22 $27 €25 81cm/32" £22 $27 €25	9.3mm 11/32"	59.5g 4lb	Poly Tech
	EPI 10	TEUFELBERGER		£11.50 $15.00 $4.40 €14.00	■■	70cm/28" £20 $25 €23 76cm/30" £20 $25 €23 81cm/32" £20 $25 €23	10mm 25/64"	62.5g 4.2lb	Poly Tech
	Ocean 8	TEUFELBERGER		£7.75 $5.70 $1.75 €5.20	■■	60cm/24" £28 - - 66cm/26" £19 $24 €22 70cm/28" £20 $25 €23 76cm/30" £20 $25 €23 81cm/32" - $25 €23 90cm/35" £28 - -	8mm 5/16"	50.1g 3.37lb	Poly
	Ocean 10	TEUFELBERGER		£4.80 $6.30 $1.95 €5.75	■■	66cm/26" £19 $24 €22 70cm/28" £19 $24 €22 76cm/30" £19 $24 €22 81cm/32" £19 $24 €22	10mm 25/64"	72.1g 4.75lb	Poly
	Sirius 8	TEUFELBERGER		£1.20 $1.60 $0.55 €1.50	■	50cm/20" £18 $23 €21 60cm/24" £18 $23 €21 70cm/28" £18 $23 €21	8mm 5/16"	50g 3.36lb	
	Sirius 10	TEUFELBERGER		£0 $0 $0 €0	■		10mm 25/64"	71g 4.77lb	
	TH1154	TREEHOG		£2.25 $3.00 $0.95 €2.70	■■	50cm/20" £18 $23 €21 60cm/24" £18 $23 €21 70cm/28" £18 $23 €21	10mm 25/64"	72g 4.7lb	Poly
	Bee line 10 Poly	YALE		£6.00 $7.90 $2.40 €7.20	■■		10mm 25/64"	72g 4.8lb	Tech
	Bee Line 8 Vectran	YALE		£6.50 $7.45 $2.26 €6.80	■■		8mm 5/16"	55g 3.7lb	Tech
	Bee Line 10 Vectran	YALE		£6.90 $8.50 $2.60 €7.75	■■		10mm 25/64"	71g 4.8lb	Tech
	Veritas 8	YALE		£5.00 $6.50 $2.00 €6.00	■■		8mm 5/16"		Tech
	Veritas 10	YALE		-	■	70cm/28" £24 $30 €28 76cm/30" £24 $30 €28 81cm/32" £24 $30 €28	10mm 25/64"		Tech

ARBORIST HITCH CORD

CONSTRUCTION			STANDARDS	SUITABLE FOR			MINIMUM BREAKING LOAD		SWL/WLL				NOTES	WWW.
MATERIALS: SHEATH CORE	SHEATH BRAID/ PLAIT	HAND SPLICEABLE PRE-SPLICED PRE-SEWN	STANDARDS	CLIMBING	BRAKING	HEAT RESIST	MBL Minimum Break Load Spliced Sewn	ABL Average Break Load Spliced Sewn	WLL Spliced Sewn *Average	OTHER COLOURS				
vester/Technora Polyester		■		■	■	■	24.1kN 5418lbf							sterlingrope.com
vester/Technora Polyester		■	ANSI	■	■	■	39kN 8767lbf	24.1kN 5418lbf						sterlingrope.com
hnora/Nomex Vectran	KM	■■	ANSI	■	■	■	26.7kN 6000lbf	20kN 4500lbf						teufelberger.com
vester/Technora nora/Dyneema	32 KM	■	ANSI	■	■	■	24kN 5395lbf							teufelberger.com
vester/Technora nora/Dyneema	32 KM	■■■	ANSI	■	■	■	32.5kN 7305lbf		3.42kN 770lbf				*Sherrill-34.2kN?	teufelberger.com
vester/Technora nora/Dyneema	32 KM	■■■	ANSI	■	■	■	40.8kN* 9170lbf		4.32kN 972lbf				*Sherrill-43kN?	teufelberger.com
yester/Aramid Polyester	32* KM	■	CE ANSI	■	■	●	22kN 4945lbf		2.2kN 500lbf				*Sherrill-24str?	teufelberger.com
yester/Aramid Polyester	32 KM	■	ANSI	■	■	●	32.9kN 7400lbf		3.2kN 7400lbf					teufelberger.com
Polyester Polyester	32 KM		CE ANSI	■	■		14.4kN 3235lbf							teufelberger.com
Polyester Polyester	32 KM		ANSI	■	■		24kN 5395lbf							teufelberger.com
yester/Aramid Polyester	32 KM	■	CE	■	■	●	32.9kN 7400lbf		170kg 374lb					treehog.co.uk
nora/Polyester Polyester		■■■		■	■	■		?kN ?lbf	?lbf				Black version cost more	yalecordage.com
nora/Polyester Vectran		■■■		■	■	■	24kN 5400lbf	35.5kN 8000lbf	362kg 800lbf				Black version cost more	yalecordage.com
nora/Polyester Vectran		■■■		■	■	■		48.9kN 11000lbf	498kg 1100lbf				Black version cost more	yalecordage.com
nora/Polyester Polyester	24 DB	■■■		■	■	●	24kN 5400lbf		2.4kN 540lbf				Uses random lengths of coloured 5KD polyester	yalecordage.com
nora/Polyester Polyester	24 DB	■■■		■	■	●							Uses random lengths of coloured 5KD polyester	yalecordage.com

UPDATED Jun '25

ARBORIST SIT HARNESSES

with Bridge and/or Sit Strap

Non-bridge SRT harnesses being added in Q4 2025

2024: Harnesses was the first GUIDE we had in ARBCLIMBER in issue 1, written in 2011, published in 2012 and in the intervening 12or 13 years it is amazing just how many things *haven't* changed. There have been many new harnesses and updates of course and some have dropped off the production schedules altogether although, even more amazingly the *Whillans T* from the 70s that we mentioned in the original intro is still being sold! So we thought it would be useful to run our original text and insert update text (in this burnt orange colour) where necessary. We don't have room for both sets of images but again the majority that we used to illustrate the introduction in issue 1 are harnesses that are still familiar today - the *Teufelberger Tree Motion, Petzl Sequoia, Buckingham Ergo, CAMP Access* and the widely rebadged *Protekt TH* models. You may need to keep reminding yourself that the text in black is over a decade old. Where a term or date has been updated from the original we have shown the changed word(s) in orange as well as all updated 2024 text. All images are of models available at the start of 2025.

***2011**: In the US, the type of harness we're looking at in this guide is still more commonly described as a 'saddle' with the term 'harness' often reserved for lightweight, full-body, fall-arrest harnesses. To avoid any misunderstandings we refer to all webbing, load-support harnesses, whether they be sit, full body or sit-strap harness as ....harnesses.*

Do you remember the original Whillans harness? If you do, you're probably from the UK and probably getting on a bit. Don Whillans, bless him, was a god in the mountaineering world and his Troll Whillans harness was, throughout the seventies and early eighties, the pinnacle of climbing harness design. As a mountaineer myself I felt that my trusty Whillans was just the thing for tree work since the Willans was already a renowned brand. Imagine my consternation on discovering that not only did I have the wrong Mr Whillans but that my version had a wicked, and I do mean wicked, central tie-in eye that came up between your legs [rather than having round leg-loops) and consequently had the very uncomfortable tendency to trap a testicle or two (if you were male) and didn't tie into the two attachment eyes emanating from the top of the waist belt. It was also not very forgiving if you were in an unusual position and in arbwork an 'unusual' position is the norm. So, far from the mountains where Don Whillans plied his trade another Willans, Major 'Dumbo' Willans without the 'h' developed, amongst many other things the Willans tree harness which had a sit (or butt) strap that coddled the buttocks like a leg loop never could, at least not in those days. The sit strap eyes then formed the central hardpoint and hey-presto your testicles could breathe again.



Images NOT to scale

Having glossed over my harness faux pas by insisting that I was trialling mountaineering gear for tree surgery I was mighty relieved when Troll produced their full body Manchester harness with sit strap which, though a messy pile of webbing, I actually could use for tree work without risking sterilisation. The venerable Willans is still made by the original Willans Harness Manufacturing company founded by 'Dumbo' in 1972 and now in its RW59 or T22 guise. But it now has lots of competition because by the mid nineties several climbing and industrial harness manufacturers had realised that they were missing a trick not catering for the tree industry and started producing arborist harnesses that combined the best features of the original Willans with the original Whillans. Well, OK maybe not the original Whillans but a modern mountaineering harness with all its gear attachments and padded, safely fitting leg-loops etc. Of course the Willans didn't have the field to itself because the standard for most arborists, especially in the US



ARBORIST SIT HARNESSES

New in 2024 - DMM's *Kinisi Max* now has simpler (and cheaper) *Pro* version without the cammed bridge - not much difference in weight.





was (and still is) the part- leather 'saddle' as exemplified by the Buckingham, Weaver and *Bashlin Classic* saddles and still made by these same companies for their traditional clientele (*Weaver* pin & hole belts shown on the right) alongside their more modern designs but there's no doubt that both Weaver and Buckingham continue to design 'out of the box' to cater specifically for the US market but all are moving more towards Euro-style technical leg-loop harnesses. The *Weaver Denali* for instance has water buffalo leather and an unusual double waist belt arrangement utilising 4 roll bar buckles in addition to the central *AustriAlpin Cobra* buckle. On the right are three of *Weaver*'s current product range, the insets are traditional leather saddles with pin & hole belt and leg loops while the main image is their latest model, the *Stratus*. This is particularly interesting because it not only follows the trend in North America towards technical leg-loop harnesses, this particular model is clearly a much lighter and trimmed down harness with minimalist webbing at the front but huge padded areas on the back of the legs and waist belt where they are needed when load is applied. It uses simplified lightweight rings for the 'pole-strap D-rings' and a minimalist multi-ring (4-hole rigging plate) as the bridge union.

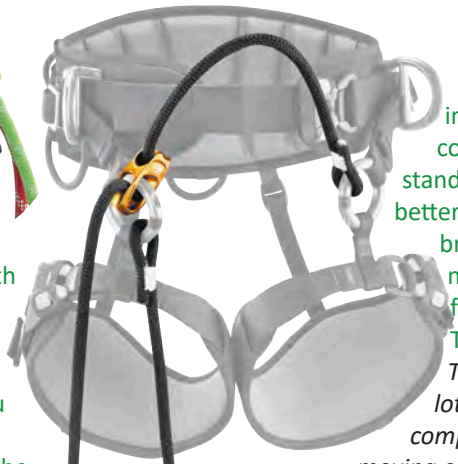
THE FLOATING (SUSPENSION) BRIDGE

With any single-central hardpoint harness, as soon as you manoeuvre off the vertical you are fighting both the pendulum effect of the rope and the restriction of the harness giving a forced rather than balletic, transitional action. In the mid to late nineties a veritable revolution in arborist harnesses saw the introduction of the floating bridge also known back then *as a glide or butterfly strap which connects two widely spaced eyes or rings. A round ring or D-ring can slide the width of this bridge allowing a huge amount of lateral rotation of the hips in continued comfort. If you compare the* three *Weaver* harnesses on the right you will notice that there are three very different tie-in options. The top harness



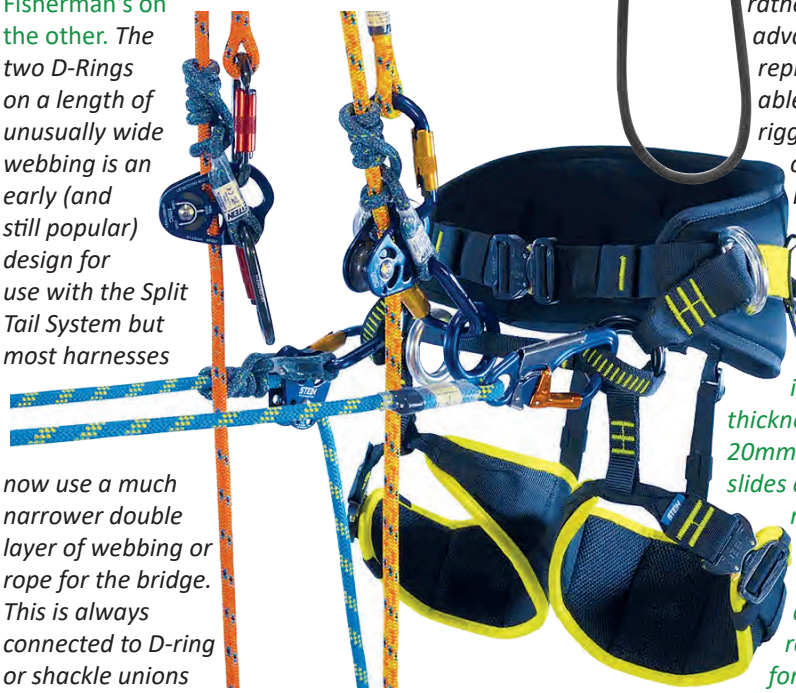
Back to some traditional designs sold in the US and the *Weaver* harness above integrates sit-strap D-rings into the leg loops while the version below has joined the two ends to create a single bridge and then slides the D-rings along its length. Contrast these with their latest designs the *Stratus* (top) and the *Denali*







is *Weaver's Stratus* with the now common rope bridge, in this case tied off with a double fisherman's knot. Most modern harnesses allow you to add a second bridge to give redundancy and/or quick access to a different length bridge. This is often tied into one end of the first bridge with a Fisherman's so that it looks like you have a quadruple Fisherman's on the same rope ends. (see inset pic above of *Edelrid's Tree Rex*). You can do the same on the other end or have the two ends separated so that you can more easily adjust the length on one or both. Some use a single rope length that is doubled using a girth hitch on one end and a Fisherman's on the other. *The two D-Rings on a length of unusually wide webbing is an early (and still popular) design for use with the Split Tail System but most harnesses now use a much narrower double layer of webbing or rope for the bridge. This is always connected to D-ring or shackle unions between both the leg loop risers and the waist belt* and *ensures that the meaty thighs as well as padded waist are each sharing some of the load some of the time.*



As you can probably guess, this design has very much taken a back-seat though there are still a number of US models and the venerable old UK *Willans* offering the D-rings on a sit-strap arrangement. Instead, virtually all modern harnesses have made the bridge union into an attachment eye for both the bridge or multiple bridges and additional SRT (SRS) , DRT (MRS) and lanyard attachments. The use of double lanyards in particular has become the norm since the first article making use of both side D's and bridge union eyes or D-rings as can be seen in the *Vega* harness above. The sit-strap style connection has been been sidelined because of its restrictive loading forcing the legs together instead of being able to stretch and reach as demanded by modern arb gymnastics but it's interesting to note that the prominent bridge union D-rings like *Petzl's SRT* version of the *Sequoia* enable the same use as that traditional sit-strap design.

A component we are seeing more and more is the openable ring which can be used as a sliding bridge ring but with increased cost over a standard ring is better used at the bridge union for multi-directional loading as distinct from the more traditional shackle. This is *Courant*'s version, *Odin.*

The bridge on all harnesses receives a lot of wear, much more than any other component since it has a continually moving connection and is a textile rather than hardware fixing. Some are user-replaceable as they are connected by shackles and some use a tied length of rope rather than webbing. This has the enormous advantage of being cheap and easy to replace and of being able to incorporate rigging plates, swivels or pulleys as a link between the bridge and your main line(s). Of course, these things will also work well enough on webbing which is often double thickness and around 20mm wide so hardware slides easily on it. Those using rope bridges offer you the option of simply replacing the bridge with your own and tying off with a fisherman's each end. Indeed since the first article it is common for the harness to come with a tied rope bridge or even two bridges offering different lengths for different systems and for double lanyard working. Many still offer a bespoke sewn end or special termination rope bridges like Petzl who also offer an optional adjsutable length bridge shown on the left. We have already mentioned the Edelrid ajustment option using a small aramid prusik.



Another interesting design is the Komet or Miller/Sperian Morpho. This harness (right) has placed the bridge shackles into a captive eye created by twisting the leg loop-to-waist belt riser into a kind of figure 8. This allows you to adjust the position of the bridge up towards the waist or down towards the legs. The Morpho is still available and this form of dual-usage bridge union has evolved to become the norm with more and more harnesses unifying the leg riser adjustment with a bridge length adjustment tied back to the waistbelt instead of the Morpho's ingenious but less adjustable twisted length of webbing. Its use of a shackle was also ahead of its time though present on the Polish Protekta models rebadged by a number of arb companies. This is still seen on some models and on others has evolved into 'multi-rings' which are large D-rings with a number of additional eyes for tying in your rope bridge(es). Still others are making more and more use of openable rings like Petzl , Edelrid and Courant and these can be bridge unions, bridge rings or even Side D's or side O's would be more accurate.

SIT-COMFORT

Whether you use a wide sit strap, (a bosun's chair/ batten seat) or you use individual leg loops in the climbing style is largely a matter of personal preference. Virtually all harnesses now offer both, but some leg loops are intended to be primarily loaded like the Ergovation and Tree MOTION harnesses and some are simply a safety back up like the Willans and the Petzl Swing variant of the Sequoia (Petzl now has just the two Sequoia models - regular and SRT versions but both can accommodate the rigid Petzl bosuns seat).



The latter is an interesting design that doesn't appear to compromise the size/ width of the leg-loop webbing while integrating the sit strap. The original sit-strap-only harnesses did, and do, have the distinct disadvantage of squeezing your legs together and limiting your movement dexterity in the canopy, they also had an alarming safety drawback in that you could fall through it if the sit strap is not properly in place and you don't have a Bluto-style barrel chest. A more common problem was that of falling out of it if you inverted. Leg loops therefore became the norm to improve safety but many arborists still insisted on the extra perceived comfort of the sit strap because it spreads the load across a wider area and tends to support higher up the thighs or even up to the buttocks. A trend adopted by Harkie and Komet and shown on the Dragon is an enhanced support leg loop which extends like a fore-sail further up the thigh and acts as a kind of 'bucket' -seat this was exemplified by New Tribe with their ProGear2 harness and then all of their later harnesses like the Onyx which is still available while stocks last but New Tribe ceased trading from January 2023 after owner and rec-climbing pioneer Sophia Sparks decided to take a well-earned retirement. The Courant Koala has elasticated loops in its leg loops that allows very simple insertion of a wooden bosun's chair, which can be fixed using webbing with buckles.

BELT HARDWARE

A high proportion of aerial tree work requires you to lean into the harness while restrained by the rope or pole strap rather than supported in it vertically and this latter function is common to all arb harnesses. Pole strap D-rings are mounted on each side of the waist band and allow connection of a pole strap or cinching rope that goes around the trunk and clips into each ring. Climbers can either lean against the pole strap/flip line using spikes for purchase or stand on a branch or platform.



Edelrid's TREE REX

and the new ***TREERAPTOR*** that came out in March 2024, have a number of interesting features that serve to illustrate modern trends in arb harnesses and in some cases has yet to make it onto other designs. The first aid or trauma kit, which, like so many now is stowed around the back and could be tricky to access in a dire emergency so Edelrid have installed a quick-release on the front - that small yellow toggle above the bridge union. This pulls the first aid kit off it's mounts but remains attached via a length of thin webbing and a retaining eye for that toggle. You can easily access the contents but to detach the kit altogether you simply rotate the toggle and push it through the eye.

On the bridge there is a prusik cord length adjuster connected through 2 of the 6 eyes on their comprehensive Bridge union plate. This is simply a shortener NOT a means to connect the bridge rope(s) which will ALWAYS be tie with a double Fishermen's on BOTH ends. If you were to use the prusik as as the attachment there is a chance your bridge ring could slide down to contact the prusik and not only allow your bridge to inadvertently increase in length but perhaps release altogether. Edelrid advise using the prusik adjuster on one bridge but have the ring around both rope bridges simultaneously to negate accidental release of the prusik. While we're on this prusik it has another fairly unique feature - it's a 6 mm Aramid so it's super-tough and can instead of a prusik be run as a backup bridge if you wanted to run with a single full size rope bridge. In the event you cut into your bridge this thin back-up offers you a good chance of survival but doesn't bulk up your front working area.

On the rear is a grey coloured, reinforced eye that is rated for fall-restraint NOT fall arrest - it's a means to limit your ability to fall over an edge if working at height although many are utilising that huge strength as their chainsaw attachment point! The TREEREX also has an embedded RFID chip, something that, as of 2023 was in around 10% of harnesses but will likely be in virtually all life-safety equipment by the end of 2024. The huge number of gear attachment points started by the Teufelberger Tree Motion range with its myriad of eyelets and carried on by the likes of Husqvarna has been modified on the TREEREX as small sewn web loops (eyes) capable of holding a small gear carabiner or to thread cord for a customized gear rack ala rock climbing harnesses of the 1980's. Finally the rope has a wear indicator thread in red to really show up when it's time to renew your bridge, however a white core to any coloured sheath would count as a wear indicator for rope bridges.



In fig 10 the use of a flip line enables this arborist to lean away from the cut while his mainline provides essential safety back up and further enhances his balance. Note that using an intermediate swivel allows plenty of rotation without applying torquing pressure which might destabilise your stance. Pole strap D-rings in themselves are not intended for full abseil/rappel loading but they do lend themselves to side-loaded work positioning despite manufacturers comments to the contrary. In rescue we have seen the advent of side-Ds that fold back flush to the waist-belt when not in use and in arb-work this is a particularly useful feature in avoiding snagging while climbing/descending or getting out of the way of a falling section. The most recent and prolific change to harness hardware is use of the Austrialpin style Cobra buckle - this is a push-clip design. It requires the top and bottom of the buckle to be depressed at the same time in order to release and is therefore a very safe design. Variations of this include Petzl's two stage release where a button is depressed for initial release then a hook arrangement has to be manually unhooked to fully separate. Since the first GUIDE, the Cobra style quick-release buckle has become the commonest means of securing the waist belt and leg loops. We have termed this design as Fast-Clip and they all require two buttons to be depressed to release. Many use the Cobra original (shown in our tables as AA Cobra) but there are now branded alternatives from the likes of ISC and Skylotec's Oktalock as well as many unbranded versions which we have termed 'Fast-Clip' .





CHEST HARNESSES

You may notice that none of the harnesses in the tables later in this article feature a chest harness or chest section. This transforms a sit harness into a full body harness capable of being used for SRT-style ascending with a Croll or frog-rig and as mentioned earlier, of meeting the EN361 safety standards because it makes the harness much safer in a vertical fall but importantly for arborists,not necessarily in a 'swinging' or pendulum fall. Nevertheless this perception of safety has caused full body harnesses to be mandatory in some organisations.

We have therefore included a row to show which models have some form of integration for a purpose-built chest harness or top section and this will, more often than not, correlate with EN361 even if the model hasn't gone through the test process necessary to obtain that standard. Two words of warning though, firstly some chest harnesses like the Courant and Petzl models shown here are dedicated to the fittings on their harness and not necessarily able to be used on other sit harnesses and secondly *'tool suspenders' are NOT necessarily load bearing though confusingly some are. They are* an American product *intended to support your sit harness if you have a narrow waist or to help transfer the equipment load from your harness to the shoulders. The fact that the vast majority of arborists insist on a sit-only harness is partly a question of taste and function since mobility is essential but full bodies can restrict movement and increase snag hazards. However, as with all roping activities at height there are times when a chest section can be a life-saver.... literally .... and it can certainly assist in difficult cuts or rigging locations that require prolonged inversion.*

MORE SIT COMFORT

Padding on the waist belt, sit strap and leg loops has become progressively more pronounced as our asses have evolved from leathery old saddle thumpers to soft, pudgy, lazy boy recliner occupants. but it's safe to say that the days of the unpadded leather belt have been waning for some considerable time and padding is like a Friday night beer, the more you have the more you want and you don't care how embarrassing it gets. To be fair, modern padding no longer entails stuffing your mum's pillow between you and the hard, rough belt or sit-strap. Now it is mostly all about thermo-moulding that puts the padding into neat little sections just where you want them without adding unduly to the bulk and weight and allowing the belt to bend without bunching up the padding. *That's not to say that you can't still find the odd sprung mattress sewn to the waist belt and that these aren't actually still more comfortable but it does now clearly differentiate a modern harness. Another feature that has increased in size, apart from some of your bellies, which is the lumbar section of the waist belt. This is the physical width of load bearing webbing, not necessarily padding. This gradual widening is not unique to the arb world, we first saw a radical change in the size of the back section of waist belts when CMC Rescue brought out their Instructor harnesses in the last century and many now emulate that. You only have to spend some quality time manoeuvring around a tree to realise that efficient padding and a wide support belt make life much more bearable on a protracted job. Teufelberger's TreeMOTION recognised this trend and is currently the widest lumbar section of all Arb Harnesses but you can be sure that others will follow.*

And indeed they did though many have stuck with strategic widening and padding rather than super-sizing the waist and leg loops. Singing Rock's Arbo Master in the ad opposite for instance has kept things simple but greatly widened the very rear of the waist and leg loops without carrying the width on all the way round. It became obvious very early on that when loaded the front parts of the waist and leg loops are pulled away from the body and don't need the same degree of comfort width or padding.

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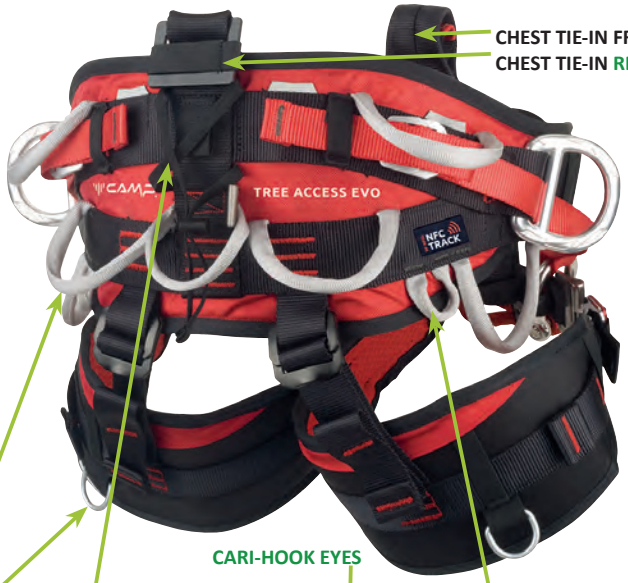
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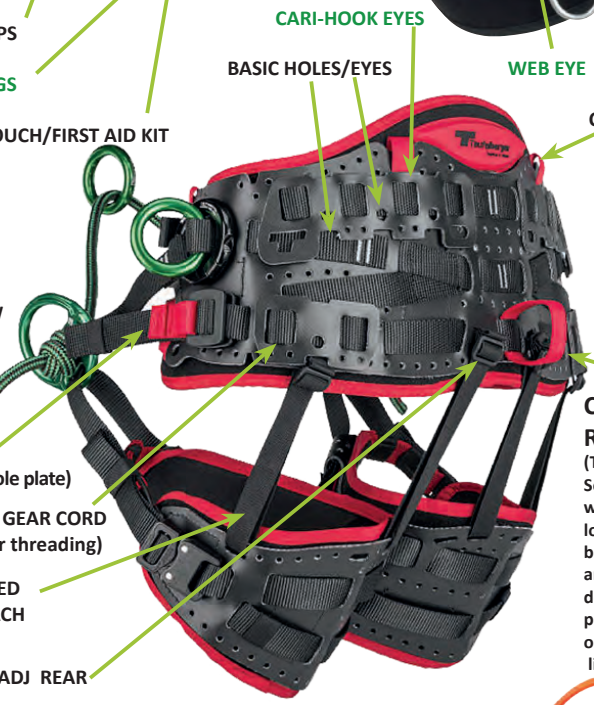


FEMALE HARNESSES

There are two harnesses in this guide that are specifically designed for women. What? the third decade of the 21st century and we're still only peripherally catering to 51% of the population? Is it pink? Nope, did you know that in Victorian times pink was for boys and blue was for girls? Apart from Bo Hammerstein, Female arborists don't need a variation based only on pink, they need better ergonomics. Recreational climbing and mountaineering have had 'female' designs since the 1980's but usually only in terms of sizing. Prolific harness designer Sophia Sparks of New Tribe, as a tree climber of many decades, also never saw the need for a gender--specific harness but this may well have been because loadings are primarily vertical. With a noticeable increase in female arborists in just the last 10 years the different needs of modern gymnastic arborsim has highlighted some ergonomic inefficiencies in the standard leg-loop designs. The *Simarghu Gemini* incorporates an additional set of pelvic straps that cross to the inside of the usual leg risers to alter the way load is applied. In the vertical plane it's still the leg loop taking the load but when you move into more horizontal (pole-strap) and diagonal (limb-walking) modes as well as rotational leaning, the pelvic strps give much better support between the lower abdomen and groin. Now defunct UK manufacturer *ChampionGear* also used these additional pelvic straps in their female version. Neither harness is/was available in pink. However, we have seen no new developments since the *Simarghu Gemini* harness.









GEAR STORAGE (see separate GUIDE)

This is a very personal thing as it is in all harness oriented trades; you've got all those carabiners, pulleys, slings, tethers, flip-lines, ascenders, prusiks, first aid kit, pruning saw, chainsaw etc. to think about. Many harnesses come with a good array of gear loops and the ability to add more yourself as well as attachment points for tool clips like the Petzl CariTool (EVO version right) which spawned a host of similar resin and alloy, carabiner-syle hooks. These include *Courant, CT, Edelrid* and *Protekt* but also more complex metal alloy wizardry from *Rock Exotica* (*TransPorter* shown below) & *C.A.M.P. CMI* now produce the Shembiner which is a simple but extremely robust and easy to use chainsaw hook while *Buckingham* went down the even simpler route of a resin clothes-peg style clip. *DMM* have embraced the concept of organising gear more than most with three sizes of their *Vault* carabiner as well as fold-flat clips and their *Parking Lot* adapter plate for fixing all kinds of hardware in the orientation to suit you . *Some harnesses like the TreeMotion, Husqvarna and DMM Kinisi, give you an infinite range of*



ARBORIST SIT HAR



connection and carrying options, as you might expect of just about the most arb-engineered harnesses on the market. Some like the Weaver Cougar, Edelrid TREEREX, DMM Kinisi, TreeMotion Pro & Essential (but NOT the original TreeMotion) have a rear belay loop in high vis red which is a fully load-bearing connection on which you could hang though it is more useful as a work restraint attachment but don't confuse a non-load bearing gear or suspender loop with this or there will be dire consequences and not for the first time.

There are basically 5 types of gear attachment:

- *the rock climbing harness style gear loop which can take a whole line of carabiners, hardware and software. This might be rigid and stand proud for easier clipping (as indicated in our tables) or hang more conventionally flush with the harness.*
- *the metal ring or eyelet which, in a larger size, may be used for connecting your chainsaw, but we now see a number of smaller rings positioned around the waist and even on the leg-loops for attaching gear. None of these are live-load-bearing and are always in standard silver whereas life-support rings are often (though not always anodized to avoid confusion.*
- *the integrated metal clip or hook often with a sprung gate and with a larger load capacity to carry the weight of a chainsaw - this is usually situated around the very back of the harness.*
- *the webbing, leather or plastic 'slot' which will hold a carabiner or Caritool which in turn gives you more space into which gear can be clipped. Most harnesses now cater for such Carritool hooks and these have the gate clearance and load capacity to be used for a chainsaw so many in our tables do not show an entry in the dedicated Chainsaw Eye/Hook row since the Carritools enable you to position your chainsaw exactly where you want it.*
- *Smaller web eyelets on some harnesses which are just large enough for a small carabiner or a cord. The eyelets restrict movement of a gear carabiner and are ideal for attaching a snap gate carabiner into which you can quickly clip pretty much anything. If you use a bent gate rather than straight gate carabiner you can also take advantage of the original rock-climbing purpose which is rapid location and 'capture' of whatever you need to clip but conversely, beware of trailing your rope across the gate. Individual web eyes are also good for direct attachment of accessory bags like throwlines and first aid kits or for attaching cord and making more gear loops.*

The Edge harness from Sherrill Tree and the Edelrid Tree Magic (initially replaced by the Tree Core and now by the TREEREX) maximise use of wide gear loops making pretty much the entire width of the waist belt a clippable area so there should never be any excuse for fumbling. However, bear in mind that if you overload a gear loop with too many carabiners full of ascenders, descenders, pulleys flip-lines etc. it can become difficult to locate let alone unclip your required item - good management is key....now go and tidy your bedroom.

Some folk prefer to climb 'clean' with little or no attachments other than an integral metal clip for the chainsaw while others are ready for an assault on the North face of the Eiger.

The TreeMotion sparked a move towards both customisable gear attachments and LOADS of gear attachments. In Teufelberger's case they were sensible enough to realise that having such a complex range of options needed improved organisation so they colour-coded their integral attachments points as GREEN for primary life-support (bridge, side-D's and Bridge Union Rings) and red for secondary life support or more accurately, restraint and chest harness attachment points. Nevertheless, many harnesses using black as their base material on the waist belt would benefit from better contrast colouring even allowing for the fact that you are meant to customise your own attachment points using the various holes and eyes BEFORE you start climbing. The ArbPro Tree Access3 above and its 'parent' the CAMP Tree Access Evo have used contrast colours on their gear loops and webbing eyes that greatly clarify where to clip - compare these to the Sherrill Tree Edge and the Notch Sentinel. Both are predominantly black with black fittings.

STANDARDS

*Leg loops are also the only way your harness will meet certain relevant safety standards like Europe's EN (European Norms) and the US's ANSI. In fact the numerically challenging **ANSI A10.14-1991** quoted here by some manufacturers was withdrawn a few years ago in favour of a 2004 version but that too is a far more generic standard relating to a number of components in addition to the harness. But I think you'll find **ANSI Z359.0** and it's numerous offspring are starting to cover things. **EN813** on the other hand is quite specific in its requirement for a sit harness to maintain a 100kg mass safely upright after a 2m free fall on a 1m lanyard and for its load-bearing components to withstand a 15kN pulling force for 3 minutes, fairly easy for many it has to be said. That's if a manufacturer is inclined enough towards the European market to go through the expensive procedures required to acquire EN certification. Virtually all of the models in this guide could meet both **EN358** and **EN813** even if they don't say so. 'Standards' is actually a whole 'nuther article but since we're on the subject you won't see **EN361** quoted in the following tables because that's a fall-arrest standard requiring the addition of a chest harness to pass the drop test. Many of these harnesses have the option of a chest harness which is vital for some SRT systems and would thus meet the requirements of EN361.*

***EN358** refers to the ability of the side D-rings to act in a work positioning role and to also not impart more than 15kN of force to your dainty waist after a 1m fall -always assuming that, even after all those doughnuts you still only weigh 100kg or 220lbs. **ASTM F887** is for personal climbing equipment and is a useful and detailed standard which includes a section specific to harnesses rather than being generic. **EAC** is for eastern Europe.*

CHINESE HARNESSES

We have not included any because we cannot yet verify the certification. They often mention CE certification but there's nothing to stop them saying this when it isn't true - it is up to the importer. So, none are included here despite the fact that one or two appear to have decent components and stitching. Expect to see properly certified, rebadged models soon.

IN THE FOLLOWING TABLES:

....we have shown most harnesses from the front and the back. Prices are for the specific version listed and normally shown in the currency of the country of origin. Some models, have so many variants that we would need an entire Market Guide just to list their range. Similarly, so many older designs are still popular that they remain in production but we have only shown key, generally padded, legloop harnesses.

Prices and weight etc, are for the base model with standard features NOT options. Any feature that is an option is shown as an outline squares ☐ ☐

ORIGIN: The manufacturer's country but not always where it's made in which case, if we know, there is an inset flag.

COST: approximate, rounded up and inclusive of local taxes which are generally 20% in Europe. Costs are the Recommended Retail Price and can often be found for less at your stockist. **Prices in orange are a currency conversion only (as of Feb 2025) not necessarily the selling price because they do not include import costs and duty.**

CHEST HARNESS: None of these harnesses includes a chest harness. If the same company supplies a chest harness it will be shown as ☐ NB: suspenders NOT for life-support but will stop you coming out when inverted . **ATTACH PTS(Points):** Not always necessary. Integrated attachment points for a chest harness- or suspenders, usually rings or sewn loops on the top edge which can also be used as gear attachment points .

BUCKLES: The specific type of buckle used for the waist and leg-loops. Many use the quick attach/release AustriAlpin Cobra as the gold standard but if they are a similar principle but unbranded we have called them 'Fast-Clip'. ISC has its own version and Petzl has a bespoke hook and push-fit combination buckle. Some US harnesses use a traditional pin & hole waist belt but these are not directly attached to .

BRIDGE TYPE: The number and type of bridge which will be rope or webbing or a double layer of webbing - some are stitched into place but most are **REPLACEABLE** referring to the ability to self-replace once worn.

BRIDGE LENGTHS If a bridge is tied rope it will be **ADJUSTABLE** but some that have a sewn termination like the Petzl or ArbPro model opposite, can also be self-replaced so there may still be a green square in the above row. Webbing is always sewn so not adjustable for length but may still be replaceable.

CONNECTION TO BRIDGE: The attachment method from your bridge to your climbing/descending system as supplied with the harness. May be an optional purchase from the same manufacturer (shown as an outline square) or you can simply attach direct with a carabiner, but most are a ring(s)

BRIDGE UNION: is the means by which the bridge is secured to the harness - this may be a rigging plate, shackle or ring offering additional bridge attachment points or it may be sewn in and fixed though that is unusual these days. LENGTH ADJ: refers to the ability to alter the distance between the bridge union and the sides of the harness, in essence , to tighten the bridge.

SRT D-RING EYE REAR BELAY: a centrally mounted D-ring or WEB EYE that is fully load-bearing and often used for SRT/SRS or as an ascender rig attachment point. Occasionally there may also be a load-bearing belay loop or sewn eye on the **REAR** but in arborist harnesses these are too easily confused chainsaw eyes that are not load bearing in terms of human weight..

POLE STRAP D's: large, load-bearing D-rings mounted on each side for attachment of pole-straps/flip-lines or lanyards. Many will **FOLD FLAT** to the waist to stop being snagged while working but this can also hinder clipping in.

GEAR LOOPS: are wide, integral attachment loops, often stiffened and together with **SEWN EYES** for attaching gear carabiners are generallly rated to around 5kg each -

CUSTOM GEAR CORD EYES: are usually smaller than the sewn eyes mentioned above but can be one and the same if sufficiently spaced. They may be sewn loops or punched eyes capable of around 1-5kg loading on each eye.

BASIC HOLES/EYES: smaller attachment points for small accessory carabiners, may simply be a hole or t-shape punched in the waist belt. **RINGS** may be metal or reinforced plastic(resin) usually rated from 1 to 10kg but those intended as chainsaw lanyard eyes may be stronger.

CARI-HOOK CARI-HOOK EYES: We've modified the Petzl trade name for a specialist tool carrying 'carabiner' (Cari-Tool) simply because its a good description and the only way we could get to fit! This could equally be called a Carry Hook or Tool Carabiner but it does refer specifically to the carabiner style hooks which can also be used for chainsaw attachment. **CARI-HOOK EYE** refers to slots or pouches in the webbing into which a Cari-Tool type hook can be slotted and are a strong option most often capable of taking a chainsaw.

CHAINSAW EYE/RING HOOK: A dedicated higher load capacity webbing eye or ring or a hook typically able to hold 15-30kg/33-66lb but the CariTool style hooks take the place of a dedicated chainsaw ring or hook on most modern designs and many standard rings or sewn eyes can also do the job as they're often used as a chainsaw lanyard attachment point but verify the load capacity first.

WAIST PADDING SWAMI: All of these harnesses are padded so they will all have a black square but then a description which is basically mesh lined, single sheet foam or thermo-form foam which looks segmented and ensures the harness padding doesn't bunch up and stays firm. SWAMI is a second inner belt sometimes elasticated, that holds your harness on while you adjust the main load bearing waist buckles.

ATTACH POUCH/FIRST AID: Adjustable strapping, eyes or elasticated cord, normally on the centre-top of the rear waist belt, to attach a first aid pouch (or anything other equipment you want to hand but a first aid kit is essential).

WAIST BELTPADDING HEIGHT: The width of the waist belt webbing - usually less than 2"/50mm. The max height of the padding is shown in orange and is not the same all the way round - most padding tapers from the back of the waist to quite low at the front.

WAIST ADJUST: The method of adjustment of the waist belt based on the position of the buckles. Some are centrally mounted, most are on one side and you pull the end of the webbing then stow the loose end, some have a buckle on each side and you pull both sides simultaneously (or alternately as you wiggle your hips).

LEGS LOOP HEIGHT PADDING: As above except on the leg loops

ELASTICATED REAR RISER: There is a ■ if the straps connecting the back of the leg loops to the waist section are elasticated rather than normal webbing. Also refer to ....

LEG RISER ADJ REAR: The Rear leg loop straps on the back of the harness can be adjusted for length and may also be elasticated (see above). **FRONT** The Leg riser at the front connecting the leg loops to the bridge union or direct to the waist belt can be adjusted for length -many will have bridge adjustment which secondarily affects the leg loop position but not a separate leg loop adjustment.

RFID CHIP: The harness has an embedded chip which can be read by a reader to provide inspection or inventory details.

WEAR INDICATE: Primarily Pertaining to the bridge and indicates a warning colour showing through when the bridge becomes worn and needs replacement. In reality, most rope bridges have a white core and coloured sheath so will ALL have wear indication!

FIRST AID TRAUMAKIT: Indicates that this manufacturer supplies (or can supply as an option ☐ ☐) a first aid kit and/or a trauma kit - a trauma kit includes a CAT (Combat Application Tourniquet) and Cellox or similar clot-forming dressing/sachet.

SIT STRAP BOSUNS CHAIR (Batten seat): A sit strap is a continuous fabric strip that replaces or augments the leg loops. It can be integral to leg loop or run around to the front of the harnesses and be connected into via rings/D-rings. a Bosun's Chair is similarly a support eat but is stiffened/ reinforced or may simply be a covered plank of wood. These also connect to the load support elements at the front of the harness and may have their own additional accessory loops/ hooks/pouches. None in this list are integral, any shown are options-only.

OTHER SRT MODELS: This company has non-bridge models that will be noted in this row in Q1 2025

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N/A: info Not Given
STANDARDS: EN358 = ■
EN813= ■ ANSI Z133= ■
ASTMF887= ■ CANADA= ■
AUS/NZ = ■ EAC = ■

	MANUFACTURER	
	MODEL VARIANT	
	ORIGIN	
	COST inc VAT/tax conv-only	
	WEIGHT	
	MAX LOAD	
	WAIST SIZES	2
	LEG SIZES	3
	STANDARDS	
LIFE SUPPORT	CHEST HARNESS ATTACH PTS	
LIFE SUPPORT	BUCKLES WAIST/LEGS	
LIFE SUPPORT	BRIDGE TYPE REPLACEABLE	
LIFE SUPPORT	BRIDGE LENGTHS ADJUSTABLE	
LIFE SUPPORT	CONNECTION to BRIDGE	
LIFE SUPPORT	BRIDGE UNION LENGTH ADJ	
LIFE SUPPORT	SRT D-RING/EYE REAR BELAY	
LIFE SUPPORT	POLE STRAP D's FOLD FLAT	
GEAR ATTACH	GEAR LOOPS SEWN EYES	
GEAR ATTACH	CUSTOM GEAR CORD EYES	
GEAR ATTACH	BASIC HOLES/EYES RINGS	
GEAR ATTACH	CARI-HOOK CARI-HOOK EYES	
GEAR ATTACH	CHAINSAW EYE/RINGHOOK	
GEAR ATTACH	ATTACH POUCH/FIRST AID	
WAIST	WAIST PADDING SWAMI	
WAIST	WAIST BELT WEBBING PADDING	
WAIST	WAIST ADJUST	
LEG	LEG LOOP HEIGHT PADDING	
LEG	ELASTICATED REAR LEG RISER	
LEG	LEG RISER ADJ REAR FRONT	
EXTRAS	RFID CHIP WEAR INDICATE	
EXTRAS	FIRST AID TRAUMA KIT	
EXTRAS	SIT STRAP BOSUNS CHAIR	
EXTRAS	OTHER SRT MODELS	
	NOTES	*2
	WEBSITE	

ARBORIST SIT HARNESSES












ARB PRO	BASHLIN	BASHLIN	BUCKINGHAM	BUCKINGHAM
Tree Access 3.0	**639 BBL 640 BBL**	**639 BBS 640 BBS**	**Agility** 1480	**BuckTree Alto Verde**
£295 $356 €341	£323 $360 $402 €385	£323 $360 $402 €385	£685-760 $867-962 €830-920	£525-690 $662-870 €634-832
1.96-2.03kg/4.3-5.5lb	2.3-2.6kg/5.15-5.75lb	2.4-2.7kg/5.2-5.9lb	2.5kg/5.5lb	2.3kg/5lb
140kg/310lb	159kg / 350lb	159kg / 350lb	159kg / 350lb	159kg / 350lb
sizes 80-140cm/31.5-55"	5 sizes 71-112cm/28-44"	5 sizes 71-112cm/28-44"	5 sizes 61-112cm/24-44"	4 sizes 71-112cm/28-44"
sizes 50-75cm/19.7-29.5"	5 sizes 40-101cm/16-40"	5 sizes 40-109cm/16-43"	n/a	n/a
■ ■	■	■	■ ■ ■	■
□ ■	- -	- -	□ ■	- -
STS Fast-Clip	Pin&Hole/Fast-Clip	Pin&Hole/DblBack	ISC Fast-Clip	Fast-Clip
20mm Webbing ■	Fixed 44mm Webbing no	Integrated sit strap no	Sewn segmented Rope ■	Tied Rope ■
25/30cm no	30cm/12" no	51cm/20" no	30cm/12" ■	30cm/12" ■
Sliding Ring	2x Sliding AlloySteel D-Rings	2x Fixed AlloySteel D-Rings	Sliding Ring	Sliding Ring
Shackle ■	Sewn/Fixed no	Sewn/Fixed no	4-hole + D-ring plate ■	4-hole plate ■
- ■ -	- - -	- - -	- - -	- - -
■	■	■	■	■
8 4+2*	- -	- -	3 4	8 1
-	-	-	-	-
- 2	- 2(sliding)	- 2(sliding)	- 4	- 2
- -	4* (sliding) -	4* (sliding) -	□ 4	□ 4
■ -	- 2 (sliding)	- 2 (sliding)	- □	- 2 x6.8kg/15lb
■	-	-	□	■
Thermo-Form -	Mesh/Foam ■	Mesh/Foam ■	Mesh/Foam -	Thermo-Form ■
44mm/1.75" 19cm/7.5"	44mm/1.75" 20.3cm/8"	44mm/1.75" 20.3cm/8"	45mm/1.75" 25.4cm/10"	45mm/1.75"17.8cm/7"
Double Sided	Central	Central	1x Front + 2x side	Central
33mm/1.5" 14cm/5.5"	44mm/2" 10cm/4"	44mm/2"10cm/4"	25mm/1" 17.8cm/7"	45mm/1.75"17.8cm/7"
-	-	-	■	■
■ -	- -	- -	■ ■	- ■
- ■	- -	- -	- -	- -
- -	- -	- -	- □	- □
- □	- -	■ -	- -	- -
-	-	-	-	-
2 sewn load-bearing eyes on bridge union shackle	639 orange stitch=Alu *Not designated eyes but 4 to 8 Cari-Hooks can be installed on belt	640 white stitch=Steel *Not designated eyes but 4 to 8 Cari-Hooks can be installed on belt	Bridge can be clipped into or length adjusted via separated sewn 'eyes' along its length. Hook&Loop on all web tails	
arbpro.it	bashlin.com	bashlin.com	buckinghammfg.com	buckinghammfg.com

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	MANUFACTURER	**BUCKINGHAM**	**BUCKINGHAM**	**BUCKINGHAM**	**BUCKINGHAM**
	MODEL VARIANT	**Buck Craft** 17911	**Ergovation SRT** 16906/ 2/4	**ErgoLite** 17906 J17906	**Ergo Pro** 17905
	ORIGIN	■	■	■	■
	COST inc VAT/tax conv-only	£390 $487 €449	£802 $1001 $1240 €923	£754 $942 €869	£651 $813 €750
	WEIGHT	2.1kg/4.6lb	2.95kg/6.5lb 6.8lb	2.3kg/5.1lb	2.6kg/5.8lb
	MAX LOAD	159kg / 350lb	140kg/310lb	159kg / 350lb	159kg / 350lb
	WAIST SIZES	4 sizes 71-112cm/28-44"	4 sizes 71-112cm/28-44"	4 sizes 71-112cm/28-44"	4 sizes 71-112cm/28
	LEG SIZES	n/a	n/a	n/a	n/a
	STANDARDS	■	■ ■ ■	■ ■ ■	■
LIFE SUPPORT	**CHEST HARNESS ATTACH PTS**	☐ ■	☐ ■	☐ ■	☐ ■
LIFE SUPPORT	**BUCKLES WAIST/LEGS**	AA Cobra Fast-Clip	Fast-Clip	Fast-Clip	Double D
LIFE SUPPORT	**BRIDGE TYPE REPLACEABLE**	2x ⅜"Tied Ropes ■	7/16"Tied Rope (6 other options) ■	Jacketed Rope ■	11mm Tied Rope ■
LIFE SUPPORT	**BRIDGE LENGTHS ADJUSTABLE**	102cm/40" ■	44cm/17.25" ■	30cm/12" no	n/a ■
LIFE SUPPORT	**CONNECTION to BRIDGE**	Sliding Ring	Sliding Ring (6 other options)	-	Sliding Ring
LIFE SUPPORT	**BRIDGE UNION LENGTH ADJ**	3-hole+D-ring plate ■	3-hole plate ■	Shackle ■	4-hole plate ■
LIFE SUPPORT	**SRT D-RING/EYE REAR BELAY**	- - -	- ☐ -	- - -	- ■ ■
LIFE SUPPORT	**POLE STRAP D's FOLD FLAT**	■	■	■*	■
GEAR ATTACH	**GEAR LOOPS SEWN EYES**	3 -	6 3*	5 1	4 -
GEAR ATTACH	**CUSTOM GEAR CORD EYES**	-	-	-	-
GEAR ATTACH	**BASIC HOLES/EYES RINGS**	- 2 (+2 waist attach rings)	- -	- 2	- 2
GEAR ATTACH	**CARI-HOOK CARI-HOOK EYES**	☐ 2	☐ -	☐ 4 +8 on seat	- 4
GEAR ATTACH	**CHAINSAW EYE/RINGHOOK**	- 2 x6.8kg/15lb	- -	- -	- ☐
GEAR ATTACH	**ATTACH POUCH/FIRST AID**	■	■	■	■
WAIST	**WAIST PADDING SWAMI**	Thermo-Form -	Drilex foam ■	Drilex foam ■	Drilex foam ■
WAIST	**WAIST BELT WEBBING PADDING**	45mm/1.75" 20.3cm/8"	45mm/1.75" 22.9cm/9"	45mm/1.75" 19cm/7.5"	45mm/1.75"17.5cm
WAIST	**WAIST ADJUST**	Central(ish)	Central +2 side	Central +2 side	2x side
LEG	**LEG LOOP HEIGHT PADDING**	45mm/1.75" 12cm/5"	45mm/1.75" 15cm/6"	45mm/1.75" 15cm/6"	45mm/1.75" 14cm/5
LEG	**ELASTICATED REAR LEG RISER**	-	-	-	-
LEG	**LEG RISER ADJ REAR FRONT**	■ -	■ -	■ -	■ ■
EXTRAS	**RFID CHIP WEAR INDICATE**	- -	- -	- -	- -
EXTRAS	**FIRST AID TRAUMA KIT**	- ☐	- ☐	- ☐	- ☐
EXTRAS	**SIT STRAP BOSUNS CHAIR**	- -	- ☐	- ■	- -
EXTRAS	**OTHER SRT MODELS**	-	-	-	-
	NOTES	Lightest Buckingham Arb Harness	Waist padding can be removed. SRT version uses a bridge conversion strap. *1 sewn eye (intended for the chest harness)+2 eyes on legs	*additional Smaller side-D on each side connects to the bridge union.	
	WEBSITE	buckinghammfg.com	buckinghammfg.com	buckinghammfg.com	buckinghammfg.co







	BUCKINGHAM	BUCKINGHAM
	Master 5.0 1490 1490T	Navigator 1470
	£460 $574 $771 €530	£539 $673 €621
	2.3kg/5.05lb	2.8kg/6.15lb
	159kg / 350lb	159kg / 350lb
-44"	4 sizes 71-112cm/28-44"	4 sizes 71-112cm/28-44"
	n/a	n/a
	■	■
	□ ■	□ ■
	Fast-Clip Pin&Hole	AA Cobra Fast-Clip
■	Sewn Dyneema Tape ■	2xTied Ropes ■
	n/a no	102cm/40" ■
	Sliding Ring	Sliding Ring
	Sewn eyes	3-hole plate
	- 4*x ■ -	- 4x ■ -
	■	■
	4 2 (on legs)	4 -
	-	-
	- 7	- 6
	- 4	- 4
	2 x 2 x6.8kg/15lb	- 2 x6.8kg/15lb
	■	■
	Drilex foam -	Thermo-form -
/7"	25mm/1"17.5cm/7"	45mm/1.75" 20.3cm/8"
	2x side	1x Side
5.5"	45mm/1.75" 10cm/4"	45mm/1.75" 15cm/6"
	■	■
	■ -	■ -
	- -	- -
	-□	-□
	- -	- -
	-	-
	*DRT & SRT soft eyes for various work and positioning options	*DRT & SRT soft eyes for various work and positioning options
om	buckinghammfg.com	buckinghammfg.com





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	MANUFACTURER	**CAMP**	**CAMP**	**CLIMAX**	**COURANT**
	MODEL VARIANT	**Tree Access Evo**	**Tree Access ST** (was ANSI)	**Atlas Tree Basic**	**Koala**
	ORIGIN	■	■	■	■
	COST inc VAT/tax conv-only	£315 $420 €380	£374 $450 €420	£140 $174 €169	£333 $543 €372
	WEIGHT	1.96-2.03kg/4.3-5.5lb	2.23kg / 4.9lb	1.52kg/3.3lb	1.5-1.7kg/ 3.3-3.74lb
	MAX LOAD	140kg/310lb	140kg/310lb	140kg/310lb	150kg/330lb
	WAIST SIZES	2 sizes 80-135cm/31-53"	2 sizes 80-135cm/31-53"	1 size 80-127cm/31-50"	3 sizes 60-120cm/23-47"
	LEG SIZES	2 sizes 50-75cm/20-30"	2 sizes 50-75cm/20-30"	1 size 65-80cm/25-31"	3 sizes 55-100cm/21-39"
	STANDARDS	■ ■ ■ ■	■ ■ ■ ■	■ ■	■ ■
LIFE SUPPORT	**CHEST HARNESS ATTACH PTS**	☐ ■	☐ ■	☐ ■	☐ ■
LIFE SUPPORT	**BUCKLES WAIST/LEGS**	3-Bar/STS Fast-Clip	3-Bar/STS Fast-Clip	Fast-Clips	AA Cobra Fast Clips
LIFE SUPPORT	**BRIDGE TYPE REPLACEABLE**	Sewn Jacketed Rope ■	*2xSewn Jacketed Ropes ■	Jacketed webbing no	Sewn Rope ■
LIFE SUPPORT	**BRIDGE LENGTHS ADJUSTABLE**	25/30* 32/37/42cm no	25/30* 32/37/42cm no	n/a no	1 or 2x 25/30/35cm no
LIFE SUPPORT	**CONNECTION to BRIDGE**	Sliding Ring	Sliding Ring	Sliding Ring	Sliding Ring
LIFE SUPPORT	**BRIDGE UNION LENGTH ADJ**	Shackles+ Rope eyes ■	Shackles+ Rope eyes ■	Rings	Openable Rings ■
LIFE SUPPORT	**SRT D-RING/EYE REAR BELAY**	- ■ -	■ ■ -	- ■+swivel -	- - -
LIFE SUPPORT	**POLE STRAP D's FOLD FLAT**	■	■	■	■
GEAR ATTACH	**GEAR LOOPS SEWN EYES**	8* 4	8* 1	3	8 x10kg 4
GEAR ATTACH	**CUSTOM GEAR CORD EYES**	-	-	-	-
GEAR ATTACH	**BASIC HOLES/EYES RINGS**	- 2*	- -	- -	- -
GEAR ATTACH	**CARI-HOOK CARI-HOOK EYES**	☐ 6	☐ 6	- -	☐ 4 x15kg
GEAR ATTACH	**CHAINSAW EYE/RINGHOOK**	- -	1 x15kg	- -	- -
GEAR ATTACH	**ATTACH POUCH/FIRST AID**	■	■	-	■
WAIST	**WAIST PADDING SWAMI**	Mesh/Foam -	Mesh/Foam -	Mesh/Foam -	Thermo-form -
WAIST	**WAIST BELT WEBBING PADDING**	44mm/1.75" 19cm/7.5"	44mm/1.75" 19cm/7.5"	45mm/1.75" 15cm/6"	45mm/1.75" 19cm/7.5"
WAIST	**WAIST ADJUST**	Double Sided	Double Sided	Double Sided	Central+both sides
LEG	**LEG LOOP HEIGHT PADDING**	33mm/1.5" 14cm/5.5"	44mm/1.75" 14cm/5.5"	45mm/1.75"10cm/4"	25mm/1"18cm/7.25"
LEG	**ELASTICATED REAR LEG RISER**	-	-	■	■
LEG	**LEG RISER ADJ REAR FRONT**	■ -	■ -	■ -	■ ■
EXTRAS	**RFID CHIP WEAR INDICATE**	■ -	■ -	- -	- ■ (bridge rope)
EXTRAS	**FIRST AID TRAUMA KIT**	☐ -	☐ -	☐ -	☐
EXTRAS	**SIT STRAP BOSUNS CHAIR**	☐ ☐	☐ ☐	-☐	-☐
EXTRAS	**OTHER SRT MODELS**	■	■	■	■
	NOTES	*inc 2 small loops *Metal rings are on leg loops web* or 10.5mm Rope bridge	*bridge is 10.5mm rope &/or web* & can have 3-way swivel *2 gear loops are on leg loops	Comes with integral swivel on SRT eye	2 of the gear loops are on the leg loops. Primary & secondary bridges (*Milo*) available
	WEBSITE	camp.it	camp.it	productosclimax.com	mycourant.com

ARBORIST SIT HARNESSES



DMM	DRAGON ARB	DRAYER/HABERKORN	DRAYER/HABERKORN	EDELRID
Kinisi Max Pro	Dragon 2 TH030B	TREE AUSTRIA 3.2	TREE AUSTRIA Pro	Tree Rex Triple Lock
£650580 $850760 €770690	£215 $270 €260	£385 $515 €430	£430 $576 €490	£354 $425 €406
2.4-3kg/5.5-6.6lb	2.6kg/5.7lb	1.9kg/4.2lb	1.75kg/3.9lb	1.4-1.6kg/3-3.5lb
150kg/330lb	100kg/220lb	150kg/330lb	150kg/330lb	150kg/330lb
3 sizes 65-123cm/25-48"	2 sizes 66-96cm 26-38"	3 sizes 77-135cm/30-53"	3 sizes 77-135cm/30-53"	2 sizes 68-121cm/26-47"
3 sizes 44-73cm/17-29"	2 sizes 59-69cm 23-27"	n/a	n/a	2 sizes 50-72cm/20-29"
☐	- -	☐	☐	☐
AA Cobra Fast-Clip	Fast-Clip	AA Cobra Fast-Clips	AA Cobra Fast-Clips	Edelrid Hook&Fast-Clips
1or2 Tied&Sewn Rope	Sewn 20mmWebbing	Sewn 20mm Web	1or2 Sewn 20mm Web	2x Tied Ropes
123/180cm Cam-	25/30/35cm no	23/25/30cm no	23/25/30cm no	145cm/57"
Sliding Ring2	Sliding Ring	Sliding Ring	1or2 Sliding Ring(s)	Sliding Ring
2x Hole + D plates	Shackles	Shackles+ web eyes	Openable rings+web eyes	6-hole+D-ring Plates
- -	- - -	- - -	- - -	-
- -	3 -	4 14	4 x5kg 14 x5kg	4x 25kg -
many!	-		x 10kg	x 10kg
14 +2 on legs -	- -	- 4	- 2 x5kg	14x 25kg
- 11	☐ 2to4	- 4	- 4 x5kg	☐ 6*
1 x35kg	-		- -	- -
	-			
Thermo-form	Mesh/Foam	Mesh/ Foam -	Mesh/Foam -	Mesh/ Foam -
25mm/1" 23cm/9"	44mm/1.75" 20cm/7.9"	45mm/1.75" 20cm/7.9"	45mm/1.75" 20cm/7.9"	28mm/1.1" 20cm/7.9"
1x Central	1x Central	Central+both sides	Single Side	Both sides
25mm/1" 14.5cm/5.7"	44mm/1.75" 15cm/6"	45mm/1.75" 24m/9.4"	45mm/1.75"12cm/5"	28mm/1.1"16cm/6.3"
		-	-	
- -	- -	- -	- -	
- -	☐ -	- -	- -	
-☐	-	-☐	-☐	- -
-	-	-	-	
Max Bridge adjusts via twin-cams *PRO* bridge is knotted (and cheaper). Most components replaceable.				*Can be purchased without SRT insert. Primary bridge adjusts via prusic (included). *2 on legs
dmmwales.com	buxtons.net/dragon	drayer.de	drayer.de	edelrid.com

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	MANUFACTURER	**EDELRID**	**HARKIE**	**HONEYWELL/KOMET**	**HONEYWELL/KOMET**
	MODEL VARIANT	**TreeRaptor**	**Ascend A1**	**Butterfly II**	**DragonFly II**
	ORIGIN				
	COST inc VAT/tax conv-only	£330 $420 €350	£253 $315 €305	£275 $432 €347	£350 $436 €422
	WEIGHT	1.5kg/3.3lb	1.94kg/4.3lb	2.3kg/5lb	2.35kg/5lb
	MAX LOAD	150kg/330lb	100kg/220lb	140kg / 308lb	140kg / 308lb
	WAIST SIZES	2 sizes 68-121cm/26-47"	3 sizes 75-132cm/30-52"	3 sizes 76-138cm/28-54"	3 sizes 76-138cm/28-54"
	LEG SIZES	2 sizes 50-72cm/20-29"	3 sizes 40-100cm/16-39"	3 sizes 40-100cm/16-39"	3 sizes 40-100cm/16-39"
	STANDARDS	■ ■ ■ ■	■ ■	■ ■ ■	■ ■ ■
LIFE ATTACH	**CHEST HARNESS ATTACH PTS**	☐ -	- -	☐ -	☐ -
LIFE ATTACH	**BUCKLES WAIST/LEGS**	Edelrid Buckles	AA Cobra Fast Clip	Fast Clip	Fast Clip
LIFE ATTACH	**BRIDGE TYPE REPLACEABLE**	2x Tied Ropes ■	Dbl Web ■	Webbing ■	Webbing ■
LIFE ATTACH	**BRIDGE LENGTHS ADJUSTABLE**	110cm/44"no	25/30/35cm no	25/30/35cm/ **no**	25/30/35cm **no**
LIFE ATTACH	**CONNECTION to BRIDGE**	Sliding Ring	2x Sliding Rings	Sliding Ring	-
LIFE ATTACH	**BRIDGE UNION LENGTH ADJ**	3-hole+D-ring Plates ■	Shackle -	Shackle ■	Shackle ■
LIFE ATTACH	**SRT D-RING/EYE REAR BELAY**	- - ■	- - -	- - -	- - -
LIFE ATTACH	**POLE STRAP D's FOLD FLAT**	■	■	■	■
GEAR ATTACH	**GEAR LOOPS SEWN EYES**	4x 25kg -	3 -	4 -	4 -
GEAR ATTACH	**CUSTOM GEAR CORD EYES**	■ x 10kg	-	-	-
GEAR ATTACH	**BASIC HOLES/EYES RINGS**	3x 10kg	- -	- 2	- 2
GEAR ATTACH	**CARI-HOOK CARI-HOOK EYES**	☐ 2-4*	1x L Caritool 2	- 2	- 2
GEAR ATTACH	**CHAINSAW EYE/RINGHOOK**	- -	- -	- ☐	- ☐
GEAR ATTACH	**ATTACH POUCH/FIRST AID**	■	-	-	-
WAIST	**WAIST PADDING SWAMI**	Mesh/ Foam -	Mesh/Foam -	Thermo-form -	Thermo-form -
WAIST	**WAIST BELT WEBBING PADDING**	45mm/1.75" 20cm/7.9"	45mm/1.75" 20cm/7.9"	45mm/1.75" 17.5cm/7"	45mm/1.75" 17.5cm/7"
WAIST	**WAIST ADJUST**	Centre	Central	Single Side	Single Side
LEG	**LEG LOOP HEIGHT PADDING**	28mm/1.1"15cm/5.9"	45mm/1.75" 23.5cm/9.25"	45mm/1.75"15cm/6"	45mm/1.75"15cm/6"
LEG	**ELASTICATED REAR LEG RISER**	■	■	■	-
LEG	**LEG RISER ADJ REAR FRONT**	■ ■	■ ■	■ ■	■ -
EXTRAS	**RFID CHIP WEAR INDICATE**	■ ■	- -	- -	- -
EXTRAS	**FIRST AID TRAUMA KIT**	☐	☐ ☐	- -	- -
EXTRAS	**SIT STRAP BOSUNS CHAIR**	- -	- -	- -	■
EXTRAS	**OTHER SRT MODELS**	■	-	-	-
	NOTES	New in 2024 *2 on legs	DISCONTINUED. Hi-Viz panels on leg loops	Morpho models Discontinued	Integrated sit strap version of the Butterfly, interchangeable with the Butterfly's leg-loops
	WEBSITE	edelrid.com	harkieglobal.com	sps.honeywell.com	sps.honeywell.com

ARBORIST SIT HARNESSES

				
				
HUSQVARNA	**JMP INTER**	**JMP INTER**	**NEOFEU**	**NOTCH**
Climbing Harness	**Treewor C U UC**	**Treeman SRT**	**ARB'O**	**Sentinel**
£679 $650 €555	£280 $352 €337	£227 $283 €274	£281 $350 €325	£415 $450 €540
2.5kg / 5.5lb	1.4-1.6kg/3-3.5lb	1.43-1.64kg/3.2-3.6lb	1.75kg/3.8lb	1.8-2kg/4.1-4.2lb
150kg / 330lb	150kg/330lbs	150kg/330lbs	140kg/308lb	140kg/308lb
1 size	2 sizes 70-110cm/	2 sizes 70-110cm/27-43"	4 sizes 65-135*cm/25-53"	2 sizes 71-112cm/28-44"
1 size	2 sizes 45-70cm/	2 sizes 45-70cm/18-27"	4 sizes 45-90*cm/18-35"	2 sizes 58-94cm/23-37"
- -				-
AA Cobra Fast Clip	Fast Clip	Fast Clip	Fast Clip	Hooked Fast Clip
2x Tied Rope	Sewn webbing	Tied Rope	2x Tied *Rope	1x Tied Rope
123/180cm	25 30 35cm/ no	35/45cm	35/45cm	24/27"
Sliding Ring	Sliding Ring	Sliding Ring	2 x Sliding Rings	Sliding Ring
5-hole + D-ring Plate	Openable Ring	3-hole plate	3 hole Rig-Plates	3 hole Rig-Plates
- - -	- - -	- -	- - -	- - -
- 4	4	4 -	2 1	8 1
	-	-	-	-
-12	- 2	- 2	- 6 + 4 on legs* (x10kg)	- 2
- 12	- 2	- 4	- 6	- 4
1 -	- -	- -	-	-
			-	
Mesh/Foam	Mesh/Foam -		Mesh/Foam	Mesh/Foam
25mm/1"24cm/9.5"	44mm/1.75" 17.5cm/7"	45mm/1.75" 24cm/9.5"	44mm/1.75" 24cm/9.5"	45mm/1.75" 20cm/7.9"
Central	Central	Single Side	1x Side	1x Side
25mm/1" 17.5cm/7"	44mm/1.75"15cm/6"	45mm/1.75" 16cm/6.3"	44mm/1.75" 11cm/4.3"	25mm/1"14.5cm/5.6"
-	-	-		-
- -	- -	- -	- -	- -
- -	- -	- -	- -	- -
- -	- -	- -	-	- -
-	-	-	-	-
All life-support attachment points are coloured blue. Waist buckle has dust cover.	UC (Comfort) has thicker padding		*reinforced Plastic rings 10kg *largest XXL size on request ***Aramid** & Nylon bridges included	Also Black/Lime Green. Chainsaw hook can be moved to either side.DISCONTINUED
husqvarna.com	jmpinter.com	jmpinter.com	neofeu.com	notchequipment.com

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N/A: info Not Given
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ASTMF887= ■ CANADA= ■
AUS/NZ = ■ EAC = ■









	MANUFACTURER	NOTCH	PETZL	PETZL	PROTEKT
	MODEL VARIANT	Catalyst	Seqouia	Seqouia SRT	Tree Up TH-O20
	ORIGIN				
	COST inc VAT/tax conv-only	£415 $450 €540	£365 $450 €386	£389 $520 €440	£140 $175 €170
	WEIGHT	2.1kg/4.7lb	1.48-1.6kg/3.26-3.5lb	1.58-1.7kg/3.5-3.75lb	1.45kg/3.2lb
	MAX LOAD	140kg/308lb	140kg/308lb	140kg/308lb	100kg/220lb
	WAIST SIZES	2 sizes 80-132cm/31-52"	3 sizes 65-120cm/25-47"	3 sizes 65-120cm/25-47"	3 sizes 75-132cm/30-52"
	LEG SIZES	2 sizes 60-82cm/23-32"	3 sizes 44-65cm/17-26"	3 sizes 44-65cm/17-26"	3 sizes 40-90cm/16-35"
	STANDARDS	■ ■ ■ ■	■ ■ ■ +UKCA	■ ■ ■ +UKCA	■ ■
LIFE CRITICAL	CHEST HARNESS ATTACH PTS	☐ -	☐ -	☐ ■	☐ -
LIFE CRITICAL	BUCKLES WAIST/LEGS	Fast Clip	Petzl FAST & FAST LT+	Petzl DblBack & FAST LT+	AA Cobra Fast Clip
LIFE CRITICAL	BRIDGE TYPE REPLACEABLE	1x Tied Rope ■	1 or 2 Sewn Rope ■	1 or 2 Sewn Rope ■	Double 20mmWeb ■
LIFE CRITICAL	BRIDGE LENGTHS ADJUSTABLE	24/27" ■	25/30/35cm no	25/30/35cm no	25/30/35cm no
LIFE CRITICAL	CONNECTION to BRIDGE	Sliding Ring (wear indicator)	*	*	Sliding Ring
LIFE CRITICAL	BRIDGE UNION LENGTH ADJ	3 hole Rig-Plates	2 holes +D-ring Plates ■	2 holes +D-ring Plates ■	Shackles
LIFE CRITICAL	SRT D-RING/EYE REAR BELAY	- - -	- - -	- ■ -	- - -
LIFE CRITICAL	POLE STRAP D's FOLD FLAT	■	■	■	■
GEAR ATTACH	GEAR LOOPS SEWN EYES	4 2 (above each side-D)	9 2	9 2	- 3
GEAR ATTACH	CUSTOM GEAR CORD EYES	- -	-	-	-
GEAR ATTACH	BASIC HOLES/EYES RINGS	- -	- -	- -	- -
GEAR ATTACH	CARI-HOOK CARI-HOOK EYES	- 2	☐ 5	☐ 5	☐ 2to4
GEAR ATTACH	CHAINSAW EYE/RINGHOOK	■ -	- -	- -	-
GEAR ATTACH	ATTACH POUCH/FIRST AID	■	■	■	-
WAIST	WAIST PADDING SWAMI	Thermo-form -	Thermo-form -	Thermo-form -	Mesh/Foam -
WAIST	WAIST BELT WEBBING PADDING	45mm/1.75" 18cm/7"	44mm/1.75" 19cm/7.5"	44mm/1.75" 19cm/7.5"	45mm/1.75" 20cm/7.9"
WAIST	WAIST ADJUST	1x Side	1x Side	double sided	Central
LEG	LEG LOOP HEIGHT PADDING	25mm/1"15cm/6"	25mm/1" 16cm/6.3"	25mm/1" 16cm/6.3"	45mm/1.75" 23.5cm/9.25"
LEG	ELASTICATED REAR LEG RISER	■	■	■	■
LEG	LEG RISER ADJ REAR FRONT	■ ■	■ -	■ -	■ ■
EXTRAS	RFID CHIP WEAR INDICATE	- ■ ■	- -	- -	- -
EXTRAS	FIRST AID TRAUMA KIT	- -	- -	- -	- -
EXTRAS	SIT STRAP BOSUNS CHAIR	- -	- ☐	- ☐	■ -
EXTRAS	OTHER SRT MODELS	-	■	■	■
	NOTES	Sentinel replacememnt from 2024. Bridge ring hs wear indicator	* Option Ring or Swivel 180cm Adjustable bridge option	* Option Ring or Swivel 180cm Adjustable bridge option	Bridge attachment webbing length adjusted via rear buckle
	WEBSITE	notchequipment.com	Petzl.com	Petzl.com	protekt.pl

ARBORIST SIT HARNESSES

				
PROTEKT	**PROTEKT**	**R-EASY CLIMBER**	**ROCK EMPIRE**	**ROCK EMPIRE**
Tree Up TH-030mX	**Tree Up** TH-050mX	**Fox** **Fox Leather**	**Sherman**	**Skill Tree**
£190 $240 €230	£190 $240 €230	£309 $385 €354 €384	£266 $346 €316	£220 $275 €250
1.94kg/4.3lb	2.6kg/5.7lb	1.6kg/3.5lb 1.7kg/3.7lb	1.88-1.95kg/4.1-4.3lb	1.79kg/3.94lb
140kg/308lb	140kg/308lb	140kg/308lb	140kg/308lb	140kg/308lb
4 sizes 75-150cm/ 30-59"	4 sizes 75-150cm/ 30-59"	3 sizes 65-120cm/25-47"	2 sizes 71-120cm/28-47.2"	2 sizes 70-130cm/27-51"
4 sizes 40-100cm/16-39"	4 sizes 40-100cm/16-39"	3 sizes 44-65cm/17-26"	2 sizes 50-80cm/19.6-31.5"	2 sizes 54-80cm/21-31.5"
-	-	- -	- -	- -
AA Cobra Fast Clip	AA Cobra Fast Clip	Fast Clip	Fast-Clip	Fast-Clip
20mm Webbing	20mm Webbing	1/2 Sewn Rope(s)	2x 11mmTied Rope	1x 11mmTied Rope
25/30/35cm no	25/30/35cm no	25/30/35cm no	130cm/51"	130cm/51"
Sliding Ring	Sliding Ring	Sliding Ring	Sliding Ring	Sliding Ring
Shackles	Shackles	Openable rings	3 hole Plates	2 hole Plates
- - -	- - -	- - -	- - -	- - -
- 3	- 3	11*	7 3	6 2
-	-	-	5	-
- -	- -	- -	- 4	- 2
2to4	2to4	- 6	2	11
-	-	- -	- -	- -
-	-		-	-
Mesh/Foam -	Mesh/Foam -	Thermo-form -	Mesh/Foam -	Mesh/Foam -
45mm/1.75" 20cm/7.9"	44mm/1.75" 20cm/7.9"	45mm/1.75"20cm/7.9"	4x30mm/4x1.25" 22cm/8.7"	44+30mm/1.25" 17.5cm/7"
Central	Central	1x Side	1x Side	1x Side
44mm/1.75" 23.5cm/9.25"	44mm/1.75" 23.5cm/9.25"	25-45mm/1-1.75"16cm/6.3"	2x20mm/2x0.8"15.5cm/6.1"	44mm/1.75" 12.5cm/55"
				-
		-		
- -	- -	- -	- -	- -
- -	- -	- -	-	- -
- -	-	- -	- -	- -
		-		
Bridge attachment webbing length adjusted via rear buckle. Replaced X & 030	Integrated sit-strap. Bridge attachment webbing length adjusted via rear buckle. Replaced X & 050	Leather version=belt and leg loop outers are LEATHER. *5 'loops' are separated sections of one cord. 2 on leg loops	Introduced in 2024	
protekt.pl	protekt.pl	r-eshop.com	rockempire.com	rockempire.com

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	MANUFACTURER	SHERRILL TREE	SIMARGHU	SIMARGHU	SINGING ROCK
	MODEL VARIANT	Edge II	Fire - Male	Gemini - Female	Arbo Master
	ORIGIN				
	COST inc VAT/tax conv-only	£385 $480-510 €465	£380 $480 €460	£380 $480 €460	£270 $340 €310
	WEIGHT	1.9kg/4.2lb	2.5-2.6kg/5.5-5.7lb	2.3kg/5lb	1.7kg/3.7lb
	MAX LOAD	159kg/350lb	140kg/308lb	140kg/308lb	120kg/264lb
	WAIST SIZES	4 sizes 71-112cm/28-44"	2 sizes 69-107cm/27-42"	1 size 66-86cm/26-34"	2 sizes 65-130cm/25-51"
	LEG SIZES	n/a	1 size 43-69cm/17-27"	1 size 43-69cm/17-27"	2 sizes 45-75cm/18-29"
	STANDARDS	■	■ ■	■ ■	■ ■
LIFE CRITICAL	CHEST HARNESS ATTACH PTS	- -	☐ -	☐ -	☐ -
LIFE CRITICAL	BUCKLES WAIST/LEGS	AA Cobra Fast Clip	Fast-Clip	Fast-Clip	Fast-Clip
LIFE CRITICAL	BRIDGE TYPE REPLACEABLE	1x Tied Rope ■	1x Tied Rope ■	1x Tied Rope ■	2x Tied Ropes ■
LIFE CRITICAL	BRIDGE LENGTHS ADJUSTABLE	102cm/40" ■	130cm/51" ■	130cm/51" ■	130cm/51" ■
LIFE CRITICAL	CONNECTION to BRIDGE	Sliding Ring	Sliding Ring	Sliding Ring	Sliding Ring
LIFE CRITICAL	BRIDGE UNION LENGTH ADJ	3 holes +D-ring ■	3 holes +D-ring ■	3 holes +D-ring ■	1 hole +D-ring Plate ■
LIFE CRITICAL	SRT D-RING/EYE REAR BELAY	- - -	- - -	- - -	- - -
LIFE CRITICAL	POLE STRAP D's FOLD FLAT	■	2x pairs ■	■	■
GEAR ATTACH	GEAR LOOPS SEWN EYES	5 3	4 2	2 2	4 x5kg 2 x5kg
GEAR ATTACH	CUSTOM GEAR CORD EYES	-	-	-	■ x5kg
GEAR ATTACH	BASIC HOLES/EYES RINGS	- 2	- -	- -	- 2 x10kg
GEAR ATTACH	CARI-HOOK CARI-HOOK EYES	- 4	- 2	- 4	☐ 6
GEAR ATTACH	CHAINSAW EYE/RINGHOOK	- -	■	■	1 x35kg
GEAR ATTACH	ATTACH POUCH/FIRST AID	■	■	■	■
WAIST	WAIST PADDING SWAMI	Mesh/Foam -	Thermo-form -	Thermo-form -	Mesh/Foam -
WAIST	WAIST BELT WEBBING PADDING	45mm/1.75" 20cm/7.9"	45mm/1.75" 20cm/7.9"	45mm/1.75" 20cm/7.9"	40mm/1.5" 20cm/8"
WAIST	WAIST ADJUST	1x Side	1x Central	1x Central	Single Side
LEG	LEG LOOP HEIGHT PADDING	25mm/1"14.6cm/5.7"	25mm/1"14.6cm/5.7"	25mm/1"14.6cm/5.7"	40mm/1.5" 15cm/6"
LEG	ELASTICATED REAR LEG RISER	■	-	-	■
LEG	LEG RISER ADJ REAR FRONT	■ -	■ ■	■ ■	■ -
EXTRAS	RFID CHIP WEAR INDICATE	- -	■ -	■ -	- -
EXTRAS	FIRST AID TRAUMA KIT	- -	☐ ☐	☐ ☐	☐ -
EXTRAS	SIT STRAP BOSUNS CHAIR	- -	- -	- -	- -
	OTHER SRT MODELS	-	-	-	■
	NOTES	Also in Black/Blue	The smaller size has the same gear attach options as the Gemini. Bridge union adjust via buckle on waist-rear	Has two additional pelvis straps from waist to legs . Bridge union adjust via buckle on waist-rear	additional neoprene pouch on leg loops for small items
	WEBSITE	sherrilltree.com	simarghu.com	simarghu.com	singingrock.com

	
	
SKYLOTEC	**STEIN**
Ignite Arb	**Vega Plus VS2**
£415 $520 €476	£431 $595 €520
2.47-3.48kg/5.4-7.7lb	1.9kg/4.2lb
150kg/330lb	150kg/330lb
2 sizes 60-125cm/24-49"	3 sizes 76-98cm/
2 sizes 60-85cm/24-33"	N/A
	+ UKCA
-	- -
Fast-Clip	AA Cobra Fast-Clip
Sewn Webbing	Sewn 20mm Webbing
20/25/30cm no	25/30/35cm no
Sliding Ring	2x Sliding Rings
Inverted D-Ring	Openable Ring -
- - -	- - -
6 4	3 8 +2 on Leg Loops
-	
- -	- 2
6	- ?
Thermo-form -	Mesh/Foam -
44mm/1.75" 22cm/8.7"	45mm/1.75" 20cm/8"
Single Side	Double Central
44mm/1.75" 15.5cm/6.1"	45mm/1.75" 15cm/6"
	-
- -	-
-	-
-	- -
	-
Replaced the celebrated Kolibri	
Skylotec.com	steinworldwide.com



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	MANUFACTURER	TEUFELBERGER	TEUFELBERGER	TREE HOG	TREE HOG
	MODEL VARIANT	TreeMOTION Essential X	TreeMOTION Pro X	Razorback TH5000	TH7000
	ORIGIN				
	COST inc VAT/tax conv-only	£356 $500 €440	£472 $625 €582	£270 $340 €325	£300 $380 €360
	WEIGHT	2kg/2.2lb	2.3kg/5lb	2.5kg/5.5lb	2.6kg/5.7lb
	MAX LOAD	150kg/330lb	150kg/330lb	100kg/220lb	100kg/220lb
	WAIST SIZES	3 sizes 69-129cm/27-50"	3 sizes 69-129cm/27-50"	3 sizes 76-140cm/26-52"	3 sizes 76-140cm/26-52"
	LEG SIZES	3 sizes 38-87cm/15-34"	3 sizes 38-87cm/15-34"	3 sizes 50-90cm/20-35"	3 sizes 50-90cm/20-35"
	STANDARDS	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	■ ■	■ ■
LIFE CRITICAL	CHEST HARNESS ATTACH PTS	☐ ■	☐ ■	- -	- -
LIFE CRITICAL	BUCKLES WAIST/LEGS	Cobra/Cobra (Fast-Clips)	Cobra/Cobra (Fast-Clips)	Fast-Clip	Fast-Clip
LIFE CRITICAL	BRIDGE TYPE REPLACEABLE	1or2 Tied or sewn Rope ■	1 or 2 Tied or sewn Rope ■	Sewn 20mmWebbing ■	Sewn 20mmWebbing ■
LIFE CRITICAL	BRIDGE LENGTHS ADJUSTABLE	123/180cm 40/45/50cm ■	123/180cm 40/45/50cm ■	25/30/35cm no	25/30/35cm no
LIFE CRITICAL	CONNECTION to BRIDGE	Sliding Ring	Sliding Ring	2x Sliding Rings	2x Sliding Rings
LIFE CRITICAL	BRIDGE UNION LENGTH ADJ	2x Hole + D plates ■	2x Hole + D plates ■	Shackles	Shackles
LIFE CRITICAL	SRT D-RING/EYE REAR BELAY	- - -	- - -	- - -	- - -
LIFE CRITICAL	POLE STRAP D's FOLD FLAT	■	■	■	■
GEAR ATTACH	GEAR LOOPS SEWN EYES	- -	- -	3 -	3 -
GEAR ATTACH	CUSTOM GEAR CORD EYES	■	■	-	-
GEAR ATTACH	BASIC HOLES/EYES RINGS	numerous -	numerous -	- -	- -
GEAR ATTACH	CARI-HOOK CARI-HOOK EYES	- 8	- 12	☐ 2to4	☐ 2to4
GEAR ATTACH	CHAINSAW EYE/RINGHOOK	■	■	-	-
GEAR ATTACH	ATTACH POUCH/FIRST AID	■	■	-	-
WAIST	WAIST PADDING SWAMI	Mesh/Foam -	Thermo-form ■	Mesh/Foam -	Mesh/Foam -
WAIST	WAIST BELT WEBBING PADDING	25mm/1" 23cm/9"	25mm/1" 23cm/9"	44mm/1.75" 20cm/7.9"	44mm/1.75" 20cm/7.9"
WAIST	WAIST ADJUST	1x Central (Cobra)	1x Central (Cobra)	1x Central	1x Central
LEG	LEG LOOP HEIGHT PADDING	25mm/1" 14.5cm/5.7"	25mm/1" 14.5cm/5.7"	44mm/1.75" 23.5cm/9.25"	44mm/1.75" 23.5cm/9.25"
LEG	ELASTICATED REAR LEG RISER	■	■	■	■
LEG	LEG RISER ADJ REAR FRONT	■ ■	■ ■	■ ■	■ ■
EXTRAS	RFID CHIP WEAR INDICATE	- -	- -	- -	- -
EXTRAS	FIRST AID TRAUMA KIT	- -	- -	☐ -	☐ -
EXTRAS	SIT STRAP BOSUNS CHAIR	- -	- -	- -	■ -
	OTHER SRT MODELS	replaces 4 previous treeMOTIONS	replaces 4 previous treeMOTIONS	-	-
	NOTES	X= 2025 version - more replaceable components, openable bridge-riser union, improved stitching etc. Green=load-bearing, Red=gear only	X= 2025 version as Essential X + more gear attach options + enhanced padding. Green=load-bearing, Red=gear only	Bridge union length adjusted via rear buckle. Updating late 2023. Also with yellow trim	Bridge union length adjusted via rea buckle. TH7000 has an integrated sit-strap. Updating late 2023
	WEBSITE	teufelberger.com	teufelberger.com	treehog.co.uk	treehog.co.uk

ARBORIST SIT HARNESSES

				
				
TREE RUNNER		**WEAVER**	**WEAVER**	**WEAVER**
Tree Rider		**Denali**	**Stratus** 08100	**WLC-790**
£270 $340 €320		£417 $520 €495	£361 $450 €430	£420 $523 €501
1.53kg / 3.4lb		2.95kg/6.5lbs	2kg /4.5lbs	3.63kg/8lbs
140kg/308lb		140kg/308lb	140kg/308lb	140kg/308lb
3 sizes 65-115cm/26-45"		1 size 26-48"	3 sizes 28-46"	4 sizes 30-48"
3 sizes 55-80cm/21.6-31.5"		61cm/ <24"	51-86cm/20-34"	61cm/ <24"
		-		-
AA Cobra Fast-Clip		AA Cobra Fast-Clip/Rollbar	ISC Fast-Clip	Pin&Hole/Fast-Clip
50mm Webbing no		Double Rope	Tied Rope	Tied Doubled Rope
Fixed 50mm Web no		35cm/14"	35cm/14"	35cm/14"
Sliding D-Ring		Sliding Ring	-	-
sewn-fixed		4-hole Rig plates	4-hole Rig plates	4-hole Rig plates
-2x -		- - -	- - -	- - -
2 (Dyneema) -		- 6*	3 - *18 + 6 on legs	2 -
4			-	-
- 6		- 2	- 4	- 6
- 2		- 4	- (use the 24 sewn eyes)	- 2
-		-	-	2 2
-				
Moulded Foam -		Moulded Air-Flex Foam -	Reinforced Mesh/Foam -	Memory Foam -
50mm/2" 20cm/7.9"		Dbl-50mm/2" 23cm/9"	25mm/1" 23cm/9"	50mm/2" 23cm/9"
1x Side		1x Central + 4x side adj	1x Central	1x Side
50mm/2" 8.5cm/3.4"		50mm/2" 17.8cm/7"	25mm/1" 23cm/9"	50mm/2" 10cm/4"
-				
- -		-	- -	- -
- -		-	-	-
- -		- -	- -	-
-		-	-	-
	EXPANSION COLUMN	*arranged as a daisy chain	*arranged as daisy chains	Also in all-black
grube.eu		weaverarborist.com	weaverarborist.com	weaverarborist.com

IMAGES NOT TO SCALE
FITTINGS and ACCESSORIES SHOWN MAY BE AN ADDITIONAL COST

KEY:
COST: Approx, inc local tax/VAT
£$€=currency conversion only
OPTION= ☐ or ☐ or ☐
N/A: info Not Given
STANDARDS: EN358 = ■
EN813= ■ ANSI Z133= ■
ASTMF887= ■ CANADA= ■
AUS/NZ = ■ EAC = ■










	MANUFACTURER	WEAVER	WEAVER	WEAVER	WEAVER
	MODEL VARIANT	WLC-760	WLC-700 730	WLC-530 560	WLC-500
	ORIGIN				
	COST inc VAT/tax conv-only	£362 $451 €431	£297 $370 $410 €354	£242 $302 $305 €290	£237 $295 €282
	WEIGHT	3.2kg/7lb	3.63kg/8lbs	2.72kg/6lbs	2.72kg/6lbs
	MAX LOAD	140kg/308lb	140kg/310lb	140kg/310lb	140kg/310lb
	WAIST SIZES	5 sizes 66-122cm/26-48"	5 sizes 66-122cm/26-48"	4 sizes 76-122cm/30-48"	4 sizes 76-122cm/30-4
	LEG SIZES	61cm/<24"	61cm/<24"	51-68cm/20-27"	41-61cm/16-24"
	STANDARDS	■ ■	■ ■	■ ■	■ ■
LIFE CRITICAL	CHEST HARNESS ATTACH PTS	☐ ■	☐ -	☐ ■	☐ ■
LIFE CRITICAL	BUCKLES WAIST/LEGS	Pin&Hole/Fast-Clip	Pin&Hole/Fast-Clip	Pin&Hole	Pin&Hole
LIFE CRITICAL	BRIDGE TYPE REPLACEABLE	Tied Doubled Rope ■	Web-covered rope ■	Fixed 50mm Webbing no	Integrated sit strap n
LIFE CRITICAL	BRIDGE LENGTHS ADJUSTABLE	35cm/14" ■	25cm/10" ■	12" no	- -
LIFE CRITICAL	CONNECTION to BRIDGE	-	-	1 (2)x Sliding D-Rings	2x fixed D-Rings
LIFE CRITICAL	BRIDGE UNION LENGTH ADJ	4-hole Rig plates ■	ISC Al ring ■	Sewn no	Sewn no
LIFE CRITICAL	SRT D-RING/EYE REAR BELAY	- - -	- - -	- - -	- - -
LIFE CRITICAL	POLE STRAP D's FOLD FLAT	■	■	■	■
GEAR ATTACH	GEAR LOOPS SEWN EYES	2 -	2 -	2 -	2 -
GEAR ATTACH	CUSTOM GEAR CORD EYES	-	-	-	-
GEAR ATTACH	BASIC HOLES/EYES RINGS	- 6	- 6	- 6	- 6
GEAR ATTACH	CARI-HOOK CARI-HOOK EYES	- 2	- 2	- 2	- 2
GEAR ATTACH	CHAINSAW EYE/RINGHOOK	2 2	2 2	2 2	2 2
GEAR ATTACH	ATTACH POUCH/FIRST AID	■	■	■*	■*
WAIST	WAIST PADDING SWAMI	Memory Foam -	Memory Foam -	Leather/Memory Foam -	Leather/Memory Foa
WAIST	WAIST BELT WEBBING PADDING	50mm/2" 23cm/9"	50mm/2" 17.8cm/7"	50mm/2" 15.2cm/6"	50mm/2" 15.2cm/6"
WAIST	WAIST ADJUST	1x Side	1x Side	1x Side	1x Side
LEG	LEG LOOP HEIGHT PADDING	50mm/2" 10cm/4"	50mm/2" 10cm/4"	50mm/2" 7.6cm/3"	50mm/2" 7.6cm/3"
LEG	ELASTICATED REAR LEG RISER	■	■	-	-
LEG	LEG RISER ADJ REAR FRONT	■ ■	■ ■	■ -	■ -
EXTRAS	RFID CHIP WEAR INDICATE	- -	- ■	- -	- -
EXTRAS	FIRST AID TRAUMA KIT	☐ -	☐ -	☐ -	☐ -
EXTRAS	SIT STRAP BOSUNS CHAIR	- -	- ■	- -	- -
	OTHER SRT MODELS	-	-	-	-
	NOTES	Endura braid rope bridge. Also in all-black	the 730 has an integrated sit strap	WLC-560 has two sliding D-Rings WLC530 has one. £ cost increases with size of harness	£ cost increases with size of harn *2 of the rings are intended for p stowage.
	WEBSITE	weaverarborist.com	weaverarborist.com	weaverarborist.com	weaverarborist.com

		
		
	WEAVER	WILLANS
	WLC-330	T22/2 WP
	£225 $280 €268	£210 $262 €250
	2.72kg/6lbs	4kg/8.8lb
	140kg/310lb	n/a
48"	5 sizes 66-122cm/26-48"	3 sizes 61-142cm/24-56"
	n/a	n/a
	☐	NO
	Pin&Hole	Fast-Clip+Roll-bar buckle
o	Fixed 50mm Webbing no	Integrated sit strap no
	12" no	- -
	Sliding D-Ring	2x fixed D-Rings
	Sewn no	Sewn no
	- - -	- - -
	■	■
	2 -	- -
	-	-
	- 5	- 4
	- 2	- -
	2 2	- -
	■*	-
m -	Leather/Foam -	Basic -
"	50mm/2" 15.2cm/6"	50mm/2" 12cm/5"28cm/11"
	1x Side	1x Side adjust
	50mm/2" None	50mm/2" NO
	-	-
	■ -	-
	- -	-
	☐ -	- -
	- -	■ -
	-	-
ness. pouch	£ cost increases with size of harness. *2 of the rings are intended for pouch stowage.	WP version has reinforced wider padding on the waist than standard version
n	weaverarborist.com	willansltd.co.uk

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UPDATED Jun '25

ARBORIST CLIMBING HELMETS

Fully or partly meeting EN12492 (mountaineering) and/or ANSI z89.1 type 2 or EN397 (industrial) & ANSI type 1 with additional side-impact & lateral deformation tests & accept Eye & Ear protection



New in 2025 is *Edelrid*'s multi-role helmets the *Tectum* and *Tectum Air* (pic left) and *Singing Rock's Blast* (below)

This GUIDE does not cover general forestry/ground work helmets (generally ANSI type 1 and/or EN397) unless they also function as a climbing helmet (ANSI type2/EN12492) and in fact, as we'll see, this whole genre is tricky to reconcile even between European standards let alone between European and North American standards. For instance there are ANSI type 1 and EN397 helmets that have top-only impact tests but may also test for side impact and/or lateral deformation. All-around impact tests and/or lateral deformation are the minimum guarantee of protection we want to see for climbers as an addition to just top impact. EN397 and ANSI Type 1 by themselves are not enough to get in this GUIDE because working at height is NOT the same as Climbing, HOWEVER, there are two helmets in this GUIDE from Kong and CT that don't meet our criterion, at least not on paper, but others in their range do and they specifically state these models as being suitable for climbers/climbing arborists so we have highlighted these with a red 'no' in the EN12492/Lateral tests column. Depending on the type of worksite, OSHA defines working at height as 4, 6 or 8 feet off the ground - that could be a 4-rung stepladder!

'Working At Height' is NOT the same as 'Climbing'

The technical specifics of visors and ear defenders are not included here as they would each need their own GUIDE. We have a full GUIDE to Climbing and Multi-Role Helmets in the **PPE & CASEVAC** and **USAR/ EXTRICATION BUYERSGUIDES** for competition and recreational climbers and arb inspectors these would be useful GUIDES to check out. In this GUIDE for climbing arborists using chainsaws, handsaws and other power equipment however, we are specifically looking at helmets that meet climbing standards and can provide eye and hearing protection often sold under the banner of 'Combination' helmets. That means various types of visors to protect from wood chips and dust and protection of the ears from the potentially damaging sound of a petrol/gas chainsaw but these days is just as likely to incorporate a communications system. Pretty much all such work helmets can be used as stand-alone climbing helmets simply by removing the click-on ear defenders and visor mounts or the visor may stow within the helmet shell. Ear defenders can be swung back onto the helmet shell when not needed as the arborist in this image obviously feels is the case in using a battery powered saw, although, it has to be said, that even electric saws have a sustained level of noise all the while you're pressing the trigger. We'll get to the details of fixtures and fittings later, we first need to discuss the various structural and design differences between helmets. In tree work we can differentiate three work types:

1) **GROUND-CREW/CHIPPER** (ANSI type1/EN397)
2) **WORK At HEIGHT** eg. Cherry picker (ANSI type1/EN397)
3) **CLIMBING** (on-rope) (ANSI Type 1-2/EN12492)
   3a) Recreational Climbing/Competitions/Inspections
   3b) Climbing and use of a saw/chainsaw
   3c) Climbing & working around electricity (ANSI/EN397 + side-impact and/or Lateral Deformations tests)

Some helmets are specifically designed and marketed towards arborists while others are modified sport or industrial helmets that are coincidentally useful for arborists. Some elements of climbing-specific standards do not take into account the need for arborists to work around electricity, especially for post-storm work so there are many overtly industrial climbing helmets without vents here that meet dielectric standards but are not actively aimed at arborists - *CT's Aries* for example as compared to their *Aries Tree* and *X Arbor*. The key difference between a climbing and a ground-work helmet is that climbers need all around impact protection (rather than just on the top) and a stronger chin strap to ensure the helmet stays on your head. Competition climbers don't need the associated safety accessories although a headtorch and flip-up goggle visor can be useful. All three of these groups can use the non-accessorised climbing helmets in W**SAR** magazine #11's GUIDE.

US & EUROPEAN STANDARDS

Unfortunately, as with most products, there is no fully international safety standard. Europe and North America have competing and slightly different standards and requirements that requires most manufacturers to produce a different version for each regional market - ANSI in the US and EN in Europe and most Pacific countries. There is much greater emphasis in the US on working around electricity because of the way the utilities are structured and the sheer number of

damaging storms. ANSI z89.1 Type1&2 helmets have the higher strength chin strap and are class 1 for top-only impact or class 2 for all-around impact. ***This GUIDE only includes ANSI Class 1/EN397 helmets if they are also tested for lateral impact and/or deformation (LD).*** LD is an addition to EN397 that tests the resistance to 'squeezing' of the sides of the helmet but not as relevant as side, rear and front *impact* tests**.** ANSI also specifies electrical conductivity as Class C, G or E which we'll come to shortly.

ANSI does not delineate the chin strap strength for ground and climbing as the European standards do. Consequently North American arborists could choose either the mountaineering (EN12492) or industrial (EN397)-standard helmets because their shells are virtually identical. This is also true in Europe given that arborists may need an unvented EN397 helmet that doesn't conduct electricity and negates the vent aspect of EN12492. There are three key differences between EN397 and EN12492 helmets which are otherwise identical:EN397 requires less vent area, a chin strap that releases at a much lower load (15- 25daN) and clearance between the shell and the cradle that doesn't allow for any lining in direct contact with the shell. It uses a 5kg test load from 1metre above which must exert no more than 5kN of force to the head whereas climbing helmets use a 5kg mass falling 2metres but exerting no more than 10kN to the head and of course, they include impact loading to the side, front and rear of the shell. Vent size must be less than 4.5cm^2 of total shell area for EN397 whereas for climbing it needs to be well ventilated in excess of 4cm^2 of area. However, that does mean there is crossover if a shell has between 4 and 4.5cm^2 of vent area - that would meet both standards.

ELECTRICAL CONDUCTIVITY

ANSI specifies three electrical conductivity classes: Class G, (General) hard hats are rated for 2,200 volts. Class E (Electrical) hard hats are rated for 20,000 volts and Class C (Conductive) hard hats offer little or no electrical protection. Electricity protective helmets are NOT vented or are minimally vented and this directly contradicts the main climbing helmet standard in Europe EN12492 which requires a certain area of vents for airflow. ANSI class E precludes vents and G has smaller vents than for C-type helmets. Utility arborists and anyone tasked with a job near power cables will need a helmet that will NOT conduct electricity to your head. In practice this means no vents and more clearance between the shell and your head. Many climbers will think that ventilation is a must-have to keep the head cooler in hot weather and during heavy work and this is a requirement of the EN12492 climbing standard. But an electrical arc will kill you quicker so if storm and/or utility work is on your radar you may well need both options. For US ANSI standards this is covered by class G and E helmets where class E rated for 20,000 volts is for high tension pylon style cables (**E** & **HT** in our tables) and the General 2,200v rating will see you though all domestic-feed power lines. In Europe this is covered primarily by EN50365 but this is only for lower voltage systems up to 1000v Ac or 1500Vdc and can be as low as the 440vAC that we have listed as **LT** so is less stringent than ANSI class G. Many EN50365 helmets also comply with ANSI G so are actually higher rated than their EN50365 adherence implies. Some helmets like *CAMP*'s *Ares* and *Petzl*'s *Vertex* have closable vents and can meet EN50365 though some only meet this electrical-protection standard if used on the ground like *JSP*'s *Evo5*. The similarly equipped *Petzl Stratos* fails on non-conductivity

PETZL STRATO Vent Hi-Viz

STIHL Advance X



because there is not enough clearance between the head and the shell.

CHIN STRAPS

And then there's chin strap strength which in climbing helmets requires it to keep the helmet in place during a fall and when resisting an impact. Industrial helmets in Europe, which often include 'arborist' models, requires the chin strap to separate or break at less than 25daN because, oddly, it is felt that there is a greater risk of being strangled if the helmet gets hung up on an obstruction during work. You would think that those at the greatest risk of hang-up would be arborists and yet they are specifically mandated towards EN12492 helmets with high-strength chin straps and NOT EN397's breakaway straps. This is because the helmet needs to stay on AFTER an impact/fall because the climber may well still be exposed at height and can't afford to have the helmet detach completely. It would be interesting to know how often a fall that results in being hung up by the helmet strap such that you are strangled to death has occurred versus being hit on the head because your helmet has come off after an impact from the first piece of falling debris or branch? A number of manufacturers like *Petzl* and *Uvex* provide both types of chin strap which can be swapped in and out but this might still result in falling foul of local protocols if you had the wrong one on. While it's impossible to meet both standards at the same time, the helmet as a 'package' is able to meet both EN397 and EN12492 and these helmets are often called 'hybrids', not to be confused with 'hybrid' as a type of helmet construction. Many more helmets, especially outside of Europe, will meet the impact resistance (including sharp-object penetration) requirements of EN12492 but not necessarily the chin strap requirement. It's a strange dilemma since we're not at all convinced of the validity of a lower strength breakaway chin strap for climbers. *Heightec's Duon* and *JSP*'s *EVO* series have gone some way to solving this dilemma by using a chin-strap buckle that adjusts between weak and strong.

The enhanced EN14052 standard that requires better top, side and frontal impact tests for industrial helmets effectively mimics EN12492 impact testing but has the lower strength EN397 chinstrap so climbing helmets will rarely be fully EN14052 compliant and vice versa. This standard is far from widely adopted so only relatively few including *Kask*, and *Team Wendy* have it. Kask have now added a green buckle to more readily differentiate EN12492 compliance



UPDATED Jun '25



1



2



4



5

1 Hard Shell
2 Hard-Shell Hybrid
3 Soft Shell (not shown)
4 Hybrid (hard shell-In-Mold)
5 In-Mold (In-Mould)

HELMET CONSTRUCTION

in the fourth quarter of the last century, sport climbers were progressing from very round, glass-fibre, water melon-style helmets with a foam lining and a chin strap to plastic ovals with a spider-web cradle and a chin strap. Meanwhile, arborists were just about progressing from a plastic building site helmet to a plastic building site helmet with a chin strap. Some of us wore certified climbing helmets with accessories but it wasn't until this century that arborists really began to see the need for a 'proper' climbing helmet that was firm and comfortable in all orientations that a climber might find him/herself in, able to withstand impacts from multiple directions (ANSI Class 2) not just from the top (as ANSI Class 1 requires) and also able to take all the safety trimmings necessary for chainsaw use. By 2010 virtually all climbing helmet manufacturers producing high quality mountaineering helmets were also producing a more 'industrial' version able to be fitted with visors and ear defenders for both the rope access and arborist markets. Europe mostly embraced the climbing helmet model with arborist helmets from the likes of *Petzl, Kask, Edelrid, Kong, CT* and *C.A.M.P.* while North America continued to develop the site-helmet theme incorporating a peak (primarily driven by the ANSI helmet standard requiring a peak) from companies like *Klein Tools*, *Americana*, *3M*, *PMI, Studson* and imports from *Pacific* and *JSP.* This has led to many Arb stockists in North America majoring on European models which, in turn, has caused some European manufacturers to ensure that their helmets either meet both ANSI and EN standards like *Petzl* or they have two versions, one meeting EN and one meeting ANSI standards, like *Kask*. Also this century we saw perhaps the biggest driver in arborist helmet evolution, the *Protos* Helmets by Austrian Forestry giant *Pfanner*. The *Protos* was the first to fully integrate eye and ear protection into the one shell but and is renown for its vast range of colours, designs and customizations. The version on the right for instance is a Ukraine Special edition with money from every sale donated by *Pfanner* and the stockist to Ukraine charities having to cope with devastation caused to civilians and civilian infrastructure by the 2022 invasion by Russia.







North America vs European

Only one of these three helmets is available to European climbers - spot the differences? These first two are the Spire without vents and the Elevation intended for North America-only. The bottom helmet is the Spire Vent for Europe.

The Spire Vent adheres to EN12492 while the Spire and Elevator adhere to ANSI z89.1 Type 1 Class C and E respectively but with extra Lateral Deformation tests for both. You'll find this same North American/European differentiation with many of the key brands Stihl, Petzl, Kask, MSA etc. and while some are fully compliant across both sets of standards most are only partially compliant. If you take electricity out of the equation the choice of European climbing helmets is huge in comparison to their US-counterparts and US stockists obviously agree since they all sell far more EN-compliant helmets to arborists than they do than ANSI.

Back to past history and after an initial flirtation with motorcycle helmets for climbing it became clear that helmet linings had to be improved. The answer initially was to keep the glass fibre shell and increase the clearance between the head and the shell. Building site helmets had something of an answer with their adjustable plastic head band and concentric plastic 'spokes' joined at the crown but more comfort was needed and this included improving ventilation or airflow to the head which was otherwise encased in a hot and sweaty goldfish bowl. Enter the age of substantial sized air vents and a webbing cradle initially riveted around the shell and with an inch or two of clearance between the top of your head and the inner shell. In the event of a lump of wood hitting the top, the shell can deform to absorb some impact before the shell reached your crown. This allowed superior materials to creep into helmet production - lighter, stronger and more resilient to wear than glass-fibre, mostly plastics, thermoplastics and polymer mixes. The next couple of decades saw various combinations of hard-shell plastics that deformed to absorb impact and cradles that tried their best to keep your crown clear of the shell. Some shells began to re-incorporate fibres into the plastics to improve durability, not quite back to the traditional glass-fibre days and certainly a feature of the more robust shells. Meanwhile, some cradles were replaced by a full 'cap' or dome of polystyrene instead of webbing straps to improve comfort, all the while making the helmet lower in profile than the original pimple-on-your-head like the *Joe Brown* and original *Edelrid Ultralight.* Carbon fibre came and went and still appears every now and then but perhaps the most obvious modern change has been more extensive use of EPS (Expanded Polystyrene) and latterly the slightly denser EPP (Expanded Polypropylene) leading to three new classes of helmet in addition to the existing hard-shells. Good luck differentiating some of the 'hybrids' from some of the 'in-Molds'. For arborists we only really have to worry about Hard-Shells and Hard Shell Hybrids. Again difficult to tell apart. They both have a full dome of material - mostly ABS and ABS/Polycarbonate (as dictated by EN397) but basic Hard Shell has a web cradle with internal clearance (often with a small insert of polystyrene in the crown while the hybrid has a much more expansive 'lining' of expanded foam/polystyrene. Hard shell is the traditional design with a web cradle and/or small EPS crown insert in a full ABS or polycarbonate shell. A few that are more suited to rescue


Ukraine-colours version of Protos



but are sold by some arb stockists like *Pacific* use a kevlar reinforced composite so are renown for being tough but are fairly heavy and not cheap. What looks like polystyrene is now carefully crafted as EPS and EPP and is used as a shell liner in addition to a mesh in place of the traditional web cradle. EPP and EPS are very light, they insulate and are soft allowing thicker cross-sections to absorb impact well. It can be shaped to fit pretty much anything you like allowing intricate designs to improve air flow, follow the shell contours, cut around ears and extend down at the nape all while allowing enough deformation/compression to absorb impact and protect your head. The initial problem with these materials is durability - as an outer shell it's a weak material when it comes to resisting having chunks knocked or scraped out of it, which is one reason you don't see many as arborist helmets.

MIPS & KOROYD



Of special mention in helmet construction is the MIPS enhanced head protection we see most often in ski-helmets that code-share as climbing helmets. ***MIPS*** stands for ***M***ulti-directional ***I***mpact ***P***rotection ***S***ystem and is basically a licensed element to helmet linings from the Swedish inventors that limits rotational impact because the special liner allows the head to rotate within the shell. Companies basically buy in the *MIPS* expertise in helmet safety and incorporate it into their helmet designs like the *Centurion Nexus MIPS* on the left (yellow section) . It's a bit like clothing manufacturers adding *GoreTex* as a key and prestigious feature. One of the newest helmets on the market is the US *Studson* helmet which purports to have merged the best of sport helmets with industrial to produce a sleek and well featured model. It uses a similar system to *MIPS* called *Brainshield* made by *Shield-X*. The *Studson* also uses another safety addition which is the *Koroyd* honeycomb liner most notably used by *Pfanner* in their *Protos* and by New Zealand's *Zero Height Safety* in their *Pinnacle* series. *Koroyd* crumples on impact to absorb far more energy than a solid liner or web cradle.

VISORS

It used to be that a helmet visor was a dark wire mesh that occluded vision by about 30% but didn't 'occlude' dust at all - just the larger particulates and chips most likely to damage your eyes. Back in the 80's when some colleagues were mocking my use of SRT systems for tree work I also got some stick for having a clear plastic visor instead of the standard mesh; this was probably acetate back then rather than the much harder-wearing polycarbonate visors we mostly see today. The advantages as I saw it were that the clear visor kept out water and dust and gave me much, much better visibility especially since mine didn't have a frame - it was a bit like the hospital covid masks. The downside was that it scratched easily and with no reinforcing frame you had to look after it a bit more and it fogged up in certain weather. This latter problem is



why the modern goggle-style visor have found favour over full 'square' visors- you're not breathing your heated, foetid fumes on it all day long and even if you were, most have anti-fog and anti-scratch treatments to prolong their usable life in the tree. Goggle-visors have therefore become the standard eyewear protection in most modern arborist helmets, practically to the exclusion of full face 'square' visors which are largely the domain of ground crew and those tending the chipper. Many of the goggles supplied directly by the helmet manufacturer have unique sizing and fittings for that helmet - *Climbing Technology* for instance has a different visor for their *X-Arbor* than to their *Aries Tree*. However, the vast majority of helmets in this GUIDE have the 30mm Uni or Euro slot that will take industry standard ear-defenders and visor mounts so you can supplement the goggles to some of these with an additional full/half size visor or mesh visor. Some of the images show the helmet with a visor that doesn't necessarily come from that helmet manufacturer and has to be purchased separately. Refer to the UNI-SLOT column to ensure that the helmet can be retro-fitted with various other general-market visors and ear defenders. High quality, anti-fog/anti-scratch goggle-visors can be as much as, if not more expensive than the helmet itself at between £/$20 and £/$100+. You can also get full visors with an integral curved chin or as a a quadrant-shaped attachment (for clear and mesh) to help stop debris blowing up under the visor. Those that stow inside the shell are obviously better protected but some like Petzl do also offer visor guards for externally stowed visors to protect from damage.

EAR DEFENDERS

Sometimes called ear-muffs, this is another area where the climbers helmet may vary from ground-crew/chipper team helmets because the chipper is a lot noisier than a tree-chainsaw and especially a battery saw. It's not quite as simple as using the greater noise insulation of a 31SNR ear defender over a climbing standard 26SNR (SNR=Single Number Rating and is equivalent to the percentage noise that is absorbed and therefore not making it through to your delicate ear holes) because a climber may need to have at least some background hearing to be aware of any hazard warnings. Although the same could be said for ground-crew since they're more likely to get a branch on the head. That's why an **alarm whistle** is a useful item to carry and only use in the event of a hazard to life because it will cut through any ear defender's noise baffle. The ear defender market is dominated by *MSA*, *Sordin*, *Sperian* and *3M Peltor* and these can have an independent head band so that you can use them under *any* helmet or, more usually they will be directly mounted to the helmet as a detachable element often in conjunction with the visor mount. Whether it's a visor or ear defenders, you need to ensure that it fits the helmet properly because so-called universal slots and fixings only need to be a half a millimetre out and there will be play in the mount. A uni-slot (in Europe a standard *Euro-slot* is 30mm wide) allows visor and ear defender mounts to simply push in and click into place. Some, like *Petzl* have their own system called *Easy-Clip* which means that *Petzl* accessories will only fit *Petzl* helmets although the helmets themselves will take other *Euro-slot* accessories and some like *Husqvarna* are even more confusing because they have accessories that will fit some in their helmet range but not others at least not without an adaptor but that pretty cheap at just a few quid/bucks. There are also helmet designs that don't suit certain accessories - peaks will block visors and side brims/flares similarly stop ear defenders from fitting to your ear properly. As with visors you'll



CLIMBING HELMETS



pay for the better quality and hearing protection is also something worth preserving expect an average of £40/$55 rising to £/$100+ for high end models.

INTEGRAL HELMET FEATURES

VENTS This is one of the two key features that differentiates a climbing arborist's helmet from an industrial helmet or ground-worker's helmet. Aside from utility climbers working around electricity, climbers mostly want vents to help cool the head when working hard. But it would be nice to have the option so helmets like *Petzl's* Vent models, *CAMP*'s *Ares* and *Pfanner's Protos* have the useful provision of a sliding vent that can be closed. Others have separated vent covers that you can push into place to provide a closed shell. Industrial helmets tend not to be vented at all in order to adhere to additional electrical conductivity and molten metal ingress requirements. Vents may be comprised of a few large openings like *Petzl's Vertex.* or many smaller ones. Some have mesh covering the vents (shown as ● in our tables) so that air gets through but not much else because the disadvantage of larger openings is the possibility of twigs and stones getting in. In some models this risk is countered by offsetting the internal lining to partially occlude the opening. Helmets with only minimal vents are indicated by ♦ in the tables.

Some helmets have a small rubber D or ring on the chin strap which is for carrying your helmet on your harness or the outside of a pack. We always simply clipped around the chinstrap or yoke section but this method ensures you don't inadvertently stress and damage the buckle or any stitching.

SIZE ADJUSTMENT

There are three main options for adjusting the fit of a helmet: Headband, Chin Strap and what we'll call the Yoke Union. The first two are self-explanatory but the yoke union is where the chin strap meets the Y-shaped helmet attachments and there is often a plastic buckle here that can adjust the chin strap forward and backwards in relation to the shell. The headband is generally padded for comfort and sweat retention and often detachable and washable. It needs to fit snuggly around your head and, together with the chin-strap, ensures the helmet won't fall off or tip forwards/backwards when you look up or down. Originally, tightening was achieved with a simple belt-style pin and hole adjustment later modified to much safer and lower profile plastic lugs on one end of the headband pushing into a set of holes in the other end, what we have called Slide Adjust and indicated by a ■ in the tables. We did see *Velcro* for a time but that quickly evolved back to a more substantial lug and hole or zip-tie/cable-tie style ridges of plastic. This gave rise to the idea of using a knob, cog or dial to drive the two sections over each other and lock into place wherever you stopped the ratcheting. These ratchet adjusters were originally seen only on fire-rescue and industrial helmets and it was decades before they started to appear on climbing helmets. This may have been because they were perceived to be too heavy or because the knob was deemed a hindrance or even a hazard to the back of the head in the event of a fall. Either way, ratchet adjust cogs/wheels have now well and truly evolved into the design of virtually all climbing helmets in this GUIDE and shown in our tables as ■. If you work in cold climates you will need to ensure that the headband sizing and internal clearance is sufficient to allow wearing a balaclava or fleece head-covering and that this is close-fitting with no extraneous buttons and lumps that can affect impact forces. Unlike sport climbing helmets, 'female-specific' versions of arborist helmets are much rarer - this is usually perceived as being pink/magenta or having a cut-out for a pony-tail or having a smaller head-size though there are plenty of males to which all three of these options might apply. ArbClimber#22 showed our own local celebrity climber Jo Hedger wearing Husqvarna's helmet with enough size adjustment to be well-fitting and with a 'pony-tail' cut-out (pic above).



MULTI-ROLE HELMETS

Arborist climbing helmets pretty much ARE multi-role helmets as exemplified by the *Pfanner Protos.* Even this non-climbing, forestry helmet (right) from *Husqvarna* shows the way things will go with their very nifty rechargeable *HL1200* 1200Lumen light mounted on it. But in this case we mean ***certified for a range of other uses***. For those undertaking tree work as part of a wider remit that encompasses either rescue, forestry, ATV driving, firefighting or shooting people, there are multi-role helmets where one model fulfils a number of different activities. At present that means it's bigger, heavier and more expensive but that will change. Military style 'rails' allow attachment of cameras, night vision, laser-pointers as well as more regular headlamps using a slot-in adapter and we will see rails catch on more in civilian rope activities rather than just military or law enforcement but it's a rare beast at the moment.



CONCLUSIONS

Ultimately, ALL of the helmets in this GUIDE are suitable as an arborist climbing helmet but aside from weight, cost and comfort (which is subjective) the key decision is on standards and whether you need to work near electricity. Don't forget that **'Working At Height' is NOT the same as 'Climbing'**. Fitting plumbing or electrical cables on the upper floors of a high rise construction is working at height but is quite unlike hanging off a rope. For climbing, arborists should be choosing a helmet tested for impact and/or deformation to the top, sides and front/back of the shell and preferably with the higher strength chin strap >50daN, which will stay on in the event of a big fall or impact - this being more important and more likely than the industrial/ground-helmet 'concern' of being hung up such that you might be strangled. Some offer both options in the same helmet such as *Petzl* , *Heightec* & *JSP* and we will see more of this because, for electrical work, you need to juggle with EN397's conflicting chin-strap strength requirement and internal head clearance and lack of vent openings. **Climbers must take note of their helmet's specific standards because some look exactly like climbing helmets but only meet top-impact (ANSI class1/ EN397) standards** like the Stihl's X-Ergo, *Klein Tools*, *Defender Safety*'s *H1CH* and the *Milwaukee's Bolt* which are therefore not included in this GUIDE. The *CAMP Ares Air Pro* and *Kong Spin* which might otherwise seem to be the perfect climber's helmets only meet EN397 but are specifically marketed as climbers helmets so we have included them with a red flag in the EN12492/Lateral column.

For pure climbing It is likely that we will see more military rail- style models creeping into arborism if only because some arborists will think it looks cool. The lighter 'foam' hybrids and in-mold climbing helmets that you can find in **WILDERNESS SAR**#11's HELMET GUIDE only get one mention here (*Kong*'s *Leef*) because they are far less robust than the hard shell and hard shell hybrid helmets but they do still have a place for tree climbing, competitions and inspections as we saw on the cover of **ARBCLIMBER**#21 with the *Edelrid Salathe* which would otherwise not be considered a typical arborist helmet. *Kong*'s *Leef* however, takes ear defenders and visors and is easily the lightest in this GUIDE. There is again no overt Chinese representation here as they continue to be difficult to extract details from and to blatantly copy identifiable models but they can and do produce quality models including companies like *Portwest* so we will see more Chinese own-branding in future.

IN THE FOLLOWING TABLES:.....

The figures in this Guide are verified by the manufacturer but you often see different spec on some supplier websites and for rebadged models. No idea why!

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

COST: Recommended Retail Price. Often sold for less so a rough guide only - varies due to exchange rates, taxes etc. and we usually round the price up. In the UK, helmets have no VAT when purchased for personal use.**Prices in £$€ are currency conversion only** with no bulk shipping or import duty etc.

The price in black is for a bare helmet. The price in **green** is for a basic combo or kit as supplied by that specific manufacturer so it varies with visor and ear defender type

□○□○□○□○ outline square or circle = OPTION

WEIGHT: for the bare helmet MINUS any accessories. As a rough guide, add 3/450g for ear defenders, 160-250g for a mesh visor, 250g+ for a full clear visor &100g+ for goggle visors.

STANDARDS: ■ =full compliance, ●● =partial compliance - (●● blue outline = a variant) the type of chin-strap and lateral deformation tests will generally be the cause of partial compliance - eg. the shell will be to EN397 to allow for electrical protection with additional lateral deformation tests and a chinstrap to EN12492.

EN50396 ELECTRICAL INSULATION (in addition to indications under ANSI - C,G & E) where EN50396 =<1000vAC , **LT** = Low Tension domestic/<440vAC and **HT**=High Tension/>1500vDC. A ■ indicates **LT** <440vAC as a max voltage but is also an addition to EN397 so may not have the ■ denoting EN50396

CSA / AUSNZ/ EAC: Specific Canadian, Australian/New Zealand And Russian/East European industrial standards but CSA mainly follows ANSI while AS/NZ mainly follows EN standards.

ANSIZ89.1: North American industrial standard - Type 2 has all around impact protection but many Type 1 have additional lateral impact and/or deformation testing to better suit climbers needs as indicated in the **EN12492/+Lateral column**. ANSI is defined by 3 classes of electrical conductivity **C**, **G** & **E**.

BS/EN14052: an enhancement of EN357 for impact tests with top, side, front and rear impact tests but seems to be largely ignored by most manufacturers.

(BS)**EN397** Industrial-oriented standard - shells may be the same general structure as an EN12492 shell but vents may be less or absent altogether and the chin strap must be able to detach/break at **15-25daN** (effectively <25kg of force) to avoid the risk of strangulation in a hang-up. Associated requirements for electrical resistance precludes the use of sizeable vents.

(BS)**EN12492/+Lateral:** Climbing Specific helmets with Lateral



CLIMBING HELMETS



(side/front/rear) impact or deformation (LD) testing and vents greater than 4cm² of the shell area. Chin strap retention should be **greater than 50 daN (50kg)** loading for 2minutes. **+LD** = additional Lateral Deformation (not impact) tests supplementing EN357 and ANSI type1 top impact tests indicated by an orange diamond ♦

MATERIALS: PP=Polypropylene (for the outer shell and some components). EPS=Expanded Polystyrene (especially for the shell liner. EPP=Expanded Polypropylene (especially for the crown insert). ABS= Acrylonitrile Butadiene Styrene (thermoplastic polymer) for the outer shell.

UNI-SLOTS/RAILS: Goggles/visors and ear protection are as supplied by the specific company - ANY helmet with a black square ■ in the UNI-SLOTS column can have visor/goggle/ear defenders fitted from *any* other manufacturer. 30mm slots in Europe ('Euro-Slots')& similar 1" in North America but double check for a firm fit. **RAILS** are military style (Picatinny) attachment points for lighting, cameras, night-vision etc.

EYE PRO[TECTION]: **INT**=Internal (Integrated) -the goggle-visor and/or 'square' visor stow INSIDE the shell not outside.

GOGGLE/VISOR: Simply indicates the colour of polycarbonate goggles and/or visors available from this manufacturer - Clear, Smoked/tinted or mirror.

VENTS CLOSE /MESH: Many of these helmets have obvious air holes (vents) in the shells shown as a black square ■ but some have less than others, particularly the more industrial oriented helmets. Those with minimal vents are shown with a black diamond ♦. CLOSABLE vents are shown as a magenta square ■ and if these are separate push-in covers there will be an asterisk and a note to that affect. Those that are permanently open but have a MESH cover to restrict the ingress of twigs and debris are shown as a magenta circle ●.

ID/LOGO REFLECT: Customised decals are available from some manufacturers while other helmets may have a specific ID badge area which might simply be a clean, flat rectangular area or may be a plastic housing allowing an ID to be slid in. If it is a standard feature it will be shown as ■ if it is an option it will be an outline square □. Reflective decals are standard on one or two indicated by ■ but most provide them as an option shown as an orange outline square □.



NAPEGUARD UV: A shroud that comes down from the rear of the helmet shell and down to your shoulders. This helps stop wood chippings, dust and water from going down your neck. Almost always an option rather than standard. **UV** is a UV indicator on the helmet. Most helmets will be retired due to sheer abuse and unsightliness with no real regard for its performance capabilities years after its purchase, which may be significantly reduced. One thing you can keep a eye on is UV exposure which is a silent helmet killer also largely ignored by most. We are now seeing red UV indicators embedded into the rear like this *Stihl Advance X-Climb* to tell you exactly when it's seen its fair share of damaging UV rays (it changes colour, in this case it bleaches white).



LAMP CLIPS BRKT where **BRKT** refers to ***an elastic retainer or a solid bracket*** at the front or rear of the helmet

COLOURS different colour options are shown as the main colour with trim or secondary colours shown in the box outline. One model, the Sovos S3200 (top) uses a clip on shell to alter the colour from the basic white.



Images NOT to scale
Visors etc. are example of what can be fitted not necessarily what is supplied
COST: Approx. **Inc** local tax/no VAT
in UK £$€=Currency Conversion Only
STANDARDS: ●●●●= partial adherence
VENTS: ■=closable ●=mesh ◆=minimal **EAR:** ◆= Will fit most accessories but check
□□□= **OPTION**
VARIANT= blue or □◇○ if it's

	MODEL Variant/ AKA	COMPANY	ORIGIN	COST BARE HELMET COMBO inc Tax £$€ currency conversion only	WEIGHT (BARE HELMET)	SIZES	CONSTRUCTION SHELL INNER STRAPS/HEADBAND
	Ares 0747 Ares MIPS 3258	C.A.M.P.		£70 $110 €76 N/A	475g 16.8oz 500g 17.6oz	54-62cm 21.3-24.4"	HARD SHELL ABS/Polycarbonate HD EPS Nylon
	Ares Air 0748 Ares Air Plus 2641	C.A.M.P.		£70 $110 €76	475g 16.8oz 480g 16.9oz	54-62cm 21.3-24.4"	HARD SHELL ABS/Polycarbonate HD EPS Nylon
	Ares Air Pro 2643	C.A.M.P.		£70 $110 €76	480g 16.9oz	54-62cm 21.3-24.4"	HARD SHELL ABS/Polycarbonate HD EPS Nylon
	Armour Pro 2644	C.A.M.P.		£50 $80 €58	360g 12.7oz	54-62cm 21.3-24.4"	HARD SHELL HYBRID ABS HD EPS Nylon
	Skylor Plus 0209	C.A.M.P.		£40 $60 €50	495g 17.5oz	55-62cm 21.7-24.4"	HARD SHELL ABS HD EPS Polyester
	Nexus Heightmaster Extreme MIPS	CENTURION		£54 $75 €75 £110	378-505g 553g	53-63cm 20.9-24.8"	HARD SHELL ABS EPS Terylene/LDPE
	Serius Height Work	EDELRID		£115 €60 $100	469g	54-64cm 21.3-25.2"	HARD SHELL ABS EPS Polyester
	Tectum	EDELRID		£TBA €TBA $TBA	TBA	54-64cm 21.3-25.2"	HARD SHELL ABS EPS Polyester
	Tectum Air	EDELRID		£TBA €TBA $TBA	TBA	54-64cm 21.3-25.2"	HARD SHELL ABS EPS Polyester
	Manta 4 MH4 Forestry Tactical Extreme MH4 Tactical	FUTURE SAFETY		£114 £143 £83 $220 €150	500g 17oz 670g 23.6oz	53-62cm 20.9-24.4" 63-65cm 24.8-25.6"	HARD SHELL HYBRID ABS EPP Polyester/Nylon

CLIMBING HELMETS

STANDARDS							EYE PRO			Goggle Visor			EAR	FEATURES				CRADLE		CHIN		COLOURS	NOTES	WEBSITE
TEMP RANGE °C °F	EN50365 LT HT	ANSI Z89.1 CGE	CSA AUS/NZ EAC	EN14052 / UKCA	EN397 (industrial)	EN12492/+Lateral	GOGGLES INT	FULL VISOR INT	MESH VISOR INT	CLEAR	SMOKED	MIRROR	UNI SLOTS/RAILS	VENTSCLOSE/MESH	ID/LOGO REFLECT	NAPE GUARD UV	LAMP CLIPS BRKT	SLIDECOG ADJUST	REPLACE PADDING	<25daN Release	>50daN Release			
-20 -4 +50 122	■ ■ -	■ - -	- ■ ●	- - -	■	●	□ -	□ -	- -	□	□	-	■ -	no	- □	- -	4	■	■	■	-	*+ Lateral deformation tests ●MIPS not yet EAC MIPS version has enhanced anti-rotational head cradle. ●only Red, White or Yellow Has NFC Track/ID tag	camp.it
-20 -4 +50 122	■ - -	■ - -	- - -	- - -	●	■	□ -	□ -	- -	□	□	-	■ -	■ ●	- □	- -	4	■	■	-	■	PLUS was originally called Ares Air ANSI. Has NFC Track/ID tag	camp.it
-20 -4 +50 122	- - -	- - -	- ■	- -	■	no	□ -	□ -	- -	□	□	-	■ -	■ ●	- □	- -	4	■	■	■	-	Same construction as Ares and listed as suitable for rope climbing but only has EN397 certification/additional tests. Has NFC Track/ID tag.	camp.it
-20 -4 +50 122	- - -	- - -	- ■	- -	●	●	□ -	- -	- -	□	-	-	■ -	■ -	- □	- -	4	■	■	-	■	Mesh visor is outsourced. Has NFC Track/ID tag	camp.it
-20 -4 +50 122	- ■ -	- - -	- ■	- -	■	●	- -	- -	□ -	-	-	-	■ -	no	- □	- -	4	■	■	■	-	Mesh visor is outsourced. Has NFC Track/ID tag	camp.it
-40	■ ■ -	■ - -	■ -	- ■	●	●	□ □ *	□ -	□ -	□	□	-	■ -	◆	□ □	□ * -	4	■	■	-	■	*Internal goggle option (shown) needs to be pre-installed. *Also full cold-weather hood system & cooling pads. *Also Hi-Viz yellow and Hi-Viz Orange	centurionsafety.eu
-30 -22 +50 122	■ - -	- ■ -	■	- -	●	●	- -	- -	□ -	-	-	-	■ -	no	□ □	- -	4	■	■	■	-	Edelrid now supply visors & ear defenders but Serius takes all standard accessories. Includes a set of replacement padding	edelrid.com
-30 -22 +50 122	■ - -	- - ■	■	- -	●	●	□ -	□ -	□ -	□	□	-	■ -	no	□ ■	□ □	4	■	■	■	-	NEW in 2025 Accessories inc. front sun brim, full sun brim, visor protector.	edelrid.com
-30 -22 +50 122	■ - -	- - ■	- - -	- - -	●	■	□ -	□ -	□ -	□	□	-	■ -	■ ■	□ ■	□ □	4	■	■	-	■	NEW in 2025 Accessories inc. front sun brim, full sun brim, visor protector.	edelrid.com
	- - -	- - -	- - -	■	-	■	□ □	□ -	□ -	□	-	-	■ -	■ ■	□ ■	- -	2 1	■	■	-	■	Standards for Forestry also include FS/ATV1 Quad/ATV for military include NFPA, Marine, firefighting, & Technical Rescue *COLOURS: Forestry also navy blue. Military=Black only	future-safety.com

Images NOT to scale
Visors etc. are example of what can be fitted not necessarily what is supplied
COST: Approx. **Inc** local tax/no VAT in UK £$€=Currency Conversion Only
STANDARDS: ●●●● = partial adherence
VENTS: ■=closable ●=mesh ◆=minimal **EAR:** ◆= Will fit most accessories but check
□□□ = OPTION
VARIANT= blue or □◇○ if it's a [illegible]tion

	MODEL Variant/ AKA	COMPANY	ORIGIN	COST BARE HELMET COMBO inc Tax £$€ currency conversion only	WEIGHT (BARE HELMET)	SIZES	CONSTRUCTION SHELL INNER STRAPS/HEADBAND
	Duon Air MH02 Duon (unvented) MH02	HEIGHTEC		£83 £80 $104 €96	350g 12.3oz 550g	52-66cm 20.7-26"	HARD SHELL ABS Polyester Web-only Polyester/Nylon
	Elevation	HUSQVARNA		£121 $170 €160	450g 15.9oz	51-62cm 20-24.4"	HARD SHELL HYBRID ABS EPS Nylon/Nylon
	Spire	HUSQVARNA		£121 $170 €160	470g 16.6oz	52-63cm 20.7-24.8"	HARD SHELL HYBRID Polypropylene EPS Nylon/Nylon
	Spire Vent Spire Vent X	HUSQVARNA		£135 £180 $170 €126	470g 16.6oz	52-63cm 20.7-24.8"	HARD SHELL HYBRID Polypropylene EPS Nylon/Nylon
	EVO 5	JSP		£79 $101 €95	480g 16.9oz	53-64cm 21-25"	HARD SHELL ABS EPP Polyester/HDPE
	EVO (ASCEND) Vista Shield Vista Lens	JSP		£110 $136 €130	415g 14.6oz	53-64cm 21-25"	HARD SHELL ABS EPP Polyester/HDPE
	EVO Lite Skyworker AJS260	JSP		£32 $41 €38	382g 13.5oz	53-64cm 21-25"	HARD SHELL ABS EPP Polyester/HDPE
	Superplasma PL WHE00108/109-201 Superplasma AQ WHE00104/105	KASK		£86 $130 €80	420g 14.8oz 390g 13.75oz	51-6263cm 20-24.424.8"	HARD SHELL HYBRID Polypropylene EPS Nylon/Nylon
	Superplasma HD WHE00036/37 Superplasma HP /HP Visor WHE00106/107	KASK		£105 $130 €120	450g 13.3oz	51-6263cm 20-24.424.8"	HARD SHELL HYBRID ABS EPS Polyester/Nylon
	Primero (EN) WHE00111/12 Primero Air (EN) WHE00113/24	KASK		£70 £86 $90 €80 €95	460g 13.3oz	52-63cm 20.7-24.8"	HARD SHELL HYBRID Polypropylene EPS Nylon/Nylon

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STANDARDS							EYE PRO			Goggle Visor			EAR	FEATURES				CRADLE		CHIN		COLOURS	NOTES	WEBSITE
TEMP RANGE °C °F	EN50365 LT HT	ANSI Z89.1 CGE	CSA AUS/NZ EAC	EN14052 / UKCA	EN397 (industrial)	EN12492/+Lateral	GOGGLES INT	FULL VISOR INT	MESH VISOR INT	CLEAR	SMOKED	MIRROR	UNI SLOTS/RAILS	VENTSCLOSE/MESH	ID/LOGO REFLECT	NAPE GUARD UV	LAMP CLIPS BRKT	SLIDECOG ADJUST	REPLACE PADDING	<25daN Release	>50daN Release			
	- ■ -	- - -	- - -	-	■* ■*	■* ●*	□ -	□ -	- -	□	-	-	■	■ ■ no	□ □	- -	4 -	■	■	■*	■*		*the same chin strap buckle can be switched between hi & low strength to fully or partially meet both standards.	heightec.com
-30 -22 +50 122	- - - -	■ - -	■ - -	- -	-	●	□ -	- -	- -	□	□	□	□ -	■ ●	- ■	- -	4 -	■	■	-	■	■	adaptor needed for Husqvarna ear defenders on Elevation.	husqvarna.com
-30 -22 +50 122	- - ■ -	- - ■ -	■ - -	- -	-	●	□ -	- -	- -	□	□	□	□ -	-	- ■	- -	□ -	■	■	-	■	■	adaptor needed for Husqvarna ear defenders on Spire. Spire Vent=EN model in Grey Spire=unvented ANSI model in Orange	husqvarna.com
-30 -22 +50 122	- - - -	- - -	- - -	- -	-	■	□ -	- -	□ -	□	□	□	□ -	◆	- ■	- -	4 -	■ ■	■	-	■	■	ear defender adaptor shown on Spire Vent is standard on Spire Vent X Spire VentX=EN model in Grey Spire=ANSI model in Orange	husqvarna.com
-40	■* - -	■ - -	- - -	- -	●*	■*	- □*	□ -	□ -	□	□	-	■ -	◆	□ □	□ -	□ □	■	■	■*	■*	■ ■ ■ ■ ■ ■	*chin strap 'switches' from high to low strength to meet both standards.*Only meets 50365 when used on the ground. Optional Evospec goggles store internally but not the same as the Vista models.	jspsafety.com
-40	- - - -	■ - -	- - -	- -	●*	■*	- □*	- ■	□ -	■	■	-	■ -	◆	□ □	□ -	□ □	■	■	■*	■*	■ ■ ■ ■ ■ ■	Branded as 'Ascend in USA. CR2 versions have hi-viz reflective as standard add $12. *chin strap has a 'switch' to change from hi to low strength to meet both standards.	jspsafety.com
-40	■ ■ -	■ - -	- - -	- -	●	■	- □*	- □*	□ -	-	-	-	■	■	□ □	□ -	□ □	■	■	-	■	■ ■ ■ ■ ■ ■	*meets some EN397 impact requirements. NB: EvoLite Forestry is not a climbing helmet	jspsafety.com
-30 -22 +50 122	- - - -	- - -	- - -	■ -	■	■ ●	□ -	□ -	□ -	□	□	□	□ -	■ ●	□ □	□ -	5	■	■	-	■	* * * * * *	*Also in Hi-Viz + (Lime EU) with fluorescent shell, luminous clips,reflective decals -add10% to cost. AQ= EU-Only EN12492 version Aluminium mesh vent guards..	kask-safety.com
-30 -22 +50 122	- - - -	■ - -	■ - -	■ -	●	■ ●	□ -	□ -	■ -	□	□	□	□ -	■ ●	□ □ ■	□ -	5	■	■	-	■	* * * * * *	*Also in Hi-Viz + (Lime US) with fluorescent shell, luminous clips,reflective decals-add10% to cost .Upgraded in 2025 HP= EU-only, NOT ANSI. White, Yellow or Red HP VISOR has Hi-Viz decals & goggles.	kask-safety.com
-30 -22 +50 122	■ - -	- - -	- - ■	- -	■	●	□ -	□ -	□ -	□	□	□	□ -	■ ●	■ □	□ -	4 2	■	■	-	■	* * * * * *	*Also in Hi-Viz (+Air=fluro Yellow) with fluorescent shell, luminous clips,reflective decals -add10% to cost. *AIR* is vented version of *Primero*	kask-safety.com

Images NOT to scale
Visors etc. are example of what can be fitted not necessarily what is supplied
COST: Approx. **Inc** local tax/no VAT in UK £$€=Currency Conversion Only
STANDARDS: ●●●●= partial adherence
VENTS: ■=closable ●=mesh ◆=minimal **EAR:** ◆= Will fit most accessories but check
□□□ = OPTION
VARIANT= blue or □◇○ i

	MODEL Variant/ AKA	COMPANY	ORIGIN	COST BARE HELMET COMBO inc Tax £$€ currency conversion only	WEIGHT (BARE HELMET)	SIZES	CONSTRUCTION SHELL INNER STRAPS/HEADBAND
 	**PrimeroPL** WHE00115/16	**KASK**		£70 $90 €80	420g 14.8oz	52-63cm 20.7-24.8"	HARD SHELL HYBRID Polypropylene EPS Nylon/Nylon
	**Primero (US)** WHE00117/18 **Primero Air (US)** WHE00119/20	**KASK**		£107 $135 $150 €125	460g 13.3oz 430g 15.2oz	Universal	HARD SHELL HYBRID Polypropylene EPS Nylon/Nylon
	**Zenith X** WHE00073/4/7	**KASK**		£90 $135 $330 €102	490g 17.3oz	52-63cm 20.7-24.8"	HARD SHELL HYBRID Polypropylene EPS Nylon/Nylon
	**Zenith X Air** WHE00075/6/8 **Zenith X PL** WHE00079/80/81	**KASK**		£100 £115 $150 $330 €103	490g 17.3oz	52-63cm 20.7-24.8"	HARD SHELL HYBRID Polypropylene EPS Nylon/Nylon
	**Zenith X2 Air** WHE00099/100 **Zenith X2** WHE00097/98	**KASK**		$154 $150	470g 16.6oz 460g 16.1oz	52-63cm 20.7-24.8"	HARD SHELL HYBRID Polypropylene EPS Nylon/Nylon
	**Leef** 997002.....	**KONG**		£100 $139 €130	230g 8.1oz	54-61cm 21.3-24"	IN-MOLD polycarbonate EPS Nylon/Nylon
	**Mouse (Sport/Tactical)** 99716.....	**KONG**		£62 £116 $95 €64	380g 13.4oz	52-64cm 20.7-25.2"	HARD SHELL ABS Web/EPS Polyester
	Spin 99720.....	**KONG**		£60 $85 €70	385g 13oz	52-62cm 20.7-24.4"	HARD SHELL ABS EPS/Web/Foam Polyester



STANDARDS							EYE PRO			Goggle Visor			EAR	FEATURES				CRADLE		CHIN				
TEMP RANGE °C °F	EN50365 LT HT	ANSI Z89.1 CGE	CSA AUS/NZ EAC	EN14052 / UKCA	EN397 (industrial)	EN12492/+Lateral	GOGGLES INT	FULL VISOR INT	MESH VISOR INT	CLEAR	SMOKED	MIRROR	UNI SLOTS/RAILS	VENTS CLOSABLE	ID/LOGO REFLECT	NAPE GUARD UV	LAMP CLIPS BRKT	SLIDE COG ADJUST	REPLACE PADDING	<25daN Release	>50daN Release	COLOURS	NOTES	WEBSITE
-30 -22 +50 122	- - -	■ - -	- - -	- -	♦	■	□ -	□ -	■ -	□	□	□	□ -	■ ●	□ □ ■	□ -	5	■	■	■	-	■ ✱ ✱ ■ ■	Primero PL is Europe only. *Also in Hi-Viz (white shown in pic) + fluro Yellow EU -add10% to cost.	kask-safety.com
-30 -22 +50 122	■ ■ ■	- ■ ■	■ ■ -	- -	-	♦	□ -	□ -	□ -	□	□	□	■ -	■ ●	■ □	□ □	4 2	■	■	-	■	■ □ ■ ■ ■ ■ ■	*Also in Hi-Viz + ■ (Lime US) with fluorescent shell, luminous clips,reflective decals -add10% to cost. *AIR* is vented version of *Primero*	kask-safety.com
-30 -22 -20 -4 +50 122	■ ■ -	- - ■	■ ■ -	- -	■	♦	□ -	□ -	□ -	□	□	□	- -	no	■ □	□ □	4 2	■	■	■	-	✱ ■ ■ ✱ ✱ ■ ■ ✱ ■ ✱ ■	*Zenith X unvented and technically an ANSI type 1 but meets EN12492. *Also in Hi-Viz versions (cost = 15-20% higher than shown) ❂3x Pre-fitted Combo colours. NB Std Zenith DISCONTINUED	kask-safety.com
-30 -20 +50	■ ■ -	- -	■ ■ -	- -	■	♦ ■	□ -	□ -	□ -	□	□	□	- -	■	■ □	□ □	4 2	■	■	■	-	✱ ■ ■ ✱ ✱ ■ ■ ✱ ■ ✱ ■	*Also in Hi-Viz versions (cost = 15-20% higher than shown) ❂3x Pre-fitted Combo colours (pic shown)	kask-safety.com
-20 -4 +50 122	- - -	- - ■*	- - -	- -	-	■	□ -	□ -	□ -	□	□	□	□ -	■ no	■ □	□ -	4 2	■	■	-	■	✱ ✱ ✱ ■ ■ ✱ ■ ■ ■	*X2 = unvented and technically an ANSI type 1 but meets EN12492. *Also in Hi-Viz versions (cost = higher prices shown) ❂3x Pre-fitted Combo colours	kask-safety.com
-30 -22 +50 122	- - -	- - -	- - -	- -	-	■	□ -	□ -	- -	□	□	-	- -	■	- -	- -	4	■	■	-	■	■ ■ □ ■ ■ ■	Kong Accessory slot required for ear defenders and visors	kong.it
-30 -22 +50 122	- ■ -	- - -	- - -	- -	□	■	□ -	□ -	□ -	□	□	-	■ -	■ ●	□ □	- -	2 1	■	■	□	■	✱ ■ □ ✱ ■	*Yellow is Hi-Viz version. ❂Gloss black or Tactical version=matt black. □Also available as WORK industrial version with EN397 chin strap	kong.it
-30 -22 +50 122	- - -	■ - -	- - -	- -	■	no	□ -	- -	- -	□	□	-	■ -	♦	- -	- -	4	■	■	■	-	■ ■ □ ■ ■	Listed as suitable for climbing arborists but only has EN397 certification/additional tests.	kong.it



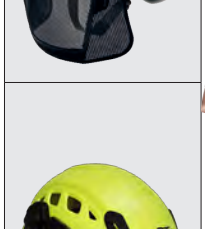
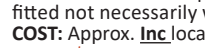
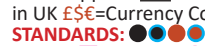
Images NOT to scale
Visors etc. are example of what can be fitted not necessarily what is supplied
COST: Approx. Inc local tax/no VAT in UK
£$€=Currency Conversion Only
STANDARDS: ●●●●= partial adherence
VENTS: ■=closable ●=mesh ◆=minimal **EAR:** ◆= Will fit most accessories but
□□□ = OPTION
VARIANT= blue or □◇○ if it

	MODEL Variant/ AKA	COMPANY	ORIGIN	COST BARE HELMET COMBO inc Tax £$€ currency conversion only	WEIGHT (BARE HELMET)	SIZES	CONSTRUCTION SHELL INNER STRAPS/HEADBAND
	F2-X-Trem	MSA-GALLET MSA-CAIRNS		£177 $175 €160	700-750g 24.7-26-5oz	52-65cm 20.5-25.6"	HARD SHELL FR Thermoplastic Polyester/Nylon/ Plastane Flame-retard mix
	F2XR	MSA-GALLET MSA-CAIRNS		£160 $235 €150	700-750g 24.7-26-5oz	52-65cm 20.5-25.6"	HARD SHELL FR Thermoplastic Polyester/Nylon/ Plastane Flame-retard mix
	V-Guard H1 TriVent Non-Vented	MSA		£96 $95 €85	515g 18.2oz	52-64cm 20.5-25.2"	HARD SHELL HD PolyEthylene EPS Polyester/Nylon
	MP2	PAB		£150 $170 €160	820g 29oz	52-64cm 20.5-25.2"	HARD SHELL FR Thermoplastic Heat Resist Foam Flame retardent
	R5SLV	PACIFIC HELMETS		£195 $230 €215	n/a	52-65cm 20.5-25.6"	HARD SHELL Kevlar composite None (Web Cradle) Polyester/Nylon
	R6V Dominator	PACIFIC HELMETS		£290 $350 €325	1003g 36.2oz	52-65cm 20.5-25.6"	HARD SHELL Kevlar composite None (Web Cradle) Polyester/Nylon
	Strato Hi Viz A020BA..	PETZL		£77 £87 $130 $140 €95 €107	415-425*g 14.6-15oz	53-63cm 20.9-24.8"	HARD SHELL HYBRID ABS EPP/EPS Polyester/Nylon
	Strato Vent Hi Viz A020BA..	PETZL		£77 £87 $130 $140 €95 €107	415-425*g 14.6-15oz	53-63cm 20.9-24.8"	HARD SHELL HYBRID ABS EPP/EPS Polyester/Nylon
	Vertex Hi Viz A010CA..	PETZL		£93 £100 $100 $110 €83 €102	490-495*g 17.3-17.5oz	53-63cm 20.9-24.8"	HARD SHELL ABS None (Web Cradle) Polyester/Nylon
	Vertex Vent Hi Viz A010CA..	PETZL		£93 £100 $100 $110 €83 €102	490-495*g 17.3-17.5oz	53-63cm 20.9-24.8"	HARD SHELL ABS None (Web Cradle) Polyester/Nylon

CLIMBING HELMETS

STANDARDS							EYE PRO			Goggle Visor			EAR	FEATURES					CRADLE		CHIN				
TEMP RANGE °C °F	EN50365 LT HT	ANSI Z89.1 CGE	CSA AUS/NZ EAC	EN14052 / UKCA	EN397 (industrial)	EN12492/+Lateral	GOGGLES INT	FULL VISOR INT	MESH VISOR INT	CLEAR	SMOKED	MIRROR	UNI SLOTS/RAILS	VENTS CLOSABLE	ID/LOGO REFLECT	NAPE GUARD UV	LAMP CLIPS BRKT	SLIDECOG ADJUST	REPLACE PADDING	<25daN Release	>50daN Release	COLOURS	NOTES	WEBSITE
-30 -22 +60 122	- - -	*	*	- -	■	■ ● *	□ -	□ -	□ -	□	□	-	■ -	■	□ ■	□ -	2+ *	■	■	-	■		*Unvented version meets NFPA & EN Technical Rescue standards with offset impact testing *Also Hi-Viz Yellow, Orange and Photoluminescent. Actual Goggles not visor-goggles	msasafety.com
-30 -22 +60 122	- - -	*	*	- -	■	■ ● *	- □	□ -	□ -	□	□	-	■ -	■	□ ■	□ -	2+ *	■	■	-	■		*Unvented version meets NFPA & EN Technical Rescue standards with offset impact testing *Also Hi-Viz Yellow, Orange and Photoluminescent. *integrated rear & optional front lighting. Clip-in ear guards	msasafety.com
-30 -22 +50 122	- - ■	■ - ■	■ ■ ■	- -	■	■ ●	□ -	□ -	□ -	□	□	-	■ -	◆ ●	□ ■	□ ■	3	■	■	-	■		Unvented version meets electrical insulation requirements. *Also Hi-Viz Yellow. Rescue whistle integrated into chin-strap.	msasafety.com
-30 -22 +50 122	- ■ -	●	-	- -	●	■ ■	- □	- -	- -	□	-	-	■ -	◆	□ ■	□ -	1+ □ *	■	■	□	■		Technical Rescue Helmet NBL MP1 Pro does not have ear defender slots/mounts. *Luminous *Option Velcro light fixtures	pab.hr
-30 -22 +50 122	- - -	■ - -	■ ■ ■	- -	■	■	- □	□ -	□ -	□	□	-	□	■ ■	□ □	□ -	3	■	■	□	■	20 inc	Simplest *R5S* version has a clean shell, no vents and no accessories. *R5T* version has integral lighting mount. Shell (only) will withstand >250°C /500°F	pacifichelmets.com
-30 -22 +50 122	- - -	■ - -	■ ■ ■	- -	●	■	- □	□ -	□ -	□	□	-	□	■ ■	□ □	□ -	*	■	■	-	■	20 inc *	Fully modular -specify fitting like Rails, lighting clips, colours,decals,water drainage/ air vents etc. *Custom options for 7 headlamp retainers/clips. Shell (only) will withstand >250°C /500°F	pacifichelmets.com
-30 -22 +50 122	■ ■ -	- - *		■ ■ ■	- ■	■ ■	■	□ □ - -	□ □ - -	□ □ - -	□ □ - -	- - - -	■ -	-	□ □ - -	□ □ - -	4	■	■	■	■		*Hi-Viz Yellow & Orange with luminous clips. *Supplied with both EN397&12492 chinstraps. Meets EN12492 except vent requirements	petzl.com
-30 -22 +50 122	- ■* -	■* - -	■ ■ ■	- ■	■	■ ■	□ □ - -	□ □ - -	□ □ - -	□ □ - -	□ □ - -	- - - -	■ -	■	□ □ - -	□ □ - -	4	■	■	■	■		*Hi-Viz Yellow & Orange with luminous clips. *Supplied with both EN397&12492 chinstraps.	petzl.com
-30 -22 +50 122	- ■ -	■* - -	■ ■ ■	- ■	■	■ ■	□ □ - -	□ □ - -	□ □ - -	□ □ - -	□ □ - -	- - - -	■ -	-	□ □ - -	□ □ - -	4	■	■	■	■		*Hi-Viz Yellow & Orange with luminous clips. *Supplied with both EN397 &12492 chinstraps. Meets EN12492 except vent requirements	petzl.com
-30 -22 +50 122	- ■* -	■* - -	■ ■ ■	- ■	■	■ ■	□ □ - -	□ □ - -	□ □ - -	□ □ - -	□ □ - -	- - - -	■ -	■ ■	□ □ - -	□ □ - -	4	■	■	■	■		*Hi-Viz Yellow & Orange with luminous clips. *Supplied with both EN397 &12492 chinstraps. *Vents must be closed to meet ANSI C, then does not fully meet EN12492.	petzl.com

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EAR: ◆= Will fit most accessories but check
□□□ = OPTION
VARIANT= blue or □◇○ if it's an option

	MODEL Variant/ AKA	COMPANY	ORIGIN	COST BARE HELMET COMBO inc Tax £$€ currency conversion only	WEIGHT (BARE HELMET)	SIZES	CONSTRUCTION SHELL INNER STRAPS/HEADBAND
	Protos Integral Arborist Integral Climber	PFANNER		£235 £144 $330 $215 €261-342 €170	629g 22.2oz	54-62cm 20.9-24.4" 56-64cm 22-25.2"	HARD SHELL HYBRID ABS EPS/Koroyd Polyester/Nylon
	Dynamo Hybrid RC05H.. Dynamo/Plus RC05/P..	ROCK HELMETS		£54 £85 $56 €55	460g 14.5oz 410-420g 14.5-14.8oz	54-62cm 21.3-24.4"	HARD SHELL HYBRID ABS EPS Polyester/Nylon
	Blast W9607	SINGING ROCK		£65 $101 €69	420g 14.8oz	53-61cm 20.9-24"	HARD SHELL HYBRID ABS/Polycarbonate EPS Polyester/Nylon
	Flash Aero W9602 Flash W9601	SINGING ROCK		£51 $60 €54	455g 16oz	53-63cm 20.9-24.8"	HARD SHELL HYBRID ABS/Polycarbonate web cradle Polyester/Nylon
	Inceptor GRX Mnt BE590.. GRX Mnt HighVoltage BE592..	SKYLOTEC		£110 $145 €111	470g 16.6oz	54-63cm 21.3-24.8"	HARD SHELL Polycarbonate/ABS EPS/web cradle Polyster/Nylon
	CT Aries Tree CT Aries	SKYLOTEC		£75 $90 €85	400g 14.1oz	53-63cm 20.9-24.8"	HARD SHELL ABS EPS Polyester/Nylon
	CT X-Arbor 6X946	SKYLOTEC		£60 £86 $65 €57	365g 12.9oz	50-61cm 19.7-22"	HARD SHELL HYBRID ABS EPS Polyester/PP
	S3200	SOVOS		£75 £167 $99 €89	422-492g* 12.9-17oz*	53-63cm 20.9-24.8"	HARD SHELL Polypropylene EPP Polyester
	Advance X-Climb	STIHL EUROPE		£145 $185 €179	495g 17.5oz	53-59cm 20.9-23.2" 58-63cm 22.8-24.8"	HARD SHELL ABS EPS/Koroyd Nylon
	Arborist	STIHL USA		n/a $130 $164 n/a	630g 22.2oz 720g 25.4oz	53-63cm 20.9-24.8"	HARD SHELL HYBRID Lexan Polycarbonate Copolymer EPS 5/8" Nylon

CLIMBING HELMETS

STANDARDS							EYE PRO			Goggle Visor			EAR	FEATURES				CRADLE		CHIN		COLOURS	NOTES	WEBSITE
TEMP RANGE °C °F	EN50365 LT HT	ANSI Z89.1 CGE	CSA AUS/NZ EAC	EN14052 / UKCA	EN397 (industrial)	EN12492/+Lateral	GOGGLES INT	FULL VISOR INT	MESH VISOR INT	CLEAR	SMOKED	MIRROR	UNI SLOTS/RAILS	VENTS CLOSABLE	ID/LOGO REFLECT	NAPE GUARD UV	LAMP CLIPS BRKT	SLIDECOG ADJUST	REPLACE PADDING	<25daN Release	>50daN Release			
-30 -22 50 122	- ■ -	■ - -	- - -	- - -	● -	■ -	- □	□ -	□ -	□	□	-	■ -	■ ■	□ □	□ -	□	■	■	□	■	28+ inc	Climber version is basic shell. Huge colour range inc solid and contrast & Hi-Viz. *GoPro*-style bracket available EN397 with optional chin strap	protos.at
-40 -40 50 122	■ ■ ■	■ -	- - -	- - -	● -	■ ●	□ -	□ -	□ -	□	□	-	■ -	■ ●	□ □	- -	4	■	■	□	■		ALL components replaceable! + Florescent orange, green yellow, Hi-Viz Yellow, Luminous & matt black. Dynamo is vented. *Plus* has mesh-covered vents	rockhelmets.com
-10 -22 50 122	- - -	- - -	- - -	- - -	■ -	- -	□ -	- -	□ -	□	-	-	■ -	■	- ■	- -	4	■	■	■	■		NEW in 2025 steel mesh vent covers. Cradle/chinstarp fold into shell for storage	singingrock.com
-10 -22 50 122	- ■ -	- - -	- - -	- - -	● ■	■ ●	□ -	□ -	□ -	□	-	-	■ -	■ no	- ■	- -	4	■	■	■	■		Flash Aero - Red or White only * High Vis Yellow as per Blast above	singingrock.com
-30 -22 50 122	■ ■ ■	- - -	- - -	■ -	● ■	■ ●	□ -	□ -	- -	□	□	-	■ -	■ ●	□ □	□ -	4	■	■	□	■*		Also other EN357 versions in additional colours red, blue, yellow and Hi-Viz *Buckle is a magnetic clip.	skylotec.com
-30 -22 50 122	■ - -	- - -	- - -	- -	■	■	□ -	- -	- -	□	□	-	■ -	■ no	- □	- -	4	■	■	■	■		Aries=unvented dielectric version. Euro slot adapter supplied. Also Aries Air to EN397 but no dielectric standards	skylotec.com
-30 -22 50 122	- - -	- - -	- - -	- -	-	■	□ -	- -	- -	□	□	-	■ -	■	- □	- -	4	■	■	-	■		TO BE DISCONTINUED Euro slot adapter supplied	climbingtechnology.com
-30 -22 50 122	- - -	- - -	- - -	- -	■	■	□ -	- -	- -	□	□	-	■ -	■	□ □	- -	4	■	■	■	■	*	*NB: all shells are white but can have a slip=over cover in various colours	sovoshelmets.com
-30 -22 50 122	- - -	- - -	- - -	- -	●	■	* -	* -	□ -	*	*	*	■ -	■ ●	- ■	□ ■	4	■	■	-	■		*NB additional accessories / visors from Stihl and 3M	stihl.com stihl.co.uk
-30 -22 50 122	- - -	■ - -	■ - -	- -	-	●	* -	* -	□ -	*	*	*	□ -	■ ●	□ □	□ -	5	■	■	-	■		*NB additional accessories / visors from Kask. Not available in the UK/EU	stihl.com

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STANDARDS: ●●●● = partial adherence
VENTS: ■=closable ●=mesh ◆=minimal **EAR:** ◆= Will fit most accessories but check
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	MODEL Variant/ AKA	COMPANY	ORIGIN	COST BARE HELMET COMBO inc Tax £$€ currency conversion only	WEIGHT (BARE HELMET)	SIZES	CONSTRUCTION SHELL INNER STRAPS/HEADBAND
	Special Vent Plus	STIHL INTERNATIONAL		£56 £70 n/a €98 €150	450g 15.9oz 440g 15.5oz	54-62cm 21.3-24.4"	HARD SHELL HYBRID ABS EPS/Koroyd* Nylon
	SHK-1 Vented SHK-1 Unvented	STUDSON		£115 $140 €130	495g 17.5oz	53-59cm 20.9-23.2" 58-63cm 22.8-24.8"	HARD SHELL ABS EPS/Koroyd Nylon
	EXFIL SAR Back Country	TEAM WENDY		£245 $221* €250	630g* 22.2oz	53-63cm 20.9-24.8"	HARD SHELL HYBRID Lexan Polycar-bonate Copolymer EPS 5/8" Nylon
	SecureFit x5000	3M		£90-115 £149 €140 $110-145 €106-135	400g 14.1oz	50-63cm 19.7-24.8"	HARD SHELL ABS EPS/web cradle Nylon/HDPE
	Pheos Alpine	UVEX		£75-85 $95-105 €84-96 €150	490g 17oz	52-62cm 20.5-24.4"	HARD SHELL ABS web cradle Nylon/PP
	Perfexxion	UVEX		£115 €145 €130	550-570g 19.4-20oz	52-58cm 20.5-22.8" 59-63cm 23.3-24.8"	HARD SHELL ABS EPS/mesh cradle Nylon/PP
	Pronamic Alpine MIPS	UVEX		£130 $165 €148	480g 16.9oz 490g 17.3oz	51-63cm 23.2-24.8cm	HARD SHELL ABS EPS / MIPS Nylon/PP
	Apex X2 ZAX201HV/202HV Apex Exo APX05	ZERO HEIGHT SAFETY		£65 $80 €62	425g 15oz 430g 15.2oz	54-62cm 21.3-24.4" 51-62cm 20-24.4"	HARD SHELL HYBRID ABS Polypropylene EPS Nylon
	Pinnacle Zertec ZPZK01/01M/02 Pinnacle Exo ZPE01/02/A02/HV	ZERO HEIGHT SAFETY		£118 £78 $140 $90 €132 €85	445-465g 15.7-16.4oz 410-440g 14.5-15.5oz	54-62cm 21.3-24.4"	HARD SHELL HYBRID ABS EPS/Koroyd* Nylon
	Zone/Zone MIPS Zone Electro	ZEKLER		£85 $105 €95	419g 14.8oz	53-63cm 20.9-24.8"	HARD SHELL HYBRID Polypropylene EPP/web cradle Nylon/HDPE

STANDARDS							EYE PRO			Goggle Visor			EAR	FEATURES				CRADLE		CHIN		COLOURS	NOTES	WEBSITE
TEMP RANGE °C °F	EN50365 LT HT	ANSI Z89.1 CGE	CSA AUS/NZ EAC	EN14052 / UKCA	EN397 (industrial)	EN12492/ +Lateral	GOGGLES INT	FULL VISOR INT	MESH VISOR INT	CLEAR	SMOKED	MIRROR	UNI SLOTS/RAILS	VENTS CLOSABLE	ID/LOGO REFLECT	NAPE GUARD UV	LAMP CLIPS BRKT	SLIDECOG ADJUST	REPLACE PADDING	<25daN Release	>50daN Release			
-30 -22 +50 122	- *- -	*- - -	- - -	- -	■	■	* -	* -	□ -	*	*	*	■ -	■ ■	□ □	□ -	4	■	■	□	■	■	*NB additional accessories / visors from Petzl *Option for both EN397 &12492 chinstraps. *Vents must be closed to meet ANSI C, then does not fully meet EN12492. Not in UK/EU.	stihl.com
-30 -22 +50 122	- - -	■ - ■	■	■ -	●	■	□ -	- -	- -	□	-	-	■ no	■	□ □	□ -	4	■	■	□	■	■	Includes a MIPS style enhanced impact system called *Brainshield*. Non-vented version in white, grey ylw or orange. Embedded NFC chip with emergency information	studson.com
-20 -4 +54 130	- - -	- - -	- - -	■ -	●	■	□ -	- -	- -	□	-	-	□* ■	■ ■	□ □	- -	1*	■	■	□	■*	■	*Weight & cost is without rails. Add £$€40 and 90g for rails. *Buckle is a magnetic clip * requires $£€10 adapter. Peltor ear defender adaptor	teamwendy.com
-30 -22 +50 122	■ - -	- - -	- - -	- -	■	■	- -	□ -	□ -	□	□	-	■ -	■ ■	□ □	- ■	4	■	■	-	■	■	Add approx 10% for reflective on standard helmet, Hi-Viz comes with reflective in price.	3m.com
-30 -22 +50 122	- - -	- - -	- - -	- -	■	●	- -	□ -	□ -	-	-	-	■ -	■	□ □	□ -	4	■	■	□	□	■	Version shown is the *Forestry* to illustrate visor and ear defenders but shows the basic *Pheos* not *Pheos Alpine*.	uvex-safety.com
-30 -22 +50 122	- - -	- - -	- - -	- -	●	■ ●	- -	□ -	- -	□	-	-	■ -	■ ■	- □	- -	1*	■	■	-	■	■*	*Rear clip recesses flush to the shell when not in use	uvex-safety.com
-30 -22 +50 122	- - -	- - -	- - -	- ■	●	■ ●	- -	□ -	- -	□	-	-	♦	■	- □	- -	4	■	■	□	■	* * *	MIPS version =enhanced anti-rotational impact protection	uvex-safety.com
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-40 -40 +50 122	■ ■ ■	- - ■	- - -	■ -	■	■ ●	□ -	□ -	□ -	□	□	-	■ -	■ ● *	□ □	□ -	4	■	■	□	■	■	*Zertec 02* =unvented & ANSI E (20,000v) + EN50395 <1500vDC. *Zertec* has NFC chip with emergency contact details. **Exo* does NOT use *Koroyd* and has mesh vents.*Fluoro Orange & Lime, luminous white	zeroheightsafety.com
-30 -22 +50 122	■ ■ ■	- - -	- - -	- -	■	■	□ -	□ -	- -	□	□	-	■ -	■ no	□ □	□ -	4 1	■	■	□	■	■	Also rebadged by CRESTO *Hi-Viz yellow. ELECTRO in Blue, White Yellow & Hi-Viz yellow	zekler.com

UPDATED Sept'24

CLIMBING SPIKES/ SPURS



The newest models on the market are Notch's Ergo Climber (left & main picture) and FTC TREE's Klik 'n Ka (right) with push button strap adjustment and an optional branch grip under the foot plate

Photo by Notch Equipment

The more environmentally-minded recoil at the sight of a set of tree-spikes (or 'climbers' as they're known in the US utilities industry), because it either means that another tree has bitten the dust and is being dismantled in its entirety or the wearer is not too concerned for the health and appearance of a tree in carrying out routine maintenance work. I had a friend in the business many moons ago who, brilliant though he was and indeed the best I've ever seen, used to wear spikes for virtually every job despite us all pointing out the woodpecker-attack appearance of the trees he left behind. That had changed by the 90's as the realisation of how many disease entry points were being created quite aside from the disfigurement which clients were presumably assured was perfectly normal! Of course, if you're working on timber that's being removed or the whole tree is being felled, it doesn't matter. Tree health and cosmetics aside, tree spikes/ climbers are essential to the safety of the climbers for many types of job, rope-safety will get you so far but not all the way, all the time.

Spikes are quite literally leg-irons with a sharp spur or gaff on the inside that digs into the wood (through the bark or just into bark if it's thick enough) as you either 'walk' up a tree or stabilize your stance in readiness for cutting. In the absence of suitable side branches to stand on or a suitable rope anchor above (because you're dismantling/sectioning the tree as you descend), they provide a stable grip and platform with your pole-strap providing some security and helping to pendulum your weight into the spur or gaff. The spur itself has become a replaceable component and more on this vital element shortly but just to say that most companies offer a short and long spur with some offering a medium or hybrid size. The short spur tended to be used more for pole-work but there are many species of tree with thin bark that warrant use of the short rather than medium or long spurs so you would do well to have size options available for varied domestic or parkland work.

The US has three of the world's oldest spike manufactuers in *Klein Tools*, *Bashlin* and *Buckingham Manufacturing*, all of whom were originally catering much more to pole climbing than to arborists and consequently still target at least 50% of their equipment ranges to utility pole climbers (telegraph and electric poles). *Buckingham Mfg* in Pennsylvania are without doubt the oldest climbing spike company in the

CLIMBING SPIKES/SPURS



world so it's not surprising that they have the largest range and like most companies has many variations on frame materials, shapes, widths, gaffs and bindings. They provide the useful chart on frame designs overleaf which obviously doesn't apply to all or indeed many manufacturers, some of which like *Panther, Distel* and *Edelrid* have simplified things entirely with just one or two frames but different gaff and binding options. The other huge player in this market is *Bashlin,* very much a utility lineman company that caters to arborists more as a sideline than their core business. They have stuck with the more traditional brown leather straps favoured by many a US arborists in particular and still offer all-in-one frames with non-replaceable spurs/gaffs (as do Buckingham). You will often see Weaver leather straps offered as an option because they are widely regarded as the premier leather-meisters but even they offer artificial 'leather' straps. However, even though well stitched leather is a thing of beauty and remains an extremely hardwearing and comfortable material especially when it is faced with softer calf-skin, there is no doubt that the most progressive models are thermo-foam padded with contoured reinforced/protective cuffs secured by Velcro or push-fit buckles.



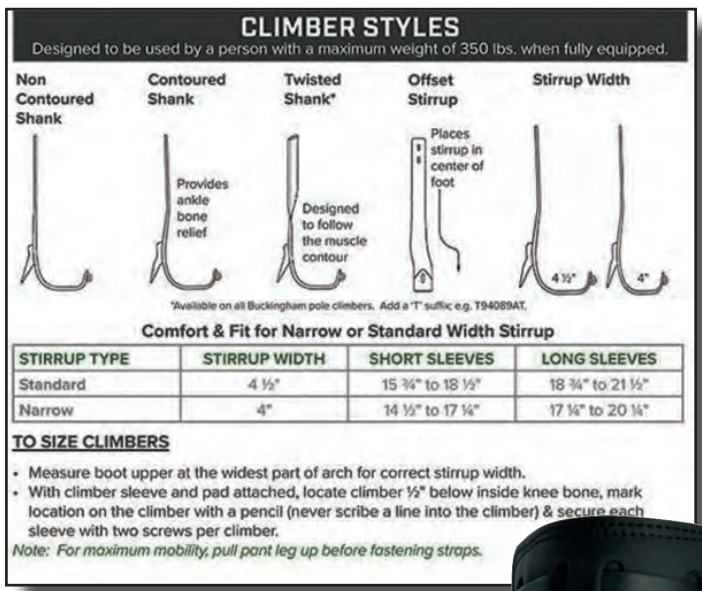
We have NOT included the '*Bistel*' Talons as they are a very poor quality imitation of the *Distel* and do not come even close to meeting the ASTM load test and we have also omitted T*omchy* and one from *Amazon* and *Walmart - Cohu* brand because it looks too poorly made to be a professional item using cable-ties to attach the bindings and padding! In the case of *Tomchy* they may be OK but we can't verify their specifications. All three appear to be Chinese made.



FRAME /SHAFT/SHANK DESIGN

Traditionally made from iron and brought up to date with carbon steel at the heavier but less expensive end rising in cost with one or two stainless steel models and reduction in weight with alumunium and carbon fibre models. Even lighter (though not by much), sturdy and more expensive, are a few titanium models. Regardless of material there may be two or three distinct components to a climbing spike frame and this does NOT include the actual pointy bit, the gaff or spur. The shaft or shank is the upright section attaching to the stirrup at the bottom and the shaft may be further sub-divided into a third component if it has length adjustment which most do. Some models may have an alloy stirrup and lower frame but a steel top adjustment to the frame. In the *Buckingham* Table above, the second frame (listed here as CONTOURED but in our tables as PROFILED) is the commonest construction for a modern climbing spike. The traditional straight shaft doesn't really follow the calf and ankles natural shape and is consequently less comfortable without padding at the top to bridge the calf's normal inward curve towards the knee but many offset the stirrup to compensate. You can see this padding in the *Harkie* model on the right where soft leather padding extends down the shank. Some designs follow the legs contours more closely with an indented shape at the bottom like this *Edelrid* model. Others, like the *Distel* flatten the cross-section of the shaft and then twisted it to face slightly forward and better fit the angle of the calf muscle and inhibit the shaft digging in. A further refinement not seen on many is to offset the stirrup a little bit forward of the shaft because your heel-rebate, into

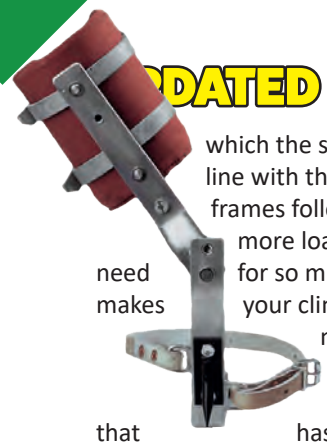


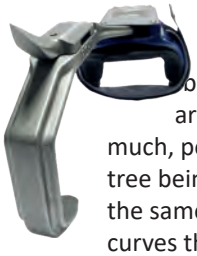




ABOVE RIGHT: Representative of a number of modern developments in spikes is Protek's R100 with a preformed plastic shell covering thermo-formed foam padding with a breathable mesh on the inside. The straps on both the calf cuff and the foot are secured with Velcro or 'hook&loop' if the manufacturer isn't stumping up for the real thing. This model uses a small D-Ring on the foot strap instead of the more usual ring to provide three-way attachment to the foot straps. OPPOSITE: Main pic is Notch Equipment's Ergo Climber from 2024 INSET: Buckingham's homage to US line workers with their hydra-transfer Stars & Stripes livery on a model with high-end push-fit buckles on the foot straps. A number of the frames, pads and straps from Bashlin, Buckingham and Klein are interchangeable.

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which the stirrup sits, isn't actually directly in line with the calf bone which is the line most frames follow. This design purports to direct more load to the gaff/spur without the need for so much driving force, in other words, it makes your climbing more efficient. If that is true, not many have adopted the offset stirrup - perhaps the increased production cost outweighs the benefits? Another design that hasn't caught on is *Antec*'s (now owned by *Honeywell*) articulated shaft model. This may be discontinued but is still being sold in France and has lateral articulation just above the achilles area. It effectively gives you an adjustable offset rather than the fixed angle of conventional offsets like this other *Antec* model providing better direction of force to the gaff but you had better make sure those bolts are tightened well.

CUFF

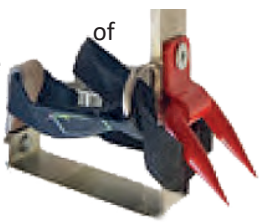
This is the top attachment to the leg securing the shaft around the calf. It comprises of padding to the frame and then to the inside of the securing strap that goes around the calf. Traditionally the upper cuff has incorporated a regular leather strap with pin and hole adjusted just like a trouser belt and this is still the case with many models today except that many replace the more expensive leather with man-made fabrics less inclined to absorb unsavoury body fluids etc. The *Harkie* model on the left, which has now been discontinued pending an updated model, is a typical variation with leather 'T-shaped' padding beneath a leather or 'pleather' strap securing it around the calf, Some use Velcro straps like the *Edelrid Talon* on the previous page, which has the advantage that it is infinitely adjustable but the disadvantage that its hook and loop fastening can get 'gummed' up by sawdust and debris. The most recent trend is towards push-fit buckles for speed which can be further finitely adjusted by pulling the tail of the webbing-see the Buck model on the title page. Pin and hole straps on the other hand, have set adjustment and while both options keep things simple and light using spikes demands the straps be quite tight to stop movement of the top part of the frame, in effect, to stop it flapping against the calf during climbing if not properly secured. To counter this possibility *Bashlin* and *Buckingham* started putting curved metal plates in or around the top plate that would not only increase protection from the intrusive metal frame but also grasp the calf even if the straps weren't overtly tight. Some still use alloy cuffs but models like the ground-breaking *Distel* models from Germany started using a much longer, contoured plastic cuff curved around a foam or thermo-moulded EVA to provide protection and comfort. At the top end of their range the plastic is replaced by carbon-fibre - lighter and tougher but more expensive. Uli Distel wasn't the first to come up with this preformed cuff idea but he did perfect the design to make it the best compromise in terms of weight, comfort and cost. *Wolf Claws* never made it much past 2010 but they had a full-length nylon 'cuff', more like the best part of a boot, which incorporated the metal frame within the moulding. It was a bit like an Ice Hockey leg pad without the articulation but it obviously never caught on much, possibly because it weighs as much as the tree being climbed. *Distel* too had a prototype along the same lines (pic right) albeit with much smoother curves than the Wolf Claw.



STIRRUP

The boot support under the heel is important in working comfort. Most use a curved inside face that allows some leeway on the width of boot it will fit and some offer a narrow or wide-fit option. It's often difficult to know where they are measuring width from since the straight section across the bottom can be half the width of the curved section higher up so assume that the average width is around 100mm/4" with narrow options at around 75mm/3". Before we talk about the sharp bit, it's worth mentioning a couple of stirrup design additions that might seem like an obvious enhancement but will very much depend on your climbing style and type of job. Grip on the underside of the stirrup to make branch walking in between vertical spiking a safer and easier operation. Some have serrations or ribs forged or cast into the underside of the stirrup while others use a rubber grip, in the case of *Distel* this is the world-leading *Vibram* rubber used on mountaineering boot soles. This is taken further by *FTC TREE* with their *Sting&Stay* spike which has a full metal spike set mounted beneath the stirrup - akin to an instep crampon, indeed many European stockists anglicise the name of the range of products as 'crampons'. On the right you can see the detachable two-spiked plate with the spikes facing outward while the regular spur faces inwards.

SPIKES/GAFFS/SPURS





The first thing to note about the pointy-end of your climbing 'leg-iron' is that it's imperative to keep it sharp and properly profiled. It needs to penetrate the bark to find a solid purchase in wood though there are some trees that have bark so thick and tough that this is impractical. It's all about penetration which requires it to be sharp with a precise cross-section - usually triangular or square. The efficiency of the spike is further enhanced with a slick surface - a rusty spike is far harder to push in and pull out than a teflon-style coating like *Distel's* PTFE and anodizing in the case of many others. However, once the need to sharpen arises you obviously begin to lose this more efficient and protective coating. BUCKINGHAM have what they call GRIP technology on some models. This stands for Gaff Ridge Positioning and is purportedly specific engineering that improves the security of placement of the gaff, ie. it digs in better with less effort. This is something that a few others have strived to achieve to help decrease the fatigue of climbing in spikes.

ORIGIN TT SYNCHRONIZES TTRS DEVICES SO COMPLETELY,

THEY FEEL CONJOINED.

The first time you rig an Origin TT rigging plate in a rope rescue system you will be reminded exactly why the first letter in TTRS is twin. This plate's two independent locking pins allow both multi-purpose devices to mount directly–without an interloping carabiner. This links and coordinates their operation for a safer, more efficient system and a smoother ride for the person at the end of the line.

Most of us aren't called upon to do a high-angle rope rescue every week—or even every month. But the day will come. Why not be ready to rig the most fully-controlled, fully-redundant system when it does?



WATCH THE ORIGIN TT AT WORK.

HARKEN™



Shorter spikes for utility poles (CCA poles in the US are particularly tough and some will mention CCA in the title of the product), medium or hybrid for trees with average density bark and long spikes for thick bark; trees like pines and sequoia. One oddity to mention is again the *Antec* (now *Honeywell/Miller*) which has a single or double gaff option, like a bull's horns. It's unclear what, if any advantage this offers since nobody else makes them? Regardless of whether you have one or two, being so sharp, you will want to cover your gaffs both as a safety precaution against impale and to preserve the keen point.



Many offer a simple leather or plastic cap but some offer something a little different - *Buckingham* have a visually bright, magnetic plastic gaff-cover on a retractable lanyard (pic left) so it stows out of the way when not in use but is immediately to hand when you want to cover them, unlike most loose gaff covers which will have been lost two minutes after you take them off. Perhaps the best protection, and a means to keep hold of those loose gaff covers is a protective bag like the *Protekt* and *Stein* models below which are supplied with your spikes.





SPIKING TECHNIQUES

Try not to snag your chainsaw trousers. *KleinTools* are one of the oldest manufacturers so we'll steal their sound advice on spur choice and use.....*When using pole climbers, remember that poles are not all alike. Different wood species, climate and pole age, as well as different preservative treatments (Creosote, Penta, CCA) affect climbability. Since these factors can result in significant differences in gaff penetration, visually check gaff penetration with your full weight on the climber before starting any climb. if penetration is shallow, use extreme caution, because the gaff could "cut-out", or the increased stress on the gaff tip could cause the tip to break. To allow for proper penetration, the minimum acceptable length for the underside of a pole climber gaff is 1-7/16" (37 mm). avoid gaff contact with metal objects when climbing (such as pole ID tags, nails, poster staples, metal pole hardware, or any other metal on the pole). When using tree climbers, remember that trees are not all alike. Different species and bark thickness affect climbability. Visually check gaff penetration in the same manner described*





for pole climbers before starting any climb. To allow for proper penetration: Use a tree-climber gaff with a minimum underside length of 2-1/4" (57 mm). When the bark thickness measures more than 2-1/2" (64 mm), make sure the gaff is long enough to properly penetrate the wood under the bark. Avoid gaff contact with metal objects when climbing (such as nails, poster staples, or any other metal on the tree).

NB: The *Wolf Claw* and *Harkie* have been discontinued although some *Harkie* spikes are still available from some stockists.
In our tables we have limited the entries to the generic head-of-family' so to speak, and in particular any that have a structural difference in the frame like a twist or offset or permanent rather than replaceable gaffs/spurs. Companies like *Buckingham*, *Bashlin* and *Protekt* have a vast number of models but they are a variation on those 'head-of-family' models so we have tried to picture different cuff options for different models. In reality the same cuff and strapping options are often available for ALL of the models listed.

IN THE FOLLOWING TABLES:

Prices and weight etc, are for a model with specific features as shown by solid black or orange squares. Options are shown as outline squares ☐ ☐ or in green with alternate variants shown in blue. We have generally shown the Velcro (or equivalent) closure for bindings as the basic design.

ORIGIN:
The manufacturer's country but not always where it's made in which case, if we know, there is an inset flag.

COST: approximate, rounded up and inclusive of local taxes which are generally 20% in Europe. **$** prices in orange are a currency conversion (as of May 2022) for reference not necessarily the actual selling price.

MATERIALS: for the main frame/shank and separately for the gaff/spur. ALU means Aluminium Alloy unless otherwise specified. STEEL means carbon steel and we assume this unless the manufacturer specifically states Alloy-Steel which includes elements like Molybdenum and Nickel to improve corrosion resistance and strength etc. Gaffs available in more than one material are listed as an option in the notes.

FRAME SHAPE: The shank or upright section of a frame can be straight, twisted, or profiled (contoured) to match the leg's shape more accurately. As the frame becomes the stirrup, this may be straight (in line) or offset shown in orange or blue for a different version in the same group of products.

HEIGHT ADJUST Increments: Adjustable height is shown as a ■ or an actual figure for the range of adjustment is shown with optional size ranges in green. Some provide the increments by which you can make adjustments.

STIRRUP FITS FOOT WIDTH.... A measurement across the width of the stirrup that your boot sits in. The width of the straight section on the bottom is less than a width measurement taken higher up on the curved section.

GAFFS/SPURS: The default spur size is shown in black with other length options shown in green. The vast majority are replaceable so the few that are not are indicated by an asterisk and a note. The lengths quoted are from the manufacturer and should indicate just the spike element of the gaff/spur but some may have included the complete length including the bolted section - this is usually obvious and we will have double checked but one or two may have crept through if they are a credible (but nevertheless incorrect) length.

CUFF SHELL & SHAPE: The material used in the 'protective shell' which may cover padding at the top/calf end of the frame with the binding often sitting over or through the shell/pad. Some have obvious plastic or glass-fibre shells but most are leather pads often with a softer facing leather on the inside. The shell/padding may be contoured to curve around the calf and extend further down to cover more of the metal or they may be a simpler square band like a giant bracelet . They might be a modified **L**-shape extending down the frame and around the 'bracelet'. Most offer a range of options for the cuff and bindings/straps with the simpler leather cuff often cheaper than the more complex shell-type cuffs. Our coding is shown below where C is the simplest and narrowest square/bracelet shape (this may have extra L-shape padding beneath and some, like *Bashlin* offer angled or straight 'legs' for shaft insertion) , L is an inverted L-shape where the top part wraps around to join the vertical section. T-shape has the cuff wrapping around from both side of the upright section. D-shape is a longer version of the C-cuff extending further down the shank. Q-shape is a variation of the D-shape with a more sculpted inner edge tapering towards the shank. Bear in mind that some T and L shapes can be broad enough to be almost indiscernible from the Q -shape. Sometimes the cuff and the padding are one and the same but our chart only relates the shape of cuff to the padding/protective element.

C=  L=  T=  D=  Q= 

WEIGHT Pair: for a pair of spikes including the binding, padding and gaff as indicated by *not* being an option.

MBS / WLL/SWL: The MBS or Minimum Breaking Strength or Load will always be a much higher figure than the Working Load Limit or Safe Working Load which is usually calculated at around 10% of the MBS. As with all systems the load figure is limited by the weakest component because the spikes themselves may be rated several times higher than the quoted WLL. Note that any load figure means the TOTAL load applied during wear - if you're a 114kg/250lb climber, unless you're climbing naked, there is going to be significant additional weight to add with boots, harness, hardware, helmet etc. that will increase in weight in rain so you will get close to the 350lb SWL of a lot of these spikes exceed the limits on one or two. Remember, it's the TOTAL weight not just your body weight.

FASTENING

This refers to the upper (cuff) strap shown as a solid black square ■ and for the lower stirrup strap as an orange square ■. Options are shown as an outline square. ☐ ☐

VELCRO: Velcro or Hook&Loop fastening

CLICK BUCKLE: A push-fit buckle like the Austrialpin Cobra that speeds up donning and doffing.

THREAD BUCKLE: webbing is threaded through a ladder od D buckles

LEATHER/EYELETS: Some straps that look like leather are actually artificial like the Distal Weaver straps and therefore listed as 'plastic'

PLASTIC/EYELETS: not necessarily 'plastic' but a catch-all for nylons and man-made materials

CUFF CONSTRUCTION

LEATHER/FELT: Usually a softer calf leather and sometimes with a suede like inner face. **WOOL** or fleece was traditionally used for padding but not seen so much any more but retro is the new modern and wool is a timeless performer.

THERMO-FOAM/EVA: a foam lining that may be shaped with rounded edges in the case of thermo-foam. EVA is a type of foam, all are harder-wearing than simply a soft foam.

MESH LINER: a wicking mesh line on foam that moves sweat away from the skin

METAL INSERT: A thin band of alloy or steel that helps retain the shape and curve of the pad or increased support between the frame and the cuff

GAFF COVER: Protective cover for the sharp bit. We haven't included it but *Bashlin* also sell a protective heel cover to stop you spiking yourself.

STORAGE BAG: Some like *Protekt* and *Stein*, include a handy storage bag for a set of spikes in with the price quoted which will often be large enough to cram other stuff in. An outline square indicates that you can buy a 'spikes' bag separately from this manufacturer.

OTHER COLOURS: Colours available other than the ones shown - usually for the top cuff but some have frame-colour options. Note that many stockists sell colour and pad options that are no longer sold by the manufacturer eg. *Bashlin* now have 3 leather pad/cuff options but we often see variations in stockists that are not now sold.

images = one of a range of options - NOT to scale.
£$€ = Currency conversion only exc. shipping, duties etc
FASTENING: Top Cuff=☐ Bottom/Foot Strap=■
OPTION= ☐or ☐



MODEL	COMPANY	ORIGIN	COST inc Tax/VAT	MATERIAL Frame/Shaft Gaff/Spur	SHAPE Shaft/ Stirrup	HEIGHT ADJUST Option Increments
BD14B BD14BOD BD14BX	BASHLIN		£746-£792 $546-$826 €505-760	ALLOY Steel	Straight Offset	15-18" 18-21"
BD16B	BASHLIN		£285-445 $306-$560 €285-515	STEEL Steel	Profiled Offset	15-18" 18-21"
BD16BC	BASHLIN		£255-500 $325-$580 €310-540	STEEL Steel	Twisted Offset	15-18" 18-21"
Permanent-Gaff BD12	BASHLIN		£225-425 $280-$540 €260-500	STEEL Steel	Straight Offset	15-18" 18-21"
Permanent-Gaff BD12C	BASHLIN		£225-425 $285-$540 €260-500	STEEL Steel	Twisted Offset	15-18" 18-21"
Permanent-Gaff BD12L	BASHLIN		£205 $260 €240	STEEL Steel	Profiled Offset	15-18" 18-21"
BuckAlloy A94089AV +94....variants	BUCKINGHAM		£610-660 $775-$835 €715-770	ALLOY Steel	Straight Offset	16¼-18¾" 19¼-21¾"
BuckAlloy A94K2FG +94..variants	BUCKINGHAM		£755 $955 €880	ALLOY Steel	Straight Offset	16¼-18¾" 19¼-21¾"
BuckAlloy A95089 +95..variants	BUCKINGHAM		£575 $730 €675	ALLOY Steel	Straight Offset	16¼-18¾" 19¼-21¾"
BuckLite TBG95K2V-SG TBG94K2V-BL TB94K2V-BL	BUCKINGHAM		£584 $990 €915 $1121 $1048	TITANIUM Steel	Profiled Offset	16¼-18¾" 19¼-21¾"

CLIMBING SPIKES/SPURS

GAFF/SPUR Option			CUFF SHAPE Option	WEIGHT PAIR	WLL/ SWL MBS	FASTENINGS ■=Cuff ■=Foot					CUFF PADDING						OTHER COLOUR		NOTES	WWW.
SHORT	MED/ HYBRID	LONG				VELCRO	CLICK BUCKLE	THREAD BUCKLE	LEATHER/EYELETS	PLASTIC/ EYELETS	LEATHER/FELT/ WOOL	THERMO-FOAM/EVA	MESH LINER	METAL INSERT	GAFF COVER	STORAGE BAG	CUFF	FRAME		
41mm 1.6"	-	63mm 2.5"	C T, L	2.2-3.86kg 4.75-8.5lb	-	□	-	-	-	■ ■	■	□	□	□	■	-	-	■ ■	Price & wt vary with colour strap/pad options. Velcro C pads=3.5lbs Basic L pads=0.5lbs Inc gaff gauge	bashlin.com
41mm 1.6"	-	63mm 2.5"	C T, L	2.7-4.5kg 6-10lb	-	□	-	-	-	■ ■	■	□	□	□	■	-	■	-	Price & wt vary with colour strap/pad options. Velcro C pads=3.5lbs Basic L pads=0.5lbs Inc gaff gauge	bashlin.com
41mm 1.6"	-	63mm 2.5"	C T, L	2.7-4.5kg 6-10lb	-	□	-	-	-	■ ■	■	□	□	□	■	-	■	-	Price & wt vary with colour strap/pad options. Velcro C pads=3.5lbs Basic L pads=0.5lbs Inc gaff gauge	bashlin.com
41mm 1.6"	-	63mm 2.5"	C T, L	2.5-4.3kg 5.5-9.5lb	-	□	-	-	-	■ ■	■	□	□	□	■	-	■	-	Price & wt vary with colour strap/pad options. Velcro C pads=3.5lbs Basic L pads=0.5lbs Inc gaff gauge	bashlin.com
41mm 1.6"	-	63mm 2.5"	C T, L	2.5-4.3kg 5.5-9.5lb	-	□	-	-	-	■ ■	■	□	□	□	■	-	■	-	Price & wt vary with colour strap/pad options. Velcro C pads=3.5lbs Basic L pads=0.5lbs Inc gaff gauge	bashlin.com
41mm 1.6"	-	63mm 2.5"	C T, L	2.5-4.3kg 5.5-9.5lb	-	□	-	-	-	■ ■	■	□	□	□	■	-	■	■	Price & wt vary with colour strap/pad options. Velcro C pads=3.5lbs Basic L pads=0.5lbs Inc gaff gauge	bashlin.com
44mm 1.75"	54mm 2.1"	62mm 2.4"	C D, L	1.45kg 3.2lb	159kg 350 lb	■ ■	-	-	-	□ □	■	-	-	□	□	-	■ ■	■	All frames , pads, straps and gaffs are interchangeable between models *Europe	buckinghammfg.com
44mm 1.75"	54mm 2.1"	62mm 2.4"	D L, C	1.86kg 4.1lb	159kg 350lb	■	■	-	-	□ □	■	□	-	□	■	-	-	-	All frames , pads, straps and gaffs are interchangeable. GRIP gaffs, see intro for discussion.	buckinghammfg.com
44mm 1.75"	54mm 2.1"	62mm 2.4"	L C D	1.3kg 2.8lb	159kg 350lb	□ □	-	-	-	■ ■	■	-	-	□	□	-	-	■*	All frames , pads, straps and gaffs are interchangeable between models. *GRIP gaffs, see intro for discussion.	buckinghammfg.com
44mm 1.75"	41mm 1.6"	71mm 2.75"	D L, C	1.6kg 3.5lb	159kg 350 lb	■ ■	□	-	-	□ □	■	□	-	■	■	-	■	-	'SG' in product Code=Safety Green Hi-Viz GRIP gaffs, see intro for discussion.	buckinghammfg.com

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FASTENING: Top Cuff=☐ Bottom/Foot Strap=■
OPTION= ☐or☐

	MODEL	COMPANY	ORIGIN	COST inc Tax/VAT	MATERIAL Frame/Shaft Gaff/Spur	SHAPE Shaft/ Stirrup	HEIGHT ADJUST Option Increments
	**BuckLite Twisted Shank-Pole** TBG94K1VT-BL	BUCKINGHAM		£815 $1035 €995	TITANIUM Steel	Twisted Offset	16¼-18¾" 19¼-21¾"
	**BuckLite Permanent Gaff** TB81429R TB87479	BUCKINGHAM		£745 $940 €890 $883	TITANIUM Steel	Profiled Offset	16¼-18¾" 19¼-21¾"
	**Buck Steel Offset** SB95059/ SB94089A SB95K2V-BL SBG95089Q2	BUCKINGHAM		£410 $405 €375 $737 $577	STEEL Steel	Profiled Offset	16¼-18¾" 19¼-25¾"
	**Buck Steel Straight Stirrup** SB93059	BUCKINGHAM		£360 $400 €370	STEEL Steel	Profiled	16¼-18¾" 19¼-21¾"
	**Buck Steel Permanent Gaff** 81429R (Tree) 87479 (Pole)	BUCKINGHAM		£310 $390 €360 $370	STEEL Steel	Profiled	16¼-18¾" 19¼-21¾"
	**Alu Classic* Alu3 Alu Comfort**	DISTEL		£375 $420 €355	ALU PTFE-coated Steel	Slight Profile	34.3-47.8cm 6mm/¼"
	**Alu Comfort Plus Alu DMM**	DISTEL		£335 $395 €375	ALU PTFE-coated Steel	Slight Profile Offset	34.3-47.8cm 12mm/½"
	**Tree Punk**	Distel		£371 £525 €375	ALU PTFE-coated Steel	Slight Profile Offset	34.3-47.8cm 12mm/½"
	**Carbon**	DISTEL		£582 $723 €700	CARBON FIBRE PTFE-coated Steel	Slight Profile Offset	34-37.8cm 6mm/¼"

CLIMBING SPIKES/SPURS

GAFF/SPUR Option			CUFF SHAPE Option	WEIGHT PAIR	WLL/ SWL MBS	FASTENINGS ■=Cuff ■=Foot					CUFF PADDING						OTHER COLOUR		NOTES	WWW.
SHORT	MED/ HYBRID	LONG				VELCRO	CLICK BUCKLE	THREAD BUCKLE	LEATHER/EYELETS	PLASTIC/ EYELETS	LEATHER/FELT/ WOOL	THERMO-FOAM/EVA	MESH LINER	METAL INSERT	GAFF COVER	STORAGE BAG	CUFF	FRAME		
44mm 1.75"	41mm 1.6"	71mm 2.75"	C D, L	1.4kg 3.1lb	159kg 350lb	■ ■	-	-	-	□ □	■	□	-	■	■	-	-	-	All frames , pads, straps and gaffs are interchangeable between models	buckinghammfg.com
38mm 1.5"	-	79mm 3.1"	L C D	1kg 2.3lb	159kg 350lb	-	-	-	-	■ ■	■	□	-	□	□	-	-	-	All frames , pads, straps and gaffs are interchangeable between models	buckinghammfg.com
44mm 1.75"	41mm 1.6"	71mm 2.75"	C L, D	2.2kg 4.8lb	159kg 350lb	■ □	-	-	-	□ ■	■	□	-	■	■	-	■	-	Hi Viz Safety Green option with Big-Buck Pads	buckinghammfg.com
44mm 1.75"	41mm 1.6"	71mm 2.75"	L C D	2.8kg 6.2lb	159kg 350lb	□ □	-	-	-	■ ■	-	□	-	□	□	-	-	-	All frames , pads, straps and gaffs are interchangeable between models. 23 deg gaff angle	buckinghammfg.com
40mm 1.6"	-	78mm 3.1"	L C D	2.8kg 6.2lb	159kg 350lb	□ □	-	-	-	■ ■	■	□	-	□	□	-	-	-	All frames , pads & straps are interchangeable between models	buckinghammfg.com
31mm 1.2"	40mm 1.6"	47mm 1.85"	FibreGlass Q	2.04kg 4.5lb	330kg	■ □	□ □	-	-	■*	-	■	-	-	-	-	-	-	*Alu Classic has been DISCONTINUED *Weaver straps	distelforst.de
31mm 1.2"	40mm 1.6"	47mm 1.85"	FibreGlass Q	2.08kg 4.6lb	330kg	■ ■	□ □	-	-	□*	-	■	-	-	-	-	■	-	Vibram rubber on underside of stirrup. *Weaver straps	distelforst.de
31mm 1.2"	-	47mm 1.85"	FibreGlass Q	2.08kg 4.6lb	330kg	■	-	-	■	□*	-	■	-	-	-	-	■	-	Vibram rubber on underside of stirrup. *Weaver straps	distelforst.de
31mm 1.2"	40mm 1.6"	47mm 1.85"	Plastic Q	1.66kg 3.6 lb	330kg	■ ■	□ □	-	-	□*	-	■	-	-	-	-	-	-	Vibram rubber on underside of stirrup. *Weaver straps	distelforst.de

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OPTION= ☐or ☐

	MODEL	COMPANY	ORIGIN	COST inc Tax/VAT	MATERIAL Frame/Shaft Gaff/Spur	SHAPE Shaft/ Stirrup	HEIGHT ADJUST Option Increments
	Talon	EDELRID		£375 $625 €400	powder-coated STEEL Steel	Profiled Offset	35.5-45.7cm 14-18" 5mm /¼"
	Sting & Stay	FTC TREE		£260 $315 €300	STAINLESS STEEL Stainless Steel	Profiled	S-15.5" L=16.5" none
	Klik 'N Ka	FTC TREE		£475 $605 €520	ALU Stainless Steel	Profiled	42-48cm 16.8-19.2" 12mm/½"
	Griffe 1	HONEYWELL MILLER/ KOMET		£255 $315 €300	ALU Stainless Steel	Profiled	?
	1014991	HONEYWELL MILLER/ KOMET		£555 $685 €650	ALU Stainless Steel	Profiled Offset	■ 3
	Axess/Axis 1014990	HONEYWELL MILLER/ANTEC		£565 $690 €662	ALU Stainless Steel	Profiled Offset	NO
	Twin Spikes 3139/1/2 Articulated 3358	HONEYWELL MILLER/ANTEC		$412 €392 $480 €457	ALU Steel Twin Steel	Profiled articulated	■ 2



CLIMBING SPIKES/SPURS

GAFF/SPUR Option			CUFF SHAPE Option	WEIGHT PAIR	WLL/ SWL MBS	FASTENINGS ■=Cuff ■=Foot					CUFF PADDING				GAFF COVER	STORAGE BAG	OTHER COLOUR		NOTES	WWW.
SHORT	MED/ HYBRID	LONG				VELCRO	CLICK BUCKLE	THREAD BUCKLE	LEATHER/EYELETS	PLASTIC/ EYELETS	LEATHER/FELT/ WOOL	THERMO-FOAM/EVA	MESH LINER	METAL INSERT			CUFF	FRAME		
43mm 1.7"	-	70mm 2.75"	Plastic D	2.5kg 5.5lb	-	■ ■	-	-	-	-	-	■	-	-	-	-	-	-	Plastic is recycled rope scraps	edelrid.de
-	50mm 2"	-	Leather T	3kg 6.6lb	-	■	-	-	■	-	■	-	■	-	□	-	-	-	2 sizes available for < or > than 1.75m height. Has instep spikes	ftc-tree.com
-	50mm 2"	-	FibreGlass Q	1.8kg 4lb	-	-	■ ■	-	-	-	-	■	-	-	□	-	-	-	New for 2024	ftc-tree.com
40mm 1.6"	-	-	Leather T	2.4kg 5.3lb	-	-	-	-	□ □	■* ■*	-	-	■	-	□	-	-	■	*Image shows Cam-'buckles' on calf and foot straps	sps.honeywell.com
40mm 1.6"	-	■	Leather D	N/A	-	-	-	-	■ ■	□ □	■	■	-	■	□	-	-	-	Miller Komet now owned by Honeywell. Good luck finding spikes on the Honeywell website	sps.honeywell.com
40mm 1.6"	-	-	ABS D	2.6kg 5.8lb	-	■	-	-	■	-	-	■	-	■	□	-	-	-		sps.honeywell.com
-	-	-	Cordura C	3.2kg 7 lb	-	-	-	-	□ □	■* ■*	-	■	-	-	□	-	-	-	***Cam-'buckles' on calf & foot straps. May be discontinued but still being sold.**	**sps.honeywell.com**



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OPTION= ☐or ☐



MODEL	COMPANY	ORIGIN	COST inc Tax/VAT	MATERIAL Frame/Shaft Gaff/Spur	SHAPE Shaft/ Stirrup	HEIGHT ADJUST Option Increments
FOR33 101603700006	IRUDEK			ALU Steel	Straight Straight	Fixed TBA
K2	KIWIKLIMBER		£430/475 $540/599 €586/536	CARBON-FIBRE Titanium*	Profiled	34.3-47.8cm 6mm/¼"
Klein-Claw & Hydra-Cool 2214..variants	KLEIN TOOLS		£425 $330 €305	STEEL Steel	Profiled	38-48cm 15-19" 43-53cm 17-21" 6mm/¼"
1907..variants	KLEIN TOOLS		£320 $300 €270	STEEL Steel	Slight Profile	38-48cm 15-19" 43-53cm 17-21" 6mm/¼"
1972..variants	KLEIN TOOLS		£300 $280 €255	STEEL Steel	Slight Profile	38-48cm 15-19" 43-53cm 17-21" 6mm/¼"
1986..variants	KLEIN TOOLS		£301 $270 €250	STEEL Steel	Slight Profile	38-48cm 15-19" 43-53cm 17-21" 6mm/¼"
Carbon Fiber	NOTCH GECKO		£642 $850 €761	CARBON FIBER Steel	Slight Profile Offset	37.5-53cm 14¾-21" 6mm/¼"
Carbon Fiber 2.0	NOTCH GECKO		£750 $950 €850	CARBON FIBER Steel	Slight Profile Offset	37.5-53cm 14¾-21" 6mm/¼"
Aluminium 2.0 DMM*	NOTCH GECKO		£435 $550 €492	ALU Steel	Profiled	37.5-53cm 14¾-21" 6mm/¼"
Steel	NOTCH GECKO		£276 $350 €313	powder-coated STEEL Steel	Profiled Offset	37.5-53cm 14¾-21" 6mm/¼"

CLIMBING SPIKES/SPURS

GAFF/SPUR Option			CUFF SHAPE Option	WEIGHT PAIR	WLL/ SWL MBS	FASTENINGS ■=Cuff ■=Foot					CUFF PADDING						OTHER COLOUR		NOTES	WWW.
SHORT	MED/ HYBRID	LONG				VELCRO	CLICK BUCKLE	THREAD BUCKLE	LEATHER/EYELETS	PLASTIC/ EYELETS	LEATHER/FELT/ WOOL	THERMO-FOAM/EVA	MESH LINER	METAL INSERT	GAFF COVER	STORAGE BAG	CUFF	FRAME		
TBA	TBA	TBA	Leather L	3.8kg 8.4lb	TBA	-	-	-	■ ■		■ ■	-	-	-	-	-	-	-	New for 2024	irudek.com
48mm 1.8"	-	60mm 2.3"	FibreGlass Q	2kg 4.4lb	95kg 210lb	■ ■	□ □	-	-	-	-	■	-	-	□	□	*	-	*Titanium gaffs lightest on the mkt Cost $159 MBS 700-1600kg *+Custom graphics	kiwiklimbers.com
38mm 1.5"	40mm 1.6"	70mm 2.75"	Leather C	3.9kg 8.6lb	136kg 300lb	■	-	-	-	■	■	■	■	-	□	-	-	-	Hydra-Cool pads. All frames , pads, straps and gaffs are interchangeable between models	kleintools.com
38mm 1.5"	40mm 1.6"	70mm 2.75"	Leather D C, L	3.5kg 7.7lb	136kg 300lb	■ □	-	-	□*	■	■	■	-	■	□	-	-	-	*Weaver leather All frames , pads, straps and gaffs are inter-changeable between models	kleintools.com
38mm 1.5"	40mm 1.6"	70mm 2.75"	Leather C, L	2.7kg 6lb	136kg 300lb	-	-	-	-	■ ■	■	-	-	-	□	-	-	-	All frames , pads, straps and gaffs are interchangeable between models	kleintools.com
39mm 1.6"	40mm 1.6"	70mm 2.75"	Leather C, L	2.7kg 6lb	136kg 300lb	-	-	-	-	■ ■	■	-	-	-	□	-	-	-	All frames , pads, straps and gaffs are interchangeable between models	kleintools.com
43mm 1.7"	-	63mm 2.5"	Fiber-Glass Q	2kg 4.4lb	159kg 350lb	■ □	■	-	-	-	■	■	-	-	□	□	-	-	ASTM F887	notchequipment.com
47mm 1.86"	-	63mm 2.5"	Fiber-Glass Q	2.1kg 4.7lb	159kg 350lb	■ □	■	-	-	-	■	■	-	-	□	□	-	-	ASTM F887	notchequipment.com
43mm 1.75"	-	63mm 2.5"	Fiber-Glass Q	2.4kg 5.3lb	159kg 350lb	■ □	□	-	■	-	■	■	-	-	□	□	-	-	ASTM F887 *DMM forged shaft version discontinued	notchequipment.com
43mm 1.75"	-	63mm 2.5"	Fiber-Glass Q	2.7kg 5.9lb	159kg 350lb	■ □	□	-	■	-	■	■	-	-	□	□	-	-	ASTM F887	notchequipment.com

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MODEL	COMPANY	ORIGIN	COST inc Tax/VAT	MATERIAL Frame/Shaft Gaff/Spur	SHAPE Shaft/ Stirrup	HEIGHT ADJUST Option Increments
Ergo Steel	NOTCH		£276 $360 €322	powder-coated STEEL Steel	Profiled Offset	4.5" 18 x 6mm/ ¼"
Panther Spikes	PANTHER		£288 $375* €305	ALU AlloySteel	Profiled	41-47cm 16-18½" 20mm/ ¾"
Panther Spikes	PANTHER		£420 $474 €451	CARBON FIBRE AlloySteel	Profiled	41-47cm 16-18.5" 20mm/ ¾"
TREEUP Iron Spikes DR100	PROTEKT		£160 $205 €185	powder-coated STEEL Steel	Profiled	33-48cm 13-19"
TREEUP DR1/DR4 SP501/SP504	PROTEKT		£205 $255 €235	powder-coated STEEL Steel	Profiled offset	45cm NO
TREEUP DR2/DR3 SP505/SP506	PROTEKT		£230 $290 €265	powder-coated STEEL Steel	Profiled	45cm ■7
TREEUP DR2A/DR3A SP502/SP503	PROTEKT		£265 $335 €305	ALU Steel	Slight Profile	45cm ■7
TREEUP DR3A SP503	PROTEKT		£265 $340 €310	ALU Steel	Slight Profile	■7
Climb Right Ultra-Lite 91225	SPYDER		£225-270 $286-340 €265-315 $417	ALU Steel	Straight offset	40-47.6cm 15.75- 18.75"

CLIMBING SPIKES/SPURS

GAFF/SPUR Option			CUFF SHAPE Option	WEIGHT PAIR	WLL/ SWL MBS	FASTENINGS ■=Cuff ■=Foot					CUFF PADDING						OTHER COLOUR		NOTES	WWW.
SHORT	MED/ HYBRID	LONG				VELCRO	CLICK BUCKLE	THREAD BUCKLE	LEATHER/EYELETS	PLASTIC/ EYELETS	LEATHER/FELT/ WOOL	THERMO-FOAM/EVA	MESH LINER	METAL INSERT	GAFF COVER	STORAGE BAG	CUFF	FRAME		
43mm 1.75"	-	63mm 2.5"	HDPE Q	2.9kg 6.4lb	159kg 350lb	■	-	2x ■	-	-	-	■	-	-	□	□			NEW for 2024 ASTM F887 Redesigned cuff and shaft for better alignment and comfort. Grip pad under stirrup. Dual foot strap	notchequipment.com
43mm 1.7"	53mm 2"	63mm 2.5"	Fiber-Glass Q	2.1kg 4.6 lb	150kg 330lb	■ ■	-	-	□	□	■	-	□	-	■	□	■ ■ ■ ■	■	*Sold as RC1 Climbers by Rock'nArb	pantherspikes.com
43mm 1.7"	53mm 2"	63mm 2.5"	Fiber-Glass Q	1.67kg 3.67 lb	150kg 330lb	■ ■	-	-	□	□	■	-	□	-	■	□	■ ■ ■ ■	■	35-48cm calf	pantherspikes.com
																			Expansion Row	
40mm 1.6"	-	60mm 2.3"	Plastic D	3.16kg 7lb	-	■ ■	-	-	-	-	-	■	-	-	□	■	■	■ ■ ■		protekt.pl
40mm 1.6"	-	60mm 2.3"	Leather L C	3.88kg 8.5lb	-	-	-	-	-	■ ■	■	-	■	-	□	□			All frames , pads, straps and gaffs fit all models. Comes with Short & Long gaffs	protekt.pl
40mm 1.6"	-	60mm 2.3"	Leather L C	3.85kg 8.5lb	-	-	-	-	-	■ ■	■	-	■	-	□	□			All frames , pads, straps and gaffs fit all models. Comes with Short & Long gaffs	protekt.pl
40mm 1.6"	-	60mm 2.3"	Leather L	2.56kg 5.6lb	-	-	-	-	-	■ ■	■	-	■	-	□	□			All frames , pads, straps and gaffs fit all models. Comes with Short & Long gaffs	protekt.pl
40mm 1.6"	-	60mm 2.3"	Leather C	2.76kg 6lb	-	-	-	-	-	■ ■	■	-	■	-	□	□			All frames , pads, straps and gaffs fit all models. Comes with Short & Long gaffs	protekt.pl
40mm 1.6"	-	67mm 2.6"	Alu C L, D	2.2kg 4.9lb	<160kg <350lb	■	-	-	-	■	■	□	□	-	□	-			Textured base to stirrup	spyderman.com

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OPTION= ☐or ☐

	MODEL	COMPANY	ORIGIN	COST inc Tax/VAT	MATERIAL Frame/Shaft Gaff/Spur	SHAPE Shaft/ Stirrup	HEIGHT ADJUST Option Increments
	Elevate	STEIN		£385 $500 €470	ALU Steel	5° Offset	37.5-53cm 14¾-21" 6mm/ ¼"
	X2	STEIN		£323 $480 €445	ALU Steel	Straight	■ x7
	TH1000	TREEHOG/ ARBORTEC		£240 $310 €295	STEEL Steel	Slight Profile	45cm NO
	TH1005 TH1003	TREEHOG/ ARBORTEC		£360 $415 €380 £354	ALU Steel	Slight Profile	45cm ■ x7
	Alu Plus 71-284	TREERUNNER (GRUBE)		£421 $553 €500	ALU STEEL	Slight Pro-file & Twist	37-47cm



CLIMBING SPIKES/SPURS

GAFF/SPUR Option						FASTENINGS ■=Cuff ■=Foot					CUFF PADDING						OTHER COLOUR			
SHORT	MED/ HYBRID	LONG	CUFF SHAPE Option	WEIGHT PAIR	WLL/ SWL MBS	VELCRO	CLICK BUCKLE	THREAD BUCKLE	LEATHER/EYELETS	PLASTIC/ EYELETS	LEATHER/FELT/ WOOL	THERMO-FOAM/EVA	MESH LINER	METAL INSERT	GAFF COVER	STORAGE BAG	CUFF	FRAME	NOTES	WWW.
43mm 1.7"	-	63mm 2.5"	Fiber-Glass Q	2.4kg 5.3lb	159kg 350lb	■ □	□	-	■	-	■	■	-	-	□	□		■		steinworldwide.com
43mm 1.7"	-	67mm 2.6"	Leather Alu C	2.2kg 4.8lb	125kg 275lb	■	-	-	-	■	-	■	-	-	■	■		■	Grip surfaces on underside of stirrups	steinworldwide.com
40mm 1.6"	-	60mm 2.3"	Leather L	3.88kg 8.5lb	-	-	-	-	□ □	■ ■	■	-	■	-	□	□			comes with 2 sets of gaffs	treehog.co.uk
40mm 1.6"	-	60mm 2.3"	Leather C L	2.56-2.76kg 5.6-6lb	-	-	-	-	■ ■	-	■	-	-	■	□	□			comes with 2 sets of gaffs	treehog.co.uk
40mm 1.6"	-	60mm 2.3"	Leather/ GRP Plastic T	2.28kg 5lb	-	-	-	-	■* ■*	-	■	-	-	■	□	□			*Weaver leather	grube.eu



UPDATED Apr '25

ROPE/GEAR BAGS TRANSPORT & ORGANISERS PACKS



The first part of this guide covers packs and bags over 30 liters which are the more 'complex' transport or organiser packs followed by less complex but larger duffles. Both are **designed to house your entire day's climbing kit.** Organisers have easier access to the kit and with more pockets, Molle/attachment eyes, mesh and clear pouches etc. on the inside and outside while duffles mostly have some organisation on the outside and a cavernous but less well organised interior. Regular rope/tackle bags and buckets follow on with more simplified data but some, like the *Arbortec Cobra* bag far right are more of a really well-endowed rope bag than a true organiser so all of these bucket-style bags, even though quite complex are in the **ROPE/GEAR BAGS** section. For many more bags from access, rescue and climbing which can all cross over into arb, see the **ROPE EQPT BUYERSGUIDE**. There will also be separate guides for **THROWLINE BAGS/BOXES** in this **BUYERSGUIDE** but check out Palmu's squarerope bag which looks like a throwline cube but is a full strngth rope bag. **TRAUMA PACKS** are in the **MEDEVAC/PPE BUYERSGUIDE** and watertight **WATER RESCUE BAGS** ARE in the **WATERRESCUEBUYERSGUIDE**. This introduction and the KEY to the tables covers *all* organiser bags. A separate KEY to Duffles and basic rope/gear bags with fewer data rows is on pages 370 & 376. [Yellow highlights indicate 'being compiled' or subject to change]

Rope bags have been around as canvas 'buckets' and bags since humans first took to the sea but in the modern era we have cavers to thank for the original hard-wearing, water and mud resistant tackle bags. They were usually in bright yellow, blue or red PVC in Europe or blue and orange Cordura in North America, with a draw-cord closure and single 25mm/1" shoulder strap or two if you were posh and could afford a longer rope. This is pretty much the template for bags even now, some 50 or so years on. PVC and Cordura are still common fabrics, yellow is still a thing and a simple web shoulder strap or straps are also just as functional today as they always were. Cavers rarely looked at anything more sophisticated because it meant more to get wet and dirty, more to snag and too large for a tight squeeze. So it was climbers and rescuers who took bags to the next level.

Mountaineers were using rucksacks all along of course and these large, carry-all products naturally organised your kit pretty well with exterior pockets and interior compartments so the obvious thing for rope-heavy activities that weren't restricted by tiny cave entrances was to marry the rope/tackle bag with a rucksack and have a tackle bag with shoulder straps, hauling eyes and with an array of pockets, pouches and loops. This would allow you to organise all your carabiners/hardware and software around your well-stowed rope and harness. Even more sophisticated was the rescue industry's further development of these bags into larger (team) packs and allow them to open fully to be laid out on the ground so that you could see everything clearly and work quickly rather than arriving on scene and tipping out whole piles of kit to find the one item you needed.

We first moved up from simple tackle bags using *CMC*'s *Heavy Rescue Organiser* which they still make (pic above). This is a kind of saddle bag that has a stiff top with a handle from which two sets of pockets hang down on each side and the whole assembly is strapped to a regular rope bag which provides the shoulder straps for back-carry. On arrival you simply disengage your rope bag with your organiser pockets sat next to it like

TRANSPORT PACKS



a collapsed calf. We're not sure of the exact evolution but we began seeing (and using) rock-climbing bags with a pull out ground tarpaulin as an ad-hoc organiser of sorts because it allowed us to tip out our kit more safely and cleanly and quickly organise the necessary equipment groups so that anyone could see what was what. Not long after that the true, afore-mentioned transport/organiser packs appeared that had all your kit already clipped into eyes and daisy chains - inside and outside - and arranged into pockets, see-through and semi-see-through mesh pockets and you simply arrived on scene, unzipped or unbuckled the entire bag and laid it in some kind of crucifix shape on the ground. And that's pretty much how things remained for the next twenty or thirty years. Loads of great bags but all a variation on the same themes. Lyon's pack on p366 is a 'roll' rather than bag intended for rescue, but trust me it's an excellent arb organiser as well. The *Lotus* opposite is *CMC*'s most recent incarnation of their excellent bags that have been market leaders since the seventies. Daisy chains and Molle style individual attachments adorn all organiser bags and *CAMP*'s *SpaceStation* (right) uses dozens of eyelets around the frame of the case. Above that is CMC-s RigTech interior with two rows of eyes along the base and velcro sealed pouches around the side walls. Sweden's *Palmu* has introduced this square rope bag with carry straps and 18 eyes on the outside.





See-through pockets in mesh or plastic are again a feature of most some back systems. like the L*otus*, are as good as any long-range expedition pack. Load bearing (hauling/carrying) handles/eyes are clearly marked in red on this one. Rope access became a much bigger market than rescue and so was able to drive production of a wider range of products than we might otherwise have had but it was the adoption of technical hardware and 'SRT' techniques in the arb industry that kick-started a whole new drive to produce rope/tackle bags, duffles and organisers for a burgeoning and willing market.



Teufelberger's Mule packs (pic right-this one has the additional *Gear Mule* attached to the front) embraces gear organisation from a mostly external perspective with no less than 81 external attachment points and a virtually clear inside space - this one has a serious back-carrying system but also has a a wheeled version called the *Lazy Mule* and you presumably used the roll-top closure a s a kind of pull-handle though that would seem to be a little more cumbersome than the extendible handle you get on most wheeled luggage? This would otherwise be more like a duffle and duffles (or duffels) are the most common transport format, not least because a duffles and bags from just about any work or sport sector works in the same way and could be used by arborists. Most have some organising features like *Koompasia*'s helmet pouch-right but the most complex organisers, in a lay-flat or cabinet configuration are still produced by the old guard like *CMC* in the US, *Courant* in France and *CAMP* and *Kong* in Italy. As long established rope bag producers they now have virtually every climbing/arb producer in the world to compete with because bags are relatively easy to make and don't have quite the same safety and standards concerns as most other access-related equipment. Many of the established rope rescue and rope access manufacturers are now well known to arborists but one overt mountaineering/sport company, Mont-Bell from Switzerland also produce a very odd diversion from their regular market - the Logger frameright which is a tough aluminium frame housing an organiser bag at the bottom and either a large gear bag on top or a chainsaw storage system for a large ground saw, fuel, tools and subsistence supplies. This is obviously aimed more at forestry but there will be many an arborist who could make use of this kind of system. We see these a lot in **WILDERNESS SAR** magazine because they are the domain of wildland firefighting and we will begin to bring across some more of these to this guide because they may well be of interest to arborists who work more remotely.





Some companies like *Silver Bull* have based their entire company on bag production and carved out a great niche in the arb industry as a name you can trust because that is literally all that they make. Their *Climber 'Day'* bag above highlights one of the unique features of arb bags compared to access and rescue bags - **saw pouches**. These are open-top outside pouches to house long-bladed pruning saws and in some cases like the *ArbPro Transporter,* a pouch and straps to secure your climbing spikes. Others have diversified more recently into bags from their main specialisations like *Teufelbereger* who have bags that are clearly related to their innovations with the *Tree Motion* harness like the bucket (pic right). This uses a base material that has hundreds of holes and shapes cut-out to accommodate carabiners, cord and loops meaning you have infinite attachment options. Despite their organisational capabilities these are mostly smaller volumes and listed in the Rope Bag s section.







www.rescuemagazines.com





Many bags have a drain hole in the bottom to let out water that can accumulate on your rope after a day of working in the wet. We used to use these as a tie-off hole for our ropes with a double fisherman's tied as a barrel termination. Frowned upon now as not only blocking the drainage hole but also exposing the knot to loads of abuse - can't say we were ever affected by either concern, we were more worried about losing our bag and marking the end of the rope with that bag should an incident push the limits of our bagged rope lengths (ie. we're about to ab off of the end!) Unlike tree work, it's not always so easy to judge distances on a long-drop, in the dark and doing it in a rush and on the fly so to speak!. There have always been drawstring lidded bags that could deploy rope through their rectal-style opening but some models have a sealable hole in the lid to allow rope deployment but keep water out when not in use.



Something overlooked by most bags including the organisers in this guide, is the incorporation of a pocket with a range of pen-style pouches for chainsaw tools, screwdrivers, sharpeners etc. like these on the *West Coast Climbers Pro Gear Bag 70L*. This would work well as a lid-organiser easily accessible without having to open the whole pack. The cabinet-style approach is exemplified by *Silver Bull*'s *Mulituse* which can be suspended as if it were a cupboard (with inclined shelves to stop roll-out) and *Buckingham's BuckPack Pro* (right) which is a stand-up backpack with compartments that unzip to clearly show what's inside. This pack demonstrates quite a few nifty features that can be found spread around the other bags in our guides. Kevlar reinforcement of the bottom and side pouches allows climbing spikes to be safely stored and these clip to their own little hooks. The top compartment is for your helmet or your sandwiches or whatever else you want to get to quickly. The middle compartment can be configured as a dry-box to keep your warm clothing separated from a wet rope and this can accept an add-on '*Garage*' which is a detachable Molle board with pouches to better store and present your hardware. This adds around $65 to the base cost of $415 making this one of the more expensive on the market but also the most complex. On the right you can see how the rucksack straps can be stowed out of snags way and immediately behind this padded back panel is another slim pocket to house a laptop or similar, delicate electronics. The latest addition to this genre is Arbsession's GearTote+ which also has a couple of nifty features we don't yet see n others - the ouside has specialist storage for two throwline cubes because they're the first bit of kit you need. The top pouch acts as a standalone rope bag for 75' of r 1/2" rope or a pre-rig system so you can grab that without taking the whole pack.









Finally, we should mention the **WHEELED PACKS**. We mentioned *Tuefelberger's Lazy Mule* earlier with low-profile, luggage-style wheels common to many mass-market bags. On the left, *Singing Rock's Movement* show's the familiar extendible handle on a duffle-style pack. Then there is the cart-style. This may have originated with freshwater anglers in Europe who have, for decades, moved their mountains of kit from car to lake as a stack of boxes/cases/bags on light alloy trolleys. Some like the afore mentioned *Mule* and the *Big Buckpack* add optional integral wheels to an existing design but others, like this *ArbPro Rolly* are used with an optional *Eckla*-style trolley if you intend to move it off the truck! It is a partitioned 'cabinet' with a large rope bag in the top shelf and smaller tackle bags in the bottom. in fact the shelf even comes out to provide a firm, clean work surface. Hardware is housed in a detachable case sat on the top. The large 'box' can accommodate much longer pole equipment like pole-saws and line-launchers nestled into pouches on the side and secured with straps. The majority of arborists are working within a few hundred yards of their vehicles so this cart approach is the definition of taking the weight off....

IN THE FOLLOWING TABLES.....

A large, modern transport pack is quite sophisticated with a whole load of different features that are not always apparent from simply looking at it.

COST: Approximate. Includes local taxes but can vary due to exchange rates, other taxes etc. We generally round up the cost to the nearest Pound£, US Dollar$ or Euro€ Simple currency conversions are shown in orange for reference - they are lower than the actual price because it does not take into account import duty, shipping or tax.

ORIGIN: Is the country of the company selling the item, not necessarily the same as the origin of the product itself which is shown as an inset flag where we know.

STYLE/FUNCTION: The bags in this guide can be defined as one or two of the following

- ***BUCKET/ROPE BAG*** - an upright, top-feeder that holds its shape to allow rope to be fed in or out.
- **BACKPACK**: two shoulder straps and maybe a waist belt but either way- carried on the back giving both hands free to carry even more stuff. Often a combo with a rope bucket.
- **DUFFLE/DUFFEL**: a horizontally carried bag with handles on the top. May also has hidden rucksack straps in the base to convert to vertical orientation.
- **TRANSPORTER**: a multi-compartmented pack - usually a rucksack style - that will either present the equipment in a cabinet style or will open out entirely on the ground to show everything in pockets/pouches or attached.



VOLUME: in Litres/liters /US Gallons (20% less than UK Gallon)
Market Origin: Bags are either specifically designed for arborists (Pro Arb), or for the Rope Access and/ore rescue markets - both requiring tough equipment. Sport can be equally tough if its caving and canyoning but tends not to be used all day every day.

NOMINAL/INTENDED ROPE CAPACITY: As provided by the manufacturer but varies with the diameter. In organiser packs, rope storage may only be part of the overall volume whereas it may be all of the internal volume in a dedicated rope bag/ duffle.
46m/150ftx 12.7mm/½"=76m/250'x11mm7/16"= 91m/300'x9mm/⅜"

WEIGHT: empty with no optional extras included

MAX DIMENSIONS: Height and the width and maybe depth front-to-back. These figures are for the body of the bag and do not include extraneous handles or external pouches that are stuffed to bursting. Most bags will end up much wider!
2xBACK STRAPS=rucksack style carrying straps
1xSHOULDER=a single strap for slinging over your shoulder
WAIST BELT=rucksack style waist belt to keep the pack tight to your body when walking any distance
[PADDED]=in brackets[] indicates straps padded for comfort.

BACK/LUMBAR PADDING=padding on the pack itself rather than straps, again for improved comfort carrying a heavy load. Lumbar is lower back, behind the waist belt if there is one.

DETACH/STOW CARRY STRAPS: refers to rucksack style straps that can either be ditched entirely or can be stuffed into an integral pocket so that no straps are exposed to snagging.

REINFORCED SIDES (Free-standing)=the pack has stiffened panels or bars that keep the bag upright during rope feed.

CARRY HANDLES WLL ENDS SIDE dedicated carrying handles with ergonomic adjuncts to make carrying a heavy weight more comfortable. Mounted on the top or for duffle-style side-carry. Can also be used to clip on kit. WLL=the max weight you can carry via these handles or an additional haul eye.....

ADDITIONAL HAUL WLL SEWN EYES RINGS Top handles can be used for hauling but there is often a sewn loop between the top of shoulder straps or there may be metal eyes around the top.

BAG OPENS FLAT to DISPLAY KIT The whole bag unzips or unbuckles to expose the interior. Can also include organisers with detachable, opening display panels/boards.

HELMET [SAW] POCKET/POUCH CORD Designated for use with a helmet or saw but can obviously be used for anything that will fit. Climbers packs often use bungee cord on the outside front or top of the pack but some have a separated helmet pocket on the top as it should be the first thing you put on. **INTERNAL PARTITION** a means to divide internal space eg. for 2 ropes or to keep clothes dry-not just a pocket. Some packs come with their own **ROPE TOOL BAG** or are an option ☐.

GEAR (individual) EYES EXTERNAL INTERNAL These can be daisy chain eyes, Molle eyes or individual plastic eyelets but all are intended to clip one carabiner and/or clippable hardware

GEAR LOOPS [STRAPS] EXTERNAL INTERNAL harness-style larger semi-circles of cord or plastic that allow multiple items to be clipped into the same loop. All handles could be used as a gear loop! **[STRAPS]** [in brackets] is securing web with buckles

TOTAL POCKETS EXTERNAL INTERNAL The total number of closable pockets and open pouches outside and inside the bag. This does not include saw pockets/pouches listed separately.
of which.. MESH/CLEAR EXTERNAL INTERNAL of the total number of pockets those which are clear plastic or open mesh allowing free drainage but more importantly visibility of the contents. Mesh makes the bag lighter than a full, heavy duty enclosure.

CLOSURES Velcro POP Zipped Draw-Cord Buckle Referring ONLY to the outside pockets - a colour square indicates the type of closure and the number is the pockets that have that specific closure.

WATERPROOF VENT HOLES DRAIN HOLES All of these packs are water resistant to a degree unless they have mesh panels but some are more waterproof than others and particularly so if they have a roll-top closure. The most water resistant are marked with a blue square ■, less water resistant - usually because ther are a drawcord closure, is marked with a ● Being waterproof does not preclude having vent and drain holes as the term 'waterproof' refers to rain from the top not complete submersion. See our **WATER RESCUEBUYERS GUIDE** for completely waterproof bags.

LID POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP Referring ONLY to the top lid and compartment doors if it is an organiser type pack.

LOCKABLE:the main compartment(s) can be locked with a small padlock (not usually supplied). Usually needs a chunky YKK style zip large enough to clip in a padlock clasp but may be a tougher, bespoke element like the *FTC-Tree Koompassia*.
ID PANEL: a small-see-through rectangle for a luggage style label or large enough for an inventory or risk assessment sheet.
END/SIDE STRAPS:in addition to the carry straps these are adjustable webbing straps on the sides that can either act to compress the bag to a smaller size if it's not fully filled or you can secure items behind them. Side straps are often set above open pouches that can house a saw, pole or spikes or end straps can be used to secure a hank of rope or a tarpaulin etc.
REFLECTIVE TRIM: not seen as much on arb packs as they are on rescue packs- light reflective to provide high visibility.
TARPAULIN: a separate or integral ground sheet. ☐=if an option
RAINCOVER: a separate cap or complete cover. ☐=if an option

MATERIALS: just the main body panel materials
OTHER COLOURS: colours available *OTHER* than the colour shown in the product image at the top of the column.

Images NOT to Scale
£$€ any price in 'burnt-orange' is a **Currency conversion only**-exc shipping, duties,taxes etc.
ROPE CAPACITY = Not necessarily related to volume if only part of the bag is for rope.
ADDITIONAL HAUL = Dedicated sewn eye or ring that can carry the entire weight of the bag & contents for hauling.Top handle is often able to function as a haul eye.
HELMET/BOOT= pouch or compartment to fit a helmet, often on the outside, and/or boots (always on the inside. [SAW]=Dedicated pouch or scabbard for a hand saw
POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle









	MANUFACTURER	ARBORTEC	ARBPRO	ARPRO	ARBSESSION
	MODELS litres/liters VARIANT	Python 50 AT104-50	Transporter 50 APTB50	Rolly Box 225 -	GearTote+ 72 -
	ORIGIN	UK	IT	IT	US
	COST (inc Tax/VAT) (currency conversion only)	£120 $146 €115	£125 $160 €137	£290 $469 €336	£188 $240 €222
	STYLE/FUNCTION	RUCKSACK	RUCKSACK	CABINET ORGANISER	TOP-LOAD CABINET
SPECIFICATIONS	VOLUME L/US Gallon intended market	50L/13.2gal Pro Arb	*50-60L/13.2-15.9gal Pro Arb	225+30L/59.4gal Pro Arb	72+15L/19-4gal Pro Arb
SPECIFICATIONS	NOMINAL/INTENDED ROPE CAPACITY	45m x 11mm 100' x ½"	45-55m x 11mm 100-135' x ½"	2x 80m+1x160m x 11mm 2x 160'+1x320' x ½"	2x 25m x 11mm 2x 75' x ½"
SPECIFICATIONS	WEIGHT empty	2.1kg 4.6lb	1.5kg 3.3lb	?	approx 2.2kg 5lb
SPECIFICATIONS	DIMENSIONS (unfilled)	70 x 37 x 20cm 27.6 x 14.6 x 7.9"	70 x 30 x 25cm 27.6 x 12 x 9.8"	75 x 60 x 50cm 29.5 x 23.6 x 19.6"	81.3 x 35.6 x 25.4cm 32 x 14 x 10"
TRANSPORT	2xBACK STRAPS 1xSHOULDER WAIST BELT [PADDED]	[■]- [■]	[■]--	- - -	[■]--
TRANSPORT	BACK/LUMBAR PADDING	■ ■	■ ■	- -	■ ■
TRANSPORT	DETACH STOW CARRY STRAPS	- -	- -	- -	■
TRANSPORT	REINFORCED SIDES (Free-standing)	-	■	■	■
TRANSPORT	CARRY HANDLES WLL ENDS SIDE	1 -	2 -	- -	- 1
TRANSPORT	ADDITIONAL HAUL WLL SEWN EYES RINGS		1 -	- -	1 -
STOW EQUIPMENT	BAG OPENS OUT to DISPLAY KIT	NO	NO	PARTIAL	PARTIAL
STOW EQUIPMENT	HELMET/BOOT [SAW] POCKET/POUCH CORD/WEB	■	■	■ [■]	■ [■]
STOW EQUIPMENT	INTERNAL PARTITION +ROPE TOOL BAG	- - -	- - -	■□□	■■-
STOW EQUIPMENT	GEAR (individual) EYES EXTERNAL INTERNAL	?	11	- -	16 20+16 in lid
STOW EQUIPMENT	GEAR LOOPS [STRAPS] EXTERNAL INTERNAL	- -	- -	- -	- -
POCKETS	TOTAL POCKETS EXTERNAL INTERNAL	2 1	*3 3*	6 1 + 30L pouch	2 * 2 + 10L pouch
POCKETS	of which..MESH/CLEAR EXTERNAL INTERNAL	?	■1	- 1 *	- -
POCKETS	CLOSURE VELCRO POP ZIPPED DRAW-CORD BUCKLE	?	- -	■3	■1
FEATURES	WATERPROOF VENT HOLES DRAIN HOLES	■-■	■-■	■--	■--
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	■	■+■	■	■
FEATURES	LOCKABLE ID PANEL END/SIDE STRAPS	- ■ ■-	■ ■ - ■	- - - ■	- - - -
FEATURES	REFLECTIVE TRIM TARPAULIN RAINCOVER	---	---	---	---
	OUTER MATERIALS	PES/PVC	PVC	680 g/m² PVC	900D PVC
	OTHER COLOURS	■	-	■ ■	
	NOTES		*inc slide-in 5L pouch on each side. *Side straps allow variable volume *Sml zipped security pocket	Wheeled trolley optional. 30L pouch has 2 dividers Clear sleeve in back of box.	Lid pouch detaches as rope bag for 75'x1/2" *2 exterior pockets intended for throwline cubes
	WEBSITE	arbortec.com	arbpro.it	arpro.it	arbsession.com

TRANSPORT/ORGANISERS










BEAL	BEAL	BUCKINGHAM	BUCKINGHAM	CAMP SAFETY	CAMP SAFETY
Combi-Pro 40 BSAC	**Combi-Pro 80** BSAC	**Buckpack Pro 90** 4377 Garage 4378	**Eqpt Bag Wheels** 41333	**Hold 40** 2789	**Spacecraft 45** 2790
£130 $155 €145	£145 $220 €173	£328 $415 €382	£0 $614* €0	£75 $110 €67	£210 $286 €258
ORGANISER	ORGANISER	CABINET ORGANISER	BACKPACK	BACKPACK	ORGANISER
40L/10gal Pro access	80L/21.1gal Pro Access	90L/23.8gal Pro Arb	0L Pro Arb	40L/10gal Pro Access	45L/11.8gal Pro Access
40m x 10.5mm 80' x ½"	60m x 10.5mm 120' x ½"	300m x 11mm 600' x ½"	0m 0'	100m x 11mm 200' x ½"	150m x 11mm 300' x ½"
1.96kg 4.3lb	2.5kg 5.5lb	3.36-4.5kg 7.4-10lb	1.1kg 2.4lb	650g 1.4lb	2.6kg 5.7lb
60 x 21cm 24 x 8"	72 x 26cm 28 x 10"	81 x 41 x 26mm 32 x 16 x 10"	48 x 36cm 18.75 x 14"	56 x 30 x 20cm 22 x 12 x 8"	62 x 32 x 23cm 24 x 13 x 9"
[■]-[■]	[■]-[■]	[■]--	[■]--	[■]--	[■]-■
■■	■■	■■	--	■■	■■
--	--	-■	--	--	--
■	■	■	-	-	■
1+1 1	1+1 1	*5 -	2 -	3 1	- 1
1 -	2 -	1 -		1x50kg -	1x50kg -
YES	YES	PARTIAL	PARTIAL	PARTIAL	YES
--	--	■[■]	[2]2-	--	--
■ -	■ ■	■-	-----	---	---
-10+popper loops	-15+7	16 35	-■-1	14 -	3 30
2* 7*	2* 7*	*5 -	------	- 2	- -
0 4	0 4	*7 4	3 1	3 -	3 *
■3*	■3*	--	1 -	1 -	- -
- 3	- 3	■5 ■2	■2	■2	■1
●--	●--	●--	■-■	■-■	■--
■	■	■+■	■	■	■+■
-■--	-■--	-■--	-■■-	-■■-	-■■■
■--	■■-	---	---	---	---
PVC 1100g/m²	PVC 1100g/m²	Vinyl,Cordura, Kevlar	44oz Vinyl	500D PVC	500D PVC
■	■	-	■	-	-
80L=pull-out rope tarp. sturdy enough to be a light handle. *6-loops detachable clear pouch can be for water	80L=pull-out rope tarp. *sturdy enough to be a light handle. *6-loops detachable *1 clear pouch can be for water	*Inc padded laptop pocket *carry handles = gear loops. GearGarage is a detachable hardware board with numerous eyes & pouches.	Hi-viz version is $401		Comes with 2.5L detachable gear bag-clips inside main bag.
beal-planet.com	beal-planet.com	buckinghammfg.com	buckinghammfg.com	camp.it	camp.it

Images NOT to Scale
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ADDITIONAL HAUL = Dedicated sewn eye or ring that can carry the entire weight of the bag & contents for hauling.Top handle is often able to function as a haul eye.
HELMET/BOOT= pouch or compartment to fit a helmet, often on the outside, and/or boots (always on the inside. [SAW]=Dedicated pouch or scabbard for a hand saw
POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle






	MANUFACTURER	CMC RESCUE	CMC RESCUE	CMC RESCUE	CMC RESCUE
	MODELS litres/liters VARIANT	H.R. Organiser 13 77040.	Rope & Eqpt 37 44100.	Lotus Tech Pack 37 441120	Rigtech Pack 42 44110.
	ORIGIN				
	COST (inc Tax/VAT) (currency conversion only)	£140 $177 €163	£142 $180 €166	£162 $205 €176	£202 $256 €236
	STYLE/FUNCTION	ORGANISER	BAG/BACKPACK	ORGANISER	ORGANISER
SPECIFICATIONS	VOLUME L/US Gallon intended market	13L/3.4gal Pro Rescue	37L/9.7gal Pro Rescue	37L/9.7gal Pro Rescue	42L0L/11gal Pro Rescue
SPECIFICATIONS	NOMINAL/INTENDED ROPE CAPACITY	25m x 11mm 50' x ½"	100m x 11mm 200' x ½"	122m x 11mm 400' x 7/16"	100m x 11mm 200' x ½"
SPECIFICATIONS	WEIGHT empty	879g 1.9lb	998g 2.25lb	2.37kg 5.2lb	2.8kg 6.2lb
SPECIFICATIONS	DIMENSIONS (unfilled)	48 x 44 x 15cm 19 x 17 x 6"	53 x 33 x 20cm 21 x 13 x 8"	50 x 33 x 23cm 20 x 13 x 9"	56 x 46 x 21cm 22 x 18 x 8"
TRANSPORT	2xBACK STRAPS 1xSHOULDER WAIST BELT [PADDED]	- - -	[■] - -	[■] - [■]	[■] - [■]
TRANSPORT	BACK/LUMBAR PADDING	- -	- -	■■	■■
TRANSPORT	DETACH STOW CARRY STRAPS	- -	- ■	■(waist belt) ■	- -
TRANSPORT	REINFORCED SIDES (Free-standing)	■	-	-	-
TRANSPORT	CARRY HANDLES WLL ENDS SIDE	1 -	1 2	1 2	- 1
TRANSPORT	ADDITIONAL HAUL WLL SEWN EYES RINGS	- -	- -	- -	- -
STOW EQUIPMENT	BAG OPENS OUT to DISPLAY KIT	PARTIALLY	PARTIALLY	YES	YES
STOW EQUIPMENT	HELMET/BOOT [SAW] POCKET/POUCH CORD/WEB	- -	- -	- -	- -
STOW EQUIPMENT	INTERNAL PARTITION +ROPE TOOL BAG	- - -	- - -	- - -	- - -
STOW EQUIPMENT	GEAR (individual) EYES EXTERNAL INTERNAL	3 -	16 ?	12 +16 web eyes 20	6 24
STOW EQUIPMENT	GEAR LOOPS [STRAPS] EXTERNAL INTERNAL	2 -	- 2	- 1	1 2
POCKETS	TOTAL POCKETS EXTERNAL INTERNAL	4 -	1 2	4 7	2 7
POCKETS	of which..MESH/CLEAR EXTERNAL INTERNAL	1 -	- -	- 6	- -
POCKETS	CLOSURE VELCRO POP ZIPPED DRAW-CORD BUCKLE	■3 ■1	■3	■10	■2 ■6
FEATURES	WATERPROOF VENT HOLES DRAIN HOLES	● - -	■ - -	● - -	■ - ■
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP		■	■	■
FEATURES	LOCKABLE ID PANEL END/SIDE STRAPS	■ ■ - ■	- ■ - -	■ ■ - ■	- ■ ■* -
FEATURES	REFLECTIVE TRIM TARPAULIN RAINCOVER	- - -	- - -	■ ■ -	■ ■ -
	OUTER MATERIALS	1000D Cordura	1000D Cordura	PU-coated 840D Ripstop	1000D Cordura
	OTHER COLOURS	■	■	-	■
	NOTES	Rope bag not included. Pockets:48x13x10cm/19x5x4" 30x13x10cm/12x5x4" 13x13x10cm/5x5x4" H.R.= Heavy Rescue	2x Internal zipped pockets - 1 for keys etc. one is fleec-lined for glasses/phone		*Lid buckles act as end-to-end compression straps. Padded side pockets. Whistle on sternal buckle. 3 lash panels. 2xToggled bungies on lid.
	WEBSITE	cmcpro.com	cmcpro.com	cmcpro.com	cmcpro.com

STIHL

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TOP-HANDLE CHAINSAW

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AP SYSTEM

Images NOT to Scale
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BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle



	MANUFACTURER	COURANT	COURANT	COURANT	COURANT
	MODELS litres/liters VARIANT	Cross Pro 54 PSCPBYA	Cross Pro XL 75 PSCPBYA	Cross Evo 45 PPLSSCC4	Dock 60 -
	ORIGIN				
	COST (inc Tax/VAT) (currency conversion only)	£164 $230 €188	£225* $300* €259*	£143 $170 €146	£92 $118 €102
	STYLE/FUNCTION	ORGANISER	ORGANISER	ORGANISER	BUCKET/BACKPACK
SPECIFICATIONS	VOLUME L/US Gallon intended market	54L/14.3gal (inc.17L rope bag) Pro Access	75L/20gal (inc 17L rope bag) Pro Rescue	45L/11.8gal (inc 17L rope bag) Pro Access	60L/15.8gal Pro Access
SPECIFICATIONS	NOMINAL/INTENDED ROPE CAPACITY	75m x 11mm 150' x ½"	75m x 11mm 150' x ½"	75m x 11mm 150' x ½"	100m x 11mm 200' x ½"
SPECIFICATIONS	WEIGHT empty	2.7kg 6lb	3.4kg 7.5lb	3.25kg 7.15lb	1.6kg 3.5lb
SPECIFICATIONS	DIMENSIONS (unfilled)	76 x 32 x 25cm 30 x 13 x 10"	88 x 36 x 27cm 35 x 15 x 11"	59 x 42cm 23.3 x 16.5"	82 x 32 x 25cm 33 x 13 x 10"
TRANSPORT	2xBACK STRAPS 1xSHOULDER WAIST BELT [PADDED]	[■]-[□]	[■]-[■]	[■]- -	[■]-[□]
TRANSPORT	BACK/LUMBAR PADDING	■■	■■	■ -	■■
TRANSPORT	DETACH STOW CARRY STRAPS	- -	- -	- -	■ -
TRANSPORT	REINFORCED SIDES (Free-standing)	■	■	■	■
TRANSPORT	CARRY HANDLES WLL ENDS SIDE	1 x200kg 4 x200kg	2 x200kg 4 x200kg	1 2	1 -
TRANSPORT	ADDITIONAL HAUL WLL SEWN EYES RINGS	1 x300kg -	1 x300kg -	- 1 x210kg	0 -
STOW EQUIPMENT	BAG OPENS OUT to DISPLAY KIT	■	YES	■	NO
STOW EQUIPMENT	HELMET/BOOT [SAW] POCKET/POUCH CORD/WEB	- ■	- ■	- ■	- -
STOW EQUIPMENT	INTERNAL PARTITION +ROPE TOOL BAG	YES + ■	YES + ■	YES + ■	- - -
STOW EQUIPMENT	GEAR (individual) EYES EXTERNAL INTERNAL	6+4 20+19molle	5+4 29+19molle	- 13 (+4 poppered)	10 + 2 3
STOW EQUIPMENT	GEAR LOOPS [STRAPS] EXTERNAL INTERNAL	- [2]	2 [2]	- 3	2 [*2] -
POCKETS	TOTAL POCKETS EXTERNAL INTERNAL	*1 11	*1+*2+*1 11	- 5	2 -
POCKETS	of which..MESH/CLEAR EXTERNAL INTERNAL	- 8	- 8	- 5 elasticated	2 -
POCKETS	CLOSURE VELCRO POP ZIPPED DRAW-CORD BUCKLE	■11 ■1	■11 ■2 ■2		■2
FEATURES	WATERPROOF VENT HOLES DRAIN HOLES	●-?	●- -	■■-	■■■
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	■■	■■	■	■
FEATURES	LOCKABLE ID PANEL END/SIDE STRAPS	- ■- ■	- ■- ■	- - ■■	- ■- -
FEATURES	REFLECTIVE TRIM TARPAULIN RAINCOVER	■- -	■- -	■- -	■- -
	OUTER MATERIALS	1680D Ballistic nylon YKK zips	1680D Ballistic nylon YKK zips	PVC	1680D Ballistic nylon YKK zips
	OTHER COLOURS	■■■	■ *		■■
	NOTES	Zipped lids both ends. Internal pocket sizes can be adjusted with poppers. *Internal key pocket zipped from outside. Kit ID labels.	*Blk10% less.Zipped lids both ends. Adj internal pocket sizes. *Key pocket zips from outside *Bottle Holders. *Padded for phone/glasses. Kit ID labels.	unzips at both ends. Includes the Cross Light rope bag.	Extra rpe/gear bags can be attached to all Cross & Dock bags. *draw-cord bungy for securing saw/bottle/cylinder in mesh pockets
	WEBSITE	mycourant.com	mycourant.com	mycourant.com	mycourant.com

www.arbclimber.com



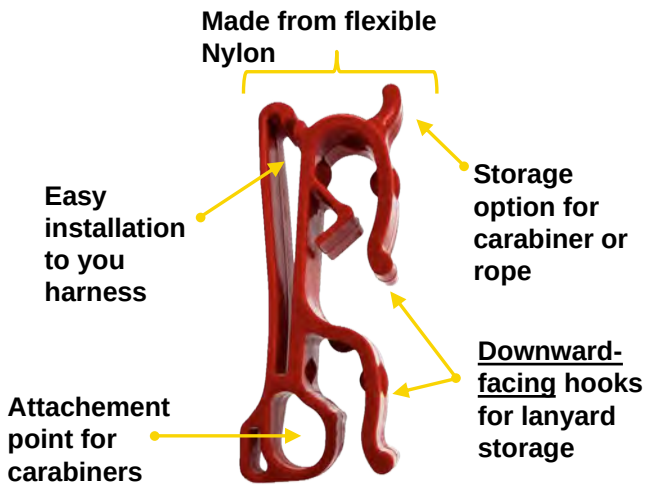
EDELRID	FRANCITAL	HUSQVARNA
PE Backpack 45 883101000170	Hercule 60 AC034	Gear Pack 70 534 10 18-02
£108 $160* €110	£170 $224 €200	£185 $260 €250
BACKPACK	BACKPACK	BACKPACK
L/11.8gal Pro Rescue	- Pro Arb	70L/18.4gal Pro Arb
90m x 11mm 180' x ½"	30kg/66lb	75m x 11mm 150' x ½"
950g 2.1lb	1.75kg 3.85lb	2kg 4.4lb
66 x 36 x 10cm 26 x 14 x 4"	?	76 x 36cm 29.5 x 14.2"
[■]--	[■]-[■]	[■]--
- -	■ -	■■
- ■	- -	■ -
-	■	-
1 -	- -	1 2
1 x40kg -	- -	- -
PARTIAL	NO	PARTIAL
- -	■ -	■ -
- - -	YES - -	- □ -
20+2* 20	5 1	2016
- 2	[4] -	
2 6	2 2	5 1
- 3	- -	- 1
■2 ■3	■1 ■1	■4 ■1
●-?		●- -
■	■	■+■
- - - -	- - ■■	- - ■* -
■--	---	■--
Ballistic Nylon	Cordura/Alu frame	900D
■ *		
- 2 metal rings if not used o attach shoulder straps *Black version lacks eflective - 12% cheaper	Forestry pack intended to carry chainsaw, fuel, helmet subsistence etc.	Additional zipped side entry. Integral first aid pocket. *Lid buckles act as end-to-end compression straps
edelrid.com	francital.com	husqvarna.com

Arbpro®

'A step up into the canopy'™

New and needed:

Arbpro Buddy - Lanyard manager



Not a PPE - Max 10 Kg | Patent pending



Ask your trusted dealer for more information

@arbpro - Follow us on Instagram

www.arbpro.it

Images NOT to Scale
£$€ any price in 'burnt-orange' is a **Currency conversion only**-exc shipping, duties,taxes etc.
ROPE CAPACITY = Not necessarily related to volume if only part of the bag is for rope.
ADDITIONAL HAUL = Dedicated sewn eye or ring that can carry the entire weight of the bag & contents for hauling.Top handle is often able to function as a haul eye.
HELMET/BOOT= pouch or compartment to fit a helmet, often on the outside, and/or boots (always on the inside. [SAW]=Dedicated pouch or scabbard for a hand saw
POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle



	MANUFACTURER	KONG	LYON EQUIPMENT	MONTBELL	NOTCH EQPT
	MODELS litres/liters VARIANT	Convoy 56 982002N00KK	First Response 50 LSBMOD..	Logger Gear 75 Chainsaw System	Pro Large 43 40082
	ORIGIN				
	COST (inc Tax/VAT) (currency conversion only)	£240 $325 €286	£271* $340 €315	£460480 $585 €535	£97 $120 €110
	STYLE/FUNCTION	ORGANISER	ORGANISER	FRAMED CARRIER	BACKPACK
SPECIFICATIONS	VOLUME L/US Gallon intended market	56L+19L/14.7+5gal rope bag Pro Access	50L/13.2gal Pro Rescue	63+12.7L/16.6+3.3gal Pro Arb	43L/11.4gal Pro Arb
SPECIFICATIONS	NOMINAL/INTENDED ROPE CAPACITY	100m x10.5mm 150' x ½"	80m x 11mm 160' x ½"	n/a	120m x 11mm 245' x ½"
SPECIFICATIONS	WEIGHT empty	2.6kg 5.8lb	1.91kg 4.2lb	2.47kg 5.5lb	1.2kg 2.7lb
SPECIFICATIONS	DIMENSIONS (unfilled)	80 x 35 x 26cm 31.5 x 13.8 x 10.2"	65 x 55cm 26 x 22"	73.5 x 39 x 28cm 28.9 x 15.3 x 11"	48 x 33cm 19 x 13"
TRANSPORT	2xBACK STRAPS 1xSHOULDER WAIST BELT [PADDED]	[■]--	---	[■]-[■]	---
TRANSPORT	BACK/LUMBAR PADDING	■■	--	■■	--
TRANSPORT	DETACH STOW CARRY STRAPS	- ■	--	■-	--
TRANSPORT	REINFORCED SIDES (Free-standing)	-	-	■	-
TRANSPORT	CARRY HANDLES WLL ENDS SIDE	1 2	1 -	1 44kg/88lb -	0 -
TRANSPORT	ADDITIONAL HAUL WLL SEWN EYES RINGS	1 -	--	--	0 -
STOW EQUIPMENT	BAG OPENS OUT to DISPLAY KIT	YES	YES	NO/YES	NO
STOW EQUIPMENT	HELMET/BOOT [SAW] POCKET/POUCH CORD/WEB	- □	--	- [■]	--
STOW EQUIPMENT	INTERNAL PARTITION +ROPE TOOL BAG	-□-	-■■	---	---
STOW EQUIPMENT	GEAR (individual) EYES EXTERNAL INTERNAL	5 24	- 20	??	13 -
STOW EQUIPMENT	GEAR LOOPS [STRAPS] EXTERNAL INTERNAL	--	--	??	--
POCKETS	TOTAL POCKETS EXTERNAL INTERNAL	6 6	- 7	2 - /2 3	6 -
POCKETS	of which..MESH/CLEAR EXTERNAL INTERNAL	2 6	- 1	--	2 -
POCKETS	CLOSURE VELCRO POP ZIPPED DRAW-CORD BUCKLE	■5 ■4	■5	■2 /■3	■4
FEATURES	WATERPROOF VENT HOLES DRAIN HOLES	■-■	■--	●--	■-?
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	■+■ & ■+■top	■	■ & ■ /■	■
FEATURES	LOCKABLE ID PANEL END/SIDE STRAPS	■■--	----	---- /---■	■■--
FEATURES	REFLECTIVE TRIM TARPAULIN RAINCOVER	---	■--	---	
	OUTER MATERIALS	-	PVC	420D Ballistic Nylon Auminium Frame	900D Polyester
	OTHER COLOURS		■■		
	NOTES	Optional 19L rope bag and helmet securing straps	Fully modular version with detachable bags & pockets *Empty modular pack=£120	Modular Carry System with two bags or organiser for chainsaw and fuel can. Also available as separate components.	
	WEBSITE	Kong.it	lyonequipment.com		notchequipment.com

TRANSPORT/ORGANISER PACKS











NOTCH EQPT	NOTCH EQPT	PROTEKT	ROCK EMPIRE	SILVER BULL	SKYLOTEC
Approach 50 99327	Pro Access 60 53444	Trans Backpack 40 Ax075	Beetle Bag II 55 -	Multiuse 63 -	Actsafe SAR ACS-0914
£156 $160 €146	£192 $250 €235	£0 $0 €0	£141 $180 €164	£162 $203 €156	£417 $547 €494
BUCKET/BACKPACK	ORGANISER	ORGANISER	BACKPACK	CABINET ORGANISER	BACKPACK
50L/13.2gal Pro Arb	60L/15.8gal Pro Arb	40L/10gal Pro Access	52.5L/13.9gal Sport	63L/16.6gal Pro Arb	
120m x 11mm 245' x ½"	75m x 11mm 150' x ½"	100m x 11mm 200' x ½"	80-100m x 11mm 160-200' x ½'	100m x 11mm 200' x ½'	n/a
2.3kg 5lb	2.63kg 5.8lb	1.88kg 4.2lb	920g 2lb	2.5kg 5.5lb	2.75kg 6.1lb
7.1 x 35.5 x 35.5cm 22.5 x 14"	69 x 36cm 27 x 14"	60 x 38 x 19cm 23.6 x 15 x 7.5"	50 x 30 x 35cm 20 x 12 x 14"	63 x40 x 25cm 25 x 15.75 x 10"	70 x40 x 25cm 27 x 15.75 x 10"
[■]- -	[■]- -	[■]- -	[■]- -	[■]- -	[■]- [■]
■ ■	■ ■	■ ■	■ ■	- -	■ ■
- -	■ -	■ -	- ■	- ■	- ■
■	-	-	-	-	■
1 1	2 1	2 1	1 -	2 2	1 1
0 -	- -	- -	- -	- 1*	- -
NO	YES	YES	YES	PARTIAL	?
- -	■ [■]	■ [■]	- -	- -	?
- - -	- - -	- - -	- - -	■* - -	?
- -	6+2* 21	6+2* 21	- -	10 -	14 ?
6 -	- -	- -	1 2 [1]	8 -	- ?
6 -	2 6	2 6	1 3	- 1	- ?
1 -	- 5	- 5	- -	- 1	- ?
■1	■3 ■1 ■2	■3 ■1 ■2	■4	■1	?
■-?	■- -	■- -	■- -	■- -	- - -
■+■	■	■	■	■+■	■
- ■ - -	■ ■ - -	■ ■ - -	- - - -	■ ■ - ■	■ - - -
- -	- - -	- - -	- ■* -	- - -	- - -
1680D Nylon	900D Polyester	PNC	PES	PVC-coated canvas	Ballistic Nylon
				■	
Luxe 60 discontinued but still available while stocks last	*a sewn eye on each back-strap. Pro Gear 70 discontinued but still available while stocks last		*padded back removes to become ground pad. Internal pocket with keys hook	Orang-utan=Ltd edition. *1,2 or 3 partitioned 'shelves' *3xLarge eyelets allow bag to be hung as a 'cabinet'	**Intended for transport of powered ascender but suitable for any bulky kit**
notchequipment.com	notchequipment.com	protekt.pl	rockempire	n/a	skylotec.com



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ROPE CAPACITY = Not necessarily related to volume if only part of the bag is for rope.
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HELMET/BOOT= pouch or compartment to fit a helmet, often on the outside, and/or boots (always on the inside. [SAW]=Dedicated pouch or scabbard for a hand saw
POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle

	MANUFACTURER	**STERLING ROPE**	**STERLING ROPE**	**STERLING ROPE**	**TEUFELBERGER**
	MODELS litres/liters VARIANT	**WonderWall 33 23** -	**Vertac 40** MDBAGVERTAC40BK	**Vertac 60** MDBAGVERTAC60BK	**Baby Mule 23** -
	ORIGIN				
	COST (inc Tax/VAT) (currency conversion only)	£0 $0 €183100	£142 $180 €166	£158 $200 €185	£0 $0 €183
	STYLE/FUNCTION	BACKPACK	BUCKET/BACKPACK	BUCKET/BACKPACK	ORGANISER
SPECIFICATIONS	**VOLUME** L/US Gallon intended market	23L Sport/Pro Access	40L/10gal Pro Access	60L Pro Access	23L Pro Access
SPECIFICATIONS	**NOMINAL/INTENDED ROPE CAPACITY**		>75m x 11mm >150' x ½'	>100m x 11mm >200' x ½'	
SPECIFICATIONS	**WEIGHT empty**	1.85kg 0lb	1.35kg 3lb	1.55kg 3.41lb	1.85kg 4.1lb
SPECIFICATIONS	**DIMENSIONS** (unfilled)	50 x 23 x 20cm 19.6 x 9 x 7.8"	56 x 34 x 22.5cm 22 x 13.3 x 9"	72.5 x 33.2 x 26.4cm 28.5 x 13 x 10.3"	50 x 20 x 23cm 19.6 x 7.8 x 9"
TRANSPORT	2xBACK STRAPS 1xSHOULDER WAIST BELT [PADDED]	[■]-[■]	[■]-■	[■]-■	[■]--
TRANSPORT	BACK/LUMBAR PADDING		■■	■■	■■
TRANSPORT	DETACH STOW CARRY STRAPS	- ■	- ■	- ■	■-
TRANSPORT	REINFORCED SIDES (Free-standing)	-	■	■	■
TRANSPORT	CARRY HANDLES WLL ENDS SIDE	22.7kg/50lb 0 -	2* 50lb -	2* 60lb -	1 -
TRANSPORT	ADDITIONAL HAUL WLL SEWN EYES RINGS		0 -	0 -	1 -
STOW EQUIPMENT	BAG OPENS OUT to DISPLAY KIT		PARTIAL	PARTIAL	PARTIAL
STOW EQUIPMENT	HELMET/BOOT [SAW] POCKET/POUCH CORD/WEB		- -	- -	■ ■
STOW EQUIPMENT	INTERNAL PARTITION +ROPE TOOL BAG	- - -	- - -	- - -	- - -
STOW EQUIPMENT	GEAR (individual) EYES EXTERNAL INTERNAL		- 6	- 6	22 -
STOW EQUIPMENT	GEAR LOOPS [STRAPS] EXTERNAL INTERNAL	1 (top for rope) -	- -	- -	1 [2]
POCKETS	TOTAL POCKETS EXTERNAL INTERNAL		1 4	1 4	3 3
POCKETS	of which..MESH/CLEAR EXTERNAL INTERNAL		- 3	- 3	- -
POCKETS	CLOSURE VELCRO POP ZIPPED DRAW-CORD BUCKLE	■2 + ■1	■4 ■1	■4 ■1	■4 ■1
FEATURES	WATERPROOF VENT HOLES DRAIN HOLES		■-■	■-■	■--
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP		■	■	■
FEATURES	LOCKABLE ID PANEL END/SIDE STRAPS		- ■ - -	- ■ - -	
FEATURES	REFLECTIVE TRIM TARPAULIN RAINCOVER				■-■
	OUTER MATERIALS	recycled 600D Ripstop	recycled 600D Ripstop	recycled 600D Ripstop	600D PVC, 600D PU
	OTHER COLOURS				
	NOTES	Hydration pouch NFC Chip	*+Rucksack straps can join to become duffle carry handles Integral NFC Chip. Keys clip in top pocket	*+Rucksack straps can join to become duffle carry handles Integral NFC Chip. Keys clip in top pocket	Includes rain cover
	WEBSITE	sterlingrope.com	sterlingrope.com	sterlingrope.com	teufelberger.com

TRANSPORT/ORGANISER PACKS













TEUFELBERGER	TEUFELBERGER	TREERUNNER	WEAVER ARBORIST	WEAVER ARBORIST	WEST COAST CLIMBER
Mule 80 -	Lazy Mule 80 -	?	Chasm 40 08411-40-00	Cavern 70 08410-00	Pro Gear 70 -
£325 $275 €314	£338 $324 €326		£130 $148 €135	£135 $160 €146	£177 $220 €206
ORGANISER	WHEELED ORGANISER		BACKPACK	-	BUCKET/BACKPACK
0L/21.1gal Pro Access	80L/21.1gal Pro Access	Pro Access	40L/10gal Pro Arb	70L/18.5gal Pro Arb	70L/18.5galL Pro Arb
>2x 75m x 11mm >2x 150' x ½'	>2x 75m x 11mm >2x 150' x ½'		100m x 11mm 200' x ¾"	>100m x 11mm >200' x ½"	150m x 11mm 300' x ½"
3.5kg 7.7lb	3.74kg 8.23lb		1.68kg 3.7lb	2.1kg 4.6lb	3.4-4.5kg 7.4-10lb
65 x 45 x 38cm 18 x 15"	68 x 45 x 38cm 27 x 15"		51 x 308 x 25cm 20 x 12 x 10"	61 x 38 x 28cm 24 x 15 x 11"	56 x 30.5cm 22 x 12"
[□]-[□]	[□]-[□]		[■]--	[■]-■	[■]--
■■	■■		■-	■■	--
■-	■-		■ -	- -	- -
■	■		-	-	■
1 2	1 2		2 1	2 1	2 1
- -	- -		0 -	1 -	- -
NO	NO		NO	NO	NO
- [■]	- [■]		- -	[■] -	■ -
-□□	-□□		- - -	- - -	- - -
70+4 4	70+4 4		22 0	22 6	10+10* -
7 -	7 -		- -	- -	- -
2 -	2 -		3 -	4 1	4 -
- -	- -		- -	- -	- -
■1	■1		■4	■3* ■1	■4
●--	●--		■* ■■	■* ■■	●■■
■	■		■+■*	■+■*	■
- - ■-	- - ■-		- - ■-	- - ■-	- - - ■
-- -	-- -		■-■*	■-■*	
500D PVC, 600D PU	600D PVC, 600D PU		HD Nylon Tarp	HD Nylon Tarp	1680D Ballistic Nylon
					-
ditional zipped side entry. 0L Gear Mule pack can be ached. 30L Optional rope buckets fit tube profile	Additional zipped side entry. 20L Gear Mule pack can be attached. 30L Optional rope buckets fit tube profile		*Separate waterproof cap held on with buckles which double as *top compression straps	*inc 1x buckle securing strap for saw pocket *Separate waterproof cap held on with buckles [see Weaver Chasm]	*5 on each shoulder strap
teufelberger.com	teufelberger.com	grube.de	weaverarborist.com	weaverarborist.com	nugreenstore.com

DUFFLE / DUFFEL BAGS



Duffle bags are usually the largest clear, usable space of any of the bags and often in a form where the bag itself can be folded down to a much smaller size when not in use. like the Husqy above left. Duffles were traditionally a cylinder with a shoulder strap in vertical orientation - think military kit bag - which then morphed into a horizontally carried bag with two long carry handles - think sports bag. On many duffles the handles are long enough to double as back-straps but they may also have full size, detachable shoulder straps enabling longer distance vertical carry. Often the handles have integral compression at their ends to help compress the volume so there's no spare material flapping around. Because of their relatively large size most have 'lift & shift' handles on the ends - not for carrying but for pulling and/or lifting and to tip out the contents, in some cases, like the FTC duffles, the lid securing buckles/straps on the ends can act as drag handles. For rope-related activities many have adopted external and internal daisy chains for clipping on gear and a variety of pockets, mostly relatively low profile to preserve the large internal space. It is otherwise a fine line of distinction between a duffle and organisers like *Sliver Bull's Multi-Use*, *Singing Rock's Movement* and *Sterling's Vertac* except to say that you can tell a duffle just by looking at it - it's relatively basic in appearance; a big rectangle or a big barrel with shopping bag handles - a European carrier bag shopping bag not a US paper bag that you cradle in your arms! It's lighter and less complex than organiser and transport packs and It sits lengthways on the ground while you access the interior via a top, longitudinal lid or full length opening. Because these things are intended to carry literally everything from clothes to climbing gear, boots to a flask of soup, the rope capacity has been replaced by the sheer weight that it will carry.

WATERTIGHT or WATERPROOF?

We have only included bags aimed mostly at arb and rope access or rescue workers but there is a whole category of duffles that may be of interest to you and that is the ***watertight*** bags as distinct from these ***waterproof*** bags. You'll find them in the WATER RESCUE BUYERS GUIDE because they keep the contents entirely dry even in the event of complete inundation or immersion - if you can even get them to sink since they usually have a lot of air sealed inside. The definition of ***watertight*** in this case is that you could store water in them (on the ground-not carried) because they have welded or glued seams rather than sewn. Brands such as *Ortlieb* and *Sealine* but there are two bags here that almost fit that bill - the *FTC Tree Duffles* with roll-top closure but you'll notice that the straps are sewn on so....waterproof, not watertight.

IN THE FOLLOWING TABLES as per p356
COST: Approximate. Includes local taxes. We round up the cost to the nearest Pound£, US Dollar$ or Euro€ Simple currency conversions are shown in orange exc import duty, shipping etc.

Images NOT to Scale
£$€ any price in 'burnt-orange' is a **Currency conversion only**-exc shipping, duties,taxes etc.
BACK STRAPSHANDLES [in brackets]=padded
COMP STRAPS = Compression straps allow you to take in slack and reduce the volume
HAUL=has eye to take entire wt of bag & contents
EYES=Sewn eyes and/or rings
STORE SAW=Dedicated pouch or scabbard for a hand saw
POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle

	MANUFACTURER
	MODEL litres/liters **VARIANT**
	ORIGIN
	COST (inc Tax/VAT) Currency conversion only
SPECIFICATIONS	**VOLUME** L/US Gallon intended market
SPECIFICATIONS	**LIFTED LOAD CAPACITY**
SPECIFICATIONS	**WEIGHT empty**
SPECIFICATIONS	**DIMENSIONS** ht x w x depth
FEATURES	**BACK STRAPS** HANDLES COMP-STRAPS
FEATURES	**POCKETS** Ext/Int EYES Ext/Int STORE SAW
FEATURES	WATERPROOF IDPANEL DRAIN/VENT HAUL
FEATURES	**LID** VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP
	OUTER MATERIALS REFLECTIVE TRIM
	OTHER COLOURS & NOTES
	WEBSITE

Images NOT to Scale
£$€ any price in 'burnt-orange' is a **Currency conversion only**-exc shipping, duties,taxes etc.
BACK STRAPSHANDLES [in brackets]=padded
COMP STRAPS = Compression straps allow you to take in slack and reduce the volume
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EYES=Sewn eyes and/or rings
STORE SAW=Dedicated pouch or scabbard for a hand saw
POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle

	MANUFACTURER
	MODEL litres/liters **VARIANT**
	ORIGIN
	COST (inc Tax/VAT) Currency conversion only
SPECIFICATIONS	**VOLUME** L/US Gallon intended market
SPECIFICATIONS	**LIFTED LOAD CAPACITY**
SPECIFICATIONS	**WEIGHT empty**
SPECIFICATIONS	**DIMENSIONS** ht x w x depth
FEATURES	**BACK STRAPS** HANDLES COMP-STRAPS
FEATURES	**POCKETS** Ext/Int EYES Ext/Int STORE SAW
FEATURES	WATERPROOF IDPANEL DRAIN/VENT HAUL
FEATURES	**LID** VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP
	OUTER MATERIALS REFLECTIVE TRIM
	OTHER COLOURS & NOTES
	WEBSITE

DUFFLE/DUFFEL BAGS

				
AAK SAFETY	**ARBORTEC**	**ARBORTEC**	**ARBORTEC**	**ARBORTEC**
Transport 80 29104	**Anaconda 90** -	**Mamba 40** -	**Mamba 70** AT101	**Mamba 90** AT101
n/a	£126 $140 €127	£87 $105 €96	£104 $125 €107	£117 $141 €120
80L/21.1gal Pro Rescue	90L/23.8gal Pro Arb	40L/10.6gal Pro Arb	70L/18.5gal Pro Arb	90L/23.8gal Pro Arb
- -	<350m x11mm 700'x½"*	13.6kg 30lb	<270m x11mm 540'x½"*	<350m x11mm 700'x½"*
1.4kg 3.1lb	2.1kg 4.6lb	2.3kg 5lb	2.6kg 5.7lb	2.88kg 6.3lb
62 x 32 x 32cm 24.4 x12.6 x 12.6"	75 x 40cm 29.5 x 15.7"	50 x 33 x 28cm 19.7 x 13 x 11"	60 x 35 x 30cm 24 x 14 x 12"	65 x 35 x 35cm 26 x 14 x 14"
2 4 -	- 2 4	2 4 2	2 * 4 2	2 * 4 2
1 * - - - -	3 - 10+4 - -	1 3 14 6 -	1 4 14 6 -	1 4 14 6 -
- -	- -	- -	- -	- -
	+ +			+ +
NYLON & PVC -	Welded PES/PVC	680 g/m² PVC	Polyester/PVC	Polyester/PVC
*Backstraps stow in an outside pocket	green version is £6 less but NOT reflective	inner key hook	*if handles used as backstraps. Reinforced base protects spikes *if whole bag used for rope. inner key hook	*if handles used as backstraps. Reinforced base protects spikes *if whole bag used for rope. inner key hook
aaksafety.no	arbortec.com	arbortec.com	arbortec.com	arbortec.com

				
ARBPRO	**ARBPRO**	**BUCKINGHAM**	**CAMP SAFETY**	**CRESTO**
Cruiser 60 -	**Cruiser 80** -	**Big Mouth Wheeled** 47333B3R5S 47333B3R5SW3	**Shipper 90** 2791	**PACQ 10** 9446
£122 $161 €141	£00 $00 €00	£312548 $409716* €360812	£125 $160 €147	£00 $0 €0
50L/15.8gal Pro Arb/Travel	80L/21.1gal Pro Arb/Travel	approx130L/29gal Pro Arb	90L/20gal Pro Access	
- -	- -	- -	- -	- -
1.8kg 4lb	3kg 6.6lb	3.4 4.5kg 7.5 10lb	2kg 4.5lb	
20 x 70 x 80cm 7.9 x 27.5 x 31.4"	25 x 90 x 60cm 10 x 35 x 23.6"	56 x 51 x 48cm 22 x 20 x 19"	70 x 40cm 27.6 x 16"	39 x 22 x 11cm 15.3 x 8.6 x 4.3"
2 * 2 -	2 * 2 -	1 2 -	2 4 4	- 2 -
2 * 1 * 8 - -	2 * - 8 - -	2 - - - -	1 1 - - -	- - - - -
- - -	- - -	- - 1	- - -	- - -
- - - -	- - - -	- - - - -	- - - -	- - - -
680 g/m² PVC	680 g/m² PVC	44oz Vinyl	500&600D Polyester-	Polyester-
*Removable backstraps stow in parate pocket.**Boot/wet pocket accessible via outside zipper	*Removable backstraps stow in separate pocket.**Boot/wet pocket accessible via outside zipper	wheeled model now in black/ green only. *Also Lockable version		Very simple and small bag for harness and perrsonal PPE
arbpro.it	arbpro.it	buckinghammfg.com	camp.it	crestosafety.com

Images NOT to Scale
£$€ any price in 'burnt-orange' is a **Currency conversion only**-exc shipping, duties,taxes etc.
BACK STRAPSHANDLES [in brackets]=padded
COMP STRAPS = Compression straps allow you to take in slack and reduce the volume
HAUL=has eye to take entire wt of bag & contents
EYES=Sewn eyes and/or rings
STORE SAW=Dedicated pouch or scabbard for a hand saw
POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle






	MANUFACTURER	FTC TREE	FTC TREE	FTC TREE	HUSQVAR
	MODEL litres/liters VARIANT	Duffle 60 Duffle	Duffle 80 Duffle	Koompassia 90 -	Xplorer Duf -
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£64 $64 €56	£80 $85 €75	£140 $178 €160	£114 $0 €
SPECIFICATIONS	**VOLUME** L/US Gallon intended market	60L/15.8gal Pro Arb	80L/21.1gal Pro Arb	90L/23.8gal Pro Arb	70L/18.5gal Pr
SPECIFICATIONS	**LIFTED LOAD CAPACITY**	- -	- -	0kg 0lb	0kg 0lb
SPECIFICATIONS	**WEIGHT empty**	1kg 2.2lb	1.2kg 2.6lb	2.1kg 4.62lb	0kg 0lb
SPECIFICATIONS	**DIMENSIONS** ht x w x depth	68 x 33 x 33cm 26.8 x 13 x 13"	73 x 36 x 36cm 28.7 x 14.2 x 14.2"	70x35x30cm 28 x 14 x 12"	0 x 0 x 0c 0 x 0 x 0"
FEATURES	**BACK STRAPS** HANDLES COMP-STRAPS	-2 4	-2 4	- -	- -
FEATURES	**POCKETS** Ext/Int EYES Ext/Int STORE SAW	- - - - -	- - - - -	- - - - -	- - - - -
FEATURES	**WATERPROOF** IDPANEL DRAIN/VENT HAUL	- -	- -	- - - -	- - - -
FEATURES	**LID** VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	+	+	- - - - - -	- - - - - -
	OUTER MATERIALS REFLECTIVE TRIM	1680D PVC-coated polyester	1680D PVC-coated polyester	800D ripstop/Polyester	Ripstop TP
	OTHER COLOURS & NOTES	-	-	*1 pocket=helmet or anything. *Reflective on rain cover *max-if no other internal contents	-
	WEBSITE	ftc-tree.com	ftc-tree.com	ftc-tree.com	husqvarna.c

Images NOT to Scale
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BACK STRAPSHANDLES [in brackets[]=padded]
COMP STRAPS = Compression straps allow you to take in slack and reduce the volume
HAUL=has eye to take entire wt of bag & contents
EYES=Sewn eyes and/or rings
STORE SAW=Dedicated pouch or scabbard for a hand saw
POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle






	MANUFACTURER	PROTEKT	RAB	RAB	RAB
	MODEL litres/liters VARIANT	AX301 50 -	Expedition II Kitbag 30 QAP56	Expedition II Kitbag 50 QAP57	Expedition II K QAP58
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£0 $0 €0	£100 $132 €116	£115 $152 €134	£125 $165 €
SPECIFICATIONS	**VOLUME** L/US Gallon intended market	50L/13.2gal Pro Access	30L/8gal Travel	50L/13.2gal Travel	80L/21.1gal T
SPECIFICATIONS	**LIFTED LOAD CAPACITY**	0m 0'	- -	- -	- -
SPECIFICATIONS	**WEIGHT empty**	1.08kg 2.38lb	0.71kg 1.6lb	0.9kg 2lb	1.08kg 2.
SPECIFICATIONS	**DIMENSIONS** ht x w x depth	0 x 0 x 0cm 0 x 0 x 0"	53 x 29 x 25cm 21 x 11.4 x 10"	55 x 32 x 27cm 21.7 x 12.6 x 10.6"	74 x 36 x 33 29 x 14.2 x
FEATURES	**BACK STRAPS** HANDLES COMP-STRAPS	[1] 2 -	[2] 4 4	[2] 4 4	[2] 4 4
FEATURES	**POCKETS** Ext/Int EYES Ext/Int STORE SAW	1 3 - - -	-2 12- -	-2 12- -	-2 12- -
FEATURES	**WATERPROOF** IDPANEL DRAIN/VENT HAUL	- -	- -	- -	- -
FEATURES	**LID** VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP				
	OUTER MATERIALS REFLECTIVE TRIM	Polyester	600D TPU/Polyester -	600D TPU/Polyester -	600D TPU/Poly
	OTHER COLOURS & NOTES		YKK#10 chunky main zip	YKK#10 chunky main zip	YKK#10 chunky m
	WEBSITE	protekt.pl	rab.equipment	rab.equipment	rab.equipme

DUFFLE/DUFFEL BAGS

					
RNA	HUSQVARNA	NATIVE ARB	PETZL	PETZL	PROTEKT
fel 70	Xplorer Trolley 90 -	Kit Bag 100 -	Duffel 65 -	Duffel 85 S045AA02	AX028 50 -
91	£156 $0 €91	£82 $103 €96	£144 $140 €150	£156 $160 €160	£0 $0 €0
o Arb	90L/23.8gal Pro Arb	100L/26.4gal Pro Arb	65L/17.2gal Pro Access	85L/22.5gal Pro Access	50L/13.2gal Pro Access
	0kg 0lb	0kg 0lb	0kg 0lb	340m x11mm 680'x½"	0m 0'
	0kg 0lb	2.2kg 4.4lb	1.35kg 3lb	1.55kg 3.4lb	0kg 0lb
m "	0 x 0 x 0cm 0 x 0 x 0"	75 x 45 x 30cm 26 x 22"	58.5 x 40 x 28.5cm 23 x 15.75 x 11.2"	70 x 40 x 32cm 27.6 x 15.75 x 12.6"	60 x 30 x 30cm 23 x 12 x 12"
	-- -	-- -	2 4 4	[2] 4 4	-4 -
	-- -- -	-- -- -	1*2 8- -	1*5 8- -	-- -- -
	----	----	----	--	--
	------	------	------		
U-	Ripstop TPU -	1000D TPE Nylon	TPU (PVC-free)	TPU (PVC-free)	PVC -
	-	Internal zip pocket for keys/ phone etc.	*inc 4 for backstraps (if used) *outside access to helmet/boot	*inc 4 for backstraps (if used) *outside access to helmet/boot	
om	husqvarna.com	nativearb.co.uk	petzl.com	petzl.com	protekt.pl

					
	RAB	ROCKnARB	ROCKnRESCUE	ROCKnRESCUE	SAR PRODUCTS
Kitbag 80	Expedition II Kitbag120 QAP59	Tech Duffle 60 -	Tech Duffle 60 -	Classic Duffle ? -	Transport 35 B0018
€145	£135 $178 €157	£0 $84 €0	£0 $109 €0	£0 $50 €0	£0 $0 €0
ravel	120L/31.7gal Travel	60L/15.8gal Pro Arb	60L/15.8gal Pro Rescue	0L	60L/15.8gal Pro Rescue
	- -	0kg 0lb	0kg 0lb	0kg 0lb	0kg 0lb
4lb	1.15kg 2.5lb	0kg 2.2lb	0kg 2.1lb	0kg 0lb	1kg 2.2lb
3cm 12"	86 x 43 x 38cm 34 x 17 x 15"	0 x 0 x 0cm 0 x 0 x 0"	61 x 30 x 30cm 24 x 12 x 12"	68.6 x 29.2cm 27 x 11.5	0 x 0cm 0 x 0
	[2] 4 4	-- -	-- -	-- -	[2] 4 -
-	-2 12- -	-- -- -	-- -- -	-- -- -	-- -- -
	--	----	----	----	--
		------	------	------	
yester -	600D TPU/Polyester -	1000D coated nylon-	1000D coated nylon-	1000D coated nylon-	PVC -
ain zip	YKK#10 chunky main zip				Hi- viz ylw or orange on request
ent	rab.equipment	rocknarbor.com	rocknrescuecom	rocknrescuecom	sar-products.com

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EYES=Sewn eyes and/or rings
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POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle






	MANUFACTURER	SAR PRODUCTS	SAR PRODUCTS	SINGING ROCK	SINGING R
	MODEL litres/liters VARIANT	Transport 63 B0032	Transport 63 B0032	Tarp Duffle 70 C0046BB70	Tarp Duffle C0046BB90
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£0 $50 €0	£0 $50 €0	£0 $0 €0	£103 $0 €
SPECIFICATIONS	VOLUME L/US Gallon intended market	63L/16.6gal Pro Rescue	63L/16.6gal Pro Rescue	70L/18.5gal Pro Access	90L/23.8gal Pro
SPECIFICATIONS	LIFTED LOAD CAPACITY	0kg 0lb	0kg 0lb	20kg/40.4lb	23kg/50.6
SPECIFICATIONS	WEIGHT empty	1.4kg 0lb	1.4kg 0lb	1.82kg 4lb	2.27kg 5l
SPECIFICATIONS	DIMENSIONS ht x w x depth	0 x 0cm 0 x 0	0 x 0cm 0 x 0	59 x 35 x 34cm 23 x 13.8 x 13.4"	69 x 40 x 33 27 x 15.7 x
FEATURES	BACK STRAPS HANDLES COMP-STRAPS	2 4 -	2 4 -	[1] 4 6	[1] 4 4
FEATURES	POCKETS Ext/Int EYES Ext/Int STORE SAW	- - - - -	- - - - -	2 2 8 - -	2 2 8 - -
FEATURES	WATERPROOF IDPANEL DRAIN/VENT HAUL	- -	- -	- - -	- - -
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP				
	OUTER MATERIALS REFLECTIVE TRIM	PVC -	PVC -	PVC -	PVC -
	OTHER COLOURS & NOTES	Hi- viz ylw or orange on request	Hi- viz ylw or orange on request	-	-
	WEBSITE	sar-products.com	sar-products.com	singingrock.com	singingrock.c

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HAUL=has eye to take entire wt of bag & contents
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POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle






	MANUFACTURER	STEIN	STEIN	STEIN	TREEHO
	MODEL litres/liters VARIANT	Metro 40 -	Metro 70 -	Metro 90 -	HiVis Kit Ba TH4002
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£60 $90 €71	£72 $100 €85	£84 $110 €100	£74 $97 €
SPECIFICATIONS	VOLUME L/US Gallon intended market	40L/10.6gal Pro Arb	70L/18.5gal Pro Arb	90L/23.8gal Pro Arb	70L/18.5gal Pr
SPECIFICATIONS	LIFTED LOAD CAPACITY	10kg 22lb	10kg 22lb	10kg 22lb	<270m x11mm 54
SPECIFICATIONS	WEIGHT empty	1.23kg 2.7lb	1.69kg 3.7lb	2kg 4.4lb	2.5kg 5.5l
SPECIFICATIONS	DIMENSIONS ht x w x depth	51 x 31cm 20 x 12.2"	60 x 39cm 23.6 x 15.3"	70 x 39cm 27.6 x 15.3"	60 x 35 x 30 24 x 14 x 1
FEATURES	BACK STRAPS HANDLES COMP-STRAPS	[2] 4 4	[2] 4 4	[2] 4 4	2 4 2
FEATURES	POCKETS Ext/Int EYES Ext/Int STORE SAW	1 - 16 - -	1 - 18 - -	1 - 20 - -	1 4 14 6
FEATURES	WATERPROOF IDPANEL DRAIN/VENT HAUL	- -	- -	- -	- - -
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP				
	OUTER MATERIALS REFLECTIVE TRIM	PVC -	PVC -	PVC -	PVC
	NOTES				No-frills version of the Mamba. *if whole bag u
	WEBSITE	steinworldwide.com	steinworldwide.com	steinworldwide.com	treehog.co.

					
OCK	SINGING ROCK	SINGING ROCK	SIP PROTECTION	SKYLOTEC	SKYLOTEC
e 90	Tarp Duffle 120 C0046BB120	Movement 110 C0073BY00	Atlas 90 -	Duffle M ? ACS-0176	Duffle L ? ACS-0176
€0	£0 $0 €0	£159 $0 €0	£0 $0 €91	£0 $0 €102	£01 $0 €108
Access	120L/31.7gal Pro Access	110L/29gal Pro Access	90L/23.8galPro Arb	90L/23.8gal Pro Access	0L/0gal Pro Access
lb	23kg/50.6lb	0kg 0lb	0kg 0lb	0kg 0lb	0kg 0lb
b	2.65kg 5.8lb	4.6kg 10.1lb	0kg 0lb	0kg 0lb	1.4kg 0lb
3cm 13"	85 x 42 x 38cm 33 x 12.5 x 15"	77 x 39 x 38cm 30.3 x 15.4 x 15"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"
	[1]4 4	-- -	-- -	-- -	-- -
	42 12- -	-- -- -	-- -- -	-- -- -	-- -- -
	---	----	----	----	----
		------	------	------	------
	PVC -	PVC	--	--	--
	-	reinforced edges/corners	-	-	-
com	singingrock.com	singingrock.com	-	skylotec.com	skylotec.com



G
g 70
88
o Arb
40'x½"*
b
0cm
2"
-
e Arbortec
sed for rope.
uk



ROPE / GEAR BAGS





These are less complex **ROPE & GEAR BAGS** than the organisers but may still have attachment eyes/ daisy chains and one or two pockets. Indeed many of these, like the *Reecoil* bag on the right and *NLG* bags have far more 'organisation' than duffle bags in the previous section. They are virtually all top-loading cylinders in design and intended mostly for rope storage/transport rather than your entire day's climbing paraphernalia.

No Working Load Limits are given because these are mostly lower volume bags for rope but beware of overloading with too much hardware! Those with a drawstring top closure will often fold back over the lip of the bag to give unimpeded access to the interior like this *Petzl 45*.

IN THE FOLLOWING TABLES....as per p356 except..

COST: Approximate. Includes local taxes but can vary due to exchange rates, other taxes etc. We round up the cost to the nearest Pound£, US Dollar$ or Euro€ Simple currency conversions are shown in orange for reference - this does not take into account import duty, shipping or tax.

STYLE/FUNCTION: The bags in this guide can be defined as one or both of the following

- ***(SIMPLE) ROPE BAG*** - an upright, flexible bag with few additional features but greater rope storage volume.
- ***BUCKET*** an upright, top-feeder that holds its shape to allow rope to be fed in or out. Usually shorter in stature than a simple cylinder bag and often has extra storage features like eyes and/or pockets but lower overall volume.
- **BACKPACK**: single or double shoulder straps making it more suitable for longer distance transport. Still a simple rope bag with few other features but can be carried on the back giving both hands free to carry even more stuff.

NOMINAL ROPE/LOAD CAPACITY: Rope access requires the load capacity of handles and attachments to be clearly labelled.

46m/150ftx 12.7mm/½"=76m/250'x11mm7/16"= 91m/300'x9mm/⅜" 100m/328' x11mm =60mx 11.7mm =

Virtually all 'buckets' have integral rigidity and will stand open.

POCKETS Ext/Int EYES Ext/Int STORE SAW The number of pockets on the outside and inside ***excluding*** ID/Document pouches and saw pouches listed separately. This number may include a small security or key pocket on the inside.

Comp strap=**Compression** Strap

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	MANUFACTURER	**AAK SAFETY**
	MODEL litres/liters **VARIANT**	**Backpack 35** 29104
	ORIGIN	
	COST (inc Tax/VAT) Currency conversion only	**n/a**
SPECIFICATIONS	**VOLUME** L/US Gallon intended market	**35L/9.2gal Pro Access**
SPECIFICATIONS	**NOMINAL ROPE/LOAD CAPACITY**	**- -**
SPECIFICATIONS	**WEIGHT** empty	**0.9kg 2lb**
SPECIFICATIONS	**DIMENSIONS**	**50 x 30 x 15cm** **0 x 12 x "**
FEATURES	**BACK STRAPS HANDLES HAUL EYE(S)**	**2 - -**
FEATURES	**POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW**	**- 1 * - - -**
FEATURES	**WATERPROOF ID-PANEL DRAIN/VENT**	**■ - - -**
FEATURES	**LID** VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	**- - ■ - - -**
	OUTER MATERIALS REFLECTIVE TRIM	**PVC/Nylon -**
	OTHER COLOURS	
	NOTES	* inner document pocket or to insert back-padding
	WEBSITE	aaksafety.no

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	MANUFACTURER	**ARBORTEC**
	MODEL litres/liters **VARIANT**	**Cobra 65** AT107
	ORIGIN	
	COST (inc Tax/VAT) Currency conversion only	**£221 $295 €252**
SPECIFICATIONS	**VOLUME** L/US Gallon intended market	**65L/17.1gal Pro Arb**
SPECIFICATIONS	**NOMINAL ROPE/LOAD CAPACITY**	**45m x 11mm 100' x ½"**
SPECIFICATIONS	**WEIGHT** empty	**3.6kg 7.9lb**
SPECIFICATIONS	**DIMENSIONS**	**61.5 x 37cm** **24.2 x 14.6"**
FEATURES	**BACK STRAPS HANDLES HAUL EYE(S)**	**- 7 -**
FEATURES	**POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW**	**3 1 44 - -**
FEATURES	**WATERPROOF ID-PANEL DRAIN/VENT**	**■ - ■ 4**
FEATURES	**LID** VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	**■ + ■**
	OUTER MATERIALS REFLECTIVE TRIM	**PES/PVC**
	OTHER COLOURS	■ ■ ■
	NOTES	Rope feed hole in lid
	WEBSITE	arbortec.com

					
ARS	ARS	ARBORTEC	ARBORTEC	ARBORTEC	ARBORTEC
Breakout -	Breakout -	oo AT105	Viper 60 AT102	Cobra 35 AT105	Cobra 55 AT106
£205 $0 €0	£220 $0 €0	£0 $0 €0	£74 $0 €0	£108 $142 €130	£184 $213 €209
0L Pro Rescue	0L Pro Rescue	0L Pro Arb	60L Pro Arb	35L Pro Arb	55L/14.5gal Pro Arb
200' x ½'	300' x ½'	0m 0'	0m 0'	45m x 11mm 100' x ½"	45m x 11mm 100' x ½"
0kg 0lb	0kg 0lb	0kg 0lb	0kg 0lb	1.5kg 3.3lb	2.4kg 5.3lb
0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	34 x 36cm 13.4 x 14.2"	48.5 x 37cm 19.1 x 14.6"
---	---	21-	21-	-4-	-7-
-- -- -	-- -- -	-- -- -	-- -- -	31 32- -	31 36- -
----	----	----	----	-	-4
------	------	+	+	+	+
1000D Cordura	1000D Cordura	PES/PVC	PES/PVC	PES/PVC	PES/PVC
ag opens out as a ground tarp for rope/gear	Bag opens out as a ground tarp for rope/gear			Rope feed hole in lid	Rope feed hole in lid
andersonrescue.com	andersonrescue.com	arbortec	arbortec	arbortec.com	arbortec.com

		
ARBPRO	ARBPRO	ARBPRO
ucket Bag Air 28 -	Bucket Backpack 40 2P654	Bucket Backpack 60 -
£0 $0 €64	£98 $110 €106	£101 $120 €110
28L/7.4gal Pro Arb	40L/10.6galPro Arb	60L/15.8gal Pro Arb
0m 0'	0m 0'	0m 0'
906g 0lb	1.5kg 3.3lb	0kg 0lb
40 x 30 x 30cm 15.7 x 12 x 12"	55 x 35 x 20cm 22 x 13.7 x 7.9"	56 x 32 x 23cm 22 x 12.6 x 9.1"
12	22	22
1- 8- -	2- 8- -	2- 8- -
-1		
680 g/m² PVC+ Mesh	680 g/m² PVC	680 g/m² PVC
AIR has mesh sides		
arbpro.it	arbpro.it	arbpro.it



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STORE SAW=**pouch or scabbard for hand saw**
POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle
PES = Polyester
●●●●● =Partial feature or OK but not ideal
□□□□□ = Option









	MANUFACTURER	ARBPRO	ARBPRO	ARBPRO	ARBPRO
	MODEL litres/liters VARIANT	Bucket Backack 75 -	Bucket Bag 28 -	Bucket Bag 40 -	Bucket Bag 75 -
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£108 $120 €118	£60 $70 €64	£98 $110 €106	£108 $130 €118
SPECIFICATIONS	VOLUME L/US Gallon intended market	75L Pro Arb	28L/7.4gal Pro Arb	40L/10.6gal Pro Arb	
SPECIFICATIONS	NOMINAL ROPE/LOAD CAPACITY	- -	- -	- -	- -
SPECIFICATIONS	WEIGHT empty	3.4kg 7.5lb	906g 0lb	0kg 0lb	2kg 4.4lb
SPECIFICATIONS	DIMENSIONS	60 x 45 x 30 cm 0 x 0"	40 x 30cm 15.7 x 12"	60 x 30cm 23.6 x 12"	60 x 45 x 30cm 23.6 x 17.7 x 12"
FEATURES	BACK STRAPS HANDLES HAUL EYE(S)	2 2 ■	1 2 ■	- 2 ■	2 2 ■
FEATURES	POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	2 - 8 - -	1 - 8 - -	- - 8 - -	2 - - - -
FEATURES	WATERPROOF ID-PANEL DRAIN/VENT	■■■	●■■	●■■	●■■
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	■	■	■	■
	OUTER MATERIALS REFLECTIVE TRIM	680 g/m² PVC	680 g/m² PVC+ Mesh	680 g/m² PVC	680 g/m² PVC
	OTHER COLOURS	■ ■ ■	■ ■	■ ■	■ ■
	NOTES	Rope feed hole in lid	AIR has mesh sides		
	WEBSITE	arbpro.it	arbpro.it	arbpro.it	arbpro.it

Images NOT to Scale
£$€ any price in 'burnt-orange' is a **Currency conversion only**-exc shipping, duties,taxes etc.
HAUL EYES = can carry the entire weight of the bag & contents eg. for hauling or attaching to harness.May double as handles shown as 1/1
STORE SAW=**pouch or scabbard for hand saw**
POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle
PES = Polyester
●●●●● =Partial feature or OK but not ideal
□□□□□ = Option









	MANUFACTURER	BEAL	BEAL	BEAL	BEAL
	MODEL litres/liters VARIANT	Genius Bucket 20 -	ProWork 35 BSAC	ProWork 45 BSAC	ProWork 60 BSAC
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£0 $0 €0	£101 $0 €110	£131 $0 €131	£137 $0 €137
SPECIFICATIONS	VOLUME L/US Gallon intended market	20L/5.3gal Pro Access	35L/9gal Pro Access	45L/11.8gal Pro Access	60L/15.8gal Pro Access
SPECIFICATIONS	NOMINAL ROPE/LOAD CAPACITY	0m 0'	0m 0'	0m 0'	0m 0'
SPECIFICATIONS	WEIGHT empty	0kg 0lb	0kg 0lb	0kg 0lb	0kg 0lb
SPECIFICATIONS	DIMENSIONS	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"
FEATURES	BACK STRAPS HANDLES HAUL EYE(S)	- - -	- 4 -	- - -	- - -
FEATURES	POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	- - - - -	4 - - - -	- - - - -	- - - - -
FEATURES	WATERPROOF ID-PANEL DRAIN/VENT	- - -	- - -	- - -	- - -
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	- - - - - -	■	- - - - - -	■■
	OUTER MATERIALS REFLECTIVE TRIM	- -		PVC	PVC
	OTHER COLOURS				■
	NOTES	-	Rope feed hole in lid		
	WEBSITE	beal-planet.com	beal-planet.com	beal-planet.com	beal-planet.com

ROPE/GEAR BAGS



ARBSESSION
Rope Bbag M 28
£20 $25 €23
28L/7.4gal Pro Arb
m/200' x 12.7mm/½"
453g 1lb
40.6 x 30.5cm 16 x 12"
-2-
-- -- -

600D Polyester -
arbsession.com



ARBSESSION
Rope Bag L 32
£28 $35 €32
32L Pro Arb
76m/250' x 12.7mm/½"
544g 1.2lb
43 x 33 cm 17 x 13"
-2-
-- -- -

600D Polyester -
arbsession.com



ARBSESSION
RopeTote 28
£45 $55 €52
28L/7.4gal Pro Arb
60m/200' x 12.7mm/½"
900g 2lb
40.6 x 30.5cm 16 x 12"
-2-
-- 8- -

900D Vinyl -
reinforced version.Apron folds down outside of bag
arbsession.com





BUCKINGHAM
Std Rope bag
£0 $0 €0
0L Pro Arb
68kg/150lb
0kg 1lb
0 x 0cm 15 x 12"

-- -- -

Canvas
-
buckinghammfg.com



BUCKINGHAM
Std Rope Bag
£0 $0 €0
0L Pro Arb
0m 0'
0kg 1.6lb
0 x 0cm 15 x 12"

-- -- -

Canvas
Hard Plastic base
buckinghammfg.com



BUCKINGHAM
0000
£0 $0 €0
0L Pro Arb
0m 0'
0kg 0lb
0 x 0cm 0 x 0"

-- -- -

Canvas
-
buckinghammfg.com



BUCKINGHAM
Buckpack Wheels
4470
£0 $365 506 €0
0L Pro Arb
0m 0'
0kg 0lb
0 x 0 x 0cm 0 x 0 x 0"

-- -- -

Canvas/Vinyl & Rubber
Black bag higher cost Vinyl. *Optional wheels/handle
buckinghammfg.com



BUCKINGHAM
Big Buckpack Wheels
4471
£0 $395 535 €0
0L Pro Arb
0m 0'
0kg 0lb
0 x 0 x 0cm 0 x 0 x 0"

-- -- -

Vinyl-coated Nylon
* Wheels=detachable option Solid handle with wheels.
buckinghammfg.com



BUCKINGHAM
Buck Haul Bag
4380
£0 $382* €0
0L Pro Arb
0m 0'
0kg 0lb
0 x 0 x 0cm 0 x 0 x 0"

-- -- -

44oz Vinyl
Hi-viz version is $401
buckinghammfg.com

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HAUL EYES = can carry the entire weight of the bag & contents eg. for hauling or attaching to harness.May double as handles shown as 1/1
STORE SAW=pouch or scabbard for hand saw
POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle
PES = Polyester
=Partial feature or OK but not ideal
= Option









	MANUFACTURER	BUCKINGHAM	BUCKINGHAM	BUCKINGHAM	CAMP SAFETY
	MODEL litres/liters VARIANT	Buck Haul Bag XL 4370	RopePro Deluxe L 4374	RopePro Deluxe XL 4373	SuperCargo 40 2915.
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£0 $478 €0	£96 $159 €0	£0 $183 €0	£220 $350 €0
SPECIFICATIONS	VOLUME L/US Gallon intended market	0L Pro Arb	0L Pro Arb	0L Pro Arb	40L/10.6gal Pro Access
SPECIFICATIONS	NOMINAL ROPE/LOAD CAPACITY	0m 0'	76m x 12.7mm 250' x ½"	152m x 12.7mm 500' x ½"	80kg/176lb
SPECIFICATIONS	WEIGHT empty	0kg 0lb	1.1kg 2.4lb	0kg 0lb	2.9g 6.4lb
SPECIFICATIONS	DIMENSIONS	0 x 0 x 0cm 0 x 0 x 0"	41 x 41 x 36cm 16 x 16 x 14 "	59 x 56 x 36cm 23 x 22 x 14"	63 x 34 x 28cm 24.8 x 13.4 x 11"
FEATURES	BACK STRAPS HANDLES HAUL EYE(S)	- - -	- - -	- - -	2 2 4
FEATURES	POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	- - - - -	- - - - -	- - - - -	- - - - -
FEATURES	WATERPROOF ID-PANEL DRAIN/VENT	- - - -	- - - -	- - - -	- - - -
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	- - - - - -	- - - - - -	- - - - - -	- - - - - -
	OUTER MATERIALS REFLECTIVE TRIM	44oz Vinyl			4500D TPU
	OTHER COLOURS				
	NOTES		Top, closable rope feed hole	Top, closable rope feed hole	*Handles inc 4 haul/gear loops. *4 eyes for backstraps
	WEBSITE	buckinghammfg.com	buckinghammfg.com	buckinghammfg.com	camp.it

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HAUL EYES = can carry the entire weight of the bag & contents eg. for hauling or attaching to harness.May double as handles shown as 1/1
STORE SAW=pouch or scabbard for hand saw
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	MANUFACTURER	CAMP SAFETY	COURANT	COURANT	COURANT
	MODEL litres/liters VARIANT	Cargo 40 2785	Cross Rope Light 17 00	Host 36 PSECBYA	Cross Rope 36 -
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£60 $80 €0	£0 $0 €0	£58 $0 €64	£66 $98 €89
SPECIFICATIONS	VOLUME L/US Gallon intended market	40L/10.6gal Pro Access	17L/4.5gal Pro Access	36L/9.5gal Pro Access	23-36L/6-9.5gal Pro Access
SPECIFICATIONS	NOMINAL ROPE/LOAD CAPACITY	0m 0'	0m x 0mm 0' x ½"	45m x 12mm	45m x 12mm
SPECIFICATIONS	WEIGHT empty	0kg 2.1lb	00g 0lb	0.91kg 2lb	1.1kg 2.4lb
SPECIFICATIONS	DIMENSIONS	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	45 x 32 x 19cm 18 x 13 x 7.5"
FEATURES	BACK STRAPS HANDLES HAUL EYE(S)	2 - 1	- - -	- - -	- - -
FEATURES	POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	- 1 - 2 -	- - - - -	- - - - -	- - - - -
FEATURES	WATERPROOF ID-PANEL DRAIN/VENT	-	- - - -	- - - -	- - - -
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	+	- - - - - -	- - - - - -	- - - - - -
	OUTER MATERIALS REFLECTIVE TRIM	500D PVC		1680D nylon & mesh	1680D Ballistic nylon/mesh
	OTHER COLOURS				
	NOTES			Buckles/straps for clipping to Cross/Dock bags	Expands (upwards).Zips open both ends. zipped rope hole
	WEBSITE	camp.it	mycourant.com	mycourant.com	mycourant.com

ROPE/GEAR BAGS

					
CAMP SAFETY	CAMP SAFETY	CAMP SAFETY	CAMP SAFETY	CAMP SAFETY	CAMP SAFETY
Super Cargo 70 2775.	Transport 20 00	Transport 30 00	Trucker 30 00.	Trucker 45 00.	Trucker 60 00
£246 $450 €0	£0 $0 €0	£0 $0 €0	£105 $0 €124	£119 $0 €139	£129 $0 €162
0L/18.5gal Pro Access	20L/5.3gal Pro Access	30L/7.9gal Pro Access	30L/7.9gal Pro Access	45L/11.8gal Pro Access	60L/15.8gal Pro Access
80kg/176lb	0m 0'	0m 0'	0m x 0mm 0' x ½"	0m x 0mm 0' x ½"	0m x 0mm 0' x ½"
3.4g 7.5lb	0kg 0lb	0kg 0lb	00g 0lb	00g 0lb	00g 0lb
70 x 40 x 30cm 24.8 x 15.7 x 12"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"
224	22-	---	---	---	---
-- -- -	-- -- -	-- -- -	-- -- -	-- -- -	-- -- -
----	---	---	---	---	---
------	------	------	------	------	------
4500D TPU	--	--	-	-	-
Handles inc 4 haul/gear ps. *4 eyes for backstraps			-	-	-
camp.it	camp.it	camp.it	camp.it	camp.it	camp.it

					
COURANT	COURANT	CLIMBING TECHNOLOGY	CLIMBING TECHNOLOGY	CLIMBING TECHNOLOGY	CLIMBING TECHNOLOGY
Cargo 40 -	Cargo 50 -	Carrier 18 6X96018	Carrier 22 6X96022	Carrier 37 6X96037	Carrier Bag 35 7X971
£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €110
0L/10.6gal Pro Access	0L Pro Access	18L/5gal Pro Access	22L/00gal Pro Access	37L/00gal Pro Access	35L/00gal Pro Access
0m x 0mm 0' x ½"	0m x 0mm 0' x ½"	0m 0'	0m 0'	0m 0'	0m x 0mm 0' x ½"
00g 0lb	00g 0lb	550g 0lb	645g 0lb	765g 0lb	650g 0lb
0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	48 x 21cm 0 x 0 x 0"	64 x 21cm 0 x 0 x 0"	64 x 31 x 20cm 0 x 0 x 0"	52 x 30cm 0 x 0"
---	---	2-1	2-1	2-1	[2]-1
-- -- -	-- -- -	-1 -- -	-1 -- -	-1 -- -	-1 72 1
----	----	●--	●--	●--	■---
------	------	■	■	■	■+Lid
		1000D PVC-coated PES	1000D PVC-coated PES	1000D PVC-coated PES	1000D PVC-coated PES
					Expandable from 25 to 25L
mycourant.com	mycourant.com	climbingtechnology.com	climbingtechnology.com	climbingtechnology.com	climbingtechnology.com

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= Option





	MANUFACTURER	CLIMBING TECHNOLOGY	CLIMBING TECHNOLOGY	CLIMBING TECHNOLOGY
	MODEL litres/liters VARIANT	Azimuth 25-35 2785	Craggy 40-50 2785	Zenith 70-85 7X96970
	ORIGIN			
	COST (inc Tax/VAT) Currency conversion only	£0 $0 €110	£0 $0 €110	£0 $0 €110
SPECIFICATIONS	**VOLUME** L/US Gallon intended market	25-35L Pro Access	40-50L Pro Access	70-85L Pro Access
SPECIFICATIONS	**NOMINAL ROPE/LOAD CAPACITY**	0m x 0mm 0' x ½"	0m x 0mm 0' x ½"	0m x 0mm 0' x ½"
SPECIFICATIONS	**WEIGHT** empty	1.2kg 0lb	1.9kg 0lb	2.7kg 0lb
SPECIFICATIONS	**DIMENSIONS**	53 x 29 x 20cm 0 x 0 x 0"	57 x 34 x 22cm 0 x 0 x 0"	70 x 36 x 30cm 0 x 0 x 0"
FEATURES	**BACK STRAPS HANDLES HAUL EYE(S)**	2-1	2-1	2-1
FEATURES	**POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW**	-1 72 1	-1 22 1	-1 22 1
FEATURES	**WATERPROOF ID-PANEL DRAIN/VENT**	■---	■---	■---
FEATURES	**LID** VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	■+■	■+■	■+■
	OUTER MATERIALS REFLECTIVE TRIM	PVC-coated polyester	PVC-coated polyester	PVC-coated polyester
	OTHER COLOURS			
	NOTES	Expandable from 25 to 25L	Expandable from 40 to 50L. Removeable padded back	Expandable from 40 to 50L. Removeable padded back
	WEBSITE	climbingtechnology.com	climbingtechnology.com	climbingtechnology.com

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	MANUFACTURER	DMM	DMM	DMM	DMM
	MODEL litres/liters VARIANT	Transit 30	Transit 45	Porter 45	Porter 70
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£60 $75 €70	£70 $85 €80	£90 $0 €90	£100 $110 €100
SPECIFICATIONS	**VOLUME** L/US Gallon intended market	30L/7.9gal Pro Access	45L/11.8gal Pro Access	45L/11.8gal Pro Access	70L/18.5gal Pro Access
SPECIFICATIONS	**NOMINAL ROPE/LOAD CAPACITY**	0m 0'	0m 0'	0m 0'	0m 0'
SPECIFICATIONS	**WEIGHT** empty	0kg 0lb	0kg 0lb	1.25kg 0lb	1.42kg 0lb
SPECIFICATIONS	**DIMENSIONS**	0 x 0 x 0cm 0 x 0 x 0"	40 x 28cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	62 x 40 x 30cm 0 x 0 x 0"
FEATURES	**BACK STRAPS HANDLES HAUL EYE(S)**	---	---	---	---
FEATURES	**POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW**	-- -- -	-- -- -	-- -- -	-- -- -
FEATURES	**WATERPROOF ID-PANEL DRAIN/VENT**	----	----	----	----
FEATURES	**LID** VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	------	------	------	------
	OUTER MATERIALS REFLECTIVE TRIM	600D PVC	600D PVC	600D PVC	600D PVC
	OTHER COLOURS				
	NOTES	-	-	-	-
	WEBSITE	dmmwales.com	dmmwales.com	dmmwales.com	dmmwales.com

					
CRESTO	**CRESTO**	**CRESTO**	**CRESTO**		
Rope Bag M ?	**Rope Bag L ?**	**Rope Bag XL ?**	**PACQ Backpack ?**		
012260242	012260243	012260244	9450		
£00 $0 €0	£00 $0 €0	£00 $0 €0	£00 $0 €0		
0kg 0lb	0kg 0lb	0kg 0lb	0kg 0lb		
39 x 22 x 11cm 15.3 x 8.6 x 4.3"	39 x 22 x 11cm 15.3 x 8.6 x 4.3"	39 x 22 x 11cm 15.3 x 8.6 x 4.3"	39 x 22 x 11cm 15.3 x 8.6 x 4.3"		
2 1 1	2 1 1	2 1 1	2 2 -		
-- 3+1 ring- -	-- 5+1 ring- -	-- 6+1 ring- -	-- -- -		
■---	■---	■---	■---		
■	■	■	■		
'Polymar' ■	'Polymar' ■	'Polymar' ■	Polyester-		
crestosafety.com	crestosafety.com	crestosafety.com	crestosafety.com		





DRAYER	DRAYER	DRAYER
Stable 22	**Stable 30**	**Stable 40**
-	-	-
■	■	■
£43 $55 €50	£63 $81 €73*	£65 $84 €76*
22L/5.9gal Pro Arb	30L/7.9gal Pro Arb	40L/10.4gal Pro Arb
0m 0'	0m 0'	0m 0'
0kg 0lb	0kg 0lb	0kg 0lb
0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"
-2 1	2 2 1	2 2 1
-- -- -	1- 10- -	1- 10- -
----	----	----
■	■	■
Coated polyester	Coated polyester	Coated polyester
■	■	■
Black=€3 less	Mesh side panel Black=€3 less	Mesh side panel Black=€3 less
drayer.de	drayer.de	drayer.de

ARBOGEAR

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FOR ARBORISTS

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gear for professional tree climbing



www.arbogear.com

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= Option






	MANUFACTURER	CLIMBING TECHNOLOGY	CLIMBING TECHNOLOGY	CLIMBING TECHNOLOGY	DMM
	MODEL litres/liters VARIANT	Azimuth 25-35 2785	Craggy 40-50 2785	Zenith 70-85 7X96970	Transit 30 -
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£0 $0 €110	£0 $0 €110	£0 $0 €110	£60 $75 €70
SPECIFICATIONS	VOLUME L/US Gallon intended market	25-35L Pro Access	40-50L Pro Access	70-85L Pro Access	30L/7.9gal Pro Access
SPECIFICATIONS	NOMINAL ROPE/LOAD CAPACITY	0m x 0mm 0' x ½"	0m x 0mm 0' x ½"	0m x 0mm 0' x ½"	0m 0'
SPECIFICATIONS	WEIGHT empty	1.2kg 0lb	1.9kg 0lb	2.7kg 0lb	0kg 0lb
SPECIFICATIONS	DIMENSIONS	53 x 29 x 20cm 0 x 0 x 0"	57 x 34 x 22cm 0 x 0 x 0"	70 x 36 x 30cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"
FEATURES	BACK STRAPS HANDLES HAUL EYE(S)	2-1	2-1	2-1	---
FEATURES	POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	-1 72 1	-1 22 1	-1 22 1	-- -- -
FEATURES	WATERPROOF ID-PANEL DRAIN/VENT	■---	■---	■---	----
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	■+■	■+■	■+■	------
	OUTER MATERIALS REFLECTIVE TRIM	PVC-coated polyester	PVC-coated polyester	PVC-coated polyester	600D PVC
	OTHER COLOURS				
	NOTES	Expandable from 25 to 25L	Expandable from 40 to 50L. Removeable padded back	Expandable from 40 to 50L. Removeable padded back	-
	WEBSITE	chnology.com	climbingtechnology.com	climbingtechnology.com	dmmwales.com

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	MANUFACTURER	EDELRID	EDELRID	EDELRID	EYOLF
	MODEL litres/liters VARIANT	KurtHaulbag 55 721860552210	Kask 28 721860552210	Kask 55 721860552210	Emmer 25 L34
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£130 $0 €0	£0 $0 €0	£0 $0 €0	£41 $52 €48
SPECIFICATIONS	VOLUME L/US Gallon intended market	55L/14.5gal Pro Rescue	28L/7.4gal Pro Access	55L/14.5gal Pro Access	25L/6.6gal Pro Access
SPECIFICATIONS	NOMINAL ROPE/LOAD CAPACITY	0m 0'	0m 0'	0m 0'	0m 0'
SPECIFICATIONS	WEIGHT empty	0kg 0lb	0kg 0lb	0kg 0lb	0g 0lb
SPECIFICATIONS	DIMENSIONS	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	30 x 34cm 0 x 0 x 0"
FEATURES	BACK STRAPS HANDLES HAUL EYE(S)	---	---	---	-2-
FEATURES	POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	-- -- -	-- -- -	-- -- -	-- -- -
FEATURES	WATERPROOF ID-PANEL DRAIN/VENT	----	----	----	----
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	------	------	------	■
	OUTER MATERIALS REFLECTIVE TRIM	44oz Vinyl	44oz Vinyl	44oz Vinyl	1000D Cordura -
	OTHER COLOURS				■■■
	NOTES	-	-	-	-
	WEBSITE	edelrid.com	edelrid.com	edelrid.com	eyolf.ca

ROPE/GEAR BAGS

					
DMM	**DMM**	**DMM**	**DRAYER**	**DRAYER**	**DRAYER**
Transit 45	**Porter 45**	**Porter 70**	**Stable 22**	**Stable 30**	**Stable 40**
£70 $85 €80	£90 $0 €90	£100 $110 €100	£43 $55 €50	£63 $81 €73*	£65 $84 €76*
5L/11.8gal Pro Access	45L/11.8gal Pro Access	70L/18.5gal Pro Access	22L/5.9gal Pro Arb	30L/7.9gal Pro Arb	40L/10.4gal Pro Arb
0m 0'	0m 0'	0m 0'	0m 0'	0m 0'	0m 0'
0kg 0lb	1.25kg 0lb	1.42kg 0lb	0kg 0lb	0kg 0lb	0kg 0lb
40 x 28cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	62 x 40 x 30cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"
---	---	---	-21	221	221
-- -- -	-- -- -	-- -- -	-- -- -	1- 10- -	1- 10- -
----	----	----	----	----	----
------	------	------	■	■	■
600D PVC	600D PVC	600D PVC	Coated polyester	Coated polyester	Coated polyester
			■	■	■
-	-	-	Black=€3 less	Mesh side panel Black=€3 less	Mesh side panel Black=€3 less
dmmwales.com	dmmwales.com	dmmwales.com	drayer.de	drayer.de	drayer.de

					
EYOLF	**EYOLF**	**EYOLF**	**EYOLF**	**EYOLF**	**EYOLF**
Emmer 35 L36	**Emmer 45** L38	**Sml 10**	**Med 23** L61	**Lg 37** L62	**XL 64** L63
£46 $59 €54	£85 $110 €100	£35 $45 €41	£49 $63 €57	£63 $81 €74	£78 $100 €91
5L/9.2gal Pro Access	35L/9.2gal Pro Access	10L/2.6gal Pro Access	23L/0gal Pro Access	37L/0gal Pro Access	64L/16.9gal Pro Access
0m 0'	0m 0'	100m/660' 11mm 7/16"	50m/164' 11mm 7/16"	100m/330' 11mm 7/16"	200m/660' 11mm 7/16"
0g 0lb	0g 0lb	0g 0lb	345g 0.76lb	414g 0.9lb	538g 1.2lb
40 x 34cm 0 x 0 x 0"	50 x 34cm 0 x 0 x 0"	25 x 23cm 9.9 x 9"	55 x 23cm 0 x 0 x 0"	60 x 28cm 0 x 0 x 0"	85 x 34cm 0 x 0 x 0"
-2-	-2-	-1-	2--	2--	2--
-- -- -	--52--	-- -- -	-- -- -	-- 5- -	-- 5- -
----	-■--	----	----	----	----
■	■	■	■	■	■
1000D Cordura -	1000D Cordura ■	1000D Cordura -	1000D Cordura -	1000D Cordura -	1000D Cordura -
■■	■■	■■	■■	■■	■■
-	-	-	-	-	-
eyolf.ca	eyolf.ca	eyolf.ca	eyolf.ca	eyolf.ca	eyolf.ca

Images NOT to Scale
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STORE SAW=**pouch or scabbard for hand saw**
POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle
PES = Polyester
=Partial feature or OK but not ideal
= Option






	MANUFACTURER	FTC TREE	FTC TREE	HARKIE	HARKIE
	MODEL litres/liters VARIANT	Cylindric 40 -	Cylindric 60 -	Champion 38 H2240	Champion 55 H2240
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£45 $54 €62	£54 $64 €68	£151 $200 €180	£201 $266 €238
SPECIFICATIONS	VOLUME L/US Gallon intended market	40L/10.6gal Pro Arb	60L/15.8gal Pro Arb	38L/10gal Pro Arb	55L/14.5gal Pro Arb
SPECIFICATIONS	NOMINAL ROPE/LOAD CAPACITY	60m/197' x 14mm	90m/295' x 14mm	0m 0'	0m 0'
SPECIFICATIONS	WEIGHT empty	600g 1.3lb	900g 2lb	0kg 0lb	0kg 0lb
SPECIFICATIONS	DIMENSIONS	83 x 23 x 23cm 32.7 x 9.1 x 9.1"	92 x 32 x 32cm 36.2 x 12.6 x 12.6"	50 x 30 x 25cm 19.7 x 12 x 13.8"	50 x 38 x 29cm 19.7 x 15 x 11.4"
FEATURES	BACK STRAPS HANDLES HAUL EYE(S)	[2]1-	[2]1-	2 2 -	- - -
FEATURES	POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	- - - - -	- - - - -	- - - - -	- - - - -
FEATURES	WATERPROOF ID-PANEL DRAIN/VENT	■ - - -	■ - - -	- - - -	- - - -
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	■ + ■	■ + ■	- - - - - -	- - - - - -
	OUTER MATERIALS REFLECTIVE TRIM	1680D PVC	1680D PVC	PVC	PVC
	OTHER COLOURS			■	■
	NOTES	Virtually, but not quite, watertight	Virtually, but not quite, watertight	-	-
	WEBSITE	ftec-tree.com	ftc-tree.com	harkieglobal.com	harkieglobal.com

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= Option






	MANUFACTURER	KONG	KONG	KONG	KONG
	MODEL litres/liters VARIANT	RopeBag 28 -	Genius II 30 -	Linnhà 40 982522000KK	RopeBag 43 -
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0
SPECIFICATIONS	VOLUME L/US Gallon intended market	28L/7.4gal Pro	30L/7.9gal Pro	40L/10.6gal Canyoning	43L/11.4gal Pro Access
SPECIFICATIONS	NOMINAL ROPE/LOAD CAPACITY	0m 0'	0m 0'	0m 0'	0m 0'
SPECIFICATIONS	WEIGHT empty	0kg 0lb	0.85kg 0lb	0kg 0lb	0kg 0lb
SPECIFICATIONS	DIMENSIONS	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"
FEATURES	BACK STRAPS HANDLES HAUL EYE(S)	- - -	- - -	- - -	- - -
FEATURES	POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	- - - - -	- - - - -	- - - - -	- - - - -
FEATURES	WATERPROOF ID-PANEL DRAIN/VENT	- - - -	- - - -	- - - -	- - - -
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	- - - - - -	- - - - - -	- - - - - -	- - - - - -
	OUTER MATERIALS REFLECTIVE TRIM	--	PVC	--	--
	OTHER COLOURS				
	NOTES	-	-	-	-
	WEBSITE	Kong.it	kong.it	Kong.it	Kong.it

ROPE/GEAR BAGS

					
HARKIE	**HARKIE**	**HUSQVARNA**	**HUSQVARNA**	**KONG**	**KONG**
Sentry 47 H2260	**Sentry 60** H2265	**Rope Bag 28** 596 93 63-11	**Xplorer Backpack** 596 93 63-11	**RopeTube 17** 982525000KK	**Lirung 25** 982521000KK
£221 $292 €262	£246 $325 €291	£61 $82 €73		£0 $0 €0	£0 $0 €0
47L/12.4gal Pro Arb	60L/15.8gal Pro Arb	28L/7.4gal Pro Arb		17L/4.5gal Pro	25L/6.6gal Canyoning
70m x 12mm 0'	90m x 12mm 0'	250' x ½"	0m 0'	0m 0'	0m 0'
0kg 0lb	0kg 0lb	0kg 0lb	0kg 0lb	155g 0oz	750g 0lb
0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"
2 2	2 2	- - -	- - -	- - -	- - -
2 - 6 - -	2 - 6 - -	- - - - -	- - - - -	- - - - -	- - - - -
- -	- -	- - - -	- - - -	- - - -	- - - -
carabiner	carabiner	- - - - - -	- - - - - -	- - - - - -	- - - - - -
PVC	PVC	- -	- -	- -	- -
-	-	-	-	-	-
harkieglobal.com	harkieglobal.com	husqvarna.com	husqvarna.com	Kong.it	Kong.it

					
KONG	**KONG**	**LYON EQUIPMENT**	**LYON EQUIPMENT**	**LYON EQUIPMENT**	**LYON EQUIPMENT**
WorkBag 50 982528N00KK	**OmniBag 60** -	**Rope Bag 20** LSB 20..	**Rope Bag 30** LSB 30..	**Rope Bag Lid 40** LSB 40..	**Industrial Access 55** LSB 55.
£0 $0 €0	£0 $0 €0	£70 $0 €0	£78 $0 €0	£82127 $0 €0	£108 $0 €0
0L /13.2galPro Access	60L/15.8gal Pro Access	20L/5.3gal Pro Access	30L/7.9gal Pro Access	40L/10.6galPro Access	52.5L/13.9gal Pro Access
0m 0'	0m 0'	80m x 10.5mm 0'	120m x 10.5mm 0'	0m 0'	220m x 10.5mm 110'x½"
0kg 0lb	0kg 0lb	0kg 0lb	0kg 0lb	0kg 0lb	0kg 0lb
0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	51 x 0 x 0cm 20 x 0 x 0"	56 x 0 x 0cm 22 x 0 x 0"	51 x 22 x22cm 20 x 8.6 x 8.6"	59x 38 x 15cm 13.2 x 15 x 5.9"
- - -	- - -	- - -	2 1 -	- - -	2 2 -
- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
- - - -	- - - -	- - - -	- - - -	- -	- - -
- - - - - -	- - - - - -			+ Lid	- - - - - -
PVC	- -	- -	- -	- -	- -
Being phased out	-	* Hi-vis Orange. Cushioned base	* Hi-vis Orange& green. Cushioned base	* Hi-vis Orange& green. Cushioned base	-
Kong.it	Kong.it	lyonequipment.com	lyonequipment.com	lyonequipment.com	lyonequipment.com

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POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle
PES = Polyester
●●●●● =Partial feature or OK but not ideal
□□□□□ = Option






	MANUFACTURER	LYON EQUIPMENT	LYON EQUIPMENT	LYON EQUIPMENT	NATIVE ARB
	MODEL litres/liters VARIANT	Essentials 30 LSB ES30..	Essentials 40 LSB ES40..	Essentials 60 LSB ES60..	Rig Bag 55 RB1
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£51 $67 €61	£56 $74 €66	£80 $105 €95	£102 $134 €121
SPECIFICATIONS	VOLUME L/US Gallon intended market	30L/7.9gal Pro Access	40L/10.6gal Pro Access	60L/15.8gal Pro Access	55L/14.5gal Pro Arb
SPECIFICATIONS	NOMINAL ROPE/LOAD CAPACITY	25kg 100m x 11mm	25kg 150m x 11mm	25kg 200m x 11mm 100'x½"	0m 0'
SPECIFICATIONS	WEIGHT empty	500g 1.1lb	620g 1.4lb	1.19kg 2.6lb	0kg 0lb
SPECIFICATIONS	DIMENSIONS	50 x 28 x 23cm 20 x 11 x 9"	52 x 33 x 28cm 20.5 x 13 x 11"	60 x 35 x 30cm 24 x 14 x 12"	45 x 36cm 17.7 x 14.2"
FEATURES	BACK STRAPS HANDLES HAUL EYE(S)	2 1 -	2 1 -	2 2 -	- 2 -
FEATURES	POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	-- -1 -	-- -1 -	-- -1 -	-- 282 -
FEATURES	WATERPROOF ID-PANEL DRAIN/VENT	■■-	■■-	■■-	■--
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	■+■ Lid	■+■ Lid	■+■ Lid	■ Cap
	OUTER MATERIALS REFLECTIVE TRIM	620g PVC -	620g PVC -	620g PVC -	1000d PVC-free TPE Nylon
	OTHER COLOURS	■	■	■	
	NOTES	-	-	Also sold under the *G-Force* brand	Integral rope cleaner on this and the twin-rope bag
	WEBSITE	lyonequipment.com	lyonequipment.com	lyonequipment.com	nativearb.co.uk

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POP= Popper or press stud
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□□□□□ = Option








	MANUFACTURER	NOTCH	NOTCH	PALMU	PETZL
	MODEL litres/liters VARIANT	Pro 250 28 00	Pro 450 35 99383	Rope Bag 32 00	Bucket 15 -
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£50 $75 €72	£72 $95 €91	£66 $89 €78	£41 $50 €42
SPECIFICATIONS	VOLUME L/US Gallon intended market	28L/7.4gal Pro Arb	35L/9.2gal Pro Arb	32L/8.2gal Pro Access	15L/4gal Pro Access
SPECIFICATIONS	NOMINAL ROPE/LOAD CAPACITY	20kg 76m/250' x½"	20kg 137m/450' x½"	50kg 80m x11.5mm	50kg 45m x11mm 88'x½"
SPECIFICATIONS	WEIGHT empty	815g 1.8lb	915g 2lb	1.2kg 2.64lb	465g 1lb
SPECIFICATIONS	DIMENSIONS	40.5 x 30.5cm 16 x 12"	50 x 30cm 20 x 12"	32 x 32 x 32cm 12.6 x 12.6 x 12.6"	30 x 25cm 11.8 x 9.8"
FEATURES	BACK STRAPS HANDLES HAUL EYE(S)	- 2 -	2 2 -	2 2 -	- 2 1
FEATURES	POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	-- -- -	-- 10- -	2 - 18- -	1 1 - 2 -
FEATURES	WATERPROOF ID-PANEL DRAIN/VENT	●--	●■-	●-■	■■-
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	■	■	■	■■
	OUTER MATERIALS REFLECTIVE TRIM	600D Nylon	600D Nylon	PVC	TPU (PVC-free)
	OTHER COLOURS				■■
	NOTES			vent mesh in lid	*two loops intended for tieo=ing in the rope ends.
	WEBSITE	notchequipment.com	notchequipment.com	palmubags.com	

ROPE/GEAR BAGS

					
NATIVE ARB	**NEVER LET GO**	**NEVER LET GO**	**NEVER LET GO**	**NEVER LET GO**	**NEVER LET GO**
win Rope Bag 55 TRB1	**Ascent Bucket 30** 101360	**Ascent Carry 50** 101730	**Ascent Haul 70** 101666	**RopePro Bucket 30** 101680	**RopePro 50** 101679
£102 $134 €121	£170 $219 €200	£230 $296 €270	£270 $347 €317	£99 $128 €116	£95 $123 €112
55L/14.5gal Pro Arb	30L/7.9gal Pro Access	50L/13.2gal Pro Access	70L/18.5gal Pro Access	30L/7.9gal Pro Access	50L/13.2gal Pro Access
0m 0'	100kg 220lb	100kg 220lb	100kg 220lb	50kg 110lb	30kg 66lb
0kg 0lb	1.99kg 4.4lb	2.6kg 5.7lb	3.05kg 6.7lb	1.65kg 3.6lb	1.44kg 3.2lb
45 x 36cm 17.7 x 14.2"	40 x 32cm 15.7 x 12.6"	57 x 32cm 22.5 x 12.6"	71 x 36 x 35cm 28 x 14.2 x 13.8"	40 x 32cm 15.7 x 12.6"	58 x 32 x 26cm 22.8 x 12.6 x 10.2"
-2-	-1+1*+1/1	21*+2/2	21*+4/4	-2/2	22-
2- 202 -	--86/2-	-1 14 6/2-	-1 6/2 5/2-	-- 10/1 6/4*-	21 -9/4*-
---					
Cap					
00d PVC-free TPE Nylon	Megatex -	Megatex -	Megatex -	Innervis -	Innervis -
ompartments with rope-feed eye each side. Integral rope cleaner	*1xBase & 1 tipping/drag handle. Comp strap	*1xBase handle. Back&waist straps detach. Comp strap	*1xBase handle. Back&waist straps detach. Comp strap	*rope tie-off. Removable reinforcing.Compression strap	*rope tie-off. Removable reinforcing.Compression strap
nativearb.co.uk	neverletgo.com	neverletgo.com	neverletgo.com	neverletgo.com	neverletgo.com

					
PETZL	**PETZL**	**PETZL**	**PETZL**	**PETZL**	
Bucket 30	**Bucket 45**	**Transport 30**	**Transport 45**	**Transport 60**	
£58 $70 €60	£76 $90 €78	£108 $0 €115	£126 $0 €134	£150 $0 €158	
0L/7.9gal Pro Access	45L/11.8gal Pro Access	30L/7.9gal Pro Access	45L/11.8gal Pro Access	60L/15.8gal Pro Access	
kg 110m x11mm 225'x½"	50kg 180m x11mm 369'x½"	50kg	50kg	50kg	
735g 1.6lb	890g 2lb	1.3kg 2.86lb	1.53kg 3.37lb	1.78kg 3.924lb	
40 x 30cm 15.8 x 11.8"	45 x 35cm 17.7 x 13.8"	53 x 29 x 23cm 20.9 x 11.4 x 9"	58 x 32.5 x 28cm 22.8 x 12.8 x 11"	65 x 35 x 30cm 25.6 x 13.8 x 11.8"	
221	221	[2]3+1inside-	[2]3+1inside-	[2]3+1inside-	
11 - 6 -	11 - 6 -	1- 22 -	1- 22 -	1- 23 -	
-	-	-	-	-	
		+ Lid	+ Lid	+ Lid	
TPU (PVC-free)	TPU (PVC-free)	TPU (PVC-free)	TPU (PVC-free)	TPU (PVC-free)	
*two loops intended for eo=ing in the rope ends.	*two loops intended for tieo=ing in the rope ends.	replaced the 'Portage' range. 50kg load limit	replaced the 'Portage' range. 50kg load limit	replaced the 'Portage' range. 50kg load limit	
petzl.com	petzl.com	petzl.com	petzl.com	petzl.com	





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	MANUFACTURER	PROTEKT	PROTEKT	PROTEKT	PROTEKT
	MODEL litres/liters VARIANT	Arborist Basket 15 AX701	Arborist Basket 30 AX701	AX011T/K 42 -	AX011N/D 42 -
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0
SPECIFICATIONS	VOLUME L/US Gallon intended market	15L/3.9gal Pro Access	30L/8gal Pro Access	42L/11gal Pro Access	42L/11gal Pro Access
SPECIFICATIONS	NOMINAL ROPE/LOAD CAPACITY	0m 0'	0m 0'	0m 0'	0m 0'
SPECIFICATIONS	WEIGHT empty	0kg 0lb	0kg 0lb	720 /650g 0lb	600/850g 0lb
SPECIFICATIONS	DIMENSIONS	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	60 x 30 x 30cm 23.6 x 12 x 12"	60 x 30 x 30cm 23.6 x 12 x 12"
FEATURES	BACK STRAPS HANDLES HAUL EYE(S)	1 2 1	1 2 1	2-1 / 2-2	2 1-
FEATURES	POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	-- 6- -	-- 6- -	-- -- -	-- 3- -/-- -- -
FEATURES	WATERPROOF ID-PANEL DRAIN/VENT	-■	-■	-■	-■/■■■
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	■	■	■/■	■
	OUTER MATERIALS REFLECTIVE TRIM	PVC & Mesh -	PVC & Mesh -	Reinforced PVC-	Reinforced PVC-
	OTHER COLOURS			■■	■■
	NOTES	Solid Plastic base with air-vents	Solid Plastic base with air-vents	T- zip closure & D-ring K=Drawstring & 2 haul loops	AX011D = lid-flap +ID pocket Also AX011 plain bag
	WEBSITE	protekt.pl	protekt.pl	protekt.pl	protekt.pl

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	MANUFACTURER	PROTEKT	PROTEKT	REECOIL	REECOIL
	MODEL litres/liters VARIANT	Arborist Backpack 80 Ax080	AX012 ARBO 100 -	Rope Bag 28 -	Rope Bag 45 -
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£0 $0 €0	£0 $0 €0	£94 $131 €0	£123 $167 €0
SPECIFICATIONS	VOLUME L/US Gallon intended market	80L/21.1gal Pro Arb	100L/26.4gal Pro Access	28L/7.4gal Pro Arb	45L/11.8gal Pro Arb
SPECIFICATIONS	NOMINAL ROPE/LOAD CAPACITY		0m 0'	100m 0' x 11mm 0"	200m 0' x 11mm 0"
SPECIFICATIONS	WEIGHT empty	2.6kg 5.7lb	1.48kg 0lb	1.7kg 0lb	0kg 0lb
SPECIFICATIONS	DIMENSIONS	80 x 35 x 35cm 31.5 x 13.8 x 13.8"	80 x 40 x 40cm 31.5 x 15.7 x 15.7"	50.5 x 35cm 19.9 x 13.8"	0 x 0 x 0cm 0 x 0 x 0"
FEATURES	BACK STRAPS HANDLES HAUL EYE(S)	---	2--	2 2■	2 2■
FEATURES	POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	-- -- -	-1 6- -	-- 16/2 ■	-- 16/2 ■
FEATURES	WATERPROOF ID-PANEL DRAIN/VENT	■---	----	■■-■	■■-■
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	■	■	■■	■■
	OUTER MATERIALS REFLECTIVE TRIM	--	Reinforced PVC-	--	--
	OTHER COLOURS		■■		
	NOTES	-	Also AX012 plain bag	-	-
	WEBSITE	protekt.pl	protekt.pl	rockempire.com	rockempire.com








PROTEKT	PROTEKT	PROTEKT	PROTEKT	PROTEKT	PROTEKT
AX011SP /S 45	AX040	AX070	AX070L	AX074	AX071
£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0
6L/11.8gal Pro Access	40L/10gal Pro Access	70L/18.5gal Pro Access	70L/18.5gal Pro Access	74L/19.5gal Pro Access	71L/18.7gal Pro Access
0m 0'	0m 0'	0m 0'	0m 0'	0m 0'	0m 0'
1.64/1.2kg 0lb	0kg 0lb	0kg 0lb	0kg 0lb	0kg 0lb	0kg 0lb
3 x 38/36 x 25/22cm 18 x 15/14.2 x 9.8/8.6"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"
[2]1-	---	---	---	---	---
2- -- -/-- -- -	-- -- -	-- -- -	-- -- -	-- -- -	-- -- -
-	-	---	---	---	---
+		carabiner		-----	
Reinforced PVC-	Reinforced PVC-	Reinforced PVC-	Reinforced PVC-	Reinforced PVC-	Reinforced PVC-
AX011S has no pockets	-	-	-	-	-
protekt.pl	protekt.pl	protekt.pl	protekt.pl	protekt.pl	protekt.pl








ROCK EMPIRE	ROCK EMPIRE	ROCK EMPIRE	ROCK EMPIRE	ROCKnARB	ROCKnARB
Cargo Reep 30	Cargo 35 CWV035	Cargo 55 CWV055	Cargo Roll 55 CVR055	Mnt Ape Bull 30 RMA001	Plain Jane II ? RPJ015
£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $46 €0	£0 $30 €0
27L/6.8gal Pro Access	31.9L/8.4gal Pro Access	52.4L/13.8gal Pro Access	52.4L/13.8gal Pro Access	30L/7.9gal Pro Arb	0L/0gal Pro Arb
0m 0'	0m 0'	0m 0'	0m 0'	0m 200'x3/4"	0m 200' x 1/2"
390g 0lb	805g 0lb	805g 0lb	805g 0lb	0kg 0lb	0kg 0lb
50 x 25cm 0 x 0 x 0"	65 x 25cm 0 x 0 x 0"	75 x 30cm 0 x 0 x 0"	85 x 30cm 0 x 0 x 0"	43 x 33 x 33cm 17 x 13 x 13"	40-52 x 30 x 30cm 16-20.5 x 12 x 12"
-2-	11-	11-	32-	-21	-2-
-- 3- -	-- -- -	-- -- -	-- -- -	-- -- -	-- -- -
---	---	---	---	---	---
--	--	--	--	600D Polyester -	600D Polyester -
-	-	-	-	Dbl reinforced bottom	Dbl reinforced bottom
singingrock.com	singingrock.com	singingrock.com	singingrock.com	rocknarbor.com	rocknarbor.com

Images NOT to Scale
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HAUL EYES = can carry the entire weight of the bag & contents eg. for hauling or attaching to harness.May double as handles shown as 1/1
STORE SAW=pouch or scabbard for hand saw
POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle
PES = Polyester
=Partial feature or OK but not ideal
= Option






	ROCKnARB	ROCKnARB	ROCKnARB	SILVER BULL
MODEL litres/liters VARIANT	Arborist Storage ? RBA00..	Arborist Storage ? RBA00..	Poseidon Rigger ? RPB093	Net Sml 21 -
ORIGIN				
COST (inc Tax/VAT) Currency conversion only	£0 $36 €0	£0 $38 €0	£0 $215 €0	£40 $0 €0
SPECIFICATIONS VOLUME L/US Gallon intended market	0L/0gal Pro Arb	0L/0gal Pro Arb	0L/0gal Pro Rescue	21L/5.5gal Pro Arb
SPECIFICATIONS NOMINAL ROPE/LOAD CAPACITY	0m 150'x ½"	0m 200'x ½"	0m 200'x ½"	0m 0'
SPECIFICATIONS WEIGHT empty	0kg 1.5lb	0kg 0lb	0kg 2.2lb	0kg 0lb
SPECIFICATIONS DIMENSIONS	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	35 x 28cm 13.8 x 11"
FEATURES BACK STRAPS HANDLES HAUL EYE(S)	- - -	- - -	[2] 1 -	- - -
FEATURES POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	4 - - - -	4 - - - -	2 - 10 14 -	- - - - -
FEATURES WATERPROOF ID-PANEL DRAIN/VENT	- -	- -	- -	- - - -
FEATURES LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP			+	- - - - - -
OUTER MATERIALS REFLECTIVE TRIM	1000D coated nylon-	1000D coated nylon-	1000D coated nylon-	- -
OTHER COLOURS				
NOTES	-	-	-	-
WEBSITE	rocknarbor.com	rocknarbor.com	rocknarbor.com	-

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HAUL EYES = can carry the entire weight of the bag & contents eg. for hauling or attaching to harness.May double as handles shown as 1/1
STORE SAW=pouch or scabbard for hand saw
POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle
PES = Polyester
=Partial feature or OK but not ideal
= Option






	SILVER BULL	SILVER BULL	SILVER BULL	SILVER BULL
MODEL litres/liters VARIANT	Rig -	Rig 44 -	(Pro) Rig 60 -	Day Pack -
ORIGIN				
COST (inc Tax/VAT) Currency conversion only	£66 $0 €90	£69 $0 €94	£83 $0 €113	£0 $0 €0
SPECIFICATIONS VOLUME L/US Gallon intended market	33L/8.7gal Pro Arb	44L/11.6gal Pro Arb	60L/15.8gal Pro Arb	0L/0gal Pro Arb
SPECIFICATIONS NOMINAL ROPE/LOAD CAPACITY	0m 0'	0m 0'	0m 0'	0m 0'
SPECIFICATIONS WEIGHT empty	0kg 0lb	0kg 0lb	0kg 0lb	0kg 0lb
SPECIFICATIONS DIMENSIONS	35 x 28 cm 13.8 x 11"	40 x 32cm 15.7 x12.6"	46 x 45cm 18 x 17.7"	0 x 0 x 0cm 0 x 0 x 0"
FEATURES BACK STRAPS HANDLES HAUL EYE(S)	- - -	- - -	- - -	- - -
FEATURES POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	- - - - -	- - - - -	- - - - -	- - - - -
FEATURES WATERPROOF ID-PANEL DRAIN/VENT	- - - -	- - - -	- - - -	- - - -
FEATURES LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	- - - - - -	- - - - - -	- - - - - -	- - - - - -
OUTER MATERIALS REFLECTIVE TRIM	- -	- -	- -	- -
OTHER COLOURS				
NOTES	-	-		-
WEBSITE	-	-		-



SILVER BULL
Basic Sml 21
£36 $0 €0
21L/5.5gal Pro Arb
0m 0'
0kg 0lb
30 x 30cm 12 x 12"

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SILVER BULL
Basic Med 28
£40 $0 €0
44L/11.6gal Pro Arb
0m 0'
0kg 0lb
40 x 30cm 15.7 x 12"

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SILVER BULL
Basic lg 35
£42 $0 €0
33L/8.7gal Pro Arb
0m 0'
0kg 0lb
50 x 30cm 19.7 x 12"

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SILVER BULL
Basic XL 43
£50 $0 €0
44L/11.6gal Pro Arb
0m 0'
0kg 0lb
60 x 33cm 23.6 x 13"

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-



SILVER BULL
scabbard Bag
£0 $0 €90
L/0gal Pro Arb
0m 0'
0kg 0lb
79 x 39cm 31 x 15.4"

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SILVER BULL
Mesh
£78 $0 €113
0L/0gal Pro Arb
0m 0'
0kg 0lb
46 x 34cm 18.1 x 13.4"

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SILVER BULL
Twinline
£68 $0 €113
0L/0gal Pro Arb
60+45m 0'
0kg 0lb
46 x 34cm 18 x 13.4"

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-



SINGING ROCK
Carry Bag 28
£0 $0 €0
28+10L/7.4+2.6gal Pro Access
0m 0'
0kg 0lb
0 x 0 x 0cm 0 x 0 x 0"

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-
singingrock.com



SINGING ROCK
Rescue Bag 30
£0 $0 €0
28+10L/7.4+2.6gal Pro Access
0m 0'
0kg 0lb
0 x 0 x 0cm 0 x 0 x 0"

-- -- -

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-
singingrock.com



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HAUL EYES = can carry the entire weight of the bag & contents eg. for hauling or attaching to harness.May double as handles shown as 1/1
STORE SAW=**pouch or scabbard for hand saw**
POP= Popper or press stud
BUCKLE ROLL TOP= all roll tops are closed with a push-fit/Fastex buckle
PES = Polyester
●●●●● =Partial feature or OK but not ideal
□□□□□ = Option






	MANUFACTURER	SINGING ROCK	SINGING ROCK	SINGING ROCK	SINGING ROCK
	MODEL litres/liters VARIANT	Gear 35 -	Drybag 40 -	Gear 50 -	Drybag 40 -
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0
SPECIFICATIONS	VOLUME L/US Gallon intended market	35L/9.2gal Pro Access	40L/10gal Pro Access	50L/30.2gal Pro Access	40L/10gal Pro Access
SPECIFICATIONS	NOMINAL ROPE/LOAD CAPACITY	0m 0'	0m 0'	0m 0'	0m 0'
SPECIFICATIONS	WEIGHT empty	0kg 0lb	0kg 0lb	0kg 0lb	0kg 0lb
SPECIFICATIONS	DIMENSIONS	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"
FEATURES	BACK STRAPS HANDLES HAUL EYE(S)	---	---	---	---
FEATURES	POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	-- -- -	-- -- -	-- -- -	-- -- -
FEATURES	WATERPROOF ID-PANEL DRAIN/VENT	---	---	---	---
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	------	------	------	------
	OUTER MATERIALS REFLECTIVE TRIM	--	--	--	--
	OTHER COLOURS	■ ■		■ ■	
	NOTES	-	-	-	-
	WEBSITE	singingrock.com	singingrock.com	singingrock.com	singingrock.com

Images NOT to Scale
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	MANUFACTURER	STEIN	STEIN	STEIN	STEIN
	MODEL litres/liters VARIANT	Utility 15 -	Utility 25 -	Vault 25 -	Vault 30 -
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£24 $0 €0	£48 $0 €0	£0 $0 €0	£60 $0 €0
SPECIFICATIONS	VOLUME L/US Gallon intended market	15L/3.9gal Pro Arb	25L/6.6gal Pro Arb	25L/6.6gal Pro Arb	30L/7.9gal Pro Arb
SPECIFICATIONS	NOMINAL ROPE/LOAD CAPACITY	0m 0'	0m 0'	0m 0'	0m 0'
SPECIFICATIONS	WEIGHT empty	0kg 0lb	0kg 0lb	0kg 0lb	0kg 0lb
SPECIFICATIONS	DIMENSIONS	0 x 0 x 0cm 0 x 0 x 0"	40 x 30 x 30cm 15.7 x 12 x 12"	50 x 30 x 30cm 19.7 x 12 x 12"	0 x 0 x 0cm 0 x 0 x 0"
FEATURES	BACK STRAPS HANDLES HAUL EYE(S)	---	---	---	---
FEATURES	POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	-- -- -	1- 24- -	-- -- -	-- -- -
FEATURES	WATERPROOF ID-PANEL DRAIN/VENT	---	●-■	●-■	●-■
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	------	■	■	■
	OUTER MATERIALS REFLECTIVE TRIM	PVC-	PVC-	PVC-	PVC-
	OTHER COLOURS				
	NOTES	-	-	-	-
	WEBSITE	steinworldwide.com	steinworldwide.com	steinworldwide.com	steinworldwide.com

ROPE/GEAR BAGS

					
SKYLOTEC	**SKYLOTEC**	**SKYLOTEC**	**SKYLOTEC**	**SKYLOTEC**	**SKYLOTEC**
Classic 9 ACS-0009-1	**Classic 22** ACS-0009-2	**Classic 30** ACS-0009-3	**Classic 38** ACS-0009-4	**Tool Bag Pro Lift 25** ACS-0133-2	**Tool Bag Pro Lift 40** ACS-0133-4
£20 $0 €21	£24 $0 €27	£26 $0 €29	£29 $0 €31	£00 $00 €00	£00 $0 €00
9L/5.8gal Pro Access	22L/5.8gal Pro Access	30L/6.6gal Pro Access	38L/10galPro Access	25L/6.6galPro Access	40L/10galPro Access
15m/50' x 11mm	50m/164' x 11mm	90m/295' x 11mm	130m/426' x 11mm	130m/426' x 11mm	130m/426' x 11mm
140g 0lb	310g 0lb	390g 0lb	520g 0lb	600g 0lb	700g 0lb
26 x 21.5 x 16.5cm 10.2 x 8.5 x 6.5"	45 x 30 x 28cm 17.7 x 11.8 x 11"	45 x 40 x 28cm 17.7 x 0 x 11"	50 x 45 x 28cm 19.7 x 17.7 x 11"	00 x 00 x 00cm 00 x 00 x 00"	00 x 00 x 00cm 00 x 00 x 00"
-2-	-2-	-2-	-2-	-2-	-2-
-- 2- -	-- 2- -	-- 2- -	-- 2- -	-- 2- -	-- 2- -
---	---	---	---	---	---
■	■	■	■	■	■
Ballistic Nylon	Ballistic Nylon	Ballistic Nylon	Ballistic Nylon	Nylon	Nylon
-	-	-	-	-	-
skylotec.com	skylotec.com	skylotec.com	skylotec.com	skylotec.com	skylotec.com

					
STEIN	**STEIN**	**STEIN**	**STERLING ROPES**	**STERLING ROPES**	**STERLING ROPES**
Utility 50	**Voyager 60**	**Utility 70**	**RopeBag S 17** MDBAGROPEBM17	**RopeBag M 31** MDBAGROPEBM31	**Rope Bag L 45** MDBAGROPEBL45
£60 $0 €0	£108 $140 €0	£90 $0 €0	£52 $60 €61	£63 $70 €74	£76 $80 €90
50L/13.2galPro Arb	60L/15.8gal Pro Arb	70L/18.5gal Pro Arb	17L/4.5gal Pro Access	31L/8.1gal Pro Access	45L/11.89gal Pro Access
0m 0'	0m 0'	0m 0'	41kg/90lb 46mx11mm	41kg/90lb 61mx11mm	41kg/90lb 92mx11mm
0kg 0lb	0kg 0lb	0kg 0lb	kg 0lb	0.81kg 0lb	0kg 0lb
48 x 38 x 38cm 18.9 x 15 x 15"	60 x 37 x 27cm 0 x 0 x 0"	60 x 40 x 27cm 23.6 x 15.7 x 10.6"	53 x 20.3cm 21 x 8"	53 x 28 cm 21 x 11"	69 x 28cm 27 x 11"
---	---	---	22-	22-	22-
1- -- -	1- -- ■	1- -- ■	-- 101 -	-- 101 -	-- 121 -
●-■	■-■	■-■	●■■	●■■	●■■
■	■+■	■+■	■	■	■
PVC-	Ballistic Nylon-	PVC-	1600D Polyester-	1600D Polyester-	1600D Polyester--
-	Will fit 3xVault 15L in a stack. 2L front pocket	Will fit 3xVault 15L+ bleed control in a stack.	-	-	-
steinworldwide.com	steinworldwide.com	steinworldwide.com	sterlingrope.com	sterlingrope.com	sterlingrope.com

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	MANUFACTURER	TEUFELBERGER	TEUFELBERGER	TEUFELBERGER	TEUFELBERGER
	MODEL litres/liters VARIANT	Rope Bucket 25	Rope Bucket 30	Rope Bucket 50	Rope Bucket 80
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£0 $210 €170	£0 $225 €185	£0 $330 €0	£0 $370 €276
SPECIFICATIONS	VOLUME L/US Gallon intended market	25L/6.6gal Pro Access	50L/13.2gal Pro Access	50L/13.2gal Pro Access	80L/21.1gal Pro Access
SPECIFICATIONS	NOMINAL ROPE/LOAD CAPACITY	0m 0'	0m 0'	0m 0'	0m 0'
SPECIFICATIONS	WEIGHT empty	0kg 0lb	0kg 0lb	0kg 0lb	0kg 0lb
SPECIFICATIONS	DIMENSIONS	35 x 35 x 35cm 13.8 x 13.8 x 13.8"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"	0 x 0 x 0cm 0 x 0 x 0"
FEATURES	BACK STRAPS HANDLES HAUL EYE(S)	-2-	-2-	22-	22-
FEATURES	POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	-- MultipleMultiple -	-- MultipleMultiple -	-- MultipleMultiple -	-- MultipleMultiple -
FEATURES	WATERPROOF ID-PANEL DRAIN/VENT	--■	--■	--■	--■
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	■	■	■	■
	OUTER MATERIALS REFLECTIVE TRIM	44oz Vinyl	--	--	--
	OTHER COLOURS				
	NOTES	Can be customised for any ext/int gear carriage	Can be customised for any ext/int gear carriage	Can be customised for any ext/int gear carriage	Can be customised for any ext/int gear carriage
	WEBSITE	teufelberger.com	teufelberger.com	teufelberger.com	teufelberger.com

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	MANUFACTURER	TREERUNNER	TREERUNNER	WEAVER ARBORIST	WEAVER ARBORIST
	MODEL litres/liters VARIANT	Vented Rope Bag 31	Spring Bag 54	Basic 26	DeLuxe 22 08-07185
	ORIGIN				
	COST (inc Tax/VAT) Currency conversion only	£0 $0 €40	£0 $0 €44	£41 $0 €0	£73 $0 €0
SPECIFICATIONS	VOLUME L/US Gallon intended market	31L/8.1gal Pro Arb	54L/14.2gal Pro Arb	26L/6.8gal Pro Arb	22L/5.8gal- Pro Arb
SPECIFICATIONS	NOMINAL ROPE/LOAD CAPACITY	0m 0'	0m 0'	0m 0'	75m x 11mm >150' x ½"
SPECIFICATIONS	WEIGHT empty	600g 0lb	0kg 0lb	0kg 0lb	0kg 0lb
SPECIFICATIONS	DIMENSIONS	50 x 28 x 28cm 19.7 x 11 x 11"	42 x 39 x 39cm 16.5 x 15.4 x 15.4"	35.6 x 30cm 14 x 12"	73.7 x 38 cm 29 x 15"
FEATURES	BACK STRAPS HANDLES HAUL EYE(S)	22-	12-	---	- 2-
FEATURES	POCKETS Ext/Int EYES/LOOP Ext/Int STORE SAW	1- -1 -	1- -4 -	-- -- -	-- -- -
FEATURES	WATERPROOF ID-PANEL DRAIN/VENT	---■	--■	●-■	●-■
FEATURES	LID VELCRO POP ZIPPED DRAW-CORD BUCKLE ROLL-TOP	■	■	■	■
	OUTER MATERIALS REFLECTIVE TRIM	Ballistic Nyon -	Tarpaulin(PVC) -	--	1200D Polyester
	OTHER COLOURS			■	■
	NOTES	-	3 height adjustments straps. Mesh lid	-	* 1 eye= shoulder+storage strap secured by 2 small fastex buckles
	WEBSITE	grube.de	grube.de	-	weaverarborist.com

ROPE/GEAR BAGS

					
TEUFELBERGER	TREEHOG	TREERUNNER	TREERUNNER	TREERUNNER	TREERUNNER
Bucket Mule	Rope&Kit Bag 40 TH4000	Rope Bag 28	Rope Tarp Bag 24	Rope Tarp Bag 28	Rope Tarp Bag 32
£45 $0 €0	£50 $0 €0	£36 $0 €35	£38 $0 €42	£47 $0 €44	£51 $0 €48
0L Pro Access	40L/10gal Pro Arb	28L/7.4gal Pro Arb	24L/6.3gal Pro Arb	28L/7.4gal Pro Arb	32L/8.4gal Pro Arb
0m 0'	0m 0'	0m 0'	0m 0'	0m 0'	0m 0'
0kg 0lb	0kg 0lb	570g 1.25lb	908g 2lb	1.05kg 2.3lb	1.09kg 2.4lb
100 x 31 x 30cm 39.4 x 12 x 12"	0 x 0 x 0cm 0 x 0 x 0"	40 x 30cm 15.8x 12"	35 x 40 x 30cm 13.8 x 15.8 x 12"	40 x 40 x 30cm 15.8 x 15.8x 12"	45 x 40 x 30cm 17.7 x 15.8 x 12"
---	2-2	-21	-21	-21	-21
-- -- -	-- -- -	4- -- -	2- 6- -	2- 6- -	2- 6- -
---	---	---	---	---	---

--		--	Tarpaulin(PVC) -	Tarpaulin(PVC) -	Tarpaulin(PVC) -
-		-	-	-	-
teufelberger.com	treehog.co.uk	grube.de	grube.de	grube.de	grube.de

					
WEAVER ARBORIST	WEAVER ARBORIST	WEST COAST CLIMBER	WEST COAST CLIMBER	WEST COAST CLIMBER	
ull Rope Deploy 52 08-07161.	All Purpose 84 08-07185	Rocket Mini 36	Classic 45	Rocket 55	
£71 $0 €0	£73 $90 €0	£101 $125 €117	£42 $52 €49	£117 $146 €137	
52L/13.7gal Pro Arb	84L/22.2gal Pro Arb	36L/9.5gal Pro Arb	45L/11.9gal Pro Arb	55L/14.5gal Pro Arb	
0m 200' x ⅝"		75m x 11mm >150' x ½"	150m x 11mm 300' x ½"	150m x 11mm >300' x ½"	
0kg 0lb	1.22kg 2.7lb	0kg 0lb	0kg 0lb	0kg 0lb	
45.7 x 38 cm 18 x 15"	73.7 x 38 cm 29 x 15"	35.6 x 30.4cm 14 x 12"	45.7 x 30.4cm 18 x 12"	69 x 38cm 27 x 15"	
[1] 2-		[2] 1-	- 2-	2 1-	
-- -- -	1- --■	-- -- -	-- 1- -	1- 1- -	
●-■	●-■	●-■	●-■	●-■	
■	■	■	■	■	
1200D Polyester	1200D Polyester	1680D Ballisic Nylon	1000D Cordura	1680D Ballisic Nylon	
			■■■		
eld closed by 2 small fastex buckles	Side zip allows access and visibily of main compartment gear	-	-	-	
weaverarborist.com	weaverarborist.com	nugreenstore.com	nugreenstore.com	nugreenstore.com	

Bungee CHAINSAW Lanyards/ Tethers



The chainsaw holding lanyard (or leash or tether) stands out as an essential accessory for professional arborists. This equipment allows secure and transport the chainsaw optimally when working at height.

The main reason to use a chainsaw holder is security. When a chainsaw is attached to a lanyard, the Risks of accidental falls are considerably reduced. This is particularly important when the pruner is working high up, where a chainsaw falling several meters can cause serious injury or significant property damage. By securing the chainsaw with a lanyard, you protect the tool against falls and shocks, but also the worker and its immediate environment in the event of loss of control.
There are more and more models of lanyards and each has advantages and disadvantages. all bungee lanyards have, by definition, a small degree of shock absorbency but some are equipped with a full-spec shock reduction system that absorbs impact force that would otherwise affect the harness and the user in the event of a fall.
Lengths, widths and attachment system vary from model to model to another, but one of the most important aspects to consider is the lengthening of the strap with stretch, which is closely related to its Maximum Utilization Capacity (CMU). Here are the main criteria to consider when making your selection:

LENGTH AND WIDTH OF THE LANYARD

The lanyard must provide adequate length to allow sufficient range of movement without risk of entanglement. A lanyard that is too short can restrict movement of the climber, while a lanyard that is too long can become cumbersome and increase the risk of accidents especially when closer to the ground or to a hazard like cables. The width of the lanyard can influence its ability to support more or less significant loads. A wider or thicker lanyard is generally capable of supporting higher loads, but the only data you can you can trust is the CMU (in France= Charge Minimale de Rupture) or MBS which is the Minimum Breaking (or Rupture) load.

MAXIMUM USE CAPACITY

The CMU or MBS is essential information and must absolutely support the weight of your chainsaw ***as well as the additional forces generated during movements***. However, some also have built-in 'weak' points that will allow the saw to break away under extreme loading such as could occur if the saw or lanyard snag on a large limb or section that then threatens to drag you with it! it's a fine line between safety of the user in this event and ensuring that the chainsaw remains secure during 'robust' work.

CONNECTION

The connection must be secure and easy to use.
THE carabiners and loops must be able to withstand the weight of the chainsaw without risk of breakage. Make sure that the locking mechanisms are reliable and easy to handle, even with protective gloves. Most chainsaw lanyards have the option of a girth-hitch connection to the handle or attachment ring using the end loop in the webbing which is often sewn inverted to make the girth hitch neater. However, for quicker change-arounds, some simply clip a carabiner from the metal ring a little further back. This metal ring is otherwise intended to be used as the short harness clip-point when climbing and manoeuvring rather than have the saw dangling a metre or so below you. Note that virtually any chainsaw lanyard can be used the opposite way around to the intended way shown in our tables.

ELONGATION

The elongation of a lanyard refers to the ability of the material to stretch under tension. This property can absorb shock and reduce the forces transmitted to the user in the event of a fall or sudden movement. A well-designed lanyard with an extension adequate acts as a shock absorber, protecting the both the pruner and the equipment.

STANDARDS

The US has ANSI/ISEA 121-2018 referring to drop-prevention but unusually the EU was a bit behind the game on this one.



Drayer's Tango Vario Plus allows each tool to have it's own loop and then connect to the lanyard as needed.

FOR TOOLS NOT PPE

The lanyards in this guide are not all from the arb industry but can all be used for chainsaws. There are many bungee-lanyards from construction and rope access intended for smaller power tools - perhaps still 5kg limit but that would stretch the limits (so to speak) of a rear-handled chainsaw. We have only included the more arb oriented models but have differentiated the lighter and heavier duty models because a top-handle chainsaw will generally be just under 5kg with the battery or a full tank of fuel while a larger, rear-handle chainsaw may go several kg beyond that. There are also a number of even lighter lanyard variants with bungee attachments for use with handsaws and light tools like this *Skylotec* Long Leash on the right - these are NOT for use with chainsaws but they will be included in the BUYERS GUIDE version of this article later this year. We have stuck with bungee or elasticated lanyards because why would you use anything else? We all used to use lengths of rope and slings but retracting the working length when you are not using the chainsaw and the extreme-load breakaway facility of some makes working much safer.





None of these lanyard are intended for personal safety in the sense of climbing PPE but there are lanyards that will do both jobs - the tactical lanyard from *Warrior (pic top right)* using Kong's Frog connector could easily do the job of a chainsaw lanyard BUT.....

1) Never mix rigging or tool connector use with climbing or personal protection.
2) Personal protection makes this more expensive at around £50 compared to a more usual £20-30
3) This is designed specifically to hold your weight no matter what - it will not break away if a trunk or limb tries to snatch your saw away with you attached to it but that is also the case with most chainsaw lanyards.



Images NOT to Scale

●● = OK but not ideal

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MBS in the case of these lanyards, usually refers to impact force and should therefore be in kiloNewtons kN or pounds force.
For reference 1kN=102kg of force or 225 pound-force









BRAND	BUCKINGHAM MFG	CAMP	CAMP	ED
MODEL VARIANT	Tear-Away Snap	Sawer	Sawer Pro	Dyno
PRODUCT CODE	25G12A 25G13A	2151	2300	
ORIGIN				
COST approx retail inc tax	£3234 $4143 €3841	£21 $35 €22	£29 $36 €32	£31
BREAKAWAY	■	■	■	
CHAINSAW/HEAVY TOOL	-	■	■	
LIGHT CHAINSAW	■	■	■	
RETRACTED LENGTH	65cm /25.6"	90cm /35.4"	75cm /29.5"	90c
EXTENDED LENGTH	120cm /48"	135cm /53"	125cm /49.2"	140
MATERIAL	Nylon	Nylon	Nylon	Polyest
WEBBING WIDTH / Ø	25mm / 1"	13-20mm / 0.5-0.8"	28mm / 1.1"	25
WEIGHT	146g / 5.1oz	95g / 3.4oz	130g / 4.6oz	90g
SWL MBS	7kg /15lb 90kg/200lb*	10kg /22lb 200kg	10kg /22lb 200kg	20kg /
CONNECTER/SHORTEN	Steel ring	Steel ring	Steel ring	Ste
HARNESS TERMINATION	Inverted loop	Snap alloy carabiner	Snap alloy carabiner	Inver
TOOL-END TERMINATION	Sml steel ring	Inverted loop	Inverted loop	Sev
STANDARDS	ANSI			
NOTES	* The tear-away element de-ploys at 90kg of force. Also available without terminal steel ring (as a sewn eye for your own carabiner/connector)	The Sawer lanyard features a metal ring, for quick and easy attachment to a tool-carabiner and a 13 or 28 mm elastic tubular strap. The tools are connected thanks to a lark's foot made with the strap. The connection to the harness safety is by aluminum alloy carabiner. "Sawer" is designed to break at around 200-250 kg, to help avoid risk of injury to the user in the event of a fall or being snagged by falling wood.	As per the Sawer with a more robust webbing but the same breakaway facility via the small integral carabiner.	Intergrated ruptures a (dropped op
WEBSITE	buckinghammfg.com	camp.it	camp.it	edel









ELRID saw ABS	HARKIE Chainsaw	HUSQVARNA Anti-Shock	HUSQVARNA Chainsaw Strop	
H2345	H2345	534 10 08-01	577 43 80-01	
$40 €25	£19 $26 €23	£67 $90 €80	£36 $40 €35	
■	no	■	no	
■	■	-	■	
■	■	■	■	
m /35.4"	90cm /35.4"	73cm /28.7"	50cm /19.7"	
cm/55.1"	130cm /51"	135cm /53"	125cm /49.2"	
ter & Nylon	Polyester	Polyester & Nylon	Nylon	
mm/1"	25mm/1"	25mm/1"	25mm / 1"	
g / 3.3oz	110g/3.9oz	140g/5oz	140g / 4.9oz	
44lb 240kg	30kg /66lb	20kg /44lb >200kg/440lb	10kg /22lb 200kg	
eel ring	Steel ring	Alloy ring	Alloy ring	
rted loop	Loop	Shock absorber	Shock absorber	
wn eye	Inverted loop	Inverted loop + Alloy ring	Inverted loop + Alloy ring	
d shock absorber at 2.4kN impact or trapped saw/ perator.)		integrated shock absorber. Ruptures at 2 kn	General purpose, relatively short lanyard	
lrid.com	harkie.co.uk	husqvarna.com	husqvarna.com	

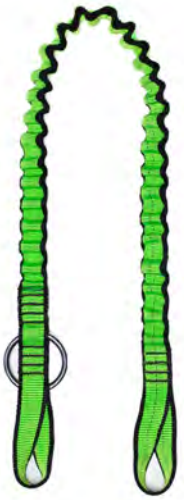
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BRAND	MILLER	NEVER LET GO	NEVER LET GO
MODEL VARIANT	Longue PT	Chainsaw	HD FIRE RESIST
PRODUCT CODE	-	101609	101373 101716
ORIGIN			
COST approx retail inc tax	£28 $40 €35	£14 $20 €17	£4665 $6186 €5577
BREAKAWAY	no	no	no
CHAINSAW/HEAVY TOOL	■	■	■
LIGHT CHAINSAW	●	●	●
RETRACTED LENGTH	60cm /23.6"	85cm /33.5"	8090cm /31.535.4"
EXTENDED LENGTH	122cm /48"	130cm /51.2"	130140cm /51.255.1"
MATERIAL	Nylon	Nylon	Nylon/Dyneema/Aramid
WEBBING WIDTH / Ø	17mm / 0.7"	25mm / 1"	1925mm / 0.75 1"
WEIGHT	70g / 2.5oz	105g /3.7oz	175g/6.2oz
SWL MBS	9kg /20lb 90kg	10kg /22lb	20kg /44lb
CONNECTER/SHORTEN	Steel ring	Steel ring	-
HARNESS TERMINATION	Alloy snap carabiner	Inverted loop	Dyneema Loop
TOOL-END TERMINATION	Loop	Inverted loop	Alloy carabiner
STANDARDS		ANSI, CE, UKCA	ANSI, CE, UKCA
NOTES	The miller brand polyamide lanyard helps secure the chainsaw and to facilitate its connection to the harness. Its load capacity reaches just under 10kg and once stretched it can measure up to 122 cm.		Auto lock alloy carabiner
WEBSITE	honeywell.com	Neverletgo.Com	Neverletgo.com

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BRAND	NEVER LET GO	NEVER LET GO	NOTCH	NO
MODEL VARIANT	Super Bungee Chainsaw	Super Bungee Tool	Quick Cinch Sml	Quick C
PRODUCT CODE	101610 101623	101419	NQCCL-17	NQC
ORIGIN				
COST approx retail inc tax	£4465 $6088 €5378	£77 $104 €93	£29 $33 €37	£32 $
BREAKAWAY	no	no	no	n
CHAINSAW/HEAVY TOOL	■	■	●	
LIGHT CHAINSAW	■	■	■	
RETRACTED LENGTH	80cm/31.5"	160cm/63"	80cm/31.5"	80cm/
EXTENDED LENGTH	200cm/78"	340cm/133"	152cm/60"	152cn
MATERIAL	Nylon	Nylon	Nylon	Nyl
WEBBING WIDTH / Ø	25mm/1"	25mm/1"	17mm/0.8"	25mr
WEIGHT	110/3.9oz 210g/7.4oz	345g/12.2oz	230g / 8oz	270g /
SWL MBS	10kg / 22lbs	20kg / 44lbs	15kg / 33lbs	25kg /
CONNECTER/SHORTEN	Sewn eye Steel ring	-	Steel ring	Steel
HARNESS TERMINATION	Loop	NOT for HARNESS	Inverted loop	Inverte
TOOL-END TERMINATION	Inverted Loop	Inverted Loop	Sml steel ring + sewn	Sml steel r
STANDARDS	ANSI, CE, UKCA	ANSI, CE, UKCA		
NOTES		Very long. Intended for use in an elevated platform/ cherry picker NOT for connecting to your harness. Integral captive eye carabiner for cage connection	The quick cinch lanyard solves a common problem faced by climbers attempting to remove a chainsaw that has been choked to the small metal d-shaped fastening buckle. The quick cinch system allows simple attachment, without having to girth hitch your chainsaw to the small metal d-ring.	The quick cinch a common prob climbers attemp a chainsaw that choked to the s d-shaped faster The quick cinch simple attachm having to girth h chainsaw to the d-ring.
WEBSITE	Neverletgo.com	Neverletgo.com	notchequipment.com	notchequip

TCH	NOTCH	PETZL
Cinch Lg	Modular	TOOLEASH
CL-25	VSG99426	S049AA00
37 €39	£40 $40 €48	£25 $35 €25
o	■	no
■	■	-
■	■	■
/31.5"	99cm /39"	40cm/15.75"
n/60"	167.6cm/66"	105cm/41.3" *
lon	Nylon	Polyester
m/1"	15mm/0.6"	25mm/1"
/ 9.5oz	230g / 8oz	56g/2oz
/ 55lbs	30kg / 65lb	5kg/11lb
ring	Steel ring	crab (using optional
ed loop	Inverted loop	Inverted loop
ing + sewn	Clip-on inverted loop	Sewn eye + alu
		ANSI, CE, UKCA
lanyard solves blem faced by pting to remove has been mall metal ing buckle. system allows ent, without nitch your small metal	Clip-on tool lanyards allow for fast-switching between tools.	* This extends to up to 120cm with the addition of one of three sizes of optional leash extensions to make switching between tools easier.
pment.com	notchequipment.com	petzl.com



Images NOT to Scale

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BRAND	REECOIL	REECOIL	REECOIL	ROC
MODEL VARIANT	Standard V2	Big Boss	Full Reach	R
PRODUCT CODE	-	-	-	
ORIGIN				
COST approx retail inc tax	£23 $30 €26	£62 $75 €66	£54 $57 €64	£28
BREAKAWAY	no	no	no	
CHAINSAW/HEAVY TOOL	●	■	-	
LIGHT CHAINSAW	■	■	■	
RETRACTED LENGTH	69cm/27"	35cm/13.8"	55cm/21.6"	91
EXTENDED LENGTH	140cm/55"	170cm/67"	150cm/59"	127
MATERIAL	Nylon	Nylon	Nylon	N
WEBBING WIDTH / Ø	20mm/0.8"	25mm/1"	25mm/1"	25
WEIGHT	100g/3.5oz	358g/12.6oz	200g/7oz	203
SWL MBS	5kg /11lb 210kg/462lb	12kg/26.4lb*	5.3kg /11.75lb	6.8
CONNECTER/SHORTEN	Steel ring	-	Sewn eye - optional	Ste
HARNESS TERMINATION	Inverted loop	Inverted loop	Inverted loop	Inver
TOOL-END TERMINATION	Sewn eye	Sewn eye	Sewn eye	Sewn
STANDARDS				
NOTES		* equates to 12kg dropped 1.5m to remain below the WLL of 107kg/235lb. Designed for heavier, rear-handled saws. Once girth-hitched to the handle there is a carabiner eye protruding for direct harness attachment	Carabiner not included Available in Pink ■ for Breast-Cancer Foundation	Carabi Also available
WEBSITE	reecoil.com	reecoil.com	reecoil.com	rockn

CHAINSAW LANYARDS



K n ARB	SAFEWAZE	SINGING ROCK	SINGING ROCK	SKYLOTEC
aider	Med Heavy Duty Tether	Tool Holder	Tool Holder MAX	Stropp
-	SW431 SW433	W1028BY00	W1054BR00	ACS-0285
$33 €35	£30 $34 €37	£11 $15 €12	£13 $19 €15	£30 $41 €26
no	no	no	no	no
■	■	-	■	●
■	■	■	■	■
cm/36"	127cm /50" 66.6"	70cm /33.5"	85cm /33.5"	70cm/27.6"
7cm/50"	168cm /66" 80.5"	130cm /51"	150cm / 59"	120cm/47.2"
Nylon	Polyester	Nylon & Polyester	Nylon & Polyester	Polyester
5mm/1"	25mm/1"	10mm/0.4"	16mm/0.6"	25mm/1"
3g/7.2oz	200g /7.1oz	30g /1oz	95g / 3.4oz	120g/4.2oz
3kg/15lb	16kg/35lb	3kg/6.6lb 25kg/55lb	10kg/22lb 300kg/660lb	10kg/22lb
eel ring	-	Stainless steel ring	Stainless steel ring	Steel ring
rted loop	Inverted loop	Sewn eye	Sewn eye	Loop
eye + alu	Captive Swivel Carabi-ner	Inverted loop	Inverted loop	Sml steel ring
	ANSI-ISEA-121			
ner included e in Neon Green ■	Also available with two captive eye swivel carabiners		A heavier duty version of the toolholder which will not breakaway in the event of chainsaw/lanyard being snagged	The Stropp lanyard is a heavy-duty elastic strap which resists permanent twisting or stretching of the strap, even after prolonged use. The rings at the end of the stropp allow it to be easily attached to your harness with a carabiner. With a capacity load of up to 10 kg, it is designed for tools such as drills or chainsaws for example.
arbor.com	safewaze.com	singingrock.com	singingrock.com	skylotec.com

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BRAND	STEIN	TANGO	TANGO	TEUFE
MODEL VARIANT	Bungee Tool Lanyard	Slim	Vario Plus	Anti-Shoc
PRODUCT CODE	5060483280110	15012340005	15012340010	
ORIGIN				
COST approx retail inc tax	£22 $30 €26	£20 $35 €21	£41 $54 €48	£5064 $
BREAKAWAY	no	■	■	
CHAINSAW/HEAVY TOOL	■	■	■	
LIGHT CHAINSAW	■	■	■	
RETRACTED LENGTH	95cm /37.4"	70cm /27.6"	75cm /29.5"	73cr
EXTENDED LENGTH	140cm /55"	140cm /55"	140cm /55"	135c
MATERIAL	Treated Nylon	Polyester	Polyester	Polyest
WEBBING WIDTH / Ø	25mm/1"	15mm/0.6"	15mm/0.6"	25
WEIGHT	140g/5oz	72g/2.5oz	107g/3.8oz	14
SWL MBS	20kg /44lb	70-140*kg /154-308lb	70kg /154lb	20 >224
CONNECTER/SHORTEN	Steel ring	Steel ring	Steel ring	All
HARNESS TERMINATION	Inverted loop	Loop	Small loop + 2x sml rings	Shock abs
TOOL-END TERMINATION	Inverted loop	1 or 2 small rings	Detachable loop	Inverted lo
STANDARDS				
NOTES	Nylon is treated to be water, oil and grease repellant	*Small ring designed to break at 70kg or 140kg if you connect to both rings at the same time.	The *Vario Plus* has detachable tool loops (1 supplied or the kit has 2 spare loops or purchase all components separately) so that chainsaws/tools can be swapped in seconds. The offset buckles ensure that it does not open unintentionally. The small lower loop rests on the chainsaw handle (this fits all chainsaws of all brands, even the largest) and can remain there for a long time. It is sized so that it does not touch the ground. Breakaway strength depends on one small ring or two.	The *Teufelberge* lanyard was the carrying lanyar shock absorber falls or gets stu (static) reaches absorber tears after 70 cm of p the shock of up climber's harne *MBS from 224
WEBSITE	steininternational.com	drayer.de	drayer.de	teufelb











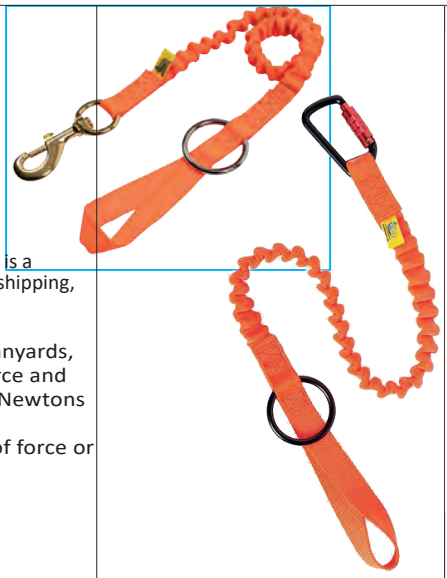
ELBERGER	TREEHOG	TREEHOG	TREEHOG	TREERUNNER
ck Ring +Krab	Standard	Heavy Duty	Mini loop Clip	Chainsaw Strop/overload
	TH1111	TH1112	TH11156	71-778
6685 €5875	£16 $20 €21	£26 $35 €30	£14 $19 €15	£14 $19 €20
■	no	no	no	■
■	■	■	●	■
■	■	■	■	■
m /28.7"	85cm /34"	90cm /35.4"	70cm/27.6"	68cm / 27"
cm /53.1"	120cm /48"	130cm /51.2"	130cm /51.2"	115cm / 45"
ter & Nylon	Polyester	Polyester	Polyester	Polyester
mm/1"	25mm/1"	25mm/1"	25mm / 1"	15mm / 0.6"
0g/5oz	110g/3.9oz	213g/7.5oz	190g/7.5oz	120g/4.2oz
kg /44lb kg/494lb*	30kg /66lb	30kg /66lb	30kg /66lb	35-70kg /77-lb
oy ring	Steel ring	Steel ring	Steel ring	Steel ring
sorber-Option crab	Loop	Loop	Loop	Loop
oop + sml steel ring	Inverted loop	Inverted loop	Inverted loop	Sewn eye+1 or 2 sml rings
r *Antishock* tool e first chainsaw d with an integrated . If the chainsaw ck and the impact 2 kn, the antishock open completely pull to mitigate to 1.5 Kn on the ess. 4 to 240kg of force.				Breakaway rings can be used together to double the 35kg limit to 70kg
berger.com	treehog.co.uk	treehog.co.uk	treehog.co.uk	grube.eu

Images NOT to Scale

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BRAND	WEAVER ARBORIST	WORKGEAR UK	WORKGEAR UK
MODEL VARIANT	Bungee Chainsaw Clip	Arborist	Arborist HD
PRODUCT CODE	08-98228 08-98225	WG-TL04	WG-TL05
ORIGIN			
COST approx retail inc tax	£2030 $1926 €2436	£9 $15 €13	£15 $23 €22
BREAKAWAY	no	no	no
CHAINSAW/HEAVY TOOL	■	■	■
LIGHT CHAINSAW	■	■	■
RETRACTED LENGTH	76.2cm /3330"	90cm /35.4"	90cm /35.4"
EXTENDED LENGTH	116cm / 4845.5"	130cm / 51"	120cm / 47.2"
MATERIAL	Nylon	Nylon	Nylon
WEBBING WIDTH / Ø	25mm / 1"	25mm / 1"	25mm / 1"
WEIGHT	159g/5.6oz 250g/8.8oz	190g/6.7oz	221g/7.8oz
SWL MBS	6.8kg /15lb 8kN	30kg /66lb	30kg /66lb
CONNECTER/SHORTEN	Steel ring	Steel ring	Steel ring
HARNESS TERMINATION	Sewn Eye+Crab Clip	Sewn Eye	Sewn Eye+ CE Crab
TOOL-END TERMINATION	Inverted loop	Inverted loop	Inverted loop
STANDARDS			
NOTES	Also available with just one ring £14 or two rings £15. Optional tool extension loops to connect to bungee lanyard carabiner.	Available with carabiner for £3/$5/€4 more.	Available without carabiner for £3/$5/€4 less.
WEBSITE	weaverarborist.com	workgearuk.com	workgearuk.com

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TYPE 1 & 2, EN 397, NFPA 1951



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Core - 100% Nylon 6.6
Sheath - 100% Polyester



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PRECISION AND EASE**

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



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Materials: synthetic leather, cowhide, spandex

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18 to 72 volt







We will shortly be adding chainsaws, blowers and safety clothing to this ARBORIST BUYERS GUIDE so as a prelude we'll start with batteries. We have limited these initially to a minimum of 18v because there are just too many 12v batteries to consider. So, while there are pro tools that run on 12v platforms (indeed we have hydraulic rescue tools running on the Makita 12v batteries) if there are no top-handle chainsaws using them we haven't included them and at the moment 18v is the minimum for pro tools while 12v are reserved for home/smallholding use.

DeWalt are a confusing brand because the US and Europeans list voltages differently (max vs nominal) and DeWalt keep changing their ranges - currently you could buy 5 different series of DeWalt batteries but there should only be three and the Europeans merge two of those series into one! The Europeans also give a different product code which, unlike the US, does not always reflect the Ah rating for the battery. The US sensibly uses a code to reflect the voltage and then the AH eg. DCB2015 is a 20volt 15Ah battery. We disappeared down a rabbit-hole with this one!



The arb industry has three unique brands of batteries for professionals *Husqvarna, Stihl* and Echo which all drive their own products but Husqvarna and Stihl have started to branch out and be used by other brands of equipment - the *Skylotec* Powered Ascender uses *Husqvarna* and the *Edel* Powered Ascender uses the *Stihl* platform - we will see more of this. There are a plethora of broad-spectrum industrial brands that are also used in arb/forestry/landscaping, *Milwaukee, Makita* and *De Walt* principle among these. *Milwaukee* in particular are a key, widely available battery with the *M18* having been adopted by hardcore rescue hydraulic brand Weber and proving that 18v will drive the largest equipment.

BATTERY TECHNOLOGY

ALL of the saws in this list are Lithium Ion (Li) and the effectiveness of the higher Amp-hour batteries might be lost on your chainsaw if its electronics aren't up to managing these higher Ah batteries. Where they can, such as the professional grade Stihl and Husqvarna saws, you're better off stumping up for their higher Ah options to give longer run times. Most chainsaws have brushless motors with 'smart' circuit boards – this means they regulate the load electronically, sensing when you're cutting a thick log as compared to pruning small branches and adjusting the power output accordingly. Having no brushes to wear out increases the lifespan of your saw and the smart element helps mitigate the tendency in underpowered saw/battery combinations for the battery to overheat and cut out to protect itself leading to you needing to swap batteries while it cools down or wait. And waiting never seems to work that well because the battery is a dense mass that retains a lot of residual heat and so overheats quicker the second and subsequent times than it did the first time. Husqvarna's newest batteries have on-board cooling which will negate this and proving once ah=gain that the more you pay, the better your productivity! If your battery-saw combination is cutting out regularly you need to upgrade the battery if a higher Ah is available and compatible or accept that the saw is not up to the job you're asking of it. This will almost always only apply to the less professionally oriented models.

When we first wrote about batteries for chainsaws we said that you were best sticking with the higher voltage packages of 28 to 36v but while that is still the case with Husqvarna and Stihl platforms the emergence f 18v as a battery for high-draw specialist equipment has backed up Makita's original contention some 30 years ago that 18v would be the coverall voltage. Milwaukee have more or less sidelined their original 28v platform in favour of the M18 which is now driving high power rescue hydraulics in life-saving circumstances that









cannot afford to have them fail so they're certainly going to make the grade for chainsaws and industrial tools.

BACKPACKS

Backpacks are an incredibly useful option for extending work duration. They cost a lot of money but you can easily get a full days work out of one backpack and it can reduce your front-end weight. Your back is a much stronger part of the body than arms so is a worthwhile compromise in terms of having to work with your chainsaw on a lead. Since most of you work with a lanyard already what's a wire cord between friends. You do pay for that extended duration in money and with charging times that, in the case of the Echo are five and a half hours but I guess if you're charging overnight prior to a days work this should work out just fine. If a full backpack is beyond your budget but you like the idea of increased duration or reduced front-end weight there are backpack-carriers that simply use the existing battery like EGO and some like Redback have a waist belt. This again requires an extraneous lead similar to the full backpack models and some may find this cumbersome but for ground work in particular it can be useful. If using a backpack for climbing be aware of the huge difference in your center of gravity and all the safety implications that this entails. If being incapacitated in the star position was uncomfortable and dangerous before, imagine that same posture with several extra Kilos flexing your spine. We've not heard it mentioned but it would be highly preferable when climbing to use a backpack in conjunction with a full body harness or chest section giving you the ability to tie in at the sternum during work and negate any chance of inversion.







Mains CHARGERS can be standard or rapid and higher initial cost of a rapid charger can make the difference between waiting around for 20 minutes or an hour or two. These three and the Echo, Milwaukee, Bosch & Makita) are the current crop of battery tools we're using and all seven continue to provide exceptional service, even the EGO which we had not previously used which has a space-station-like charging dock.



You can see that its 54v batteries are larger than the Stihl 36v and the even sleeker Oregon 36v. The charge status is shown as 4 LEDs which illuminate when you press the button. In the case of the EGO it's the round button on the top and the LEDs are around the circumference of the button. Unlike most images in this article, these chargers are in scale to each other.

Images below NOT to scale

CHARGERS

A much overlooked but vitally important consideration. If you buy a kit it will invariably come with a standard single charger. In some cases they may provide a 'Rapid' charger which seems great until you realise that their base charger is a 'rapid'. For all other we would generally expect a standard charger and a rapid/quick charger and maybe a further enhancement as milwaukee has with their 'Super' charger in addition to 'Rapid' and 'Standard' chargers. The difference in speed of charging is very roughly, twice as fast for a 'Rapid' versus a 'Standard' but don't forget that charge times increase as the Ah of your battery increases - a 3Ah may take 30minutes while an equivalent 6Ah would be 70mins. If you need fast turn around a rapid charger is essential but some contest that fast charging lessens the life of your battery. Not sure that's true these days as much as it was back in the days of NiMH and lead acid!

The next consideration is the ability charge multiple batteries at the same time. Most manufactures have at least a twin battery option but some have considerably more either as a racked system secured to your vehicle as the 4-bay Sthl can do or as a more portable option like the 4-bay £$500 Husqvarna below or the 6-bay milwaukee. These multi-chargers are also excellent protective storage measures for your precious batteries so are more of an investment than they might at first appear. The Ego PGX PowerBank below is an off-mains charger for true, in-the-field charging.











IN THE FOLLOWING TABLES

We have included the all-important consideration (if cost is a consideration) of what other tool classes your battery will operate:

FITS TOOLS FOR.....

We have given a generic idea of what types of tools this particular battery will fit because cross-platform capability can be such a key consideration for smaller services/departments/agencies:

■= **CSaw** -Pro Chainsaws

■= **OPE** - DIY Chainsaws & Outdoor Power Equipment inc blowers, brushcutters and strimmers

■= **Trade Tools** - Can be any number of over 200 tools in the case of Milwaukee, DeWalt and Makita etc but it really refers to hand tools like hand drills, impact drill and hammer drills used in vehicle extrication and/or building collapse etc.

■=**Lighting** - A specifically useful item for your battery platform to power - may be anything from a hand torch to area lighting.

■=**Rescue Tools** - Hydraulics Cutters, spreaders, combi, rams and special tools like door breakers and re-bar cutters

■=**Disc Cutter** - either smaller disc cutters or larger circular saws for metal/concrete/masonry cutting

ⓘ=**Special Tools** - Other rescue-specific equipment detailed in the NOTES section

We've added an icon key to the additional features which indicate, from top to bottom:

LED charge indication: This may be visible continuously or you may need to press the button to see what power you have left.

On-board cooling - the battery itself has active cooling as distinct from the charger which is often fan-cooled.

Wifi or Bluetooth connectivity of the battery (not necessarily the tool) for service management & inventory

The IP rating indicating degree of water resistance 54/55/56 or waterproof 57/58

Operating temperature - battery performance is at optimum room temp - colder and hotter will affect performance and work duration.



NEW

PROFESSIONAL QUALITY. POWERFUL CUTTING. BATTERY POWERED.

—

AP SYSTEM



PROFESSIONAL PERFORMANCE:
THE MSA 220 TC-O BATTERY-POWERED CHAINSAW.

AVAILABLE AT YOUR LOCAL **STIHL APPROVED DEALER**

The MSA 220 TC-O is STIHL's most powerful battery arborist chainsaw to date. It's the first STIHL chainsaw that has an LED display and integrated oil sensor, which provides key information during operation. With equivalent cutting performance to the petrol MS 201 TC-M and long-service life, arborist professionals can take on the tough tree maintenance and removal jobs.

The new ADVANCE ProCOM headset and ear defenders on the X-CLIMB helmet allow you to communicate with workers on the ground seamlessly, with simple networking over vast distances for up to 16 people, plus much more.

SMART, EFFICIENT, COMFORTABLE COMMUNICATION:
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OTHER TOOLS IN RANGE:
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=OPE =Rescue Tools =Lighting
ⓘ=Special Tools
●=PARTIAL FEATURE
= Option

	SERIES MODEL NB: 20v/60v in the US is 18v/54v in Europe	COMPANY	FITS TOOLS FOR:...	ORIGIN	COST inc tax / VAT	WEIGHT	BATTERY TYPE VOLTAGE	AmpHours Ah	Energy/ Work-Hours Wh	LEN
	Max XR DCB203 DCB183-XJ	DEWALT			£74 $100 €90	350g 14.6oz	Li ion 18/20v	2 Ah	36 Wh	17
	Max XR DCB230	DEWALT			£0 $00 €00	520g 1.15lb	Li ion 20v	3 Ah	54 Wh	17
	Max XR DCB200	DEWALT			£0 $140 €00	1.27kg 2.8lb	Li ion 18/20v	3 Ah	00 Wh	25
	Max XR DCB240	DEWALT			£0 $130 €00	520g 1.15lb	Li ion 20v	4 Ah	00 Wh	17
	Max XR DCB204 DCB182	DEWALT			£80 $130 €00	630g 1.4lb	Li ion 18/20v	4 Ah	72 Wh	17
	Max XR DCB205 DCB184	DEWALT			£84 $150 €00	630g 1.4lb	Li ion 18/20v	5 Ah	90 Wh	17
	Max XR DCB206 DCB185	DEWALT			£0 $180 €00	680g 1.5lb	Li ion 18/20v	6 Ah	00 Wh	17
	Max XR DCB208 DCB1808	DEWALT			£00 $200 €00	1.02kg 2.25lb	Li ion 18/20v	8 Ah	160Wh	17
	Max XR DCB210 DCB1810	DEWALT			£186 $249 €223	1.11kg 2.45lb	Li ion 18/20v	10 Ah	00 Wh	17
	Max XR DCB2105 DCB184B-XJ	DEWALT			£0 $00 €00	620g 1.3lb	Li ion 18/20v	5 Ah	00 Wh	17
	Max XR DCB2108	DEWALT			£0 $220 €00	00g 00oz	Li ion 18/20v	8 Ah	00 Wh	17

NGTH	WIDTH	DEPTH	RECHARGE Min to Max Time Charger-dependant / No of CHARGE CYCLES	MULTI CHARGERS	REPRESENTATIVE ENDURANCE	WARRANTY (Years)	LED CHARGE STATUS	IN-USE COOLING	WiFi/BLUETOOTH	IPRATING (WATERPROOF)	OP TEMPERATURE °C°F	NOTES	WWW.
77mm 7"	89mm 3.5"	45mm 1.8"	30-90-mins 1500	2 & 4-port Standard Rapid			■	-	-	-	-	NB: DEWALT are a confusing range having modified various batteries that are still under the same names. info is limited and often contradictory so will take longer to compile.	dewalt.com
78mm 7"	89mm 3.5"	45mm 1.8"	30-90-mins	2 & 4-port Standard Rapid			■	-	-	-	-		dewalt.com
54mm 10"	114mm 4.5"	75mm 3"	60-mins	2 & 4-port Standard Rapid			■	-	-	-	-		dewalt.com
78mm 7"	89mm 3.5"	45mm 1.8"	45-90mins	2 & 4-port Standard Rapid			■	-	-	-	-		dewalt.com
78mm 7"	89mm 3.5"	75mm 3"	60-185mins	2 & 4-port Standard Rapid			■	-	-	-	-		dewalt.com
78mm 7"	89mm 3.5"	75mm 3"	90mins	2 & 4-port Standard Rapid			■	-	-	-	-		dewalt.com
78mm 7"	89mm 3.5"	75mm 3"	90mins	2 & 4-port Standard Rapid			■	-	-	-	-		dewalt.com
78mm 7"	89mm 3.5"	75mm 3"	60mins	2 & 4-port Standard Rapid			■	-	-	-	-		dewalt.com
78mm 7"	89mm 3.5"	75mm 3"	60mins	2 & 4-port Standard Rapid			■	-	-	-	-		dewalt.com
78mm 7"	89mm 3.5"	75mm 3"		2 & 4-port Standard Rapid			■	-	✱	-	-	Also available as an oil-resistant version. Bluetooth is an option	dewalt.com
78mm 7"	89mm 3.5"	00mm 00"		2 & 4-port Standard Rapid			■	-	✱	-	-	Bluetooth is an option	dewalt.com

IMAGES NOT TO SCALE COSTS in £$€= Currency conversion only. Most costs=max MSRP - you will often find for a lot less. OTHER TOOLS IN RANGE: =CSaw =Trade-Tools =DiscCutter =OPE =Rescue Tools =Lighting ⓘ=Special Tools ●=PARTIAL FEATURE = Option	SERIES MODEL NB: 20v/60v in the US is 18v/54v in Europe	COMPANY	FITS TOOLS FOR:...	ORIGIN	COST inc tax / VAT	WEIGHT	BATTERY TYPE VOLTAGE	AmpHours Ah	Energy/ Work-Hours Wh	LEN
	XR Powerstack DCBP034 DCBP034-XJ	DEWALT			£0 $00 €00	320g 11.3oz	Li ion 18/20v	1.7 Ah	27 Wh	18 7
	XR Powerstack DCBP518-XJ	DEWALT			£0 $00 €00	300g 12.8oz	Li ion 18/20v	5 Ah	00 Wh	18 7
expansion row										
	FlexVolt DCB606 DCB546	DEWALT			£141 $180 €00	1.05kg 2.3lb	Li ion 20-60v 18-54v	2/6 Ah	108 Wh	12 4
	FlexVolt DCB609 DCB547	DEWALT			£197 $300 €00	1.44kg 3.2lb	Li ion 20-60v 18-54v	3/9 Ah	162 Wh	13 5.
	FlexVolt DCB612 DCB548	DEWALT			£281 $00 €00	1.46kg 3.2lb	Li ion 20-60v 18-54v	4/12 Ah	216 Wh	13 5.
	FlexVolt DCB615 DCB549	DEWALT			£0 $00 €00	2.04kg 4.55lb	Li ion 20-60v 18-54v	5/15 Ah	00 Wh	19 7.
	36v DCB361	DEWALT			£0 $300 €00	1.44kg 38.4oz	Li ion 36v	2 Ah	00 Wh	0 (
	Max XR DCB404	DEWALT			£0 $00 €00	1.6kg 3.53lb	Li ion 40v	4 Ah	00 Wh	18 7.
	Max XR DCB406	DEWALT			£0 $00 €00	1.96kg 4.32lb	Li ion 40v	6 Ah	300 Wh	18 7.
	Max XR DCB407	DEWALT			£80 $00 €00	2.1g 4.6lb	Li ion 40v	7.5 Ah	00 Wh	18 7.

NGTH	WIDTH	DEPTH	RECHARGE Min to Max Time Charger-dependant / No of CHARGE CYCLES	MULTI CHARGERS	REPRESENTATIVE ENDURANCE	WARRANTY (Years)	LED CHARGE STATUS	IN-USE COOLING	WFfi/BLUETOOTH	IPRATING (WATERPROOF)	OP TEMPERATURE °C°F	NOTES	WWW.
37mm 7.4"	34mm 1.3"	46mm 1.8"	60mins				■	-	-	-	-		dewalt.com
37mm 7.4"	150mm 5.9"	66mm 2.62"	75mins	multi voltage charger	70cuts 4x4 PT Spruce		■	-	-	-	-	Enhanced power to weight/Ah ratio +50%	dewalt.com
25mm 4.9"	85mm 3.3"	90mm 3.5"	40-90mins				-	-	-	-	-		dewalt.com
88mm .433	87mm 3.543"	97mm 3.813"	60-140mins				-	-	-	-	-		dewalt.com
88mm 433"	87mm 3.543"	97mm 3.813"	80-180mins				■	-	-	-	-		dewalt.com
92mm 563"	111mm 4.375"	97mm 3.813"	100-233mins				■	-	-	-	-		dewalt.com
0mm 00"	00mm 00"	00mm 00"	30mins				-	-	-	-	-	discontinued	dewalt.com
84mm .25"	137mm 5.375"	126mm 4.938"	90mins				■	-	-	-	-		dewalt.com
84mm .25"	137mm 5.375"	126mm 4.938"	130mins				■	-	-	-	-		dewalt.com
84mm .25"	137mm 5.375"	126mm 4.938"	60mins				-	-	-	-	-		dewalt.com

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	E-Force LBP-36-80	ECHO	■		£145 $00 €00	1.8kg 2.2lb	Li ion 36/40v	2Ah	150 Wh	
	E-Force LBP-36-150	ECHO	■		£145 $00 €00	1.8kg 3.9lb	Li ion 36/40v	4Ah	150 Wh	0 0
	E-Force LBP-56V125 LBP-50-150	ECHO	■ ■		£190 $150 €210	1kg 2.25lb	Li ion 56/50.4v	2/2.5Ah	113/ 126 Wh	18 7
	E-Force LBP-56V250 LBP-50-250	ECHO	■ ■		£290 $250 €300	1.8kg 4lb	Li ion 56/50.4v	4.5/5Ah	252 Wh	18 7
	E-Force LBP-56V400A LBP-50-400	ECHO	■ ■		£299 $350 €356		Li ion 56/50.4v	9Ah	400 Wh	222 8
	ARC 56v BA1400T	EGO	■ ■		£120 $187 €0	1.3g 2.9lb	Li ion 56v	2.5Ah	140 Wh	19 7
	ARC 56v BA2242T	EGO	■ ■		£190 $330 €0	2.1kg 4.7lb	Li ion 56v	4Ah	224 Wh	19 7
	ARC 56v BA2800T	EGO	■ ■		£240 $330 €0	2.25g 5lb	Li ion 56v	5Ah	280 Wh	19 7
	ARC 56v BA3360T	EGO	■ ■		£0 $0 €0	2.8g 6.2lb	Li ion 56v	6Ah	336 Wh	19 7
	ARC 56v BA4200T	EGO	■ ■		£0 $0 €0	2.9kg 6.4lb	Li ion 56v	7.5Ah	420 Wh	19 7
	ARC 56v BA4480T	EGO	■ ■		£00 $00 €00	3kg 6.7lb	Li ion 56v	8Ah	448 Wh	19 7

NGTH	WIDTH	DEPTH	RECHARGE Min to Max Time Charger-dependant / No of CHARGE CYCLES	MULTI CHARGERS	REPRESENTATIVE ENDURANCE	WARRANTY (Years)	LED CHARGE STATUS	IN-USE COOLING	WiFi/BLUETOOTH	IPRATING (WATERPROOF)	OP TEMPERATURE °C°F	NOTES	WWW.
			60mins	Standard			■	-	-				echotools.com
0mm 00"	00mm 00"	00mm 00"	120mins	Standard			■	-	-				echotools.com
34mm .24"	88mm 3.46"	66mm 2.6"	38-75mins	Dual-port. Rapid. Ultra-Rapid.			■	-	-		0 45 32 113		echotools.com
34mm .24"	88mm 3.46"	100mm 3.96"	60-150mins	Dual-port. Rapid. Ultra-Rapid.			■	-	-		0 45 32 113	NB: will not fit 2500T Top-handle CSaw	echotools.com
2.2mm .75"	88mm 3.46"	107mm 4.25"	60-225mins	Dual-port Rapid. Ultra-Rapid.			■	-	-		0 45 32 113	NB: will not fit 2500T Top-handle CSaw	echotools.com
95mm .67"	157mm 6.2"	109mm 4.3"	30-50mins	2,3 &6-port. Power Bank* Standard Rapid Turbo	130 cuts in 2x2" with 12" bar C'Saw	3	■	-	BT	X4		2Ah DISCONTINUED *An off grid, remote charging bank for 2 batteries at a time	egopowerplus.com
95mm .67"	157mm 6.2"	109mm 4.3"	30-80mins	2,3 &6-port. Power Bank* Standard Rapid Turbo	240 cuts in 2x2" with 12" bar C'Saw	3	■		BT	X4		*An off grid, remote charging bank for 2 batteries at a time	egopowerplus.com
95mm .67"	157mm 6.2"	109mm 4.3"	30-100mins	2,3 &6-port. Power Bank* Standard Rapid Turbo	300 cuts in 2x2" with 12" bar C'Saw	3	■		BT	X4		*An off grid, remote charging bank for 2 batteries at a time	egopowerplus.com
95mm .67"	157mm 6.2"	109mm 4.3"	35-120mins	2,3 &6-port. Power Bank* Standard Rapid Turbo	265 cuts in 4x4" with 12" bar CSX3000 C'Saw	3	■	-	BT	X4		*An off grid, remote charging bank for 2 batteries at a time	egopowerplus.com
95mm .67"	157mm 6.2"	109mm 4.3"	45-140mins	2,3 &6-port. Power Bank* Standard Rapid Turbo	450 cuts in 2x2" with 12" bar C'Saw	3	■		BT	X4		*An off grid, remote charging bank for 2 batteries at a time	egopowerplus.com
95mm .67"	157mm 6.2"	109mm 4.3"	50-160mins	2,3 &6-port. Power Bank* Standard Rapid Turbo	275 cuts in 4x4" with 20" bar CSX5000 C'Saw	3	■			X4		*An off grid, remote charging bank for 2 batteries at a time	egopowerplus.com

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	ARC 56v BA5600T	EGO			£470 $00 €00	3.5kg 7.7lb	Li ion 56v	10Ah	560 Wh	19 7
	ARC 56v BA6720T	EGO			£560 $00 €00	3.65kg 8lb	Li ion 56v	12Ah	672 Wh	19 7
	24v G24B2 / 2926707	GREENWORKS			£0 $0 €75	500g 1.1lb	Li ion 24v	2Ah	43.6 Wh	
	24v G24B2 / 2926707	GREENWORKS			£0 $0 €0	500g 1.1lb	Li ion 24v	2Ah	43.6 Wh	
	24v G24B2 / 2926707	GREENWORKS			£0 $0 €0	500g 1.1lb	Li ion 24v	4Ah	000 Wh	
	24/48v BAM706	GREENWORKS			£0 $100 €0	789g 1.74lb	Li ion 24-48v	2Ah	86.4 Wh	
	24v BAM704	GREENWORKS			£0 $150 €0	1.4kg 3.17lb	Li ion 24-48v	4Ah	172.8 Wh	
	24/48v 48B4AH	GREENWORKS			£0 $180 €0	1.4kg 3.17lb	Li ion 24-48v	4Ah	172.8 Wh	
	60v 60BD200	GREENWORKS			£0 $0 €145	1.24g 2.7lb	Li ion 60v	2Ah	`120 Wh	
	60v G60B4 / 2918407	GREENWORKS			£0 $180 €0	1.9g 4.2lb	Li ion 60v	4Ah	240 Wh	
	60v G60B4 / 2918407	GREENWORKS			£0 $0 €0	0g 0lb	Li ion 60v	6Ah	324 Wh	

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95mm .67"	157mm 6.2"	109mm 4.3"	70-190mins	2,3 &6-port. Power Bank* Standard Rapid Turbo	600 cuts in 2x2" with 12" bar C'Saw	3 to 5	■	-	-	X4		*An off grid, remote charging bank for 2 batteries at a time	egopowerplus.com
95mm .67"	157mm 6.2"	109mm 4.3"	75-230mins	2,3 &6-port. Power Bank* Standard Rapid Turbo	720 cuts in 2x2" with 12" bar C'Saw	3 to 5	■	-	-	X4		*An off grid, remote charging bank for 2 batteries at a time	egopowerplus.com
			60mins	Dual-port Standard						67		Waterproof	greenworkstools.com greenworkstools.eu
			60mins	Dual-port Standard									greenworkstools.com greenworkstools.eu
			60mins	Dual-port Standard		-							greenworkstools.com greenworkstools.eu
			30mins	Dual-port Standard		-							greenworkstools.com greenworkstools.eu greenworkscommercial.com
			60mins	Dual-port Standard		-							greenworkstools.com greenworkstools.eu greenworkscommercial.com
			120mins			-							greenworkstools.com greenworkstools.eu greenworkscommercial.com
			<60mins			-							greenworkstools.com greenworkstools.eu greenworkscommercial.com
			<120mins			-							greenworkstools.com greenworkstools.eu greenworkscommercial.com
			<120mins			-							greenworkstools.com greenworkstools.eu greenworkscommercial.com

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	SERIES MODEL NB: 20v/60v in the US is 18v/54v in Europe	COMPANY	FITS TOOLS FOR:...	ORIGIN	COST inc tax / VAT	WEIGHT	BATTERY TYPE VOLTAGE	AmpHours Ah	Energy/ Work-Hours Wh	LEN
	Commercial 82BD250	GREENWORKS					Li ion 82v	2.5Ah		
	Commercial 82BD400	GREENWORKS					Li ion 82v	4Ah		
	Commercial- 82BD500	GREENWORKS			£145 $495 €00	1.8kg 2.2lb	Li ion 82v	5Ah	656 Wh	0
	Commercial 82BD600	GREENWORKS					Li ion 82v	6Ah		
	Power+ 82BD750	GREENWORKS			£145 $495 €00	1.8kg 2.2lb	Li ion 82v	7.5/8Ah	656 Wh	0
	Commercial 82BD1000	GREENWORKS					Li ion 82v	10Ah		
	Commercial 82BD1200	GREENWORKS					Li ion 82v	10Ah		

NGTH	WIDTH	DEPTH	RECHARGE Min to Max Time Charger-dependant / No of CHARGE CYCLES	MULTI CHARGERS	REPRESENTATIVE ENDURANCE	WARRANTY (Years)	LED CHARGE STATUS	IN-USE COOLING	WfFi/BLUETOOTH	IPRATING (WATERPROOF)	OP TEMPERATURE °C°F	NOTES	WWW.
													greenworkstools.com greenworkstools.eu greenworkscommercial.com
													greenworkstools.com greenworkstools.eu greenworkscommercial.com
0mm 00"	00mm 00"	00mm 00"	60mins	Standard			■	-	-	X4			greenworkstools.com greenworkstools.eu greenworkscommercial.com
													greenworkstools.com greenworkstools.eu greenworkscommercial.com
0mm 00"	00mm 00"	00mm 00"	60mins	Standard			■	-	-	X4			greenworkstools.com greenworkstools.eu greenworkscommercial.com
						-							greenworkstools.com greenworkstools.eu greenworkscommercial.com

IMAGES NOT TO SCALE COSTS in £$€= Currency conversion only. Most costs=max MSRP - you will often find for a lot less. OTHER TOOLS IN RANGE: =CSaw =Trade-Tools =DiscCutter =OPE =Rescue Tools =Lighting ⓘ=Special Tools ●=PARTIAL FEATURE = Option	SERIES MODEL NB: 20v/60v in the US is 18v/54v in Europe	COMPANY	FITS TOOLS FOR:...	ORIGIN	COST inc tax / VAT	WEIGHT	BATTERY TYPE VOLTAGE	AmpHours Ah	Energy/ Work-Hours Wh	LEN
	Aspire P4A 18-B45	HUSQVARNA			£75 $00 €00	360g 12.7oz	Li ion 18v	2.5 Ah	45 Wh	11 4
	Aspire P4A 18-B72	HUSQVARNA			£100 $00 €00	660g 1.4lb	Li ion 18v	4 Ah	72 Wh	116 4
	Aspire P4A 18-B108	HUSQVARNA			£120 $ €	800g 1.76lb	Li ion 18v	6 Ah	108 Wh	13 5
	100 40-B70	HUSQVARNA			£100 $ €	800g 1.76lb	Li ion 36v	2 Ah	75.6 Wh	13 5
	100 40-B140	HUSQVARNA			£150 $ €	1.25k 2.7lb	Li ion 36v	2 Ah	144 Wh	13 5
	BLi BLi30	HUSQVARNA	ⓘ		£280 $ €	1.9kg 4.2lb	Li ion 36v	7.5/7.7 Ah	270 Wh	13 5
	BLi BLi100	HUSQVARNA	ⓘ		£170 $00 €00	00kg 00lb	Li ion 36v	2.6 Ah	00 Wh	13 5
	BLi BLi200	HUSQVARNA	ⓘ		£240 $00 €00	1.3kg 2.8lb	Li ion 36v	5.2 Ah	180 Wh	13 5
	BLi BLi200X	HUSQVARNA	ⓘ		£260 $00 €320	1.3kg 2.8lb	Li ion 36v	5.2 Ah	180 Wh	13 5
	BLi BLi300	HUSQVARNA	ⓘ		£340 $00 €00	1.9kg 4.2lb	Li ion 36v	9/9.4 Ah	324 Wh	15 5

NGTH	WIDTH	DEPTH	RECHARGE Min to Max Time Charger-dependant / No of CHARGE CYCLES	MULTI CHARGERS	REPRESENTATIVE ENDURANCE	WARRANTY (Years)	LED CHARGE STATUS	IN-USE COOLING	WfFi/BLUETOOTH	IPRATING (WATERPROOF)	OP TEMPERATURE °C°F	NOTES	WWW.
.4mm .5"	81mm 3.1"	45mm 1.7"					-	-	-	-	-	Not technically a pro battery but will power a range of 18v trade tools -	husqvarna.com
6.5mm .5"	84mm 3.3"	64mm 2.5"					-	-	-	-	-		husqvarna.com
2mm 6.2"	117mm 4.6"	98mm 3.8"	>600				-	-	-	-	-		husqvarna.com
2mm 6.2"	117mm 4.6"	98mm 3.8"	>600			-	■	-	-	-	-	ⓘ Powered ascender/winch	husqvarna.com
2mm 6.2"	117mm 4.6"	98mm 3.8"	>600			-	■	-	-	-	-	ⓘ Powered ascender/winch	husqvarna.com
2mm 6.2"	155mm 6.1"	98mm 3.8"	>600			-	■	-	-	-	-	ⓘ Powered ascender/winch	husqvarna.com
2mm 6.2"	115.6mm 4.5"	98mm 3.8"	1500			-	■	-	-	-	-	ⓘ Powered ascender/winch	husqvarna.com
2mm 6.2"	115.6mm 4.5"	98mm 3.8"	1500			-	■	-	-	-	-	ⓘ Powered ascender/winch	husqvarna.com
2mm 6.2"	115.6mm 4.5"	98mm 3.8"	1500			-	■	-	-	-	-	ⓘ Powered ascender/winch	husqvarna.com
5mm 6.2"	115.6mm 4.5"	98mm 3.8"				-	■	-	-	-	-	ⓘ Powered ascender/winch	husqvarna.com



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Get ready to revolutionize the way you work with the Husqvarna® x Skylotec Power Ascender. Designed for arborists and tree care professionals, this battery-powered ascender, using Husqvarna® Bli-X 36V battery system, makes the ascend into the canopy effortless and efficient. Experience smooth ascents and descents, remote control functionality and robust, weatherproof construction.
With a lifting capacity of 185 kg and speeds up to 24 meters per minute, you've got the power to tackle any challenge in the canopy. Elevate your workday with the ICX – because you've got the power!

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ⓘ=Special Tools
●=PARTIAL FEATURE
□□□= Option

	SERIES MODEL NB: 20v/60v in the US is 18v/54v in Europe	COMPANY	FITS TOOLS FOR:...	ORIGIN	COST inc tax / VAT	WEIGHT	BATTERY TYPE VOLTAGE	AmpHours Ah	Energy/ Work-Hours Wh	LEN
	BLiX 40-B140X	HUSQVARNA	■■■■ ⓘ		£210 $ €	800g 1.76lb	Li ion 36v	4 Ah	75.6 Wh	13 5
	BLiX 40-B220X	HUSQVARNA	■■■■ ⓘ		£310 $ €	1.4kg 3lb	Li ion 36v	6 Ah	216 Wh	13 5
	BLiX 40-B330X	HUSQVARNA	■■■■ ⓘ		£420 $560 €520	1.9kg 4.2lb	Li ion 36v	9 Ah	324 Wh	15 6
	Residential KAB02	KRESS	■■■		£35 $00 €00	420g 00lb	Li ion 20v	2 Ah	36 Wh	00 0
	Residential KAB04	KRESS	■■■		£50 $00 €00	660g 00lb	Li ion 20v	4 Ah	72 Wh	00 0
	Residential KAB08	KRESS	■■■		£115 $00 €00	1kg 2.2lb	Li ion 20v	8 Ah	144 Wh	00 0
	Cyber System KAC800	KRESS	■■■		£300 $00 €00	1.56kg 3.4lb	Li ion 60v	4 Ah	240 Wh	00 0
	Cyber System KAC804	KRESS	■■■		£600 $00 €00	3kg 6.6lb	Li ion 60v	4 Ah	240 Wh	00 0
	Cyber System KAC810	KRESS	■		£1400 $00 €00	7.7kg 17lb	Li ion 60v	2.6 Ah	660Wh	00 0
	Cyber System KAC815	KRESS	■		£1500 $00 €00	8.1kg 18lb	Li-ion 60v	25 Ah	1500 Wh	00 0

NGTH	WIDTH	DEPTH	RECHARGE Min to Max Time Charger-dependant / No of CHARGE CYCLES	MULTI CHARGERS	REPRESENTATIVE ENDURANCE	WARRANTY (Years)	LED CHARGE STATUS	IN-USE COOLING	WiFi/BLUETOOTH	IPRATING (WATERPROOF)	OP TEMPERATURE °C°F	NOTES	WWW.
2mm .2"	117mm 4.6"	98mm 3.85"	>600				■			X4	-	On-board temp gauge. ⓘ Powered ascender/winch	husqvarna.com
2mm .2"	117mm 4.6"	98mm 3.85"					■			X4	-	On-board temp gauge. ⓘ Powered ascender/winch	husqvarna.com
5mm .1"	130.5mm 5.1"	93mm 3.6"					■			X4	-	On-board temp gauge. ⓘ Powered ascender/winch	husqvarna.com
0mm 00"	00mm 00"	00mm 00"	20-60	2-bank 2-bank Rapid Standard			■	■		-	-		kress.com
0mm 00"	00mm 00"	00mm 00"	30-120	2-bank 2-bank Rapid Standard			■	■		-	-		kress.com
0mm 00"	00mm 00"	00mm 00"	32-?	2-bank 2-bank Rapid Standard		-	■	■		-	-		kress.com
0mm 00"	00mm 00"	00mm 00"	8 - 1200	2-bank 4-Bank Standard 5kW Power Pack		5	■	■		X5	5-40	Ultra-fast charging	kress.com
0mm 00"	00mm 00"	00mm 00"	8 -12 3000	2-bank 4-Bank Standard 5kW Power Pack		5	■	■		X5	5-40	Ultra-fast charging	kress.com
0mm 00"	00mm 00"	00mm 00"	8 -25 3000	2-bank 4-Bank Standard 5kW Power Pack		8	■	■		X5	5-40	Mowers only Ultra-fast charging	kress.com
0mm 00"	00mm 00"	00mm 00"	8 - 3000	2-bank 4-Bank Standard 5kW Power Pack		8	■	■		X5	5-40	Mowers only Ultra-fast charging	kress.com

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	Professional KA3000	KRESS			£120 $00 €00	1.55kg 3.4lb	Li ion 60v	2 Ah	108 Wh	00 0
	Professional KA3002	KRESS			£200 $00 €00	2.75kg 6.05lb	Li ion 60v	4 Ah	240 Wh	00 0
	Professional KA3018	KRESS			£370 $00 €00	0kg 0lb	Li ion 60v	8 Ah	144 Wh	00 0
	XGT BL4020	MAKITA		●	£75 $00 €00	690g 1.5lb	Li ion 40v	2 Ah	72 Wh	11 4
	M18 BL4025	MAKITA		●	£90 $00 €00	710g 1.5lb	Li ion 40v	2.5 Ah	90 Wh	11 4
	XGT BL4040F	MAKITA		●	£150 $00 €00	1kg 2.2lb	Li ion 40v	4 Ah	144 Wh	13 5.
	XGT BL4050F	MAKITA		●	£180 $00 €00	1.3kg 2.8lb	Li ion 40v	5 Ah	180 Wh	15
	XGT BL4080F	MAKITA		●	£265 $00 €00	1.9kg 4.2lb	Li ion 40v	8 Ah	288 Wh	15
	36Liion BL3622A	MAKITA		●	£00 $00 €00	1.33kg 2.9lb	Li ion 40v	2.2 Ah	80 Wh	16 6
	36Liion BL3626	MAKITA		●	£00 $00 €00	1.34kg 2.95lb	Li ion 40v	2.6 Ah	94 Wh	16 6
	36Liion BL6440	MAKITA		●	£00 $00 €00	2.2kg 4.4lb	Li-ion 64v	4 Ah	230.4 Wh	19 7

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0mm 0"	00mm 00"	00mm 00"	25-40mins	2-bank Standard Rapid			■	■	-	-	-		kress.com
0mm 0"	00mm 00"	00mm 00"	50-80mins	2-bank Standard Rapid			■	■	-	-	-		kress.com
0mm 0"	00mm 00"	00mm 00"	?mins	2-bank Standard Rapid		-	■	■	-	-	-	Not available in UK/Aus Canada or USA	kress.com
8mm .6"	77mm 3"	65mm 2.5"	22-30mins	2-bank Rapid Standard Back/Power Pack			■	■	●*	-	-	*Digital coms between battery and tool regarding staus and power draw etc.	makitatools.com
8mm .6"	77mm 3"	65mm 2.5"	28-38mins	2-bank Rapid Standard Back/Power Pack			■	■	●*	-	-	*Digital coms between battery and tool regarding staus and power draw etc.	makitatools.com
3mm 23"	82mm 3.22"	71mm 2,8"	45-67mins	2-bank Rapid Standard Back/Power Pack		-	■	■	●*	-	-	*Digital coms between battery and tool regarding staus and power draw etc.	makitatools.com
2mm 6"	79mm 3.1"	92mm 3.6"	50-85mins	2-bank Rapid Standard Back/Power Pack		-	■	■	●*	-	-	*Digital coms between battery and tool regarding staus and power draw etc.	makitatools.com
2mm 6"	85mm 3.3"	94mm 3.7"	76mins	2-bank Rapid Standard Back/Power Pack		-	■	■	●*	-	-	*Digital coms between battery and tool regarding staus and power draw etc.	makitatools.com
5mm .5"	102mm 4"	85mm 3.3"		2-bank Rapid Standard Back/Power Pack		-	■	-	-	-	-	DISCONTINUED	makitatools.com
2mm .3"	102mm 4"	85mm 3.3"		2-bank Rapid Standard Back/Power Pack		-	■	-	-	-	-	DISCONTINUED	makitatools.com
0mm .4"	90mm 3.5"	172mm 6.77"				-	■	-	-	-	-	Mower only	makitatools.com

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	LXT BL1820B	MAKITA		●	£00 $00 €00	380g 13oz	Li ion 18V	2 Ah	36 Wh	11 4
	LXT BL1830B	MAKITA		●	£00 $00 €00	640g 1.4lb	Li ion 18V	3 Ah	54 Wh	11 4
	LXT BL1840B	MAKITA		●	£00 $00 €00	640g 1.4lb	Li ion 18V	4 Ah	72 Wh	11 4
	LXT BL1850B	MAKITA		●	£00 $00 €00	640g 1.4oz	Li ion 18V	5 Ah	90 Wh	11 4
	LXT BL1860B	MAKITA		●	£00 $00 €00	660g 1.45lb	Li ion 18V	6 Ah	108 Wh	11 4
	M18 Red Lithium XC1.5	MILWAUKEE			£00 $00 €00	0g 0lb	Li ion 18V	1.5 Ah	00 Wh	00 0
	M18 Red Lithium XC2	MILWAUKEE			£53 $00 €00	0g 0lb	Li ion 18V	2 Ah	00 Wh	00 0
	M18 Red Lithium XC3/2.8	MILWAUKEE			£00 $00 €00	0g 0lb	Li ion 18V	2.8 Ah	00 Wh	00 0
	M18 Red Lithium XC4	MILWAUKEE			£78 $00 €00	0g 0lb	Li ion 18V	4 Ah	00 Wh	00 0
	M18 Red Lithium XC5	MILWAUKEE			£80 $160 €202	700g 1.5lb	Li ion 18V	5 Ah	00 Wh	80 3
	M18 Red Lithium XC6	MILWAUKEE			£00 $00 €00	1.03kg 2.27lb	Li ion 18V	6 Ah	00 Wh	00 0

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3mm .4"	75mm 3"	45mm 00"	22-45 mins	2-bank Rapid Standard Back/Power Pack			■	-	-	-	-		makitatools.com
3mm .4"	75mm 3"	62mm 2.4"	24-60 mins	2-bank Rapid Standard Back/Power Pack			■	-	-	-	-		makitatools.com
3mm .4"	75mm 3"	62mm 2.4"	36-90 mins	2-bank Rapid Standard Back/Power Pack			■	-	-	-	-		makitatools.com
3mm .4"	75mm 3"	62mm 2.4"	45-110 mins	2-bank Rapid Standard Back/Power Pack			■	-	-	-	-		makitatools.com
3mm .4"	75mm 3"	62mm 2.4"	55-130 mins	2-bank Rapid Standard Back/Power Pack			■	-	-	-	-		makitatools.com
0mm 0"	00mm 00"	00mm 00"	21 mins 21 mins 31 mins	2,3,4 & 6-bank Super Rapid Standard		-	■	-	-	-	-20		milwaukee.com
0mm 0"	00mm 00"	00mm 00"	27 mins 27 mins 42 mins	2,3,4 & 6-bank Super Rapid Standard		-	■	-	-	-	-20		milwaukee.com
0mm 0"	00mm 00"	00mm 00"	34 mins 34 mins 57 mins	2,3,4 & 6-bank Super Rapid Standard		-	■	-	-	-	-20		milwaukee.com
0mm 0"	00mm 00"	00mm 00"	48 mins 48 mins 76 mins	2,3,4 & 6-bank Super Rapid Standard		-	■	-	-	-	-20		milwaukee.com
0mm .1"	50mm 2"	80mm 3.1"	60 mins 60 mins 105 mins	2,3,4 & 6-bank Super Rapid Standard		-	■	-	-	-	-20		milwaukee.com
0mm 0"	00mm 00"	00mm 00"	70 mins 70 mins 125 mins	2,3,4 & 6-bank Super Rapid Standard		-	■	-	-	-	-20		milwaukee.com

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	MX Fuel RedLithium Forge XC8	MILWAUKEE			£00 $00 €1154	4.4kg 9.8lb	Li ion 00v	8 Ah	00 Wh	27 1(
	MX Fuel RedLithium Forge XC12	MILWAUKEE			£00 $00 €1546	0g 0oz	Li ion 00v	12 Ah	00 Wh	0((
	M18 Red Lithium High Output CP3	MILWAUKEE			£130 $120 €166	0g 0oz	Li ion 18v	3 Ah	00 Wh	0((
	M18 Red Lithium High Output XC5.5	MILWAUKEE			£197 $00 €00	0g 0oz	Li ion 18v	5.5 Ah	00 Wh	0((
	M18 Red Lithium High Output XC6	MILWAUKEE			£00 $00 €00	0g 0oz	Li ion 18v	6 Ah	00 Wh	0((
	M18 Red Lithium High Output XC8	MILWAUKEE			£160 $200 €279	1.08kg 2.38lb	Li ion 18v	8 Ah	00 Wh	13 5.
	M18 Red Lithium High Output HD12	MILWAUKEE			£240 $250 €361	1.54kg 3.4lb	Li ion 18v	12 Ah	00 Wh	15 5.
	M18 Red Lithium Forge XC5	MILWAUKEE			£00 $00 €00	0g 0oz	Li ion 18v	5 Ah	00 Wh	0((
	M18 Red Lithium Forge XC6	MILWAUKEE			£311 $00 €00	0g 0oz	Li ion 18v	6 Ah	00 Wh	0((
	M18 Red Lithium Forge XC8	MILWAUKEE			£220 $200 €279	1.08kg 2.38lb	Li ion 18v	8 Ah	00 Wh	10 5
	M18 Red Lithium Forge HD12	MILWAUKEE			£270 $250 €361	1.54kg 3.4lb	Li ion 18v	12 Ah	00 Wh	14 5

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74mm 0.8"	180mm 7.1"	96mm 3.8"	45mins	RedLi Super			■	■	■				milwaukee.com
0mm 00"	00mm 00"	00mm 00"	0 mins				■	■	■				milwaukee.com
0mm 00"	00mm 00"	00mm 00"	35 mins 35 mins 65 mins	2,3,4 & 6-bank Super Rapid Standard			■	-	-	-	-28		milwaukee.com
0mm 00"	00mm 00"	00mm 00"	35 mins 35 mins 65 mins	2,3,4 & 6-bank Super Rapid Standard			■	-	-	-	-28		milwaukee.com
0mm 00"	00mm 00"	00mm 00"	35 mins 65 mins 123 mins	2,3,4 & 6-bank Super Rapid Standard			■	-	-	-	-28		milwaukee.com
88mm .46"	84mm 3.33"	82mm 3.25"	45 mins 83 mins 153 mins	2,3,4 & 6-bank Super Rapid Standard		-	■	-	-	-	-28		milwaukee.com
52mm .99"	86mm 3.4"	99mm 3.9"	60 mins 130 mins 241 mins	2,3,4 & 6-bank Super Rapid Standard		-	■	-	-	-	-28		milwaukee.com
0mm 00"	00mm 00"	00mm 00"	0 mins	2,3,4 & 6-bank Super Rapid Standard		-	■	-	-	-	-28		milwaukee.com
0mm 00"	00mm 00"	00mm 00"	0 mins	2,3,4 & 6-bank Super Rapid Standard		-	■	-	-	-	-28		milwaukee.com
05mm 5.6"	95mm 3.4"	154mm 3.5"	45 mins 83 mins 162 mins	2,3,4 & 6-bank Super Rapid Standard		-	■	-	-	-	-28	oil resistant	milwaukee.com
47mm 5.8"	0mm 00"	104mm 4.1"	45 mins 130 mins 241 mins	2,3,4 & 6-bank Super Rapid Standard		-	■	-	-	-	-28	oil resistant	milwaukee.com

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	SERIES MODEL NB: 20v/60v in the US is 18v/54v in Europe	COMPANY	FITS TOOLS FOR:...	ORIGIN	COST inc tax / VAT	WEIGHT	BATTERY TYPE VOLTAGE	AmpHours Ah	Energy/ Work-Hours Wh	LEN
	Power Now B42E/B426	OREGON			£00 $105 €00	1.24kg 2.74lb	Li ion 36/40v	2.6 Ah	94 Wh	17 6
	Power Now B600E/B742	OREGON			£00 $145 €00	1.24kg 2.74lb	Li ion 36/40v	4 Ah	144 Wh	17 6
	Power Now B650E/B662	OREGON			£00 $00 €00	2.84lb 1.29lb	Li ion 36/40v	6 Ah	216 Wh	17 6
	AK AK 10	STIHL			£119 $00 €00	800g 1.76lb	Li ion 36v	1 Ah	72 Wh	0 0
	AK AK 20	STIHL			£120 $00 €00	1.2g 2.64lb	Li ion 36v	2 Ah	144 Wh	0 0
	AK AK30	STIHL			£140 $00 €00	1.3kg 2.86lb	Li ion 36v	3 Ah	180 Wh	0 0
	AP (Pro) AP 100	STIHL	ⓘ		£126 $00 €00	1.3kg 2.86lb	Li ion 36v	2Ah	94 Wh	0 0
	AP (Pro) AP 200 200S	STIHL	ⓘ		£156 $00 €00	1.3kg 2.86lb	Li ion 36v	4.8Ah 5.2Ah	187 Wh	0 0
	AP (Pro) AP 300	STIHL	ⓘ		£288 $00 €00	1.8kg 4lb	Li ion 36v	3Ah	227 Wh	0 0
	AP (Pro) AP 300 S	STIHL	ⓘ		£288 $00 €00	1.8kg 4lb	Li ion 36v	7.2Ah	281 Wh	0 0
	AP (Pro) AP 500 S	STIHL	ⓘ		£385 $00 €00	2kg 4.4lb	Li ion 00v	8.8 Ah	337 Wh	0 0

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70mm 6.6"	105mm 4.1"	50mm 1.9"	30-90 mins ≥1000	Rapid Standard	≤250cuts @2-3"		■	-			-20 40 -4 104		oregon.com
70mm 6.6"	105mm 4.1"	50mm 1.9"	55-135 mins ≥1000	Rapid Standard	≤400cuts @2-3"		■				-20 40 -4 104		oregon.com
70mm 6.6"	105mm 4.1"	50mm 1.9"	75-200 mins ≥1000	Rapid Standard	≤600cuts @2-3"		■				-20 40 -4 104		oregon.com
00mm 00"	00mm 00"	00mm 00"					■	-	-	-	-		stihl.com
00mm 00"	00mm 00"	00mm 00"					■	-	-	-	-		stihl.com
00mm 00"	00mm 00"	00mm 00"				-	■	-	-	-	-		stihl.com
00mm 00"	00mm 00"	00mm 00"				-	■	-	-	X4	-	ⓘ Powered ascender/winch	stihl.com
00mm 00"	00mm 00"	00mm 00"	45-200 mins		161T CSaw-42mins	-	■	-	■	X4	-	ⓘ Powered ascender/winch 200S=Wifi-capable	stihl.com
00mm 00"	00mm 00"	00mm 00"	75-250 mins		161T CSaw-50mins	-	■	-	-	X4	-	ⓘ Powered ascender/winch	stihl.com
00mm 00"	00mm 00"	00mm 00"	45-300 mins		161T CSaw-60mins	-	■	-	□	X4	-	ⓘ Powered ascender/winch 300S has Wifi-option	stihl.com
00mm 00"	00mm 00"	00mm 00"	55-355 mins 2530 over 10yrs		161T CSaw-74mins	-	■	-	-	X4	-		stihl.com

IMAGES NOT TO SCALE COSTS in £$€= Currency conversion only. Most costs=max MSRP - you will often find for a lot less. OTHER TOOLS IN RANGE: ■=CSaw ■=Trade-Tools ■=DiscCutter ■=OPE ■=Rescue Tools ■=Lighting ⓘ=Special Tools ●=PARTIAL FEATURE □□□= Option	SERIES MODEL NB: 20v/60v in the US is 18v/54v in Europe	COMPANY	FITS TOOLS FOR:...	ORIGIN	COST inc tax / VAT	WEIGHT	BATTERY TYPE VOLTAGE	AmpHours Ah	Energy/ Work-Hours Wh	LEN
	OO 00	HITACHI/ KOKI			£00 $00 €00	1.8kg 0oz	Li ion 36v	3Ah	227 Wh	0(
	OO 00	HITACHI/ KOKI			£00 $00 €00	1.8kg 0oz	Li ion 36v	3Ah	281 Wh	0(
	OO 00	HITACHI/ KOKI			£00 $00 €00	0g 0oz	Li ion 00v	5 Ah	337 Wh	0(
	OO 00	HITACHI/ KOKI			£00 $00 €00	0g 0oz	Li ion 00v	0 Ah	00 Wh	0(
	OO 00	HITACHI/ KOKI			£00 $00 €00	0g 0oz	Li ion 00v	0 Ah	00 Wh	0(
	E-Power E450	STIGA	■		£190 $00 €00	0g 0oz	Li ion 48v	4 Ah	00 Wh	0(
	Max Flex-Force L135	TORO			£135 $00 €00	0g 0oz	Li ion 54/60v	2.5 Ah	135 Wh	0(
	Max Flex-Force L216	TORO			£205 $00 €00	0g 0oz	Li ion 54/60v	4 Ah	216 Wh	0(
	Max Flex-Force L405	TORO			£325 $00 €00	0g 0oz	Li ion 54/60v	7.5 Ah	405 Wh	0(
	OO 00	OO			£190 $00 €00	0g 0oz	Li ion 48v	0 Ah	00 Wh	0(

NGTH	WIDTH	DEPTH	RECHARGE Min to Max Time Charger-dependant No of CHARGE CYCLES	MULTI CHARGERS	REPRESENTATIVE ENDURANCE	WARRANTY (Years)	LED CHARGE STATUS	IN-USE COOLING FAN	WfFi/BLUETOOTH	IPRATING (WAITERPROOF)	OP TEMPERATURE °C°F	NOTES	WWW.
0mm 00"	00mm 00"	00mm 00"					■						stihl.com
0mm 00"	00mm 00"	00mm 00"					■						stihl.com
0mm 00"	00mm 00"	00mm 00"					■						stihl.com
0mm 00"	00mm 00"	00mm 00"					■						OO.com
0mm 00"	00mm 00"	00mm 00"					■						OO.com
0mm 00"	00mm 00"	00mm 00"	120-220 mins -			-	■						OO.com
0mm 00"	00mm 00"	00mm 00"				-	■						OO.com
0mm 00"	00mm 00"	00mm 00"				-	■						OO.com
0mm 00"	00mm 00"	00mm 00"	60 mins -			-	■						OO.com
0mm 00"	00mm 00"	00mm 00"	0-0 mins -			-	■						OO.com
						-							

CHAINSAW PROTECTIVE GLOVES





Ask most private arb contractors about chainsaw protective gloves and they'll be pretty dismissive especially if they're left-handed. Many value the safety offered by comfort and dexterity of a quality work glove more than the possibility that a chainsaw glove will actually make much difference. It is indeed hard to see how that thin barrier on the back of the left hand (in most instances) will cover all the possible scenarios involving your hand coming into contact with a moving chain. The only real scenario being covered by most gloves is a rotational kickback impact to the back of your left hand while it is grasping the top of the wrap-around handle.

You might be surprised to hear that specialist glove manufacturers making gloves for many different purposes deem chainsaw use as a minority concern and often simply rename a glove they already make with kevlar protection for some other industry like foundry workers or mining! Consequently there are many hundreds of gloves that COULD be used by chainsaw operators but we have included only those models actively marketed to arborists and meeting a chainsaw-relevant standard. We will, however, be augmenting this chainsaw-specific guide with CUT-RESISTANT models shortly. You need to be VERY careful that the glove you have picked up for work actually *is* chainsaw protective, outwardly there may be nothing to distinguish a chainsaw protective glove from a .....well...glove. Even recognition of a quality brand is no indication - take the gloves above from *Arbortec* - top right. The glove on the right is EN certified to withstand a chain speed of 16m/sec or 3150ft per minute. The equally slick looking gloves on the left are similar colours and even have the same pattern of palm reinforcement not to mention a dubious finger insult but they are NOT chainsaw protective except that they are leather and therefore have greater cut resistance than your skin. Shame because they otherwise looked like our kind of glove with excellent dexterity for as long as you keep your fingers. Our definition of a chainsaw protective glove is one that meets either EN381-7 with a specified chain speed that needs to be resisted or has active chainsaw protective materials in terms of kevlar or multi-fibres to clog the moving chain. The US ANSI/ISEA cut resistance standards using primarily ASTM test methods is better than it was with an extra four sub-classifications but this still only relates to downward pressure and side-to side movement of knives and hand saws not powered chainsaws - if a retailer tells you the glove they're selling you meets ANSI 4,5,6,7, 8 or 9, ask them if that actually means it will resist a moving chain?

Most chainsaw protective gloves only provide active protection on the Left glove and almost without exception, to the back of the hand rather than all around. So, not only are the cut-protection areas quite limited, even where they do exist, we're really only talking about the most glancing of glancing blows rather than falling onto a moving chain with your hands outstretched. This is effectively run-out protection-only rather than full speed protection. Cut *resistance* is a different matter, that does not refer to chainsaws at all and instead, as we've already mentioned with the ASTM standard, resists knife or hand saw blades. In Europe this may be categorised under EN 388 as the third of 4 numbers relating to abrasion, tear, cut and puncture resistance, these are numbered 0 to 4 and 0-to 5 in the case of cut resistance with 5 as the highest protection. There may also be letters A to F relating to an alternative cut test if the blade is too dull to cut and a P if there is Impact resistance. You may see these numbers and letters listed after EN388. Again, this standard does not relate to chainsaw use and it could be that, if you have an accident resulting in lost digits and you are found to be wearing gloves that meet EN388 but *NOT* EN 381-7 , the insurance company can say you weren't properly equipped and will not pay out. For those of you that resist wearing gloves because you say they are too bulky or you're primarily climbing, don't be lulled into thinking that the thinner, more dexterous 'cut-resistant' gloves under an EN388 or ANSI standard are going to give you protection against your chainsaw or insurance broker. However, cut-resistant gloves will help minimise the multitude of small cuts and impales that occur during a working day and you would think chain-mail would almost come under active chainsaw protection? Probably binds up and causes more of an amputation risk than sharp chain? Even so, aside from multi-layer protection like the *Cutters, Elvex* and *Endura* gloves (right) which bind up the chain, we have our doubts about the true validity of single sheets of material and chainsaw-resistance cut tests using test chainsaws that don't accurately reflect the size and power of what is actually being used. They do at least give an indication of something specific to chainsaws but chainsaw protection may not be as effective a barrier against a samurai blade or



CHAINSAW PROTECTIVE GLOVES



Fig 1 ANATOMY of a CHAINSAW-PROTECTIVE GLOVE

FINGER-TIP GRIP
tactile material to improve grip but on most gloves this may simply be reinforcement.

PREFORMED/SHAPED HAND for improved dexterity. a shaped, close-fitting glive is vital in a climbing glove

VIBRATION-DAMPENING
foam or gel layer beneath reinforcement. If no dampening this may simply be part of palm reinforcement

PALM REINFORCEMENT
High-wear area of the hand has extra material and may incorporate vibration dampening.

FINGER REINFORCEMENT

KNUCKLE REINFORCEMENT

SWEAT or NOSE-WIPING MATERIAL!

HI-VISIBILITY COLOURS usually red, orange or lime. May also have reflective highlights on the fingers and/or back and/or cuff

STRETCH FABRIC

ACTIVE CHAINSAW PROTECTION
but may just be padding in other designs-very hard to tell if you don't know the glove.

VELCRO CLOSURE/TIGHTENING

NEOPRENE or ELASTICATED cuff -Often knitted.

rotary saw blade as the cut-resistant gloves we maligned earlier because it's designed to stop a moving chain not a rotating or swinging sharp edge. And what about electric chainsaws with higher torque - admittedly not originally a pro tool but this type of glove may not stop that at all. It's interesting to note that *Pfanner,* that make a lot of chainsaw clothing, don't produce a chainsaw-protective glove at all even though they do have a number of work gloves. Instead they just have chainsaw protective *sleeves* to protect the forearm and wrist. Maybe they see arms as more vulnerable or that gloves just aren't up to much while comfort and dexterity of a glove takes priority in reducing the risk of injury?

What we need is a lightweight glove that you hardly realise you have on but has active, effective chainsaw protection on the front and back of BOTH hands covering the entire surface from wrist to palm to finger tips, how hard can it be? The Holy Grail of gloves it would seem although the *Youngstown* model we've included has 360° kevlar lining (pic below) in quite complex but light designs so maybe it's not that far off. Two of these Youngstown gloves will NOT stop a chainsaw so their inclusion is a little misleading but they do offer some protection and more on the right hand and front of hand than most actual chainsaw gloves and the *Winter Plus* glove (right) offers all around Kevlar on both hands AND is entirely waterproof. Their latest model the *CR5 Hybrid* does have level 5 instead of level 4 protection which is as high as it gets in the US at the moment. As usual, we have more 'manufacturers' listed than there are actual 'manufacturers' so there are a number of like models under different names. Not surprising really that if you make chainsaws you would feel the need to provide an accompanying branded glove but they're generally not set up to produce textiles so they source it elsewhere and rebadge. Nothing wrong with that, no point in reinventing the wheel.





FEATURES (refer to fig 1 left)

FINGER-TIP GRIP:
Refers to specific rubberised or tactile enhancement to the finger-tips to improve grip particularly in the wet.

PREFORMED/SHAPED HAND:
The glove is designed as 3-dimensional hand-shape with curves rather than two flat hand-shapes (back and front) sewn together. Pre-shaped gives a much closer fit but costs more.

VIBRATION-DAMPENING:
Extra padding or gel pads which stop some of the saw's vibration reaching your hand and fingers.

PALM REINFORCEMENT:
This may include dampening mentioned above but without dampening is an extra layer of material to improve wear

FINGER REINFORCEMENT:
As above but it runs up the front/ and/or back of the fingers as an extra layer of protective material - this may include cut-protection but more often than not, not!



KNUCKLE REINFORCEMENT
Often coincides with the active cut protection but since this may only be on the left glove it is a narrow or wide strip of extra protective material, mostly leather.

NOSE-WIPING MATERIAL:
They may not admit it but that bit of Terry-cloth (nappy material) on the back of some of the thumbs is for forehead-sweat-removal or nose-wiping - bare this in mind when you borrow your mate's gloves. Listed as 'Sweat-Wipe' in the tables

HI-VISIBILITY COLOURS
Unless you're Edward Scissor-hands or working next to Edward Scissor-hands and there's a danger of speedily slashing around your own hand. this is more to do with overall visibility of the arborists and signalling ground crew than noticing where your own hand is..

VELCRO CLOSURE/TIGHTENING:
A velcro closure means that you can tighten the wrist - this not only makes for a firmer, more secure fit but it helps keeps out sawdust and debris. It also means that the glove is made easier to put on in the first place. This needs to be very firmly stitched because, for most arborists, it doubles as a pull-on tab.

CUFF:
If the cuff is elasticated, it might be Neoprene or knitted. We've differentiated between the two by having a solid black square for neoprene and an outline square for knitted. Knitted can be be good and bad - on cold dry days it's the warmest and most comfortable fit but many will retain water and sweat and any other body moisture or nasal effluent you inflict on it as well as dust and wood chips. For a firmer and more watertight fit Neoprene is used and may be married to a Velcro closure to provide a flexible, water-resistant cuff. Some gloves, particularly all-leather or leather and cotton, may have a simple, open 'skirt' which many find more comfortable. This is fine on shaped gloves like the Forester High Impact but be careful that the glove doesn't work loose on more generic designs with an open cuff like the Forester HD.

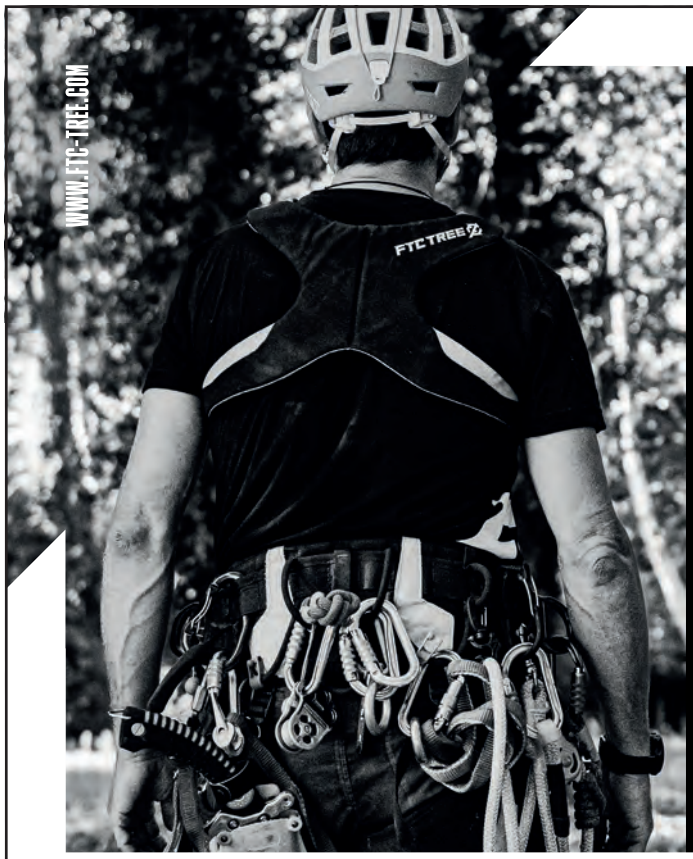
size	inch*	cm*	size	inch*	cm*
XS	7	18	XS	6	15
S	7.5 - 8	20	S	6.5	16.5
M	8.5 - 9	23	M	7	18
L	9.5 - 10	25	M/L	7.5	19
XL	10.5 - 11	28	L	8	20
XXL	11.5 - 12	30	XL	8.5	23

SIZING
This is a can of worms. In the US sizes are usually given as Small to XXL sometimes as a figure normally relevant to dress gloves with the measurement taken as the circumference around the palm. In the UK and parts of Europe sizes are from 6-12 where 9 is generally Med, L in the case of Francitel, 10 is Large and don't arm wrestle with a size 11 or12. However, we also see these measurements given by some as what must be a width across the palm rather than circumference which helps confuse things: 8cm = small, 9cm = medium, 10cm = large, 11cm = X large
The tables above are the US charts for Men and Women:

The moral of the story is - try them on if you're using a different glove to your last pair or make sure you can send them back if they don't fit.

STANDARDS
We've mentioned EN388 but for active chainsaw protection it's **EN381-7 1999** sub-divided into three cut-resistance classes and two designs adopted across the globe:
Class 0 = 16m/sec or 3150 feet/min
Class 1 = 20m/sec or 3937 feet/min
Class 2 = 24m/sec
Standard EN 381-7 design A for gloves describes a protection surface on the back of the hand. The protective surface must be min. 110mm wide and min.120mm high at the highest point (without the fingers).
Standard EN 381-7 design B for gloves describes a protection on the back of the hand and 4 fingers. The protective surface must be min. 110mm wide and min. 190mm high from the base to the highest point.
In simple terms the European standard EN381-7 is specific about providing some degree of protection against a moving chainsaw However it only requires the back of the left-hand glove to be chainsaw protective and this may include fingers but not the thumb. Not much you can do without that opposing thumb! We wonder why this standard applies to a PAIR of gloves when only the left is protective? It's strange that this standard hasn't been tightened up or further sub-categorised to indicate dual hand protection. And aren't left-handed people discriminated against in the arb world with all the right handed chainsaws and gloves? The biggest nonsense is that in the US you can virtually forget about ANSI/ASTM cut-resistance standards having much to do with protection from chainsaws - they're really only applicable to knives and hand saws. Until this very odd oversight is rectified, look for European chainsaw standards quoting 0 or 1 when choosing gloves. *Solidur* now has a '2' - the *Sequoia* protecting to 24m/s so expect to see more.
EN420 is a generic Safety Glove and quality assurance standard covering quality of components, manufacture, fit & longevity.

IN THE FOLLOWING TABLES.....
USES: All except two of the *Youngstown* models are certified as, or designed to be, chainsaw protective gloves.
CLIMBING: The manufacturer feels these are particularly appropriate for climbing but you may find a favourite glove for climbing not listed as such. It should be close fitting with an elasticated (wrist-hugging) cuff and tacticle grip.
COLD WEATHER: Some have active insulation against the cold but this will often be at the expense of dexterity.
UTILITY: most of these could be be listed under this heading which takes in chipping, rope-work and groundwork but it's a bit of a waste of the higher quality gloves so you will see shaped gloves in particular not listing 'UTILITY' as a use.
Our tables show '**WATERPROOF**' but chainsaw gloves have such a complex array of stitching and articulation points that none are truly waterproof - water-resistant is the best you'll get unless you wear a latex/nitrile glove as a liner and even then it will end up damp from sweat! The key value of a waterproof glove is that you're less likely to be working all day in a wet glove that retains moisture through the day from the first half hour's cutting. We haven't yet included *Vgo*, the *Raptor* and *Hand Protection International*. We would probably need an entire publication to capture them all!



WORK HARD.
CLIMB HARD.
PLAY HARD.

To gear up for a hard day's work and end our day with a smile. That's our chance as arborists: to have a unique and thrilling job, the opportunity to mix working, climbing and playing!

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PROTECTION CUT= EN381-7 level = ANSI level
GENERAL= EN388 level = ANSI level
● Water Resistant ■ Water Proof
● OK but not Ideal
○ Good Cut-resistance but not full chainsaw protection



MODEL	COMPANY	ORIGIN	COST For 1x PAIR approx, rounded up inc. VAT/Tax	MATERIAL	SIZES	STANDA
AT875	ARBORTEC FORESTWEAR	UK	£48 $59 €55	Cowhide, Polyester, Rubber, Kevlar	8,9,10,11	EN38 EN388
X-Pert AT900	ARBORTEC FORESTWEAR	UK	£47 $57 €54	Leather	79,9,10, 11,12	EN38 EN388
XT Chainsaw AT1550	ARBORTEC FORESTWEAR	UK	£47 $57 €54	Leather	8,9,10,11	EN38 EN388
Pro Climber AT950/75	ARBORTEC FORESTWEAR	UK	£42 $49 €51	Leather	8,9,10,11	EN38 EN388
Handguard	ARBPRO	IT	£00 $00 €35	*Griptech* reinforced Goat leather Stretch Nylon	8,9,10,11, 12	EN388- EN4
Classic CW400	CUTTERS	UK	£23 $00 €00	Full Grain leather, Cordura	8,9,10,11 S,M,L,XL	EN38
Pro Winter CW500	CUTTERS	UK	£29 $00 €00	Amara synthetic leather, Spandex, PVC, Thin-sulate	8,9,10,11 S,M,L,XL	EN38
Pro Summer CW600	CUTTERS	UK	£25 $00 €00	Amara synthetic leather, Spandex, PVC	8,9,10,11 S,M,L,XL	EN38
Tegera 951	EJENDAL	SE	£39 $00 €00	1-1.2mm Cowhide, Polyester, Dyneema	8,9,10,11 S,M,L,XL	EN38 EN388
Pro-Gloves	ELVEX	US	$43 $00 €00	Cowhide & Suede, Polyester fibres	M,L,XL	EN38 EN388

CHAINSAW PROTECTIVE GLOVES

	USES				PROTECTION									WRIST/CUFF				FEATURES											
ARDS	CHAINSAW	CLIMBING	COLD WEATHER	UTILITY	CUT EN / ANSI	PROTECT LEFT HAND	PROTECT RIGHT HAND	ABRASION EN / ANSI	BLADE CUT EN / ANSI	TEAR EN / ANSI	PUNCTURE EN / ANSI	ALT CUT IMPACT	VELCRO	ELASTICATED	PULL-ON/HANG TAB	WATERPROOF	ENHANCED GRIP in WET	ANTI-VIBRATION	SWEAT-WIPE	PRE SHAPED	REINFORCED PALM	REINFORCED KNUCKLES	REINFORCED FINGERS	WARRANTY (YEARS)	OTHER COLOURS	NOTES	WWW.
31-7 3222	■			■	1	■	-	3	3	4	2	- -		□		□		■	■		■	■	■	?	■ Rubber palm grip. ■ Reflective knuckle band. ■ Kevlar stitching	Replaced the 850 Rubber palm grip. Reflective knuckle band.Kevlar stitching	arbortec.com
31-7 3122	■				1	■	-	2	2	3	2	- -	■	■		■				■						AT500 Forester & AT950 Pro Climber have been discontinued.	arbortec.com
31-7 3122	■	●			0	■	-	3	1	2	2	- -			■		■			■	■	■				Hi-Viz, breathable 4-way stretch back. Non-restrictive cut-away cuff for comfort	arbortec.com
31-7 3122	■	■			1	■	■	3	1	2	2	- -	■	■	■		■	■	■	■	■		■		■	Hi-Viz, Kevlar stitching. while stocks last DISCONTINUED as are AT500 Forester & Treehog TH040	arbortec.com
-4142 20	■	●			0	?		4	1	4	2	- -	■	■	■		■			■	■	■					arbpro.it
31-7	■			■	0	■	-					- -		□		□				■	■		■			14-layers of cut-resistant fibres	cutterworkwear.com
31-7	■	●	■		0	■	-					- -		□		□	■			■	■					4-way stretch, 14-layers of cut-resistant fibres	cutterworkwear.com
31-7	■				0	■	-					- -	■	■			■			■			■			14-layers of cut-resistant fibres	cutterworkwear.com
31-7 3122	■	●			1	■	■	3	1	2	2	- -	■	■		□				■						Hi-Viz, Reflective piping, Multi-layers of Dyneema	ejendals.com
31-7 4244	■			■	1	■	-	4	2	4	4	- -	■			□			■		■		■			Prolar™ chainsaw padding	elvex.com
																											expansion row

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PROTECTION CUT= EN381-7 level = ANSI level
GENERAL= EN388 level = ANSI level
● Water Resistant ■ Water Proof
● OK but not good
○ Good [illegible] protection but not full chainsaw protection



MODEL	COMPANY	ORIGIN	COST For 1x PAIR approx, rounded up inc. VAT/Tax	MATERIAL	SIZES	STAND
Anti-Vibration Chainsaw	FORESTER / ECHO-USA		£00 $23 €00	Goatskin Leather, Nylon/Poly Spandex, Neoprene, Kevlar-Lined	M-XXL	
Knitted Chainsaw	FORESTER		£00 $26 €28	Goatskin Leather, Nylon/Poly Spandex, Kevlar-Lined	M-XXL	
Arbor	FORESTER		£00 $23 €00	70% leather 20% polyester spandex 10% polyester nylon	S-XXL	EN3
HD Leather	FORESTER		£00 $23 €00	Leather	S-XXL	EN3
High Impact	FORESTER		£00 $23	50% Goat Skin 50% Kevlar	S-XXL	EN388
Chain 304	FRANCITAL		£26 $00 €25		8,9,10,11 M-XXL	EN38 EN3
Chain 216	FRANCITAL		£25 $00 €00	Leather	8,9,10,11 M-XXL	EN38 EN388
Pro	GO PART		£13 $00 €00	Kid Leather Polyester	8,9,10,11 M-XXL	EN38 EN3
454	HARKIE		£33 $00 €34		8-12 S-XXL	EN38 EN388
Functional	HUSQVARNA		£39 $30 €42		8,9,10,11	EN38 EN3
Technical	HUSQVARNA		£42 $00 €00	Goatskin, Polyester, Neoprene,Spandex, Terry-cloth	8,9,10,11	EN38 EN3

CHAINSAW PROTECTIVE GLOVES

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	○				NO	■	■	3	3	4	2	- -	■	■			■	■	■		■	■	■	1	■ ■	rebadged by ECHO USA in Orange. 2 layers of Kevlar	forestershop.com echo-usa.com
	○				NO			3	1	2	2	- -		■							■	■		1		Also available in WHITE/black with extended safety cuff with Velcro	forestershop.com
88	○	■			4	■	■					- -	■			□	■	■	■		■		■			Hi-Viz Carabiner eye	forestershop.com
88	○			■	4	■	■					- -				□				■						Hi-Viz	forestershop.com
2243	○			■	4	■	■					- -								■	■	■				Back-hand shield resists impact.	forestershop.com
1-7 88	■				1							- -		□								■					francital.com
1-7 4144	■	●			0			4	1	4	4	- -	■	■							■		■		■	Hi-Viz, 4-way stretch fabric on back	francital.com
1-7 88	■			■	0	■	-					- -		□	■	□					■						kramp.com
1-7 4142	■				0	■	-	4	1	4	2	- -		■			■			■			■			4-way stretch fabric on back. Rubber grip pads on palm	harkie.co.uk
1-7 88	■			■	0							- -		■		□				■						reflective logo	husqvarna.com
1-7 88	■	●		■	1							- -	■	■		□	■		■	■	■		■			Hi-Viz, Reflective piping.	husqvarna.com

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○ Good [illegible]ance but not full chainsaw protection



MODEL	COMPANY	ORIGIN	COST For 1x PAIR approx, rounded up inc. VAT/Tax	MATERIAL	SIZES	STAND
Chainsaw 91305	OREGON		£20 $20 €00	55% Leather 25% Nylon 10% Spandex 5% Polyester 5% Para-aramid	8,9,10,11 S,M, L,XL	EN381 EN388-
Fiordland	OREGON		£30 $00 €00	24% Leather 47% Nylon 9% Poly/Cotton 15% PVC 5% Para-aramid	9,10,11 M, L,XL	EN381 EN3 EN4
Fiordland Winter	OREGON		£26 $35 €00	Leather	9,10,11 M, L,XL	EN381 EN3 EN4
OAK A290	PORTWEST		£14 $00 €00	60% leather 25% polyester 10% polyethylene 5% elastic	9-10 M-L	EN38 EN3 EN4
Function MS Protect	STIHL		£30 $00 €00	Leather, Textile, Elastic	8-11 S-XL	EN38 EN3 EN4
Dynamic MS Protect/ Pro-Mark	STIHL		£42 $00 €00	Leather, Textile, Elastic	8-11 S-XL	EN38 EN3 EN4



CHAINSAW PROTECTIVE GLOVES

	USES				PROTECTION								WRIST/CUFF				FEATURES											
ARDS	CHAINSAW	CLIMBING	COLD WEATHER	UTILITY	CUT EN / ANSI	PROTECT LEFT HAND	PROTECT RIGHT HAND	ABRASION EN / ANSI	BLADE CUT EN / ANSI	TEAR EN / ANSI	PUNCTURE EN / ANSI	ALT CUT IMPACT	VELCRO	ELASTICATED	PULL-ON TAB	WATERPROOF	ENHANCED GRIP in WET	ANTI-VIBRATION	SWEAT-WIPE	PRE SHAPED	REINFORCED PALM	REINFORCED KNUCKLES	REINFORCED FINGERS	WARRANTY (YEARS)	OTHER COLOURS	NOTES	WWW.
-7 A -3142	■	-	-	■	0	■	■*	3	1	4	2	- -	-	■	-	-	-	-	-	-	■	■	-	1	■	*10% cheaper with Left hand pro only	oregonproducts.com blount.com
-7 A 88 20	■		■	■	0	■						- -	■								■	■	■				oregonproducts.com blount.com
-7 A 88 20	■		■	■	0	■						- -	■								■	■	■				oregonproducts.com blount.com
1-7 88 20	■			■	0	■						- -		■												Also badged as 'Arborsafe'	portwest.com
1-7 88 20	■	-	-	■	0	■	■					- -	-	■	-	-	-	-	-	-	■	■	-	?		Lined	stihl.com stihl.co.uk
1-7 88 20	■	-	-	-	1	■	■					- -	■	■	-	□	-	-	-	■	■	■	-	?		Lined	stihl.com stihl.co.uk



IMAGES NOT TO SCALE
COST: approx, rounded up & inc local tax/vat
£$€= currency conversion only - no import duty, etc.
PROTECTION CUT= EN381-7 level = ANSI level
GENERAL= EN388 level = ANSI level
● Water Resistant ■ Water Proof
● OK but not Ideal
○ Good Cut-resistance but not full chainsaw protection




MODEL	COMPANY	ORIGIN	COST For 1x PAIR approx, rounded up inc. VAT/Tax	MATERIAL	SIZES	STAND
SS-15 010 25 0_	STEIN		£20 $00 €00	Leather, Rubber	8,9,10	EN381 EN3
2XD3/2	SIP PROTECTION		£24 $00 €29	60% polyamide 40% polyurethane Rubber PVC/PU	8,9,10, 11,12	EN381 EN388 EN4




MODEL	COMPANY	ORIGIN	COST For 1x PAIR approx, rounded up inc. VAT/Tax	MATERIAL	SIZES	STAND
2SA5	SIP PROTECTION		£38 $00 €36	cowhide leather, aramid yarn	8,9,10, 11,12	EN381 EN388 EN4
Infinity	SOLIDUR		£39 $00 €35			



MODEL	COMPANY	ORIGIN	COST For 1x PAIR approx, rounded up inc. VAT/Tax	MATERIAL	SIZES	STAND
Cidre	SOLIDUR		£00 $00 €20			



MODEL	COMPANY	ORIGIN	COST For 1x PAIR approx, rounded up inc. VAT/Tax	MATERIAL	SIZES	STAND
Magic	SOLIDUR		£00 $00 €30			




MODEL	COMPANY	ORIGIN	COST For 1x PAIR approx, rounded up inc. VAT/Tax	MATERIAL	SIZES	STAND
Sequoia	SOLIDUR		£00 $00 €38			





MODEL	COMPANY	ORIGIN	COST For 1x PAIR approx, rounded up inc. VAT/Tax	MATERIAL	SIZES	STAND
Endura	SUPERIOR GLOVE/ LUMBERWORKS		£00 $39 €00	Goatskin Leather, Nylon lycra, Kevlar	9,10,11 M, L,XL	
Titan XT Kevlar	YOUNGSTOWN		£00 $44 €00	Sythetic Leather, Kevlar, Elastic, Nylon	7-12 S-XXXL	ANSi/



MODEL	COMPANY	ORIGIN	COST For 1x PAIR approx, rounded up inc. VAT/Tax	MATERIAL	SIZES	STAND
WINTER + Kevlar	YOUNGSTOWN		£00 $50 €00	Sythetic Leather, Waterproof/ breathable membrane, Clarino Palm, Kevlar-Liner	7-12 S-XXXL	ANSI/
CR5 Hybrid Kevlar	YOUNGSTOWN		£00 $55 €00	Sythetic Leather, Kevlar, Elastic, Nylon	7-12 S-XXXL	ANSI/

CHAINSAW PROTECTIVE GLOVES

	USES				PROTECTION								WRIST/CUFF			FEATURES											
ARDS	CHAINSAW	CLIMBING	COLD WEATHER	UTILITY	CUT EN / ANSI	PROTECT LEFT HAND	PROTECT RIGHT HAND	ABRASION EN / ANSI	BLADE CUT EN / ANSI	TEAR EN / ANSI	PUNCTURE EN / ANSI	ALT CUT IMPACT	VELCRO	ELASTICATED	PULL-ON TAB	WATERPROOF	ENHANCED GRIP in WET	ANTI-VIBRATION	SWEAT-WIPE	PRE SHAPED	REINFORCED PALM	REINFORCED KNUCKLES	REINFORCED FINGERS	WARRANTY (YEARS)	OTHER COLOURS	NOTES	WWW.
L-7 A 88	■	-	-	-	0	■	-					- -	■	-	-		■	-	■	■	■	■			☐	heavy duty threads	steinworldwide.com
L-7 A 3131 20	■	●	-	■	1	■	■	3	1	3	1	- -	■	■	■		■	-	-	■	■	■	■			Also 2XD2 with pro in left hand only costs €24	sip-protection.com
L-7 A 3132 20	■	-	-	-	1	■	■	3	1	3	2	- -	■	■	-	■	■	-	-	-	-	■				Also 2SA4 without rubber grip palm €36 & 2SB5 as gauntlet €42	sip-protection.com
	■	●			1	■	■	3	2	3	2	- -	■	■						■	■		■				solidur.fr solidur.co.uk
	■			■	1	■	-	3	2	4	3	- -		■							■	■					solidur.fr solidur.co.uk
	■	●			1	■	-	3	2	3	2	- -	■	■							■	■	■				solidur.fr solidur.co.uk
	■			■	2	■	-	3	2	4	4	- -		■							■	■					solidur.fr solidur.co.uk
	■	-	-	-	0*	■	-					- -	■	■	-	■	-	-	■	■	■	-	■			Hi-Viz, 8-layer Kevlar stops 3140ft/min .*Equivalent to Class 0. Not for EU	superiorglove.com
ISEA	○	●	-	■	A5	■	■					- -	-	■	-		-	-	■	■	■	■	■			Hi-Viz, Reflective panels. Impact pads on back 360°Kevlar	ytgloves.com
ISEA	○	-	■	■	A4	■	■					- -	■	■	-	■	■	-	■	■	■	-	■			Water, wind & cutproof. 360°Kevlar Terry cloth outer thumb for brow/ nose-wiping!	ytgloves.com
ISEA	■	-	-	■	A5	■	■					- -	-	■	-		-	-	■	■	■	■	■			Hi-Viz, Reflective finger-tips. 360°Kevlar Terry cloth outer thumb for brow/ nose-wiping!	ytgloves.com

CHAINSAW PROTECTIVE TROUSERS



Title pic: *Arbortec Breatheflex* range of trousers are available as protective and non-protective versions.
Top-right Their collaboration with *Realtree* has resulted in striking colour and pattern options but we're not sure how well the lime and orange will hide you from a bear! Below-Left: *Cloggers Zero range* is one of several in this guide that have pockets etc designed for use with a harness. Some, like *Husqvarna*, go one step further and have strategically placed protective fibres in their climber's trousers that will pull out and clog when others might compress and be trapped by the harness leg loops.
Left/Right: In stark contrast to the high viz colours of most chainsaw and climbing trousers like the *Francital Prior Move Pro* on the left there are a number of 'urban camouflage' protective trousers that look like regular denim jeans like this *Englebert Strauss* pair.



Believe it or not, there was a time when the use of chainsaw protective trousers was frowned upon by climbers if not blatantly dismissed as far too restrictive in the canopy and best left to the ground crew. In the early days, we did have a point because trousers with active protection were five times heavier than regular trousers/pants, two or three times the bulk and had the stretch of a suit of armour such that, when going for that next dynamic step up, you found your knee got stuck mid-step and you had to cling on to regain your footing. These days of course, not only is it 'the law' and common sense to protect your legs when using sharp-ass cutting implements but the quality of trousers and the design in terms of stretch/mobility, ventilation and light weight are outstanding. The choice too is quite remarkable with the most prolific manufacturers: *Arbortec Forestwear, Francital, Solidur, ProfiForest* and *Sip Protection* producing well over two thirds of the more than 130 models we've listed in our full **Guide to Chainsaw Protective Trousers** in our ARBORIST BUYERS GUIDE.

Protection against a moving, cutting chain is categorically a life-critical consideration. If you cut into your leg, you can bleed out in minutes

Don't forget that this not only captures all of the models on the market, and provides a real-time update to this article but, being digital-only, it is updated throughout the year with new models, price and specification changes. This ArbClimber article introduction covers all chainsaw protective trousers but the tables are concerned only with trousers offering 360° protection which, for type C, includes the rear leg and what we're calling type A+ includes the rear calf. Despite the fact that most trousers called 'Arborist' are type A only, we have limited this guide to Type C/A+ for two reasons: 1) unlike North America and Europe, rear leg protection is advised to UK arborists when using a chainsaw aloft and we too would steer climbers that way knowing what a chainsaw cut to the back of your leg can result in - 70ft up a tree, hanging on a rope/lanyard is no place to get a serious injury and 2) we simply could not include the 26 or so pages it took to include all trousers that we have in our BUYERS GUIDE.

Nothwithstanding our previous warning, If you're a dynamic climber and prefer lighter, less restrictive trousers you will want



to check out the A/Front-only trousers as by far the wider choice. While some, like *Arbortec,* offer most as both A and C, others consider their climber-related design with rear ventilation for light and comfort to be the key concern and concentrate on type A only. *SIP Protection* for instance has 23 models and only one of these is a Type C. *Husqvarna, Pfanner, Francital and Stihl* etc. also engineer type A models specifically for freedom of movement on rope. There are also **non-protective trousers** because you won't always be using a chainsaw or you may be climbing for inspection or competition. In these instances, non-protective specialist climbers trousers like *Clogger's Spider*, *ArbPro's Sigma*, *Arbortec's Breatheflex* range and *SIP's Gecko* are worth checking out. However, back to our protection lecture and don't forget that chainsaw protection doesn't only guard against a hit from a running chainsaw, some will improve your chances against an impale, a miscued handsaw stroke, a bear attack and even a heavy and/or point-ended branch impact which may not take a chunk out and instead leave you with a huge bruise (but beware of internal injury on this one not evident by any surface bleeding!). Protective trousers are mostly from Europe but there is a divergence between the UK and Europe on whether type C or type A are best for arborists,. **Type A (Front Protection) covering the front of the legs only** are suitable for ground crew and foresters but most widely used by arborists particularly on the European mainland and in North America.

Type C (360° Protection): provides all-around leg protection and is suitable for all but in EU and N.America aimed at foresters and ground workers while in the UK they are aimed at climbing arborists because of the unusual cutting positions and greater chance of a chainsaw rotating onto the back of the ankle or calf. Ironically, the very reasons many European and US/Canadian manufacturers consider them better for ground workers who might brash around the legs or be more prone to stumbling. Perhaps the best compromise is the so-called **Type A+** unofficial category adopted mainly by *Arbortec* and *Clogger* that have all around protection around the calf but not the upper leg so they are much lighter than type C. All now include stretch panels of strategically located material (including 'baggy' knees) that permit relatively unrestricted movement so, let's be honest, there are three reasons you'll choose, what you choose: 1) They're the type you've used for years and you like 'em. 2) You hate 'em and someone recommended another type. 3) You're trusting their cut-protection credentials and choosing based on the colour because you really like that Stihl and Englebert Straus have pairs that look like denim or *Arbortec*'s *Realtree* hunting-style camo (pics-title page opposite). NB: All current denim trousers areType A/front-only.





Gloves and boot protection is important but with a decent first aid kit these are survivable as long as you remain conscious, even if you are a lone climber in the canopy. That's also true of a leg injury but being a larger area carrying your femoral and radial arteries there is much greater scope for rapid exsanguination that can only really be controlled by application of a tourniquet - hence the need for climbers to carry a CAT in their first Aid kit.



Unlike boot protection which frequently disappointed us in its ability to prevent a moving chain from getting through to your foot, trousers are much, much more effective because they contain larger and more extensive areas of chainsaw binding material, whether that is Aramid/Kevlar, Dyneema or nylon fibres. All of the top arborist trouser manufactures produce trousers that will definitely stop a chain on runout and some will even work on full throttle remembering of course that you are generally using a smaller saw, (and these days battery with higher torque) when working aloft. With the contortions you have to employ to get into a decent cutting position there is much greater scope for injury to the backs of a climbers leg so type C trousers may be mandated. Ironically these are the very trouser types that originally led to resistance against wearing them for climbing and only when lighter weight Type A trousers with front-only protection became common did many climbers get back on board with some then moving up to the greater levels of protection afforded by Type C and/or Class 2 and 3 as well as the most common class 1 trousers. While any chainsaw user can use any type of chainsaw trouser and it will be better than your old denim jeans, there are clearly different types of user - Climbers, ground crew, emergency workers, foresters and utility workers in cherry pickers for instance. There are also different work environments - hot and cold climates, wet and dry (which can both be hot or cold), working on a garden lawn, a remote and congested forest floor, a manoeuvrable hydraulic platform or hanging from a rope in the tree's canopy. These uses may require that your trousers are also highly visible such as road and Rail workers or that they are as well ventilated and lightweight as possible for hot-dry climates. Indeed with a few exceptions it is only type A and A+ that allows the rear zipped vents and a main reason for many climbers sticking to 1A protection. 'Comfort' is not restricted to the cut protection and flexibility that this allows. There is also the question of whether it keeps you dry in the wet, (See EN343-3), whether it is well ventilated or can be seen in low light and when working in areas where others need to see you like roads and railways.







FEATURES:

MATERIALS: modern chainsaw trousers have evolved from those early suits of armour in two ways in particular - stretch fabrics to allow less restricted movement and breathability. Its no surprise that the waist, the high waist band to preven 'builders bum' and stop drafts and the larger trouser panels around the thighs and crotch have incorporated elastic fabrics but so too have the reinforced areas of the knee and seat. These high wear areas have combinations of heavy duty nylon/*Cordura* - in heavier weights than the main fabrics but they also incorporate even harder wearing fabrics like *Aramid* in combination with stretch fabrics like *Spandex* to try and cancel each other out in the stretchy/not-at-all-stretchy battle. The ankle is also reinforced because it can get a lot of abuse from your boots and especially your spikes but that doesn't need the addition of stretch fabrics so it can be all-tough. The seat can be a high wear area if you take a lot of tea breaks or drive in your chainsaw trousers but equally you lean on your backside during climbing more than you'd expect and the harness being in continual loaded contact is a real point of wear. All of this stretch and tear resistance is married with breathability and comfort so these are a pretty complex arrangement of fabrics - there are 4 or 5 different fabrics on show in this pair of SiP Canopy trousers. Breathability is introduced by adding cooling and moisture wicking materials like *Coolmax* and humble cotton into the inner lining and even sandwiching the cut protective layers as these are often bundles of fibres that are inherently aerating as you move, in fact you could almost see this as a kind of bellows sucking and blowing air as you move.

REFLECTIVE: Not just high-viz which you can see just by looking at the pictures but has reflective strips or piping or highlights that pick up and reflect light so that the trousers are highlighted in low light or in the dark when an ambient light source is shined in the general direction.

ANTI-TICK: An elasticated or velcro-closed hem or gaiter is good in the cold and wet and for keeping out ticks. Some are designed as a secondary gaiter inside the hem and running several inches up but this can be hot and heavier for climbers so some are a detachable gaiter like these *Francital Hades* (listed as such in the 'features' panel in the tables). Closing the hem to restrict access of snow and ticks may be via elastication

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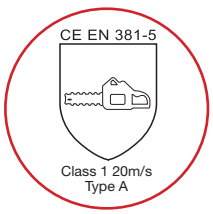
Adjustable leg width



Ventilation zippers



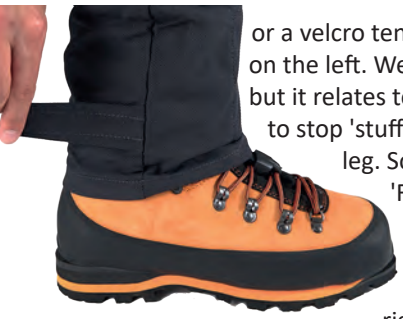
4 Way stretch fabric



Chainsaw protection Class 1 Type A

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or a velcro tensioning strap as in the *Clogger* pic on the left. We have listed this as TICK prevention but it relates to any hem that closes on the boot to stop 'stuff' and critters getting up your inside leg. Some will mention in their 'FEATURES' notes in our tables that the hem has a vertical zip like the *Pfanner* pair bottom-right - this makes for easier boot donning/doffing.



BOOT HOOK: Many hems have a boot hook to stop the trouser leg riding up. This clips to the laces just around the transition from upright to horizontal.

ATTACH BRACES: a bespoke attachment point(s) like buttons, loops or *Velcro* etc. to attach braces/suspenders/shoulder straps securely to the trousers. Trousers that have a raised waist at the rear (kidney warmer) like these *Husqvarna Functionals* usually incorporate an attachment point that not only secures the braces/suspenders but keeps that raised waist section upright.



ZIP VENTS: Working hard in a pair of multi-layered, relatively heavy trousers generates a lot of heat and moisture so most type A/front-only protection trousers have an opening on the thighs that can be unzipped to allow better air circulation and exhaust some moisture. This is often negated in type C trousers by the layer of chainsaw protection on the rear of the legs which is why many European manufacturers consider type C to be less suitable for climbers. The UK disagrees and reckons you just adjust to the discomfort of increased heat and sweat because it's better than bleeding out from a cut to the back of your legs. Type A+ with Calf protection can, and most often does, have rear vents in the thigh area.



CLIMBING: What's the difference between a pair of chainsaw trousers used on the ground and a pair used by climbers? Well, sometimes, not a lot. Again, the different approach by the UK with the greater chainsaw protection of type C is recommended for climbers is in stark contrast to Europe and North America where lighter, front-only protection trousers are deemed most suitable for climbers because they're lighter and they allow more freedom of movement. There are other features that will get the trousers a **CLIMBING**- suitable green square, Harness-compatible pockets - only climbers will be wearing a harness so, by default , these must be climbers trousers - that is of course the manufacturers interpretation, as are all of the trousers that have a green square in this row - we're not subjectively telling you that they are suitable for climbing, the manufacturer is, so some will certainly be better for climbing than others.



Class 2 and class 3 trousers will be heavier and bulkier because they have higher chain speed protection which will usually mean more bundles of fibres or more layers. Even n the UK it is not deemed great for climbing to have this degree of protection at the expense of comfort and dexterity. Type A+ however, with chainsaw protection on the calf rather than all the way up the back of the leg may well be the best compromise and somewhere that the UK and Europe/ North America can come together and agree. *Clogger* in New Zealand, don't care either way because they provide the equivalent of type C and type A as options on all their main trouser ranges.

POCKETS

The problem with pockets on chainsaw trousers is that they fill up with sawdust and debris unless they have efficient closures. So you see that most pockets have either a zip, and often a waterproof sealed zip, or a *Velcro* or press stud flap. Most trousers have various combinations of the following:

HAND POCKETS: one or two side (some describe this as front) slant or hand pockets - these are mostly angled downwards for easier hand entry but some are square and they are pretty much all zip closures. However, you will forget to close those zips on a regular basis so many are 'reversible' so that you can pull the pocket out like an old sock and tip out all the accumulated sawdust.

CARGO: A side or thigh mounted cargo pocket with a flap over the opening - this is usually the largest pocket.



RULER/TOOL POUCH: which is long and thin and often flapped like the *Pfanner* on the left or open at the top like the *Solidur* model right and may be located within the cargo or on the outside of it. This *Solidur* pic-right also shows a tool loop which is a receptacle for your scrench and in its simplest form is just a loop or tab of material with a slit opening and the screwdriver end is secured in the ruler pouch/pocket or into web loops as with this *Solidur*.

REAR POCKET - usually zipped though some may have a securable flap. Almost always square with the trouser waist.



PHONE POUCH/POCKET - sized to fit a large smartphone these days rather than a late nineties *Nokia* and often also inside another pocket. This will usually have a sealed zip that stops water getting in.



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FIRST AID: Not common but *Solidur* have made that high waist we mentioned previously into a first aid pocket - genius (as long as it's all the soft first aid stuff like plasters and trauma dressings, wouldn't fancy a defibrillator sticking in my back!)

CHAINSAW & SAFETY STANDARDS

In terms of Chainsaw protection there are three European Standards and two North American standards that specifically deal with chainsaw protection of trousers: EN 381 5, and EN11393 and the multi-faceted KWF in Europe with the latter two referencing EN381.5 rather than being specific cut test standards, in fact KWF is more of a prestige or quality assurance 'badge'. ASTM F1897 and the newer ASTM 3325 in North America. The European standards specify differing chain speeds from 16 to 28metres per second whereas the US ASTM F1897 specifies only 14m/s and the more Canadian-adopted ASTM 3325 with the higher 20m/s resistance. It's no real surprise that the vast majority of US retailers sell the higher rated and more specifically cut-tested European trousers. Australia and New Zealand have AS/NZS 4453.3:1997 also 20 m/s chainspeed.

EN 381-5 – Chainsaw Protective Clothing – Leg Protection
This standard covers leg protection for chainsaw users, ensuring materials can resist chainsaw cuts. Performance classes are based on chain speed which broadly relates to a chain on runout (finger off the trigger) not at full revs:

- **Class 0 (16m/s) (normally for gloves)**
- **Class 1 (20 m/s)**
- **Class 2 (24 m/s)**
- **Class 3 (28 m/s)**

In addition there are locational 'Types' of trouser protection indicating where the specific protection barriers are located:
Type A: protective layers/materials are positioned only on the the front of the legs
Type B: 'Chaps' or open-backed, shaped 'covers' that go over the top of any type of work trousers.
Type C: protective layers/materials positioned at the front and the back of the legs, - 360° coverage.

EN ISO 11393-21 – Protective Clothing for Chainsaw Users
This standard may be mutually exclusive with EN381-5 since it incorporates its test methods for protective clothing designed to protect against chainsaw injuries. Key parameters are:

- Cut resistance (tested using a chainsaw at different speeds)
- Abrasion and tear resistance
- Ergonomic design and comfort
- Material durability and flexibility
- Coverage areas (e.g., trousers, jackets, gaiters, gloves, boots)

KWF/KWF-Profi - German forestry 'quality-assurance' version of EN11393 inc waterproofing. Profi=professional
In North America different standards apply which are more akin to EN11393 with seven requirements including one cut test.
AS/NZS 4453.3:1997 - Australia & New Zealand broadly following EN 381-5 Class 1 testing (20m/s).

ASTM F1897 – Leg Protection for Chainsaw Users
1. Cut Resistance Testing: The protective material is tested against a moving chainsaw to evaluate its ability to slow down or stop the chain. The test is performed at a chain speed of 2750 feet/minute (fpm) (≈ 14 m/s). If the chainsaw does not cut through the innermost layer, the clothing passes the test.
ASTM F3325 For lighter chainsaw clothing but actually uses the higher 20m/s so aligns more with Canadian requirements.
2. Coverage and Design: Minimum coverage for protection:
Chaps: Must cover the front and sides of the legs.
Pants: Must have full-leg protection, including the back if designed for arborists.
Leggings: Must provide at least 180° coverage around the leg (Equivalent to EN 381-5 type A).
Garments should not have gaps or unprotected areas where a chainsaw could easily penetrate.
3. Material Requirements: Must include multiple layers of cut-resistant fibers that can clog the chainsaw's drive system upon contact. Common materials used: Kevlar®, Ballistic Nylon & Engtex® high-performance fibers
4. Water and Oil Resistance: Protective clothing must be resistant to water and petroleum-based oils, as these substances can degrade fabric performance. Some designs include a water-repellent outer layer to maintain durability in wet conditions.
5. Labelling and Certification: All chainsaw protective clothing must have a label indicating compliance with ASTM F1897.
The label should also specify:

- Manufacturer information
- Garment type (chaps, pants, leggings, etc.)
- Chain speed rating (e.g., 2750 fpm)

Associated Standards which don't include a cut test other than to reference a requirement for ASTM F1897 include:

ANSI Z133 – Safety Standards for Arboriculture
Requires chainsaw operators to wear leg protection (chaps or pants) meeting ASTM F1897. Covers helmet, eye, ear, hand & foot protection for tree workers.
OSHA 1910.266 – Logging Operations Standard
Requires chainsaw chaps or pants meeting ASTM F1897 for loggers. Specifies other PPE requirements (helmet, gloves, boots, hearing protection, etc.)Mandates chainsaw training.
Canada: **CSA Z195 – Protective Footwear**
Requires chainsaw protective boots to have cut-resistant material around the foot and ankle.

CSA Z96 – High-Visibility Safety Apparel
Relevant for chainsaw operators working in roadside or forestry environments. Defines visibility requirements for jackets, vests, and coveralls. Various provinces, like BC, Alberta, and Ontario, enforce workplace chainsaw safety rules and often require chainsaw protective gear that meets or exceeds ASTM F1897 and OSHA 1910.266.

PERIPHERAL EUROPEAN STANDARDS

There is the German KWF trademark for forestry equipment referencing EN 318.5 but also requiring water resistance and durability plus a whole load of associated European standards that are not directly related to chainsaw protection but cover other comfort and safety issues like visibility. We've listed these

associated standards here so's you are clear on what is and isn't relevant to your work conditions.

EN ISO 13688 – Protective Clothing general performance in terms of ergonomics, markings, compatibility with other safety gear, sizing, use of inert fabrics and colours etc.

EN 13758-3 – UV Protective Clothing

EN ISO 20471-9 – High-Visibility Clothing

Minimum surface area of fluorescent material (yellow, orange, or red). Retro-reflective tape properties (brightness and performance),Colorfastness and washing durability Design requirements (placement of reflective materials)

Performance classes (Class 1, 2, or 3) based on risk levels

RIS-3279-TOM - Hi-visibility clothing as required by the RAIL industry and including prescribed reflective panels

EN 343-3 – Waterproof Clothing

This standard defines waterproof and breathable clothing for protection against rain and wet conditions. Key parameters:

Water penetration resistance (Waterproofness) – Class 1 to 4

Water vapour resistance (Breathability) – Class 1 to 4

Seam strength and durability, resistance to hydrostatic pressure, impact of washing on waterproof performance. Note that we also list ● **REPEL WATER** (enhanced material or a coating) separately since not all will apply for the **EN343** standard even if the product is waterproof.

NORTH AMERICA VS. EUROPE

Feature	ASTM F1897 (USA)	EN 381-5 (Europe)
Tested Chain Speed	2750 fpm (~14 m/s)	Class 1: 20 m/s, Class 2: 24 m/s, Class 3: 28 m/s
Protection Area	Front and sides of the legs	Type A (front), Type C (full-leg)
Material Used	Kevlar, Ballistic Nylon, Engtex	Multi-layer synthetic fabrics
Oil/Water Resistance	Required	Not always specified
Certification Required	Label with ASTM F1897 compliance	CE marking with EN 381 certification

COMFORT AND BREATHABILITY:

- Ventilation zippers, moisture-wicking fabric, and reinforced knee and ankle areas for durability.
- Lightweight and flexible designs improve comfort for prolonged use.
- Chaps offer better ventilation, trousers vary in airflow. Type A trousers include ventilation zips for breathability.
- North American chaps provide better breathability, but European trousers offer superior all-around protection but can be heavier due to the extra protection measures.

ADDITIONAL FEATURES COMMON TO BOTH:

- Water-resistant or waterproof coatings for wet conditions.
- High-visibility colours or reflective strips for added safety.
- Reinforced seams and stretch panels for better mobility.



CHAINSAW TROUSERS

Chainsaw protective trousers in North America and Europe serve the same purpose; preventing injuries by stopping or slowing down a running chainsaw, But they follow different safety standards, classifications, and design requirements.

In Europe they must be CE-certified, but some manufacturers make US variant trousers that comply with ASTM requirements -remember that the Canadians tend to use ASTM (F3325) with a slightly higher chain speed requirement of 20m/s.

Finally, some of these entries aren't simply trousers, hey may be **overalls** or **jump-suits** like *Pfanner*'s eft, which integrates the trousers into a top section r they may have just a bib in the same style as kiing Salopettes. We have not included chaps in his guide as they are mostly front protection nly and are prone to snagging so not generally sed by arborists. Nevertheless these can be an option for you to consider so are included in the **BUYERS GUIDE**. Also worth a look is the modular concept as used by *Arbortec* with the *ArborFlex* system. A base protective layer provide 1A, 1A+ or 1C protection (which can be worn by itself) and this is married to an outer (skin) in your colour choice. These can all be worn as standalone or a system.

IN THE FOLLOWING TABLES.....

Protection The level ***(or equivalent level to EN381-5 in brackets eg.(1C))*** of chainsaw cut protection with variants in cyan eg. 1A

SERIES: Is often the same as the Model name if there are few others or only one model in the range. Some trousers are better known by their series name.

REFLECTIVE: Active reflective material -not just high viz colour

BOOT HOOK: Often elasticated, an attachment from the trouser hem to the boot or its laces to stop the trousers riding up. Not the same as **ANTI-TICK** where the hem/gaiter closes around the ankle to prevent snow & critters climbing up the inside of the leg.

ZIP VENTS: Zipped opening on leg's rear to help cool the wearer- NOT normally on type C because of rear thigh coverage although but A+ with calf only usually has vents.

CLIMBING: These have features such as elasticated panels and expanding knee area that allow dynamic moving and acute bending at the knee necessary for dynamic climbing. They also have pockets that are accessible wearing while a harness.

POCKETS: we have listed the spark-plug wrench/screwdriver/sprocket-cover wrench as a '**scrench' (screwdrver/wrench)**

FEATURES: Because the materials and definitions vary so much and there is a fair degree of subjectivity in how they view their own materials and combinations, we also use the manufactures own description of features.

OTHER COLOURS: We have usually shown a different coloured rear and front so 'other colours' is all other colour options aside from the one or two shown at the top of each column.

Husqvarna

NEW PROFESSIONAL 2-YEAR WARRANTY



Redefining standards

Designed for tree care professionals, by tree care professionals, our new T540 XP® Mark III features a remastered design for increased reliability, maneuverability and power. And it pairs perfectly with our new arborist climbing gear, creating an ecosystem of arborist solutions so you can be **up early, down safely.**



Exceptional power-to-weight ratio

Engineered for **durability**

AutoTune™ 3.0 delivers **peak performance**



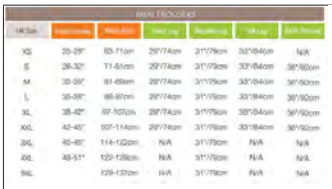
NEW Climbing gear





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ROPE
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LEGSIZES: S Short R Regular L Long/Tall XL Extra Long/Tall

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ENISO11393-2= Chainsaw safety
ASTM F1897 USA= Cut Pro+
ASTM Canada= Cut Pro+
AS/NZS 4453.3= Cut Pro+
KWF-Profi= Forestry safety
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ENISO13688= Safety Clothing
EN 343-3 = Waterproofing
RIS-3279-TOM= Hi-Viz Rail
EN ISO 20471= Visibility
ANSI107 & CSAZ96= Visibility

EN CUT PROTECTION:
Class 1: 20m/s
Class 2:
Class 3:
Level A=Front leg. **A+**= +Calf
Level C=front & back leg
WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing

















MANUFACTURER	ARBORTEC FORESTWEAR	ARBORTEC FORESTWEAR	ARBORTEC FORESTWEAR	ARBORTEC F
MODEL PROTECTION VARIANT	AT4050 AT4010 1C 1A	AT4050F AT4010F 1C 1A	AT4010 USA UL 1A	AT401
SERIES	BREATHFLEX	BREATHFLEX	BREATHFLEX	BREAT
PRODUCT CODE(S)	AB344497 AB345451 AB345414	AB344497 AB345451 AB345414	AB364005..025	AB34
ORIGIN				
COST inc VAT/tax conv-only	£342298 $445386 €350305	£342298 $445386 €350305	£298 $000 €000	£315 $4
WEIGHT per pair (m/lg R)	1.5 1.2kg / 3.3 2.64lb	1.5 1.2kg / 3.3 2.64lb		1.6kg
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	S-5XL S, R, L, XL	S(6)-2XL(22-24) R	S-5XL S, R, L, XL	XS-3X
MATERIALS - OUTER LINER CUT PROTECTION	Polyester, Nylon, Kevlar Nylon 6 layers-Trio strand *Gridlock*	Polyester, Nylon, Kevlar Nylon 6 layers-Trio strand *Gridlock*		Polyester, N Ny 6 layers-Trio s
POCKETS	Dbl-flap Cargo & phone pockets. 2xTool pouches. 2xrear & 2x front zip	Dbl-flap Cargo & phone pockets. 2xTool pouches. 2xrear & 2x front zip	Dbl-flap Cargo & phone pockets. 2xTool pouches. 2xrear & 2x front zip	Zip Cargo & phone pouches. 2xrear &
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING	*	*		
FEATURES	Reinforced at high tension seams. Kevlar lower leg. Quality YKK zipper inc. pockets Downward-facing Pocket Zips. Compatible with climbing harness. Reinforced lining around ankle. *Rear Vent zip on Level A Only	Reinforced at high tension seams. Kevlar lower leg. Quality YKK zipper inc. pockets Downward-facing Pocket Zips. Compatible with climbing harness. Reinforced lining around ankle. *Rear Vent zip on Level A Only	Reinforced at high tension seams. Kevlar lower leg. Quality YKK zipper inc. pockets Downward-facing Pocket Zips. Compatible with climbing harness. Reinforced lining around ankle.	AT4015 is a Design protection to the f rear from ankle to Reinforced at high Kevlar crotch & lov Downward-facing Compatible with cl Reinforced lining a Velcro waist size ad
OTHER COLOURS				green/b
NOTES		Female cut		
WEBSITE	arbortec.com	arbortec.com	arbortec.com	arbort

CHAINSAW TROUSERS



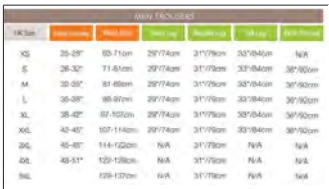









ORESTWEAR	ARBORTEC FORESTWEAR	ARBORTEC FORESTWEAR	ARBORTEC FORESTWEAR	ARBORTEC FORESTWEAR
15 1A+	AT4040 AT4020 2C 2A	AT4035 AT4030 3C 3A	ATHV4050 ....40...35 1C 2C 3C	ATHV4040 4050 2C 3C
THFLEX	BREATHFLEX	BREATHFLEX	BREATHFLEX	BREATHFLEX
45580	AB345470 AB345433	AB344573 AB344555	AB344942..633	AB344942..633
08 €000	£418248 $541322 €000000	£378248 $490322 €461431	£342420 $441542 €408500	£303382 $000 €000
/ 3.5lb	1.9 1.4kg / 4.2 3.1lb	2.3 1.8kg / 5 4lb	1.9 1.4kg / 4.2 3.1lb	
XL R,L	S-5XL S, R, L, XL	S-5XL S, R, L, XL	XS-3XL R,L	XS-3XL R,L
lylon, Kevlar lon trand *Gridlock*	Polyester, Nylon, Kevlar Nylon 6 layers-Trio strand *Gridlock*	Polyester, Nylon, Kevlar Nylon 6 layers-Trio strand *Gridlock*	Polyester, Nylon, Kevlar Nylon 6 layers-Trio strand *Gridlock*	
pockets. 2xTool 2x front zip	Dbl-flap Cargo & phone pockets. 2xTool pouches. 2xrear & 2x front zip	Dbl-flap Cargo & phone pockets. 2xTool pouches. 2xrear & 2x front zip	Zip Cargo & phone pockets. 2xTool pouches. 2xrear & 2x front zip	Zip Cargo & phone pockets. 2xTool pouches. 2xrear & 2x front zip
				-
	*	*		
A Plus pants (saw ront of the leg and knee) tension seams. ver leg. Pocket Zips. imbing harness. round ankle. djustment.	Reinforced at high tension seams. Kevlar lower leg. Quality YKK zipper inc. pockets Downward-facing Pocket Zips. Compatible with climbing harness. Reinforced lining around ankle. *Rear Vent zip on Level A Only	Reinforced at high tension seams. Kevlar lower leg. Quality YKK zipper inc. pockets Downward-facing Pocket Zips. Compatible with climbing harness. Reinforced lining around ankle. *Rear Vent zip on Level A Only	High Vis (UK Railways Approved) Reinforced at high tension seams. Kevlar crotch & lower leg. Downward-facing Pocket Zips. Compatible with climbing harness. Reinforced lining around ankle. Zipped Cargo and phone pockets. Velcro waist size adjustment.	High Vis (UK Railways Approved) Reinforced at high tension seams. Kevlar crotch & lower leg. Downward-facing Pocket Zips. Compatible with climbing harness. Reinforced lining around ankle. Zipped Cargo and phone pockets. Velcro waist size adjustment.
lack only	green/black only	green/black only	orange only	
			Price for 2C, 3C =£	
ec.com	arbortec.com	arbortec.com	arbortec.com	arbortec.com



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ASTM Canada= Cut Pro+
AS/NZS 4453.3= Cut Pro+
KWF-Profi= Forestry safety
ANSI Z133= Gen Arboriculture
ENISO13688= Safety Clothing
EN 343-3 = Waterproofing
RIS-3279-TOM= Hi-Viz Rail
EN ISO 20471= Visibility
ANSI107 & CSAZ96= Visibility

EN CUT PROTECTION:
Class 1: 20m/s
Class 2:
Class 3:
Level A=Front leg. **A+**= +Calf
Level C=front & back leg

WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing

















MANUFACTURER	ARBORTEC FORESTWEAR	ARBORTEC FORESTWEAR	ARBORTEC FORESTWEAR	ARBORTEC F
MODEL PROTECTION VARIANT	AT4061 1A	AT4070 AT4060 1C 1A	ATHV4070 ATHV4060 1C	AT4070 AT
SERIES	BREATHFLEX PRO (USA)	BREATHFLEX PRO	BREATHEFLEX PRO	BREATHEFLE
PRODUCT CODE(S)		AB345554 to..8079 AB345538 to	AB346154 AB346164	AB36517x AB
ORIGIN				
COST inc VAT/tax conv-only	£357 $330 €000	£392357 $508463 €410360	£392357 $508463 €410360	£414378 $537
WEIGHT per pair (m/lg R)		1.5 1.2kg / 3.3 2.64lb	1.5 1.2kg / 3.3 2.64lb	1.5 1.2kg /
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	XS-3XL R,L	XS-3XL R,L	XS-3XL R,S, L, XL	XS-3X
MATERIALS - OUTER LINER CUT PROTECTION		Polyester, Nylon, Kevlar Nylon 6 layers-Trio strand *Gridlock*	Nylon, Kevlar Nylon 6 layers-Trio strand *Gridlock*	Nylon, Ny 6 layers-Trio s
POCKETS	Zipped Cargo and phone pockets.	2x zip side, 2x zip front/thigh, 1 zip rear	2x zip side, 2x zip front/thigh, 1 zip rear	2x zip side, 2x zip f rear
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING		*	*	*
FEATURES	Reinforced at high tension seams. Kevlar reinforcement at lower leg. Downward-facing Pocket Zips. Compatible with climbing harness. Reinforced lining around ankle. Velcro side adjusters: Adjust the waist size to suit.	Reinforced at high tension seams. Kevlar crotch & lower leg. Downward-facing Pocket Zips. Compatible with climbing harness. Reinforced lining around ankle. Velcro waist size adjustment. YKK zips *Rear Vent zip on Type A Only	High Vis (UK Railways Approved) Reinforced at high tension seams. Kevlar crotch & lower leg. Downward-facing Pocket Zips. Compatible with climbing harness. Reinforced lining around ankle. Velcro waist size adjustment. YKK zips *Rear Vent zip on Type A Only	*REALTREE* pattern Reinforced at high Kevlar reinforceme Downward-facing Compatible with cl Reinforced lining a Velcro side adjuste waist size to suit.YK *Rear Vent zip on
OTHER COLOURS				
NOTES	USA/Canada Only	The 2xMulticolour options have plain blue rears.		Pattern version o
WEBSITE	arbortec.com	arbortec.com	arbortec.com	arbort

CHAINSAW TROUSERS












ORESTWEAR	ARBORTEC FORESTWEAR	ARBORTEC FORESTWEAR	ARBORTEC FORESTWEAR	ARBORTEC FORESTWEAR
4060 1C 1A	AT4060 USA UL 1A	AT4062 Vented 1A 1C	AT4070 AT4060 FREESTYLE	AT4090 AT4080 1C 1A
EX REALTREE	BREATHEFLEX REALTREE	BREATHEFLEX	BREATHEFLEX	DEEP FOREST
3463.66.42.88	AB3651..14..72..93	AB366006...026..	AB346496 AB346513	AB346743.794.691..717.768.665
7490 €410360	£378 $000 €000	£305 $405 €349	£406388 $526503 €381364	£497444 $644575 €520460
3.3 2.64lb		1.2kg / 2.64lb	1.5 1.2kg / 3.3 2.64lb	1.8 1.6kg / 4 3.5lb
XL R,L	XS-3XL R,L	XS-3XL R,L	XS-3XL S,R,L	XS-3XL S,R,L
Kevlar lon trand *Gridlock*		Nylon, Kevlar Nylon 6 layers-Trio strand *Gridlock*	Nylon, Kevlar Nylon 6 layers-Trio strand *Gridlock*	Nylon, Kevlar Nylon 6 layers-Trio strand *Gridlock*
ront/thigh, 1 zip	Zipped Cargo and phone pockets.	1x Cargo, 2x zip side, 1x zip rear	2x zip side, 2x zip front/thigh, 1x zip rear	2x zip side, 1x flap cargo/thigh, 2x zip rear
		*	*	*
collaboration tension seams. nt at lower leg. Pocket Zips. imbing harness. round ankle. rs: Adjust the K zips. Type A Only	*REALTREE* pattern collaboration Reinforced at high tension seams. Kevlar reinforcement at lower leg. Downward-facing Pocket Zips. Compatible with climbing harness. Reinforced lining around ankle. Velcro side adjusters: Adjust the waist size to suit.	4 large ventilation panels, front & back, max airflow, for hot climates. Reinforced at high tension seams. Kevlar Knee Reinforcement. Downward-Facing pockets. Harness compatible zips. Extra-stretchy crotch panel. Adj waistband with high back. YKK zips. *Rear Vent zip on Type A Only	Low elasticated waist, offset seams and articulated knees for extra flexibility and comfort. Crotch = Kevlar & stretch fabric that allows for flexibility aloft. Strong, flexible outer materials.New tailored fitting. YKK zips Belt loops. Low back. Adjustable waistband. *Rear vent zips on Type A only	Heavier duty fabrics. Double Stitching. Avoid tears, rips, & seam failure for longer-lasting wear. Kevlar reinforced Reinforced Ankles and Knees. YKK zips. 3 strand Gridlock Lite=breathable chainsaw blocking fabric. Removable & replaceable Gaiter. *Rear Vent zip on Type A Only
f Breatheflex Pro	USA/Canada Only	USA/Canada Only		
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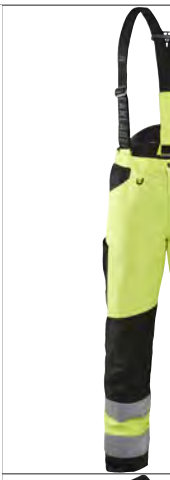
IMAGES NOT TO SCALE
COST: inc local tax/VAT
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LEGSIZES: S Short R Regular L Long/Tall XL Extra Long/Tall

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ASTM Canada= Cut Pro+
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ENISO13688= Safety Clothing
EN 343-3 = Waterproofing
RIS-3279-TOM= Hi-Viz Rail
EN ISO 20471= Visibility
ANSI107 & CSAZ96= Visibility

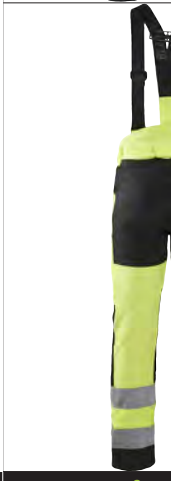
EN CUT PROTECTION:
Class 1: 20m/s
Class 2:
Class 3:
Level A=Front leg. **A+**= +Calf
Level C=front & back leg

WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing







MANUFACTURER	ARBORTEC FORESTWEAR	ARBORTEC FORESTWEAR	ARBPRO	BLÅKL
MODEL PROTECTION VARIANT	AT4250 AT4215.10 Base 1C 1A+	AT41..Outer Pro/Storm/HV	Gamma 1A	
SERIES	ARBORFLEX-SKINS	ARBORFLEX SKINS	CLIMBTECH	
PRODUCT CODE(S)	AB346155 AB343056	AB343233-AB343189	-	
ORIGIN				
COST inc VAT/tax conv-only	£199187 $259243 €212208	£159-214 $206-278 €225-280	£287 $355 €328	£000 $0
WEIGHT per pair (m/lg R)	1.2kg / 2.64lb	0.6kg / 1.32lb	1.34kg/3.1lb	00kg
STANDARDS REPEL WATER	(outer skin options)	NO Cut Pro Storm= H-		
WAIST & LEG SIZES FEMALE	XS-3XL R, L	XS-3XL R, L	XS-3XL S,R,L	00-00S 00-
MATERIALS - OUTER LINER CUT PROTECTION	Polyester,Nylon, Kevlar Nylon 6 layers-Trio strand *Gridlock*	Polyester, Nylon, Kevlar Nylon mesh NONE	00% oo 00% oo Engtex Avertic Pro	00% 00% 100
POCKETS	No	2x zip Side, 1 Flapped Cargo, 2x zip Rear	1 Rear zip, 3 front zip, 1 zip cargo, 1 sml Flap pouch	
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING		*		
FEATURES	Arborflex base protective layer (colour-coded C=green, A+=Orange, A=Red) worn with *Arborflex Skins* of your choice Med/Pro/Storm). High-quality stretch fabrics for greater movement. Moisture-wicking Flex top shorts for comfort. Very lightweight chainsaw blocking material. Reinforced lining around the ankle area. YKK zips.	Arborflex Skins have no cut protection. They provide an outer skin to the protective base layer. All can be worn separately. Outer Skins= LIGHT/Standard- light & breathable MID: seat & low-leg Reinforcement (grn) PRO: HeavyDuty Reinforcement, STORM, Waterproof. YKK zips. HV and HV+STORM: High Viz Orange	Includes braces. 4 way stretch fabric with high resistance to abrasion. Slim design and light weight. Ventilation zippers in the back. Detachable gaiters Zipped/gusseted ankle/hem	
OTHER COLOURS		STORM PRO LT		
NOTES			Gear loop designed for 'Scrench'	
WEBSITE	arbortec.com	arbortec.com	arbpro.it	blaklad

CHAINSAW TROUSERS












LÄDER	CAN-SWE	CAN-SWE	CLOGGER	CLOGGER
	Poly Pro Backpad (2A+)	Seismic (3A+)	DefenderPro WoMans (1A+	Ascend WoMans (1C 1A)
	FALLERS	PROMAX	-	-
	P001B	M002	TC21DPRZW-RT TC21DPRZ-RT	TU71BW TU71B
00 €273	£128 $165 €153	£147 $190 €175	£289 $375 €344	£370 $480 €441
/00lb	0.92kg/2.2lb	1.36kg/3lb	1.1kg/2.4lb	1.3kg/2.6lb
	*WCB PPE 1-1997 TCS3600	*WCB PPE 1-1997 TCS4100	*	*
00R 00-00L	S28-XXL44" R30"	S28-XXL44" R30"	XXS-2XL S,R,L	XS-3XL S,R,L
% oo % oo % oo	13oz Stretch Polyester Polyester Kevlar	600D Polyester front/ Polyester Polyester	Cordura Nylon Ripstop Mesh 6 lyr Arrestex HP + UHMWPE fibres	HTP Nylon Ripstop Mesh 6 lyr Arrestex HP + UHMWPE fibres
	2x flap-covered hip pockets	2x flap-covered hip pockets	2x zip hip, 2x zip thigh,1x lg rear	2x zip hip, 2x zip thigh,1x lg rear
☐				*
	Fabric is Heavy Double Knit 13oz Stretch Polyester for added durability Knit provides excellent ventilation and movement. Nylon reinforced crotch with extra bar tacking. Hip pockets are ergonomically located to prevent hang ups during cutting and bending. Signature pocket flaps keep chips out and allow quick easy access. Intended for ground workers.	Nylon reinforced crotch with extra bar tacking. Nylon reinforced seat patch. Full wrap protection extends around the calf. Belt Loops. Hip pockets are ergonomically located to prevent hang ups during cutting and bending. Signature pocket flaps keep chips out and allow quick easy access 50% Woven 600 Denier Polyester front. 50% polyester knit back Intended for ground workers	Mostly but not exclusively, for ground work, Tough outer still full stretch, light and cool to wear. 2 zipped rear vents. Hip pockets pull out to easily remove saw dust. Zipped thigh pocket ofor phone etc - accessible while wearing a harness.Sealed zips to stop dust ingress. Special zipper pulls on the pockets to make accessing your pockets easy even when wearing gloves. Wide belt loops to fit up to a 2 inch belt. Opening at hems to remove debris. Additional calf chainsaw protection	Thigh pocket can be inverted to remove saw dust. Lower pockets accessible wearing harness. Strong, durable zippers with seal to reduce sawdust damage. Zip- pulls on pockets. Snag-resistant plastic Boot hooks. Wide belt loops to fit up to a 50mm belt.Mesh lining for enhanced breathability. Hi-visibility orange highlights. Zip vents on type A only
	*Meets a B.C. std exceeding chain speed of ASTM-F1897 & F3325 but not so certified	*Meets a B.C. std exceeding chain speed of ASTM-F1897 & F3325 but not so certified	*Minus $30 for Type A (front-only) pro. *Waterproof from the knees	*Minus $30 for Type A (front-only) pro. *Waterproof from the knees
der.com	canswe.com	canswe.com	clogger.co.nz	clogger.co.nz

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EN ISO 20471= Visibility
ANSI107 & CSAZ96= Visibility

EN CUT PROTECTION:
Class 1: 20m/s
Class 2:
Class 3:
Level A=Front leg. **A+**= +Calf
Level C=front & back leg
WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing



MANUFACTURER	CLOGGER	CLOGGER	CLOGGER
MODEL PROTECTION VARIANT	Wildfire WoMens	Tree Crew WoMens	Denim WoMens
SERIES	O 000	O 000	O
PRODUCT CODE(S)			
ORIGIN			
COST inc VAT/tax conv-only	£000 $470-510 €000	£000 $255 €000	£000 $380 €000
WEIGHT per pair (m/lg R)	00kg/00lb	00kg/00lb	00kg/00lb
STANDARDS REPEL WATER			
WAIST & LEG SIZES FEMALE	00-00S 00-00R 00-00L	00-00S 00-00R 00-00L	00-00S 00-00R 00-00L
MATERIALS - OUTER LINER CUT PROTECTION	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo
POCKETS			
REFLECTIVE ZIP VENTS BOOT HOOK			
ATTACH BRACES ANTI-TICK CLIMBING			
FEATURES			
OTHER COLOURS			
NOTES			
WEBSITE	clogger.co.nz	clogger.co.nz	clogger.co.nz

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LEGSIZES: S Short R Regular L Long/Tall XL Extra Long/Tall

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EN ISO 20471= Visibility
ANSI107 & CSAZ96= Visibility

EN CUT PROTECTION:
Class 1: 20m/s
Class 2:
Class 3:
Level A=Front leg. **A+**= +Calf
Level C=front & back leg
WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing









MANUFACTURER	CLOGGER	CLOGGER	CLOGGER	CO
MODEL PROTECTION VARIANT	Zero Ultra WoMans (1C 1A)	Zero Gen2 WoMans (1C 1A)	Arcmax Gen3 WoMans (1A+	
SERIES	ZERO	ZERO	-	
PRODUCT CODE(S)	TU73ZW TU73Z	TU71ZW TU71Z	TU91FW TU91F	
ORIGIN				
COST inc VAT/tax conv-only	£393 $510* €468	£343 $445 €409	£378 $490 €450	£81 $0
WEIGHT per pair (m/lg R)	1.05kg/2lb5oz	1kg/2.2lb	1.23kg/2.7lb	
STANDARDS REPEL WATER			+NFPA & ENA NENS 09-2014	
WAIST & LEG SIZES FEMALE	XXS- XXXL S, R, L	XS-3XL S,R,L	XS-3XL S,R,L	S-4X
MATERIALS - OUTER LINER CUT PROTECTION	Ripstop nylon & stretch lycra Mesh 6 lyr Arrestex HP + UHMWPE	HTP Nylon Ripstop Mesh 6 lyr Arrestex HP + UHMWPE	Stretch FR Mesh 6 lyr Arrestex FR + Vectran fibres	65% polyeste
POCKETS	2x zip hip, 2x zip thigh, zip phone pocket, 1x rear zip.	2x hip pockets, 2x thigh, 1x phone pocket on thigh	2 zipped hip pockets and a zipped pocket on the left thigh	
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING				
FEATURES	Abrasion resistant fabric on knee, inside calf & ankle. Dyneema© fabric on calfs to protect against hanging C'Saw. Elasticized waist.Lock stitched seams and reinforced stress points. Waist to ankle coverage. Extra on left side. Scannable© NFC. Deep & Harness Accessible pockets; Ankle cinches. 50mm belt loops. Opening at hems to remove debris. High viz panels front and rear. YKK zips	Proven over many years.2x high-efficiency fixed side vents for max cooling airflow. Breathable outer uses Nilit® Breeze fibers to wick heat from the body. 140% 4-way stretch for max flex & ultra-low weight. Hi-tenacity nylon ripstop outer with Dyneema right calf to counter hanging chainsaw wear. Upgraded zippers and FlexZone in the seat seam for extra give. DWR water-resistant	*Arrestex FR* inc Vectran cross woven to counter multi-directional strike. Waist to ankle coverage with extra on the left side. Front pro with 360 calf wrap. Outer rated to 11 cal/cm2 - ASTM F1959 -arc resistance &EN ISO 15025-fire resistance. 4-way 120% stretch FR outer with 60% increase tear strength.Abrasion resistant knee. Flexible seat-seam. Elasticized waist. Lock stitched seams & stress points reinforced. Strong, zippers sealed to sawdust. 50mm belt loops.	1 back pocket with front pockets, elast textile inserts, high pocket, side openi ventilation, side po flap closure, suspe flap which covers t with protective ma
OTHER COLOURS				
NOTES	*Minus $30 for Type A (front-only) protection	*Minus $30 for Type A (front-only) protection	Intended more for ground workers but has rear calf pro	
WEBSITE	clogger.co.nz	clogger.co.nz	clogger.co.nz	

CHAINSAW TROUSERS













FRA	ECHO	ECHO	ECHO	ENGLEBERT STRAUSS
	Arborist Pants 1A	Performance Flex 1A	Pro-Tech 1A	Cotton Touch 1A
	PERFORMANCE	PERFORMANCE	PRO-TECH	O
	000	1TSYF0PT3 1TPYF0PAS	1TNYFOPE5	60200
00 €000	£125 $000 €130	£185 $000 €000	£255 $000 €000	£168 $000 €000
	00kg/00lb	00kg/00lb	00kg/00lb	1.6kg/3.52lb
XL R	32-46" L	S-XXLL		
r – 35% cotton	Stretch nylon ? 8 layers Dyneema oo	93% Nylon 7% Elastane 00% oo 100% oo	100% Cordura Ventilation mesh 6 layers Dyneema oo	
	two front, two back and one cargo.	side and back pockets with zippers, plus left thigh and spark plug pockets	2x Side and 1x back pocket with zip-pers, left thigh (ruler) and scrench/	
velcro, 2 wide ticated waist, fluo back waist, rule ngs with zip for ocket with velcro nder buttons, the he zip is reinforced terial	Elastic waist and gusseted crotch. Articulated knees help to reduce pull at the waist. meet OSHA 1910-266. Pockets:	Maximum protection alongside good flexibility and comfort. Pezaflex aqua waterproof reinforcement on knees.	High visibility with reflective elements.Pezaflex aqua waterproof reinforcement on knees. Robust weather resistance with integrated mesh ventilation. Hook for base of leg onto on laces.	Zipped rear thighs
	echo-usa.com	echotools.com	echotools.com	engelbert-strauss.com

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Class 1: 20m/s
Class 2:
Class 3:
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Level C=front & back leg
WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing










MANUFACTURER	ENGLEBERT STRAUSS	ENGLEBERT STRAUSS	ENGLEBERT STRAUSS	ENGLEBER
MODEL PROTECTION VARIANT	Denim Jeans 1A	Forestry KWF	Forestry Bib&Brace KWF	Visio
SERIES	O	O	O	C
PRODUCT CODE(S)	60205	60156	60177	601
ORIGIN				
COST inc VAT/tax conv-only	£174 $000 €000	£141 $000 €000	£152 $000 €000	£216 $0
WEIGHT per pair (m/lg R)	1.7kg/3.75lb	1.6kg/3.52lb	1.8kg/3.96lb	1.66kg
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE		30-48 S,R,L 4-26 S,R, L		
MATERIALS - OUTER LINER CUT PROTECTION		93% Polyester 7% Elastane 100% Polyester 100% Polyester	93% Polyester 7% Elastane 100% Polyester 100% Polyester	90% Polyester 88% Polyeste 100% P
POCKETS				
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING		■		
FEATURES		Cam-Buckle belt 7 belt loops Zipped rear thighs High Waist Cordura Reinforced Knees, seat & ankles. Reflective highlights	Zipper 7 Zipped rear thighs. Reflective highlights	Button Waist
OTHER COLOURS			■	
NOTES		Gear loop designed for 'Scrench'	Gear loop designed for 'Scrench'	Gear loop desig
WEBSITE	engelbert-strauss.com	engelbert-strauss.com	engelbert-strauss.com	engelbert-s

















T STRAUSS	FRANCITAL	FRANCITAL	FRANCITAL	FRANCITAL
on 1A	Arbois HV 1C	Biot HV 1A 3A	Booster 1A	Cadiz 2A
O	TYPE C	O	GOLD	CLASS II
181	NR011	FL317	FL561	F1202
00 €000	£185 $205 €188	£000 $000 €101138	£000 $000 €000	£000 $000 €166
/3.65lb	1.4kg/3.08lb	1.6kg/3.52lb	00kg/00lb	00kg/00lb
	*			
	S-2XL R82cm	XS-3XL S,R,L	XS-3XL S,R,L	XS-3XL S,R,L
r 10% Elastane r 12% Elastine olyester	93% Polyester 7% Elastane Cotton 8-Layer Polyester/Polyprop	93% Polyester 7% Elastane 100% Polyester 100% Polyester	00% oo 00% oo 100% oo	93% Polyester 7% Elastane 100% Polyester 100% Polyester
	2x slant, 1x Ruler			
t 7 Belt loops	Elasticated waist. Polyester - cotton fabric 70/30 240 gr/m² water-repellent (fluorocarbon finish). Double-sided fabric 70% polyester exterior side for greater machine resistance and 30% cotton on the interior side of the fabric for comfort. 8-layer chain saw protection system. Rear high band 70 mm.	Cam-Buckle belt 7 belt loops Zipped rear thighs High Waist Cordura Reinforced Knees, seat & ankles. Reflective highlights.	High-Viz Panels	
ned for 'Scrench'	*TOM - Orange only			
strauss.com	francital.com	francital.com	francital.com	francital.com

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Level C=front & back leg

WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing









MANUFACTURER	FRANCITAL	FRANCITAL	FRANCITAL	FRAN
MODEL PROTECTION VARIANT	Cervin R 1A	Cervin Pro 1A	Everest R 1A+ 1A	Hades H
SERIES	ECO/GOLD	PLATINUM/ECO	ECO	PLATI
PRODUCT CODE(S)	FL584D	FL511B FL584D	FL567DM FL567D	FL502
ORIGIN				
COST inc VAT/tax conv-only	£000 $000 €176	£000 $000 €238	£202 $194 €185 178	£245230 $262
WEIGHT per pair (m/lg R)	00kg/00lb	1.2kg/2.4lb	1.1kg/2.4lb	1.641.2kg
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	XS-3XL S,R,L	XS-3XL S,R,L	XS-3XL R82,L87cm	S-3XL R8
MATERIALS - OUTER LINER CUT PROTECTION	00% oo 00% oo 100% oo	Cordura, nylon & Elastane Cotton 5-Layer *Sofly*	Cordura, nylon & Elastane Cotton 5-Layer *Sofly*	Polyester Cot 5-Laye
POCKETS		2x slant zip, 2x Ruler 1x Scrench , 1x zip wallet, 1x rear zip, 2x tool	2x slant zip, 1x Ruler & Scrench , 1x rear zip, 1x left front leg cargo	2x slant Zip, 1x F 1x rea
REFLECTIVE ZIP VENTS BOOT HOOK		( )		
ATTACH BRACES ANTI-TICK CLIMBING				
FEATURES		Elasticated waist. Extended rear waist. Multi-purpose, very resistant trousers (mix of Polyamide CORDURA® for solidity and Elastan stretch comfort). 96% Polyamide ECONYL® Regenerated Nylon 4% Elastane Rear zip vents on type A only	Eco=-recycled nylon, unbleached lining, Fluor-free water-repellent finish. features reduced to a minimum Easily repairable accessories. Elasticated waist. Extended rear waist Lower leg & knee=2-way stretch fabric. UV protective .	Global Recycled Sta Certified Core Fabr recycled fiber 4% E rocarbons: *Sofishie* =4x more durable t PFC-free Water-rep Elasticated waist. E waist Removable gaitors *Rear Vent zip on T
OTHER COLOURS			(All-black) 1A+ only	
NOTES		Cervin Pro/Queribus discontnued as type C	Cervin Pro/Queribus discontnued as type C	*TOM - O
WEBSITE	francital.com	francital.com	francital.com	francit

CHAINSAW TROUSERS













CITAL	FRANCITAL	FRANCITAL	FRANCITAL	FRANCITAL
IV 1C 1A	Helios 1A	Hera Femme 1A	Hermes 1A+ 1A	HV 1A
INUM	GOLD	PLATINUM	PLATINUM	CLASS III
FL501	FL596	FL104F	FL560MM 1560M	FL317
2248 €240227	£000 $000 €168	£000 $000 €205	£260245 $270262 €248240	£000 $000 €153
g/3.62.6lb	00kg/00lb	00kg/00lb	1.07kg/2.35lb	00kg/00lb
*				
82,L87cm	XS-3XL S,R,L	34-54cm R,L	XS-23XL S77,R82,L87cm	S-3XL R,L
, Elastane tton r *Sofly*	00% oo 00% oo 100% oo	Cordura% oo 00% oo 100% oo	90% Nylon 10% Elastane Cotton 5-Layer *Sofly*	00% oo 00% oo 100% oo
Ruler, 1x rear zip, r cargo		2x Zip Slant , 1xcargo with Ruler 2x Rear	2x slant/side zip, 1x Rear zip, 1x Ruler, 1x cargo	2x slant Zip, 1x Ruler, 1x rear, 1x wound dressing
*				
andard (GRS) ic: 96% Polyester Elastane, 0% fluo- *eld* reinforcements than Cordura. pellent treatment Extended rear Type A Only		4-way & 2-way stretch fabrics	2 & 4-way stretch fabric. Elasticated waist. Extended rear waist Lower leg and knee supports in two-way stretch fabric. Elastic drawstring at the bottom of trousers. Pockets usable with harness. Removable gaiters with hook	*Sofishield* reinforcement areas 4x more robust than Cordura
range only			Type A Add €8 for Short & Long	
al.com	francital.com	francital.com	francital.com	francital.com

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EN ISO 20471= Visibility
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EN CUT PROTECTION:
Class 1: 20m/s
Class 2:
Class 3:
Level A=Front leg. **A+**= +Calf
Level C=front & back leg
WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing









MANUFACTURER	**FRANCITAL**	**FRANCITAL**	**FRANCITAL**	**FRAN**
MODEL PROTECTION VARIANT	**HV Salopettes 1A**	**Kraken 1A**	**Lugo 2A**	**Muzi**
SERIES	**CLASS III**	**PLATINUM**	**CLASS II**	**ECO/**
PRODUCT CODE(S)	FL335	FL566	FL201	FL5
ORIGIN				
COST inc VAT/tax conv-only	£000 $000 €164	£000 $000 €224	£000 $000 €154	£000 $0
WEIGHT per pair (m/lg R)	00kg/00lb	00kg/00lb	00kg/00lb	1.6kg
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	S-3XL R,L	XS-3XL S,R,L	XS-4XL R,L	XS-3XL
MATERIALS - OUTER **LINER** **CUT PROTECTION**	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	93% Polyester 7% Elastane 100% Polyester 100% Polyester	96% Cordura 00% 100
POCKETS	2x slant Zip, 1x Ruler, 1x rear, 1x wound dressing		2x slant/side, 1x Cargo (with ruler), 1x rear	
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING				
FEATURES	*Sofishield* reinforcement areas 4x more robust than Cordura		Button for Braces. High waist.	2 hand pockets wit 1 anti-reverse rule 1 spanner-holder r zip pocket rear left 2 tool hooks. Butto Belt with loops. Bib with two pocke flap, elastic shoulder str buckle
OTHER COLOURS				
NOTES			Cost more for 3&4XL. 4XL=green-only	
WEBSITE	francital.com	francital.com	francital.com	francit

CHAINSAW TROUSERS












CITAL	FRANCITAL	FRANCITAL	FRANCITAL	FRANCITAL
o R 1A	Opoul HV 1A 1C	Prior 1C 1A	Prior 3A	Prior Move Pro 1C 1A*
GOLD	O	ECO	CLASS III	SILVER
94D	000	FL001B	FL310B	FL513
00 €196	£000 $000 €118.80	£168 $165 €152	£000 $000 €124.13	£188 $184 €169
/00lb	1.6kg/3.52lb	1.5kg/3.3lb	1.2kg/00lb	1.5kg/3.3lb
L S,R,L	XS-3XL S,R,L	XS-3XL S77,R82,L87cm		XS-2XL R82cm
® 4% elastan % oo % oo		Coated Polyester Cotton 5 Layer SOFLY	00% oo 00% oo 100% oo	Coated Flex Rip-Stop Nylon/ Poly Cotton 5 Layer SOFLY
		2x slant/side zip, 1x Ruler, 1x scrench		2x slant/side zip, 1x Ruler, 1x scrench
th downward zips. r pocket. ear right leg. leg ons for straps. ets closed with a raps with plastic	Zipped rear thighs	Semi-elasticated waist with loops and extended (high) rear waist. Double-sided fabric 70% polyester exterior side for greater resilience and 30% cotton on the interior for comfort.Crotch has two-way stretch for more comfort and endurance. Cordura Reinforced Knees, seat & ankles. High-Viz Panels	High Waist Cordura Reinforced Knees, seat & ankles. High-Viz Panels	SOFIGUARD® water-repellent finish, 6.6/7% Elastane provides all-way stretch Mono Rip textured fabric Double-sided fabric 70% polyester exterior side for greater resilience and 30% cotton on the interior for comfort. Wide dorsal bib (waist/kidney).
		Also available as overalls		*Also available as Class 2 & 3
al.com	francital.com	francital.com	francital.com	francital.com

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MANUFACTURER	FRANCITAL	FRANCITAL	FRANCITAL	GRUBE TI
MODEL PROTECTION VARIANT	Prior Salopettes 1A	Prior Salopettes3A	Sestriere Pro 1A	All Round
SERIES	SILVER	CLASS III	PLATINUM	
PRODUCT CODE(S)	FL002B	FL302B	FL590A	0
ORIGIN				
COST inc VAT/tax conv-only	£000 $000 €93	£000 $000 €93	£000 $000 €252	£000 $0
WEIGHT per pair (m/lg R)	00kg/00lb	00kg/00lb	00kg/00lb	1.35k
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	XS-3XL S,R,L	XS-3XL S,R,L	XS-4XL R,L	XS-3XL S7
MATERIALS - OUTER LINER CUT PROTECTION	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	Polyester/Ny 100% P 5lyr 69% PPYL
POCKETS				
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING	■	■	■	
FEATURES	High-Viz Panels	High-Viz Panels		Upper Material: 6 Polyamide, Up 89% Polyester, 11 100% Polypropy Polyamide, 13% A tane (Spandex), N Polyurethane, Cu Polypropylene Tested by the G Association's test
OTHER COLOURS	■	■		
NOTES				
WEBSITE	francital.com	francital.com	francital.com	grub

CHAINSAW TROUSERS

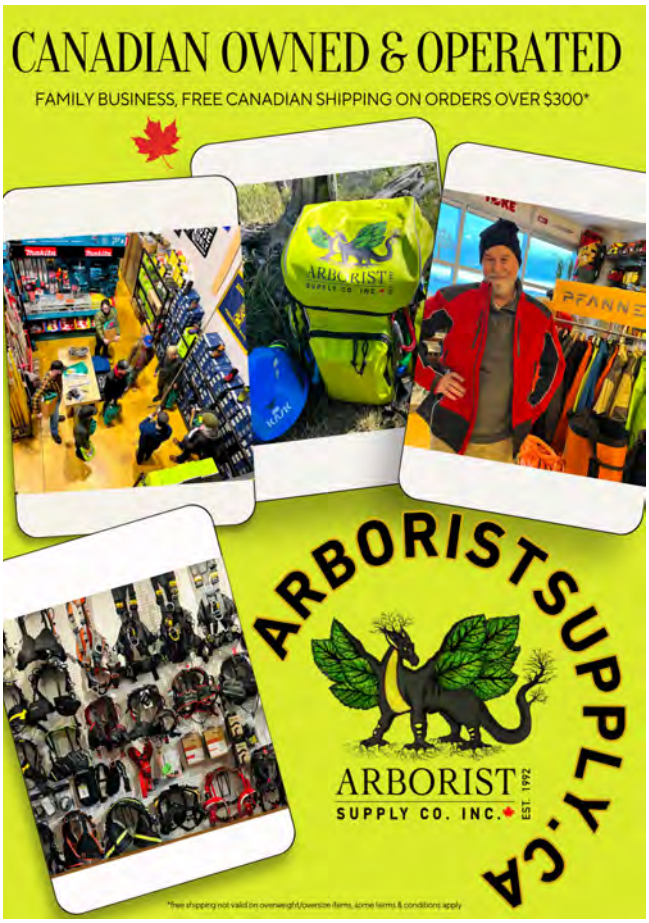






MBERMAN	GRUBE TIMBERMAN	
d Light 1A	All Round Hi-Viz1A	
O 00	O 000	
00 €000	£000 $000 €299	
g/00lb	1.35kg/00lb	
75,R82,L87	XS-3XL S75,R82,L87	
lon/Spandex olyester 31% Polyester	Polyester/Nylon/Spandex 100% Polyester 5lyr 69% PPYL 31% Polyester	
8% Polyester, 32% per Material 2 % Elastane, Lining lene, Trim, 75% ramide, 12% Elas- Membrane, 100% t Protection 69% 31% Polyester, ermany Forestry ting agency (FPA),	Upper Material: 68% Polyester, 32% Polyamide, Upper Material 2 89% Polyester, 11% Elastane, Lining 100% Polypropylene, Trim, 75% Polyamide, 13% Aramide, 12% Elas-tane (Spandex), Membrane, 100% Polyurethane, Cut Protection 69% Polypropylene 31% Polyester, Tested by the Germany Forestry Association's testing agency (FPA),	
e.eu	grube.eu	





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MANUFACTURER	HUSQVARNA	HUSQVARNA	HUSQVARNA	HUSQV
MODEL PROTECTION VARIANT	Classic 1A	Carpenter Classic 1A	Classic 1A	Function
SERIES	ENTRY	FUNCTIONAL	FUNCTIONAL	FUNCT
PRODUCT CODE(S)	529519444	529519644	529518944	52951.185
ORIGIN				
COST inc VAT/tax conv-only	£115 $000 €000	£130 $000 €135	£121 $000 €125	£115 $000
WEIGHT per pair (m/lg R)	00kg/00lb	00kg/00lb	00kg/00lb	1.35 1.6
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	XS-3XL S,R,L	44-64 S,R,L	XS-3XL S,R,L	XS-3XL
MATERIALS - OUTER LINER CUT PROTECTION	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	Cord Micro P 100
POCKETS				
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING				
FEATURES				Extended reinfo lower leg . Breatha Rear legs ventila waist and buttons attachment. Feat protection pad • knees • High ba
OTHER COLOURS				
NOTES	Intended for very occasional use			
WEBSITE	husqvarna.com	husqvarna.com	husqvarna.com	husqvar

CHAINSAW TROUSERS











VARNA	HUSQVARNA	HUSQVARNA	HUSQVARNA	HUSQVARNA
nal 1A 2A	Extreme (1A)	Extreme Arborist (1A)	Robust (1A)	Waist/Hip Type C 1C 1A
TIONAL	TECHNICAL	TECHNICAL	TECHNICAL	TECHNICAL
546 ..18846	537643246	537642542	537642746	595000754 594999059
0 €200270	£380 $000 €470	£369 $000 €460	£309 $000 €370	£349 $380 €350
5kg/00lb	00kg/00lb	00kg/00lb	1.2kg/00lb	1.63kg/3.5lb
L S,R,L	XS-3XL S,R,L	XS-3XL S,R,L	XS-3XL S,R,L	XS46cm-3XL64cm S,R,L
dura olyester % oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	Cordura/Nylon/ Lycra Polyester 5 layer Tekora
				1x Zip side-leg
rcement on the able. 3 zip pockets. tion, Back elastic suitable for brace ures:• Reinforced Reinforcement on ck • Fit - Straight				Lightweight, four-way stretch fabrics and a range of smart comfort and design features including pre-bent knees help you get more from every shift. Stretch fabric upper front & rear legs. *Teflon*-coated Kevlat/*Cordura-Heavy* reinforced knees, crotch & lower legs 45% Cordura®/30% Nylon/25% Kevlar. *Rear Vent zip on Type A Only
rna.com	husqvarna.com	husqvarna.com	husqvarna.com	husqvarna.com

IMAGES NOT TO SCALE
COST: inc local tax/VAT
£$€=currency conversion only
LEGSIZES: S Short R Regular L Long/Tall XL Extra Long/Tall

STANDARDS:
EN3815= Chainsaw Cut Pro
ENISO11393-2= Chainsaw safety
ASTM F1897 USA= Cut Pro+
ASTM Canada= Cut Pro+
AS/NZS 4453.3= Cut Pro+
KWF-Profi= Forestry safety
ANSI Z133= Gen Arboriculture
ENISO13688= Safety Clothing
EN 343-3 = Waterproofing
RIS-3279-TOM= Hi-Viz Rail
EN ISO 20471= Visibility
ANSI107 & CSAZ96= Visibility

EN CUT PROTECTION:
Class 1: 20m/s
Class 2:
Class 3:
Level A=Front leg. **A+**= +Calf
Level C=front & back leg

WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing









MANUFACTURER	KIYARI	MONTBELL	NOTCH EQUIPMENT	ORE
MODEL PROTECTION VARIANT	1A		Armorflex II	Wai
SERIES			-	
PRODUCT CODE(S)			NA2CP	2954..
ORIGIN				
COST inc VAT/tax conv-only	£210 $000 €000		£309 $270 €000	£309 $0
WEIGHT per pair (m/lg R)	1.04kg/00lb		00kg/00lb	00kg,
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	32-36" R		28-30" 32-34" 36-38" 30,32,34	S-3XL
MATERIALS - OUTER LINER CUT PROTECTION	00% oo 00% oo 100% oo		88% cordura, 12% Elastane/ DWR 100% Polyester 5-Layer Avertic Engtex	00% 00% 100
POCKETS			2x zip angled front with pull tabs 2x side cargo/phone.	
REFLECTIVE ZIP VENTS BOOT HOOK			*	
ATTACH BRACES ANTI-TICK CLIMBING				
FEATURES			Scannable NFC tag technology. DWR finish repels water, oil & dirt Articulated knee protection with Armortex® abrasion resistant fabrics Large cooling rear vents *NOT zipped. Elastic waistband. UL classified in accordance with ASTM standard for leg protection Meets ANSI, ASTM Class C	• 6 Layer prote • Abrasion re stretch p • Lightweight: • Zipper pocke double tool p • Zipper ventila le
OTHER COLOURS			-	
NOTES				
WEBSITE			notchequipment.com	oregonpro

CHAINSAW TROUSERS











GON	OREGON	OREGON	OREGON
peao	Yukon 1C 1A	Yukon + 1A	Fjordland 1A
	-		
66..69	295397..295435..	295466..67	295466..67
00 €000	£155135 $237220 €150130	£309 $000 €000	£309 $000 €000
/00lb	1.25kg/2.75lb	00kg/00lb	00kg/00lb
S,R,L	S30"-XXL40" S,R,L	XS-3XL S,R,L	XS-3XL S,R,L
% oo % oo % oo	Polyester Polyester 5-Layer	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo
	2x large front, 1x slanted rear (with hook and loop closure)		
ctive material sistant 4-way polyester 1,38kg (size M) ets at front and pocket at back tions at back of gs	5-layer protective material Abrasion resistant 2 & 4-way stretch polyester 2 large front pockets &and one back pocket Lightweight: 1,05 kg (size M Type A trousers)	• 6 cutting resistant protective layers • 35% cotton for comfort, breathability and sweat control • 65% polyester for high durability • Oil, fuel and heat resistant • Lightweight: 1.15 kg (size M Class 1)	
ducts.com	oregonproducts.com	oregonproducts.com	oregonproducts.com

Size	Chest width	Waist	inside Leg Lengths Short	Reg	Long/Tall
2XS	78	74	80	87	75
XS	84	80	80	87	75
S	96	86	80	87	75
M	102	92	80	87	75
L	108	98	80	87	75
XL	116	104	80	87	75
XXL	124	110	80	87	75
3XL	132	116	80	87	75
4XL	138	122	80	87	75

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COST: inc local tax/VAT
£$€=currency conversion only
LEGSIZES: S Short R Regular L Long/Tall XL Extra Long/Tall

STANDARDS:
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ASTM F1897 USA= Cut Pro+
ASTM Canada= Cut Pro+
AS/NZS 4453.3= Cut Pro+
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EN 343-3 = Waterproofing
RIS-3279-TOM= Hi-Viz Rail
EN ISO 20471= Visibility
ANSI107 & CSAZ96= Visibility

EN CUT PROTECTION:
Class 1: 20m/s
Class 2:
Class 3:
Level A=Front leg. **A+=** +Calf
Level C=front & back leg

WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing









MANUFACTURER	PFANNER	PFANNER	PFANNER	PFAN
MODEL PROTECTION VARIANT	Arborist Slimfit 1A	Arborist 1C 1A	Ventilation 1C 1A	Jumps
SERIES	00	ARBORIST	VENTILATION	0
PRODUCT CODE(S)	0000	106651 102218	102078 101761	102
ORIGIN				
COST inc VAT/tax conv-only	£306 $000 €000	£336 $405€350326	£340288 $438 €408	£000 $0
WEIGHT per pair (m/lg R)	1.33kg/00lb	1.63kg/3.6lb	1.2-1.95kg/2.6-4.3lb	2kg/
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	XXS-3XL S,R,L	XXS-3XL S-75,R-80,L-87cm	XS-3XL S-75,R-80,L-87cm	S-XL
MATERIALS - OUTER LINER CUT PROTECTION	92% Nylon 8% Elastine 100 % polyester (Cocona) Dyneema	100% Nylon (Rear 10% Elastine) Polyester Cocona Engtex Avertic Pro	Coated Nylon (Rear 10% Elastine) Polyester Cocona Engtex Avertic Pro	00% 00% 100
POCKETS		2x side zip, 1x phone, 1x cargo, 1x rear zip	2x side zip, 1x flapped phone/cargo, 1x ruler pouch, 1x rear zip	
REFLECTIVE ZIP VENTS BOOT HOOK		(Orange Hi-Viz version-only)		
ATTACH BRACES ANTI-TICK CLIMBING				
FEATURES	StretchAIR® technology KlimaAIR® in the waistband area Gladiator® Extreme reinforcements for optimum protection on the front and inside of the leg (type A) Removable, elastic gaiters Preformed knee area Reflective Paspol stripes	Pfanner's StretchAIR® and KlimaAIR® fabrics for freedom of movement. Soft fibre lining for skin comfort. Keprotec® reinforcement front & inside legs protect against climbing spikes. Avertic Pro cut protection from Engtex. Waistband mesh improves ventilation. Preformed, tear-proof Keprotec knees. Soft comfort lining.	Very lightweight (1.2kg size medium) Removable gaiters - Summer version doesn't come with gaiters or coating. Waistband mesh improves ventilation. Tear-proof Gladiator fabric in the front. Pre-shaped knee reinforcements. Soft comfort lining. Zip Vents on Type A only	Stretch-AIR® and with chainsaw p way up to the ch fabric allows fo Klima-AIR® helps temperature. Com body size adjuste the shoulders. De prevent debris in knee reinfo
OTHER COLOURS				
NOTES	Olive & Blue colours shown are Slimfit			
WEBSITE	pfanner-austria.at	pfanner-austria.at	pfanner-austria.at	pfanner-a

CHAINSAW TROUSERS













NNER	PFANNER	PFANNER	PFANNER	PFANNER
suit 1A	Gladiator 2A	Gladiator II/Extreme 1A	Keprotec Light 1A	Impact Clearing Pants 1A
00	00	00	00	00
182	102192	102155 102192	102193-140	101756
00 €000	£300 $000 €000	£318 $000 €000	£210 $000 €000	£000 $000 €000
4.4lb	1.71kg/00lb	1.43kg/00lb	1.32kg/00lb	00kg/00lb
R,L	XS-3XL S,R,L	XS-2XL S,R	S-XL R	XS-3XL S,R,L
% oo % oo % oo	00% oo 00% oo 100% oo	Nylon, Aramid, PU, Elastane Polyester Cocona	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo
Klima-AIR® fabrics protection all the best. Stretch-AIR® or stretch while regulate the body nfort lining. Upper d via velcro tabs at tachable leg cuffs gress. Pre-shaped orcements.	Water-repellent, oil repellent and abrasion resistant, Gladiator fabric in the front and Stretch AIR fabric in the back. Pre-shaped knee reinforcements. Inside leg cuff is reinforced. Detachable internal gaiters provide protection from ticks and stop dirt and sawdust getting into boots.	Outer fabric is reinforced with Kevlar threads giving these trousers water, abrasion, oil and heat resistant qualities with excellent durability. Keprotec knee reinforcements. Pfanner's StretchAIR and KlimaAIR fabrics plus gentle-on-the-skin Cocona fibre Ventilation zips at the back of the knees allow for further wearing comfort.		StretchAIR® technology Gladiator® fabric on the front Impact protection in the front area Ventilation insert at the waistband Vents on the back of the leg Preformed knee reinforcement
austria.at	pfanner-austria.at	pfanner-austria.at	pfanner-austria.at	pfanner-austria.at

ProfiForest Size Chart

Size	A chest circumference	B Waist circumference of the pants	C stride length normal	extended	shortened
XXS	78	74	80	87	75
XS	84	80	80	87	75
S	96	86	80	87	75
M	102	92	80	87	75
L	108	98	80	87	75
XL	116	104	80	87	75
XXL	124	110	80	87	75
3XL	132	116	80	87	75
4XL	138	122	80	87	75

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ENISO11393-2= Chainsaw safety
ASTM F1897 USA= Cut Pro+
ASTM Canada= Cut Pro+
AS/NZS 4453.3= Cut Pro+
KWF-Profi= Forestry safety
ANSI Z133= Gen Arboriculture
ENISO13688= Safety Clothing
EN 343-3 = Waterproofing
RIS-3279-TOM= Hi-Viz Rail
EN ISO 20471= Visibility
ANSI107 & CSAZ96= Visibility

EN CUT PROTECTION:
Class 1: 20m/s
Class 2:
Class 3:
Level A=Front leg. **A+**= +Calf
Level C=front & back leg
WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing










MANUFACTURER	PROFIFOREST	PROFIFOREST	PROFIFOREST	PROFIF
MODEL PROTECTION VARIANT	Extreme 1A	Extreme Womans 1A	Arborist 1C 1A	Cool
SERIES	-	-	-	
PRODUCT CODE(S)	11-021/20	11-021/20	17-019 / 10	11-02
ORIGIN				
COST inc VAT/tax conv-only	£000 $000 €270	£000 $000 €245	£276 $357 €268	£221-244 $288
WEIGHT per pair (m/lg R)	00kg/00lb	00kg/00lb	1.6kg/3.5lb	1.45kg
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	XS-4XL S,R,L	XS-4XL S,R,L	XS-4XL S, R82, L cm	XXS-4XL
MATERIALS - OUTER LINER CUT PROTECTION	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	92% Cordura, 8% spandex 100% Polyester 48% Polyester, 52% PP	92% Cordura 100% P 48% Polyes
POCKETS			Scrench pocket, Ruler pouch. 2x Zip front (1xeach side), 1x Cargo, 1 rear	Scrench pocket, Ru front (1xeach side)
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING				
FEATURES	Protective trousers of the highest quality, manufactured based on the experience of forest workers who work in the toughest conditions. To make work in the forest even easier, we have used a new stretch protective insert that meets the standard 11393-2 Class 1 - 20 m/s with just 5 layers.	Protective trousers of the highest quality, manufactured based on the experience of forest workers who work in the toughest conditions. To make work in the forest even easier, we have used a new stretch protective insert that meets the standard 11393-2 Class 1 - 20 m/s with just 5 layers.	Developed for work at heights with 360° reinforced legs. The trousers are reinforced in places where arborists need it most. Good ventilation. Water-repellent, dirt & abrasion resistant. Functional lining with Coolmax fibers Ventilation gaps on back of trousers Anti-Tick hems. Removable gaiters. 3M Reflective highlights. YKK zips.	For higher risk fact Despite higher leve the user remains c climates. Materials used are and resistant to dir Comfortable Coolm lation on rear of le Anti-Tick hems. Re 3M Reflective high
OTHER COLOURS				
NOTES				
WEBSITE	profiforest.eu	profiforest.eu	profiforest.eu	profifo

CHAINSAW TROUSERS











FOREST	PROFIFOREST	PROFIFOREST	PROFIFOREST	PROFIFOREST
1C 1A	Flex 1A	BlueLight 1A	Classic 1A	Basic 1A
-	-	-	-	-
21/20	11-021/20	11-021/20	11-021/20	11-021/20
3-316 €266-292	£000 $000 €122	£000 $000 €256	£000 $000 €57	£000 $000 €92
g/3.2lb	00kg/00lb	00kg/00lb	00kg/00lb	00kg/00lb
R 82cm	XXS-4XL S,R,L	XXS-4XL S,R,L	XXS-4XL S,R,L	XXS-4XL S,R,L
, 8% spandex olyester ster, 52% PP	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo
uler pouch. 2x Zip , 1x Cargo, 1 rear				
	■	■	■	■
ors at work el of protection, ooler in warmer water-repellent rt and abrasion. nax lining & venti- gs movable gaiters. lights. YKK zips.				
rest.eu	profiforest.eu	profiforest.eu	profiforest.eu	profiforest.eu

ProfiForest Size Chart

Size	A chest circumference	B Waist circumference of the pants	C stride length normal	extended	shortened
XXS	78	74	80	87	75
XS	84	80	80	87	75
S	96	86	80	87	75
M	102	92	80	87	75
L	108	98	80	87	75
XL	116	104	80	87	75
XXL	124	110	80	87	75
3XL	132	116	80	87	75
4XL	138	122	80	87	75

IMAGES NOT TO SCALE
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£$€=currency conversion only
LEGSIZES: S Short R Regular L Long/Tall XL Extra Long/Tall

STANDARDS:
EN3815= Chainsaw Cut Pro
ENISO11393-2= Chainsaw safety
ASTM F1897 USA= Cut Pro+
ASTM Canada= Cut Pro+
AS/NZS 4453.3= Cut Pro+
KWF-Profi= Forestry safety
ANSI Z133= Gen Arboriculture
ENISO13688= Safety Clothing
EN 343-3 = Waterproofing
RIS-3279-TOM= Hi-Viz Rail
EN ISO 20471= Visibility
ANSI107 & CSAZ96= Visibility

EN CUT PROTECTION:
Class 1: 20m/s
Class 2:
Class 3:
Level A=Front leg. **A+**= +Calf
Level C=front & back leg
WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing









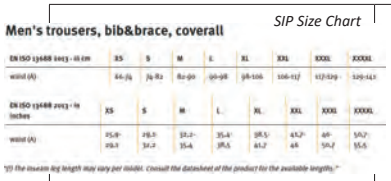

MANUFACTURER	PROFIFOREST	PROFIFOREST	PROFIFOREST	PROFIF
MODEL PROTECTION VARIANT	Innovation 1A	Kevlar 1A	Summer 1A	Visib
SERIES	-	-	-	
PRODUCT CODE(S)	11-021/20	11-021/20	17-019 / 10	11-02
ORIGIN				
COST inc VAT/tax conv-only	£000 $000 €276	£000 $000 €315	£000 $000 €268	£000 $0
WEIGHT per pair (m/lg R)	00kg/00lb	00kg/00lb	00kg/00lb	00kg,
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	XS-4XL S,R,L	XS-4XL S,R,L	XS-4XL S,R,L	XXS-4X
MATERIALS - OUTER LINER CUT PROTECTION	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	00% 00% 100%
POCKETS				
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING	■	■	■	■
FEATURES				
OTHER COLOURS				
NOTES				
WEBSITE	profiforest.eu	profiforest.eu	profiforest.eu	profifo

CHAINSAW TROUSERS

				
				
FOREST	OO	OO	OO	OO
le 1A	oo 1A	oo 1A	oo 1A	oo 1A
-	-	-	-	-
21/20	11-021/20	11-021/20	11-021/20	11-021/20
00 €266	£000 $000 €122	£000 $000 €122	£000 $000 €122	£000 $000 €122
/00lb	00kg/00lb	00kg/00lb	00kg/00lb	00kg/00lb
L S,R,L	XXS-4XL S,R,L	XXS-4XL S,R,L	XXS-4XL S,R,L	XXS-4XL S,R,L
% oo % oo % oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo
■	■	■	■	■
rest.eu	oo.com	oo.com	oo.com	oo.com

SIP Size Chart

Men's trousers, bib&brace, coverall



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RIS-3279-TOM= Hi-Viz Rail
EN ISO 20471= Visibility
ANSI107 & CSAZ96= Visibility

EN CUT PROTECTION:
Class 1: 20m/s
Class 2:
Class 3:
Level A=Front leg. **A+=** +Calf
Level C=front & back leg
WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing















MANUFACTURER	SIP PROTECTION	SIP PROTECTION	SIP PROTECTION	SIP PRO
MODEL PROTECTION VARIANT	Arborist Tall 1A	Arborist HV 1A	Canopy Air GO Donna 1A	Canopy A
SERIES	PROGRESS	PROGRESS	(WOMANS) INNOVATION	INNOV
PRODUCT CODE(S)	1SNA 1SNB			
ORIGIN				
COST inc VAT/tax conv-only	£000 $000 €338370	£000 $000 €349	£000 $000 €330	£000 $0
WEIGHT per pair (m/lg R)	00kg/00lb	00kg/00lb	1.6kg/00lb	00kg,
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	XS-XXL R82,(L88)cm	XS-XXL R82,(L88)cm	XS-3XL S,R,L	XS-3XL
MATERIALS - OUTER LINER CUT PROTECTION	87% Cordura® 13% elastane Polyester mesh 6-layer Dyneema	87% Cordura® 13% elastane Polyester mesh 6-layer Dyneema	96% Cordura® 4% elastan 00% oo 100% oo	00% 00% 100%
POCKETS	2x zip slant, 1x Cargo, 1x splashproof zipped phone/waterproof lining	2x zip slant, 1x Cargo, 1x splashproof zipped phone/waterproof lining		
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING				
FEATURES	Zip Front fly with press stud. Elasticated waist with belt Armortex® Light (30,7% para-aramid - 60,6% polyamide - 6,5% elasthane - 2,2% polyurethane ±340g/m2) knee reinforcements Water/dirt repellent Teflon-coated TeXXion (±240g/m2) Full stretch Armortex-ip light reinforcements	Zip Front fly with press stud. Elasticated waist with belt Armortex® Light (30,7% para-aramid - 60,6% polyamide - 6,5% elasthane - 2,2% polyurethane ±340g/m2) knee reinforcements Water/dirt repellent Teflon-coated TeXXion (±240g/m2) Full stretch Armortex-ip light reinforcements	2 hand pockets with downward zips. 1 anti-reverse ruler pocket. 1 spanner-holder rear right leg. zip pocket rear left leg 2 tool hooks. Buttons for straps. Belt with loops. Bib with two pockets closed with a flap, elastic shoulder straps with plastic buckle	
OTHER COLOURS				
NOTES				
WEBSITE	sip-protection.com	sip-protection.com	sip-protection.com	sip-protec

CHAINSAW TROUSERS











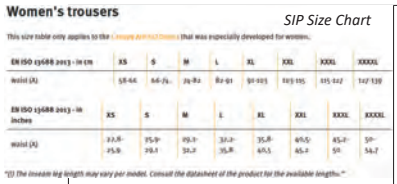








TECTION	SIP PROTECTION	SIP PROTECTION	SIP PROTECTION	SIP PROTECTION
Air Go 1A	Canopy W Air 1A	Flex 1A	Forest W Air 1A	Innovator 1A
VATION	INNOVATION	FLEX	INNOVATION	INNOVATION
	000	1XSPN2PT3	1SBWA2PH5	000
00 €317	£000 $000 €295	£000 $000 €125	£000 $000 €295	£000 $000 €243
/00lb	00kg/00lb	00kg/00lb	00kg/00lb	1.6kg/00lb
				EN11393
L S,R,L	00-00 S, R, L	00-00 S, R, L	00-00 S, R, L	00-00 S, R, L
% oo % oo % oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	96% Cordura® 4% elastan 00% oo 100% oo
				2 hand pockets with downward zips. 1 anti-reverse ruler pocket. 1 spanner-holder rear right leg. zip pocket rear left leg 2 tool hooks. Buttons for straps. Belt with loops. Bib with two pockets closed with a flap, elastic shoulder straps with plastic buckle
ction.com	sip-protection.com	sip-protection.com	sip-protection.com	sip-protection.com


Women's trousers

SIP Size Chart

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LEGSIZES: S Short R Regular L Long/Tall XL Extra Long/Tall

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Class 1: 20m/s
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Class 3:
Level A=Front leg. **A+**= +Calf
Level C=front & back leg

WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing















MANUFACTURER	SIP PROTECTION	SIP PROTECTION	SIP PROTECTION	SIP PRO
MODEL PROTECTION VARIANT	Ninja 1A	Perthus 1C	Perthus Flash 1A 3A	PROGre
SERIES	EVO	BASE PRO	BASEPRO	OC
PRODUCT CODE(S)	1SPOA2PTH	1RP6A2PAS	1RQ1.. 1RQ3..	
ORIGIN				
COST inc VAT/tax conv-only	£000 $000 €208	£159 $245 €190	£000 $000 €120164	£000 $0
WEIGHT per pair (m/lg R)	1.8kg/3.96lb	1.75kg/3.85lb	00kg/00lb	00kg,
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	00-00 S, R, L	S-3XL S, R, L	00-00 S, R, L	XS-3X
MATERIALS - OUTER LINER CUT PROTECTION	93% Polyester 7% Elastane 100% Polyester 100% Polyester	Polyester Cotton 6-Layer	00% oo 00% oo 100% oo	00% 00 100
POCKETS		2x front-slant, 1x rear zip, 1x cargo/ ruler pouch & scrench holder		
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING				
FEATURES		Bib in back with attachment for braces Front fly with zip closure & button Elasticated waist with belt and attachment for suspenders classic SIP Protection triple needle stitching in the back seam		
OTHER COLOURS				
NOTES		NB: This is the only type C in Sip's current range, *Samourai* =now A-only		
WEBSITE	sip-protection.com	sip-protection.com	sip-protection.com	sip-protec

CHAINSAW TROUSERS









TECTION	SIP PROTECTION	SIP PROTECTION	SIP PROTECTION	SIP PROTECTION
ssion 2A	PROGression Flash 2A	Reflex 1A	Samourai 1A	Samourai HV 1A
OO	OOO	FLEX	PROGRESS	PROGRESS
		1XRPNAPT3	1SRLNAPTP	1SALA2PTH
00 €374	£000 $000 €349	£000 $000 €157	£000 $000 €298	£000 $000 €330
/00lb	00kg/00lb	00kg/00lb	1.6kg/00lb	00kg/00lb
			EN11393	
L S,R,L	XS-3XL S,R,L	00-00 S, R, L	00-00 S, R, L	00-00 S, R, L
% oo % oo % oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	96% Cordura® 4% elastan 00% oo 100% oo	00% oo 00% oo 100% oo
			2 hand pockets with downward zips. 1 anti-reverse ruler pocket. 1 spanner-holder rear right leg. zip pocket rear left leg 2 tool hooks. Buttons for straps. Belt with loops. Bib with two pockets closed with a flap, elastic shoulder straps with plastic buckle	
ction.com	sip-protection.com	sip-protection.com	sip-protection.com	sip-protection.com

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STANDARDS:
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ENISO11393-2= Chainsaw safety
ASTM F1897 USA= Cut Pro+
ASTM Canada= Cut Pro+
AS/NZS 4453.3= Cut Pro+
KWF-Profi= Forestry safety
ANSI Z133= Gen Arboriculture
ENISO13688= Safety Clothing
EN 343-3 = Waterproofing
RIS-3279-TOM= Hi-Viz Rail
EN ISO 20471= Visibility
ANSI107 & CSAZ96= Visibility

EN CUT PROTECTION:
Class 1: 20m/s
Class 2:
Class 3:
Level A=Front leg. **A+**= +Calf
Level C=front & back leg

WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing



MANUFACTURER	SIP PROTECTION	SIP PROTECTION	SIP PROTECTION
MODEL PROTECTION VARIANT	T-Flex 1A+	Ventoux2 2A	Ventoux 3 3A
SERIES	FLEX		
PRODUCT CODE(S)	1XRU		
ORIGIN			
COST inc VAT/tax conv-only	£157 $241 €187	£000 $000 €132	£000 $000 €149
WEIGHT per pair (m/lg R)	1.8kg/3.96lb	00kg/00lb	00kg/00lb
STANDARDS REPEL WATER			
WAIST & LEG SIZES FEMALE	XS-2XL R82cm	00-00 S, R, L	00-00 S, R, L
MATERIALS - OUTER LINER CUT PROTECTION	Coated Nylon Polyester mesh 6-layer Dyneema	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo
POCKETS	2x front-slant, 1x rear zip, 1x cargo/ ruler pouch & scrench holder		
REFLECTIVE ZIP VENTS BOOT HOOK			
ATTACH BRACES ANTI-TICK CLIMBING			
FEATURES	Zip Front fly with press stud. Elasticated waist with belt Anti-tick elasticated gaiter with metal lace hook to fix on shoe laces 6 layer front protective inlay and additional calf protection, Waterproof anti-wicking fabric on the hem, on top of the protective inlay. 2-way stretch fabric with 7%Elastane		
OTHER COLOURS			
NOTES			
WEBSITE	sip-protection.com	sip-protection.com	sip-protection.com

SOLIDUR
1946

PERSONAL PROTECTIVE EQUIPMENT
for professionals working outdoors



FRPAUS
ASTM F1897-20 with
360°calf protection
Size: XS to 4XL

SOFRESH

- Chainsaw protective pants
- 5 layers protection
- 6 ventilation panels,
placed on the front & back



FRPA
EN 11393
Size: S to 4XL



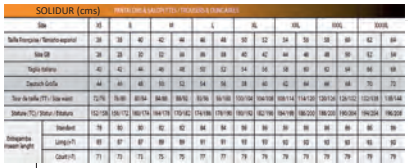
SHER
Size: XS to 2XL

SHERMAN

- Working pants, 4 ways stretch
no chainsaw protection
- Preformed knee in Armortex®
- Leg reinforcement in Cordura®

www.solidur.fr @solidur1946

Photo credit: © SOLIDUR - AdobeStock | # 344511538



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EN 343-3 = Waterproofing
RIS-3279-TOM= Hi-Viz Rail
EN ISO 20471= Visibility
ANSI107 & CSAZ96= Visibility

EN CUT PROTECTION:
Class 1: 20m/s
Class 2:
Class 3:
Level A=Front leg. **A+=** +Calf
Level C=front & back leg
WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing















MANUFACTURER	SOLIDUR	SOLIDUR	SOLIDUR	SOLI
MODEL PROTECTION VARIANT	Comfy 1C 1A	Climb LE 1A+	Hi-Viz Trousers 1C 1A 2A	Hi-Viz Tro
SERIES	-	CLIMB	GLOW	GL
PRODUCT CODE(S)	COPA1C COPA	CLIPH	HVPA1C HVPA	HVP
ORIGIN				
COST inc VAT/tax conv-only	£204190 $265250 €200187	£305 $395 €303	£108 $000 €190	£000 $0
WEIGHT per pair (m/lg R)	1.7kg/3.74lb	1.2kg/2.64lb	1.25kg/2.75lb	1.5kg
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	XS-4XL S, R, L, XL	S-2XL S, R, L	XS/78-4XL/86 S, R, L, XL	XS/78-4XL
MATERIALS - OUTER LINER CUT PROTECTION	245 g/m² polycotton/Kevlar 140 g/m² CoolMax® 5 layer polyester	88%Cordura/Kevlar 12%Spandex 55%CoolMax®45%Coolpass® 4 layer Polyester 160g/m²	150g/m² high viz polyester Polyester stretch-mesh 5 layer Polyester 160g/m²	150g/m² high Polyester st 5 layer Polye
POCKETS	2x Front-slant, 1x Scrench, Ruler pouch	2x Front, 1x Scrench, Ruler pouch tool-holder. First Aid pouch.1x Cargo	2x front-slant, 1x scrench, Ruler pouch &	2xfront-slant, 1xscr tool-holder loop.
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING	*		*	
FEATURES	Low bulk 5 layer protective material. Armortex® Kevlar® reinforcement to knees and right thigh. Teflon® Shield+ waterproof and oil/dirt repellent coating. Cordura® knees/seat/ankes. Zip detachable gaiters Type C DISCONTINUED in France but available in the UK as a special. *Rear Vent zip on Type A Only	Lightweight 4 -layer protection. Knee reinforcement in Armortex and Kevlar, right thigh in Cordura Rear leg material Ripstop and breathable mesh. Removable gaiters. Dirt and water repellent Teflon treated RIRI® button closure. Zipsol® system for extra pockets. Cargo pocket on the left leg has dust flap. High back. Elasticated waistband	High visibility orange &water-repellent, Lining: Stretchy polyester mesh, promoting breathability and comfort. Reflective strips: 3M. Anti-snag hooks Stretch lining and elasticated waistband for freedom of movement. Wraparound bib back . Zipsol® system for adding accessories *Rear Vent zip on Type A Only	3M High Visibility T Zipsol® system for sories Elasticated waistba Buttons for suspen Back wraparound b
OTHER COLOURS			4XL=orange only	
NOTES	Authentic Type C DISCONTINUED	Type C HVPA1C DISCONTINUED being replaced by ULTRALIGHT Q3'25	Type C HVPA1C DISCONTINUED being replaced by ULTRALIGHT Q3'25	TOM & 4XL=
WEBSITE	solidur.fr solidur.co.uk	solidur.fr solidur.co.uk	solidur.fr solidur.co.uk	solidur.fr

CHAINSAW TROUSERS










SOLIDUR	SOLIDUR	SOLIDUR	SOLIDUR	SOLIDUR
ousers 3A	**Sallopettes 1A**	**Trousers 1A**	**Trousers 3A 2A**	**Salopettes 1A**
OW	**GLOW**	**AUTHENTIC**	**AUTHENTIC**	**AUTHENTIC**
PA3A	HVSA	AJPA	AJPA	AUSA
00 €142	£000 $000 €120	£89 $000 €80140	£89 $000 €78	£00 $000 €95
/00lb	00kg/00lb	1.031.4kg/00lb	00kg/00lb	00kg/00lb
/86 S, R, L	XS/78-4XL/86 S, R, L	XS-4XL S, R, L	XS-4XL S, R, L	XS-4XL S, R, L
n viz polyester retch- mesh ster 160g/m²	150g/m² high viz polyester Polyester stretch- mesh 5 layer Polyester 160g/m²	180g/m² Eco polyester Polyester mesh 5 layer polyester 160g/m²	Eco Polyester Twill 180g/m² Polyester Mesh 55g/m² 5 layer Polyester 160g/m²	Eco Polyester Twill 180g/m² Polyester Mesh 55g/m² 5 layer Polyester 160g/m²
rench, Ruler pouch	2xfront-slant, 1xscrench, Ruler pouch tool-holder loop.	2xfront-slant, 1xscrench, Ruler pouch tool-holder loop.	2xfront-slant, 1xscrench, Ruler pouch	2xfront-slant, 1xscrench, Ruler pouch
Tape additional acces- nd ders ib	high visibility, anti-snatch hook Elasticated waistband, wraparound bib back, straps Water-repellent treated fabric 3M High Visibility Tape Anti-snag fixing hook Zipsol® system for additional acces-sories 1 non-return meter pocket 1 tool holder flange	Ergonomic cut and stretch lining provides excellent freedom of movement. Elasticated waist. Anti-tick hem-tightening system. Water-repellent fabric.	Hydrophobic polyester outer material 2 Italian pockets Ruler pocket Plug spanner pocket Stretch lining	Solidur AUTHENTIC Chainsaw Trousers. Hydrophobic polyester outer material 2 Italian pockets Ruler pocket Plug spanner pocket Stretch lining
=orange only	TOM & 4XL=orange only	Type C discontinued		
solidur.co.uk	solidur.fr solidur.co.uk	solidur.fr solidur.co.uk	solidur.fr solidur.co.uk	solidur.fr solidur.co.uk

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EN ISO 20471= Visibility
ANSI107 & CSAZ96= Visibility

EN CUT PROTECTION:
Class 1: 20m/s
Class 2:
Class 3:
Level A=Front leg. **A+**= +Calf
Level C=front & back leg
WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing







MANUFACTURER	SOLIDUR	SOLIDUR	SOLIDUR	SOLI
MODEL PROTECTION VARIANT	Comfy 1A 1C	Felin 1A	Trousers 1C	Infini
SERIES	-	-	AUTHENTIC	
PRODUCT CODE(S)	COPA COPA1C	60181	AUPA1C	INPA I
ORIGIN				
COST inc VAT/tax conv-only	£204 $000 €187200	£103 $000 €000	£000 $000 €140	£245 $0
WEIGHT per pair (m/lg R)	1.7kg/00lb	00kg/00lb	1.4kg/3.1lb	00kg/
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	XS-4XL S, R, L, XL	XS-4XL S, R, L	XS-4XL S, R, L	XS-4XL
MATERIALS - OUTER LINER CUT PROTECTION	245 g/m² polycotton/Kevlar 140 g/m² CoolMax® 5 layer polyester	00% oo 00% oo 100% oo	180g/m² Eco polyester polyester mesh 5 layer polyester 160g/m²	Cordura Cool 100
POCKETS			2x front-slant, 1x scrench, Ruler pouch &	
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING				
FEATURES	Low bulk 5 layer protective material. Armortex® Kevlar® reinforcement to knees and right thigh. Teflon® Shield+ waterproof and oil/ dirt repellent coating. Cordura® protection for vulnerable areas. Zip detachable gaiters with hooks for tick protection	Solidur FELIN Stretch EN381-5 Type A Chainsaw Trousers FEPA Retail Price Reg. £93.00+ VAT Sizes XS - 4XL Also available in long / short and Class 3 Solidur FELIN Chainsaw Trousers Low bulk 5 layer chainsaw cut protec-tive material 4 way stretch outer material	Ergonomic cut and stretch lining provides excellent freedom of movement. Elasticated waist. Anti-tick hem-tightening system. Water-repellent fabric.	Low bulk 5 layer p Armortex® Kevlar® knees and Teflon® Shield+ w dirt repelle Cordura® protect are
OTHER COLOURS				
NOTES			Type C DISCONTINUED	
WEBSITE	solidur.fr solidur.co.uk	solidur.fr solidur.co.uk	solidur.fr solidur.co.uk	solidur.fr

CHAINSAW TROUSERS

				
				
DUR	SOLIDUR	SOLIDUR	SOLIDUR	SOLIDUR
ty 3A	Sofi 1A	Infinity 1A	Infinity 3A	So Strong 1A
-	-	-	-	-
NPA3A	FRPA	INPA INPA3A	INPA INPA3A	STPA
00 €000	£189 $000 €000	£245 $000 €225	£245 $000 €000	£ $000 €230
/00lb	00kg/00lb	00kg/00lb	00kg/00lb	1.35kg/00lb
L S, R, L	XS-4XL S, R, L	XS-4XL S, R, L,XL	XS-4XL S, R, L	XS-4XL S, R, L
a/Kevlar lmax % oo	00% oo 00% oo 100% oo	Cordura/Kevlar Coolmax 100% oo	Cordura/Kevlar Coolmax 100% oo	Cordura/Kevlar Coolmax 100% oo
rotective material. ® reinforcement to right thigh. aterproof and oil/ ent coating. ion for vulnerable eas.	Solidur SOFRESH Class 1 Type A Summerweight Chainsaw Trousers Retail Price £157.50 + VAT Sizes S - 4XL Long / short also available S - 2XL Solidur SOFRESH Summerweight Ventilated Chainsaw Trousers Breathable mesh front and back EN381-5 Class 1 Design Type A protection against chainsaw cuts	Low bulk 5 layer protective material. Armortex® Kevlar® reinforcement to knees and right thigh. Teflon® Shield+ waterproof and oil/dirt repellent coating. Cordura® protection for vulnerable areas. Removable anti-tick gaitors.	Low bulk 5 layer protective material. Armortex® Kevlar® reinforcement to knees and right thigh. Teflon® Shield+ waterproof and oil/dirt repellent coating. Cordura® protection for vulnerable areas.	Front fabric: Armortex® 325gr/m² (50% Kevlar®, 31% Nomex®, 19% PU) Lining: Coolmax® 130gr/m² Back fabric: Cordura® stretch 215gr/m² (30% Kevlar®, 30% Cordura®, 20% Nomex®, 18% Polyester, 2% Spandex) Back knee fabric: Polyester Ripstop® stretch 4-way 160gr/m² Breathable mesh band: 210gr/m² Optimal protection:
solidur.co.uk	solidur.fr solidur.co.uk	solidur.fr solidur.co.uk	solidur.fr solidur.co.uk	solidur.fr solidur.co.uk

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ANSI107 & CSAZ96= Visibility

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Class 1: 20m/s
Class 2:
Class 3:
Level A=Front leg. **A+**= +Calf
Level C=front & back leg

WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing








MANUFACTURER	STEIN	STEIN		ST
MODEL PROTECTION VARIANT	Sentinel Rail 1C	Sentinel 1C 1A		Dynamic Ov
SERIES	SENTINEL	SENTINEL		O
PRODUCT CODE(S)	SS-1130155...	SS-1141523...		602
ORIGIN				
COST inc VAT/tax conv-only	£323 $419 €385	£298 $385 €356		£000 $0
WEIGHT per pair (m/lg R)	1.82kg/4lb	1.76kg/3.9lb		00kg,
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	S-4XL R, L	Sm-XXL R		00-00
MATERIALS - OUTER LINER CUT PROTECTION	Cordura/Elastane/Armortex ? 6 Layer	Cordura/Elastane/Armortex ? 6 Layer		00% 00% 100%
POCKETS	2x Side zipped, 1x Rear zip, press-stud left leg cargo	2x Side zipped, 1x Rear zip, press-stud left leg cargo		
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING				
FEATURES	6-layer European Protective Material Multi-directional material for increased movement and comfort (89% PES, 11% Elastane). Pre-formed Armortex KFM abrasion resistant knees (waterproof) YKK zips throughout. 75mm Reflec-tives. Armortex KFM Re-enforced belt loops.	6-layer European Protective Material Multi-directional material for increased movement and comfort (89% PES, 11% Elastane). Pre-formed Armortex KFM abrasion resistant knees (waterproof) YKK zips throughout. ArmortexKFM Re-enforced belt loops. Tri-Loop brace system. Wide waist		
OTHER COLOURS				
NOTES	Krieger name discontinued Long leg add £10	Krieger name discontinued		
WEBSITE	steininternational.com	steininternational.com		stihl

CHAINSAW TROUSERS











IHL	STIHL	STIHL	STIHL	STIHL
veralls 1A 1C	Function Ergo	Advance X Light	Advance X Treem	Protect
OO	OO	OO	OO	OO
200	60200	60200	60200	60200
00 €000	£000 $000 €000	£204 $000 €000	£381 $000 €000	£144 $000 €000
/00lb	00kg/00lb	00kg/00lb	00kg/00lb	00kg/00lb
S, R, L	00-00 S, R, L	00-00 S, R, L	00-00 S, R, L	00-00 S, R, L
% oo % oo % oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo
.com	stihl.com	stihl.com	stihl.com	stihl.com

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CLIMBING: Flexible enough to allow dynamic climbing











MANUFACTURER	STIHL USA	STIHL (STIHL USA)	STIHL	STIHL
MODEL PROTECTION VARIANT	Advance Arborist 1A 1C	Dynamic 1C (1C)	Dynamic Winter (1C)	Functio
SERIES	OO	DYNAMIC	DYNAMIC (USA)	O
PRODUCT CODE(S)	60200	008834225..	008834225.	60
ORIGIN				
COST inc VAT/tax conv-only	£000 $000 €000	£188 $243 €225	£155 $170 €160	£381 $0
WEIGHT per pair (m/lg R)	00kg/00lb	1.64kg/3.6lb	1.7kg/3.75lb	00kg
STANDARDS REPEL WATER		(USA)		
WAIST & LEG SIZES FEMALE	00-00 S, R, L	S34"-XL38" R32.5"	S30"-XL46" R32.5"	00-00
MATERIALS - OUTER LINER CUT PROTECTION	00% oo 00% oo 100% oo	Nylon, Spandex 100% Polyester 6-layer *Engtex Avertic Pro*	Treated Nylon, Spandex Thinsulate 6-layer *Engtex Avertic Pro*	00 00 100
POCKETS		2x side slant, 1x rear zip, 1x Lg left leg cargo with phone pouch inside	2x side slant, 1x rear zip, 1x Lg left leg cargo with phone pouch inside	
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING				
FEATURES		Fully elasticated trousers with freedom of movement in the seat and crotch, kidney protection and fitted with ventilation zips and ventilation material on the back of the upper thighs. Reinforced knees, seat and ankle with Aramid	Fully elasticated trousers with freedom of movement in the seat and crotch, kidney protection and fitted with ventilation zips and ventilation material on the back of the upper thighs. Reinforced knees, seat and ankle with Aramid. a long leg zipper for easy boot removal.	
OTHER COLOURS				
NOTES		Tan colour (Coyote)=USA only Also available in EU as overalls		
WEBSITE	stihlusa.com	stihl.com	stihl.com	stihlus

CHAINSAW TROUSERS

				
				
L USA	**STIHL**	**TREEHOG**		
n Denim	**X-Flex 1C**	**THHV1670 1C**		
OO	**ADVANCE**	-		
200	008834223...	AB301420....344		
00 €000	£293 $378 €285	£222 $265 €266		
/00lb	1.3kg/2.86lb	1.8kg/3.96lb		
		(+HV=)		
S, R, L	S34"-XXXL46" S, R32.5"	S-3XL S, R, L		
% oo % oo % oo	89% polyester, 11% elastane 100% Polyester 6-layer *Engtex Avertic Pro*	93% Polyester 7% Elastane 100% Polyester 100% Polyester		
	2x side slant, 1x rear zip, 1x Phone 1x zip cargo-left, 1x flap cargo-right	2x zip Side, 1 zip front 2 zip rear		
		(HV)		
	Full elasticated crotch with ProElast for greater freedom of movement. Quick drying fabrics.Elastic and breathable, with elasticated and waterproof knee protection Thorn and water resistance in the lower leg area, dirt resistant, long ventilation zippers on the back of the legs	- Bi-Stretch breathable crotch panel. - Raised kidney panel. - Elasticated waist with wide belt loops.		
		TH1670 also available as 1A in Grey. THHV1670 add 5% to price		
sa.com	stihl.com	treehog.co.uk		

Choosing the correct chainsaw trouser



Selecting the appropriate chainsaw trousers is essential for ensuring safety, as leg injuries are the most common type of chainsaw-related harm. At Arbortec, we offer a comprehensive range of chainsaw trousers designed to meet the diverse needs of arboricultural professionals and related industries.

Protection Levels & Certification

The primary factor when choosing arborist trousers is the required level of protection. Our trousers meet a minimum of Class 1 (20m/s) standards, with additional options for Class 2 (24m/s) and Class 3 (28m/s) to accommodate higher chainsaw speeds. We also provide a range conforming to UL standards for the US & Canada. 2025 has seen the introduction of the Vented Trouser, certified to UL standards, designed for optimal comfort in warmer climates.

Design Options

Design A (Type A) – Frontal protection with 5 cm rear coverage, ideal for standard forest and arb jobs
Design A Plus – Enhanced Design A with added calf protection, offering 180° coverage to the lower leg.
Design C (Type C) – Full leg protection for comprehensive safety during demanding jobs

Safety Meets Style

In addition to top-tier protection, our trousers are available in a wide range of colours, allowing you to express your style without compromising on safety.

For a full list of styles, colours, and specifications, visit arbortec.com.

ARBORTEC
FORESTWEAR

Arbortec - innovative options for all applications

BREATHEFLEX



Design A Design C

An affordable option for any arborist/groundie seeking a trouser to cover all eventualities. The original limes are available to Class 3!!

CLASS: 1, 2, 3 (UL available please see website for colours)
DESIGN/TYPE: A, A+, C
FIT: STRAIGHT
FLEXIBILITY:
DURABILITY:
COLOURS: 8
RAIL APPROVED OPTION: YES
SIZES:* XS-5XL. Short, Regular, Tall, Extra Tall



BREATHEFLEXPRO



Design A Design C

The most popular trouser in the industry. Designed for professionals with a wealth of benefits and features for all daily forest & arb tasks

CLASS: 1, 2. (UL available please see website for colours)
DESIGN/TYPE: A, C
FIT: SLIM
FLEXIBILITY:
DURABILITY:
COLOURS: 14
RAIL APPROVED OPTION: YES
SIZES:* XS-3XL, Short, Regular, Tall, Extra Tall



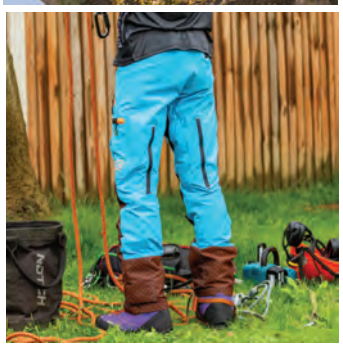
PROFREESTYLE



Design A Design C

A super flexible chainsaw trouser with a tailored fit. The perfect trouser for treework but equally great whatever your day entails.

CLASS: 1 (UL available please see website for colours)
DESIGN/TYPE: A, C
FIT: ATHLETIC
FLEXIBILITY:
DURABILITY:
COLOURS: 4
RAIL APPROVED OPTION: NO
SIZES:* XS-3XL, Short, Regular, Tall



DEEPFOREST



Design A Design C

A heavy duty chainsaw trouser using the latest technology & superior fabrics, delivering the ultimate in comfort with maximum safety.

CLASS: 1
DESIGN/TYPE: A, C
FIT: ATHLETIC
FLEXIBILITY:
DURABILITY:
COLOURS: 3
RAIL APPROVED OPTION: Coming Soon!
SIZES:* XS-3XL, Short, Regular, Tall



VentedUL



Vented Pants for uncompromising protection and comfort, plus additional ventilation for the warmest of working environments.

CONFORMS TO: ASTM F1897-20 - leg protection for chain saw users certified for the USA & ASTM F3325-20 Class C - leg protection or chain saw users certified for Canada
FIT: STRAIGHT
FLEXIBILITY:
DURABILITY:
VENTILATION PANELS: 4
COLOURS: 3
SIZES:* XS-3XL Regular, S-3XL Tall



*Sizes are available in at least one colour option within the range. For full colour options, specification and sizes visit **arbortec.com.**

IMAGES NOT TO SCALE
COST: inc local tax/VAT
£$€=currency conversion only
LEGSIZES: S Short R Regular L Long/Tall XL Extra Long/Tall

STANDARDS:
EN3815= Chainsaw Cut Pro
ENISO11393-2= Chainsaw safety
ASTM F1897 USA= Cut Pro+
ASTM Canada= Cut Pro+
AS/NZS 4453.3= Cut Pro+
KWF-Profi= Forestry safety
ANSI Z133= Gen Arboriculture
ENISO13688= Safety Clothing
EN 343-3 = Waterproofing
RIS-3279-TOM= Hi-Viz Rail
EN ISO 20471= Visibility
ANSI107 & CSAZ96= Visibility

EN CUT PROTECTION:
Class 1: 20m/s
Class 2:
Class 3:
Level A=Front leg. **A+**= +Calf
Level C=front & back leg

WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing










MANUFACTURER	CLOGGER	CLOGGER	CLOGGER	CLOG
MODEL PROTECTION VARIANT	Zero 1A	Defender Pro 1A	Defender Pro Arborist 1A	ArcMax
SERIES	OO	OO	OO	O
PRODUCT CODE(S)	000	000	000	0
ORIGIN				
COST inc VAT/tax conv-only	£000 $000 €000	£000 $000 €000	£000 $000 €000	£000 $0
WEIGHT per pair (m/lg R)	00kg/00lb	00kg/00lb	00kg/00lb	00kg,
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	XS-3XL S,R,L	XS-3XL S,R,L	XS-3XL S,R,L	XS-3XL
MATERIALS - OUTER LINER CUT PROTECTION	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	00% 00% 100%
POCKETS				
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING				
FEATURES				
OTHER COLOURS				
NOTES				
WEBSITE	clogger.co.nz	OO.com	OO.com	OO.

CHAINSAW LEGGINGS/CHAPS

				
				
GGER	CLOGGER	OO	OO	OO
gen3 1A	Wildfire 1A	OOO 1A	OOO 1A	OOO 1A
OO	OO	OO	OO	OO
00	000	000	000	000
00 €000	£000 $000 €000	£000 $000 €000	£000 $000 €000	£000 $000 €000
/00lb	00kg/00lb	00kg/00lb	00kg/00lb	00kg/00lb
L S,R,L	XS-3XL S,R,L	XS-3XL S,R,L	XS-3XL S,R,L	XS-3XL S,R,L
% oo % oo % oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo	00% oo 00% oo 100% oo
com	OO.com	OO.com	OO.com	OO.com

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EN CUT PROTECTION:
Class 1: 20m/s
Class 2:
Class 3:
Level A=Front leg. **A+**= +Calf
Level C=front & back leg

WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing








MANUFACTURER	FRANCITAL	FRANCITAL	PROFIFOREST	ORE
MODEL PROTECTION VARIANT	Prior Leggings 1A 1C	Elne 1A	- 1A	Universal
SERIES	Silver	O	-	
PRODUCT CODE(S)	000	000	11-021/20	2954
ORIGIN				
COST inc VAT/tax conv-only	£000 $000 €151	£000 $000 €101	£000 $000 €270	£309 $0
WEIGHT per pair (m/lg R)	1.8kg/3.96lb	1.66kg/3.65lb	00kg/00lb	00kg,
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	XS-3XL S,R,L	XS-3XL S,R,L	XXS-4XL S,R,L	XS-3XI
MATERIALS - OUTER LINER CUT PROTECTION	93% Polyester 7% Elastane 100% Polyester 100% Polyester	90% Polyester 10% Elastane 88% Polyester 12% Elastine 100% Polyester	00% oo 00% oo 100% oo	00% 00% 100
POCKETS				
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING			■	
FEATURES	Zipper 7 Zipped rear thighs. Reflective highlights	Button Waist 7 Belt loops		
OTHER COLOURS				
NOTES				
WEBSITE	francital.com	francital.com	profiforest.eu	oregonpro

CHAINSAW LEGGINGS/CHAPS

				
				
GON	SOLIDUR	SOLIDUR	SOLIDUR	SOLIDUR
Chaps 1A	Authentic Chaps 1A 1C	Authentic Chaps 3A	Glow Chaps 1A	Glow Chaps 3A
	-	-	-	-
66..67	AJPA	AJPA	HVJA	HVJA3
00 €000	£89 $000 €78	£000 $000 €133	£000 $000 €105	£000 $000 €142
/00lb	1.2kg/00lb	00kg/00lb	00kg/00lb	00kg/00lb
	■	■	■	■
L S,R,L	XS-4XL S, R, L	XS-4XL S, R, L	XS-3XLS, R, L	XS-3XLS, R, L
% 00 % 00 % 00	Eco Polyester Twill 180g/m² Polyester Mesh 55g/m² 5 layers Polyester 160g/m²	Eco Polyester Twill 180g/m² Polyester Mesh 55g/m² 5 layers Polyester 160g/m²	150g/m² high viz polyester Stretch mesh polyster 5 layers Polyester 160g/m²	150g/m² high viz polyester Stretch mesh polyster 9 layers Polyester 160g/m²
	■	■	■	■
	Class 2 and Class 3 Solidur AUTHENTIC Chainsaw Trousers. Hydrophobic polyester outer material 2 Italian pockets Ruler pocket Plug spanner pocket Stretch lining	Class 2 and Class 3 Solidur AUTHENTIC Chainsaw Trousers. Hydrophobic polyester outer material 2 Italian pockets Ruler pocket Plug spanner pocket Stretch lining	Solidur GLOW EN381-5 Class 1 Type A Chainsaw Trousers HVPAOR Retail Price £90.00 + VAT Sizes XS - 3XL Also available in yellow HVPA and Class 3 Solidur GLOW High Visibility Orange Chainsaw Trousers EN381-5 Class 1 Design Type A protection against chainsaw cuts	Stretch lining and quick-release waistband. Full-length zippers make the leggings easy to put on and take off & simple adjustment. The non-return ruler pocket and tool loop provide quick access to necessary gear, while MOLLE loops allow for additional accessories or tools for added convenience. 2 side pockets, 1 rule pocket, 1 plug
	■	■		
ducts.com	solidur.fr solidur.co.uk	solidur.fr solidur.co.uk	solidur.fr solidur.co.uk	solidur.fr solidur.co.uk

NON-PROTECTIVE CLIMBING TROUSERS

The problem with chainsaw protection is that it adds weight, bulk and cost to an item of clothing that, for climbers, needs to be as unrestrictive as possible. There are many arb jobs that don't involve chainsaw use, at least not for more than a judicious cut or two or use hand saws or pruners instead. Other jobs like inspections, pre-large-scale contract rigging and competitions don't have any cutting risk at all so lighter and more flexible trousers that sill exhibit the useful bits like venting, high-vis, differential wear and stretch fabrics, gaiters, boot-hooks and useful pockets, are called for.

This is very much more the domain of contract climbers and competition (and perhaps recreational) climbers than it is the utility crews and forestry workers so the choices are far fewer than for protective trousers. A handful specialist of manufacturers in Europe and Clogger in New Zealand have currently cornered the market though others will cotton on to the demand and will appreciate the free reign in design afforded by NOT incorporating standards prescribed chainsaw protection. It's no surprise that the most prolific manufacturers.

Temperature reduction is perhaps the biggest bonus with bespoke climbing trousers; well ventilated, lighter materials that are directly breathable rather than more protective trousers which are 'breathable' but with additional barrier materials between your skin and the outside air. That's not to say that these are 'fragile' trousers - if they are designed for climbing they will incorporate defensive fabrics that are hard wearing in all the usual high-wear areas and will not easily tear. This is where there is a distinction between arborists climbing trousers and the plethora of outdoor/climbing trousers intended more for rock climbers and mountaineers - they have the same dynamic capabilities but not the anti-snag and working properties of arb trousers.

IMAGES NOT TO SCALE
COST: inc local tax/VAT
£$€=currency conversion only
LEGSIZES: S Short R Regular L Long/Tall XL Extra Long/Tall
STANDARDS:
KWF-Profi= Forestry safety
ENISO13688= Safety Clothing
EN 343-3 = Waterproofing
RIS-3279-TOM= Hi-Viz Rail
EN ISO 20471= Visibility
AANSI Z133= Gen Arboriculture
ANSI107 & CSAZ96= Visibility

WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing

MANUFACTURER	ARBORTEC FORESTWEAR	ARBORTEC
MODEL PROTECTION VARIANT	AT4110 -	AT
SERIES	BREATHFLEX	BREATH
PRODUCT CODE(S)		
ORIGIN		
COST inc VAT/tax conv-only	£234 $000 €000	£234 $
WEIGHT per pair (m/lg R)		
STANDARDS REPEL WATER		
WAIST & LEG SIZES FEMALE	XS-3XL R,L	XS-3
MATERIALS - OUTER LINER REINFORCEMENT		
POCKETS	Zipped Cargo and phone pockets.	Zipped Cargo an
REFLECTIVE ZIP VENTS BOOT HOOK		
ATTACH BRACES ANTI-TICK CLIMBING		
FEATURES	Reinforced at high tension seams. Kevlar reinforcement at lower leg. Downward-facing Pocket Zips. Compatible with climbing harness. Reinforced lining around ankle. Velcro side adjusters: Adjust the waist size to suit.	Reinforced at hig Kevlar reinforcer Downward-facin Compatible with Reinforced lining Velcro side adjus waist size to suit
OTHER COLOURS		
NOTES	USA/Canada Only	USA/Ca
WEBSITE	arbortecforestry.com	arbortec

NON-PROTECTIVE CLIMBING TROUSERS

				
				
FORESTWEAR	ARBPRO	ARBPRO	Clogger	FRANCITAL
4160 -	Sigma -	Delta -	Spider -	Monvert R
HFLEX PRO	-	-		ECO
	000	000	ooo	FL594D
$000 €000	£000 $000 €000	£000 $000 €000	£000 $000 €000	£000 $000 €110
	00kg/00lb	00kg/00lb	00kg/00lb	00kg/00lb
3XL R,L	XS-2XL S,R,L, XL	XS-2XL S,R,L, XL	XS-3XL S,R,L	XS-3XL S,R,L
	53% Polyamide, 39% Polyester, 8% Elasthane 100% Polyester 63% Polyamide, 37% Elastane	52% Nylon, 40% Poly, 8% Spandex 70% Nylon, 7% Polyester, 9% Kevlar, 14/% Spandex	00% oo 00% oo None	96% Cordura® 4% elastan 00% oo 100% oo
d phone pockets.				
	Braces included	Braces included		
gh tension seams. ment at lower leg. g Pocket Zips. climbing harness. around ankle. sters: Adjust the .				Removable gaitors
anada Only				
forestry.com	arbpro.it	arbpro.it	oregonproducts.com	francital.com

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EN ISO 20471= Visibility
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ANSI107 & CSAZ96= Visibility

WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing







MANUFACTURER	NOTCH	PFANNER	OO	O
MODEL PROTECTION VARIANT	SonicII -	Gladiator -	OO -	O
SERIES	SONIC	OUTDOOR	OUTDOOR	
PRODUCT CODE(S)	sonic2	1SSPN2PTP	1SSVA2PH5	o
ORIGIN				
COST inc VAT/tax conv-only	£000 $198 €000	£210 $000 €225	£000 $000 €193	£89 $0
WEIGHT per pair (m/lg R)	00kg/1.2lb	00kg/00lb	00kg/00lb	1.2kg
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	28-30" 32-34" 36-38" 30,32,34	XS-3XL R85cm	XS-3XL R85cm	XS-4XL
MATERIALS - OUTER LINER CUT PROTECTION	88% cordura, 12% Elastane/ DWR 100% Polyester None	00% oo 00% oo None	00% oo 00% oo None	Eco Polyester Polyester M No
POCKETS	2x zip angled front with pull tabs 2x side cargo/phone.			
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING				
FEATURES	High abrasion resistant Cordura® 4 way stretch fabric allows greater freedom of movement & flexibility Excellent breathability DWR finish repels water, oil & dirt Knee protection = Armortex® abrasion-resistant fabrics Grey color keeps cool in high temps. Elastic waistband. Aluminum button			
OTHER COLOURS				
NOTES				
WEBSITE	notchequipment	sip-protection.com	sip-protection.com	solidur.fr

NON-PROTECTIVE CLIMBING TROUSERS

O	OO	OO		
O -	OO -	OO -		
-	CLIMB	-		
oo	ooo	000		
00 €112	£000 $000 €175	£000 $000 €112		
/00lb	500g/1.1lb	00kg/00lb		
S, R, L	XS-4XL S, R, L	XS-3XL S,R,L		
Twill 180g/m²	Cordura/Spandex	100% oo		
lesh 55g/m²	Polyester Mesh 55g/m²	100% oo		
one	None	None		
	88% Cordura® and 12% Spandex®, with a weight of 275g and Teflon® treatment for four-way stretch. Pockets: 4 front pockets, 1 back pocket with body fabric bottom. Fasteners: YKK zipper for long lasting strength.			
solidur.co.uk	solidur.fr solidur.co.uk	solidur.fr solidur.co.uk		

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ANSI107 & CSAZ96= Visibility

WATER REPELLENT:
CLIMBING: Flexible enough to allow dynamic climbing










MANUFACTURER	SIP PROTECTION	SIP PROTECTION	SIP PROTECTION	SOLI
MODEL PROTECTION VARIANT	Gecko -	Progress -	1SSV -	Sherr
SERIES	OUTDOOR	OUTDOOR	OUTDOOR	
PRODUCT CODE(S)	1SS5A2PTP	1SSPN2PTP	1SSVA2PH5	oc
ORIGIN				
COST inc VAT/tax conv-only	£000 $000 €000	£000 $000 €226	£000 $000 €193	£89 $0
WEIGHT per pair (m/lg R)	00kg/00lb	00kg/00lb	00kg/00lb	1.2kg
STANDARDS REPEL WATER				
WAIST & LEG SIZES FEMALE	XS-XL R82cm	XS-3XL R85cm	XS-3XL R85cm	XS-4XL
MATERIALS - OUTER LINER CUT PROTECTION	00% oo 00% oo None	00% oo 00% oo None	00% oo 00% oo None	Eco Polyester Polyester M No
POCKETS				
REFLECTIVE ZIP VENTS BOOT HOOK				
ATTACH BRACES ANTI-TICK CLIMBING				
FEATURES				
OTHER COLOURS				
NOTES				
WEBSITE	sip-protection.com	sip-protection.com	sip-protection.com	solidur.fr

NON-PROTECTIVE CLIMBING TROUSERS













DUR	SOLIDUR	SOLIDUR
man -	Climb -	SRT Kanop -
-	CLIMB	-
oo	ooo	000
00 €112	£000 $000 €175	£000 $000 €112
/00lb	500g/1.1lb	00kg/00lb
S, R, L	XS-4XL S, R, L	XS-3XL S,R,L
Twill 180g/m² lesh 55g/m² one	Cordura/Spandex Polyester Mesh 55g/m² None	100% oo 100% oo None
■	■	■
	88% Cordura® and 12% Spandex®, with a weight of 275g and Teflon® treatment for four-way stretch. Pockets: 4 front pockets, 1 back pocket with body fabric bottom. Fasteners: YKK zipper for long lasting strength.	
■	■	
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Typhoon 12.2mm climbing line



Brochure

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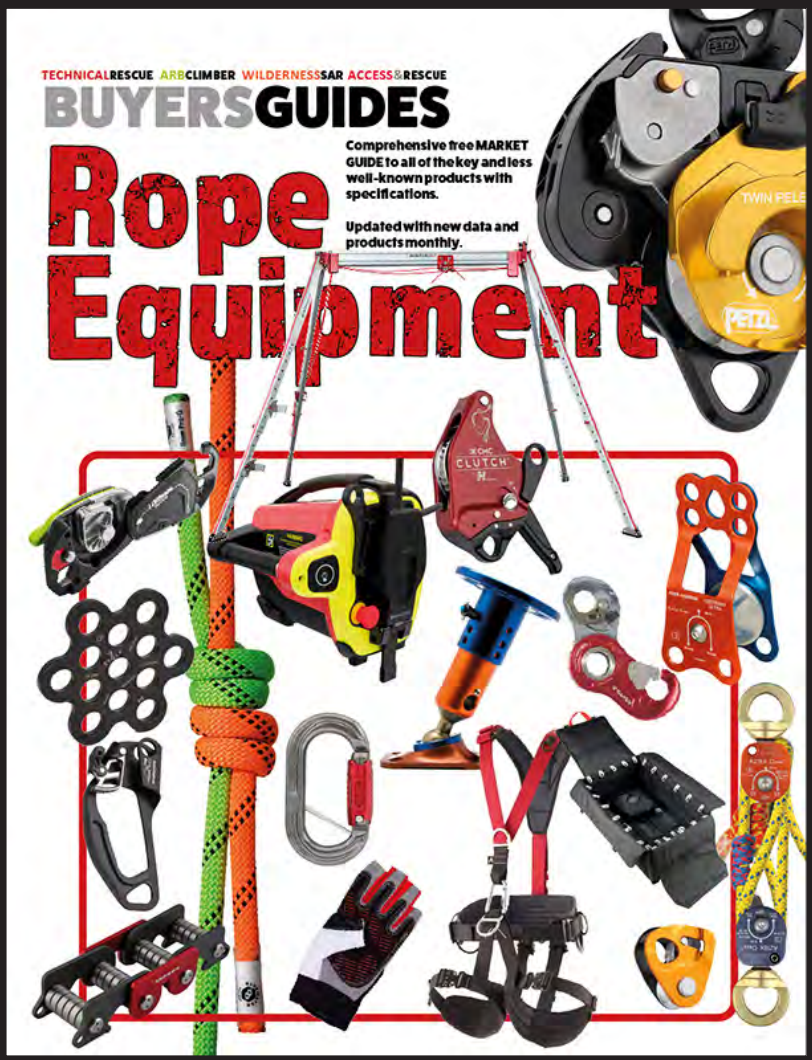
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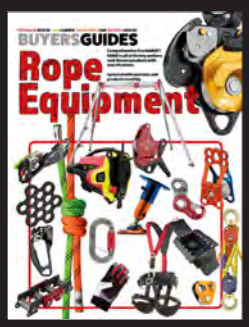
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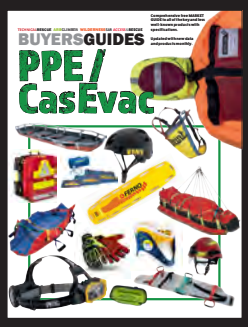












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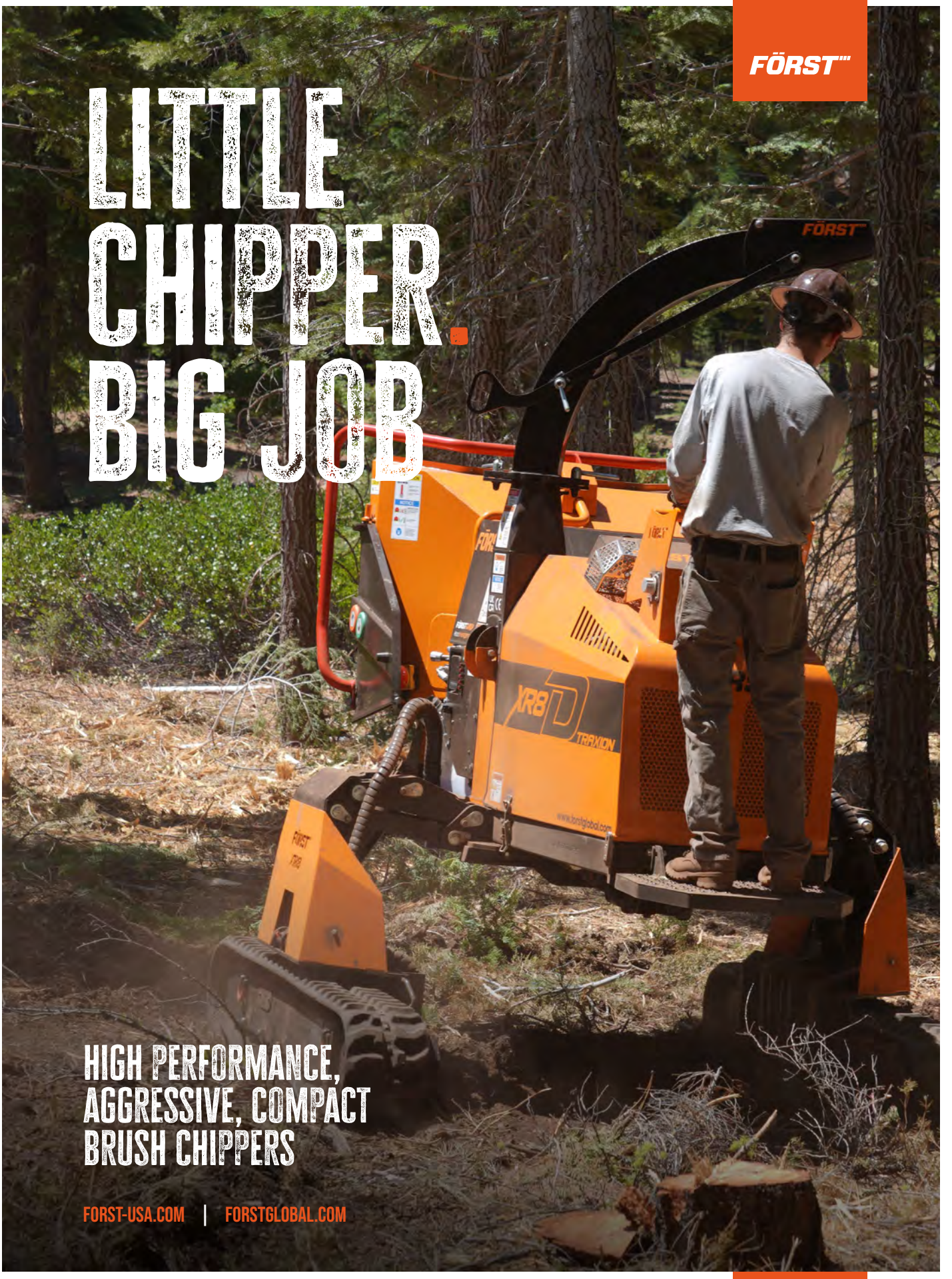
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