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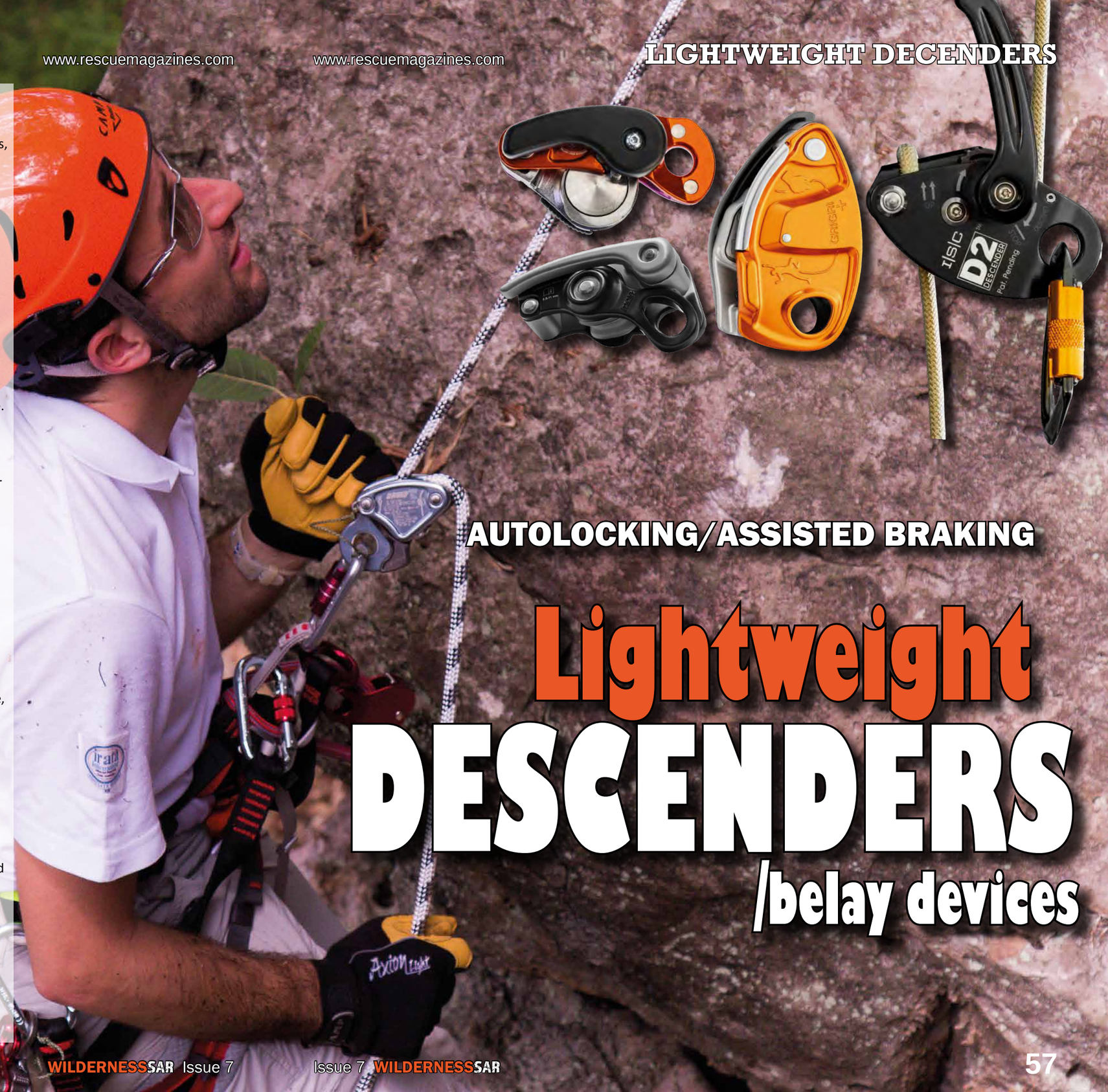
Superlight, autolocking descenders

The purpose of this GUIDE is to identify smaller, lighter devices that are easily carried as 'personal' descenders capable of a two person rescue at a push even if the instructions and standards specifically preclude such an action. We'll probably get grief for saying it, but the fact remains that there are NO descenders/belay devices in this list that are so sketchy on strength or ultimate failure load that they couldn't handle the weight of you ***plus*** a casualty if you had no other option. Descender cams are not like ascender teeth which can start to tear through rope as the loads increase, unless you're rescuing an elephant, a smooth cam's failure mode will be in the event of a shock loading and that's only where there is a more aggressive 'pinch' between the cam and the casing and where there is relatively short length of rope between you and the anchor or an intermediate edge. The bigger problem may be that you experience considerable difficulty in starting your descent with a heavy load. In a few cases (but not the Camp Druid, Lifeguard and ISC D2 pictured here!) you will need to be careful not to leverage a plastic handle so much that it breaks – then you really are stuck. You will need to take very firm hold of the trail or tail rope while applying a very controlled force as close to the handle's union with the cam as you can and take care that your transition from stopped to moving is smooth and slow and doesn't become a stutter as you lurch from stopped to freefall and back to shuddering stop. Don't forget to gradually release rope through the hand as you depress the handle otherwise you may find you don't go anywhere even after putting the handle into what you think is a freefall position. Indeed, with high loads you may find greater control with the device wide open but controlling on the rope INSTEAD of the handle providing you have sufficient friction. Some larger descenders have ancillary friction posts or hooks for exactly this task but that's rarely the case with these lighter weight models. Handling heavy loads is something you can and should practice in a controlled and safe environment and get accustomed to exactly what force is required and what handle pulling/pushing technique works best. You may find that in one or two cases, the descender just won't budge under loads over a certain weight. It would be good to know what that ultimate weight is for your chosen descender and then cut down on the pies and doughnuts. The main rule with brake assist descenders is to keep hold of the trail rope at all times except for the very rare occasion when you might need to fend off or hold-on to something or someone with one hand while still descending – this was an easier proposition with old-style manual friction devices like fig-8s but remember that using JUST the handle is a very different feel without that control hand on the tail of the rope and you ARE more likely to accidentally put yourself into locked mode.

A number of escape or bail out devices from the fire-sector are included here if they will operate on regular sized rope because they are, by design, smaller, lighter and tougher than purely sport-oriented devices. We've excluded devices that operate on fire-retardent webbing-only or on rope diameters less than 7mm – there's not a lot of point in everyone on the team carrying a diminutive personal descender that operates on 4.5 or 6mm cord if the team ropes are all larger than 10mm/3/8". However, from a personal perspective you may well want to take a look at an Escape device or kit for personal use because they can be incredibly useful in all manner of access and rescue situations with diminutive sized kits containing, on average, 15m/50ft of rope or webbing that is tough as old boots over unprotected edges because most incorporate high-strength aramid fibres like Technora.

Back to this particular Guide and there is a mix in this list of sport devices (aimed primarily at belaying), tactical, fire descenders and one or two purposely designed small descenders. What they all have in common is auto-locking or assisted braking as it's now become known. If you remove your hand from the device and the trail/tail rope, the device will hold your position and you won't plummet to the ground. There are many fig8 style 'bottle-openers' that are the size of, well... bottle openers, that can function as an emergency descender but these are in the category of 'emergency-self-rescue, much like using your boot laces as prusiks. They



AUTOLOCKING/ASSISTED BRAKING

Lightweight DESCENDERS /belay devices

are not a preplanned in-line device that will auto-lock while you attend to a situation and without twisting the rope into a Shirley Temple (youngsters Google it) but a 'bottle-opener' might just enable you to safely lifeline somebody or, at a push, pick them off of a precarious situation.

BELAY OR DESCENDER?

We've mentioned 'belay devices' as a secondary function of lightweight auto-locking descenders but some of these are belay devices first and foremost and may not even mention descending as a function! However, regardless of whether it is mentioned in the instructions, any device that can lower a climber can function as a descender over short distances. Perhaps the finest and original proponent of brake-assist belaying is the Petzl GriGri now in its fourth and fifth incarnation and as fine a small descender as we've ever used. Remember though that smaller devices have much less metal and surface area with which to dissipate heat so you need to be very aware of heat build-up during descent and either mitigate it during descent, not stop at all or stop before it gets too hot. Any descender can 'belay' in terms of factor-0 lifelining or top-roping where dynamic impact is kept to an absolute minimum but they can't all perform the stiffer task of belaying a lead-climber with the potential for greater than Factor-1 impact. Lead climb belaying mandates use of dynamic rather than static/low-stretch ropes and while dynamic ropes are commonly carried they're not generally as common in rescue as low stretch ropes because climbing up to the casualty/strandee is not as common as top-down rescues. It also requires a more dynamic braking action rather than a sudden arrest which is why some are belay-first like the C.A.M.P. Matik versus the C.A.M.P/ Druid.

RULE NUMBER 1:
Maintain Control of the Trail/Tail/Brake Rope AT ALL TIMES

DEVICES NOT INCLUDED

Devices larger than around 150mm/6" inc handle and using rope diameters less that 7mm have been excluded although we have included the C-Toms Quickie ostensibly for 6.5mm but you might get away with it on a 'smaller' 7mm. This unfortunately means the very small and light Escapettor using 5mm cord is out. We've excluded heavier devices by using the rather arbitrary figure of 300g/11oz as the upper weight limit for what we consider 'lightweight' for rescue and even then we've had to cheat and make exceptions for the TAZ Lov2 and the ISC/SAR Products RAD. If you're a climber you'll already know that if it weighs more than half an ounce you'll be hiring an extra Sherpa but this is meant to be a multi-use device for rescuers so it needs to do a bit more than adequately belaying your mate while he cleans a new route. That does mean we've excluded a quite prominent model, The Lory by Anthron, also known as the Edelrid Edy or Singing Rock SIR. At 365g this is significantly more than 'lightweight'. We haven't included any devices without a dedicated handle to indicate (or at least imply) that lowering or descending is a proper function of the device rather than an afterthought. All belay devices require you to lower and can therefore function as a descender. All of the Sticht plate/tuber derivatives are manual and definitely hands-on while the more complex frame devices like the RAMA, SRC, Smart and Fish which utilise the carabiner as a brake by jamming it against the frame, are neither categorically auto-locking or handsfree. However, the latest term 'brake-assist' probably would apply as it brings in the kind of leeway you need with devices like the Wild Country Revo which may run briefly before the inertia brake activates. We first used the frame style of belay device in the early eighties with a device from Salewa that hasn't really changed that much in mechanism, just in the space-age looking hot and cold forging and some more complex curves and inlets. We haven't even included the Austiapin Fish even though it has a fold out handle because it's not a separate camming action, just an extension of pushing/pulling down on the end of the body as you do with all others in this genre. The Alpine-Up model from Climbing Technology (pic above) is closest to meeting our multi-functional and autolocking requirements but none of this genre guarantee autolocking (as distinct from a more dynamic brake-assist) in an abseil/rappel so we haven't included them.

Because many of the devices in our Guide to Escape Descenders in TECHNICAL RESCUE #76 are also in this Guide we can steal and modify some of that editorial.....

PANIC GRAB or DOUBLE BRAKE?

We feel this term, often described as 'anti-panic' in descender instructions, to be somewhat insulting to rescuers who are presumably at the top of their game and not prone to panicking. Climbing Technology calls it an 'Extraordinary Braking System' which is perhaps more appropriate to expert users who then don't have to admit to having panicked but instead simply had an 'extraordinary moment'. To keep everyone happy let's think of it as a double or secondary brake to protect against accidental activation that might put you into a free-fall such as pressure from webbing or rigging against the handle. The 'panic' term has come about because a climber's reaction to an unexpected and maybe scary occurrence is to hang on more tightly to whatever you're already holding, in this case the handle of the descender. It was often the case with single action brakes that having grasped the handle and gone into virtual free-fall this further inclined you towards hanging on tighter rather than the unnatural reaction of letting go of everything in order to arrest your fall. So double braking devices arrived and were sold on the ability to mitigate that grab reaction when something goes wrong.

Double or Panic-Brakes come in 3 forms:

1) 'Lock' when the handle goes beyond a certain point, they then need to be reset before you continue descent like the ISC D2 and CAMP Druid
2) As 1) but instead of having to reset after locking, the handle can continue past the lock and back into descent mode like the newer GriGri +
3) if the handle is squeezed too hard, it goes into an 'overpressure' braking action for as long as you maintain sufficient pressure on the handle or remember to let go altogether. This style of secondary brake is much better suited to tactical and high-speed descents where a sudden arrest could be disastrous whereas a temporary slowing could be easily dealt with. You may never stop completely but you will at least hit the floor at a slower speed. Most Tactical situations prefer no secondary brake at all as with the regular GriGri and Druid Pro.

STANDARDS

The devices in this Guide fall into two distinct standards, one for sport devices and one for escape/rescue devices. EN15151-1 2012 is the cover-all standard for belay devices that can also function as limited speed/distance descenders. The official description is:

'*braking devices with manually assisted locking used in mountaineering, climbing and related activities for belaying, with manually assisted locking function, to protect against falls from a height and/or for abseiling with speed regulation. This European Standard applies to braking devices which are loaded with one person and which use mountaineering ropes according to EN 892. In case of abseiling and lowering down, this standard also applies to braking devices, used with low stretch kernmantle ropes according to EN 1891. It does not apply to manual braking devices which are addressed in EN 15151-2:2012, nor to fully automatic fixed installations*.

Devices that are specific to Escape, even though they function as conventional descenders may ONLY have a fire-or safety industry related standard rather than the UIAA or EN15151 standards as belay devices. Escape/evacuation devices are NOT intended for mountain rescue and are instead aimed at firefighters and rope access workers but a number of those shown here may be worth consideration if they meet your team or service protocols. In Europe especially, the wind turbine market is driving a lot of development towards escape and evacuation systems. Many of the larger rescue descenders meet more than one performance standard. For instance, Kong's Indy Evo Plus descender which is too large to be included in this Guide, could be described as a personal evacuation/Escape device as well as a rescue descender and general descender. In contrast NFPA E tends to rule out G and L devices as being too large/heavy and requiring of larger diameter ropes though their specific wording for E versus T hardware is exactly the same. NFPA defines 'Escape' as....

Immediate self-rescue of a single fire or emergency services person from a life-threatening emergency situation, generally above ground, using system components or manufactured systems designed for self-rescue escape.

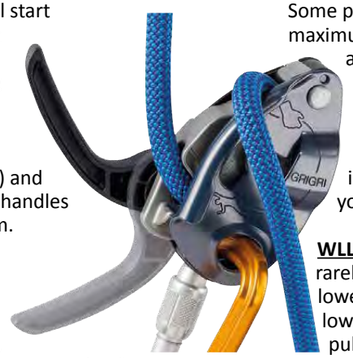
In Europe, descenders were historically tested to EN 341:1992 Personal fall protection equipment which actually was originally written from the perspective of descenders being used for evacuation purposes in an emergency. The 2011 revision states clearly that it 'does not specify requirements for descender devices that are used for descending in mountaineering, rope access and work positioning systems'. Descenders for these specific tasks are now tested in Europe to EN12841:2006/C. NB: The EN 341 standard includes test procedures that require a series of high-level descent tests to assess the product's ability to perform satisfactorily after repeated use. The standard categorises descenders into two types: 'automatic', which incorporates a braking system that requires no intervention by the user once the descent has

commenced [so-called 'true-blue' devices], and 'manually-operated' products with a braking system that requires the user to take action. EN 341 refers to these as 'Type 1' and 'Type 2' respectively – *ALL of the devices in this article are Type 2* which are manual because you must do something to make the brake operate, even if that is simply letting go of the handle.

DESCENT SPEEDS/DISTANCES

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

Some descenders have short handles or release mechanisms that have little mechanical advantage, meaning that the user quickly tires and lets go for a rest. This limits the descent energy very nicely and means that the device does not warm up. Longer handles and more mechanical advantage make it much easier to release the rope, giving finer control but at the risk of allowing a rapid, temperature rising descent. Unlike full-size rescue descenders, lightweight and escape devices don't tend to have larger handles with better mechanical advantage/leverage though this is still a benefit where it can be incorporated to make the initial start smoother and less dramatic and it enables the user to maintain the descent for longer without getting cramps in the hand. In the case of the Core, the handle is longer because it is specifically used as a lever. Devices like the GriGri (right) and Trango have body-hugging folding handles that keep the profile to a minimum.



IN THE FOLLOWING TABLES:.....

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

WEIGHT: for the individual descender

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 (MBL's) are rarely shown for sport-oriented devices. It's a complex area and it is always best to read the manufacturers product instructions thoroughly to make sure that you really understand what your device is capable of. Generally, the MBL is the minimum figure before failure that will be achieved by the device when used in a specific configuration. In the case of Escape devices which tend to be much tougher than the sport devices, this may even be the MBS of the specific rope it uses rather than the device itself. Some manufacturers bizarrely use the MBL figure that must be met in the relevant standard test – regardless of the fact that their device is capable of much more than that, for instance ***many will quote around 12kN because it's the required minimum for some standards while others use the figure at which the device is just about, but not actually going, to fail, making the device appear much 'stronger' than a competitors product.*** Rarely, you might see a few MBL's marked on the same product or in the instructions; in these cases, they may relate to each of the configurations described or the separate individual standards tested to. On most products here where a belay function is possible, the MBL may define the maximum load that can be held in a limited dynamic event (top-roping/ FF0.3) where the true applied force is significant.

MRL: **Maximum Rated Load** can be just as confusing as MBL's. Some performance standards require devices to indicate the maximum rated load that can be applied during that specific application. The trouble is that the MRL may be different for each standard and some manufacturers again do things literally and only test to the minimum figure stated in the standard. This means some devices have differing MRL's marked on them and the MRL marked is actually less than the manufacturer is willing to allow you to apply!

WLL: Working Load Limit (Safe Working Load). 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.

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

LOAD ROPE WHILE ATTACHED: The carabiner can be clipped in while the rope is loaded into the device. There is therefore no danger of dropping the device during rope installation or

removal. Most belay-specific devices don't have this option.

ROPE DIAMETERS: Descenders that are primarily belay devices will quote a diameter that is based on dynamic rather than low stretch rope and these are shown in green. Dynamic ropes are always 'softer' and will compress more than stiffer static ropes but the initial diameter that the device will accept is the same for both types of rope, it's the subsequent 'feel' and braking response that will be different. A number of belay devices like the GriGri don't even list low stretch ropes as an option but this is in belay terms where dynamic arrest is required, as a descender, low stretch rope is fine on all belay devices.

EYE DIAMETER: refers to the harness or anchor connection eye as distinct from any secondary eyes intended as beckets for inclusion in a pulley system but this is not the norm for lightweight devices. This is an important figure because some eyes are quite small and would struggle to take some of the larger rescue carabiners and the forged, profiled cross-sections, having been designed originally with round bar section carabiners in mind.

USES:

DESCENDER: ALL of these devices can be used for LOWERING so they will function as a descender which is best achieved on low stretch rather than dynamic rope.

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

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

ASCENDER: Most standard, autolocking descenders (but not the rack style escape devices) can be used s a haul cam or as a second ascender where a more conventional handled ascender provides the top ascender. Two descenders or a descender and a prusik cord/Purcell could also work well enough over short distances. The thing about using a descender instead of an ascender is that, while it imparts more friction during any ascent it does give you the option of an immediate switch to descent rather than trying to downclimb on ascenders or switch systems from ascenders to descender. It's already there.

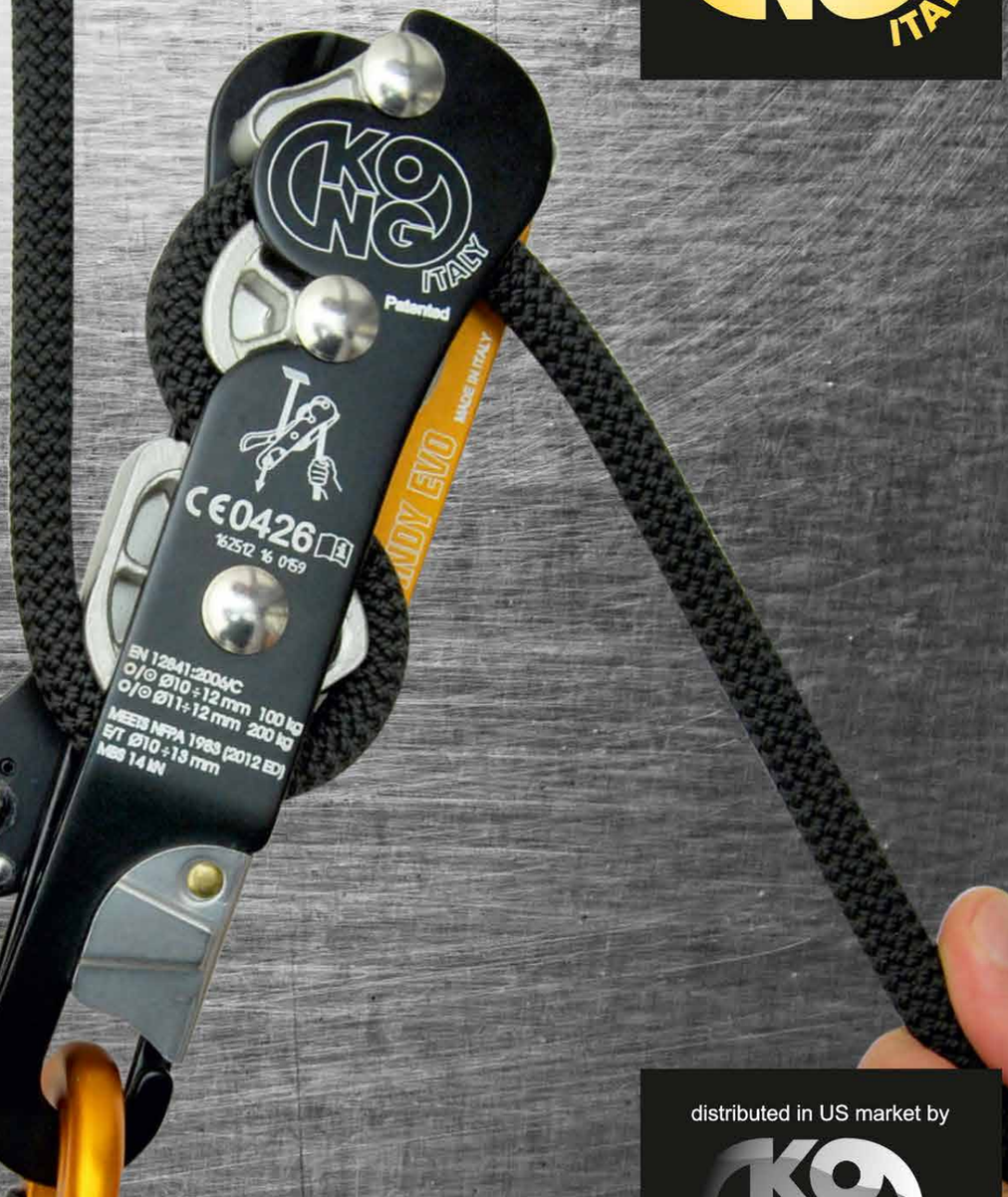
COLOURS different colour options are separated by a comma. CAPITALS indicate the primary colour or colours if they are half and half. Secondary colour(s) on the same device are in lower case and separated by a forward slash /.

DESCENDERS!

INDY EVO PLUS

PIRATA

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



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LIGHTWEIGHT DECENDERS

images NOT to scale	MODEL	COMPANY	ORIGIN	COST	WT	DIMENSIONS of DEVICE	MATERIALS: FRAME / CAM / HANDLE	DOUBLE BRAKE	LOAD ROPE WHILE CONECTED	MBS/ MBL	MIN MAX WLL	STANDARDS	ROPE RANGE (DYNAMIC)	EYE DIAMETER	USES: DESCENDER	USES: ASCENDING	USES: BELAY/LIFELINING	COLOURS	NOTES	WWW.
	P15	ANPEN		$135*	245g 8.6oz	140x50mm 5.5x2"	Alloy Alloy Plastic	■		16kN 3597 lbf	250kg 551 lb	GA494-2004	9.5-11mm 3/8-7/16"	17mm 0.7"	■	■	■ ■	GREEN	P16 discontinued	anpen.net
	P18	ANPEN		$150*	223g 7.9oz	96x68mm 3.8x2.7"	Alloy Alloy Alloy			20kN 4496 lbf	250kg 551 lb	GA494-2004	10-13mm 7/16-1/2"	17mm 0.7"	■	■	■ ■	BLUE. BLACK		anpen.net
	Birdie	BEAL		£60 $75 €65	210g 7.4oz	104x50x46mm 4x2x1.8"	Alloy Stainless Steel Alloy			n/a	n/a	EN1551 UIAA	8.5-10.5mm 3/8-7/16"	19mm 0.75"	■	■	■ ■	GREY/blue, GREY/green GREY/orange		sport.beal-planet.com
	Druid	C.A.M.P.		£135 $200 €146	280g 9.9oz	118x76x46mm 4.7x3x1.8"	Alloy Stainless Steel Alloy	■		12kN 2697 lbf	200kg 441 lb	EN 341/2A EN 12841/C EN15151	10-11mm 7/16"	19mm 0.75"	■	■	■ ■	RED/black		camp.it
	Druid-Pro	C.A.M.P.		£135 $220 €132	280g 9.9oz	118x76x46mm 4.7x3x1.8"	Alloy Stainless Steel Alloy			12kN 2697 lbf	200kg 441 lb	EN 341/2A EN 12841/C EN15151	10-11mm 7/16"	19mm 0.75"	■	■	■	GREY/ black	*Druid Pro* is single -lock only with no double brake/anti-panic	camp.it
	Matik	C.A.M.P.		£135 $200 €146	276g 9.7oz	118x76x46mm 4.7x3x1.8"	Alloy Stainless Steel Alloy	■		12kN 2697 lbf	100kg 220 lb	EN1551 UIAA	8.6-10.2mm 3/8 -"	19mm 0.75"	■	■	■ ■	BLUE	Sport model	camp.it
	Quickie Descender (QD)	CTOMS		$70	95g 3.3oz	60x100x26mm 2.4x4x1"	Alloy Stainless Steel Nylon			*15kN 3372 lbf	n/a	-	6.5mm 1/4-5/16"	19mm 0.75"	■	■	■ ■	BLACK, ORANGE	* Designed to slip at around 4kN on new rope	ctoms.ca
	Core	FIRE INNOVATIONS		$125	193g 6.8oz	152x50x25mm 6 x 2 x1"	Alloy - Alloy	■		13.5kN 3035lbf	n/a	NFPA-E	7.5mm 5/16"	*	■	□	□	BLACK	*Uses integral tape extension to a carabiner	fireinnovations.com
	QRAB	HIGHNOVATE		n/a	150g 5oz	120x50x40mm 4.7x2 x1.5"	Alloy Stainless Steel Alloy	■		10kN 2248 lbf	160kg 352 lb	NFPApending EN341pending	7.5-8mm 5/16"	17mm 0.7"	■	■	■ ■	BLACK	Red button is a quick release from the rope which does NOT function under load.	highnovate.com
	RAD	ISC		£90 $120	306g 10oz	112x73x34mm 4.4x2.8x1.4"	Alloy Stainless Steel Alloy			16kN 3957 lbf	200kg 441 lb	EN 12841/C EN15151 EN 358	10.5-12.7mm 9.9-11mm 10.5-12.7mm 7/16-1/2"	15mm 0.6"	■	■	■ ■	RED. BLACK	Squeeze-style, with flip down handle extension. Can be converted between fixed and swing-cheek modes.	iscwales.com
	D2	ISC		£157 $260 €181	290g 10.2oz	143x70x61mm 5.6x2.75x2.4 "	Alloy Stainless Steel Alloy	■		14kN 3147 lbf	140kg 310 lb	EN 12841 NFPA E ANSI Z359.4	8mm 5/16"	20mm 0.8"	■	■	■	BLACK. RED	Data for 2018 version (red).2020 version in black with larger handle. * + Custom lengths Also Sold by FERNO & PMI	iscwales.com

NOTES: N/A = info not Available/not given COST: Approx & include local tax/VAT except* which need import duty and tax added DOUBLE BRAKE: ■=Lock requires reset. □=proportional on squeeze pressure. USES: ■= OK BUT NOT IDEAL

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images NOT to scale	MODEL	COMPANY	ORIGIN	COST	WT	DIMENSIONS of DEVICE	MATERIALS: FRAME / CAM / HANDLE	DOUBLE BRAKE	LOAD ROPE WHILE CONECTED	MBS/ MBL	MIN MAX WLL	STANDARDS	ROPE RANGE (DYNAMIC)	EYE DIAMETER	USES: DESCENDER	USES: ASCENDING	USES: BELAY/LIFELINING	COLOURS	NOTES	WWW.
	Gnome IR0318	ICE ROCK		€110	275g 9.7oz	107x57x38mm 4.2x2.2x1.5"	Alloy Steel Alloy	■	■	>12kN 2697 lbf	200kg 441 lb	EN 12841/C	10-11mm 7/16"	15mm 0.6"	■	■	■ ■	BLACK. ORANGE/ violet	Device can adapt to better suit specific user weights and rope size	icerockequipment.com
	Fedor Mini 8+*	KROK		$60* €48*	200g 7oz	110x70x25mm 4.3x2.75x1"	Alloy Alloy Alloy	-	■	>15kN 3372lbf	400kg 882 lb	EN 341	5-9mm 1/4-3/8"	14mm 0.55"	■	■	■ ■	SILVER	Carabiner clips through eye in cam, rope can load by opening carabiner gate. NB this seems to have replaced the Fedor Light . *Data unverified	Krok.biz
	Lifeguard	MAD ROCK		£65 $90 €70	154g 5.4oz	78x48x39mm 3x1.9x1.5"	Alloy Stainless Steel Alloy	-	-	n/a	n/a	CE-pending	8.1-11mm 5/16-7/16" 8.9-11mm 3/8-7/16"	14mm 0.55"	■	■	■ ■	RED		madrock.com
	Safeguard	MAD ROCK		£65 $90 €70	154g 5.4oz	78x48x39mm 3x1.9x1.5"	Alloy Stainless Steel Alloy	-	-	n/a	n/a	CE-pending	8.1-11mm 5/16-7/16" 8.9-11mm 3/8-7/16"	14mm 0.55"	■	■	■ □	BLACK	Safeguard has no spring and is better suited to escent/rigging than belay- approvals pending	madrock.com
	GRIGRI	PETZL		£65 $110 €70	175g 6.2oz	115mm 4.5"	Alloy/Steel Stainless Steel Nylon/Alloy		-	13.5 kN 3034 lbf	140kg 310 lb	EN 15151-1 UIAA	8.5-11mm 5/16-7/16"	15mm 0.6"	■	■	■ ■	BLUE, ORANGE, GREY		petzl.com
	GRIGRI +	PETZL		£100 $160 €95	200g 7oz	115mm 4.5"	Alloy/Steel Stainless Steel Nylon/Alloy	■	-	13.5 kN 3034 lbf	140kg 310 lb	EN 15151-1 UIAA	8.5-11mm 5/16-7/16"	15mm 0.6"	■	■	■ ■	VIOLET, ORANGE, GREY	Can be switched or locked between Top-rope and leader belay options	petzl.com
	RAD	SAR PRODUCTS		£90	306g 10oz	112x73x34mm 4.4x2.8x1.4"	Alloy Stainless Steel Alloy	-	-	16kN 3957 lbf	200kg 441 lb	EN 12841/C EN15151 EN 358	10.5-12.7mm 9.9-11mm 10.5-12.7mm 7/16-1/2"	15mm 0.6"	■	■	■ ■	BLACK	Certified as part of a lanyard system for EN358 with SAR Products rope.	sarproducts.com
	FCX	STERLING ROPE		$113	221g 7.8oz	140x50x25mm 5.5x2x1"	Alloy - Alloy	■	■	13kN 3035lbf	-	NFPA-E	7-8mm 5/16"	20mm 0.8"	■	□	■	GREY/RED		sterlingrope.com
	F4	STERLING ROPE		$100	170g 6oz	152x50x25mm 6 x 2x1"	Alloy - Alloy	-	■	13.5kN 1376 lbf	-	NFPA-E	7-8mm 5/16"	20mm 0.8"	■	□	□	RED. BLACK		sterlingrope.com
	Lov 2	TAZ		$275 €200	353g 12.4oz	140x95x50mm 5.5x3.75×2"	Alloy Stainless Steel Nylon	-	-	15kN 3372 lbf	200kg 441 lb	EN 358 EN 12841/A-C	10-11mm 7/16"	15mm 0.6"	■	■	■	BLACK. RED	also operates on tensioned diagonal ropes	taz3d.fr
	Vergo	TRANGO		£80 $99 €86	195g 6.9oz	103x58x32mm 4x2.3x1.25"	Alloy Cast Steel Nylon	-	-	n/a	n/a	EN15151	8.9-10.7mm 3/8-7/16"	20mm 0.8"	■	■	■ ■	PURPLE, BLUE, GOLD	supercedes the Cinch	trango.com

NOTES: N/A = info Not Available/not given COST: Approx & **include** local tax/VAT except* which need import duty and tax added DOUBLE BRAKE: ■=Lock requires reset. □=proportional on squeeze pressure. USES: ■= OK BUT NOT IDEAL