

ACCESS E-MAG 47 & RESCUE 2021

covering **TECHNICAL RESCUE**, WILDERNESS **SAR** (**PARK RANGER**) & **ARB CLIMBER** print magazines



ACCESS & RESCUE

Emag

47

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EMAIL ADDRESSES

We've got a shed-full of email addresses so if you get mail bounced, try another one - they all work at some point!

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arbcclimber@aol.com

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accessandrescue@aol.com

temporarily AWOL ade@trmedialtd.com

WILDERNESS SAR issue 8 featured a **GUIDE to Rescue Dog (suspension) Harnesses**, in other words, safety harnesses design for rescue dogs to be abseiled/winchd/raised/lowered/rappelled into or out of a helicopter and up or down vertical faces. We thought we had all of the most relevant models but Tyromont subsequently released a new model which we've included in the Products section of WSAR#9 and we also missed an existing model from Austrian rope and webbing company Haberkorn, who, to be fair to us, have possibly the worst marketing in our sector. Until they produced a product catalogue as a pdf which got picked up by one of the search engine thingies it was virtually impossible to know what they actually sold and none of our go-to access & rescue supply companies seemed to stock it. However, this is a pretty big company albeit only recently moving more into the access & rescue sector, so we did check it and didn't see anything so we moved on. Luckily, the dog harness we subsequently found has disappeared again so we can be satisfied that we didn't really miss it in the first place! Forget I mentioned it.

MANUFACTURERS

of the following gear might want to give us a heads-up on your ranges if you don't hear from us in the coming months so that we don't miss you:

Arborist HELMETS

Lightweight Climbing HELMETS

Fire-Rescue/Tech -Rescue HELMETS

Water Rescue HELMETS

Confined Space Rescue STRETCHERS

Flexible/Roll-Up STRETCHERS

Tree Climbing SPIKES/SPURS

Cave Rescue ROPES

UAV's for SAR, USAR/TECRESCUE

USV for Underwater Search

DRONES for Surface water rescue

CARABINERS - Swivel & Pulley

SAR Dog Flotation HARNESSSES

EDITOR'S NOTES

SitRep
September
2021

COVID'19 POST-MORTEM

It has very rarely been the case that our magazines comment on politics but this pandemic is all about politics instead of science and health. In fact, not just 'politics' but 'politics and gross ineptitude' assisted by an amazing number of people actually opposed to vaccines and masks. We were rightly scathing about the initial response to Covid '19 in the last Emag in March 2020 and this pandemic with continued unnecessary deaths is not over yet. But at this stage, with vaccines proven to be outstanding at preventing deaths, any significant death rate increase is unforgivable. In the Spring of this year, just before vaccine rollout really kicked in for richer nations, the USA went over half a million dead and the UK, with a fifth of the US's population surpassed 125,000 dead which was the third highest total in the world and quite embarrassing for an island nation with an outstanding national health system. Imagine how bad the UK would have been with a US-style treatment-if-you-can-afford-it system! Only Brazil with a leader denying most aspects of the pandemic, did worse than the UK and US, if calculated per-capita. Luckily, the US has returned from the brink of a bizarre non-response to Covid with a vaccine program hindered only by resistance of a not insignificant, proportion of the population. The UK was initially just as poor but unlike the US, did ensure that all citizens and businesses continued to receive a phenomenal degree of state aid and ultimately was the quickest to implement a vaccine program which showed immediate results with a death rate now counted in the 10s and occasionally 100s with the new variants. This helped mitigate a ridiculously slow response which saw early disagreement on whether face masks had any medical efficacy! Sweden eventually came round to the idea of masks and by the way, their herd-immunity experiment didn't really work since they had almost 13,000 deaths this spring while their immediate neighbours, Norway and Finland adopting simple mask-wearing, distancing and 'tactical' lockdown measures, had 608 and 733 deaths respectively.

If Face masks had been mandated to be worn ALL-THE-TIME from the very start and everybody kept a few feet apart, there would have been a fraction of the deaths and far less financial disruption. IT WAS NOT DIFFICULT TO PREDICT and most Asian nations see it a common courtesy to others rather than a social imposition, even for regular cold and flu let alone COVID '19.

As well as basic measures allowing a more normal lifestyle, it is vaccines that have become the necessary saviour in a pandemic that was allowed to get so out of control. In this respect the UK was unusually ahead of the game, again putting its money where its mouth is and investing heavily in several vaccine projects and gambling on forward ordering multiple millions of doses instead of waiting to see how well they worked as some richer nations like Australia did and who are now counting the cost of that hesitancy. In contrast, the UK saw virtually the entire adult population vaccinated by Summer 2021. Just in the nick of time. But we now need to ensure that the whole world is vaccinated before we're scuppered by yet another new variant.

Apart from a contra-indicated medical condition, turning down the vaccine because you're scared of a needle is just something you'll have to get over because contracting Covid will give you a whole new 'if-only' perspective. Get with the program.....Winter's coming....again!

Cheers **Ade Scott**

ON THE COVER

This issue's front cover is from London Fire Brigade's Lee Newman and shows the now almost routine use of drones for rescue operations.

In this case London Fire Brigade's Urban Search & Rescue contingent in a scenario that was sadly all too real for Miami residents in the July collapse of an ocean-side residential tower block.

We now see drones/UAVs/ROVs as a regular articles in both of our rescue magazines. They have an increasing role for arborists too as an inspection and in some cases line-delivery tool but in general this sector has been slower to see the advantages.

COVID EXCUSES

We have been lucky enough to have been largely unaffected by the Covid disaster. However it has caused a slowing of some aspects of production as companies providing equipment and editorial input haven't been so lucky and have been adversely affected. Delivery has been a particular problem and at one point became impossible for several weeks. We also had to contend with the chaos caused by Brexit making shipping magazines to Europe a very expensive farce. We still have problems but it's improving. We have temporarily lost access to our website **ARBCLIMBER.com** and to an email address

ade@trmedialtd.com

These were set up by a third party who is currently unreachable and we have been unable to log in so that we can renew them. Luckily we only kept the ArbClimber site name for posterity as everything goes through the one main site www.rescuemagazines.com



Be Prepared.....



Living in Alaska, earthquakes are always on our minds, and we thought it would be a fine time to revisit some of our preparedness advice. There were five essentials we covered there, the tl;dr being: trauma kit, survival gear, water, food, and communication.

One thing we did not include was a first aid kit, assuming everyone absolutely has one. Asking around, we found that is absolutely not the case, and some people are uncertain about exactly what should be included. Before we

get started, a disclaimer up front: a first aid kit is for things that will not kill you. For things that will kill you - hello, massive blood loss - you should also have a trauma kit. Tl;dr tourniquet, clotting gauze, pressure dressing and chest seals, plus the training to use them. But first aid kits are great too, because minor wounds are far more common, especially for all the little floggers in our lives. And with that in mind, here we go!

In the interests of not reinventing any wheels, we are going to point you to Andrew Skurka's backpacking first aid gear list as a great place to start. Andrew has a must-have list of medications and wound treatment supplies, all based on his voluminous experience adventuring and leading adventures all over the globe. Check out his site, and click on his links to buy stuff so he gets that tiny commission, so he can keep giving us great advice! And speaking of advice, a lot of this stuff comes in bulk, so go in with some friends and make a bunch of kits at once why don't you?

Our modifications to his kit start with this nice little pill case. Andrew uses small, thick ziplock bags and just piles it all in a stuff sack, and that obviously works too, but we like the small hard shell wallet with six small and four larger compartments. We cut around the individual blister pack compartments to fit some things in, and label each compartment with a three-letter abbreviation of the medication and a number that is the dosage per pill in milligrams, e.g. ADV 200. It's also a good idea to make a small card with the dose, frequency and daily limit of all the meds in the case, e.g. Advil, 200mg, 1 pill/4 hours or 2 pills/6-8 hours, limit 6 pills/24 hours. Laminate that little card so the numbers do not smudge, and maybe even include expiration dates and put an annual reminder in your phone to update the kit.

Some other small changes we make to Andrew's list

- mini-EMT shears instead of scissors to cut through anything without poking holes;
- Phokus Frog tape for quickly closing larger cuts (yeah, it's just pre-cut tape, but we like it!);
- keychain CPR mask because even though rescue breathing isn't necessarily recommended (for civilians, that is...) with chest compressions anymore, outcomes are still better if you do it, especially for drowning/lightning strike victims;
- Povidone iodine swab sticks for wiping out and sterilizing cuts;
- Sting Kill for stings, put the vials in a small tin to protect from breakage;
- Possibly a tampon, which can double as a gauze in a wound, e.g. nosebleed stopper;
- 20ml syringe, which Andrew lists as optional, but it weighs nothing and can really hose out a wound or be used more gently on eyes;
- Single-use hydrocortisone packets, for anti-itch application.
- Andrew also has a foot care list, and if your feet are problematic you might want to take a look at it. The only items we normally carry that he lists are Leukotape P wrapped around a mini-Bic lighter or hand sanitizer bottle (no more moleskin, that stuff is so last century), and Joshua Tree climbing salve.

Final bonus item: if you don't normally carry trekking poles, you ought to rethink that strategy. For about an extra pound of weight per pair you can go farther with less effort and have a valuable backup if you or someone in your party gets gimpy for whatever reason. You do have to actually use them though, unlike us recently on a recent trip where we slipped and torqued our shoulder on a sketchy step coming off-mountain, with the poles still in our pack. Now we're two weeks into rehabbing our shoulder, a completely avoidable injury had we used the tools we brought along for just that reason! As Andrew and a lot of others will tell you, the first thing on any list like this is your brain. Use it or lose it.



UTTy Gear Storage Strap

We almost took a pass on reviewing the UTTy, and we'll be the first to admit that would have been a mistake. It just seemed too simple: a four-foot strap of one-inch wide nylon with four double hooks that slide up and down and lock in place. Seems like a yawner, right?

It's not. The day it arrived we hung it up next to our gear area, and there it has stayed to organize hiking gear and packs for all our outings.

Normally for gear organization we tack up a 2x4 and screw some hooks into it, but wood is expensive these days and once it's in place it's a pain to move or customize without rearranging everything. The UTTy lets us easily reconfigure the hooks up and down the strap - it's just like a fastex buckle, except with a cam lock. As we sort gear for whatever the next mission is we just hang it on the strap: bear spray, medical kits, trekking poles, food bags, clothes, climbing gear, you name it.

The UTTy is just a better solution than 2x4s, at least for light to medium weight gear. It's designed to support 8lb per hook - 16lb per double hook - and 75lb total on the strap. We are pushing it significantly beyond that limit at the moment with no problems, but probably best to stay within those specs. The whole unit weighs just 5.4 ounces, so it's a great portable solution as well, especially if you know you're going to be somewhere where gear gets wet and needs to hang dry.

There are basically three versions of the UTTy, all with a 4' strap: the UTTy (4 double hooks), the UTTy Hockey (6 double hooks), and the UTTy Van (4 double hooks and a grommet for a biner, so you can run it horizontally to stow it). They are all dead simple to use, and the only improvement we can think of would be if they sold just the hooks, so you could add them to your own 1 inch webbing. Also, some different styles of hangers, for example ones designed to hang from a horizontal strap or to clamp instead of hook. We're sure UTTy is on the job coming up with more customization options, but for now it's just a great way to organize anything you can hang on a hook, either at home or on the trail.

From \$35.00 at UTTy



SLIPPAGE

with a specific batch of

ZIGZAG

ZIGZAG PLUS

ZILLON

Petzl has received reports of users experiencing rope slippage while using the ZIGZAG, ZIGZAG PLUS and ZILLON. Following these reports, we have identified two defects causing the slippage. We therefore ask you to do a manual inspection and a function test of your product, to detect any possible slippage. In case your product slips, we are providing details on our after-sales returns service.

This information concerns only the following products: ZIGZAG (D022AA00), ZIGZAG PLUS (D022BA00), ZILLON (L22A 025, L22A 040, L22A 055) with serial numbers between 18L 0000000 000 and 21G 0000000 000.

Customer returns alerted us to slippage with new or slightly used ZIGZAG / ZIGZAG PLUS / ZILLON products. Following our technical investigations, we were able to identify the causes of the slippage. They are related to a variance in our production process, resulting in two types of defects in the release levers on ZIGZAG, ZIGZAG PLUS and ZILLON:

- random malfunction of the spring effect of the upper release lever
- variance in the surface treatment resulting in a modification of the geometry of the release lever.



ZIGZAG, ZIGZAG PLUS and ZILLON release levers

This production variance causes premature wear of the release levers, resulting in slippage that can be observed after a few months of use, or even on new products.

This situation leads us to three actions:

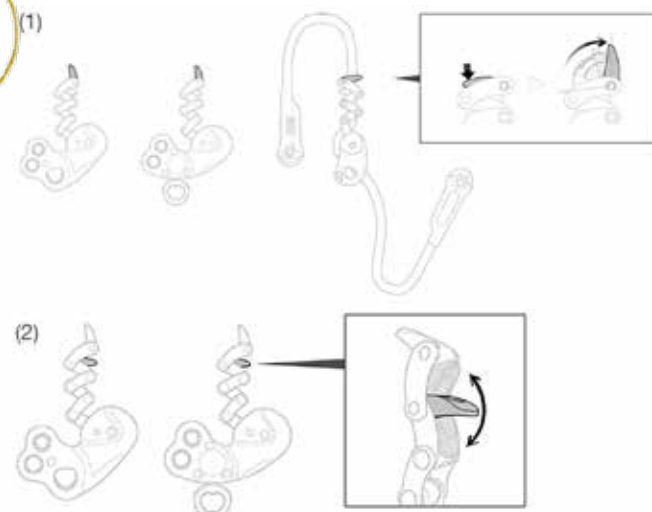
- **Stop sales** of current products. We are working to

solve the problem with the goal of being able to deliver new products after November 1st, 2021.

- A **request for inspection** of your product by following two specific points of the PPE inspection procedure.
- An **after-sales service offer** to redress the inconvenience caused by slippage of your product (exchange or refund).

Inspection points to carry out on your ZIGZAG / ZIGZAG PLUS / ZILLON product.....

1) Inspecting the release levers



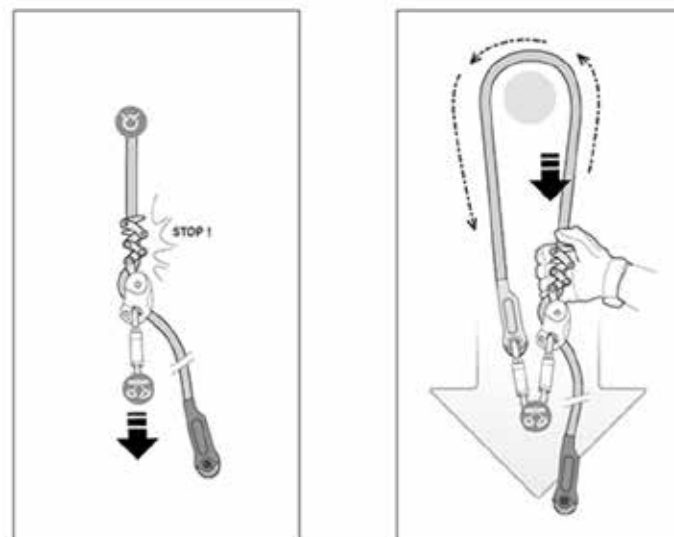
Check the effectiveness of the upper release lever return spring (1) and the mobility of the lower release lever (2) for ZIGZAG, ZIGZAG PLUS. Repeat the test at least ten times.

The levers should move freely without friction.

If the results of these tests are not satisfactory, immediately stop using your product and return your product by contacting your local after-sales service center with on the contact form. If the release levers work, proceed to the next inspection point

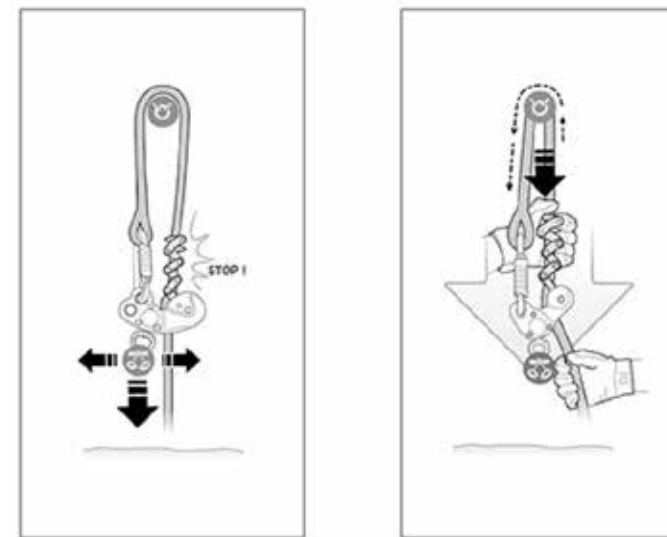
2. Function test

ZILLON: Hang on the lanyard in single mode at a very low



height: there should be no slippage. When used in double mode, verify that pressure on the release lever allows smooth and controlled sliding of the rope.

ZIGZAG / ZIGZAG PLUS: perform a function test with your rope (compatible rope diameters: 11.5 to 13 mm). Install the ZIGZAG in double mode. Suspend yourself at a very low height.



When hanging from the ZIGZAG in double mode, there should be no slippage. Verify that pressure on the release lever allows smooth and controlled sliding of the rope.

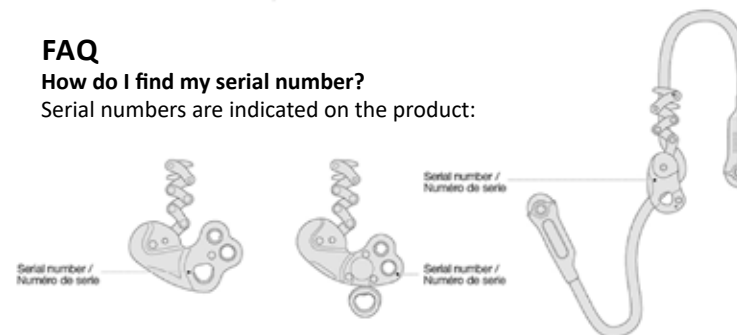
If the results of these tests are not satisfactory, immediately stop using your product and return your product by contacting your local after-sales service center on the contact form.

If you have any doubt about the results of these tests, contact us via the contact form. These inspection points are in no way a substitute for a complete PPE inspection of your product following the procedure available on Petzl.com.

FAQ

How do I find my serial number?

Serial numbers are indicated on the product:



Which rope should I use to test my ZIGZAG / ZIGZAG PLUS?

The test should be performed with your rope (compatible rope diameters: 11.5 to 13 mm). This test is valid for one device/rope combination. If you change the rope, the result of this test may be different (e.g. smaller diameter rope or new rope). Be sure to perform

this test each time you change the rope, in accordance with the Instructions for Use.

My product is affected by this information and does not slip; should I return my product?

If you have inspected your product and it does not slip, you can continue to use your product. However, make sure to perform a function test before each use and whenever the rope is changed, in accordance with the Instructions for Use.

I am an end user. My product is affected by this information and is slipping. How do I return my product?

Contact your local after-sales service center on the contact form. Choose "After Sales Service" in the reason for the request.

We offer the following service: refund at the recommended retail price excluding VAT in your country, or an exchange starting November 1st, 2021. Return costs are at our expense.

My product is affected by this information. I carried out the inspection on my product, and it did not slip. However, I have experienced slippage in use. Why?

Because of the defects in the release levers, we have also noted that in use, under certain conditions (repeated loading on the same section of rope, use of a PANTIN-type foot ascender and/or small diameter rope), you may experience more significant and/or more frequent slippage. If you find that the slippage you experience is acceptable in your practice, you can continue to use your product while monitoring for any increase in slippage. Otherwise, you can return your product to us by contacting your local after-sales service center on the contact form.

Is there more slippage with small diameter ropes?

Yes, there is more slippage if you use small diameter ropes such as FLOW. To limit slippage, you can use a larger diameter rope within the authorized diameter range. Be sure to perform a compatibility test before use.

My ZIGZAG / ZIGZAG PLUS / ZILLON is not affected by this information but it is slipping. What should I do?

Any sign of slippage or poor locking may indicate that the device is worn. Be sure to perform a complete inspection of your product by following the PPE inspection procedure.

Have there been any injuries with the products affected by this information?

To date, no injuries have been reported to Petzl. We have only received reports of inconvenience related to slippage.

How many products are affected by these defects?

All products with serial numbers between 18L 0000000 000 and 21G 0000000 000 are affected by the geometry defect of the release levers. For the defect concerning malfunction of the spring effect of the upper release lever, the return rate is 0.025%

My product is affected by this information and it slips when tested as requested. How long do I have to return my product?

If your product's serial number is between 18L 0000000 000 and 21G 0000000 000 and slips when tested as requested in our information, you have until December 31, 2022 to return your product.

Higgins & Langley Award Dr Mike Tipton



[ED: A worthy recipient if ever there was one. We nominated Mike for a literal lifetime of achieving things in a vital field that, until recent years wasn't even on most peoples' radar. He featured in our very first issues in the 90s with important articles on circum-rescue collapse from water and has been breaking ground in all areas of water rescue ever since. He's now also a Professor at Portsmouth University on the South coast of England so this is their press release from earlier this year].....

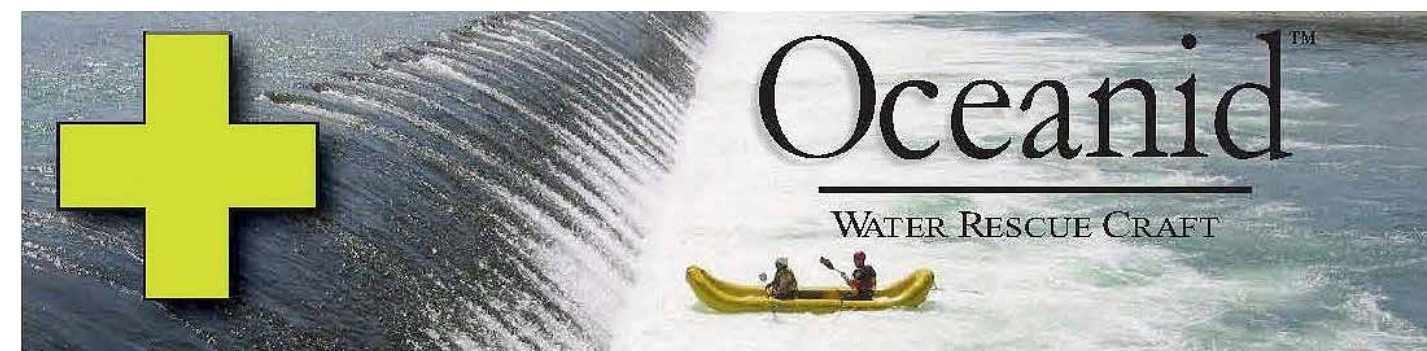
A British world leading expert in extreme environments has been given an international lifetime achievement award in recognition of his decades of work to help prevent drowning. Professor Mike Tipton, a human and applied physiologist at the University of Portsmouth, was given the award in June 2021 by the Higgins and Langley Memorial Awards for Flood and Swiftwater Rescue. The awards recognise teamwork, preparedness, skill and honour under extreme conditions. Recipients from across the world were honoured for working extremely long hours in difficult situations to save lives threatened by water, such as following hurricanes, floods and monsoons. Professor Tipton was nominated by Hampshire Fire and Rescue and the editor of Technical Rescue magazine for his work helping those who get into trouble and the search and rescue community over 35 years. Professor Tipton said: "I am honoured to receive this. It is really satisfying to have been nominated by those at the sharp end of search and rescue. It vindicates what we do and applied physiology in general. It's also a great honour to be recognised by an international award."

His work has fundamentally altered how rescuers approach and handle drowning victims.

A WORD FROM THE HIGGINS AND LANGLEY MEMORIAL AWARDS JUDGES

The award is Professor Tipton's 27th over a career examining human survival in extreme environments, including from: The Physiological Society, Surf Lifesaving GB, The USA Aeromedical Association, the RAF and International Association of Sea Survival Trainers. The award judges praised his more than 30 years research in extreme environments and drowning prevention, adding: "He is a subject matter expert, advising the military, search and rescue community and industry in thermoregulation, environmental and occupational physiology and survival. His work has fundamentally altered how rescuers approach and handle drowning victims."

The Higgins and Langley Memorial Awards were established in 1993 by members of the Swiftwater Rescue Committee of the National Association for Search and Rescue in honour of Earl Higgins, a writer and filmmaker who lost his life in 1980 while rescuing a child who was swept down the flood-swollen Los Angeles River, and Jeffrey Langley, a Los Angeles County Fire Department firefighter-paramedic, who lost his life in a helicopter incident in 1993.



PODS

[ED: Northern Diver's answer to Thunderbird 2's Pod system, the **Lug System** uses foot long pouches that velcro onto any loop velcro but are intended to fit a PFD, many of which have a velcro strip for the service reflective decal. These lug pouches still offer that option but with the bonus of extra, detachable storage. These could equally be used on search dog harnesses and body-carrier vest systems.....]

Specifically designed to offer excellent utility in any rescue environment. The **LUG POUCH** can carry anything from Carabiners, Prusiks, Flexi-Lights, Safety Tapes and Rescue Slings to Medical equipment & can be stored on the Lug Pouch Storage Bag prior to use, ready for any call-out. Encapsulated panels are not included with the lug pouch but can be ordered separate by contacting the team. Northern Divers handy Lug Pouch is compatible with any PFD that has a hook Velcro strip on the back of the jacket.

LUG POUCH KEY

- Velcro securely fastens to PFDs & Storage Bag
- Securely fits to Velcro panels and can be stored on our hanging Pod-pack (pic right)
- Accessible storage
- Space to fit custom removable Encapsulated Panel
- Additional space to attach our Flexi-Light sticks
- Webbing loop for easy one-handed removal
- Large interior space with split compartment
- Mesh exterior removes the risk of water build up
- Size: 305 x 160 x 40mm (12" x 6.3" x 1.6") approx.

www.ndiver.com



1600 Lumens FENIX HEADTORCH

Fenix HP25R V2.0 sits at the pinnacle of the Fenix single lithium battery headlamp range. With a huge 5000 mAh capacity from its rear mounted, replaceable rechargeable battery, combined with precision engineered heat transfer from the LED's into the cast / precision machined aluminium head unit, this headlamp delivers massive performance in terms of power output at high brightness, plus huge run time at lower brightness levels. HP25R V2.0 features 3 individual LED's enabling the headlamp to cover a range of uses. Main and flood/red beams feature their own independent switches and can be used individually or combined to provide the perfect lighting for any task. The rear mounted battery pack is connected by a strong, light weight braided cable with anti-stress S curve fitting in the headband, and gives the headlamp great balance for comfortable wear. A modern USB-C type socket is fitted (charging cable supplied) to charge the included 21700 battery in just 4 hours using your 2A mobile phone charger or similar. The main 1600 lumen LED offers 5 output levels from 50 to 1600 lumens and punches out to an impressive 290 meters at maximum output.

- Eco- 50 lumens (80 hours non dimming output)- 59m beam
- Low- 150 lumens (24 hours non dimming output)- 83m beam
- Med- 400 lumens (8 hours non dimming output)- 140m beam
- High- 1000 lumens max- 228m beam-10 minutes constant output at 1000 lumens! (output will dim to 450 lm after 10 minutes to prevent overheating. High output can be re-activated once the headlamp cools. Continuous (non stop) run time is 7 hours +.
- Turbo- 1600 lumens max- 290m beam- 10 minutes constant output at 1700 lumens! (output will dim to 450 lm after 10 minutes to prevent overheating). Turbo output can be re-activated once the headlamp cools. Continuous- non stop run time is 6 hours +

PURE FLOOD BEAM WITH NO DISTRACTING HARD EDGES:

The HP25R V2's pure flood beam offers 3 output levels from 5 to 400 lumens. From low level night reading to a smooth, powerful close in working beam with no hot spot, the flood light has you covered. Run times vary from a powerful 8 hours working light, to a huge 16.6 days, great for low level lighting and emergencies.

- Low- 5 lumens (400 hours non dimming output)- 8m beam
- Med- 150 lumens (24 hours non dimming output)- 30m beam
- High- 400 lumens (8 hours non dimming output)- 50m beam

COMBINED BEAMS:

Combine main and flood beams to create your ideal beam profile. For example, 150 lumens close in flood lighting combined with 50 lumens, 59 meter main beam. Work in close yet have a little extra reach without adjusting the headlamp.

RED BEAM:

Protect your night vision or set up an SOS signal with the low level red beam. Red- 5 lumens (400 hours)- 6m beam
Red SOS- 5 lumens (800 hours- 33 days !)- 6m beam

OTHER FEATURES:

- * Rear mounted battery pack
- * LED battery level / charging indicator
- * Can use 18650 battery (ALF-18 battery adapter sold separately)
- * Perforated, breathable comfort headband
- * Reflective strips on headband and battery box rear
- * 2m impact tested for durability
- * 60 degree tilt mechanism for ideal beam alignment
- * Dual lock out (electronic and plastic cover) to prevent accidental activation during transport
- * IP66 weather proof for all outdoor conditions
- * Wide operating temperature of -35 to + 45 Deg C
- * 4 x Helmet attachment hooks supplied
- * Intelligent Memory Circuit
- * The headlamp memorizes the last selected output. When turned on again the previously used output will be recalled.
- * Lockout Function

HP25R V2.0 LED headlamp is perfect for search and rescue, and daily work. approx \$120/£120 www.fenix.com



Peli Products (UK) Ltd
Tel: 01457 869999 www.peliproducts.co.uk



INDUSTRIAL EDGE PROTECTION

TheEDGE CAN\$99

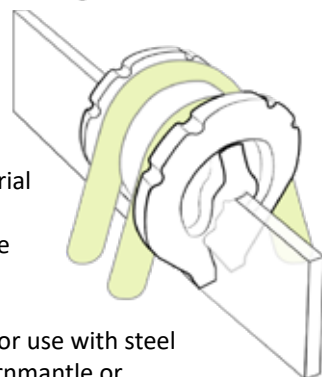
- Size - 62mm x 90mm
- Weight -1.1 oz
- Conformity - Non PPE
- Material PA12 Nylon: Melting point 175°C(347°F), Tensile Strength 48MBa (Approx. 6962PSI), Impact resistant to 1247lbs

The Edge rope protector is designed for use on varying sizes of "kick-plate" and metal plating found on industrial & commercial work sites (aka: walkway grating kick-plate, toe board) and other steel plate configurations). The Edge has been designed for use with steel rope rigging slings & nylon kernmantle or natural fibre ropes as a physical barrier to assist in the protection of the steel rope slings & rope from coming into contact with the sharp edges of kick-plate during normal use. In industrial rope access, all rigging equipment & ropes shall be rigged in such a way so as to avoid contact with potential hot, sharp or abrasive surfaces that threaten the integrity of the life supporting rope access system.

- The Edge may be used with steel & nylon Rope diameters of up to 13mm. (The Edge's "rope channel" is 16mm wide) **The Edge is not designed for raising or lowering using wire rope or steel cable of any kind at any time.**
- The Edge should not be used if the expected load on the rope exceeds 250kg regardless of entry angle into device.
- The Edge, and all of its parts is never to be considered, or used as, an anchoring device or an anchor itself, and therefore, does not hold a load rating. Normal life span 10 years from manufacture or 5 years from first use, dependant on passing daily and min. 6 month inspections.
- The Edge does not protect rope from hot surfaces of any kind. Avoid hot surfaces when using The Edge.

INSTALLATION

1. Before installing, fully inspect for damage or cracks
2. Before placing The Edge on kick-plate, be sure that the set-screw is dialled back all the way.
3. Thoroughly inspect the components and integrity of the selected section of kick-plate to be used.
4. Ensure kick-plate is stable and free from any movement.
5. Place The Edge onto the kick-plate until the inside base of the device rests on the top surface of the kick-plate.
6. Turn & tighten the set-screw clockwise (to the right) until it stops, securing The Edge in place.
7. By hand, apply approx. 2.2Nm of force to the set-screw to ensure security of the Kick-Plate.



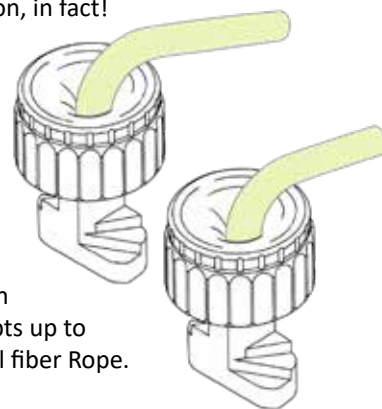
TheVORTEX CAN\$199pr

Protects from sharp/serrated edges of steel & composite walkway grating & grid-mesh around the world. It's designed and tested to work with varying sizes of walkway grating commonly found on industrial work sites with incredibly fast & secure installation. A reliable thread-lock system keeps The Vortex in place

securely, protecting it from unintended movement. It offers an unparalleled bend radius for the ropes contact surface entering the device thereby offering more strength retention of the rope used. 100% strength retention, in fact!

Constructed of ultra-lite & ultra-durable advanced thermo-plastic materials, The Vortex will stand up to the abuses of an industrial work site but only weighs 155g. Given the increased bend radius and ultra low friction coefficient of the material, lowering a casualty or load through The Vortex is made possible. Accepts up to 13mm nylon kernmantle or natural fiber Rope.

www.ropesedge.ca



SLACKLINING goes MAINSTREAM(ish)

[ED: Slacklining has always been a very interesting spin-off of regular rope activities because the rigging required for a 'high-wire' or tight-rope is at the gnarly end of anchor loads. Slacklining actually uses narrow webbing rather than rope and can be safely done in the local park a few inches off the ground but many aspire to a risky tight-rope walk out over a void so they need to be damned sure of their gear and rigging. Consequently, these folk are experts in tensioning and rigging, traditionally using a mix of ratchets and rope access/rescue hardware. In more recent times they've been designing and using dedicated specialist equipment, much of which would interest the wider rope community. Take the T-Grip for instance - this grips webbing and it has taken the designers 6 years to come up with a design and rubber compound that could cope with the loads generated, this still requires dry conditions so the applications outside of recreation are limited but you can see where this niche skill is taking things. With certified products like the HangOver pulley-carabiners now in production, it's worth keeping on eye on developments as they tackle design problems with an entirely different perspective to rescuers, arborists and rope access technicians...]

T-GRIP: Webbing Grip tool

The function of the T-Grip is to hold/clamp slackline webbing (made of polyamide/Nylon or polyester) and has been optimized for use with the HangOverPulley. The T-Grip is suitable for slackline thicknesses of 1 to 5 mm and webbing widths of 20 to 26 mm. It consists of lightweight parts, made of high-strength aircraft 7075 and 6061 aluminium. The interchangeable Dyneema double sling protects your HangOver, as there is no metal-on-metal friction. The difference to all other available webbing grip solutions lies, among other things, in the particularly durable synthetic rubber that does not become brittle over time, similar to the natural rubber compounds in Vibram soles etc.

T-GRIP OPERATION

To attach the T-Grip, the underside (black part) is positioned from below on the slackline webbing. The top of the T-Grip (green part) is clipped onto it in the middle, for this purpose two ball head bolts snap into the bottom of the tool. Fixed on the slackline, the two loops can now be conveniently placed over the deflection rollers on the top of the T-Grip. T-Grip is removed from the slackline by reversing the above process.

SPECIFICATIONS

Weight: 200g
Dimensions LxHxW: 95x65x55mm
Synthetic special rubber
Approved for use on webbings made of polyester or nylon
breaking load: 22kN (UHWMPPE loop)
WLL: 7kN
COST: €99

NOTE: This tool should only be used in dry conditions, in a temperature range from -10 to 40 ° C. The T-Grip can slip on wet and particularly on smooth polyester webbing



Left: Slacklining star Louise Lenoble of France demonstrates alternative cable car egress.



Slacktivity

HANGOVER Carabiner-pulley

The worlds first first ball bearing slackline carabiner. The Screw-gate HangOver can be used to tension 25mm wide [webbing] slacklines or to roll along a 25mm wide slackline with hardly any friction. The HangOver has been ergonomically designed so that it is easy and intuitive to use. The HangOver has a smooth surface and smooth edges to ensure that the line can not be damaged. The line passes over four ball bearings with a total width of 27.5mm, which always keeps the HangOver straight.

The screwgate adds extra safety while rolling on a highline and when taking a leashfall (self-belay) . Specially for rescue it can be used as full personal safety equipment.

APPLICATIONS of the screw-gate HangOver

- Tool to roll over a highline
- Multiplier in Ellington tension system/primitive system.
- Build a HangOver Pulley System
- Can also be used as a single pulley in for example a multiplier.

SPECIFICATIONS

PSA certified CE 0194
Width of the rolling surface: 27.8 mm
Minimum Breaking Strength (MBS) major axis: 22 kN
MBS open gate: 6 kN
MBS minor axis: 7 kN
Max. Working Load Limit (WLL): 4 kN
Dimensions: 124 x 62 x 28 mm

Weight: 157 g
Material: hot-forged aircraft aluminium 7075-T6, green anodized
Ball bearing: 19mm; Sealing: 2RS; Cr: 2.80 kN, Cor: 1.06 kN
COST: €38 to €62 (Screwgate version= €54.95)

The design of this product is protected by international law (registered international design- WIPO DM / 095081)

Web: slacktivity.com

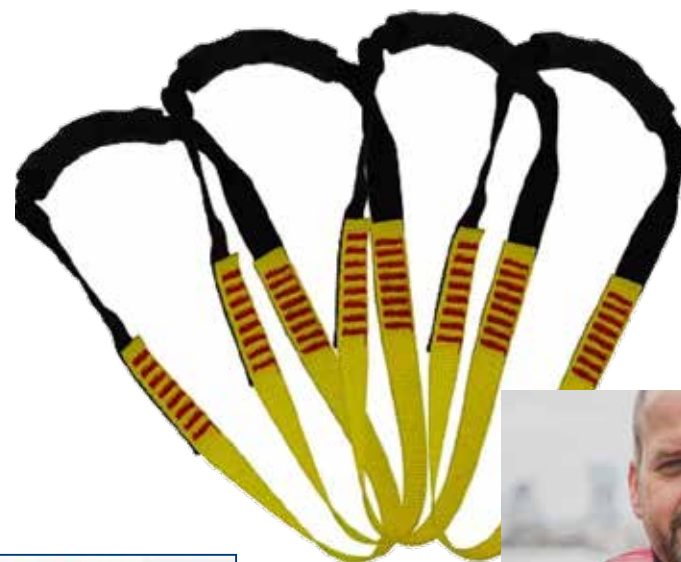


EASIER Lifting and Carrying



[ED: An ingeniously simple piece of kit that is intended to assist in stretcher handling but would actually find applications in so many other areas that either require lifting something with an uncomfortably small hand-print (like foot-print only more palmate) or an extended hand restraint to assist in leaning out for instance or in extending a handhold to create a safer, more comfortable posture. Saviour Medical is best known for it's hyper-realistic manikins and moulage services/products as well as specialist flexible stretchers (which you will see in WILDERNESS SAR#10's GUIDE to Flexible Stretchers) and is the brainchild of Paul Savage, long time colleague and advisor to many of our key UK magazine folk Rich Hackwell of HM Coastguard, Chris Walker of the RNLI and Gary Cross of Fire&Rescue. Paul is a man of many talents including more Clinical Governance positions to major rescue agencies than we have space to list and we

hope to see him with a more direct input in the magazines through 2022.



Saviour Carry-Ez is designed to attach to any stretcher with a handhold or rail. Manufactured to meet the standards of a lifting device with working load limit of 110Kg per handle. Allows for easier extended duration carries or stretcher movement over difficult terrain. Makes for improved safety for patient and rescuer alike. Sold in sets of 4. saviourmedical.com

FIRST AID | MEDICAL | TRAUMA

Critical Injury Kit
Product code: DS02331

T: 01329 311451 E: info@dsmedical.co.uk www.dsmedical.co.uk

ISC WALES Miniaturising stuff for escape & tactical use

The **D1PRO** descender is a compact, lightweight device, which can be stored in the user's harness and efficiently deployed, as required. The **D1PRO** descender is an auto-stop device (descent ceases when the user releases the control handle). The absence of a panic brake on this 'PRO' model, allows the user the freedom to descend, without accidental activation of the panic brake. This can be useful on longer, faster descents and in emergency situations when an efficient, uninterrupted descent is particularly important. The **D1** descender is the fourth in the range of D-Series specialist descenders. The **D1PRO** utilises our patented D-Series progressive cam technology and specifically designed $\phi 6\text{mm}$ (1/4") rope, to achieve genuine one-handed descent control, with performance characteristics comparable with those of an $\phi 11\text{mm}$ (7/16") rope descender device!

- rated load of 140kg

The **D1PRO TACTICAL (KT850)** model (pic above-right) is designed for professional users, in specialist applications. It is fitted with a high friction spur which allows the user to transition between standard and high-friction mode, as required. The **D1PRO TACTICAL** is also fitted with a latch which can be disengaged to allow the plate of the descender to swing open. This means that the device is mid-line attach/detachable, without the need for the user to disconnect the device from their harness.

A1 ASCENDER

The **A1** ascender is an extremely compact, mid-line attachable device. The squeeze-style cam, allows for smooth, ergonomic adjustment. The attachment hole of the A1 accepts a karabiner connection (for use as part of a hauling/ascent system). Alternatively, the **C1 Combination Pulley** can be clipped directly in to the attachment hole of the A1 (without the need for a karabiner/connector).

C1 COMBINATION PULLEY

The **C1** combination pulley has an attachment bollard (rather than an attachment hole) and a swing-cheek which is fitted with a spring-loaded closure mechanism. The profile of the bollard also allows for karabiner connection. The



attachment bollard profile features a central groove which is designed to centralise the karabiner connector, keeping the pulley system balanced. The Pulley is fitted with a super lightweight acetal wheel.

MICRO ACCESSORY PULLEY

The **Micro Accessory Pulley** is an extremely compact (53 x 31mm / 2 1/16 x 1 1/4") pulley with a strength rating of 25kN (5620lbf). The + has swing-cheeks, with an acetal wheel and an attachment hole which is suitable for a standard karabiner connection.



QUADRA & ESCAPE6 ROPE

We took an holistic approach to the design of the **D1PRO** descender kit and developed the descender cam in unison with two specifically designed ropes: **ISC QUADRA** rope has a unique four-strand Nylon core, which is protected by a highly heat resistant **Technora** Sheath, **Technora** decomposes at 498°C (930°F), with a Nylon core which is resistant to melting, up to 215-221°C (419-430°F). The quad-core construction of this unique rope provides perfect support to the device cam and optimally balanced firm, yet flexible, performance, with twist minimising qualities. **ISC ESCAPE6** is a full **Technora** rope, with ultimate heat-resistant properties. **Technora** decomposes at 498°C (930°F) and therefore **ISC ESCAPE6** should be chosen for applications where there is the risk of extreme heat (burning structures, etc).

D1PRO Kits are suitable for use with $\phi 6\text{mm}$ **ISC QUADRA** or **ISC ESCAPE6** Rope, ONLY.

www.iscwailes.com

NON-CONTACT HIGH VOLTAGE DETECTOR for 1st RESPONDERS & ARBORISTS working post- storm /disaster



FLIR Systems has introduced the Extech DV690 its first non-contact high voltage detector with a detection range of up to 69,000 volts (69 kV). The industrial-grade DV690 provides early warning alerts of energized electrical

components for utility lineworkers, telecommunications installers, first responders, search and rescue teams, and tree removal services.

The DV690 features five flexible mounting options: handheld, around the neck, clipped to a belt, strapped to an arm, or attached to a universal spline hot stick. The three handsfree possibilities allow the most optimal operation to efficiently and carefully complete a job. Using a hot stick creates a safer distance to target, extending operator reach. The DV690 also features a bright LED alarm and 106 decibels (dB) buzzer to notify users of the presence of dangerous voltage adding another layer of protection in hazardous conditions. Built with a durable IP54 housing, protected from dust intrusion and water spray, and drop tested to 4 ft (1.2 m), the DV690 performs reliably in harsh environments. Additionally, the built-in safety test function assures operators the unit is in proper working condition for rapid deployment. Offered with a 2-year warranty, the Extech DV690 is available globally today for \$299.99 through Extech.com and authorized dealers. The complete DV690 kit includes a hard-carrying case, safety break-away lanyard, arm strap, water resistant soft pouch, universal hot stick adapter, and 3x AA batteries.

www.extech.com/products/DV690



EGO Battery Top-handle Chainsaw

[ED: this is one of two saws that we've been using for several months and we've been impressed with the quality and power. Initially we found the very large battery attached to a cable somewhat at odds with the whole 'cordless' thing but since all top-handles are lanyarded anyway you can get used to it if it's flexible enough and of course the advantage is that the saw itself is lighter since the battery, often the heaviest component, is on your waist or back and not in the hand.]

EGO launched its first Top-handle Chainsaw, delivering petrol-beating performance for arborists. An uncompromising and unbeatable combination of power, torque and chain speed. Long run times allow up to 186 cuts on a single charge. Boasting an uncompromising and unbeatable combination of power, torque and chain speed, EGO, the specialists in battery-powered outdoor equipment, has launched its first ever Top-handle Chainsaw, to meet the needs of professional arborists. Promising best in class performance while further enhancing the company's Professional range, EGO's new chainsaw features a 30cm blade, together with a 20m/s chain speed, and has been designed from the ground up with professional users in mind. The tool itself makes light work of everyday tree care tasks; all while being driven by EGO's new lightweight, reduced profile 4Ah battery which is able to deliver 186 cuts on a single charge.

To improve usability, the chainsaw's battery is mounted on the accompanying holster, rather than on the tool itself. Taking weight off the tool, this improves ergonomics and optimises its power-to-weight ratio for reliable and safe performance, all without the need for any additional cords, with the power cable intelligently integrated directly into the safety stop.

While its lightweight and ergonomic design improves safety when working at height, a unique chain-brake system combines mechanical and electronic technology to reduce risk of injury in the event of kickback.

Ensuring the first ever Top-handle Chainsaw from EGO meets the demands of professionals, the support of expert arborists was enlisted during its development and testing. As a result, users can be sure of the tool's ability to perform in the most demanding environments, while features such as indicators for battery and oil levels alert users when a re-charge or top-up is required. Powered by EGO's Arc Lithium 56V battery technology, the 4Ah battery provides optimum performance, while the tool's brushless motor is quiet, smooth and free of emissions. With a fast charger (included with the kit), operators can rely on equipment being ready when they are.

The first Top-handle Chainsaw from EGO is available as a bare tool (RRP £429) and as a kit, complete with 4Ah battery and fast charger, (RRP £599).

www.egopowerplus.com

MEINDL TIMBER CRACK GTX

With the Meindl Timber Crack GTX you are not just choosing a cut protection boot that meets the strict cut protection class 3. The combination of robust waterproof leather and Gore-Tex lining makes the Timber Crack GTX completely waterproof. High-quality full leather is used in the entire cuff and folding flap area. There are color-highlighted reinforcements on the toe and heel that protect the upper and increase work safety. Both the shaft end and the ankle area are softly padded for high wearing comfort. The Digafix system with deep-drawn hook ensures a firm hold on the heel.

Thanks to the continuous midsole made of thermoplastic polyurethane, these chainsaw protection boots can also be used in conjunction with crampons, which is a real bonus on extremely steep terrain. The solid shaft and sole structure ensures high step and edge stability. The Meindl cut protection boot Timber Crack GTX is equipped with the proven Meindl Rock Grip sole. Thanks to its strong web profiling and movable slats, it offers you a secure hold even on slippery surfaces and prevents sideways slipping. Care with Meindl Wet-Proof, Sportwax and Conditioner & Proofer.

- Cut protection boots according to EN ISO 17249, cut protection class 3 and EN ISO 20345, S2
- Crampon-compatible sole construction with cushioning midsole
- Full-grain waterproof leather with Gore-Tex lining
- High wearing comfort thanks to the soft shaft end and ankle padding
- Digafix system with deep draw hook
- Proven Meindl Rock Grip sole
- Removable, washable Air-Active drysole footbed
- Approved with orthopedic insoles according to DGUV rule 112-191
- Color-contrasting toe and heel reinforcement
- Steel cap
- Shaft height 19 cm
- Weight 2580 g (size 43)
- COST: £320-383 Honeybrothers €369 (Grube)

honeybr

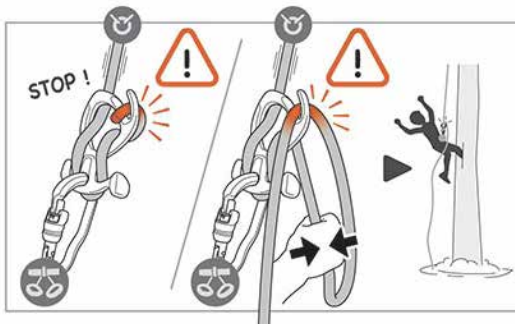


WSAR SAFETY NOTICE

[ED: Two in one issue is not an indication of problems at Petzl, it's more confidence inspiring that they catch problems before they become problems and pass that info straight on - many wouldn't be quite so forthcoming! This Pirana (more often spelt 'Pirahna') is most likely to be used in canyoning from a rescuer's perspective and this whole piece is more of a useful instructional article than a safety notice.]

PRECAUTIONS WHEN USING THE PIRANA

This information concerns the PIRANA (reference numbers D005AA00 & D005AA01) sold since the beginning of January 2020. Upon receiving feedback from users regarding instances of unintended blocking of the rope in the locking slot of the PIRANA, Petzl wishes to clarify details regarding the use of the descender for canyoning.



SITUATION ENCOUNTERED BY OUR USERS:

In aquatic rappelling situations (e.g. rappel into a pool, to a jump stance, to the top of a slide, etc.), the user may need to release their hold on the rope and allow the rope to slide freely through the PIRANA and intentionally drop into the water. This can result in the rope becoming locked in the PIRANA locking slot, thus stopping the user on the rope. The user is then stuck, and it can be very difficult to remove the rope from this position. This situation can be dangerous, especially if the user is under a waterfall or in a pool of water.

ACTIONS:

We have updated our technical information, providing two solutions that limit the risk of locking the rope. The Instructions for Use have been updated as follows: Take precaution when arriving at the end of a rappel



into water: Allowing the rope to slide freely through the PIRANA when jumping, going down a slide, or swimming requires caution. When the end of the rope slides through the PIRANA, it can whip and become blocked in the locking slot, causing the user to stop unexpectedly. It is recommended to set up every rappel so that it can be released, or so that the user can remove the rope from the PIRANA before they jump or slide. Alternatively, to reduce the risk, pass the rope over the friction spur and/or place your hand behind the device to prevent the rope from entering the locking slot. These two actions should not be a substitute for setting up a releasable rappel, which provides a means of lowering a person in the event of an incident during descent. The locking slot allows the user to tie-off the device and remove the tie-off, in order to manage hands-free stops during the descent. This feature presents advantages and limitations in certain situations that users must know how to manage. Before using this product, you are responsible for reading and understanding all of the instructions for use, receiving training specific to the use of this equipment, familiarizing yourself with your equipment and accepting the risks in using it.

www.petzl.com



SAFE USE of PETZL PIRANA

ARMOURED LIFE PRESERVERS

The Survitec Armoured Aircrew Life Preserver has optional integrated armour protection and is designed to the highest UK Ministry of Defence (MOD) specifications. Meeting the needs of both front crew (MK61, MK65) and rear crew (MK60) within non-fast-jet fixed and rotary wing aircraft, Survitec's Armoured Aircrew Life Preserver incorporates unique design and advanced technology. A fully integrated product, it couples marine survival flotation with complete armoured torso protection and is intended for use by international defence organisations and national MODs.

The Armoured Aircrew Life Preserver offers protection for aircrew deployed in hostile environments, without compromising comfort, movement or survival equipment storage, making it the ultimate defence under fire. Fully integrated and sanctioned for use on attack helicopters including Chinook, Apache, Lynx and Puma, the RFD Beaufort Armoured Aircrew Life Preserver has been successfully certified and approved by over twenty international air forces. It is currently undergoing several further international trials. Survitec unveiled three new lifejackets at this year's SEi show and form part of Survitec's newly created AirPEX (Aircrew Protection Extreme) product portfolio.

Available in sage green and desert tan to suit different terrains, each jacket in the new range offers different features appropriate to different mission profiles. All three new life preservers include a new single or double chamber micro life preserver unit, a simplified quick adjustment system for optimum fit and many other design innovations that lead to a product that has received very positive user feedback both in terms of comfort and functionality. For instance, Protectoris is the introductory product in the AirPEX range and is equipped with large fixed multi-functional pockets allowing different Personal Locator Beacons and all essential survival aids to be stowed and retrieved quickly. AirPEX Defender is a fully modular life preserver allowing total configuration flexibility to suit different mission requirements, while the combat ready AirPEX Warrior provides unrivalled small arms ballistic protection with fully integrated front and rear body armour options. All products in the range are manufactured from lightweight fabrics to reduce bulk, thermal burden and heat stress, with the objective to deliver greater comfort to male and female aircrews.

survitecgroup.com



WATER RESCUE STUFF

Breakout Rope Bag

Rigging Reimagined

ARS www.andersonrescue.com



ARBORIST Helmets

For Tree Climbing, Groundwork & General Chainsaw Use

NB: Although this article includes mention of visors, ear defenders and other accessories and we try to show many helmets as complete sets, the individual specifics of these vital safety accessories will be discussed in separate articles.



Above: The Protos Integral Arborist by Pfanner represents the latest generation of purpose designed arb helmets. We're used to seeing the red and yellow colourway but this red and grey is their preferred colour for arborists and will have integral chinstrap

It wasn't so many years ago that arb helmets were very much like the old Ford Model T - any colour you like as long as it's orange, the universal tree-fellers hat. Those were the days when tree helmets were the same as groundworker helmets - modified building site helmets with comfort levels akin to a medieval knight's metal bucket. We have included some of the leading budget models but there are far too many for us to include them all. Cost is a key factor in considering use of a basic helmet; the 3M/Peltor we list first for instance can be bought for as little as \$6. (helmet only). This

article is concerned with the more technical helmets and these days we're getting closer to a comfy tea cosy mostly thanks to the mountaineering and fire-rescue helmet manufacturers. I quickly learnt that there was a huge difference between working your way through dense macrocarpa with a big ear-defender and mesh visor endowed site helmet and a close fitting climbing helmet with ear plugs and bolle safety glasses. Aside from steaming up too easily on wet days the comfort and the dexterity in tight climbs was worlds apart. As usual my orange-headed mates would take the mick but

Above: Market leaders in the Arb-world like Husqvarna and Stihl recognise where their expertise lies and instead of reinventing the wheel have Petzl, Kask and other specialists make their helmets for them.

take a look at this list suckers-who's laughing now? It is a list dominated by modified mountaineering helmets with the market leaders unquestionably Petzl of France and relative newcomers Kask of Italy. They followed Edelrid's lead in adding ear-defender slots and visor holes to standard climbing helmets and then later improving the adjustability of the head band. This made such helmets useable in all facets of tree work and now, instead of climbers wearing mostly groundworker oriented helmets it's the groundworkers who often wear climbing style helmets (but check

out the chin strap discussion opposite). The full safety accessory compliment still makes many models less than aerodynamic in restrictive spaces but this began to be improved upon with the introduction of integrated low profile visors - kinda like giant goggles - that hugged the contours of the shell and provided the minimum of snag hazards. We again have the fire helmet market and companies like Gallet (now MSA) to thank for this innovation now well represented by Kask (top right) and Petzl with their Vizion cut-down clear visor and their Virzir visor-goggles. The newest

Left: Super-versions of the old site-helmets are mid-range models like the Rockwell, MSA V-Gard, Bullard S62 etc. which are now well specified helmets.



Above: Low profile goggle-visors have become popular because they are light and unobtrusive.

incarnation is the Protos from Pfanner which has cut away the ears altogether to accommodate much sleeker ear defenders which fold away into the rear of the shell and it has virtually integrated the full size mesh visor to cut down on snag hazards without compromising your visibility and face protection. Not all of the models in this guide are able to accept ear defenders in which case a simple set of soft ear plugs will serve you equally well.

The majority of designs have no brim, a feature (or lack of feature) typical of European climbing helmets. Brims tend to inhibit upwards visibility and get caught up in dense canopy. On the other hand groundworkers appreciate the fact that they keep rain and debris off the face and act as a sun shield and there are climbers who swear by them for the same reasons and welcome the fact that this is an option still offered by companies like; Pacific Helmets of New Zealand, Sherri's budget ground worker helmet with it's full circumference brim, the mid-priced MSA (formerly Gallet)'s V-Gard and lower priced Forester, 3M/Peltor, Canasafe and Rockwell helmets. Many have the additional advantage of a rain 'gutter' which stops water cascading down your back and instead channels it to the front - a feature not present on newer generation climbing helmets.

ELECTRICAL CONDUCTIVITY: If

your tree work takes you close to power cables you'll need one rated to an electrical complicity, normally shown as a voltage figure - these helmets do not have vents but that doesn't necessarily mean that a non-vented helmet is suitable for electrical work - it may have metal rivets for instance which would act as superb conductor straight through to your head.

CHIN STRAP STANDARDS: In Europe, chin straps may be either EN 12492 or EN 397. EN12492 refers to a chin strap stronger than 50daN in a hang-up while EN397 is a helmet with either no strap or one that is designed to break apart if loaded beyond 25 daN. The Petzl Best series has an 'intermediate' chin strap so is CE-marked rather than designed to meet either 397 or 12492. Other helmets are available with the option of either so you need to order to your specific needs.

LIGHTING: Because many of the helmets have a mountaineering background the ability to mount a head torch is quite high on their list of features, but truthfully, when was the last time you undertook climbing tree work in the dark? Useful for emergency work though. Older styles have always featured a length of elastic on the front to restrain a headtorch but these days they're all integrated bits of recessed plastic incorporated into the design and profile of the shell - the black shark's tooth shape in the Kask Plasma above for instance is a head band restraint.

SHELL MATERIALS: Helmet materials have gone from cheap and quite brittle plastics of the 80s to flexible but extremely tough thermoplastics, ABS and polycarbonates. There have always been fibreglass shell helmets available but they were largely ignored by tree workers due to cost and weight until the more recent introduction of lighter composites and the complexity of modern technical helmets brought greater parity to the pricing.

GROUNDWORKER HELMETS: There are still two distinct levels of expenditure epitomised by Husqvarna with their basic Pro Forest and more technical Pro Arborist but let's use the MSA range as an example; they have the the V-Gard 200 as a modern version of the old building site helmets which are quite simple,

FROM THE ARCHIVES

This article is from ARBCLIMBER issue 2 in 2012. We have updated GUIDES to HELMETS coming up soon in all three magazines so it's again interesting to see who the main players were then. This GUIDE was in ARBCLIMBER but the majority of these are cross discipline in terms of rescue and rope access. Most individual helmet models are as good today as they were then and some that were revolutionary then like the Pfanner Protos (which lacked a chinstrap at the time of this article) or market leading like the Petzl and Kask ranges, remain the leaders now. Helmets in general haven't seen the kind of radical changes or developments that we've seen in hardware and battery technology for instance. Nevertheless, there have been changes - site helmets are rarely seen any more, even ground crew who used to be given what ever was left over in the truck after the climbers have had their pick, generally get climbing quality helmets. Remember that there is a very specific difference between dedicated ground-working helmets and a climbing helmet. It is all about how the helmet reacts should the climber fall and his/her head impact a solid object during, or at the culmination of, a fall rather than simply protecting the user from being hit on the head by a falling object. The thing that has improved most is not so much the shell design or even the internal cradles and comfort measures, it's more the accessories,; the low profile visors and in-ear piece comms systems. Not that we included those things in this GUIDE but the ability to add specific ear defenders, visors, lighting and comms is a key consideration.

Some of these models no longer exist, indeed some of these companies no longer exist but mostly it's business as usual with a number of new models out in the past year that we'll pick up in the updated guides.

HELMET MANUFACTURERS be sure to let us know if you have any new helmets of any type - arb, rescue, climbing or water coming out in 2022

BEWARE of ONLINE GUIDES & REVIEWS

We come across so many during research while we're trying to make sure we've included all the most relevant models and many are lightweight rubbish masquerading as comprehensive and independent. You can often tell by the similar format and the fact that there are often very few participants, in fact only the two or three category 'winners'!

We realised very early on with our magazines that if we handed a decent looking item of equipment to a team, station or individual and asked them to review it - the review invariably came back positive and somewhat wishy-washy. That's not through any lack of skill or knowledge on their part but simply because they've been using the same kit for quite a while so, not only does a new piece of kit nearly always look much better, their frame of reference might be quite limited and it's this knowledge of a broad range of equipment within each equipment category and what to look for in terms of manufacture quality and usage that is vital. You need to be able to compare any given product with as many of its contemporaries as possible to know how good it actually is. That's why 'trekking/walking/climbing magazines use professional boot reviewers and why we kept all reviews in-house, albeit with quite a wide cross-section of expert users. We were/are using new kit every week and more than that, are able to push the outer envelopes of their intended use by using them across a range of disciplines that they may not even have been designed for. This may seem a little unfair but, in our experience, if kit can be abused, it will be. Having an idea of what constitutes failure potential, however outlandish that might be, is useful information though we don't always report the details on this!

There are a number of online reviewers who may have started out with limited scope but are now well versed in how the latest bit of kit compares to the competition and these sites are very good. But there are unfortunately also a whole load of 'reviews' and 'Best Gear for 2021' type things that are not quite bogus because they often have a decent top-pick but it's not necessarily the best for any number of reasons not included in the 'test-criterion' which only seems to include name, cost and where you can buy it, in fact a direct link to the Amazon page! That's a fair indication that they wouldn't know the product if it hit them in the face and what info they have provided is second hand from other online 'reviews' and 'guides'.

BELOW: The Camp Mouse cradle is a foam padded suspension cradle, the site helmet has a simple plastic 6-point suspension cradle with a 2-point chin strap and the red BD Climbing helmet is a polystyrene liner with comfort padding

with basic shell comfort and

impact resistance but still able to accept visor, ear defenders, neck cape etc. and give you all the protection you need at a relatively low cost of £30 or so including visor and eardefenders. Next they have the mid-priced V-Gard 500 at around £55 which is a top-end 'site' helmet with a unique retractable chin-guard option. Then there are their technical shells like the F2 Xtrem and Fuego- the latter admittedly designed more for general rescue and firefighting but crossing over very nicely into tree work with the added bonus that you stand a better chance of surviving a forest fire.

It is the comfort levels, specific shell design and additional features that will make you consider paying three times more (with visor and ear defenders) for helmets like F2, the Petzls and Kasks etc over the more basic shells. Generally speaking your groundworkers, being wholly expendable get the cheaper helmets while the climbers get the posh ones. It's a cruel world.

SO WHAT DO YOU GET FOR YOUR EXTRA BUCKS?

1) **Cooler shell designs** - subjective I know but you have to admit that the Italian companies have some of the most modern looking designs - the Kask Plasma, Camp Armour and Kong Mouse - don't let a daft name put you off this last one. Whereas the site helmets are mostly variations on a design little changed from the 70s (or from the 20's if you have one of the US full brim round models) the latest, higher cost models are noticeably sleeker. Again, take a look at that Protos. Not always the case though as the Rockwell and Protector are pretty sleek for site-helmets and both have rain gutters which move water from your back to the front - you don't get that on high-end helmets. Shell accessories are more in evidence at the top-end with torch mounts, headlamp mounts, weird vent configurations (if it's not an electricity-work version) and integral head band adjustment like the Petzl with its cogs either side of the head.

2) **More complex head protection** with either a suspension cradle with clearance between your head and the shell allowing it to distort and absorb an impact or a full high density polystyrene liner, similar to bicycle



ACCESSORIES
Although we have shown most helmets as 'combinations' complete with visors and ear defenders etc. this article is only concerned with the helmet itself so with a few exceptions, weights and costs etc refer only to the basic helmet.
Typical accessories include rain/chin guards at the neck and above the visor. Some, like the Rockman have an expansive chin cup to protect debris coming up below the visor. Visors can be metal or nylon mesh, clear or smoked 'plastic'.



helmets. This latter style is on the increase because it allows the shell to sit much lower on the head; a lower profile is quite important to climbers - check out the difference between the Edelrid model and the Protos in the following table. However, be warned that adherence to an impact resistance standard is not necessarily all it appears to be. The UK's BMC (British Mountaineering Council) had concerns that their testing of top impact on Black Diamond's Half Dome with foam (polystyrene) interior was wildly at odds with the figures quoted in BD's standards testing (over 10kN as compared to only 1.6kN quoted). Further investigation confirmed that there were serious anomalies and subsequently BD introduced a new version of the popular Half Dome but it does raise some interesting questions about lower profile helmets and how close your head is to the 'protection' barrier. Some models like the Petzl Vertex Vent have both a suspension cradle and a polystyrene liner, albeit reduced to a 'skull cap' size and even more unusual is the Kong Mouse which has a cross between a suspension cradle and a padded comfort cap sitting directly on the head but still allowing clearance to the shell.

3) **Posh chin strap.** Since most of the top-end helmets are aimed at climbers the chin strap is normally a 4-point Y-shape culminating in a quick-release buckle and some, like the Camp Armour having a comfort chin cup which really does seem to make a difference on long days.

4) **Added comfort** in the form of foam liners which double as size adjustment. These normally sit on the front of the band to protect the forehead from chafing but often continue round to the ears and all are replaceable once the smell of stale sweat or dubious algal growth gets too much.

5) **Nifty colours.** Many offer ultra high visibility yellows and greens, some are even luminous - not that you're necessarily going to be working in the dark (although there is a lot of emergency storm work these days) but in low light and in the darkness of a thick canopy the sniper will be able to pick out your head more easily. Some designs have taken on board the principles of vehicle conspicuity marking with two contrasting colours to really make it stand out - the Protos and the Camp Armour are proponents of this but most manufacturers supply decals which can enhance the visibility of your helmet - if you look at the Pacific R7HVS you'll see what a difference contrasting decals can make.



The Petzl Vertex Vent demonstrates the adjustable vents designed to improve air flow when it's hot or protect your head when it's cold and wet

6) **Options** -not always the case, but generally speaking the top-end helmets have a greater range of lighting options and eye protection with cut-down clear visors or integral goggle-visors instead of, or in addition to the traditional mesh visor. The vents on non-electrical models may be adjustable - this is a very useful option and is a simple sliding screen to close the open vents to the cold wind and rain. Others like the Kask Plasma have a mesh to maintain air flow but stop debris getting in.

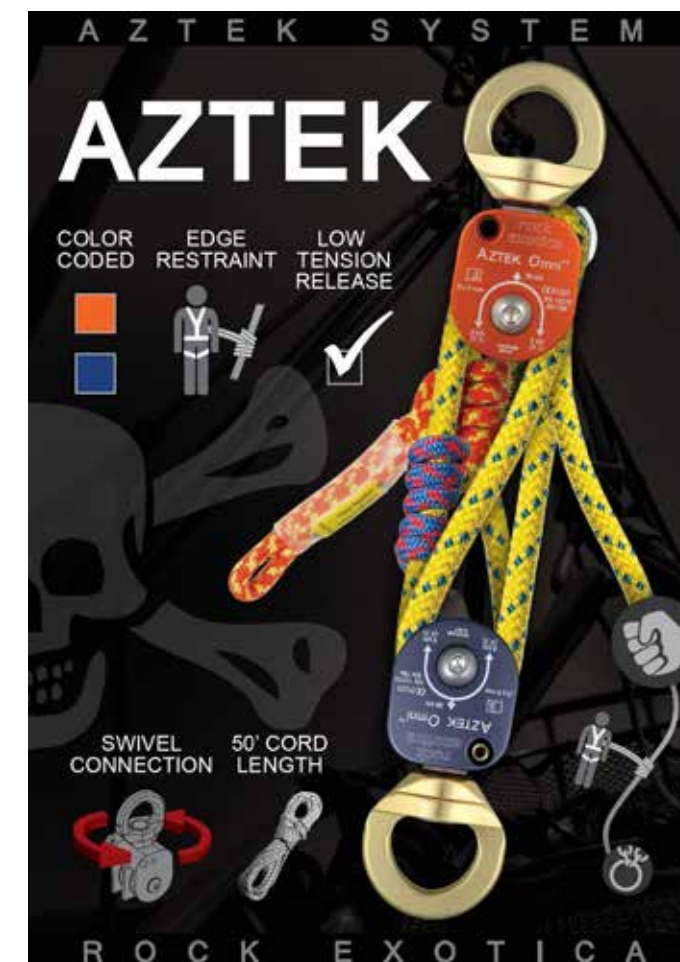
CONCLUSIONS

Of course the one thing a chainsaw helmet won't do, is stop a running chainsaw if those fellas from Texas are after you though it may deflect and/or slow it up. Some of the helmets here lack the accessories to be used with a chainsaw, some are useless for climbing without ear defenders engaged because they lack a chinstrap and some are barely passable in either role (indicated by a green diamond instead of black) but that hasn't stopped them being used in those roles for decades. Having the same style of helmet for everyone in a work team from ground crew to climber has its advantages as long as your local protocols/laws don't preclude high strength (<50daN) chinstraps being used on the ground and the helmet can be fitted with all the accessories you need including the latest vogue for helmet-cameras- always useful to let others witness your disasters especially if a court case ensues! ☹






































Helmet visor 2021 style

Something that wasn't on our radar when this Guide was written was a global pandemic requiring masks, visors and social distancing for ground crew. This is where the traditional forestry mesh visor failed to meet the new protective measure and where the shortie, fighter-pilot style visor also fell short of full protection so manufacturers went







































back to a visor design that used to be standard in the 70s or 80s - a full length plastic visor. Better quality these days of course and a better wrap-around to really ensure that pesky sneeze or shouting colleague doesn't spray you with infected droplets. This one is on CAMP's Ares and Ares Air Pro helmets which weren't around when this archives Guide was compiled. The visor is made of 0.5mm acetate and weighs 50g/2oz.









































Images NOT to scale
All helmets have
safety accessories
not necessarily
shown

	MODEL		MODEL	COMPANY	ORIGIN	COST helmet only except*	Chainsaw	Groundwork	Climbing	Electrical Work	Mesh Visor	Clear Visor	Goggles/Visor	Ear Defend	Headlamp	Light Mount	Rear/Cheek Shield	Air Vents	Reflective Tape	COLOURS	STANDARDS with accessories where required		SHELL MATERIALS	INNER HELMET	CHIN STRAP	Size Adjust	SIZING	NOTES	www.
			Lumberjack (XLR8)	3M (PELTOR)		\$32	◆	◆		◆	◆			◆			◆			Orange	ANSI Z89.1-2003 Type 1 class C G E	340g 12oz	HD Polyethylene	4 or 6-Point plastic suspension cradle	None	pinlock (Ratchet option)	n/a		solutions.3m.com
	Half Dome			BLACK DIAMOND		\$60 £50		◆	◆						◆	◆	◆			Orange, Grey, Brown, White	EN12492	290/320g 10- 11.2oz	ABS	Polystyrene with padding	4-point	Rear ratchet	S/M 48-57cm M/L 55-61.5cm	Earlier version had reduced sized vents	blackdiamond equipment.co m
			Advent	BULLARD		\$85	◆	◆	◆	◆	◆	◆		◆				OPTION		20 Colours inc. pink, black,orange,hi- vis & Brown	ANSI/ISEA Z89.1- 2009, Type II, E and G	371g 27oz	Polycarbonate	8-Point suspension cradle + impact liner	2-Point or 3- Point	Rear Ratchet	6.5-8	Also available as lower priced <i>Vector</i>	bullard.com
	Standard			BULLARD		\$14	◆	◆	◆	◆	◆	◆		◆				OPTION		White, Red, Yellow, Orange, Blue	ANSI/ISEA Z89.1- 2009, Type I, Class E & G		HD Polyethylene	4-Point suspension cradle	option	Pinlock or Rear Ratchet	n/a	Also available with flat front & with full brim	bullard.com
			Armour	CAMP		\$60 €59		◆	◆						◆	◆	◆			Orange, Green, Blue,Red, White(ish),	EN12492	340g 12oz	ABS	Polystyrene with padding	4-point	Rear Ratchet	Uni 54-60cm		camp.it
	Silver Star Visor			CAMP		€45 A\$116	◆	◆	◆		◆					◆	◆	◆		Red, White	EN 397	470g 17oz	ABS	6-point suspension cradle plus padding	4-point	Push but- ton band feed	Uni 53-62cm	Vents lined with protective mesh	camp.it
			Skylor Plus	CAMP		€45	◆	◆	◆	◆				◆		◆	◆			Red, Orange Yellow, White, Black	EN 397 440V a.c. LD -20C	475g 17oz	ABS	6-point suspension cradle plus padding	4-point	Rear Ratchet	Uni 54-62cm		camp.it
	Vision			CENTURION		£18	◆	◆		◆	◆	◆	◆			◆	◆	OPTION		White, Green, Blue, Orange, Red, Black Hi-viz Yellow, Hi-viz orange	En 397 ANSI Z89.1-2003 Type 1 Class E	480- 505g 17-18oz	ABS	6-point suspension cradle	none	Rear Ratchet Option	Uni 52-63cm		centurionsafe- ty.co.uk
			Arborlight	EDELRID		€56 A\$80	◆	◆	◆		◆			◆			◆	OPTION		Red, White	EN 397	425g 15oz	Polypropylene	6-Point suspension cradle	4 point <25 daN break	Rear Buckle	Uni 54-60cm		edelrid.de
	Balance Forestry/AC with Peak			ESL		£12	◆	◆			◆	◆	OPTION				◆			White, Orange, Red,Green,Blue ,Black, Yellow	EN397 LD -30	n/a	Polyethylene	6-point suspension cradle	none	n/a	n/a	Also Hi-Viz Orange or hi-Viz Red, Rain Gutter	n/a
			Balance Climber No Peak	ESL		£33* as combi	◆	◆	◆		◆	◆		◆			◆			White, Orange, Red,Green,Blue ,Black, Yellow	EN397 LD -30	n/a	ABS	6-point suspension cradle	2-point	Rear Ratchet	n/a	Also Hi-Viz Orange or hi-Viz Red, Rain Gutter, rear vents	n/a
	Terrain Forestry			FUTURE SAFETY		£58	◆	◆	◆			◆	◆	◆			◆	OPTION		White, Green, Red, Balck, Blue, Yellow, Hi-vis Orange	EN14052 EN12492	4-500g 14- 17.6oz	ABS	Polystyrene Liner	4 point	Rear Ratchet	Uni 52-62cm		futuresafety.co .uk
			Forest/ Construction/ functional	HUSQVARNA		\$46-\$57	◆	◆			◆	◆		◆			◆			Orange, White	NSI Z89.1-2009 Class G,E ANSI Z89.1-2003 Class G-E-C EN397	470g* 17oz*	HD Polyethylene	6-point suspension cradle	option	pin lock or ratchet	Uni 54-61cm	HiViz Orange with neck protection	husqvarna.se
	Protective/ Semi-Pro			HUSQVARNA		\$46 £50	◆	◆	◆		◆	◆		◆			◆			Orange	ANSI Z89.1-2003 Type 1 Class E EN397	380g* 13oz*	HD Polyethylene	6-point suspension cradle	none	pin lock or ratchet	Uni 53-61cm	HiViz Orange with neck protection	husqvarna.se
			Pro Arborist/ Technical	HUSQVARNA		\$119 £110	◆	◆	◆		◆	◆	◆			◆	◆			Orange	EN12492 UIAA ANSI Z89.1-2009-1-C	340g 12oz	ABS	Expanded Foam insert + Comfort pads	>50daN non-break	2 side ratchets	Uni 53-63cm	available with integrat- ed LED headlamp	husqvarna.se

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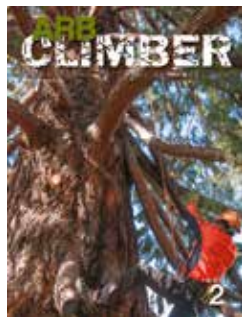
	MODEL		MODEL	COMPANY	ORIGIN	COST helmet only except*	Chainsaw	Groundwork	Climbing	Electric Work	Mesh Visor	Clear Visor	Goggle Visor	Ear Defend	Headwarmer	Light Mount	Ham/Chin Shield	Ar Vents	Reflective Tape	COLOURS	STANDARDS with accessories where required	WEIGHT (helmet only except*)	SHELL MATERIALS	INNER HELMET	CHIN STRAP	Size Adjust	SIZING	NOTES	www.
			Super Plasma	KASK		\$135 £53	◆	◆	◆				◆	◆	◆	◆	◆			Anthracite, Blue,Orange, White,Red	ANSI Z89.1-2009 EN 397OR 12492	350g 12.3oz	Polypropylene	HD Polystyrene & Padding	4 point	Rear Ratchet	Uni 51-62cm	Vents have mesh grill Hanging loop	kaskhelmets.com kask.it
	Super Plasma Hi-Viz			KASK		\$150 £63	◆	◆	◆				◆	◆	◆	◆	◆	◆		Orange Fluo Red Fluo Yellow Fluo White	ANSI Z89.1-2009 EN 397 OR 12492	350g 12.3oz	Polypropylene	HD Polystyrene & Padding	4 point	Rear Ratchet	Uni 51-62cm	Vents have mesh grill Hanging loop	kaskhelmets.com kask.it
			Magic Pro Arborist	KONG		£80	◆	◆	◆		◆	◆	◆	◆		◆	◆	OPTION		White, Red	EN 397	410g	ABS	6-Point Suspension Cradle & Padding	4 Point <25daN Break	Rear Velcro Strips	Uni 53-61cm		kong.it
	Mouse Work			KONG		€55 AS107	◆	◆	◆		◆	◆	◆	◆		◆	◆	OPTION		Yellow, Red, White, Black	EN 397	370g 13 oz	ABS	6-Point Suspension Cradle & Padding	4 Point <25daN Break	Rear Ratchet	S/M 52-59cm M/L 58-63cm		kong.it
			F2 Extrem (vented version shown here)	MSA (GALLET)		£95	◆	◆	◆	OPTION	◆	◆		◆	◆	◆	◆	OPTION		Red, Blue, Yellow, White, Black, Indust=white	EN397, 440V,LD (non-vent- ed) -30°C	540/570g 19-20oz	Thermoplastic	6-Point suspension cra- dle	2-Point or 4-Point	rear ratch- et	Uni 52-64cm	Industrial version takes same acces- sories as vented rescue version	msa-europe.com
	Fuego			MSA (GALLET)		N/A	◆	◆	◆	◆	◆					◆	◆	OPTION		Red, White, Black, Fluoro Yellow,Photol uminescent	EN 443 : 1997, E2,E3	1050g 37oz	High Temp Polyamide	Reinforced polyurethane & Padding	4 point	Rear Ratchet	Uni 52-64cm	general purpose fire helmet	msa-europe.com
			V-Gard 500 V-Gard 520 (no peak)	MSA (GALLET)		£9	◆	◆	◆	OPTION	◆	◆		◆	◆	◆	◆	OPTION		White, Orange, Yellow, Green, Black, Grey, Blue,Red	EN 397	360g 12.6oz	ABS	4-point suspension cra- dle	2 Point <25daN Break	Rear Ratchet	Uni 52-64cm	with Fastrac Cradle. Rain gutter	msa-europe.com
	V-Gard 200			MSA (GALLET)		£6	◆	◆	◆		◆	◆	◆	◆		◆	◆	OPTION		White, Orange, Yellow, Green, Blue,Red Fluro yellow	EN 397	350g 12.3oz	ABS	4-point suspension cra- dle	2 Point <25daN Break	Rear Slide	Uni 52-62cm	with Staz OnCradle (Fastrac Option shown), Rain gutter	msa-europe.com
			chainsaw	OREGON		\$30* £20* as combi	◆	◆		◆	◆					◆				Yellow	EN 397	n/a	ABS	4-Point suspension cra- dle	n/a	n/a	n/a	Comfort chin cup	
	Forestry/ Sarawak			OREGON		\$82* £30* as combi	◆	◆	◆		◆			◆			◆	◆		Orange, Yellow	EN 397	n/a	ABS	6-point suspension cra- dle	n/a	Rear ratchet	n/a	Rain gutter	
			R7HVS	PACIFIC		\$300	◆	◆	◆		◆		◆	◆	◆	◆	◆	◆		Red, Green, white, yel- low, Orange, Blue	AS/NZS1801 EN397	510g 18oz	kevlar/fibre- glass composite	4-point suspension cra- dle	3 point with break	Rear ratchet	Uni 52-64cm	Closeable vents Fire certified Integral Torch option Available with no peak	pacifichelmets.com pmiropo.com (USA)
	R5 several variants			PACIFIC		\$144	◆	◆	◆		◆		◆	◆	◆	◆	◆	OPTION		Red, Blue, Green, white, Yellow,Orange	AS/NZS 1801 EN397	780g 28oz	kevlar/fibre- glass composite	4-point suspension cradle	2 -3 point with break	Rear ratchet	Uni 52-64cm	Fire certified Integral Torch option	pacifichelmets.com pmiropo.com (USA)
			BR7P	PACIFIC		\$195	◆	◆	◆		◆	◆		◆	◆	◆	◆	OPTION		Red, White, Yellow, Orange,	AS/NZS 1801 NFPA1977	n/a	Lexan123 plastic	Suspension cra- dle	2-point	Rear ratchet	Uni 52-64cm	Available without Brim (c-variant)	pacifichelmets.com pmiropo.com (USA)
	Alveo Vent			PETZL		\$105 £53	◆	◆	◆		◆	◆	◆	◆		◆	◆	OPTION		Red, Yellow, White	CE or EN 12492 UIAA ANSI Z89.1-2009-1-C	340g 12oz	ABS	Expanded Foam insert + Comfort pads	>50daN non-break	2 side ratchets	Uni 53-63cm	available with inte- grated LED head- lamp	petzl.fr
			Alveo Best	PETZL		\$105 £53	◆	◆	◆	◆	◆	◆	◆	◆		◆	◆	OPTION		Red, Yellow, White	CE ANSI Z89.1-2009-1-E	350g 12.3oz	ABS	Expanded Foam insert + Comfort pads	>50daN non-break	2 side ratchets	Uni 53-63cm	available with inte- grated LED head- lamp	petzl.fr

Images NOT to scale All helmets have safety accessories not necessarily shown	MODEL		MODEL	COMPANY	ORIGIN	COST helmet only except*	Chainsaw	Groundwork	Climbing	Electrical Work	Mesh Visor	Clean Visor	Goggle Visor	Ear defend	Headwarmer	Light Mount	Rain/Cap Shield	Air Vents	Hi-Viz Colours	COLOURS	STANDARDS with accessories where required	WEIGHT (helmet only except*)	SHELL MATERIALS	INNER HELMET	CHIN STRAP	Size Adjust	SIZING	NOTES	www.
			Vertex Vent	PETZL		£60.	◆	◆	◆		◆	◆	◆	◆		◆	◆	OPTION	Red, White Yellow, Black, Orange, Blue	CE or EN12492 UIAA ANSI Z89.1-2009-1-E	455g 16oz	ABS	6-point suspension cra- dle Comfort pads	>50daN non- break	2 x side ratchets	Uni 53-63cm	available with inte- grated LED head- lamp	petzl.fr	
	Vertex Best Vertex ST			PETZL		£60 £60 (ST)	◆	◆	◆	◆	◆	◆	◆	◆		◆		OPTION	Red, White (ST) Yellow, Black, Orange, Blue	CE EN397 (ST) ANSI Z89.1-2009-1-E CSA Z94.1-05T-1-E	455g 16oz	ABS	6-point suspension cra- dle Comfort pads	>50daN non-break ST= <25daN break	2 x side ratchets	Uni 53-63cm	available with inte- grated LED head- lamp	petzl.fr	
			Elios	PETZL		£44 \$66		◆	◆		◆		◆			◆	◆		Orange, Blue White	EN 12492, UIAA	300g 330g	ABS	Polystyrene liner	>50daN non-break	Push but- tos at rear	2 sizes 48-56cm 53-61cm	available with inte- grated LED head- lamp	petzl.fr	
	Protos Integral Arborist			PFANNER		£216* As Combi (estimated)	◆	◆	◆		◆	◆		◆			◆	◆	◆	Red/Yellow Red/Grey Orange/Grey Orange/Yellow	EN 397 OR 12492	798g* 28oz*	Polycarbonate	Polystyrene liner	4 point	rear ratch- et	Uni	Ear & eye pro is inte- gral hence high weight	pfanner.at
			300	PROTECTOR (SCOTT SAFETY)		£4	◆	◆	◆	OPTION	◆	◆		◆	◆		◆	OPTION	White, Yellow, Blue, Red, Hi-viz Yellow	EN 397 LD -30	310g 11oz	HD Polyethylene	8-point suspension cra- dle	2-point option	Pinlock	Uni 50-66cm	Elite version has terylene cradle, Rain gutter	scottssafety.com	
	600			PROTECTOR (SCOTT SAFETY)		£10	◆	◆	◆	OPTION	◆	◆	◆	◆	◆		◆	◆	OPTION	White, Ylw,Grn Blue, Red,Grey Hi-vizOrange Hi-Viz Yellow	EN 397 LD -30	350g 13oz	ABS	8-point suspension cra- dle	2-point option	Pinlock	Uni 50-66cm		scottssafety.com
			Forestry/ Premium	ROCKMAN (ENHA gmbH)		£10 €11 \$45	◆	◆	◆	OPTION	◆	◆		◆		OPTION	◆	◆	Yellow, Red, Orange, Green	EN 397 ANSI Z89.1,Class C	315g 11oz	HD Polyethyelene	6-point suspension cra- dle	4-point <25daN break	rear ratch- et	Uni	Also F6 and F4 variants Rain gutter	enha.de	
	C39			SF ELECTRIC			◆	◆	◆	OPTION	◆			◆			◆		Orange	EN 397	330g 11.6oz	HD Polyethyelene	suspension cra- dle	cotton 2-point	n/a	n/a	Rain Gutter	sf-electric.com	
			Forester	SHERRIL/ 3M		\$17		◆		◆									Yellow, White	ANSI Z89.1, Class G	500g 17.6oz	HD Polyethyelene	6-point suspension cra- dle	none	Pinlock	n/a		sherrilltree.com	
	Plasma Work AQ			STEIN		£50	◆	◆	◆		◆	◆	◆	◆	◆	◆	◆	◆		White, Red, Blue	EN 397	350g oz	Polypropylene	HD Polystyrene & Padding	4 point	rear ratch- et	Uni 51-62cm	Mesh grill on vents Harness Hang loop	steinsafety.co.uk
			Super Plasma PL	STEIN		£58	◆	◆	◆		◆	◆	◆	◆	◆	◆	◆	◆	Orange, White, Grey , Red, Blue, fluoro Yellow	EN 12492	350g oz	Polypropylene	HD Polystyrene & Padding	4 point	rear ratchet	Uni 51-62cm	Mesh grill on vents Harness Hang loop	steinsafety.co.uk	
	AeroLight			STIHL		£30*as combi €11 \$45	◆	◆	◆	OPTION	◆	◆		◆		OPTION	◆	◆	Yellow, Red, Orange, Green	EN 397 ANSI Z89.1,Class C	315g 11oz	HD Polyethyelene	6-point suspension cra- dle	4-point <25daN break	rear ratch- et	Uni	Rain gutter NB: Stihl Germany has 7 helmet model	stihl.de stihl.co.uk	
			Special	STIHL		£43* €65* As Combi	◆	◆			◆		OPTION	◆			◆		Orange	EN 397	330g 11.6oz	ABS	4-Point suspension cradle	none	pinlock	Uni	NB: Stihl GB has 7 helmet model	stihl.de stihl.co.uk	
	ProMark Forestry			STIHL		\$65	◆	◆		◆				◆			◆		Orange	ANSI Z89.1-2003 Type 1 class C G	340g 12oz	ABS	6-Point suspension cra- dle	none	rear ratch- et	n/a	NB: Stihl USA has 3 Helmet models	stihlusa.com	
			Vent Vent Plus	STIHL		€104	◆	◆	◆		◆	◆	◆	◆		◆	◆	nil	Orange	CE, EN12492 UIAA ANSI Z89.1-2009-1-E	455g 16oz	ABS	6-point suspension cra- dle Comfort pads	>50daN non- break	2 x side ratchets	Uni 53-63cm		stihl.de stihl.co.uk stihlusa.com	

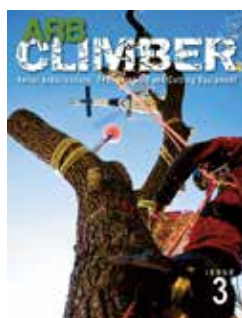
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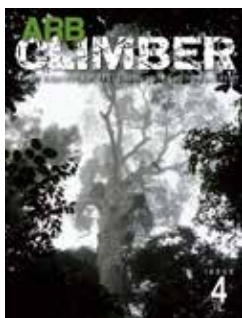
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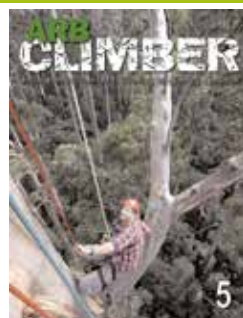
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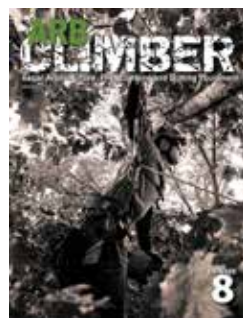
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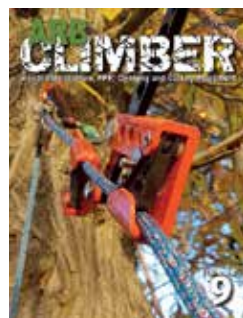
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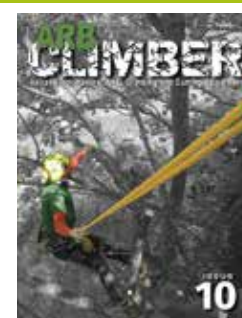
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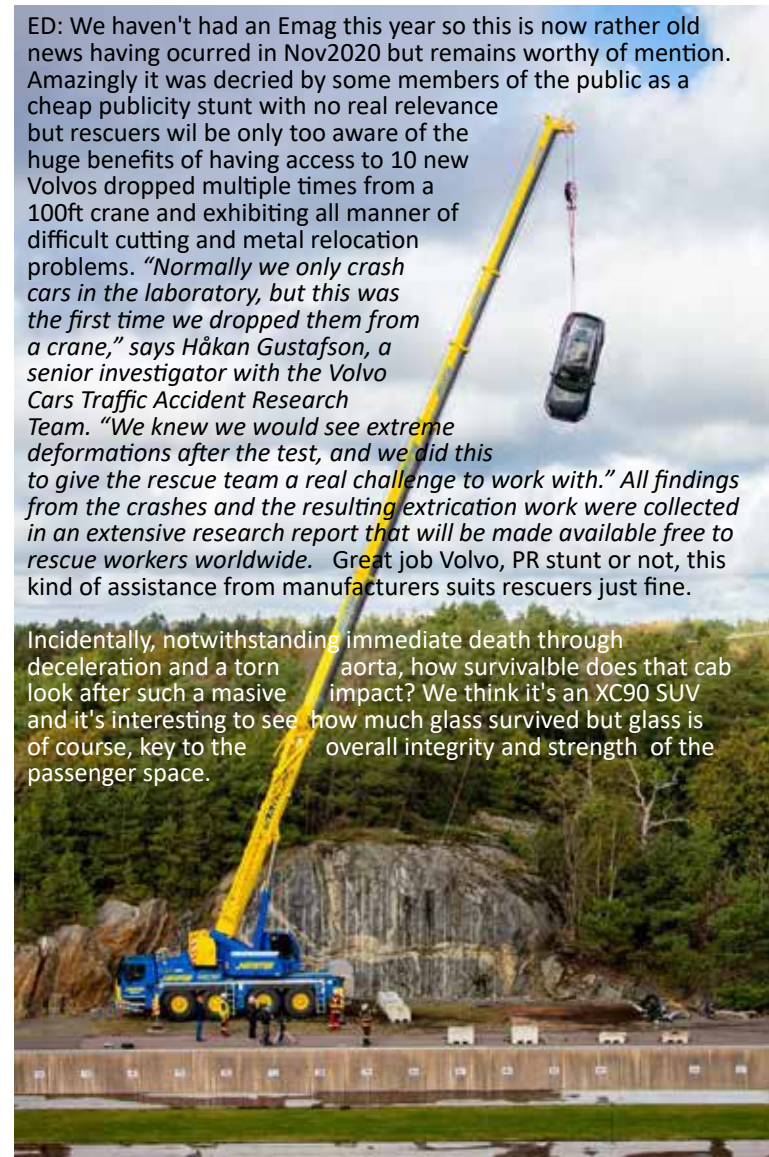


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Arcteryx

Rescue Pack 50

by **Roland Curll**
NSW Police Rescue

The alpine style mountaineering pack has for a long time now been the pack of choice for mountain rescue teams. The top loading pack, with a smaller pouch on top to be used in a lid-style fashion that closes over the main top loading section. And not to mention a thick waist belt to help distribute the weight over the body instead of all the weight being on the shoulders.

The Arc'teryx Professional Program is designed to provide equipment specifically designed to meet the needs of mountain professionals such as mountain guides and mountain rescue teams. This program mostly provides a hard-shell jacket and pants that is exclusively made as a uniform that meets the needs of these professionals.

Combining the needs of rescue technicians and the advantages of an alpine style pack, this Professional Program has produced a backpack called the Arc'Teryx Rescue Pack 50 (Model 23735). This pack definitely displays functionality as it has multiple access points and is designed to carry the type of rescue equipment that can be required in the mountains. At this stage, the only colour it comes in is red. The international colour for search and rescue is orange, but a lot of mountain rescue teams / search and rescue teams are using the colour red these days; such as for their team's hard-shell jackets, because this colour does stand out in the mountains and snow. So, choosing to make this pack in a red colour is a good choice.

The N315r-LCP fabric that this pack is made from gives it a high level of durability and resistance to the weather. This is a high tenacity nylon fabric that has a liquid crystal polymer ripstop grid which is what gives it the durability and abrasion resistance. So, it can take a hammering against rocks and trees, and also being thrown around in the back of a four-wheel drive vehicle. The grid pattern was mistaken as just being for looks, but it turns out this grid actually has a purpose in preventing abrasion. The N315r-LCP is Arc'Teryx's own fabric. It is the LCP that stands for Liquid Crystal Polymer. It is a lightweight fabric that is resistant to tearing with sealed stitching. This specialised

ORIGIN: USA
COST: \$450
SIZE: 50L /
COLOURS: Red (Dynasty)
WEIGHT: 2.1 kg /10.1 oz
MATERIAL: High Tenacity
Nylon with Ripstop
WEB: arcteryx.com



fabric which is a combination of nylon and ripstop grid allows Arc'Teryx to construct a backpack which is made from a lightweight material that does not sacrifice strength. This is a lighter alternative instead of relying on a heavy Cordura military style pack.

Like all alpine packs it has a top-loading large main compartment, and the closure of this main compartment is a drawstring with a toggle, and a lid section on top. But what makes it stand out is the large front pocket. This front pocket has a zipper down both sides of the pocket, so pulling down from the top quickly opens the whole front pocket for easy access to your equipment. This is like opening up the Arc'Teryx LEAF Khard pack by pulling on the front panel to quickly access all your equipment, but the difference is with the Khard pack you access the entire main compartment, but with this Rescue Pack 50 you only access the large front pocket.

In similar design to the Arc'Teryx LEAF DryPack 25 (LEAF stands for Law Enforcement Armed Forces), inside the large front pocket is a wide Velcro panel that runs from the top to bottom of the pockets back panel. This works well to attach smaller pouches with Velcro backing, such as medical pouches which can be pulled off when needed, and properly organised when standing by. This back panel also has two zippers which work together to open this panel allowing access to the main compartment from the inside. In similar design to the Arc'Teryx LEAF DryPack 25 there is webbing loops, in a daisy chain fashion running down both sides of this Velcro panel, which



Which is Roalnd's shot and which are by Arcteryx? Kit can be well organised but is unlikely to look quite as neat as the studio shots - try to avoid the temptation to cram too much into your pack because it negates the point of a well-organised layout which enables you to see what's needed at a glance.

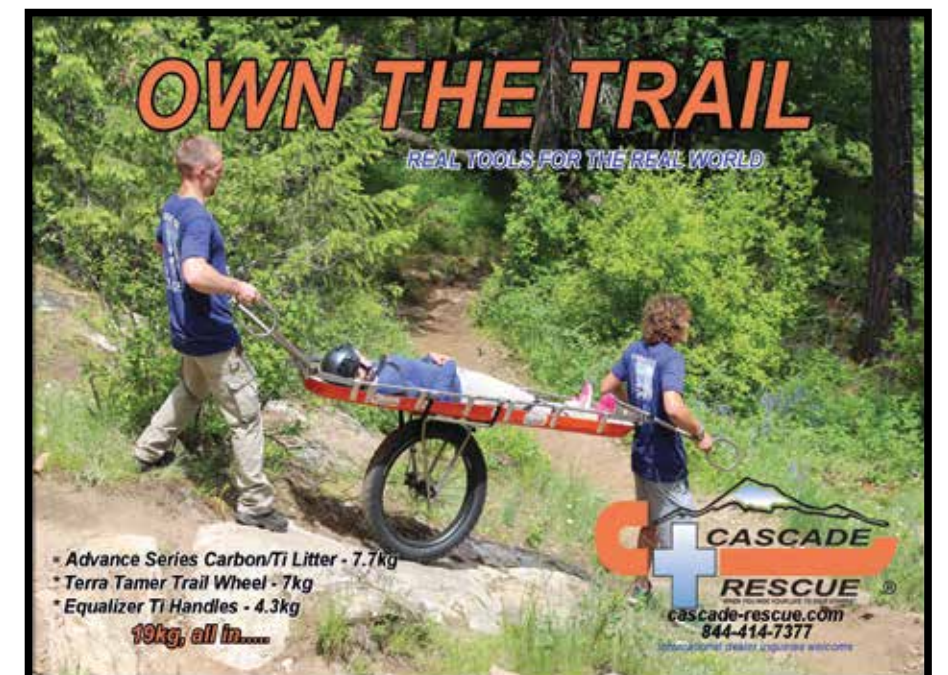
is designed for holding carabiners and other pieces of rope rescue hardware. And while still talking about this front pocket, on the outer side of both these two daisy chains there are long internal pockets (or sleeves). These sleeves can be used to hold avalanche probes, or a shovel handle, and therefore this compartment could be set up as an avalanche pocket. In the event of an avalanche these items can be quickly accessed when time is crucial. This pack can be used by the professional to customise the pack to a configuration that focuses on the type of response that is required. There is also another daisy chain on the outside of this large front pocket running down the centre for clipping equipment like carabiners and technical equipment on the outside.

Running horizontally across this daisy chain on the outside of this front pocket are two webbing straps which are adjustable and can be connected, or removed, by way of the plastic hooks which hook the straps onto the loops sewn into the pack near the sides. These two straps are in a place which is perfect for carrying a pair of snowshoes.

The top lid of this pack has two large pockets which both have Arc'teryx's trademark watertight zipper. These zippers are urethane-coated and apparently endured a few years of testing before finally being used on these packs. There is also a hidden zippered flat pouch underneath this top lid. The Rescue Pack also has a zipper which runs the full length on the side of the main compartment, from top to bottom, allowing side access to the main compartment instead of having to open the top lid and dig in from the top.



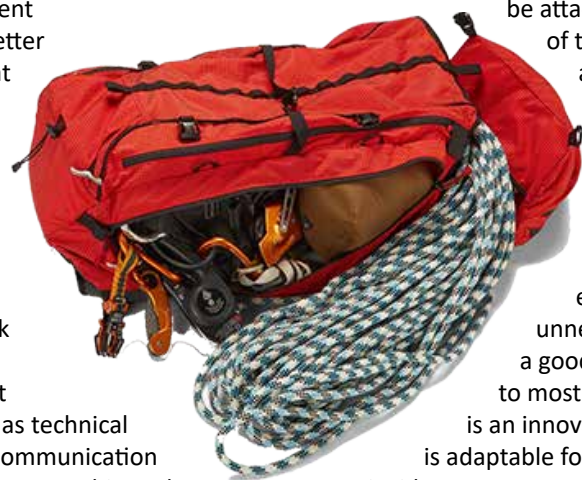
Unfortunately, this full length zipper on the side of the pack is not one of Arc'Teryx's trademark watertight zippers, but perhaps future upgrades of the Rescue Pack may come with the watertight zip on the side. However, in the meantime it does not seem to be causing any problems. The top lid of the pack is removable and so is the hip belt, but the hip belt is strongly held in place by Velcro in a way that keeps it in a solid position, so it does not move around. The hip belt has webbing loops for attaching additional pouches around the waist area, and on the bottom sides of the hip belt there are also gear loops similar to those on a climbing harness for carrying things like carabiners for easy access. The hip belt is designed to take a lot of the weight which would be



experienced with wearing the pack and being a rescue pack can mean that heavy loads of rescue equipment may need to be carried when responding to a rescue situation. The pack does move with the body to assist in maintaining the centre of gravity.

The harness system has fully adjustable suspension so it should suit most body sizes. Similar to the Arc'Teryx Bora AR 50 pack, the shoulder straps position can be adjusted by using a smart GridLock system that seems to be unique to Arc'Teryx. They can be adjusted up or down in three different stages. The high-density thermoformed material provides comfort for the wearer, even though it appears to have a flat look in appearance, which means there is no need to add extra padding under the shoulder straps in order to prevent them from digging into your shoulders causing unnecessary discomfort. The back panel appears to be made of multiple layers with aluminium stays which can be bent to conform with your bodies shape and to also keep a portion of the pack away from your back which allows air to circulate between the pack and the wearer, and therefore preventing unnecessary sweat and overheating of the back. The back panel also has a removable composite construction plate to maintain the structure of the back panel. There is a sternum strap which is adjustable and can be moved to different heights on the shoulder straps for a better fit for the individual. A lot of packs that claim to be rescue packs usually have a whistle built into the Fastex buckle of the sternum strap, however this pack did not have one, instead it had a clip that is again, unique to Arc'Teryx.

As the name suggests, the Rescue Pack 50 has a 50-litre capacity allowing the user to be able to carry the equipment necessary for a rescue response, such as technical rescue equipment, medical supplies, communication systems, navigation, and survival equipment. This pack is designed to meet the needs of a rescue technician, so weighing 2.1 kilograms tends to classify it as heavy when comparing it to a pack of similar size such as Arc'teryx's Alpha AR 50 which only weighs 1.3 kilograms. But when comparing it to the Arc'Teryx Bora AR 50 it weighs about the same. The pack does have some extra padding sewn into the material in the



base. It feels like a thin piece of foam has been put inside this section of material for extra durability.

The backpack has a tall profile with no side pockets, which makes sense because having side pockets would prevent accessing the main compartment via the full-length side zip. It does have compression straps on the sides, but these don't seem to get in the way too much when trying to access the main compartment via the side zip. As already mentioned, the inside of the large front pocket also has a zipper access to the main compartment, so every piece of equipment in the main compartment can be accessed without having to unload everything out the top. This is a very handy feature to have when needing a specific piece of equipment, because responding to a

rescue can require various pieces of equipment but not every piece of equipment may be needed. There is no water bottle pockets on the outer side either. It does have a few pockets, but it is not one of those backpacks which has a separate pocket for everything.

The outside has an attachment system for ice axes which allows them to be quickly removed when needed. Other items can be attached to the outside, such trekking poles and climbing equipment. A climbing rope can also be attached to the outside, sitting on top of the top loading main compartment and under the top lid. The side compressions straps can also be used to hold the rope in place at the sides.

This pack has lots of handy features, yet at the same time it doesn't have extra features that could be considered unnecessary. At 50 litres in volume it is a good all-round capacity for responding to most mountain rescue scenarios. It is an innovative and durable backpack that is adaptable for responding to a wide range of incidents. For a material that appears so lightweight it is surprisingly capable in taking punishment and this pack is a great choice for bad weather. Overall this pack is definitely made with excellent quality. It combines the light weight, long range carrying capability of an alpine pack with the organisation of a technical rescue pack.

SAR ATV



ATASD is an advanced multi-purpose 4-season amphibious vehicle. Designed as a powerful Search & Rescue amphibious vehicle it could be also used with much success as a passenger and cargo transportation mean over a wide range of water and ground surfaces. Founded in 2009, "Interconn Development Ltd." is dedicated to developing high performance amphibious vehicles. The goal was to build cost effective, multi-purpose amphibious vehicle for Search & Rescue, First Responders and Military applications that could successfully operate in areas where conventional watercrafts can't. From the debris-filled streets of a flooded Canadian city to the dangerous wild river of Brazilian Amazonia – the ATASD was designed for all these reasons and more.

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- 2) Easily accessible frame and engine components for repair or replacement.
- 3) Variable pitch air propeller specially designed for hovercrafts with 92% efficiency coefficient.
- 4) Adjustable air pressure inflatable skegs, protected from tear and wear by replaceable UHMWPE shells.
- 5) 252 hp 2.0L or 2.3L 310 hp Ford Ecoboost Turbo engines-fuel efficient and readily available spare parts and servicing at any auto repair shop around the world.
- 6) Rated cargo capacity is 700 kg

- (1540 lbs). This includes 1 pilot + 6 passengers + fuel.
- 7) Deck room is sufficient for loading one 8 wheeled Argo or two snowmobiles.
- 8) Included a removable deck/cabin enclosure for protection from the elements.
- 9) Available interior heating for winter operation.
- 10) Full forward lighting array for dusk or night time operation.
- 11) 15 minutes to re-arrange deck for use as cargo, passenger or cargo- passenger configuration.
- 12) By transportation requirements to overseas customers or to far destinations ATASD can be partially or fully disassembled within 5-6 hours and loaded into the 40' sea container. Re-assembly will require approximately the same time.

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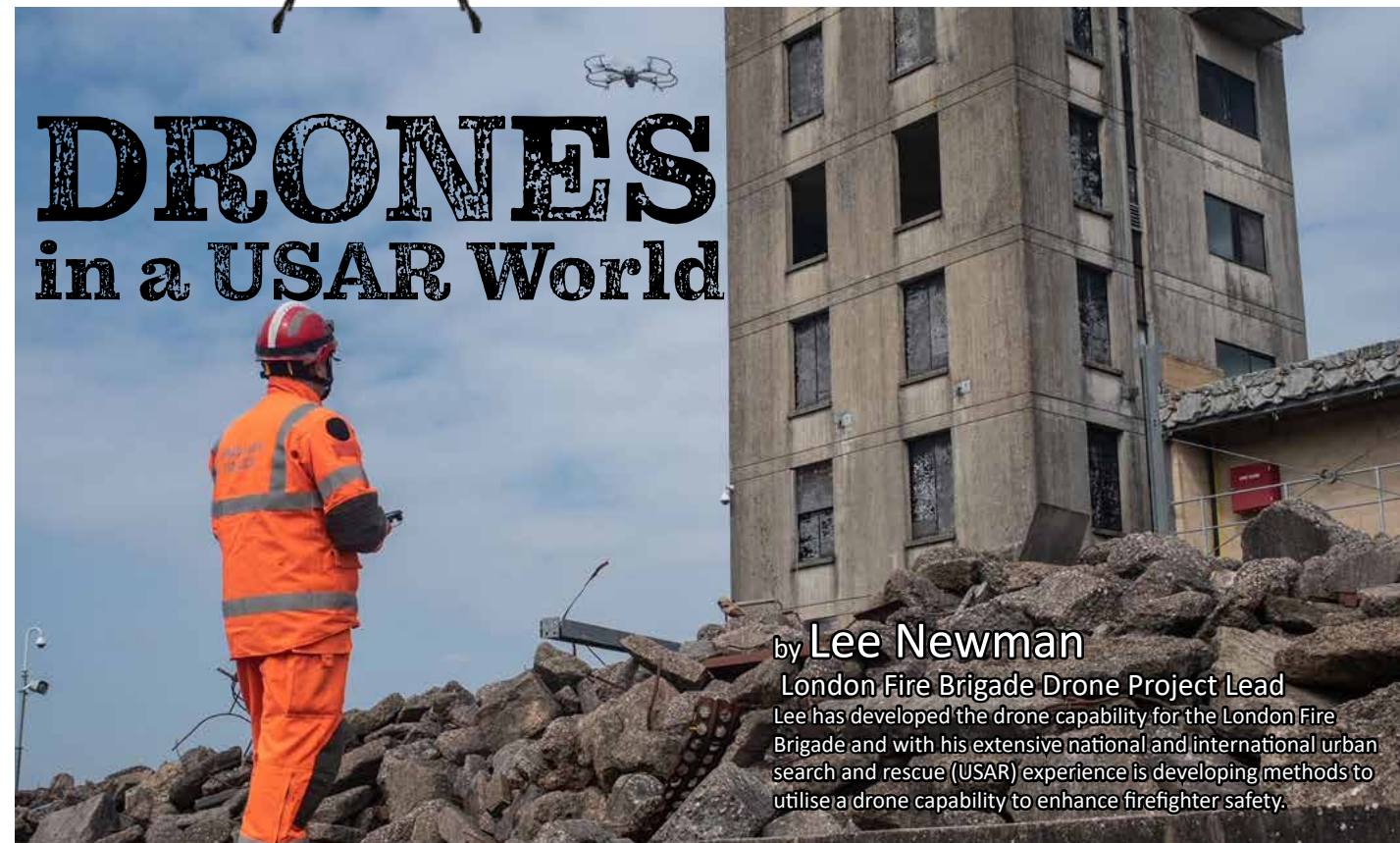


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INTO THE VOID

Urban Search and Rescue in its purest form has been with us in various forms since way back and in a more uniformed and developed capability form since World War 2. During the war years it was mainly a dig by hand process, maybe some tools and if lucky some heavy plant. By the end of the war the capability had grown in technical and practical know how to the point where some shoring techniques are a direct consequence of this knowledge learned. From the war years through until today it has increased immeasurably in what it can deliver at an incident if called upon with various hi-Tec equipment, enhanced technical skills and advanced methods of rescue. Advanced technology should see further changes to capability including, robotic search dogs (SPOT is already in service <https://www.bostondynamics.com/spot>), artificial intelligence sensors, nano technology and drones. The use of drones in the urban search and rescue environment is the main thrust of my work within the London Fire Brigade along with the organisations aim of driving innovation into different areas of the service.

This article will explore how drones could effectively be used in a USAR environment and what it will mean for teams overall planning, searching and rescuing using the information harnessed from the drone. I will discuss how I have tested drones within exercise simulations,

by **Lee Newman**

London Fire Brigade Drone Project Lead

Lee has developed the drone capability for the London Fire Brigade and with his extensive national and international urban search and rescue (USAR) experience is developing methods to utilise a drone capability to enhance firefighter safety.

the benefits gained and the feedback from the staff and technicians received was.

BEFORE DRONES

Information at the scene of a USAR incident and any incident really, is incredibly important so those in charge can assess the situation quickly and make value judgement decisions and plan a course of action. The stages of a USAR incident are broken down into Assessment, Search & Rescue (ASR) levels which will range from wide area assessments down to individual search sites. Before drones the information over a wide land mass was gathered by ground intel, satellite images and aerial photography sometimes using planes or helicopters. Latterly, as described in TECHNICAL RESCUE, drones were pre-dated by the use of remote control helicopters with an on-board gimbal-mounted camera but such craft were incredibly difficult to pilot so would not have been widely available. Nevertheless, the information captured by all or any of these measures allowed for a picture to be built of what teams are going into and to help break it down into sizable chunks thus allowing a more efficient approach to be taken when allocating work sites to teams. Although this proved successful for incidents in the past, evolving technology has now opened a new source of information gathering available to all services/teams that can prove game-changing for future incidents.



DRONES AND BEYOND

The new age of drone technology within USAR will be a potential game changer in respect to continuous 360° situational awareness and additional capabilities it can provide. At a recent USAR exercise at the Fire Service College (UK) I used the drone for the initial assessment to feed back to the command cell. I was able to identify hazards, locate victims and send back the images for the officers to start making plans from. The drone was also used to fly above the line and hail rubble pile sweep to give a wider view and to spot any potential hazards not seen from the ground. The operator with a radio relayed the information to the team leader in a rapid manor to give early warning of potential hazards.

This role moving forward could be done autonomously or from a tethered drone and the live feed received via a team leader tablet and will be a normal integrated process within a few years. At a recent incident in London a three-story house had partially collapsed, and a full search had to be made to locate the missing occupants. The access to the top floor was a slow process due to the need for a platform to be built plus shoring around the structure to enable a safe work environment. All of this took time and by the time shoring systems had started being put in place the aerial appliance had arrived that was then used to gain access for USAR technicians to look inside and clear it of any victims.

I thought about the timescale we have in USAR to save life and the time it takes to erect safety systems to gain access there is a gap in which we could exploit using drones. I tested the ability to fly small sized drones through windows, doors or any general sizable gap to see if this would be an ideal procedure to explore voids and spaces not easily assessable by technicians for the reasons of having to put safety systems in place first. The flight in our USAR training rig was fairly easy and once we were familiarised and

spatially aware, we could fly about the room and use the camera to assess and systematically search the area. I then took it to the next level when I flew it from outside of the USAR rig up to the 6th floor of the tower block and into the lobby, I used this flight to test the limits of drone use and how far into a building you could go before losing signal or any other limiting factor. The only limiting factor was the drone used did not have lighting however, this is already commercially available. The ability to undertake these type of flights means that at the initial stages of an incident we can assess and search from a stand-off position which will limit USAR technicians from entering buildings unnecessarily increasing their safety and



DRONES

providing critical information to incident planners.

MAPPING AND PLANNING

Aside from the physical flying of drones at USAR incidents the other options they give us are, Mapping and planning, 3D modelling and situational awareness.

At any incident we can take photos and print them off for incident commanders to use to draw up search sectors and for briefing crews with, however the capability of the drone and associated software via computers means the mapping can be far superior to just a piece of paper. It is possible to show this as a live visual with floating icons to denote specific points of interest

or cordons and can be as dynamic as the incident and will aid the situational awareness to be maintained remotely. 3-D modelling is fast becoming an application which in some cases can be turned around within 20 minutes and enables the viewer to look round the whole building from floor level or a bird's eye view. This will be the go-to for any incident and as the incident progresses the 3-D models will almost be a time lapse of the incident and show progression and or deterioration of the building. These models will form part of the post incident brief and any subsequent investigations and will enable people who attended the incident to remember actions



and events better through a visual representation.

SUMMARY

The use of drones within the USAR world is slowly increasing in use and its untapped potential is only now being realised to what it can bring to the table. Through innovation and education, we will start to see a rapid increase in utilising drones in this field of operations. Using them as a safety tool primarily for firefighter safety coupled with their ability to aid in information gathering and post flight mapping and planning processes. The next generation of drones will incorporate robotic search dogs to undertake a multitude of functions, artificial intelligence drones to aid in search and rescue and nano robots or drones to

enter voids and send back data of conditions and casualty information.

A few years ago, this would have seemed like fantasy but the reality is, it's here already and evolution is likely to move faster than fire and rescuer services can financially keep up with. But there is little point in waiting for the next 'upgrade' because there will always be something new on the horizon. All you can do is step onto the ladder with the best technology you can afford now - no matter what comes next, that current model will still be better than whatever you did before drones.

DRONE/UAV NEWS

RENO FIRE DEPT.CA ASSESS DRONE OPTIONS FOR WATER RESCUE



As part of the [FAA's BEYOND program](#), the City of Reno, Nevada is testing [drone-based search and rescue operations](#).

A key limitation on commercial drones, however, is their ability to operate "beyond visual line of sight" or BVLOS, in order to integrate commercial drone operations into mainstream airspace. In the US and other national airspaces, operators must maintain command and control at all times, avoid flights over people, and avoid collisions with other aircraft. Hence the need to maintain Visual Line of Sight (VLOS) is a critical part of 14 CFR Part 107, the law governing drone flight. But it limits the distance a drone can fly to roughly one mile, with at least one pilot on the ground managing the drone.

For large scale operations, this means drone crews must continuously reset their base of operations, flying the drone in one location then moving to the next mile to start a flight again which is neither scalable or cost-effective.

FAA approval (a waiver) is required to perform Beyond Visual Line of Sight (BVLOS) operations, allowing drones to fly long distances. But these approvals are notoriously difficult to obtain as they require drone operators to identify potential operational risks and propose risk mitigation strategies to ensure the safety of other aircraft, people, and the property below. If granted, the approvals are also limited to a specific geography. While some of these operations may involve temporary BVLOS authority for a public aircraft operating under an FAA certificate of authorization or waiver, others occur under visual line of sight using Part 107. The City

of Reno's goal is to validate the safety of true BVLOS, to unlock long-range search and rescue operations for Reno and beyond.

THE SEARCH AND RESCUE USE CASE

Emergency management professionals understand the "Golden Hour," the one hour timeframe from accident to definitive care, that exponentially increases the likelihood of survival for those being rescued. But search and rescue operations often involve time-consuming foot searches that can take hours or days – or expensive helicopter searches, often limited in how low it can go for clearer views.

In the case of river rescues, time is even more of the essence. City of Reno Fire Chief, Dave Cochran, an expert with over 20 years of experience with the Reno Fire Department and a licensed attorney, leads the City's BEYOND R&D efforts. As a long-time member of the Reno Fire Department Water Entry Team, Cochran has also

SwellProUK
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been trained as an Advanced Emergency Medical Technician. He explained, "Cold water rescues, especially in high water river flows, are qualitatively different from land rescues. The lack of heat can adversely affect metabolic systems, disabling victims quicker. They lose the ability to think and to move. They can't self-rescue, which often causes panic which increases the likelihood of drowning."

Cochrane's Water Safety Team responds regionally, across multiple jurisdictions in Nevada and also provides mutual aid to California. They receive on average 50 rescue calls a year, with a high of 120.

In Reno, average, traditional river rescue operations in-

sary because of the inherent unreliability of initial reports of a victim's location. "We have to send resources all along the river - at the reported point of entry, at the potential end point, and everywhere in between to create a search box," said Cochrane. "We then essentially create a 'net' over that box. We have personnel walking the banks and, when needed, swimmers in the water."

The normal progression, once the team finds a victim, is to "reach, throw, row, go." "If we can reach them, we'll do that. If not, and we can throw them a line, that's our next step. Short of that, we get in a boat to get to them. Our last resort is to send out a swimmer," Cochrane stated. "These steps ascend in order of risk to the victim and to my team."

Now add a drone. Cochran can send it to the scene, and employing infrared tech and other sensors, would begin the search even before committing resources. Initially, the drone would aid in decision-making and planning as to which and how many resources would be required on site. "We would no longer need a net over a big box," he explains. "Drones drastically reduce resources and, more importantly, the amount of time a victim and my team would be in

volve at least 24 personnel and seven apparatus including three engines, a truck, a water-entry vehicle, and others. This huge amount of manpower and equipment is neces-

the water."

Case in point: in June 2021, [Ohio and North Carolina](#)



[reported](#) using drones to rescue missing kayakers, in a span of approximately five minutes each. In these cases it appears the remote pilots tracked the drone, on foot, along the river bed. These drone rescues are not isolated. Drone manufacturer DJI created a dynamic and plat-



form-agnostic [map of drone rescues around the world](#). As of July 2021, it counts almost 400 rescue incidents from over 34 countries, saving 701 lives.

Cochran's best case scenario concept of operations (CONOPS) would be to launch a drone from a strategically positioned operations center near the river to fly BVLOS for these search and rescue missions. In Reno, as in other cities, nearby controlled airspace presents a significant challenge to doing this - the Truckee River runs directly north of the airport runway. The city has worked with Iris Automation, a leader in detect-and-avoid (DAA) technology and also a partner in the BEYOND program, to prove these operations are safe, even in controlled airspace.

Rebecca Venis, Reno's Director of Communications, explained the city is taking a "crawl, walk, run" approach in BEYOND, as the program's only fire department participant. The city continues working with Iris to test its Casia®

series of onboard integrated computer vision systems in a rural area at Fort Churchill park. Iris Automation's DAA system enables intelligent decision-making to avoid mid-air collisions. Iris also provides regulatory professional services to assist partners, such as the City of Reno, seeking permissions for BVLOS operations. Venis explained, "We are conducting the DAA testing and getting a BVLOS waiver in a rural environment to prove the safety case. Once we do that, we plan to use the Iris DAA technology in support of real-world river rescues."





THE DRONE VALUE PROPOSITION

Venis has high hopes for drones in Reno. "Using drones with our Fire Department will save lives, save money for taxpayers, and better protect our communities and first responders. Besides the river rescue CONOPS, imagine how much safer it will be for our team if we don't have to send someone into a building to determine the extent of the fire," she said. "This is just the beginning, though. The City of Reno could utilize drones in support of other work areas including public works, parks and recreation, community development, and more."

Chief Cochran agrees. "Once we have a fleet of drones, we would deploy them for every incident, except basic medical calls, to provide situational awareness." Besides fighting fires and leading river rescues, the Chief leads the city's Hazardous Materials (HAZMAT) and wildland urban interface operations. In a HAZMAT event, often his team faces unknown substances leaking out of tankers. They then have to put up a perimeter and send someone into danger to determine the nature of the substance. "It would be so much easier to just fly a drone and look at the placard on the side of the truck. We would use our field guide to identify what's in it, who the trucking company is, where it came from, etc. A drone would enable us to rapidly do the foundational work to expedite cleanup and containment without putting anybody at risk."

This same logic applies to having eyes in the sky on a standard house fire, wildfire, and motor vehicle incident. Being able to determine what is happening, the location

of the actual danger zone, victim location, and what the overall situation may be, while remaining at an offsite ops center, saves time, resources and even lives.

Dawn M.K. Zoldi (Colonel, USAF, Retired) is a licensed attorney with 28 years of combined active-duty military and federal civil service to the Department of the Air Force. She is an internationally recognized expert on unmanned aircraft system law and policy and recipient of the Woman to Watch in UAS (Leadership) Award 2019, President and CEO of UAS Colorado and the CEO of P3 Tech Consulting LLC.

EVENTS 2021/22

European Cave Rescue Meeting 2021,

11-14 Nov 2021
Ramales de la Victoria,
Alto Asón,
Cantabria
Spain



The 18th Caving International Congress TUI

24 - 31 July, 2022
Savoie Mont-Blanc
France



Interschutz 2022

20 - 25 June, 2022
Hannover
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UNSOCIAL MEDIA

We have mentioned this before but since it keeps cropping up, **we don't do social media** - not *Twitter*, not *Facebook*, not *Instagram*, not *TikTok*, none of 'em. We understand the value of corporate *Facebook* sites keeping colleagues and customers up to date and some of our folk especially Kelly and Gary do use it personally but as a magazine we just can't bring ourselves to support the dubious Zuckerberg empire or any of the other .com billionaire geekdoms. We do have legacy stuff on *Linked-In* because we got lured in when it first started not realising that it would turn into as much of a stalking monolith as the others. If you send us a link request we might occasionally get to it every month or two but don't take it as a personal rebuff if you don't get friended or whatever the hell Linked-In's version is. There's just so many of 'em!

Similarly, there is apparently an **ARBCLIMBER** facebook page that we don't have access to and can't change or answer, we think it was set up years ago by a well meaning 'intern'.

~~ARBCLIMBER~~ WEBSITE DOWN

We amalgamated all of our titles into the one **rescuemagazine.com** website a while ago but still held ARBCLIMBER as a webpage pointing to the main website. However, we've temporarily lost access to that as well. We can't log-in in order to renew the site because it was set up by our man Lee who remains long-term incommunicado in his role as a remote area Park Ranger, last we heard he was fighting the California forest fires so he's certainly got more important things to worry about! *Also on that same server is my direct email address -*

~~ade@trmedialtd.com~~

so this too is currently unavailable
we've got plenty of other contact addresses though.

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- arbclimber@aol.com
- rescuemagazine@aol.com
- accessandrescue@aol.com
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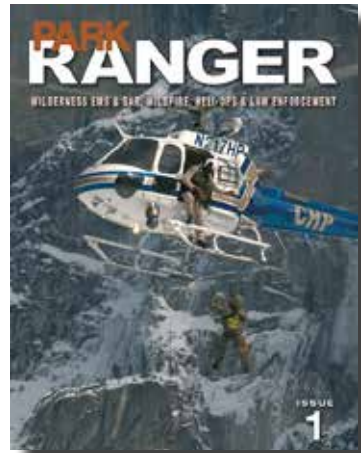
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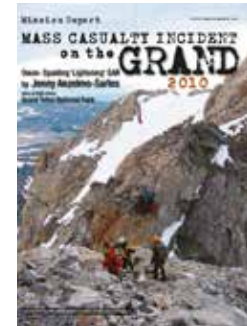
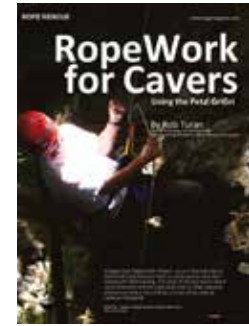
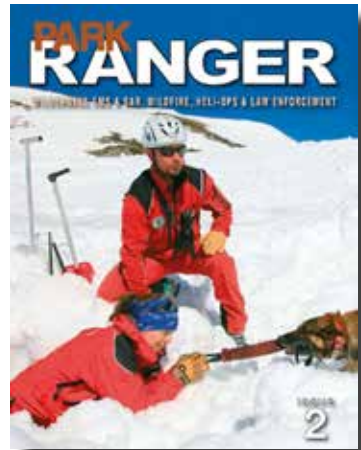
- (it's a)WOMAN'S WORLD-Salute to the Bag Lady
- SPECIAL - Speak Up! by Ken Phillips
- GEAR REVIEW- Princeton Tec Apex Headlamp
- ROPE RESCUE - Litter Bridges
- GEAR SPOTLIGHT - REACH Rescue System

- SAR HELOs - Things that go bump in the flight
- MARKET GUIDE - Rigging Plates
- SPECIAL - Unmanned Aircraft
- GEAR REVIEW- Wolverine ICS Boots
- SEARCH DOGS - Getting to know their capabilities



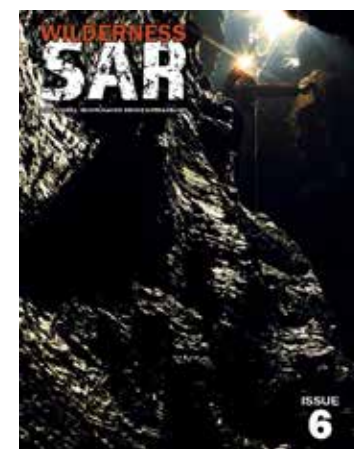
- INCIDENT REPORT: RSA Amputation/Cliff Rescue
- GEAR REVIEW: Team Wendy Ski Patrol Helmet
- KIT PROFILE: RNLI Offshore Rescue
- SEARCH TECHNIQUES: Terrain based Probability

- Models for SAR
- GUIDE to 300+ Lumen Headlamps
- GEAR REVIEW: C.A.M.P. Lift Ascender
- GEAR REVIEW: Bestard SAR Pro Boot



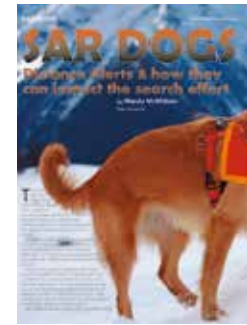
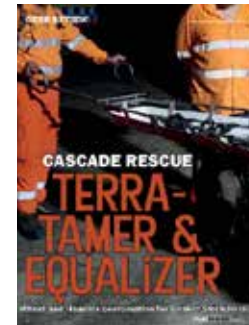
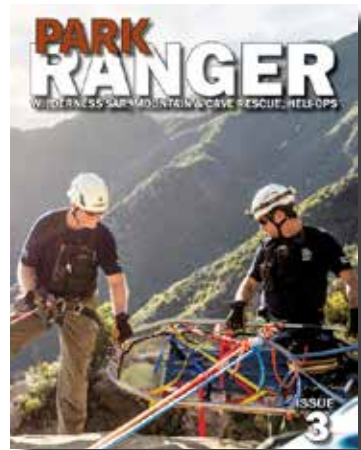
- GEAR SPOTLIGHT - Yamaha Rhino ATV
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- ROPE RESCUE - Rope Work for Cavers
- WATER RESCUE - Pinned Rafts

- SAR HELOs - An Inconvenient Death
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- GEAR REVIEW - Savvy Female Body Armour
- SEARCH DOGS - K9 102 for Search Management



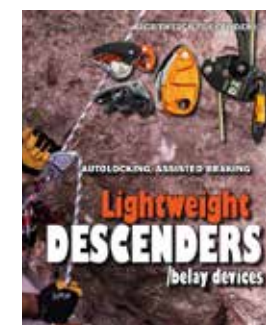
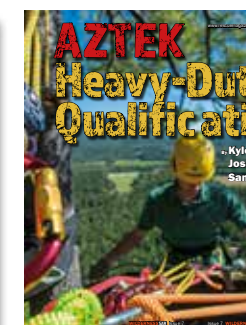
- GEAR REVIEW - DMM Revolver Rig carab/pulley
- KIT PROFILE - Killin Mountain Rescue, Scotland
- DRONES/UAVs - Listening Drones for SAR by Samuel McNalley

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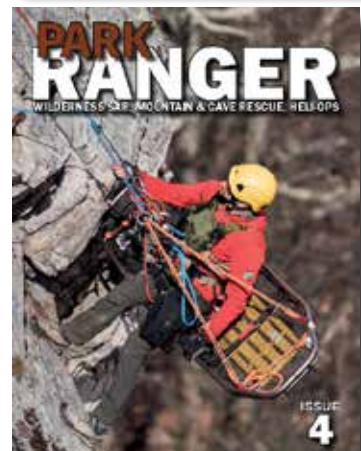
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- TRADITIONAL SKILLS FOR TODAY'S RANGER
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- SAR DOGS - Distance Alerts

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- MISSION REPORT - Meteor Crater, 2013
- MARKET GUIDE - <10mm CANYONING ROPES
- TRAIL NOTES -Who works for who?
- GEAR REVIEW - Peli Urban Elite iPad Backpack



- TESTING-Sterling Ropes Tests for AZTEK system
- SAR SAFETY - Pt1 Skills & Clothing by Greg Toman
- GUIDE to Headlamps pt3 <100 Lumen
- GUIDE to Lightweight Descenders

- WOMEN in RESCUE by Andrea DeVries
- KIT PROFILE - Women's Rescue Clothing
- GEAR REVIEW - Silva Compass & Navigation skills by Roland Curll



- INCIDENT REPORT Montecito 2018 Debris Flow
- HELICOPTERS: casualty strop/package options
- TEAM: Climbing Rangers of Mohonk Preserve NY.
- KIT PROFILE: Cave Rescuer

- GUIDE to 7/16", 11-11.9mm Low Stretch Ropes
- GEAR REVIEW - Haix Nevada Pro Mid Boot
- GEAR REVIEW, Garmin Fenix 5X Plus GPS watch



- WATER RESCUE: EMILY Drone by Ed Lundquist
- WELL-BEING: Stress Injury by L McGladrey & K Democoeur
- SPOTLIGHT: Micro-Blasting by Carroll Bassett
- GUIDE to Basic Hand Ascenders
- MOUNTAIN RESCUE: UAVs by DAS

- SAR SAFETY: Pt2 MR Equipment by Greg Toman
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- EQUIPMENT: SAR Pack pt 1 by Roland Curll
- WATER RESCUE: Crossline REACH by Mitch Sasser

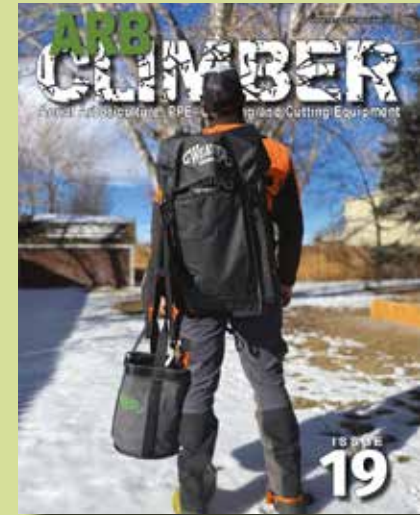


WSAR#9's **cover** features SMC's **Apex** swivel pulley, well....the **TerrAdapter** is a pretty obvious presence as well but mainly it's about the **Apex**. This is another shot from prolific US photographer John Evans who many will know from some iconic **Petzl** images and will soon get to know more in his new role with a **GoPro** style company (or maybe it is **Go-Pro**- can't access the emails on our lost server to check!). Elsewhere in this issue our main article is another big'un, a **GUIDE to Rigid Frame Stretchers**. This is something we haven't revisited since 1994 would you believe! Our intro covers construction, suspension options, water and helicopter rescue, wheels, handles and head protection. Our next WSAR issue will feature SKED-style flexible/roll-up stretchers and we will also have a separate **GUIDE to Confined Space Stretchers** in **TECHNICAL RESCUE**. Scottish Mountain Rescue's Darryl Ashford-Smith carries on from last issues **UAV/drone** article with specifics on how to use them in searches while Marcos Gabl of the **Austrian Mountain Rescue service** tells us about his **ARCOS Search Management System** along with info on his own rescue team. Oz firey Greg Toman's series on **Rescue Safety** from around the globe continues with **rope rescue systems** including hardware, software, rope protection measures and then the specific types of rope systems being used a number of the key teams in the US, Canada, UK and Europe. Fellow Aussie, NSW Police's Roland Curll finishes this issue off with the second part of his look at the **SAR Pack**, a term that's come to mean the 24hr 'personal grab-back' that sustains a SAR team member's safety and well-being on search and/or rescue that could become protracted at the drop of a hat. Environmental protection and getting through an impromptu night out is the subject of this one. **The PDF version of this is FREE-to-ALL.**



Holmatro's battery powered **Pentheon** cutter is the subject of issue 79's front cover and On-the-Cover spread. You might remember the cover of issue 76 with **Lukas's** spreader being used in water. Both systems are completely waterproof so, apart from miniaturisation which will be the next step in evolution these battery powered tools ARE a better option than your generator-driven, hose-fed hydraulics. Money will be the limiting factor in these systems being standard on all trucks but that time will come. Also on Extrication Rich Denham and Nick Appleton have a comprehensive review of Lukas' excellent **Vehicle Extrication manual** utilising the skills and knowledge of ex-Holmatro man Ian Dunbar. Reed Thorne looks at the best way to teach and learn the sometimes complex art of Pulley systems in **Learning by Rote**. You may be able to use a pre-rigged system straight out of the bag and we would contend that this is a quicker option when time's-a-pressing but *every* rope rescuer should be able to build these systems from scratch. Our **GUIDE** is the third part of **Wheeled Waterproof cases** with just the 'long' cases to go next time. These are used more for firearms but can be very useful for tubes, tripods and shoring. Chile's Mitch Sasser and California's Doc Mike Croslin continue their update on the **REACH water rescue system** begun in issue 8 of WSAR and emphasise a new doctrine warning against entering moving water AT ALL if it can be avoided. Too many wading deaths occurring. Mark Phillips of Texas looks at **Dive Searching Techniques** and how learning in the seemingly unrealistic confines of a swimming pool can help yield better training results because it's such a controlled environment. Back to rope stuff and we look at the three 'heavy-rescue' lowering/raising devices with our man Roland. Literally in a clas of their own are the Petzl **MAESTRO**, CMC's original **MPD** and the CMC/**Harken Clutch**.

WHAT'S in ARBCLIMBER 19



ARB CLIMBER issue 19:

On the cover is a contemplative climber adorned with **Weaver bags** including the **Cavern** which is the main focus of our On-the-Cover feature. Our **Market Guide** has again turned into a monster - it's **Battery-Powered Handheld Blowers** and we've had to divide it into stand-alone handheld models and in the next issue, Backpack and waist carried Corded models. We will also get around to petrol-gas models but these too will need to be sub-divided because there are just so many - Echo alone has about a dozen back models! We were hoping that liquid fuel would have been replaced by battery before we got around to them but that's not looking very likely despite the meteoric rise of battery-power.

With such a large GUIDE to Blowers we managed to even things up for pure climbers with a quite specific **GUIDE to CLIMBING ROPES** covering just the 11.5 to 11.8mm models (0.45"). Around the 12.7mm mark has become a noticeable sub-class of ropes in recent years so we've singled them out for a closer look.

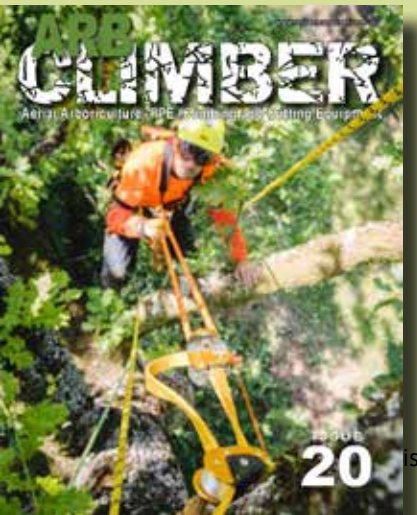


Not much room left for reviews but Adam managed to sneak one in on the **Edelrid Talons** which he and his crew have been using for several months. We'll be having a GUIDE to SPIKES/GAFFS/SPURS in either issue 21 or 22 of **ARBCLIMBER**.

Michael 'Ox' Oxman kicks off some hopefully regular appearances with an article on last year's Treeapalooza even in Florida, a quite spectacular scenario-based competition using 'crashed' aircraft fuselages. **TECHNICALRESCUE** readers take note! Finally, our Recreational Climbing series with Charlotte Ina-Sterland looks at where you can and can't climb. You might think that you could pretty much climb any tree in a local, regional/state or national park but technically, that's rarely the case. You're unlikely to be prosecuted in preference to being told to 'get down and shove-off' unless you're on General Sherman, the White-House lawn or Buckingham Palace grounds but the key thing seems to be....seek permission (although we are prone to asking for forgiveness rather than permission for harmless stuff like this).



WHAT'S in ARB CLIMBER 20



ARB CLIMBER issue 20:

Our cover and On-the-Cover features **Petzl's EJECT** a ground-retrievable, adjustable friction-saver with pulley. Shown above this issue's combination GUIDE/REVIEW to the top 6 **French ARB harnesses**. We also have a combination article/GUIDE to **RFID kit ID systems** while our more conventional GUIDE to everything in the world is **Battery-Powered Backpack & Corded Blowers**. The mighty Ox looks at **Crossbow Line-setting** for giant rec climbs (right) and Charlotte Ina-Sterland looks at **Sleeping in the Trees**. Reviews this issue are on **Atlantic Braids Kernmatle arb ropes** and **Ego's battery-powered top-handle chainsaw**.

DMM's VAULT downsized

Secure hooks, wherever!. For your keys in the camper van, coats in the hallway, tools in the workshop or gear on your harness, the lockable **DMM Micro Vault** is your secure storage solution. Big enough to hold two full sized carabiners and strong enough to never flinch, **Micro Vault** can be folded away when not required or fixed in place for easy access. Available in a 4 colours.

FEATURES

- Can be installed to wide range of substrates e.g. wood, laminates and harnesses
- Accepts two full sized carabiners
- Two modes – pivoting and fixed
- Keylock nose
- Screwgate locking mechanism



- Top plate helps to organise kit
 - Compatible with DMM Parking Lot (pic far right) for up to 45mm webbing
 - Hot forged & CNC machined alu
 - Patent Pending - Not PPE
- Micro Vault weight: 22g
Opening: 12mm WLL/MBS: 0.3KN/3kN
Dimensions 35 x 68mm
Vault £20 Parking Lot £10
www.dmmwales.com



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me
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Coming up in 2022

We're not allowed to talk about new products being launched by Petzl for 2022 but some have been making the rounds at recent shows so we can at least mention what's around the corner. This little beauty is a twin 38/40mm sheave, double bucket, swivel, progress capture pulley with a GriGri/ID-style release/lowering handle and it loads rope while still attached with a red warning indicator if you fail to close it properly. If they crammed any more features into this, they'd have to put a Swiss Army badge on it. Expect weight to be less than a kilo/2lb and an MBS around 36kN.

Also on the 2022 horizon, some more swivel pulleys to go with the **SPINs** we saw this year (and are currently using for Reviews later this year), a double pulley carriage trolley for

highlines and some new emergency/evacuation harnesses. 15,30 & 45 L bucket bags with loads of handles and attachment points etc. much flasher than the name 'bucket-bag' implies. Some hard and soft rope protection measures and that's all I'm prepared to say...now shut everything down and let's get out before they find us...

**PURE
FOCUS
TAKES
YOU TO
GREAT
HEIGHTS.**

**THE RIGHT GEAR
GETS THE JOB DONE.**

Freedom To Focus™



DON'T GET COMPLACENT WORKING at HEIGHT

Actsafes have received a few incident reports regarding dropped ACX and batteries that they want to share to help avoid further of these incidents.

DROPPED ACX ASCENDER

ActSafe have received two incident reports where ACX machines have been dropped. Both cases involved an unloaded ACX being sent down by remote control. Both ACX had functioning rope cover locks and it is suspected that the rope covers were not closed properly by the users. Close the cover with a distinct click and double check by pulling outwards on the rope cover with your hand to make sure it's locked. This type of incident can only occur with an unloaded ACX, because when ACX is under load, the cover is also forced closed by the load.

DROPPED ACX BATTERIES

ActSafe have received two incident reports that batteries have been dropped. One is suspected to have been dropped because the battery was not fully inserted, and the locking mechanism was thus not holding the battery in place. Always check that the white battery lock is visible outside of the black battery plastic. "click in place".

The other incident is believed to have accidentally operated the battery release while practising to use the emergency descent. Each ACX is supplied with a Cordura protective cover which fully covers the battery and is one option to prevent dropping the battery. It is also possible to mount a tool tether or sling to the battery to secure it to the ACX. The battery sling is marked 0kN, but it is tested for a one meter factor one fall with a static lanyard. If changing the battery at height always secure it in the battery sling with suitable lanyard. Spare battery should not be only hanging in the battery sling while transported but secured in a bag or similar to reduce risk of dropping it.

Both these cases of the dropped ACX and the batteries highlights the importance of proper user training.

actsafe.se

ED: We promised our man Tim Anderson a veteran of the Philadelphia Fire Dept and better known to readers as ARS-Anderson Rescue Solutions, a new Front Cover once his water rescue stuff came out but we haven't had enough issues out during Covid to clear our backlog so we tried to change the subject and asked him how things were going with the new gear and the MagnaPulleys we featured on the cover of WSAR issue 7 and whether he had any new shots we could use for an update page.....not sure that was enough to make him forget about the cover...

Tim: Pulleys: The Magnapulley (pics right) market continues to grow but by far our biggest customer is the tactical user who perhaps benefits greatly from the flexibility of the small package. We've also gotten a bigger foot in the back country market that has similar needs. They are pending CE UKCA certification which should be completed (if I can ever get all the paper work squared up) in September. I'm excited to finally have that recognized cert on there. 1/2" rope capacity prototype is out there but still wrestling with the market and not sure if I'll make them or not.




ARS Rope Gear Update

Multi-Loop Rescue Strap (below): We've expanded into the water rescue market a lot with the Multi-Loop Rescue Strap and the Magnapulleys. The flexibility of the pulleys and numerous usages for the MLRS have been a big asset in the water. We've used the pulleys for ziplines and rigging, and the MLRS for virtually everything: ziplines, rigging, boat entry, parbuckling, boat flipping, body recovery, etc. We designed a mesh Rapid Deployment Bag (below) specifically to mount the MLRS on a PFD or directly on a boat.



The Breakout rope bag continues to prove its worth [ED: see ad on page 17] and we may have some tune ups coming to it in the next 6 months but we'll see.


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Arb supply stores that stock **ARBCLIMBER** ALL have a wide range of rope-related equipment, including ropes, hardware, harnesses, helmets etc. as well as chainsaws, boots, clothing etc. Now that SRT/SRS is an accepted area of tree work, the rope-related equipment is often the same and even if it's not they can get it in for you. In the case of suppliers shown in red (opposite) that stock **TECHNICAL RESCUE** and **WILDERNESS SAR** magazines as well as ARB CLIMBER, these are already rescue and access equipment suppliers of note so they can sort you out whether you're an arborist or a rescue agency.

For rope-related equipment in particular, you should check out your local ARB supplier or Rescue supplier, if you haven't already, and be amazed by the amount of kit you recognise.


If you would like to stock our magazines (and aren't located next door to our existing stockists), [email us](mailto:admin@rescuemagazines.com): admin@rescuemagazines.com

ARB EVENTS

Tree Care Industry Association Expo 2021
4-6th November 2021
Indianapolis Convention Center
Indianapolis,
IN
USA
expo.tcia.org




























ArborFest Expo East
1-3rd April 2022
Western North Carolina Agricultural Center
Fletcher,
NC,
USA
arborfestexpo.com



APF International Forest Machinery Exhibition Ltd 2018 (2022)
22-24th September 2022
Ragley Estate,
Warwickshire,
UK
apfexhibition.co.uk



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AUSTRALIA		RISE PACIFIC	7/593 Withers Rd	Rowse Hill	NSW 2155	rise-au.com
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GERMANY Central		SEILTECHNIC	Immengarten 8	Seelze	30926	seiltechnik-hannover.eu
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USA North-East		GAP ARBORIST SUPPLY	835 PA-41	Gap	PA 17535	gaparboristsupply.com
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THESE STOCKIST sell: ArbClimber, Wilderness SAR & Technical Rescue magazines