

DMM RopePro User Guide



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Rope protection is vital for protecting elements of PPE, such as ropes, lanyards, slings and other equipment that can be subject to cutting, tearing and abrasion. The DMM RopePro range is designed to assist users in fulfilling the requirements of the **National Working at Height Regulations** and the **IRATA International Code of Practice**.

Use

Rope access, rope rescue, safety ropes systems, mountaineering, abseiling and adventure activities.

1. **Protect ropes from damage**
2. **Protect property from rope damage**
3. **Protect ropes and safety equipment from operational contamination & hazards**

DMM RopePro Range

Code	Product name	Description
PROPAD+	ProPad+	Three layer protection pad incorporating a thick natural fibre internal mat. Includes a replaceable wear sheet. Designed to protect ropes by increasing edge radius.
WEARSHEET	ProPad+ Wear Sheet	Replacement double thickness heavy-duty, proofed natural fibre canvas wear sheet for the ProPad+. Not to be used as a rope protector on its own.
K-PRO50 K-PRO80	K-Pro Rope Protector	Canvas construction with an internal Aramid layer for added protection. A lighter weight rope protector for enhanced versatility. Available in 50cm or 80cm lengths.

DMM canvas is waterproof, can be re-proofed and is fire retardant treated. All products available to special order in Black or Olive.

General Information

WARNING! Working at height, rock climbing, mountaineering and related activities are inherently dangerous. It is the responsibility of any person using this equipment to learn and practice the proper techniques for use of the equipment for its designated purposes safely and to foresee and take appropriate action in situations where rescue may be required. Even the correct use of equipment and techniques may result in fatal consequences. Medical conditions can affect the safety of the equipment user in normal and emergency use. Any person using this equipment assumes all risks and full responsibility for all damages or injury which may result from the use of it. It is impossible to cover all methods of use. The instructions and pictograms show some of the common correct and incorrect methods of use; it is impossible to predict them all. There is no substitute for instruction by a trained and competent person.

Competence in anchor selection, rigging and risk management are essential for all users. Use must be risk assessed, planned and supervised. Rigging techniques are the primary way to avoid rope damage caused by contact with obstacles. Where rigging cannot prevent contact, each point must be assessed and other forms of protection must be installed. It is essential that users are fully proficient in the use of the type of protectors that they use, are fully aware of device limitations and the methods of positioning and securing. Where safety cannot be guaranteed rope activities should not be undertaken. Training is recommended.

1. Inspection

Immediately before use, visually/functionally inspect to ensure that this product is in a serviceable condition and operates correctly. This inspection should be recorded on the inspection form supplied. We recommend a thorough inspection at least once every 6 months by a competent person (this may be the manufacturer).

Check for signs of material thinning and holes (different coloured material showing), contamination and embedded metal sharps/swarf. Check Velcro closures faces for dirt and function. Check material around eyelets for signs of separation. Check eyelets for security and deformities. Where fitted check the attachment and integrity and function of tie-cords. Remove all damaged/failed items from service for replacement or repair. Inspections provide important information for performance evaluations - essential to all professional users.

Warning: if you are in any doubt about the safe condition of this product, replace it immediately.

2. Maintenance and Servicing

This product must not be marked (except on the ID label), modified or repaired by the user unless authorised by DMM.

Note: this product is not user maintainable with the exception of the following:

K-Pro tie cords are replaceable with 3mm diameter accessory cord - recommended length 70cm per tie.

2.1 Disinfection: disinfect using a disinfectant containing quaternary ammonium compounds reinforced with chlorhexidine (e.g. Savlon) in sufficient quantities to be effective. Soak the product for 1 hour at dilutions recommended for general use using clean water as per (2.2) not exceeding 25°C then rinse thoroughly as per (2.2).

2.2 Cleaning: if soiled rinse in clean warm water of domestic supply quality (maximum temperature 25°C) with mild detergent at appropriate dilution (pH range 5.5 - 8.5). Thoroughly rinse and dry naturally in a warm ventilated room away from direct heat. Important: Cleaning is recommended after every use in a marine environment.

2.3 Storage: after any necessary cleaning store unpacked in a cool, dry, dark place in a chemically neutral environment away from excessive heat or heat sources, high humidity, sharp edges, corrosives or other possible causes of damage. Do not store wet.

2.4 Chemical: All chemical products, industrial dirt/substance or environmental substance must be assessed for the effects on the materials. Users must also be aware that substances which may not damage the rope protector materials yet may damage ropes etc.

2.5 Re-waterproofing: Canvas protectors can be re-proofed using any product specifically designed for this purpose.

2.6 Fire Proofing: DMM recommend the use of a Natural Fibre Flame Proofing Treatment for all planned operations where cutting/grinding sparks may occur. Not suitable as protection from heavy/long term exposure to cutting/grinding sparks, burning torch, or other direct flame sources. **Not to be used for insulation from electrical sources.**

3. Lifespan and Obsolescence

3.1 Lifespan: this is the maximum life of the product, subject to detailed conditions, that the Manufacturer recommends that the product should remain in service.

Maximum Lifespan: Textile & Plastic Products - 10 years from date of manufacture. Metal Products - no time limit.

Note: This may be as little as one use, or even earlier if damaged (e.g. in transit or storage) prior to first use. For the product to remain in service it must pass a visual and tactile inspection when considering the following criteria: fall arrest, general wear, chemical contamination, corrosion, mechanical malfunction/ deformation, cracks, loose rivets, loose strands of wire, frayed and/or bent wire, heat contamination (over normal climatic conditions), cut stitching, frayed tape, degradation of tape and/or thread, loose threads in tape, prolonged exposure to UV., clear and readable marking (e.g. marking, batch reference, individual serial numbers etc).

Contaminated ropes may increase the wear on the product and may damage it.

3.2 Obsolescence: a product may become obsolete before the end of its lifespan. Reasons for this may include changes in applicable standards, regulations, legislation, development of new techniques, incompatibility with other equipment etc.

Disposal: Ensure that all failed items can no longer be used and are disposed of according to local disposal requirements.

Emergency Use: If operational planning chooses lowering or hauling techniques as a standard requirement DMM recommend a device designed specifically for such use. The ProPad+ is designed for the regular deployment and retrieval of ropes and loads of less than 15kg. Lowering of persons or loads in excess of 15kg should only be carried out as an emergency procedure.

Following any Emergency use: Back-up deployment, lowering or hauling, all protectors must be removed from service.

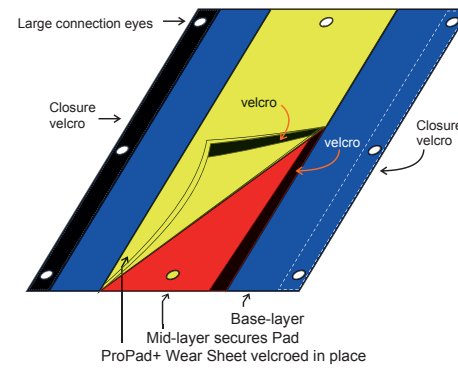
IMPORTANT: Please read and understand this information before use, and retain this information for future reference.

Guarantee: DMM guarantees this product for 3 years against any defects in materials or manufacture. The guarantee does not cover this product for normal wear through usage, incorrect storage, poor maintenance, accidental damage, negligence, any modifications or alterations, corrosion, or for any usage for which the product was not designed.

PRIOR TO USE THE USER IS OBLIGED TO COMPLETE THE FOLLOWING INFORMATION - User's Name: Place of Purchase: Date of Purchase: Date First Used.			
Date Inspected	INSPECTION FORM Comments/Actions	OK? (Yes/No)	Signature
.....
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ProPad+

The ProPad+ is designed for daily use, especially those operations that require ropes to be lowered and pulled up repeatedly. The replaceable ProPad+ Wear Sheet is secured with 40mm Velcro strips. Four layers of heavy-duty, proofed, natural fibre canvas and a 15mm thick inner pad of natural fibre laminated with a flexible, latex membrane. In addition it protects building fascia, cladding and paint coatings from damage. A total of 9 large connection eyes provide many securing options. The 40mm Velcro closure allows the side flaps to be secured. When closed in this manner, the connection eyes align to allow clipping through three holes simultaneously. The replaceable ProPad+ Wear Sheet also makes the ProPad+ ideal for training centres or situations that envisage heavy use.



Use

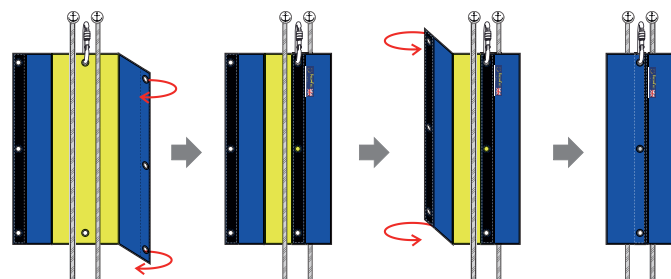
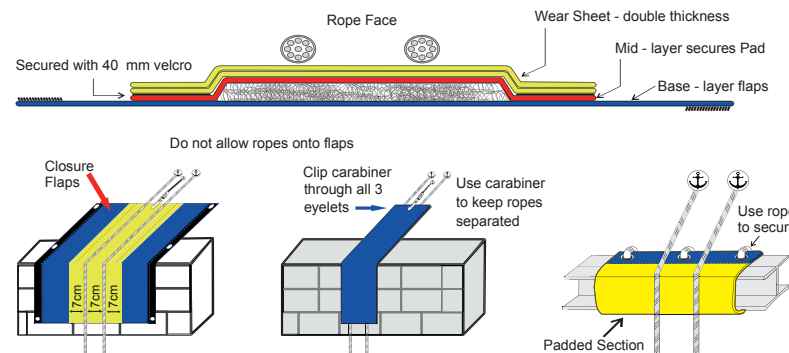
The ProPad+ can be used open or closed depending on application and the stability of the loaded ropes. Position the ProPad+ over a hazardous area and secure to avoid movement or loss. Ensure all hazards are protected. Lower ropes over the padded section. Check the position and check that the method of securing will maintain effectiveness throughout all activities. Descent: using a controlled method descend over the edge keeping ropes on the ProPad+ and minimum of 7cm from the edges of the padded section. If used for two ropes the ropes should be 7cm apart. Where required, close the side flaps and ensure that the Velcro is fully engaged. Do not allow ropes on the side flaps. Ascent: climb up to the ProPad+. Open the Velcro ensuring that the protector remains effective, and climb over the protected hazard using a controlled method. To prevent dropping the pad during installation and manoeuvres ensure a suitable back-up connection is used.

When the ProPad+ is used to protect more than one rope it is vital that the protection will remain in position and effective if either rope was to fail. Use multiple pads for large contact areas. Always check that the ProPad+ Wear Sheet is correctly positioned and that all Velcro is fully engaged.

Securing the pad to the structure

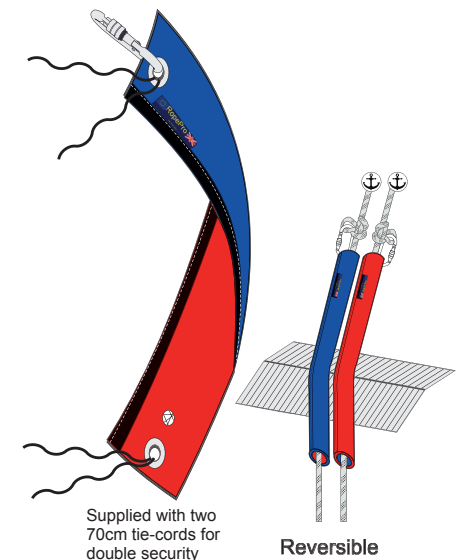
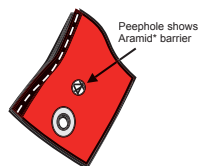
ProPad+ - Use 6mm-11mm diameter rope to secure the ProPad+ to the structure. Ensure that lateral rope movement does not exceed 50% of the width of the pad's padded area.

ProPad+ Wear Sheet - Only for use with ProPad+. **Not to be used as a stand-alone rope protector.**



K-Pro

The K-Pro uses two layers of heavy-duty, proofed, natural fibre canvas with an additional Aramid layer in-between. This Aramid layer provides additional protection with little increase in weight or bulk. It is designed for use on areas of moderate abrasion and minimal lateral movement. Can be used to protect rigging slings and where rigged ropes cross one another. Used to protect ropes from dirt or becoming contaminated with rust or heavy grease. Also used to protect structure from rope rub and where rigging equipment is in contact with painted surfaces etc. Not for use on sharp edges (less than 3mm edge radius). Full length continuous Velcro and large connection eyes at each end to ensure effective protection and double position fixing. Supplied with two 3mm diameter cord ties. Reversible red and blue canvas combination with Aramid peep-hole.

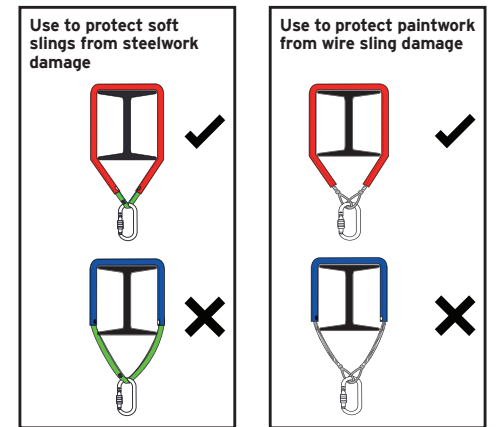


For rope protection - DMM recommend 1 x K-Pro for each rope. Where used to prevent light contamination or protect structural paint etc from rope-rub damage 1 x K-Pro may be suitable for 2 ropes - users must ensure that ropes are not crossed internally and that the positioning system will remain effective if either rope was to fail.

Use

Wrap the K-Pro around the rope, align and engage the Velcro fully. Position in the desired location, secure in place.

See **Positioning and Securing** for suggested methods.



Comparison Table

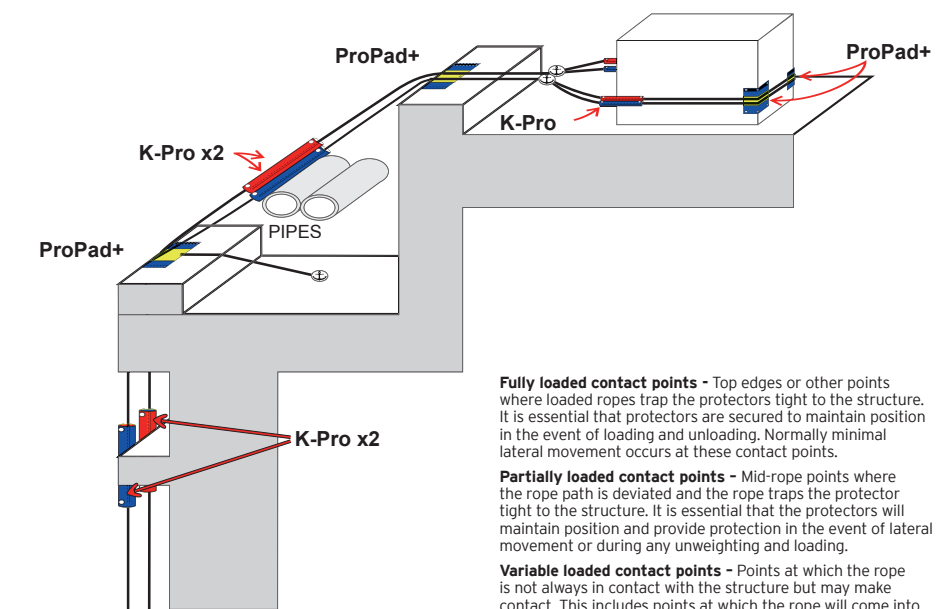
Choose the Best Protection	Heavy Use	90° Edge Radius Limits	Secured to Structure	Controlled Contact with Structure	Controlled Lateral Movement	Pull Through Retrievable Rigging	Emergency Lowering	Emergency Hauling	Contaminants Only After Tests	Occasional Grinding Sparks Flame Proofing
	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓	✓✓✓
	✓✓✓	✓✓	✓✓✓	✓✓✓	✓✓	✓✓✓	✓✓✓	✓✓	✓	✓

Contact Points

The effectiveness, positioning and securing of protectors must be verified prior to each use. Where protectors are to be left in position for multiple access use, the selection of protection devices and securing system must allow for increased wear and the protection must be re-checked at appropriate intervals and prior to each use.

Compatibility: DMM RopePro products are for use with any diameter of rope or size of sling that allows the Velcro to be fully closed. Steel/Wire slings must be inspected to ensure that no damaged or sharp strands are allowed to contact and damage the materials. Connection eyes are compatible with any diameter rope or connectors that can easily be rotated within the eye.

Where possible alternative rigging should be installed to prevent contact points. DMM provide a range of protectors to assist in the various problems associated with ropes contacting edges and obstacles along the rope path. All contact points should be assessed to ensure that they will support the loading of deviated ropes. All contact points will need protection unless the surface is both smooth and curved with large radius 10mm+. Protection will also be required at any contact point where the ropes may rub and cause damage to the structure - painted surfaces etc. The ProPad+ is designed to spread loadings and help prevent deformities to cladding, copings and stop ropes cutting in to soft ground at the top of cliffs and embankments.



Fully loaded contact points - Top edges or other points where loaded ropes trap the protectors tight to the structure. It is essential that protectors are secured to maintain position in the event of loading and unloading. Normally minimal lateral movement occurs at these contact points.

Partially loaded contact points - Mid-rope points where the rope path is deviated and the rope traps the protector tight to the structure. It is essential that the protectors will maintain position and provide protection in the event of lateral movement or during any unweighting and loading.

Variable loaded contact points - Points at which the rope is not always in contact with the structure but may make contact. This includes points at which the rope will come into contact as a user descends. It is essential that protection is installed ready for any periods of contact.

All DMM RopePro devices can be used in multiple layers and combinations. If protection devices are unable to make rope contact points safe, then operations should not commence.

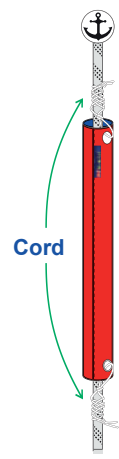
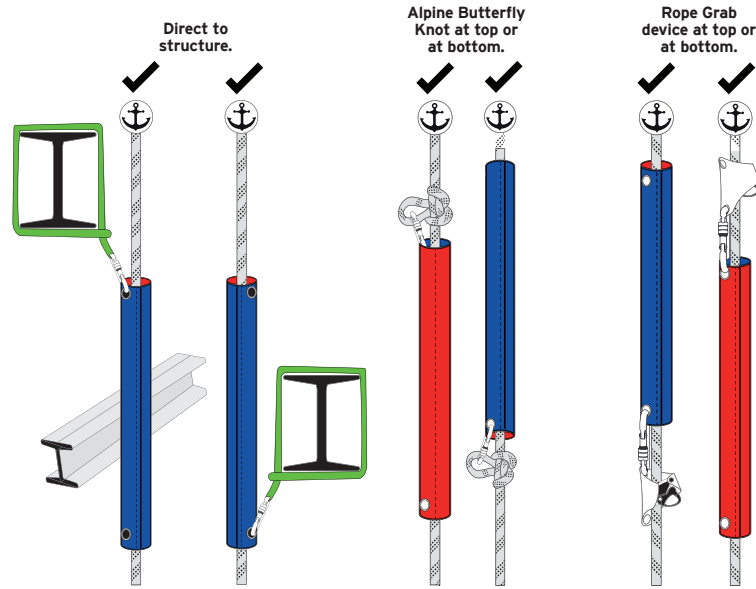
Positioning and Securing

It is essential that rope protectors are secured in position using a method that ensures that they remain effective. When used for a loaded working rope the positioning is generally easily determined. When used for unloaded back-up rope or horizontal safety line or lead climbing the positioning and method of securing must be assessed so it functions during normal non-emergency use yet also for potential emergency loading of the back-up rope. Elongation and other movements must be assessed and allowed for in both the choice of rope protection system and the method used to secure in position. During installation and de-rigging always secure rope protectors to avoid dropping them.

DMM recommend a selection of methods to secure protection. Users must select a suitable method for each situation and assess effectiveness prior to continuing operations.

- › **Secure direct to structure**
- › **Secure to knots in the rope**
- › **Secure to Rope Grab devices attached to ropes**
- › **Secure at each end using 3mm diameter tie-cords**

These methods allow for operatives to pass an obstacle without fully removing the protector e.g. On ascent: remove lower securing system, partially open protector, move ascenders in to the open section, re-secure the lower securing system, continue ascent re-closing passed sections, opening higher section, remove top securing system, once fully passed re-close and re-secure top system, check and continue ascent. At all times ensure that the ropes are clear of the contact point and associated dangers. When one protector is used to protect two ropes it is vital that the protection will remain in position and effective if either rope was to fail. K-Pro rope protectors are supplied with two 3mm x 70cm tie-cords.



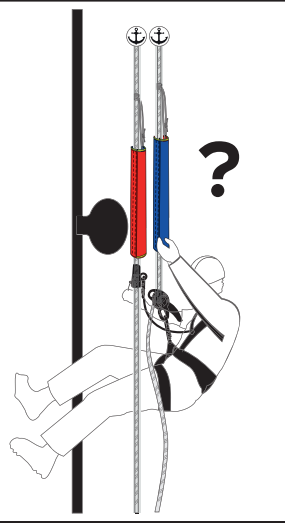
When using cord, DMM recommend the use of one at each end. Ensure all ties and prusiks are secure.

BE AWARE of the problems when using a single prusik hitch:

The use of a single prusik hitch attached to the top of protectors is not recommended for most applications due to the known foreseeable failure/slippage of this method. This method requires a large prusik sling (approx. 30cm loop). To form the hitch, roll up the protector and pass through the prusik sling a minimum of 3 times.

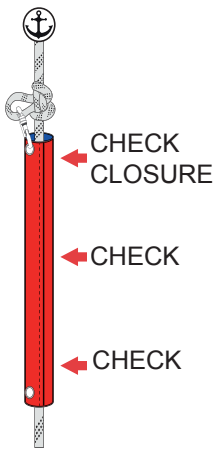
Problems: The prusik hitch will be high above the top of the protector which makes the tightening and adjustment of its position difficult. These problems and the positioning failures that have occurred are sufficiently foreseeable for DMM not to recommend this method as the sole technique used to secure protectors.

WARNING: during installation ropes may be exposed to edge wear.



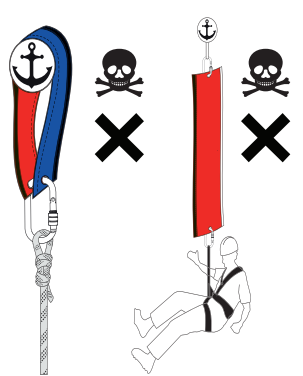
Velcro

During installation the Velcro must be closed and remain so with both faces fully engaged. Nothing should be allowed to affect this closure. If movement shows signs of affecting the Velcro closure, operations must cease until a solution is implemented. In some applications e.g. fully loaded top edge contact points or when protectors are lashed to beams the Velcro may not be required - no lateral rope movement must occur.



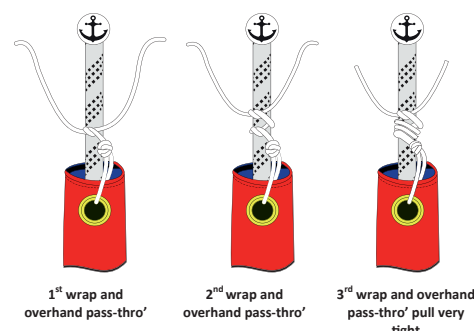
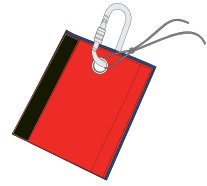
Warning!

Never use to support any load - never connect both ends for use as an anchor.

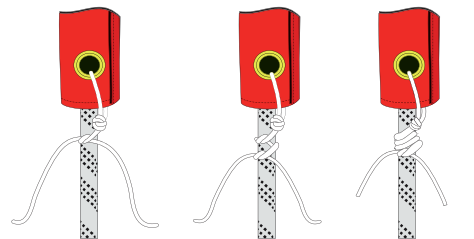


Connection Tails - Tail Knots

Use the supplied 3mm diameter cords to attach tails at each end using a simple overhand knot in the mid-point of the cord. Ensure that each tail is 15cm to 25cm in length. Use a minimum of 3 x wraps each with an overhand pass-thro'. Tighten each overhand during this process. Secure at both ends for double security to overcome unexpected and unwanted slippage/movement.

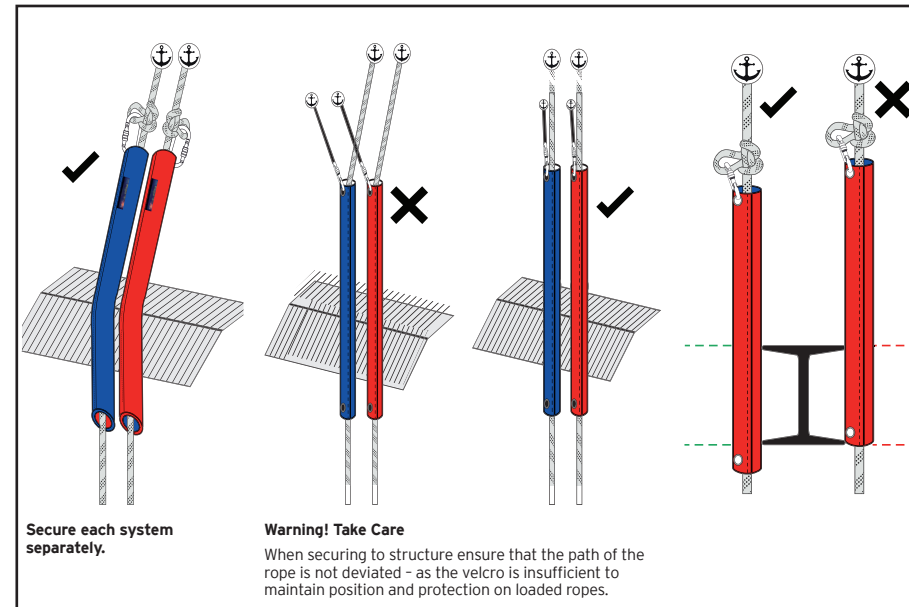
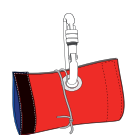


Repeat wraps and at bottom of each protector



Carrying and Transportation - Roll-up and tie with a connection tail. Always secure to a prevent dropping using a carabiner attached through a connection eye.

ProPad+ - always carry secured using a minimum of 2 connection eyes.



Elongation

When protectors are to be secured to a rope to which they have to provide protection it is essential that users fully understand the implications of rope elongation - rope stretch.

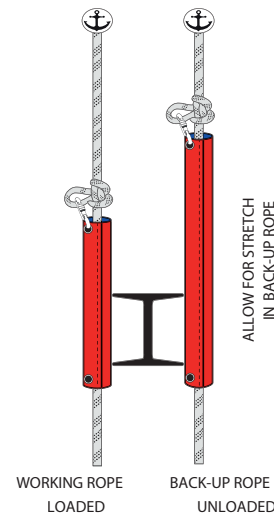
Working ropes: When secured to a loaded working rope, the positioning is generally stable and the protectors will generally maintain position. When working ropes are unloaded the rope will contract - affecting the position of protection. If ropes are to be re-loaded it is critical that the protection is verified prior to re-loading. Always check that protection is provided both when loaded and unloaded.

Back-up ropes: When secured to unloaded back-up ropes users must anticipate and allow for rope stretch. Back-up ropes stretch considerably when subjected to emergency loading. Elongation of the back-up rope will be approximately 10% of the amount of the rope above the protector. This should be allowed for when selecting the length and type of protection required. Friction with structure may cause adverse loading of the securing system and velcro. It is important that users verify the elongation properties of the ropes they use. It is important that the securing system will be sufficient to resist any friction-pull caused by any dynamic movement of the rope.

Protection attached to back-up ropes may need to be longer than that for working ropes to allow for dynamic rope stretch, e.g. where 5m of low-stretch rope is deployed above an obstacle - allow for a minimum of 0.5m of stretch in back-up rope - use longer rope protection or multiple protectors.

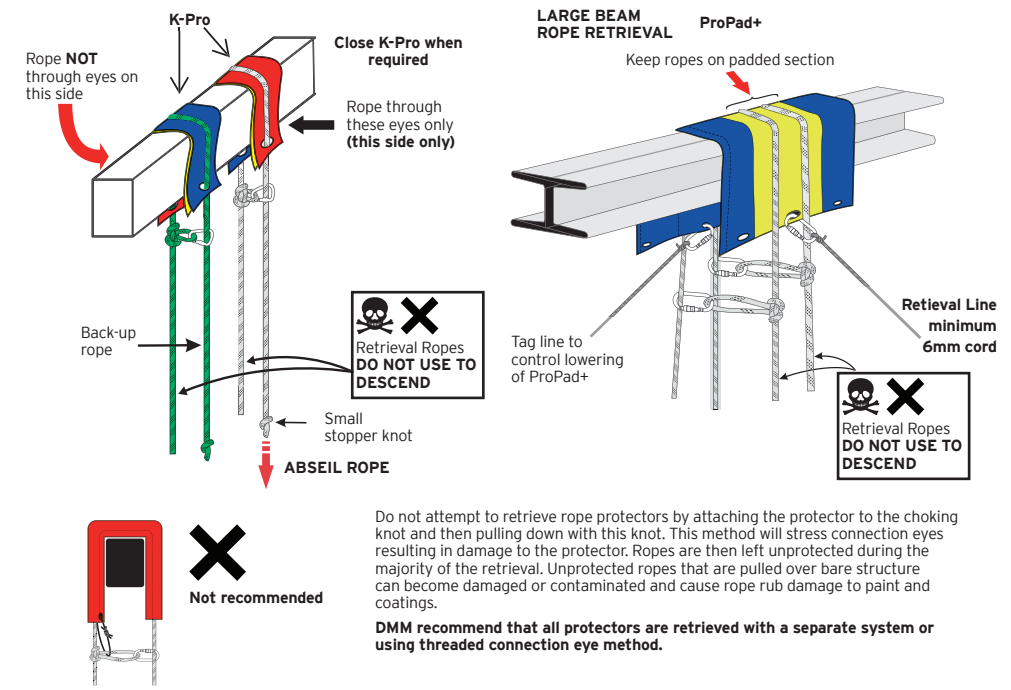
Dynamic rope: Elongation will be considerably more with these ropes and this must be allowed for on both working and back-up ropes. It is preferable to secure protection to the structure.

Other factors can affect the positioning of rope protection measures. These include: the effects of wind and changes of rope path during rope manoeuvres - passing re-anchorage, rope to rope, passage along tensioned ropes, emergency loading of horizontal safety ropes and during lead climbing etc. Planning must assess these and all other influencing factors and implement adequate controls prior to starting operations.



Pull Throughs - Remote Retrieval of Evacuation Ropes

These techniques should only be undertaken following a planned procedure by competent operatives working under direct control of a qualified rope access supervisor. Only use 'pull throughs' to evacuate from a high position where no safer alternative exists. **DO NOT USE** these techniques for emergency evacuation of one or more persons, due to the potential for misuse under pressure, delays and the serious consequences of errors.

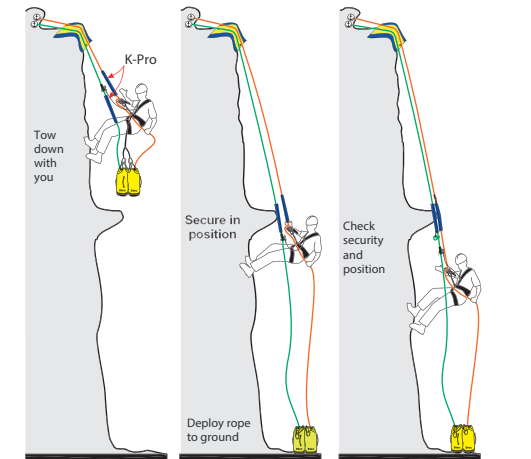


Pre-installation of mid-rope protectors during abseil descent.

This technique can provide protection to ropes on reaching obstacle/potential abrasion point. Pre-fitting a suitable protector around each rope and sliding them down during descent can provide instant protection and reduces exposure time on reaching problem area and make positioning more accurate.

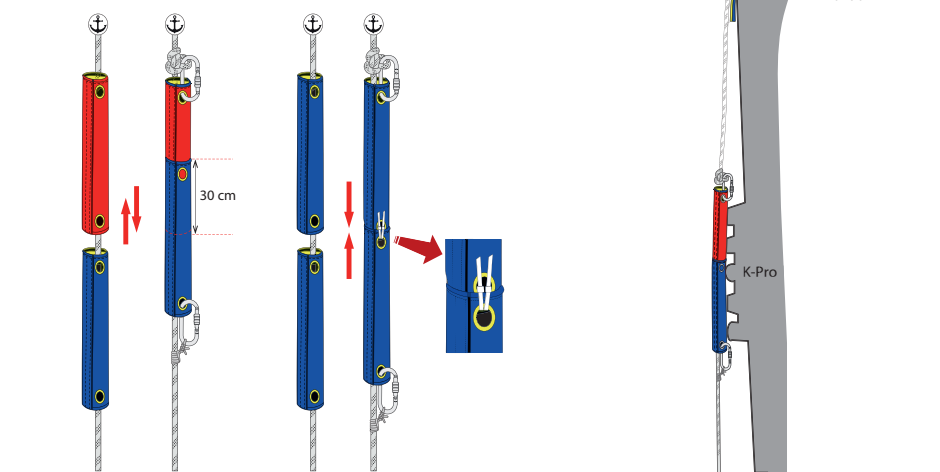
Example:

1. Fit a 80cm K-Pro around the working rope above your descender. Fit another on to your back-up rope above or below the back-up device (depending on the type of device used - if below attach temporarily with cord to the back-up device connector).
2. Descend bringing the protectors down with you, as the obstacle is reached - they automatically provide protection and ready for final positioning and securing.
3. Secure to top and/or bottom connection eye using a suitable method.



Oversized and multiple protectors

Where rope contact is extensive it is possible to use multiple RopePro devices overlapping or joined securely. Overlapping protectors must overlap by a minimum of 30cm. Connected protectors must be secured with 2 x cable ties/zip-ties for each pair of adjacent connection eyes. It is essential that users verify effectiveness and ensure that protection is maintained. DMM can supply over-sized versions of most models to special order.



Where edges are more severe and rigging can not achieve clearance it is possible to 'Wrap' or 'Stack' RopePro devices to provide multiple layers of devices.

'Wrap' - e.g. use 2 x K-Pro inside a closed ProPad+.

'Stack' - by layering 2 x ProPad+ on a narrow rough edge - the connection eyes assist in holding devices together.

Side 6 of 6