

Static Rope Knots for Rope Extension or Rope Connections for Rope Extension

20171021-TER-REC0004 Terrestrial Rescue Recommendation

1. Introduction

On occasion, there is a need to extend ropes to be used within a rescue, when joining conventional kernmantle ropes used for rescue purposes, a limited range of knots/bends offer the best performance when working with rescue loads.

This recommendation identifies the knots to be used for this purpose.

2. Recommendation

Suitable knots for connecting ropes to extend them are:

- Ropes with sewn terminations: 10 mm standard maillon connector
- Ropes with NO GROUND CONTACT:
 - Double or Triple Fisherman's Bend.
- Rope with NO GROUND CONTACT BUT HIGH TENSION:
 - Reef (square) Bend with Double Fisherman's backup
 - Double or Triple Fisherman's Bend or
 - Flat Figure Eight
- Ropes WITH GROUND CONTACT:
 - Double Overhand Bend
 - Postman's Bend
 - Single Overhand Bend when load not more than one person and ropes with the same diameter

Pictures of these knots can be found in the glossary in section 4.

3. Explanatory notes

The highest strength performance for connecting conventional kernmantle ropes is to use sewn rope loops terminations in conjunction with a 10 mm oval maillon rapide. This method of connection also provides the highest level of protection against jamming the rope connection into cracks and fissures.

Where knots have to be tied to achieve the connection, it is recommended that only a limited number of knot types are used. These knots maintain a good strength performance after they have been tied and dressed properly.

When there is no risk of the rope(s) being in contact with the ground and/or running over edges then a Double or Triple Fisherman's Bend can be used.

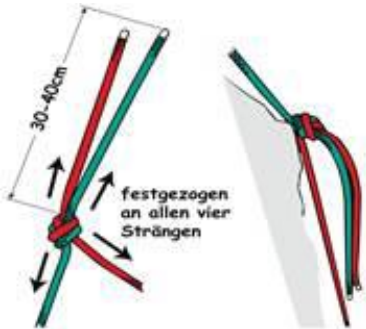
Similarly where ropes are subject to high tension it can make it very difficult to untie these knots, the use of a Reef Bend with Double Fisherman's Knots as back up or Flat Figure Eight may be used. An example of an application for these knots would be to join ropes for use in aerial ropeways.

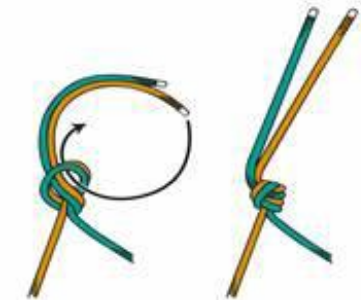



Where knots may be in contact with the edges the use of Double Overhand Bend or Postman's Bend allow the knots to move across ground with a reduced risk of jamming.

For loads of one person and when joining ropes of the same diameter, a tightly dressed Overhand Knot with long tails (30-40 cm) can also be used.

This is typically employed when abseiling.

4. Glossary

Overhand Bend	
---------------	--

<p>Double Overhand Bend</p>	 A diagram showing two steps of the Double Overhand Bend. On the left, a rope is looped back on itself to form a single overhand knot. On the right, a second identical knot is tied on top of the first, creating a double overhand bend. The ropes are colored yellow and green.
<p>Flat Figure of Eight</p>	 A photograph of a Flat Figure of Eight knot. The knot is formed by two ropes, one red and one green, joined together. The knot lies flat on a light-colored surface.
<p>Figure of Eight Knot</p>	 A photograph of a Figure of Eight Knot. The knot is formed by two ropes, one red and one green, joined together. The knot is shown from a slightly elevated angle, showing its three-dimensional structure.
<p>Double Fisherman's Bend</p>	 A photograph of a Double Fisherman's Bend knot. The knot is formed by two ropes, one red and one green, joined together. The knot is shown from a slightly elevated angle, showing its complex structure.



<p>Triple Fisherman's Bend</p>	
<p>Sewn Loop/Maillon Connections</p>	
<p>Postman's Bend</p>	
<p>Dressing a Knot</p>	<p>A knot that has good form/shape with the rope strands correctly laid up; rope tails, loops or eyes are of a suitable length for use.</p>
<p>Setting a Knot</p>	<p>Once a knot has been dressed it should be set by firmly pulling/loading the ropes, tails or loops to firmly tighten all the strands used to tie it.</p>

Graphics used in this document are from the Bavarian Mountain Rescue Organization, they allowed us to use them.

History of Revisions	
issued	1996 Karpac
revised	2000 Chamonix
revised	2010 Stary Smocovec
revised	2013 Bol
revised	2014 South Lake Tahoe
revised	2017 Soldeu

DRAFT

