

# Knots

**NOTE:** Rope handling is dangerous and it is your responsibility to ensure your safety and to know your limitations of skills and good judgment **before** attempting to use ropes and knots. This is valid for any rope work. Remember your life and/ or other people's life can be in danger.

**Knots invariably weaken the rope they are made in.** When knotted rope is strained to its breaking point, it almost always fails in or near the knot, unless it is defective or damaged elsewhere. The bending, crushing, and chafing forces that hold a knot in place also unevenly stress the rope fibers and ultimately lead to the reduction of strength.

Here are a few tips when handling ropes:

- Always work in pairs. You can check each other's work to ensure safety
- The choice of materials; the age, size, and condition of ropes is very important
- Know your knots and their uses
- Practice constantly

## **Double Overhand Stopper Knot**



- In addition to acting as a stopper in the end of a rope, it can act as part of another knot or used to add security. It is commonly used along with the figure 8 knot or the bowline.

## **Figure 8 Knot**



- The Figure Eight itself is a quick and convenient stopper knot which can be undone fairly easily. This knot is the basis for many variations used in climbing and rescue.

## **Figure 8 Bend**



- This is a variation of the simple figure 8 knot used to join two ropes **with relatively same diameter**. When used to join two ropes together it is suggested to use a double overhand stopper at both ends to ensure security. (See picture on the right). The Figure Eight Bend is relatively bulky and, therefore, slightly more likely to get stuck when an abseil rope is pulled down than the double Fisherman's. Its advantage, however, is that even after considerable strain it remains relatively easy to undo.



## **Figure 8 Loop Follow Through**



- This is another variation of the simple figure 8 used to be tied to a ring, carabiner or your harness. It is the most used knot to tie you to a rope. It is usually used in conjunction with a stopper at the end of the rope.

## **Bowline**



- The Bowline makes a loop in the end of a piece of rope. If used in search and rescue work always provide additional security by adding a stopper knot. The stopper knot can be tied round the adjacent part of the loop (picture on right)



### Water Knot



- It is used to join two pieces of webbing strapping. The Water knot is essentially an overhand knot with the second strap passed along the knot in the reverse direction. The knot should be arranged neatly and pulled tight. Several inches of the straps should be left over and for safety some authorities recommend tying an overhand knot in the ends. In webbing straps it makes a very satisfactory and safe join.

### Girth Hitch



- The Girth Hitch attaches a sling or a webbing strap loop to your harness or to another sling, strap, or rope. It is also often employed when slings are used to connect anchor points to a static rope in a top-rope set-up. The Girth Hitch is much more familiar than many of us recognize: it is the same knot we use to link a pair of elastic bands. It is known by many names including: strap hitch, cow hitch, lark's head (and lark's foot), and lanyard hitch.

### Double Fisherman's



- The Triple Fisherman's Bend is *the* way to form a Prusik Loop and is an excellent and reliable way of joining two ropes. It can be used for a full rope-length abseil; after which it is still possible to retrieve the rope. For load-bearing using modern high modulus ropes such as Spectra, Dyneema or Kevlar/Technora, use a Triple Fisherman's. In each stopper knot the rope is passed around a third time before being threaded back through the loops.

### Prusik Knot



- Its principal use is allowing a rope to be climbed. Two Prusik loops are alternately slid up the static rope: a long Prusik loop allows the climber to lift himself using leg power, and a second short Prusik loop is attached to the harness. In rescue work, if a climber has to be pulled up, a Prusik loop could be used to attach a pulley block purchase system to a climbing rope.



### Round Turn & Two Half Hitches

- A Round Turn and Two Half Hitches is ideal for attaching a line to a post or ring. As the name suggests, it is composed of two important parts:

The '*Round Turn*' is really two turns, and these should take the initial strain while you complete the knot. This may be critical when handling a line. An additional turn, or even two additional turns, should be added initially if you are handling a heavy load. These turns allow you to control the load while you add the two half hitches.

**Two Half Hitches:** The two half hitches actually form a clove hitch round the standing end. It is not uncommon to see additional ones (or more!) half hitches - either to make the knot more secure or to use up any excess line.

### Clove Hitch



The Clove Hitch can be done in two ways. It can be done with two loops on a bite of rope or it can be done at the end of the rope. The Clove Hitch has two glaring faults: in some applications it may bind and be hard to undo; and, in others, it may slip under load. It can be used for adjusting the height of tent ropes or tarp ropes.

It can also be used to tie off a rope that is passing through a carabiner: a bight can be hooked in to secure the rope - effectively creating two half hitches, i.e., a clove hitch.

This information and pictures were removed from <http://www.animatedknots.com/>. Please refer to this website for other important knots.