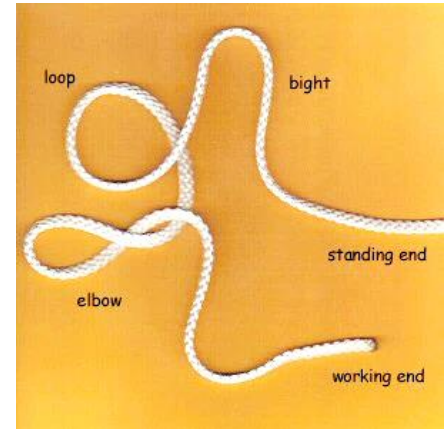


# Basic Scout Knots - Introduction

## Terminology related to Knots

Knots are divided into broad categories such as *hitches* and *bends*. Collectively we just call them all *knots*. However, the correct terminology is useful and worth learning:

- **Bend:** Joins two ropes or fishing lines, e.g., [Sheet Bend](#), [Alpine Butterfly Bend](#), [Figure 8 Bend](#), [Ashley Bend](#), [Hunter's Bend](#), [Zeppelin Bend](#).
- **Bight:** In knot tying, a bight is a curved section or slack part between the two ends of a rope, string or yarn. "Any section of line that is bent into a U-shape is a bight." An open loop is a curve in a rope narrower than a bight but with separated ends. The term "Bight" does not imply a "Loop" and does not mean the same.
- **Bitter End:** Derived from the "Bits" – the stout metal posts used for attaching mooring ropes – it is applied to the tail end of a mooring line.
- **Breaking Strain:** The theoretical strength of a rope - derived by averaging many tests of a rope tested under optimal conditions, i.e., when stretched slowly while wound many times round a smooth, large diameter drum. The theoretical breaking strain is rarely (if ever) achieved in practice despite claims made by enthusiastic knot proponents.
- **Dressing a Knot:** Arranging the components of the knot to optimize security and/or strength.
- **Fake (or Flake) a Rope:** Lay a rope out neatly on the deck in a [Zig-Zag Pattern](#) ready for easy use. Both **Fake** and **Flake** are in widespread use. People using **Flake** tend to reject **Fake** and vice-versa. History and literature support both names. "**Flaking**" a rope could have entered common use because of the generally accepted "**Flaking**" a sail
- **Flake a Sail:** Fold a sail back and forth in neat layers for storage. This prolongs the life of the sail and facilitates raising the sail later.
- **Fraping Turns:** Additional turns added in another axis to bind a [Lashing](#) or a [Sailmaker's Whipping](#).
- **Hitch:** Attaches a rope to something, e.g., a **Hitching Post**, dock pole, mooring buoy, anchor, or cleat. Such knots include the [Rolling Hitch](#), [Cleat Hitch](#), [Buntline Hitch](#), [Icicle Hitch](#), [Distel Hitch](#), and [Lighterman's Hitch](#).
- **Hollow Braid:** A loosely woven single-braid rope which can be spliced using a [Brummel](#) or a [Long Bury](#) technique.
- **Kernmantle:** A type of rope construction with a Kern (interior core) protected by a Mantle (woven exterior sheath) – a design that achieves abrasion resistance and strength.
- **Lay:** The direction in which the strands of a rope twist. As the strands progress away from the viewer, if they rotate clockwise like a right hand thread, it is a **Right Hand Lay** – typically used for most three-strand rope. Steel cables are usually laid with a Left Hand Lay - hence the term **Cable Laid**, which is used when rope has a Left Hand Lay. If you have become accustomed to splicing three-stranded rope, splicing a piece of cabled-laid rope feels very awkward.
- **Loop:** Made when a rope forms a partial circle with the ends crossing each other.
- **Racking Turns:** Lashing turns which pass between poles to bind against the pole better. They are used in [Tripod Lashings](#).
- **Round Turn:** Two passes of a rope round an object – to completely encircle it.
- **Slipped:** A knot is *Slipped* when it is completed using a loop or loops. The best known example is the [Bow](#), a slipped version of the [Square Knot](#). Many of the knots described can be *slipped*. Using a loop makes them less secure - think of shoelaces - but they are released more easily.
- **Solid Braid:** A tightly woven single-braid rope which cannot be spliced using a [Brummel](#) or a [Long Bury](#) technique.
- **Splice:** A knot made using the strands of a rope rather than the whole rope – stronger than ordinary knots and intended to be permanent.
- **Standing End:** The long end - the part not knotted. The standing part lies between the standing end and the knot.
- **Stopper Knot:** A knot in the end of a rope – used to prevent fraying or to prevent the end passing through a hole.



- **Strands:** The major components of a rope – three in a three-strand rope. Each "Strand" is made up of many separate fibers.
- **Tail:** The short end – the part getting knotted.
- **Turn:** One pass of the rope round or through an object.
- **Whipping:** A binding knot used to prevent a rope's end fraying.

Ref: <http://www.animatedknots.com/>

## Rope and Line Terminology

Similarly, there are many names for *rope* and *line* that, particularly in boating, climbing, and fishing, depend on their use:

Boating	Climbing	Fishing
<p><b>Anchor Rode</b> The line or chain attached to your anchor.</p> <p><b>Bow line</b> The rope attached to the bow of your boat. Used for docking or towing.</p> <p><b>Buntline</b> A rope used to furl (wrap up) a square sail up to the yardarm.</p> <p><b>Downhaul</b> A rope used to tighten the front (luff) of a sail.</p> <p><b>Halyard</b> A rope used to pull up a sail.</p> <p><b>Hawser</b> A larger diameter rope used for towing large vessels and barges.</p> <p><b>Lanyard</b> Short length of thin rope, e.g. attached to a knife or whistle.</p> <p><b>Outhaul</b> Rope used to stretch a sail tight along the boom.</p> <p><b>Painter</b> The Bow Line on a small boat such as a dinghy.</p> <p><b>Ratline</b> Ropes stretched between adjacent shrouds to act as steps for the crew to climb.</p> <p><b>Sheet</b></p>	<p><b>Cordelette</b> Accessory cord - a long loop that can be attached to several anchor points to distribute and equalize the load.</p> <p><b>Double Rope</b> A technique employing two smaller ropes when leading a climb.</p> <p><b>Dynamic Rope</b> Rope that is slightly elastic and therefore reduces the impact of a fall. Compare with Static Rope.</p> <p><b>Fixed Rope</b> A rope secured to a fixed point. Used in Abseiling (German) or Rappelling (US English).</p> <p><b>Single Rope (technique)</b> Technique employing a single rope that is attached at one or both ends.</p> <p><b>Static Rope</b> A non-elastic climbing rope - compare with Dynamic Rope.</p> <p><b>Top Rope</b> The use of a fixed anchor point above. This requires easy access to the top.</p>	<p><b>Backing Line</b> Nylon or Dacron line tied between the fly line and the reel to provide additional length if required to play the fish.</p> <p><b>Braided Line</b> A fishing line made up of multiple strands - providing better abrasion resistance with no memory so coils are less of a problem.</p> <p><b>Dropper Line</b> Multiple short lines attached along the length of a fishing line to allow multiple catches with one cast.</p> <p><b>Floating Line</b> Fishing line that is lighter than water and floats on the surface.</p> <p><b>Hollow Braid</b> Braided fishing line designed to allow the tail to be passed through the braid to create a loop or a join.</p> <p><b>Leader</b> Short length of heavy line or wire between the main fishing line and the lure. Prevents sharp-toothed fish damaging the main line.</p> <p><b>Loop to Loop</b> A method of joining two fishing lines that have loops in their ends, e.g., Perfection Loops.</p> <p><b>Monofilament</b> Nylon line available in different strengths and colors. It is almost invisible to the fish. However, it absorbs water which loosens knots and has a memory so that it tends to come off the reel in coils.</p> <p><b>Sinking Line</b></p>

<p>Rope attached at the back lower corner of a sail to trim the sail for the wind direction.</p>		<p>Heavier than water and useful when fishing in still waters.</p>
<p><b>Spring Lines</b></p>		<p><b>Snelling</b></p>
<p>Dock lines - usually used as a pair - one from the bow back to the dock and the other from the stern forward to the dock. This arrangement prevents the boat moving fore and aft.</p>		<p>Attaching a line to a hook using the Snell Knot – originally used with eyeless hooks.</p>
<p><b>Topping lift</b></p>		<p><b>Tag (or Tag End)</b></p>
<p>A rope from the mast to the back of the boom - principally used to take the weight of the boom when the sail is down.</p>		<p>The working end - where the knot is tied.</p>
		<p><b>Tippet</b></p>
		<p>The piece of line between the leader and the fly.</p>

When sailing, quite often, the one word that won't be used is "**Rope!**".

If you spend much time boating, climbing or fishing you will learn these useful names and use them. Until then call it **rope** or **line** but learn to handle it and become familiar with the essential knots.

## Knot and Rope Safety

### Safety

- Rope, and sports associated with rope, can be dangerous. Wrongly handled, gripped, or tied, rope can kill, maim, or burn. You could be the victim! Handle rope with care, inspect and test any knot you tie, and respect any rope subject to a heavy load, e.g., a rope controlling a large sail, a mooring rope when you are docking or berthing, and especially your own climbing rope.

### Control

- Never try to control a heavily loaded rope or fishing line with your bare hands. Take two or more turns round a post, winch, or cleat, and use appropriate equipment for fishing line. The danger associated with heavily loaded rope or fishing line is commonly learned by experience, which is often very painful and could be lethal.

### Knots Weaken Rope

- Because of knots, kinks, and imperfections, assume that even brand new rope will perform at no more than 50% of its rated breaking strength. And, when dealing with critical loads, it is vital to understand the magnitude of a sensible Safety Factor:

### Working Load or Safety Factor

- The National Fire Prevention Assoc. advises the following: To lift non-critical loads, e.g., equipment, a rope's breaking strain should be seven times the load (7:1).
- For live or critical loads the rope's breaking strain should be fifteen times the load (15:1). To lift an average man, a breaking strain of over a ton is indicated.

### Watch Your Limbs

- Never stand in a loop or a bight of a rope which may suddenly tighten, e.g. an anchor line or tow line. You have two legs when you are born. Guard them. That goes for any body parts, fingers, arms, and the like, watch out for coils and small loops. Even a small line wrapped around a finger can cause serious injury when put under sudden strain. And, avoid deliberately wrapping a line/rope around your hand to get a better grip. You may find that the rope has you rather than you having it.

### Rigging Angle

- A rope strong enough to lift a given weight may be totally inadequate when the weight is hanging from the middle of the same rope stretched horizontally, e.g., when rigging a hammock. Too often the effect of such a rigging angle is not appreciated. In certain circumstances, such a mistake may be lethal.

### Dynamic Loads vs. Dead Weights

- Similar concerns apply to loads that are moving. A rope stopping a falling object will be subject to a load many times the object's weight.

#### **Intermittent Loads**

- Many knots can loosen with prolonged intermittent strain. For example, a bowline just "floated undone" when Grog was swimming around scrubbing the boat's waterline; a perfectly good scrubbing brush sank before he realized it was no longer attached.

#### **Security and Additional Half Hitches**

- **Mooring lines** are exposed to intermittent strains and it is wise to use additional half hitches or a seizing to provide greater security. A seizing is a wrap of small line holding the tail against another adjacent part of the knot. Although a seizing may be very secure, it is a nuisance because it cannot be easily "untied". By contrast, it is quick and convenient to add extra half hitches, and they are commonly found on the: Round Turn & Two Half Hitches, Rolling Hitch, Anchor (Fisherman's) Bend, the Clove Hitch and, of course, the Reef (Square) Knot.
- **Safety Knot:** Climbers are particularly wary of the bowline especially when carried around at the end of a coil of rope. One technique they recommend is to use a stopper knot to secure the tail around either the standing end or the adjacent part of the bowline's loop.
- **Under Load:** Four knots are valuable specifically because they can be tied and untied under load: the Round Turn & Two Half Hitches; the Cleat Hitch; the Rolling Hitch; and the Munter Mule, combination. Learn these well. By contrast, the bowline is impossible to tie or untie under load.

## **Proper Rope Care and Use**

While there are too many variables in work conditions to predict everything that can go wrong, proper rope care and use includes doing what you can to minimize your risks and make dangerous situations, at least, safer.

### **Rope selection:**

Use a rope type that's been used successfully to do the same kind of work you're doing, and confirm that your choice has the proper characteristics and a working load limit for the specific task at hand. Some industries, especially those involving overhead work – tree trimming, window washing, any job requiring use of scaffolding or climbing – have very clear specifications, often as required by OSHA. When in doubt, check with an engineer or other qualified person experienced in rope use.

Having the right rope is a good start. But as with any tool, it must be used properly. When any of the following conditions exist, we strongly recommend expert guidance:

- Abrasive conditions such as exposure to sharp edges, rough surfaces, and improperly sized pulleys
- Exposure to hazardous chemicals that can weaken some fibers
- Dynamic loading, which occurs when the stress on a rope is increased - by picking up a load, or if a load stops quickly or is otherwise subjected to shock, or when it is swung or held over a prolonged period of time
- Rope use at elevated temperatures, which can weaken or even melt the fibers
- The rope source, age, or history is not known
- There are no provisions for frequent inspection based on specific standards
- There are knots or splices in the rope
- Exposure of polypropylene or polyethylene rope to sunlight – ultraviolet degradation can dramatically reduce the working load limits of these products
- Rope stored dirty, wet, or near sunlight or heat – especially natural fiber ropes such as manila, which will rot and weaken dramatically from moisture

Rope under tension can recoil if it breaks or is released suddenly, causing serious injury to anyone in front of or behind it.

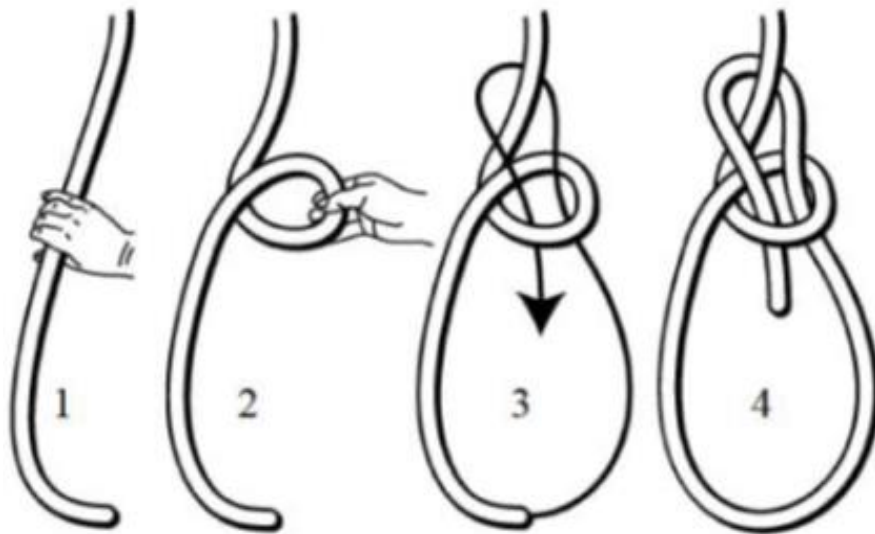
The working load is the weight or force exerted on a rope at work. The working load limit is a guideline number representing the maximum rope capacity. For general use, the working load limit is based on normal loading. It is calculated by dividing the new rope minimum breaking strength by a design factor based experience with the work to be done.

Remember taking "defensive driving" courses in high school? It makes sense to adopt the same attitude when working with rope: even when you're doing everything right, be prepared something to go wrong.

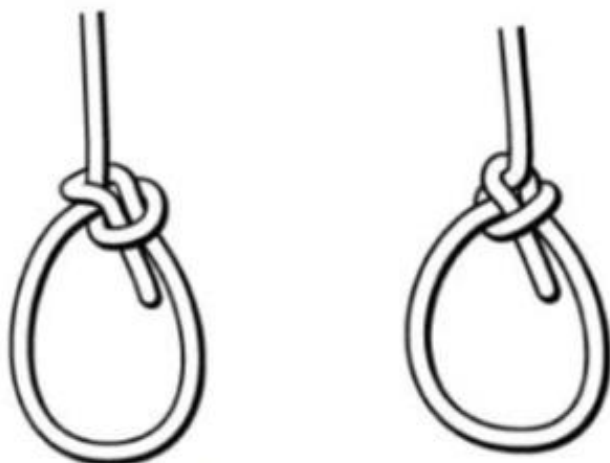
## Basic Scout Knots – The Bowline

# Bowline

The bowline is used to make a non-slip loop on the end of a rope. It is called the king of knots and it is so dependable that it can be used for rescue work.



After the bowline has been formed, you must tighten it correctly like this.



Tightened correctly

Tightened incorrectly

## Description

The bowline is one of the most used loop knots. At the end of a rope, the bowline forms a strong loop that will not slip or jam. It is easy to tie and to untie, it never slips nor jams and has a high breaking strength. It has been called the 'King of Knots'.

The bowline knot makes a loop with a knot that does not slip or jam when under tension. If you want a loop that does not get tighter and tighter, but will not loosen under a load, this is a good one.

### Best used for:

- Tying in an emergency or rescue situation
- Tying on the waist to drag an object

Use it to secure a line around an object, such as a tree (such as for one side of a clothesline, then use the taut line hitch for the other side so you can adjust the line and it will not sag). We also use it to secure the rope to the anchor and the thwart on the canoe when we are canoeing.

### Easy way to remember how to tie:

Use a mnemonic to remember how to tie the knot.

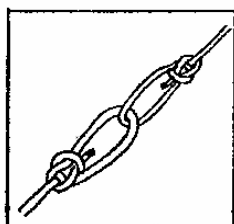
Think of the loop as a "rabbit's hole" and the string end coming off the loop as a "tree". Imagine the other loose end of the string, which you're holding in your right hand, is the "rabbit". The rabbit comes up the hole, runs around the tree, and goes back down the hole.

### One-Handed Tying

#### Instructions:

1. Wrap the line around your waist so that the working end is on the opposite side of the standing part.

## Variations:



BOWLINE BEND

**Bowline Bend.** A bend formed from two interlocking Bowlines. Most useful for joining two ropes of widely different thicknesses



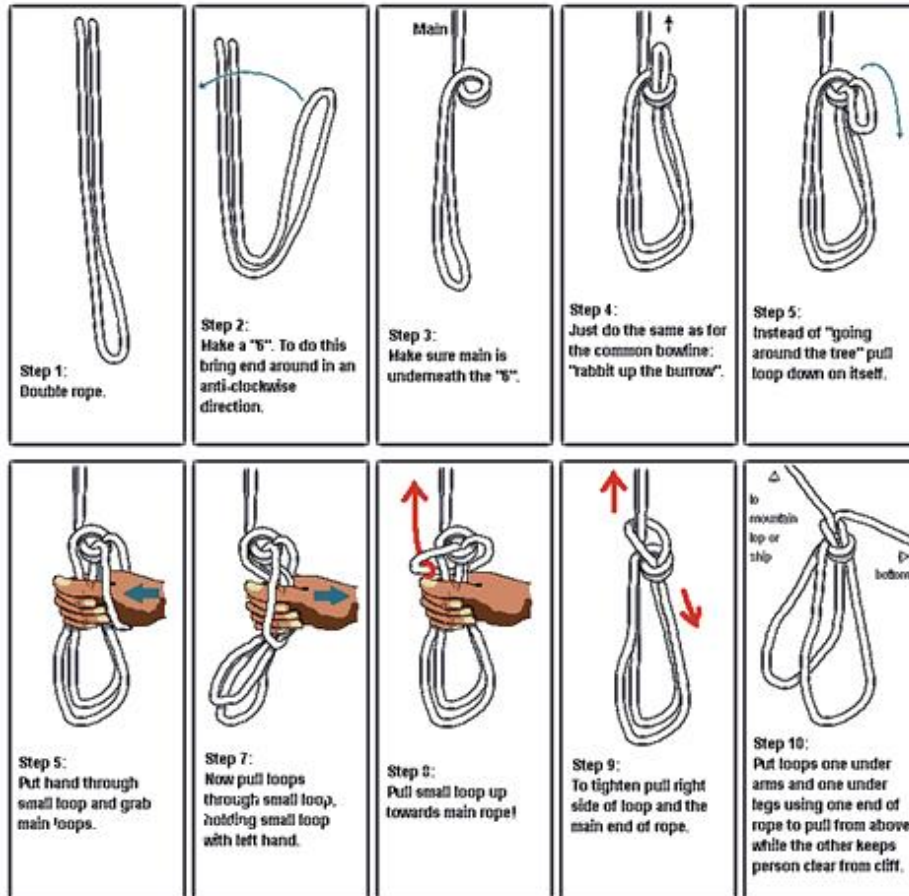
Bowline on a Bight

**Bowline-On-The Bight.** A double loop knot which is tied in bight when the two ends are fixed or inaccessible. The strain should come equally on both standing parts. A good rescue or chair knot.



## Bowline on the bight

This is a rescue knot. Probably the trickiest knot to get right. Great care must be taken when tightening this knot. Always make sure the loops are the correct size for person.



2. Ensure you have at least six inches of line past where you're gripping the working end.
3. Without ever releasing the line from your hand, bring the working end over the standing part.
4. Now around the standing part and back into your chest, creating a loop on your wrist.
5. Pass the line around the standing part and to yourself.
6. You should now have made a wrap around the standing part and be holding the working end.
7. Continuing to grab the working end, pull your hand towards you and out through the loop on your wrist.
8. \*If there is too much tension on the rope, this movement will be impossible\*
9. Once through the rope, pull to tighten up the bowline.
10. You can also back up this knot after it's tied by simply adding an overhand knot with the working end.

## Bowline (pronounced "boh-linn")

The most useful and one of the simplest ways of putting a fixed loop in the end of a rope. It is easy to tie and to untie, it never slips nor jams and has a high breaking strength. It has been called the 'King of Knots'

### Good Points

- Easy to tie and untie.
- Never slips nor jams.
- It has a high breaking strength.
- It will not slip under load.
- The more pressure applied, the stronger the knot.
- Easily untied.

### Bad Points

- Cannot be tied or untied with a load on it.
- Though the Bowline isn't generally bad, it isn't secure enough for critical applications, especially where the line will see a lot of jerking and/or where stiff or slippery rope is used.
- If you tie a Bowline in polypropylene rope, and give it a few jerks, you'll quickly discover its lack of security.

### Notes

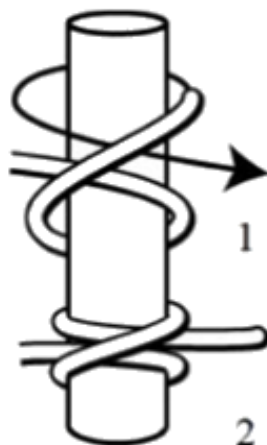
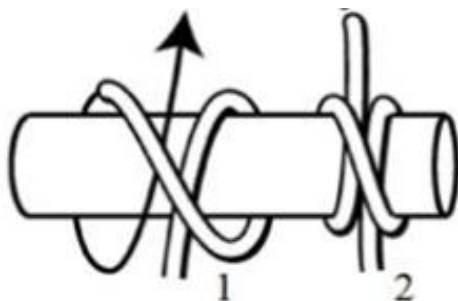
- If you use this knot to carry an injured person, you must use a stop knot (*Overhand on the end*)
- You can use it for tying two ropes of different sized together with one knot on each line (*Bowline Bend*)
- Two bowlines can make an emergency bowsman's chair. (*Bowline-On-The Bight*)

## Basic Scout Knots - Clove Hitch

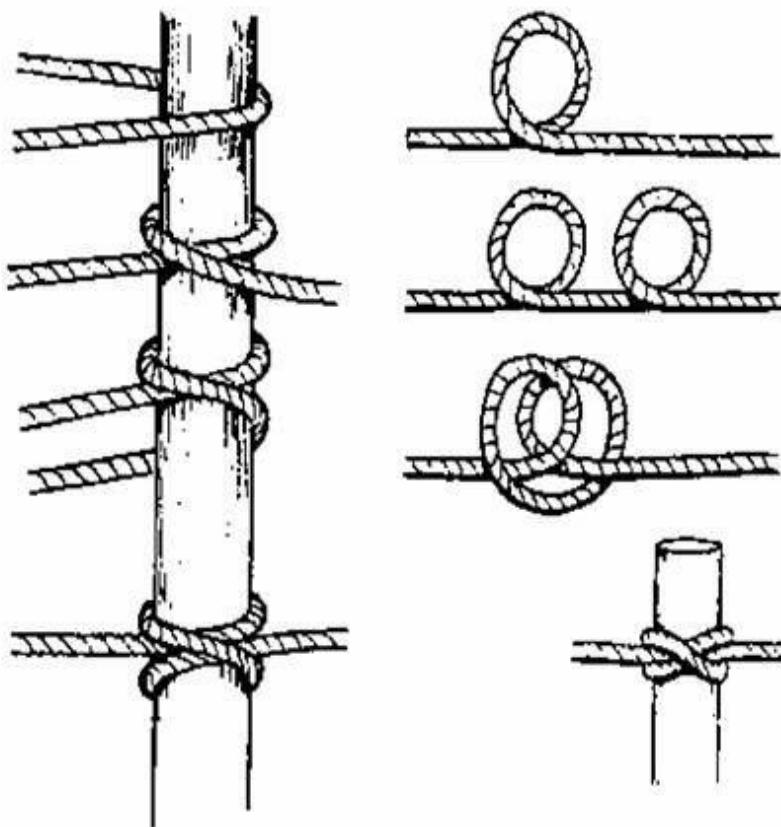
# Clove Hitch

The clove hitch is known in the oilfield as a claw hitch. It is the best knot to use with stiff large diameter rope because it never makes a sharp bend. It is also used to start and finish lashings. A lashing is a series of wraps tying two poles together.

Here is how to tie it around a horizontal post.



Here is how to tie it around a vertical post.



### Variations:

Some folks don't like it because in various applications, it's not the most secure or reliable choice. But, in those instances, there are numerous alternatives. See the following photos—all close clove hitch relatives.

### Description

Clove Hitch, AKA peg knot, claw hitch or boatman's knot. The clove hitch is a simple way to attach a rope to a pole, it's side-to-side adjustable and is frequently used to start and finish a variety of lashings.

The clove hitch is one of the most-frequently-used knots Scouts learn, so common, yet it can also be very elusive, especially when it comes to completing certain lashings. In the knot-tying universe, the clove hitch is a whole lot more prevalent than most of us realize, and it can be tied in a variety of ways and from a variety of different perspectives.

### Best used for:

Fastening a rope around a fixed object. Used to fasten lines to a post or ring. It has been used on primitive fishing poles by attaching the line at intervals along the pole. Use this knot is used to start and finish lashings.

### Easy way to remember how to tie:

Around the pole, form a cross, around again, under the cross, pull tight.

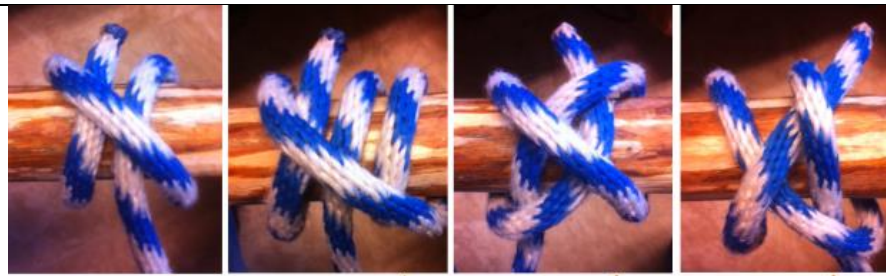
### One-handed tying Instructions:

#### Method 1 (Tying to a Pole)

1. Pick up the running end of the rope (the end that will be loose after you tie the knot). Wrap it halfway around the pole or timber.
2. Cross the running end over the wrapped part of the rope. This will form an "X" shape. Bring it back around the pole.
3. Lift the "X" part of the knot and slip the running end under this "X" horizontally.
4. Pull the knot tight.

#### Method 2 (Quicker Method)

1. This is an alternative method of tying the clove hitch. A clove hitch may be tied by forming two loops and putting a pole through those two loops. This alternative technique has the limitation of having to be tied at the

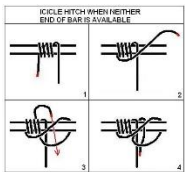


**Clove Hitch**

**Rolling Hitch**

**Constrictor**

**Spar Hitch**



**Icicle Hitch**

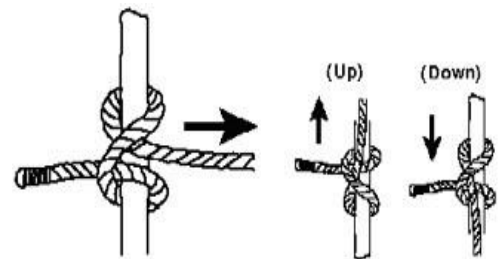
The Icicle Hitch grips a smooth surface so well that it even works on a tapered surface such as a marlinespike - hence its name



**Midshipman's Hitch**

The midshipman's hitch is made by taking a half-hitch around the standing part and a round turn twice around above it. Used for hooking a tackle for a temporary purpose.

- end of a pole. However, it is quicker to tie than the above method.
2. Make the two loops. An easy way to remember this is to end the left loop above and right loop down.
  3. Place the right loop over the left loop.
  4. Insert the pole into the loops. You now have a clove hitch.
  5. Pull in opposite directions to tighten the clove hitch.



**Clove Hitch Up or Down** — (Depending on Direction of Pull)

**Clove Hitch** (General utility hitch)

The nearest there is to a general utility hitch. It is easy to tie in a number of different ways and to untie. It has a wide variety of uses but care should be taken not to misuse it: it is so easy to use it when a more suitable hitch (e.g. a Rolling Hitch, etc.) would serve better.

**Good Points**

- Quick and easy to tie
- Can be tied in the bight
- Can be tied one handed

**Bad Points**

- Can slip in wet conditions or in slippery rope
- Weak when a load is applied to it rapidly
- Needs constant tension on both ends
- Without extra support, it is untrustworthy in any situation, except as a crossing knot
- This knot has a tendency to slip so it requires an overhand safety knot
- Retains 60% - 65% tensile strength

**Notes**

- If you have to use it, work it up properly; pull length-wise only at both ends before you load the working end.
- The standing end should be secured if it is going to be used as an 'anchor' as it may work loose otherwise.
- If you have to use it, work it up properly; pull length-wise only at both ends before you load the working end. It is better to use the Rolling Hitch instead.
- Although often used to start and finish lashings it is far from ideal for this task. Consider using another hitch instead or at least secure the standing part of the Clove Hitch used.



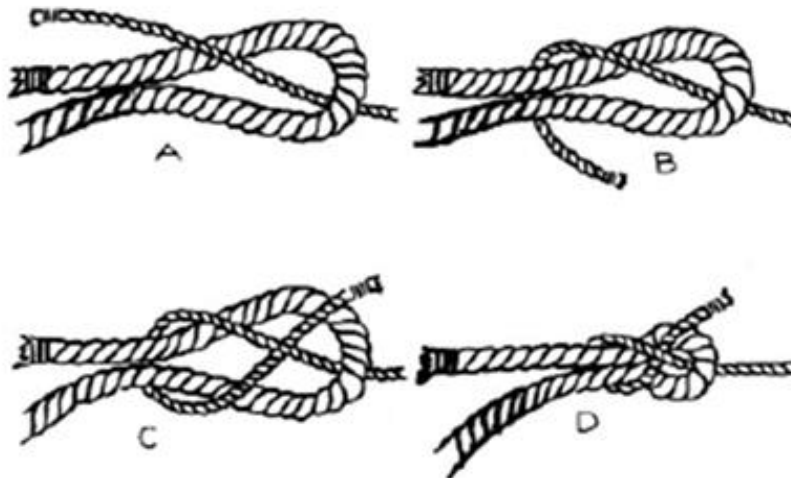
## The Basic Scout Knots - Sheet Bend

# Sheet Bend

The sheet bend is the knot you are "supposed" to use to tie two ropes together. You can tie on a sheet or blanket with it if you fold the corner of the sheet into a point and substitute it for the left rope below.



## SHEET BEND



**Sheet Bend:** This is used to tie two lines together, to extend a line, or to tie a line to fabric. It is particularly useful for tying two lines of different diameters. A variation is the slipped sheet bend for ease of untying. Try this mnemonic "the rabbit comes out of the hole, around the tree, and under the exposed tree root".

### Variations:



#### Double Sheet Bend

If you want to join two ropes of the same diameter, it is better to use a Double Sheet Bend. This bend offers more grip, but is still very easy to tie.

### Description

The sheet bend (also known as becket bend, weaver's knot and weaver's hitch) is a bend, that is, a knot that joins two ropes together. Doubled, it is effective in binding lines of different diameter or rigidity securely together, although it has a tendency to work loose when not under load.

The sheet bend is related in structure to the bowline. It is very fast to tie, and along with the bowline and clove hitch is considered so essential it is knot №1 in the Ashley Book of Knots. It is a more secure replacement for the reef knot (square knot), especially in its doubled variety.

The "weaver's knot" takes its common name from its historic use in textile mills. Even in modern operations, weavers are taught to use this particular knot when correcting broken threads in the warp. In practice, weavers are taught to be able to tie the knot in as little time possible, with the mean average being no more than three to five seconds. A knot used aboard ships for joining small- to larger -sized ropes.



### Best used for:

- Join two unequal items together
- Largest rope forms the bight

Getting larger rope across a void. Shoot a lighter line across a river, valley or two ships. Attach a larger



### Tucked Sheet Bend

Worried that the tail of rope B will catch or is it simply in the way? By creating a tucked version, the tails of both ropes lie flat against the sheet.



### Slipped Sheet Bend

This slipped version allows you to quickly untie your bend even when the ropes are under pressure.

rope using a sheet bend and continue pulling larger lines until a sufficient line is passed that is big enough to safely do the work needed.

Think a surveyor's nylon line across a river, then attach para cord and pull it across, then attach a 1 1/2" hawser or steel cable. Anchor both ends, attach a trolley and start passing supplies. This is basically how fuel lines are passed between moving ships at sea.

### Step-by-Step how to tie a Sheet Bend

1. Form a non-overlapping curve (bight) with the thicker rope and lay the end of the bight over the end of the thinner rope
2. Wrap the thinner rope over and around the end with the tip (working end) of the thicker rope and
3. Back under the working end of the thicker rope and
4. Under the non-tip end (standing end) of the thicker rope.
5. Then put the working end of the thinner rope over the bight
6. But under its own standing end.
7. Pull to tighten. Note: the two free ends (working ends) must be on the same side for the knot to be secure.

### One-Handed Tying

#### Instructions:

A loop is first formed with a thicker rope, the thinner is then threaded through this loop. Fig. A, passed right around the end and standing part of the thicker rope B, tucked under as in C and tightened by pulling on the standing part of the thin rope D.

You can see how the thin rope jams against the loop of the thick rope to prevent it from slipping.

## Sheet Bend

(also known as Weavers Knot)

The sheet bend is very similar to the square knot, granny knot, thief knot, and particularly the bowline. In fact, the sheet bend can be tied using the One Handed Twist Method which is also used to tie the bowline.

### Good Points

- Very fast to tie
- When slipped, is one of the easiest bends to work with
- Useful when joining two ropes of different diameters.
- It will not slip under load
- The more pressure applied, the stronger the knot
- Easily untied

### Bad Points

- It may jam
- Hard to untie if wet and under strain (for instance in a towline)
- The knot is neither strong nor secure. It reduces the strength of lines by 55% and can spill if subject to spasmodic jerking.

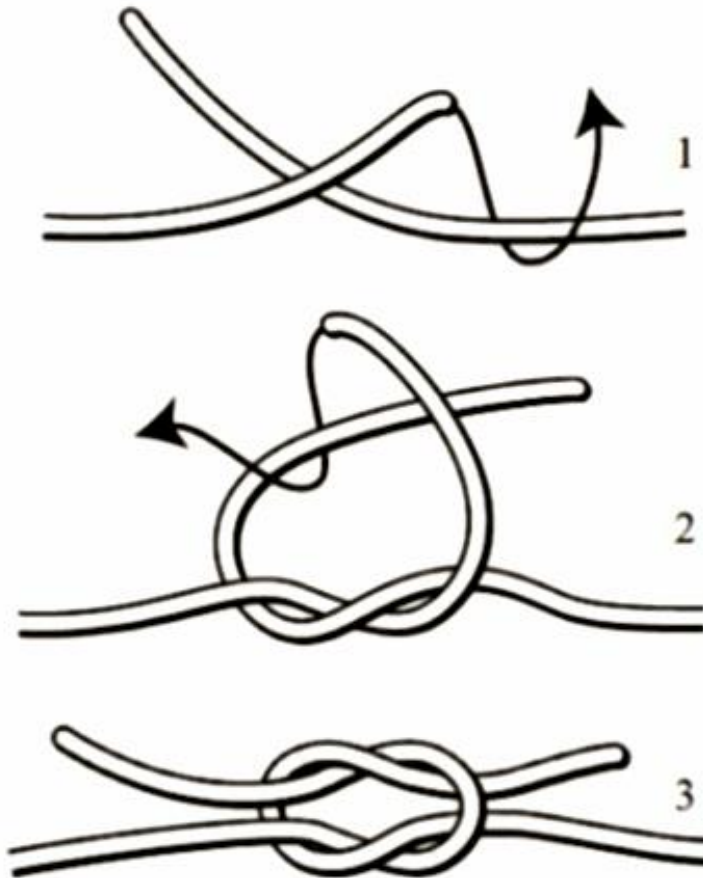
### Notes

- If the ropes are of quite different diameters (e.g. a very large and a small rope together) then you will be better off tying a Double Sheet Bend.
- If you have done the knot correctly the two ends should be on the same side of the knot.
- The running parts should be left long because there is some initial slip in the knot when the knot is first brought under tension.

## The Basic Scout Knots - Square Knot

# Square Knot

The square knot is used as a binding knot for such things as clamping a pad on a wound, tying a gathering rope on the male end of an extension cord, or as a shoestring knot. The bowknot we all use to tie our shoes with is really just a double slipped square knot. The books say not to use the square knot to tie two ropes together because it can untie itself under the right conditions but I have used a single slipped square knot to tie two ropes together for years without a problem yet.



## Description

The square knot is also known as the joining knot because it can join two ropes together and because it is the first knot Scouts learn when they join the BSA. It has many uses-from securing bundles, packages, and the sails of ships to tying the ends of bandages

Also known as a Reef knot or a Surgical Tie. It serves to join the ends of two ropes, and has the advantage of strength and ease of tying and untying. It slips or jams only if pulled around a corner. An improperly tied square knot is called a granny knot. A granny knot may come loose under pressure and should not be used.



### Best used for:

People use square knots to tie packages and to fasten towing lines, it is also called the "first aid knot." Most people use a variation of the square knot to tie their shoes.

### Easy way to remember how to tie:

#### Square (Reef) knot

This knot is often remembered by, 'left over right and right over left'.

### One-Handed Tying

#### Instructions:

1. Have the short end away from you.
2. With your index finger hook the long end.
3. Pull the short end under it and through.
4. Tighten the Half Knot. Lay the short end, then the long end, over your hand.

### Variations:



The Granny is shown because it is so commonly tied in error.



The Double Throw Knot or Surgical Knot is very commonly used by Surgeons as the first part of a Ligature.



Thief Knot is included for interest as the final frame, even though it is a useless knot.



When the Square (Reef) Knot is used it is common to add additional Half Knots as security - a tribute to how unsatisfactory a knot it is. A better alternative may be to use two Surgeon's Half Knots, which make better binding

knots for each stage and a secure final knot. When the second Half Surgeon's Knots is tied as a bow, it makes a [Secure Shoelace Bow](#). The Square (Reef) knot can also be tied using bights (loops). For example, to use up long shoelaces, the knot can be tied with loops from the start. This means the final "bow" cannot be untied by pulling the ends - but it makes a secure knot.

### Square Knot (Reef Knot) Details

**First Knot:** The Square (Reef) Knot is usually learned when we tie the laces on our first pair of shoes. Admittedly it is usually a bow that we tie - but the underlying knot is a Square (Reef) Knot. We also learn just how unsatisfactory the knot is. It slips, it comes undone, it jams, and it is all too easy to tie a Granny instead which behaves even less well.

### Square Knot Capsizing

**Caution:** This picture demonstrates how even a "Stack" of Square Knots can capsize and pull undone. These photographs were created by pulling on the ends of the red rope. "There have probably been more lives lost as a result of using a Square Knot as a bend (to tie two ropes together) than from the failure of any other half dozen knots combined.". Never use it for critical loads.



**Uses:** Nevertheless, the Square (Reef) knot has many uses but not where safety is critical, e.g., you can tie a sail cover over a sail; you can tie the string on a gift; and you can tie the laces on your shoes (if they still come with laces). It is also one of the many knots used in macrame. More importantly, the experience of tying a Square Knot teaches the fundamental process of tying a Half Knot or Half Hitch.

5. With your middle finger hook the long end.
6. Pull the short end under it and through.
7. Pull tight to complete the Square (Reef) Knot.

### Method 2

This most common knot is used to tie together two working ends of the same material and size.

1. Take an end of rope in each hand and lay the left hand end over the right.
2. Then, using your right hand, take the end from the left down behind the other rope and up to the front again.
3. Point the ends inwards again, this time the right hand one over the other one, then take it down behind it and up to the front through the loop which has now been formed.
4. Pull the knot tight.

**Purpose:** It is intended to be a binding knot and, tied in the right material against a curved surface, the first Half Knot may bind – but it cannot be trusted. That is why surgeons use an extra turn in the first Half Knot – to achieve the binding required while they prepare the second Half Knot.

## Square Knot (also known as Reef Knot)

The best known and most useful parcel knot. It should preferably only be tied with the two ends of the same material, but should never be used as a bend. It is the best knot for tying a triangular bandage.

**WARNING:** The reef knot should never be used as a bend to join two ropes that will be under load. The reef-knot is only useful in simple applications.

### Good Points

- Easily tied

### Bad Points

- Can slip
- Can come undone under movement
- Will capsize or jam under load

### Notes

- Its relatives, the granny, the thief-knot and the what-knot all have their purposes, but not as a trustful knot
- It is strictly a binding knot, reliable only when pressed against something else and tied in both ends of the same material so restrict its use to bandages and all sorts of parcels.



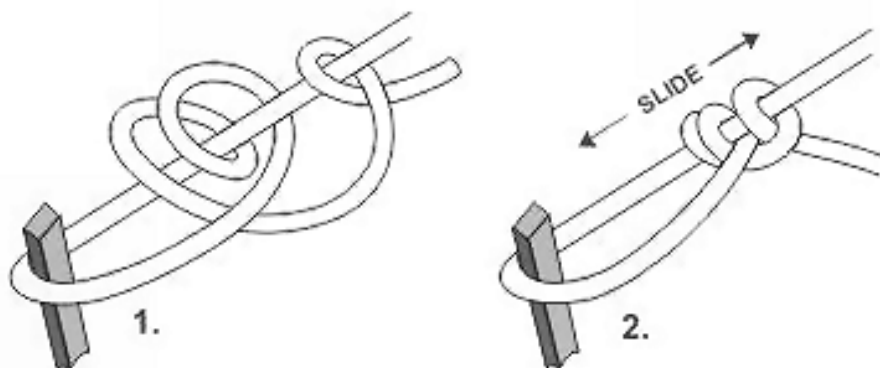
## The Basic Scout Knots - Taut-line Hitch

## Description

# TAUTLINE HITCH

The Tautline Hitch is a favorite among campers. This knot is useful for adjusting the tension of tent guy lines and laundry lines, among other uses.

The knot can be slipped to tighten or loosen a line, then holds fast under load.



The taut-line hitch is an adjustable loop knot for use on lines under tension. It is useful when the length of a line will need to be periodically adjusted in order to maintain tension. It is made by tying a rolling hitch around the standing part after passing around an anchor object. Tension is maintained by sliding the hitch to adjust size of the loop, thus changing the effective length of the standing part without retying the knot.

A taut line, also known as two half-hitches with an extra turn, is used to tighten a line.

### Best used for:

It is typically used for securing tent lines in outdoor activities involving camping, by arborists when climbing trees, for tying down aircraft, for creating adjustable moorings in tidal areas, and to secure loads on vehicles.

### Easy way to remember how to tie:

### One-Handed Tying Instructions:

1. Make a turn around a post or other object several feet from the free end.
2. Coil the free end twice around the standing line working back toward the post.
3. Make one additional coil around the standing line on the outside of the coils just made.
4. Tighten the knot and slide it on the standing line to adjust tension.

### Variations:

#### Midshipman's (Taut Line) Hitch Details

**Structure:** The Midshipman's Hitch creates an adjustable loop in the end of a rope. The knot can be slid up and down the standing end but when tightened holds securely.

**Advantages:** This knot is relatively easy to tie or untie under load and, even after being heavily loaded, it is reasonably easy to release.

**Better Version:** The Midshipman's Hitch described here is better than the "Taut Line" version described below because it creates the useful intermediate Awning Hitch; this takes the strain while tying the final Half Hitch and the completed hitch is more secure.

**Awning Hitch:** This temporary hitch can be useful when rigging a tent because it allows all lines to be adjusted and then secured later with the final half hitch.

**Adjustable Hitch:** The final half hitch normally continues around in the same direction. However, this can be reversed as shown in the last animation step – "Adjustable Hitch".

#### Taut Line Less Secure Version

Ashley claims that the Adjustable Hitch version is less prone to twist. It is, however, also harder to dress and tighten.

**Less Secure Taut Line Hitch Version:** The Taut Line Hitch frequently taught by Scouting groups is less secure because it uses Version 1 of the Rolling Hitch

Regrettable Change: The 1948 (5th edition) of the Boy Scout Handbook included the Midshipman's but used the name Taut-Line Hitch. Inexplicably, after the 5th edition, the Boy Scout Handbook retained the name but showed in its place the less secure version (ABOK # 1856, p 310).

I live in hope that Scouting organizations will abandon both the Taut Line Hitch, and its name, and teach instead the Midshipman's Hitch. To reinforce the need for this change, the misspelling "Taught Line Hitch" is astonishingly widespread.

***Tautline Hitch (also known as Rolling Hitch, Midshipman's Hitch, Tent-line Hitch, Rigger's Hitch)***

Where a lengthwise pull from a pole or static line is needed, this old faithful takes some beating.

***Good Points***

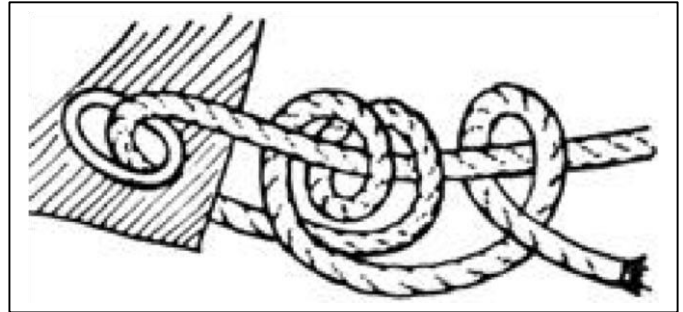
- Strain can be applied sideways to this knot in one direction
- Can be tied around a pole/ring or for attaching a light line to a rope

***Bad Points***

- Can only cope with strain in one direction

***Notes***

- The two diagonal riding turns must go on the side of the object from which the pull will be applied



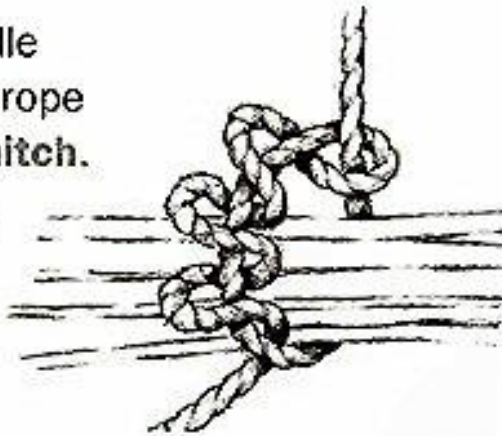
## The Basic Scout Knots - Timber Hitch

# Timber hitch

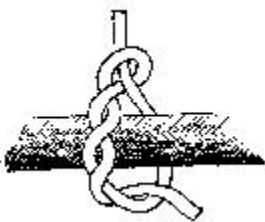
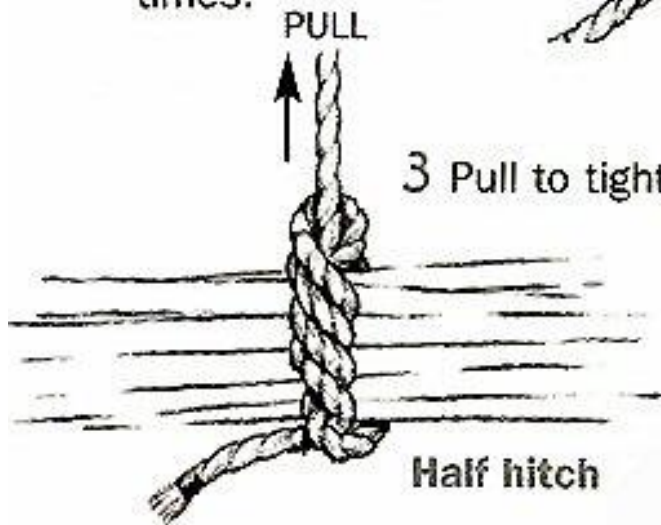
Holds poles or logs together temporarily.

1 With the bundle on top of the rope make a half hitch.

2 Wrap the end round itself two or three times.

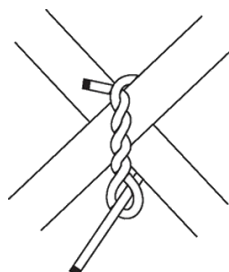
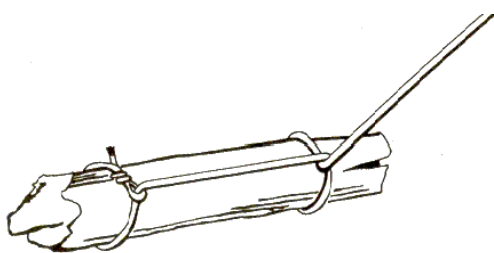


3 Pull to tighten.



One of the simplest yet most effective of hitches.

Used on spars, bales, etc., for commencing a diagonal lashing, and with extra half hitches added, for towing or dragging, etc.



## Description

### Timber hitch

Also known as a Bowyer's Knot, Lumberman's Knot, Countryman's Knot

### Instructions

The timber hitch is a knot used to attach a single length of rope to a cylindrical object. Secure while tension is maintained, it is easily untied even after heavy loading.

The timber hitch is an old knot. It is first known to have been mentioned in a nautical source c. 1625 and illustrated in 1762.

### Usage

As the name suggests, this knot is often used by lumbermen and arborists for attaching ropes to tree trunks, branches, and logs. For stability when towing or lowering long items, the addition of a half-hitch in front of the timber hitch creates a timber hitch and a half hitch, or known as a killick hitch when at sea. A killick is "a small anchor or weight for mooring a boat, sometimes consisting of a stone secured by pieces of wood". This can also prevent the timber hitch from rolling.

This knot is also known as the Bowyer's Knot, as it is used to attach the lower end of the bowstring to the bottom limb on an English longbow.

The hitch is also one of the methods used to connect ukulele and classical guitar strings to the bridge of the instruments.

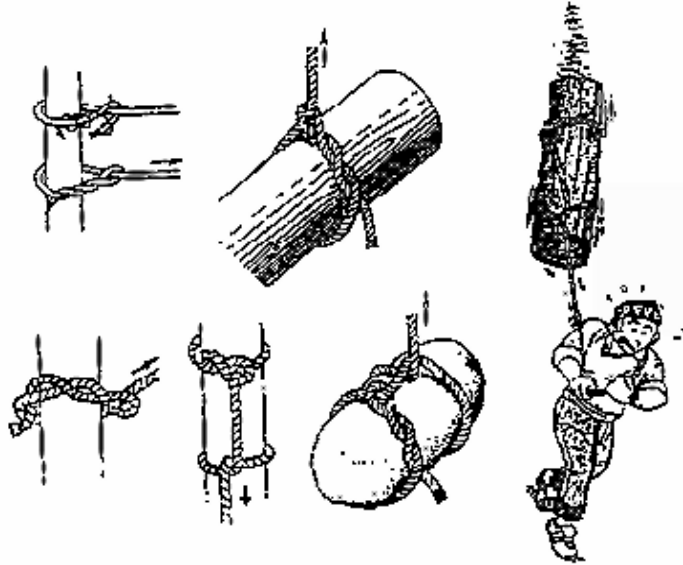
### Tying

To make the knot, pass the rope completely around the object. Pass the running end around the standing part, then through the loop just formed. Make three or more turns (or twists) around the working

## Variations:

**Killick hitch** Also known as Kelleg hitch, Timber Hitch and a Half Hitch  
The killick hitch is a type of hitch knot used to attach a rope to oddly shaped objects. This knot is also known as the kelleg hitch. It is a combination of a timber hitch tied in conjunction with a half hitch, which is added to lend support and stability when pulling or hoisting the object; the addition of a half-hitch in front of the timber hitch creates a timber hitch and a half hitch, known as a killick hitch when at sea. A killick is "a small anchor or weight for mooring a boat, sometimes consisting of a stone secured by pieces of wood".

**Typical use:** Attach a rope to an oddly shaped object.



part. Pull on the standing part to tighten around the object.

A common error in tying can be avoided by assuring that the turns are made in the working part around itself. When making the hitch in laid rope, the turns should be made with the lay of the rope, that is, in the same direction as the twist of the rope.

## Timber hitch step by step:

Three turns are shown. Five are preferred.

## Security

Although The Ashley Book of Knots states that "three tucks or turns are ample", this work was written prior to the wide use of synthetic fiber cordage. Later sources suggest five or more turns may be required for full security in modern ropes.

## Timber Hitch

*(a useful hitch to grip and pull)*

Traditionally used for tying a length of rope around a pole or bundle of logs, the more strain that is put on the hitch the tighter it grips.

### Good Points

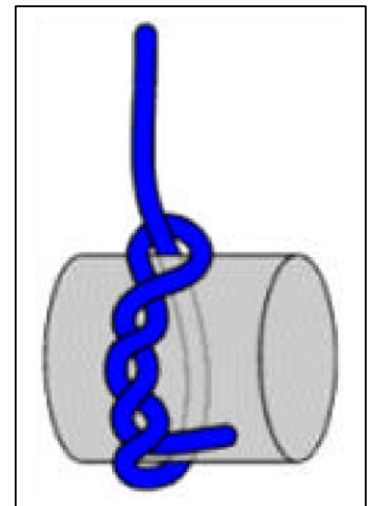
- Quick to tie
- Never jams
- Easy to untie

### Bad Points

- Only secure when under load

### Notes

- Used together with one or more Half Hitches (Killick Hitch) it can be used to drag or hoist a cylindrical object.

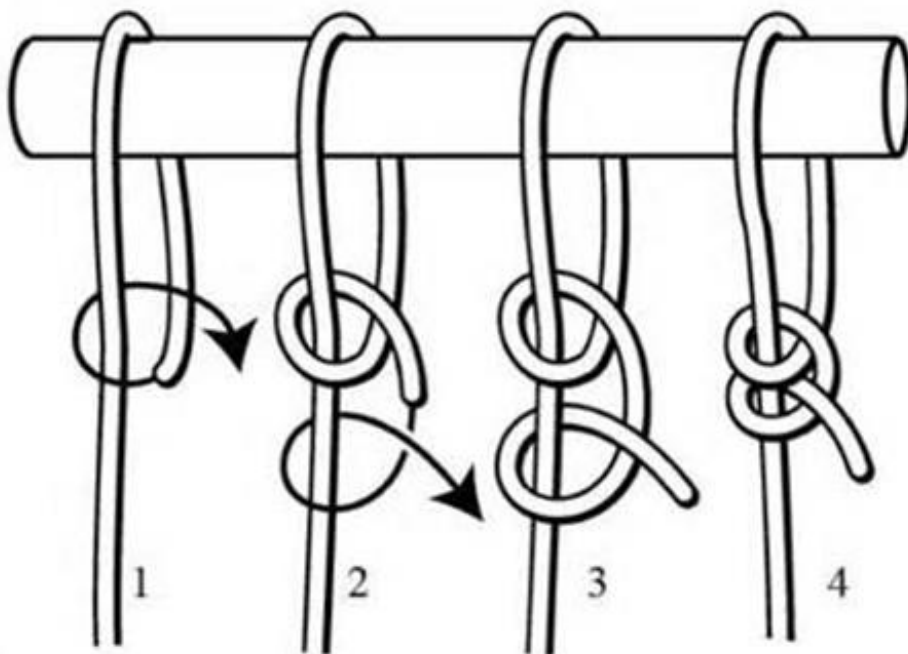




## The Basic Scout Knots - Two Half Hitches

# Two Half Hitches

Two half hitches is my favorite knot. You can tie onto almost anything with it. In the first step, if you go around the post one and a half times instead of just one half time as shown, you will make a knot called "a round turn and two half hitches" which will grip onto the post extremely well. If you go around the post two and a half times or more, you will make a knot called "the pipe hitch" which will form a death grip on the post.



## Description

The two half-hitches is a type of knot, specifically a binding knot or hitch knot. It consists of an overhand knot tied around a post, followed by a half-hitch. Equivalently, it consists of a half-turn around a post followed by a clove hitch of the running end around the standing part.

This knot is also sometimes referred to as a clove hitch over itself.

### Best used for:

The two half hitches is used for tying a rope with a right-angle pull to a pole or ring. It should be constant under load. (Not under constant load). It does not jam. If the object you tie it on has a small diameter it is better to use the "Round Turn with Two Half Hitches". This is the same knot but with an extra turn round the object.

### Easy way to remember how to tie:

## Variations:



### Round Turn and Two Half Hitches

The round turn and two half hitches knot is used for securing a rope to a spar. Has good strength. Ideal for tying a hammock to a tree.

### Buntline hitch

The buntline hitch is useful for attaching lines to rings, eyes, posts, rods, and railings where a compact and secure knot is required.



The buntline hitch is simply a clove hitch tied around the standing part, with the turns of the clove hitch progressing towards the object.

## Tying Instructions:

The following three-step process for tying the two half-hitches.

1. Begin by forming a clockwise loop around the pole, with the working end of the rope on top. Bring the working end through the loop. At this point, you have an overhand knot around the pole.
2. Bring the working end down and to the left. Loop it under the standing end. Pull the working end through the loop just formed, tighten, and slide the knot along the standing end up to the post.
3. A correctly tied two half hitches resembles a clove hitch tied



**Half hitch**



**Double half hitch**



**Slipped half hitch**

Half hitch and double half hitch: The half hitch can be used for hanging a rope from a branch or post. This is another knot that can be made to untie easily with the slipped version. I like to make mine a slipped version. For tethering animals there is a version known as the cow hitch/ lanyard hitch. The cow hitch is made of two single hitches on a post or ring.

around the standing end of the line, not a cow hitch.

To release the knot, pry apart the two hitches with a bending motion. However, it can often be difficult to untie.

To help avoid this problem, tie a slipped variation: in the second half-hitch, pass through a bight, as when tying your shoe, rather than the entire free end.

## Round Turn and Two Half Hitches

*(good all round hitch)*

This knot can be used to secure a rope in a variety of situations. It can be placed under a lot of strain and is easy to untie.

### Good Points

- It rarely jams!
- A good hitch in almost all circumstances
- Easy to untie even after being subjected to a large strain
- Easy to tie even when the line is under tension

### Bad Points

- Not many!
- Possible to work loose if subject to spasmodic motion

### Notes

- Sometimes seen with more than two half hitches either to make it more secure or to use up excess rope





HEAD



EYE



TEMPLE



OPEN HAND



HIP



GROIN



STUMP



FOOT



FIST



PALM



# FORTY KNOTS

A VISUAL AID FOR KNOT TYING

OFFICIAL EQUIPMENT—BOY SCOUTS OF AMERICA

The Scout Seal is Your Guarantee of Quality, Excellence and Performance



OVERHAND KNOT



SQUARE KNOT



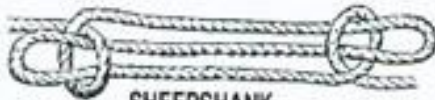
SHEET BEND



SHEET BEND DOUBLE



GRANNY KNOT



SHEEPSHANK



DOUBLE OVERHAND



BOWLINE



RUNNING KNOT



FIGURE EIGHT KNOT



OVERHAND BOW



DOUBLE CARRICK BEND



BOW KNOT



FIGURE EIGHT DOUBLE



CLOVE HITCH



HALF HITCH



TIMBER HITCH



KILLICK HITCH



HALYARD BEND



ROLLING HITCH



FISHERMAN'S BEND



TWO HALF HITCHES



CHAIN HITCH



TAUT-LINE HITCH



SLIPPERY HITCH



MIDSHIPMAN'S HITCH



TILLER'S HITCH



BOWLINE ON BIGHT



LARIAT LOOP



CAT'S PAW



LARK'S HEAD



BLACKWALL HITCH



FISHERMAN'S KNOT



FISHERMAN'S EYE



HITCHING TIE



SURGEON'S KNOT



MARLINSPIKE HITCH



MILLER'S KNOT



SAILOR'S KNOT



STEVODORE'S KNOT