

Troop 777

Knot Master

Revised September 18, 2021



Congratulations on embarking on Troop 777's Knot Master Program!

The purpose of the Knot Master Program is to encourage participants to learn to tie a full range of useful and practical knots.

By the time you complete the entire program, you will have mastered and have at your disposal at least 25 new knots!

1. Goals Of The Knot Master Program

- Learn knot skills for rank advancement, merit badges, and practical situations.
- Provide opportunities for one-on-one teaching using the E.D.G.E. method.
- Provide opportunities for mastery and advancement with increasingly challenging levels.
- Recognize self-directed effort and achievement.

2. Program Overview

This program holds to BSA's longstanding tradition where Silver outranks Gold (and is a higher achievement). Accordingly, Gold is the first level, followed by Silver.

Everyone is encouraged to work with their fellow Scouts to learn to tie their knots. A useful resource is included in this document, starting with Section 4.2. In addition, other resources may be used, such as other books or online references.

In general, the program flow is as follows:

- Scouts should work on each requirement and record their progress for each award level using the Knot Master Progress Sheet in Section 4.1.
- Some other person must certify that the requirement(s) have been met. Self-certification is not allowed.

Very important regarding requirement sign-off:

- Sign-off should come from other Scouts. In isolated instances, adults may provide sign-off.
 - The person who signs must be qualified to certify completion. If they do not feel qualified, they should rightfully withhold their signature. Because "a Scout is trustworthy", the Troop presumes that this privilege will not be abused.
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- When the requirements for each award are completed, the Scout must turn in the completed progress sheet (for that award level) to the Scoutmaster.

3. Requirements

3.1. Gold Award Level – Introductory Level

Requirements:

- Possess the black shoulder cord, given to you when you joined. Lost shoulder cords must be replaced, at a cost of \$5, payable to Troop 777.
- Demonstrate how to tie all the “basic” knots listed in Section 3.1.1. For each respective knot, know the name of the knot and its uses.
- Demonstrate how to tie the Gold “advanced” knots listed in Section 3.1.2. For each respective knot, know the name of the knot and its uses.
- Help another Scout earn the Gold Knot Master Award.



3.1.1. Basic Knots

- Knots
 - Overhand Knot ([reference](#))
 - Slip Knot ([reference](#))
 - Square Knot ([reference](#))
 - Two Half-Hitches ([reference](#))
 - Taut Line Hitch ([reference](#))
 - Sheet Bend ([reference](#))
 - Bowline – must master both the “round-the-tree” and one-handed forms of tying ([reference](#))
 - Timber Hitch ([reference](#))
 - Clove Hitch – must master both the single-end method and two loop method ([reference](#))
- Lashings
 - Square ([reference](#))
 - Shear ([reference](#))
 - Diagonal ([reference](#))
 - Tripod ([reference](#))

3.1.2. Gold “Advanced” Knots

- Figure-8 ([reference](#))
- Alpine Butterfly ([reference](#))
- Double Fisherman’s Knot ([reference](#))
- Trucker’s Hitch ([reference](#))
- Prusik Hitch ([reference](#))
- Bowline-on-a-bight ([reference](#))

3.2. Silver Level (highest level) – Master

Requirements:

- Earn the Gold Knot Master Award.
- Demonstrate how to tie the Silver “advanced” knots listed in Section 3.2.1. For each respective knot, know the name of the knot and its uses.
- Help another Scout earn the Silver Knot Master Award.

3.2.1. Silver “Advanced” Knots

- Surgeon’s Knot ([reference](#))
- Carrick Bend ([reference](#))
- Diamond (Friendship) Knot ([reference](#))
- Cobra Stitch ([reference](#))
- Monkey Fist ([reference](#))
- Woggle (Turk’s Head) ([reference](#))



4. APPENDIX

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4.1. Progress Sheet

BASIC KNOTS/LASHINGS

		DATE	SIGNATURE
	Possess black shoulder cord		
Know name and use	Overhand Knot		
	Slip Knot		
	Square Knot		
	Two Half-Hitches		
	Taut Line Hitch		
	Sheet Bend		
	Bowline		
	"round-the-tree" form		
	one-handed		
	Timber Hitch		
	Clove Hitch		
	single-ended		
	two loop		
	Square Lashing		
	Shear Lashing		
Diagonal Lashing			
Tripod Lashing			

GOLD "ADVANCED" KNOTS

		DATE	SIGNATURE
Know name and use	Figure 8		
	Alpine Butterfly		
	Double Fisherman		
	Trucker's Hitch		
	Prusik Hitch		
	Bowline-on-a-bight		
	Help another Scout earn the Gold Award		

SILVER "ADVANCED" KNOTS

		DATE	SIGNATURE
Know name and use	Surgeon		
	Carrick Bend		
	Diamond Knot (Friendship Knot)		
	Cobra Stitch		
	Monkey Fist		
	Woggle (Turk's Head)		
	Help another Scout earn the Silver Award		

4.2. Knot Reference

All knots are listed below, in the order shown in each award level.

4.2.1. Basic Knots/Lashings

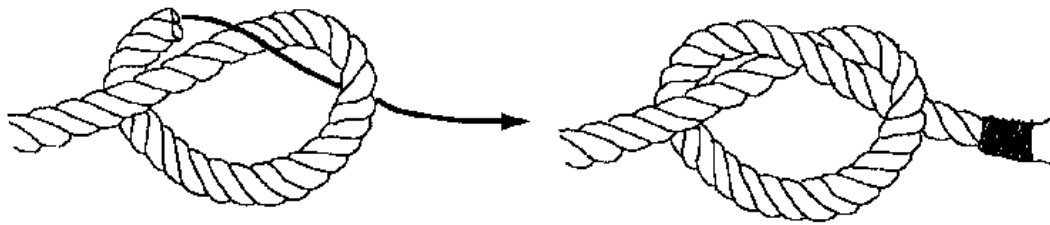
4.2.1.1. Overhand Knot

Type: Stopper

Uses: Stopper knot; forms the basis for many other knots.

The Overhead Knot is one of the most fundamental knots and forms the basis for many other knots. It is the simplest way to tie a quick and easy stopper knot, and can be used to keep the end of a rope from unraveling.

The Overhand Knot is very secure, but can bind tightly, especially in smaller line, and should be used when the knot is intended to be permanent.



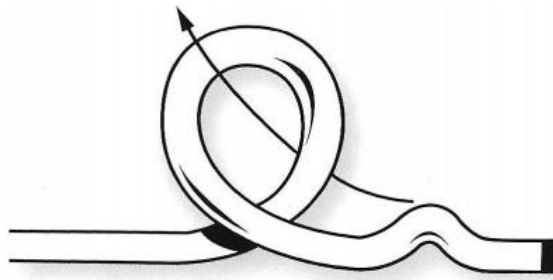
4.2.1.2. Slip Knot

Type: Stopper

Uses: Temporary stopper knot.

Close examination will reveal that the Slip Knot is actually a simple Overhand Knot tied with a bight, so could be called a Slipped Overhand. It is one of the most frequently tied knots, and makes a good temporary stopper knot that is easily untied.

The Slip Knot illustrates a basic principle: putting a bight into the final tuck of a knot, instead of using the end of the rope, makes untying most basic knots quick and easy, even when the knot is tightly bound.



4.2.1.3. Square Knot

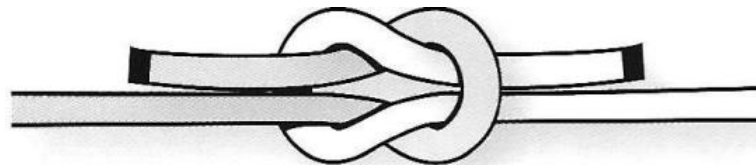
Type: Binding

Uses: Tying shoelaces, binding bundles, tying bandages.

The Square Knot is an ancient and simple knot commonly used to bind packages and bundles. It is well suited for tying bandages, as the knot lies flat, making the dressing more comfortable and effective. When tied correctly, the working ends will lie on the same side of the knot. If they are on opposite sides, the result is called a Thief Knot.

The slipped version of the Square Knot, known as the Bowknot, is universally used to fasten shoelaces.

While easy to tie, the Square Knot can capsize easily and should not be trusted. Never use the Square Knot as a bend (to join two ropes) or for critical loads.



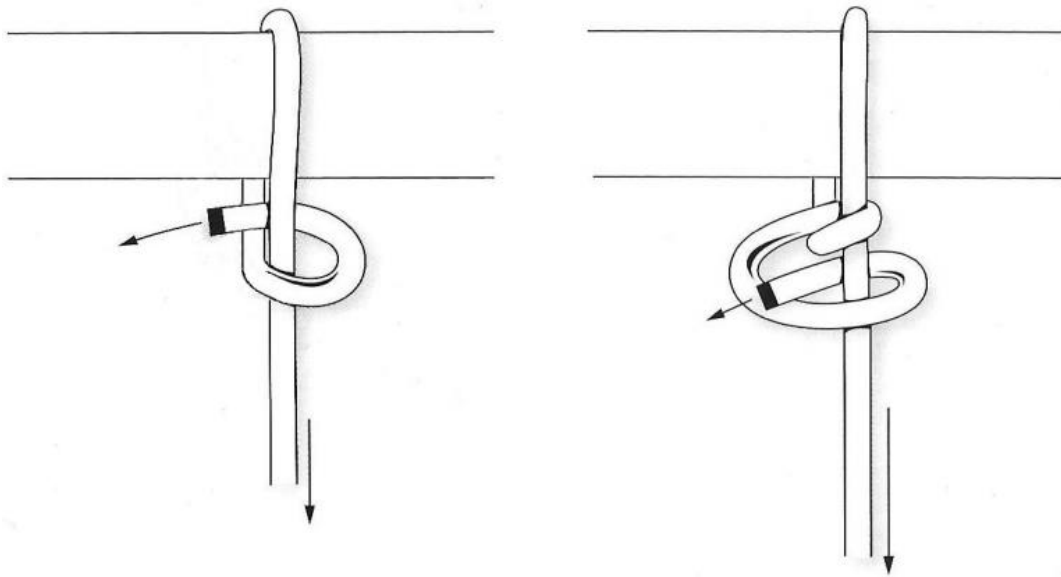
4.2.1.4. Two Half-Hitches

Type: Hitch

Uses: A quick and temporary tie-off to a post.

Two Half Hitches is a reliable and useful knot for attaching a rope to a pole or boat mooring. As its name suggests, it is formed from two half hitches, one after the other. To finish, push the half hitches together and snug them by pulling on the standing part.

Note that the two half hitches form a [Clove Hitch](#) around the standing end of the rope. To make this knot easier to untie, slip the second hitch (by pulling a bight through the hitch instead of the end of the rope).



4.2.1.5. Taut Line Hitch

Type: Hitch

Uses: Fastening lines under tension; tent or fly guy lines, tying down cargo.

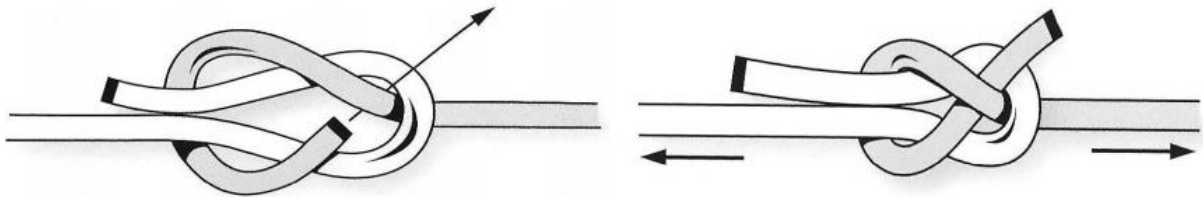
The Taut-line Hitch is particularly useful on lines under tension. This knot allows for the length of a line to be periodically adjusted in order to maintain tension without untying the knot. Tension in the line can be adjusted by sliding the knot to change the effective length of the standing part.



4.2.1.6. Sheet Bend

Type: Bend

Uses: Joining ropes of similar or different sizes.



4.2.1.7. Bowline

Type: Loop

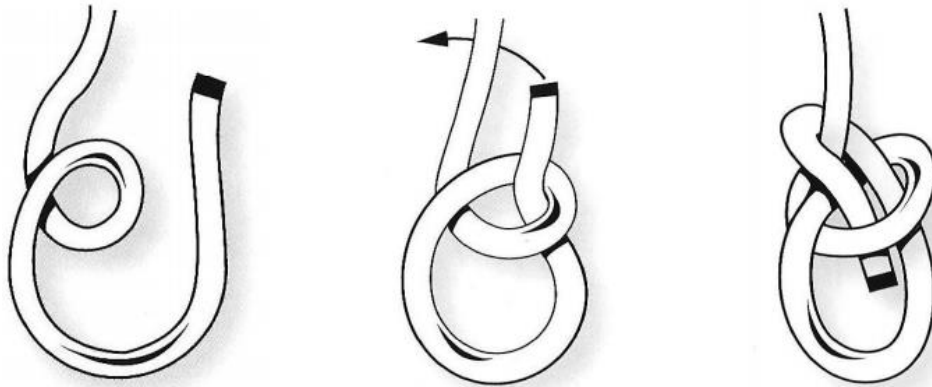
Uses: Forming a fixed loop at the end of a rope; rescue line; mooring line.

****Must master both the one-handed and “round-the-tree” forms of tying**

The Bowline Knot takes its name from the bow line, a rope that holds the edge of a square sail towards the bow of the ship and into the wind. The Bowline, often referred to as “The King of Knots,” is an extremely versatile knot with a multitude of uses. When tied and dressed correctly it forms a secure fixed loop that will not slip or bind. The Bowline will not tighten down on an object it’s looped around and so can be used to form a loop in the end of a rescue line.

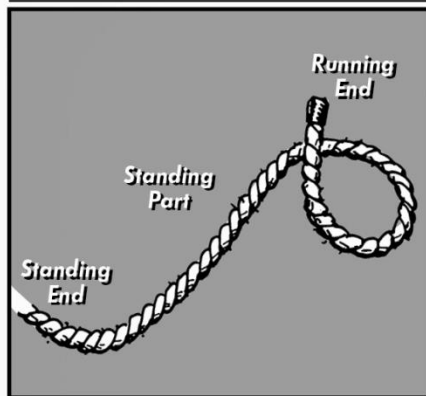
When the Bowline is properly tied, the tail lies in the middle of the loop. Passing the opposite way around the standing part results in a Left-Handed Bowline, which is less reliable than the standard Bowline.

It is possible for the Bowline to work loose when not loaded. The knot can be made more reliable by fastening the tail of the Bowline to the loop or to the standing part with a stopper knot.



“Round-the-tree” method

HOW TO TIE A ONE-HANDED BOWLINE KNOT



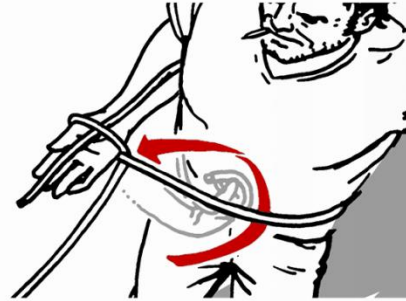
1: **REMEMBER** your knot lingo. Here's what you'll need to know.



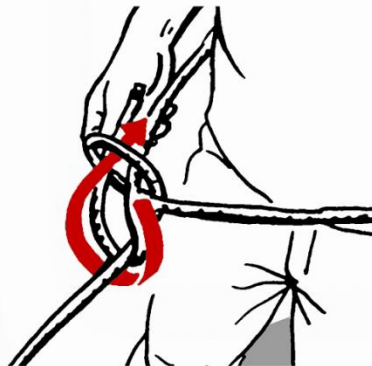
2: **GRIP** the running end so that you've got at least six inches of rope coming out of your hand.



3: **BRING** the rope behind your back, then grab the standing part with your pinky while still holding onto the running end.



4: **PASS** the running end over the standing part, and then back up between your body and the rope while maintaining your grip on the running end.



5: **GRAB** the running end from under the standing part and then pull through the loop.



6: **DRAW** the running end back slowly through the loop and pull taut.

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One-handed method

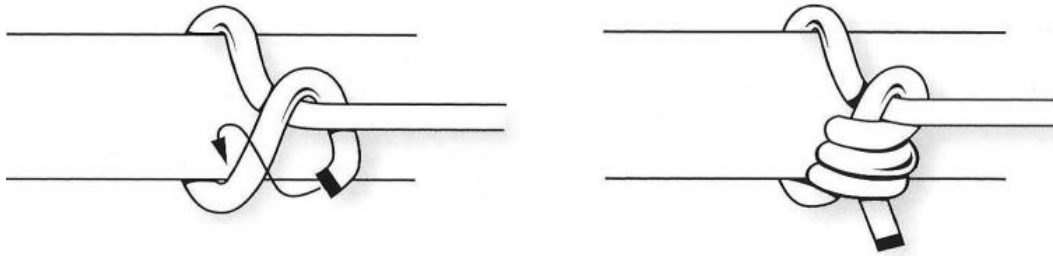
4.2.1.8. Timber Hitch

Type: Hitch

Uses: Temporary hitch for attaching a rope to a round object; dragging logs or poles, attaching guitar strings.

The Timber Hitch is traditionally used to hoist or drag logs or poles. It is also the knot that starts the [Diagonal Lashing](#). The Timber Hitch will remain secure as long as tension is placed on the standing end of the rope. When tension is released, the knot is easily loosened and untied.

When used to drag a log or heavy pole, the Timber Hitch is usually placed near the center of the log and a separate half hitch is tied near the end of the log to act as a guide and to improve the stability of the Timber Hitch.



4.2.1.9. Clove Hitch

Type: Hitch

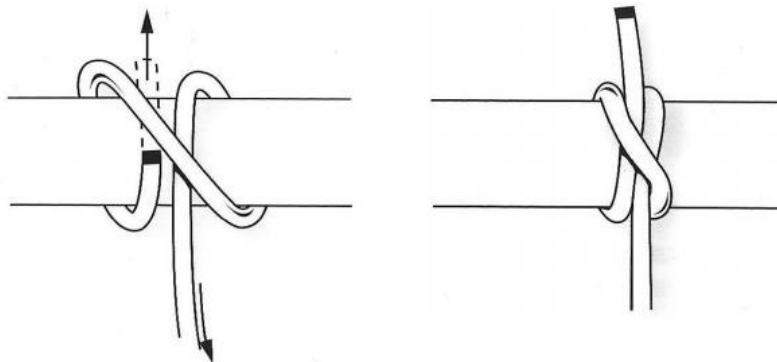
Uses: A quick, easily adjustable hitch; basis for many lashings.

****Must master both the single-end method and the two loop method**

The Clove Hitch, along with the [Bowline](#) and the [Sheet Bend](#), is considered one of the most essential knots. It consists of two identical half hitches made successively around an object.

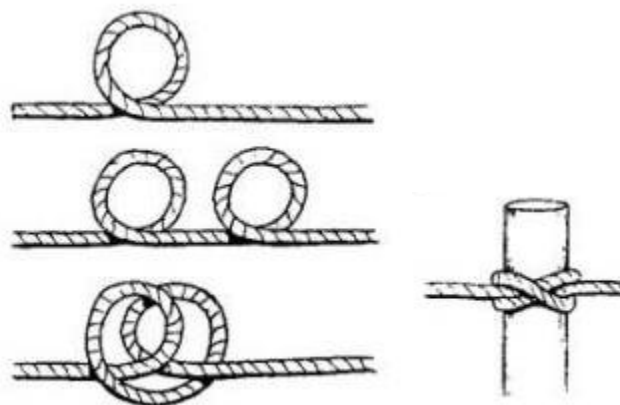
Although the Clove Hitch can be used as a binding knot, it is not particularly secure in that role. This knot has two major faults: it can slip and it can bind so tightly that it becomes impossible to untie. This knot should not be considered a permanent connection, and should not be used for critical or heavy loads.

The Clove Hitch can be used to start most lashings, and can serve as a quick temporary hitch to tie a rope to a post.



Single End Method

The clove hitch can also be made with 2 [overhand loops](#). Form one overhand loop, followed by a second overhand loop. Slide the left loop over the right loop and place the whole thing over a pole.



Two-Loop Method

4.2.1.10. Square Lashing

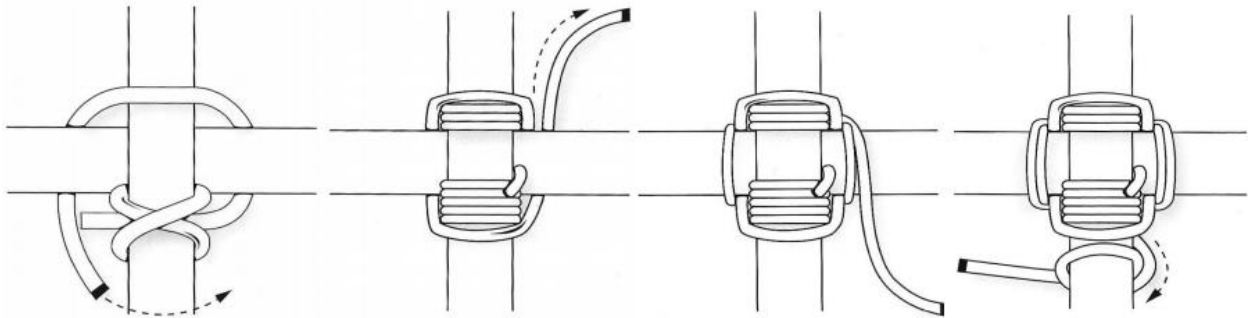
Type: Lashing

Uses: Joining poles that meet at right angles; square structures; scaffolding.

Lashings are used to tie together poles, spars and branches and can be used to build all kinds of structures and camp equipment. Lashings are composed of two parts: Wrapping turns and Frapping turns. Wraps are made around the poles to hold them tightly together. Fraps are made between the poles and around the wraps, and serve to pull the wraps even tighter.

A Square Lashing is used to bind together poles that meet at right angles. This type of lashing starts and ends with a [Clove Hitch](#).

The key to tying a good Square Lashing is to keep tension on the lashing at all stages



4.2.1.11. Shear Lashing

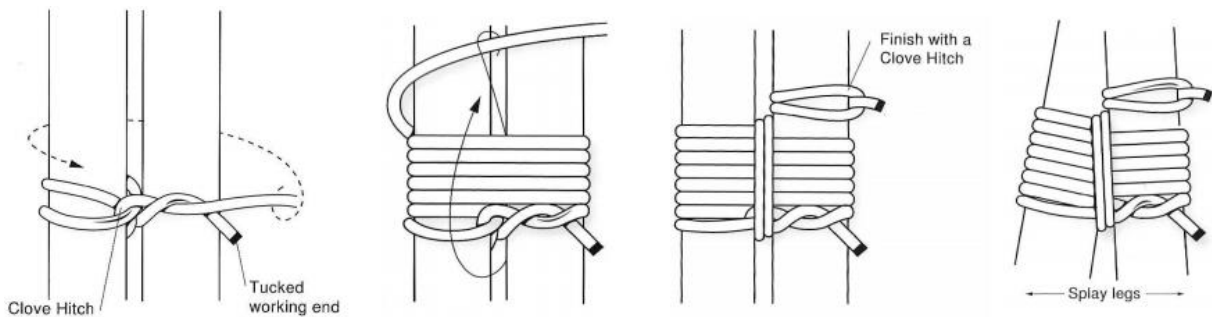
Type: Lashing

Uses: Lashing the ends of two poles together; A-frame.

The Shear Lashing is used to lash the ends of two poles together. Poles secured using this lashing can be spread and raised as an A-frame for a variety of structures.

If making an A-frame, use only moderate tension in the wrapping turns; if the poles are wrapped too tightly it will prove difficult to spread them to form the A-frame. The frapping turns in this and any other lashing should be as tight as possible to make the lashing secure.

The Shear Lashing starts and ends with a [Clove Hitch](#).



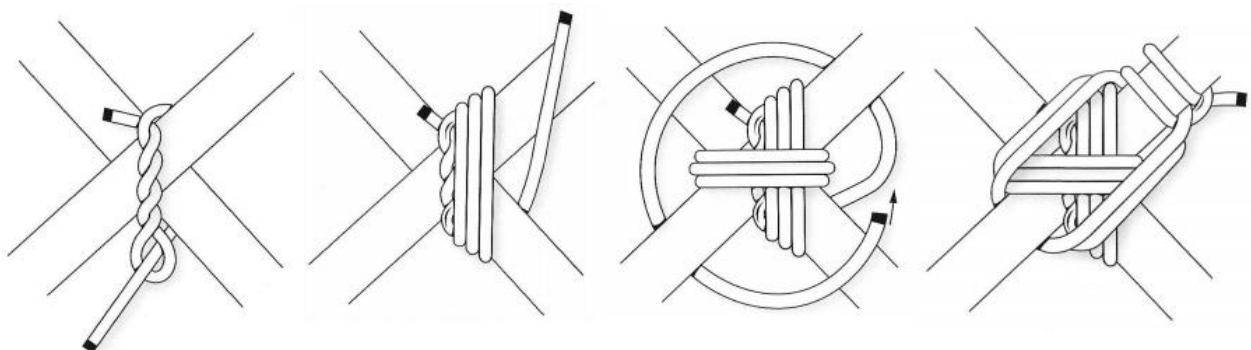
4.2.1.12. Diagonal Lashing

Type: Lashing

Uses: Joining poles that meet at a variety of angles; structural support.

The Diagonal Lashing is used to secure poles that cross at a variety of angles. This type of lashing is generally used for bracing and non-load bearing support. Large, semi-permanent structures may be built with a combination of [Square Lashings](#), which are stronger, and [Diagonal Lashings](#).

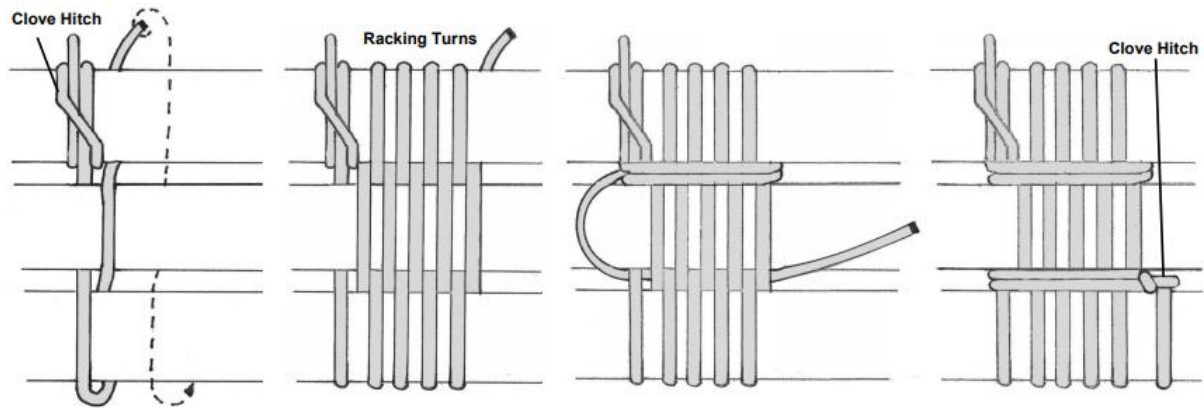
The Diagonal Lashing starts with a [Timber Hitch](#) and ends with a [Clove Hitch](#). The initial Timber Hitch serves to pull and hold the two poles together while the lashing is tied.



4.2.1.13. Tripod Lashing

Type: Lashing

Uses: Lashing three poles to form a tripod; tepees; table supports; weather rock.



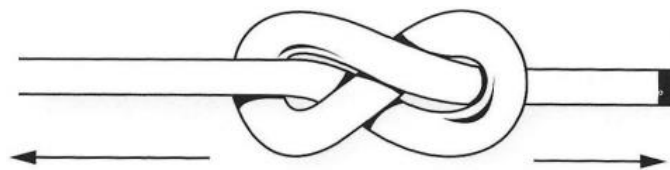
4.2.2. Gold Award Knots

4.2.2.1. Figure-8

Type: Stopper

Uses: Simple stopper knot; basis for many other knots.

The Figure Eight Knot provides a quick and simple stopper knot that does not bind and can be untied easily. This knot forms the basis for many climbing knots, including the Figure Eight Bend, The Double Figure Eight Loop and the In-Line Figure Eight. When not loaded the Figure Eight may shake loose.



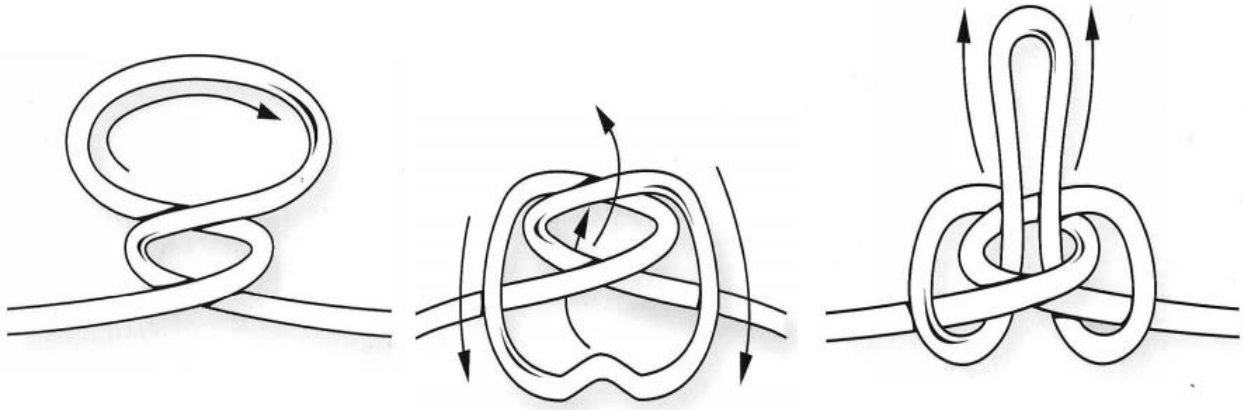
4.2.2.2. Alpine Butterfly

Type: Loop

Uses: Tie a secure loop in the middle of a rope; handhold; isolate a damaged section of rope.

The Alpine Butterfly is used to provide a stable, secure loop in the middle of a rope. Load can be safely applied on either or both standing ends, as well as on the loop. The Alpine Butterfly will not flip over or slip and is easily untied even after being put under strain.

This knot may be used to shorten a rope or to isolate a worn or damaged section of rope.



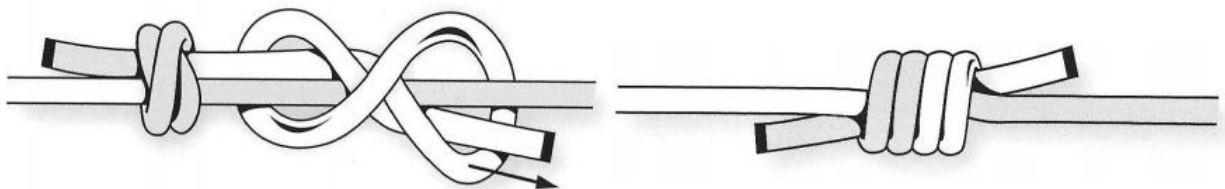
4.2.2.3. Double Fisherman's Knot

Type: Bend

Uses: Joining lengths of fishing line; tying together two climbing ropes; Prusik Loop.

The Double Fisherman's Knot is one of the most reliable bends, and is the preferred bend for tying together climbing ropes or forming a [Prusik Loop](#). When used to join lengths of fishing line, the Double Fisherman's Knot offers more security than the standard Fisherman's Knot when tied in monofilament and other slippery material.

The Double Fisherman's Knot is a symmetrical bend formed by tying a Safety Knot (Double Overhand Knot) in each rope around the standing part of the other rope.



4.2.2.4. Trucker's Hitch

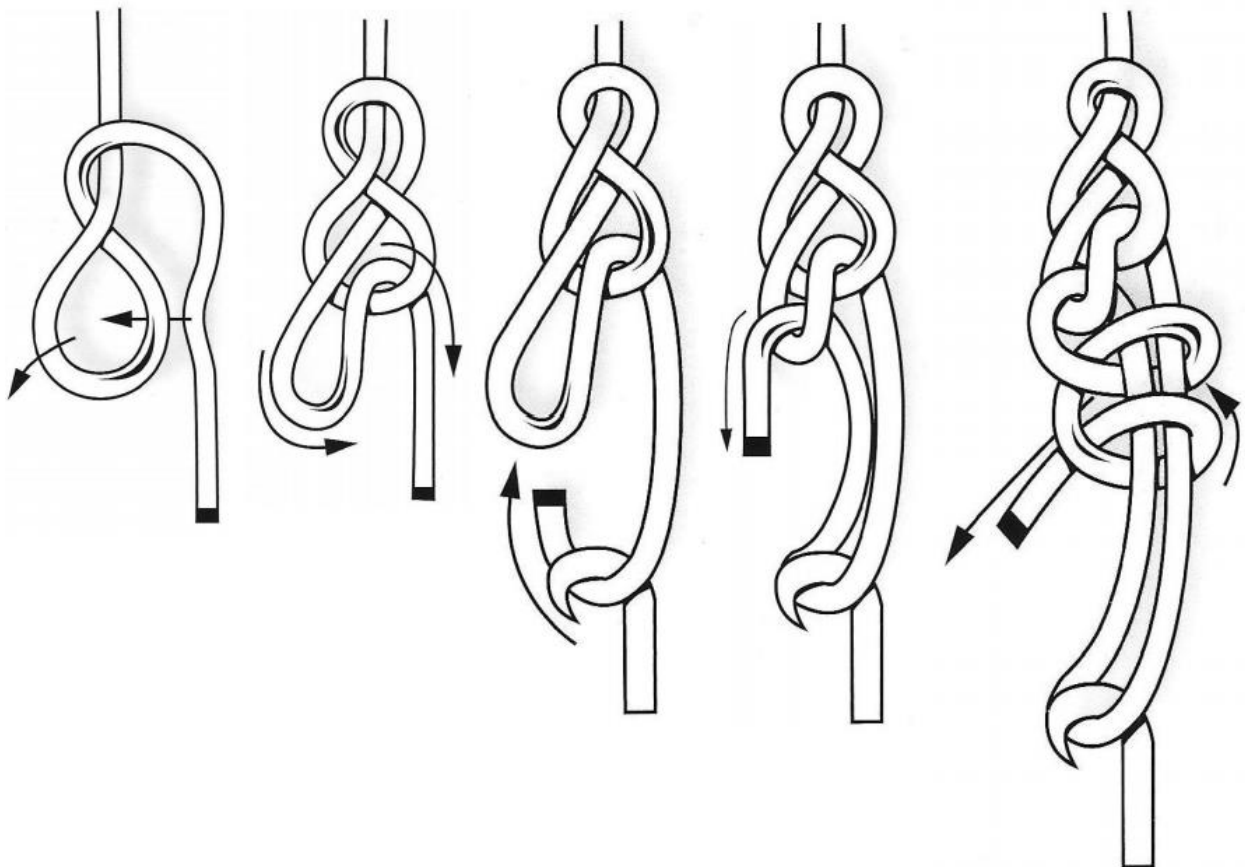
Type: Hitch

Uses: Securing cargo or tarpaulins on trucks and trailers.

The Trucker's Hitch is a compound knot commonly used for securing loads on trucks or trailers. The structure of the knot, using loops and turns in the rope itself to form a crude block and tackle, provides a theoretical mechanical advantage of 3-to-1, allowing the rope to be drawn down very tightly.

There are several variations of the Trucker's Hitch in widespread use. The common elements are a knot to create a loop at the top, the 3-to-1 purchase created by passing the working end through the top loop, and a hitch to secure the end.

The version illustrated below starts with a Slipped [Figure Eight Knot](#) to create the top loop, and the final knot is secured with [Two Half Hitches](#). Other options to create the top loop include the [Bowline on a Bight](#) and the [Alpine Butterfly](#).

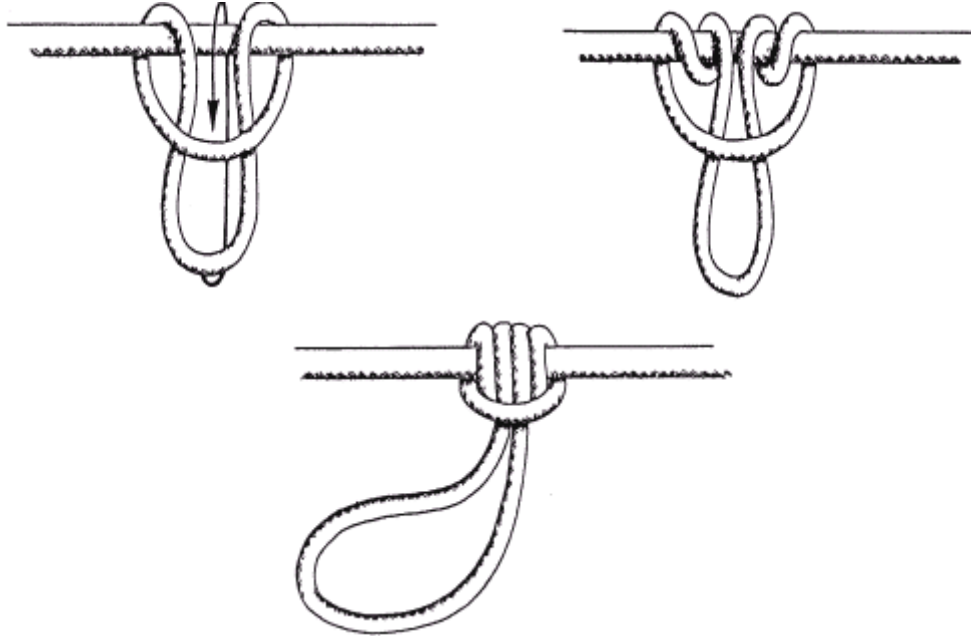


4.2.2.5. Prusik Hitch

Type: Hitch

Uses: The principal use of a Prusik Knot is allowing a rope to be climbed – ascending or “*Prusiking*”. Two Prusik loops are alternately slid up the static rope.

A Prusik hitch is tied around another rope. The unique aspect of a Prusik hitch is that it slides freely along the other rope when unloaded yet grabs tightly when loaded.



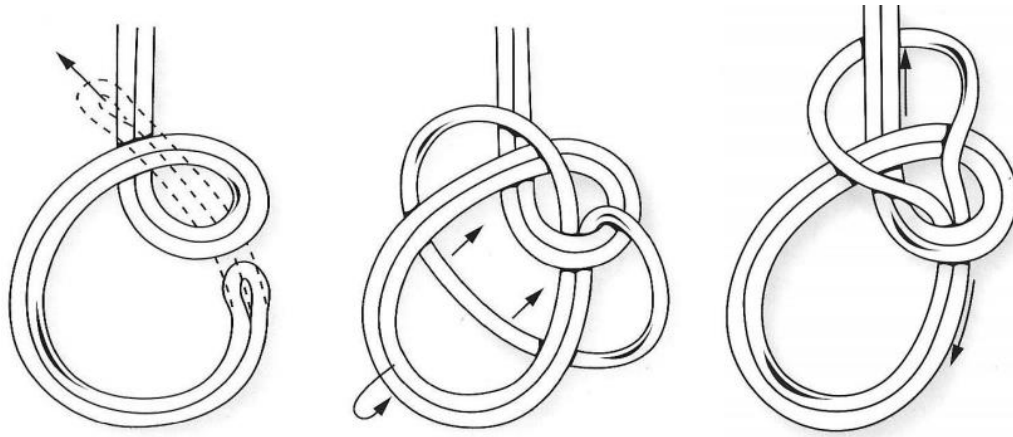
4.2.2.6. Bowline-on-a-bight

Type: Loop

Uses: Forming a secure double loop; boson's chair; toe/hand hold; rescue line.

The Bowline on a Bight is similar to the regular [Bowline](#), except that it is tied on a bight rather than with the end of the rope. It makes a quick, secure double loop anywhere in the rope that will not slip or bind.

The Bowline on a Bight can be used to provide a fixed loop in the middle of a rope or to make an emergency boson's chair. This knot may slip if only one loop is loaded.



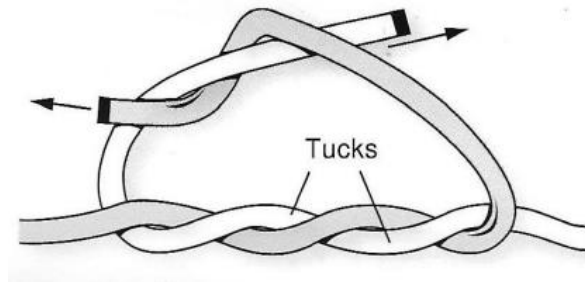
4.2.3. Silver Award Knots

4.2.3.1. Surgeon's Knot

Type: Binding

Uses: Situations where a binding knot is tied under load; suturing; variations used in fly fishing.

The Surgeon's Knot is a simple modification to the [Square Knot](#). It adds an extra tuck when tying the first overhand, forming a double overhand, thus adding friction and preventing the knot from slipping while the final part of the knot is tied. The Surgeon's Knot has more holding power than the Square Knot and is commonly used by surgeons in situations where it is important to maintain tension while tying a suture.

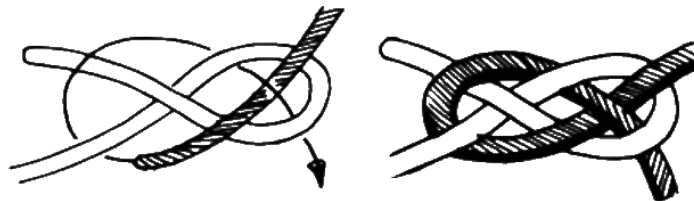


4.2.3.2. Carrick Bend

Type: Bend

Uses: Particularly appropriate for very heavy rope or cable that is too large and stiff to be easily formed into other common bends. Also used for decorative mats.

The Carrick bend, also known as the Sailor's breastplate, is a knot used for joining two lines. It is particularly appropriate for very heavy rope or cable that is too large and stiff to be easily formed into other common bends. It will not jam even after carrying a significant load or being soaked with water.



4.2.3.3. Diamond Knot (Friendship Knot)

Type: Decorative

Uses: Decorative round or flattened button; knife lanyard; key fob.

The Diamond, or Friendship, Knot was traditionally used to fashion a soft, durable button for fastening clothing. The knot can be woven and tightened to form a small, rounded button-like shape and used to decorate the end of a cord.

Alternatively, if the top loop of the knot is left long, the knot is often referred to as a Knife Lanyard Knot or Friendship Knot, and may be used as a decorative knife lanyard or key fob.

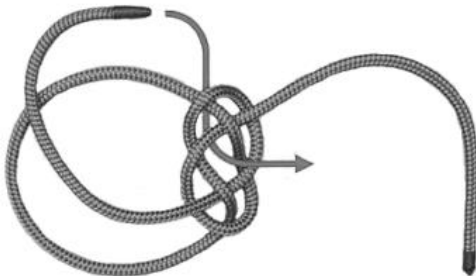
1. Form two overhand loops as pictured below.



2. Pull a short bight through the loop on the right, then pass the long end under the short end and pass it through the bight. This will form a Carrick Bend.



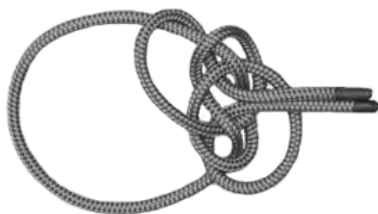
3. Pass the same end up and outside the bight, then through the diamond-shaped center of the Carrick Bend, as indicated by the arrow below.



4. Now pass the other end around and through the center of the Carrick Bend.



5. Both ends have now passed through the Carrick Bend. To tighten, carefully work the slack out through the knot.



6. In the knot pictured below the center loop has been left long to form a Knife Lanyard Knot. To form the Chinese Button Knot, carefully pull the slack out of the center loop as the knot is tightened, and the loop will be drawn into the center, forming a neat button.



4.2.3.4. Cobra Stitch

Type: Decorative

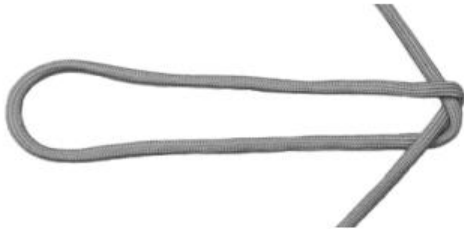
Uses: Lanyard; wrist band, rope storage.

The Cobra Stitch is one of the most widely used lanyard knots. It is composed of a series of alternating half knots tied around a two-strand core, creating what is essentially a stack of Square Knots around the core.

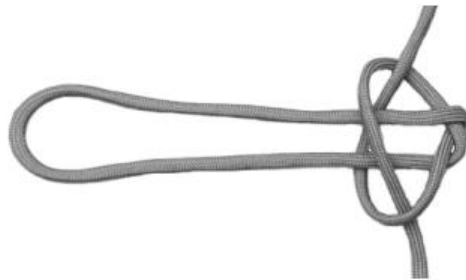
The Cobra Stitch can be used to create an endless variety of straps and lanyards, and is commonly used to tie paracord survival bracelets.

Variations include the King Cobra, a double-wide version in which an additional series of knots is tied using the initial Cobra Stitch as a core, and the Twisted Cobra, a twisting version created by tying Granny Knots rather than [Square Knots](#).

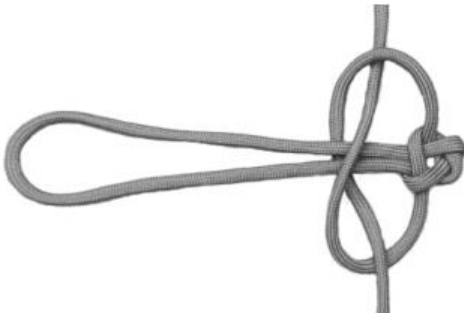
1. The Cobra Stitch is composed of a series of alternating half knots (overhand knots). To begin, form a long loop and tie an overhand knot.



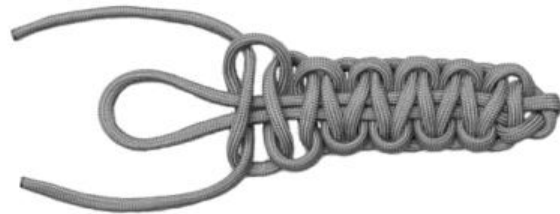
2. Tie a half knot around the loop and tighten.



3. Keeping the same rope in front, tie another half knot and tighten.



4. Keep repeating the pattern until you reach the top of the loop. Notice that the same rope remains in front for the entire Cobra Stitch. Leave the last several knots loose.



5. Tuck the ends inside the loose knots.



6. Tighten the loose knots and trim the ends off.



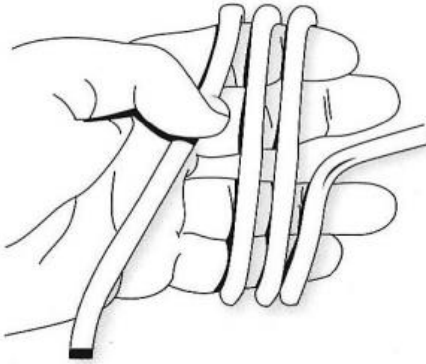
4.2.3.5. Monkey-Fist

Type: Decorative

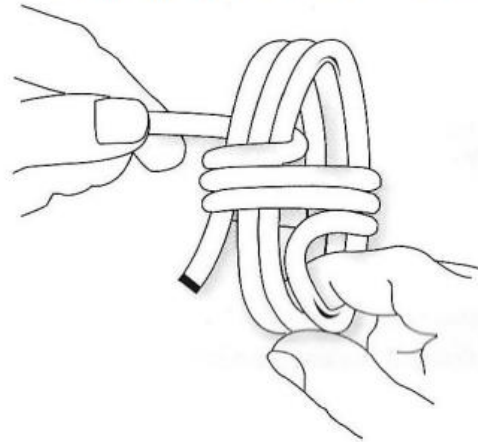
Uses: Makes a decorative knob on the end of a rope; key fog; may be used to weight a rope for heaving.

Traditionally used to weight the end of a heaving line, the Monkey's Fist can be used to make a large decorative ball at the end of a rope. To give the Monkey's Fist a finished look, tie a stopper knot in the standing end of the rope and tuck it into the knot before tightening the turns.

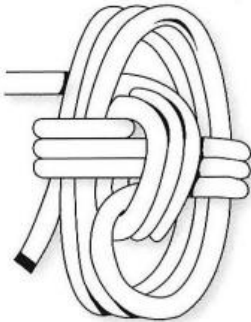
1. Make the initial set of three vertical



2. Hold the turns in place as you add three horizontal turns.



3. Add three turns that passing through the middle of the knot, wrapping around the horizontal turns.



4. Keeping the loops in place, carefully work the slack out through the knot, one turn at a time.



4.2.3.6. Woggle (Turk's Head)

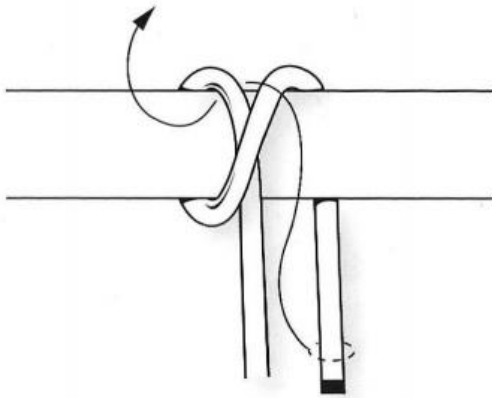
Type: Decorative

Uses: Woggle; decoration for handle or walking stick; possible binding.

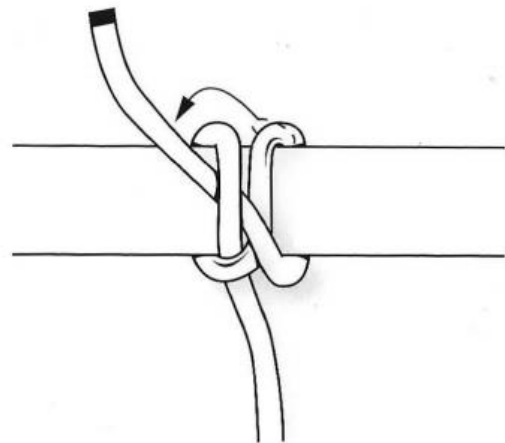
The Turk's Head is a decorative knot composed of a variable number of strands woven together to form a closed loop. While generally formed around a cylinder, the knot can also be created in a spherical shape or as a flat, mat-like shape.

The Turk's Head, which takes its name from its resemblance to a turban, is primarily a decorative knot, and can be used to create a woggle (neckerchief slide) or to decorate a walking stick. If tightened, the Turk's Head may serve as a binding. The illustration below shows the first winding pass. To double, repeat the pattern. To finish the knot, trim the ends, tuck them inside the knot and fuse.

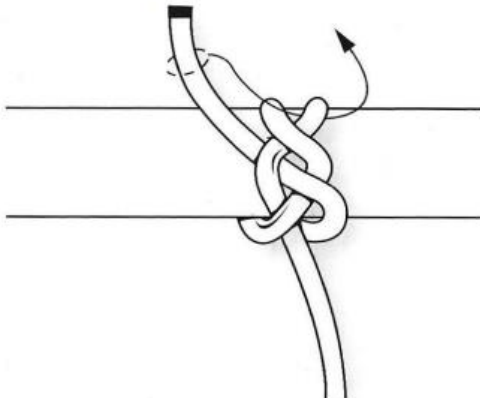
Pass the running end twice around the bar, then over and under as indicated by the arrow.



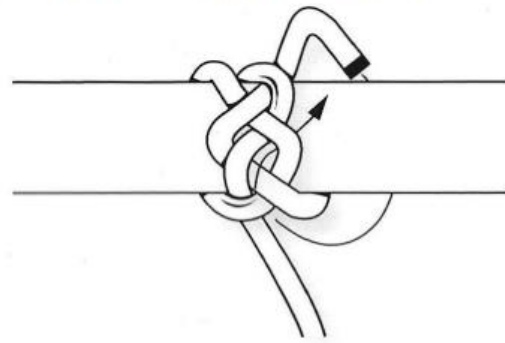
Flip the right crossing over the left one.



Thread the running end through the right crossing as indicated by the arrow.



To double the knot, bring the running end around the back to the original start and follow the same pattern again, staying next to the cord you are doubling without crossing over it.



4.3. Online References

- www.animatedknots.com
- www.knots3d.com
- <https://www.roffs.com/2016/11/17-essential-knots-every-survivalist-needs-know/>
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