PERTH FLYING SQUADRON YACHT CLUB

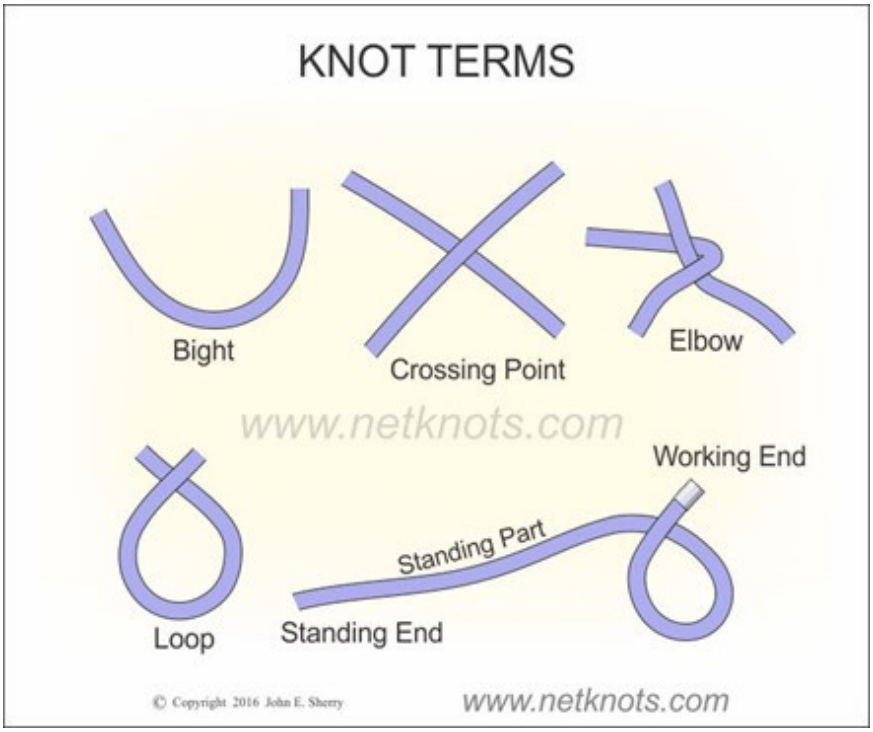
Tying Knots Booklet

2026

- *Rope Knot Terms*
- *Round Turn & Two Half Hitches - Securing Under Load*
- *Cleat Hitch - Deck of Halyard*
- *Chain Splice*
- *Spar Hitch - Fender Knot*
- *Sheet Bend (Weaver's Knot) - Joining Two Ropes*
- *Bowline Knot - Non Slip Loop*
- *Eye Splice - Fixed Loop*
- *Zeppelin Bend*
- *Stevedore Stopper Knot*
- *Scaffold Knot*
- *Mooring Hitch*
- *Midshipman's Hitch*
- *Knute Hitch*
- *Highwayman's Hitch*
- *Figure Eight*
- *Butterfly Knot*
- *Anchor Bend*

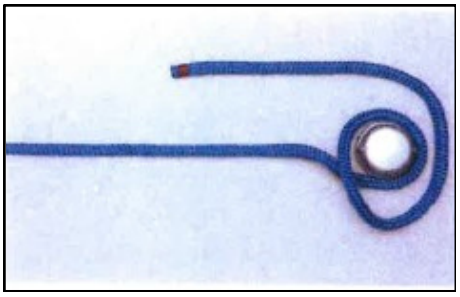
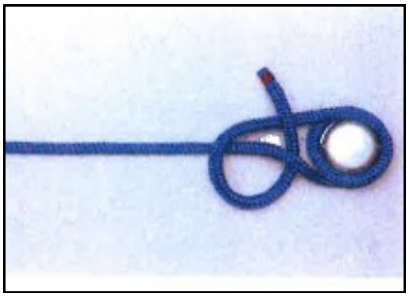
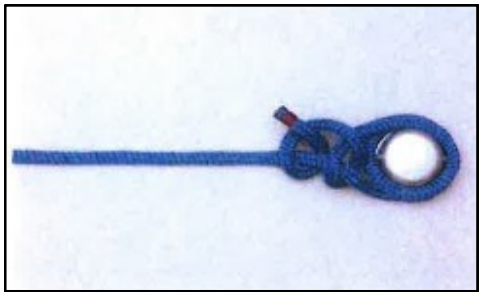
ROPE KNOT TERMS

There are specific terms or nomenclature to describe the parts of a knot while it is being tied. The common knot parts are illustrated and described below;



- *Bight: Any part of a rope between the ends. Bight also is used to refer to a curved section of a rope within a knot being tied.*
- *Crossing Point: The place where ropes cross in the making of a loop.*
- *Elbow: Two or more loops in close proximity to each other.*
- *Loop: A bight becomes a loop when the two ropes cross. If the working end is crossed over the standing line, it is an overhand loop. It is an underhand loop if the working end runs under the standing part.*
- *Working End: The active end being used to tie the knot.*
- *Standing End: The end not being used in the tying of the knot. The rope part that is not being used is called the Standing Part.*

ROUND TURN & TWO HALF HITCHES - SECURING UNDERLOAD

A Useful Boating Knot: A Round Turn and Two (or more) Half Hitches (ABOK #1720, p 296) is useful for attaching a mooring line to a dock post or ring, although probably less secure than the Anchor (Fisherman's Hitch).

As the name suggests, the Round Turn and Two Half Hitches is composed of two important parts;
Round Turn: The initial "Round Turn" - actually two passes of the tail - should take the initial strain while you complete the knot. This may be critical when handling a mooring line. An additional turn, or even two additional turns, should be added initially if you are handling a heavy load, eg., with a large vessel or in a strong wind. These turns allow you to control the load while you add the:
Two or More Half Hitches: The two Half Hitches actually form a clove hitch round the standing end. However, it is common to see an additional one, or more Half Hitches - whether to make the knot more secure or to use up excess line.

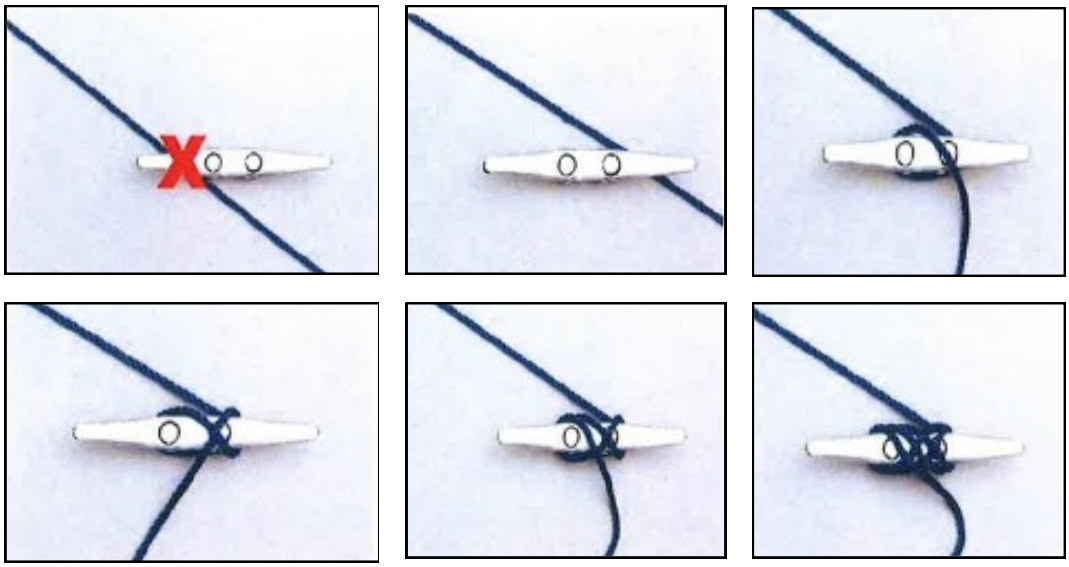
Tying the Knot: Learn to tie the Half Hitches with one hand! This allows you to use the other hand to take the strain of a vessel that may easily pull with a force far greater than you could otherwise control. As emphasized above, when dealing with such force, use as many turns on the post as are necessary to control the strain.

Direction: Always tie the Half Hitches in the same "direction". If you start the first Half Hitch with the tail passing away from you above the rope, then do the same with the next (and the next).

Variation Using a Bight: When there is a long tail, the Half Hitches can be tied using a bight (loop) instead of the end. This consumes excess rope which may otherwise hang in the way or require coiling.

Reference - www.animatedknots.com/anchor/index.php

CLEAT HITCH - DECK OR HALYARD



Uses: The Cleat Hitch secures a rope to a cleat. It is deceptively simple and an unwary skipper who invites visitors to cleat a mooring line may be astonished and dismayed by the unsatisfactory results.

First Horn: Initially the rope must be led around the most distant horn of the cleat followed by a turn in the same direction round the other horn. Starting around the wrong horn increases the risk of a jam.

*Name: Some contributor's protest that the name **"Hitch"** is wrongly applied because there is no final Half Hitch. However, **Cleat Hitch** describes the purpose well - the rope is **hitched** to a cleat - and there are other **"Hitches"** that are sometimes used without a final Half Hitch, eg., Tensionless and Lighterman's (Tugboat).*

No Round Turn: After passing the rope around two horns of the cleat, always cross over and make a figure 8 turns afterwards. This is because the figure 8 turns the rope up against the horns and out of the way of the first turn. There is a risk if the initial turn continues around under the first horn a second time (making a complete round turn). Now if a towline briefly becomes slack, the initial turn can separate away from the cleat and then clamp down on top of the second turn making it impossible to release the rope while there is load in the towline.

No Locking Hitch: Several skippers have written to emphasize various situations when a Locking Half Hitch must be avoided;

CLEAT HITCH - DECK OR HALYARD - Cont.

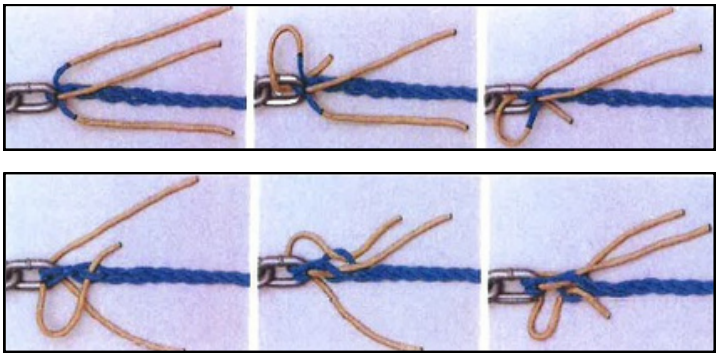
- *Large Vessels:* *The uniform practice on large vessels is to never add a final Half Hitch*
- *Towing:* *Never add a Half Hitch on either end of a towline. First, a towline should always be monitored. Second, the ability to quickly release either end is essential.*
- *Sheeting a Sail:* *Avoid a Half Hitch for the sheet controlling the sail - rapid release may be critically important in preventing a disaster, eg., a capsize.*

Using a Locking Hitch? *In other situations a locking hitch is commonly used, eg., the dock lines for a yacht left in harbour for long periods, small boat sail halyards and flag halyards.*

Number of Turns: *In most of Ashley's illustrations he shows astonishingly few turns. However, he was writing when tarred hemp was the rope of choice. Today's ropes may be stronger, thinner, slippery and more elastic (nylon rope streches by more than 5% when loaded to 20% of its rated breaking strain). Some modern illustrations still show only a single crossover followed by a Half Hitch. An intermittent load on a nylon rope may transmit tension to the other Half Hitch and make release awkward. Kevin Redden has the following practical advice: two crossovers is the bare minimum, and only for temporary use in sheltered conditions. In all other situations, always add more - certainly enough to handle any storm load.*

History: *"Belaying a rope" means securing it or making it fast. Before cleats were common, a rope used to be secured to a vertical pin in a wooden beam called of course, "Belaying Pin". Ashley describes several variations including the use of a single hitch by itself (ABOK #1594, p 284)*

CHAIN SPLICE



Uses: The Chain Splice is a modification of the Eye Splice described by Ashley (ABOK # 2725, p 445). It is particularly useful when rope followed by chain passes over a windlass and descends into a chain locker.

Structure: Technically it is a miniature Flemish Eye (ABOKK # 2751, p 449) completed with additional tucks. ***Note:*** *for photography, only five sets of tucks were completed.* ***Seven complete set of tucks are recommended.***
Preparation: To prevent chaos, burn the three ends and wrap the rope at the correct length. For seven tucks. measure at lease 21 times the rope's diameter and wrap the rope with tape or a Constrictor Knot tied in twine. Unravel the strands back to the tape or twine.

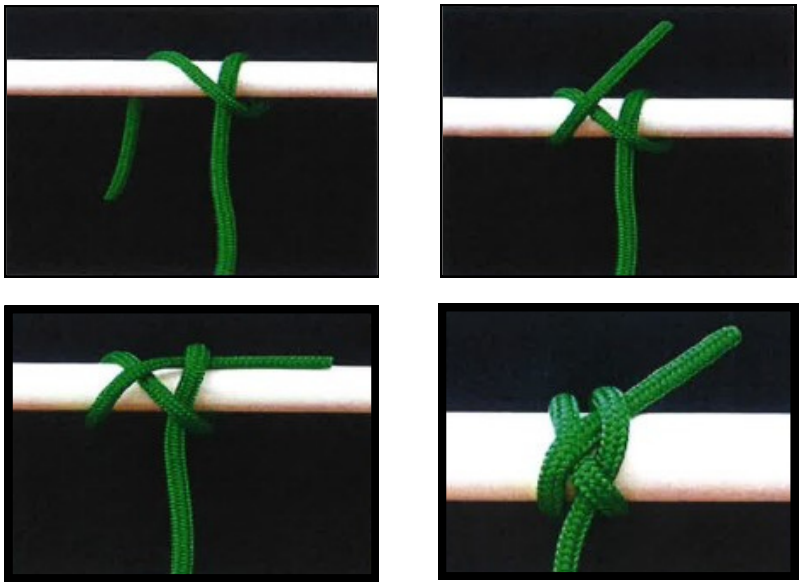
Making the Splice: Pass two strands together through the end of the chain and pass the third strand in the reverse direction. It is neatest when the single strand passes between the other two. Lay the three strands down beside the rope and thread them through adjacent standing strands as close to the chain as possible. Complete the remainder of the splice by tucking each tail over and under standing strands.

Practical Aspects: As when making the Eye Splice, keep each end as neat and tightly wound as possible - at least for the first three tucks. After the first tuck is completed for all three strands, the wrapping tape (or the constrictor) should be removed so that the splice can be tightened against the chain. Remember to twist each tail tightly before pulling on it!

Durability: By its nature, a chain splice may be subject to heavy lead and chafing. It should be inspected if used frequently and a worn splice should be cut off and remade a few inches further up the rope. However, in many yachts where the anchor is only used occasionally, the chain may rust and become untrustworthy long before the splice shows significant wear!

Reference - www.animatedknots.com/anchor/index.php

SPAR HITCH - FENDER KNOT



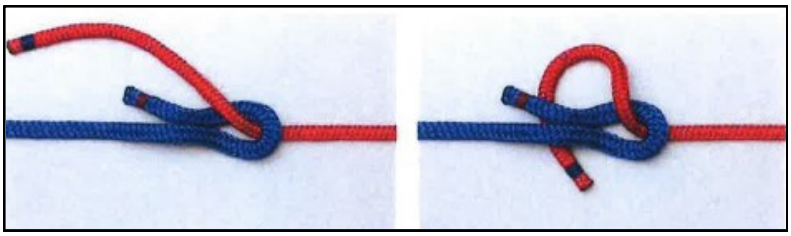
The Spar Hitch is a great knot for tying fenders to a lifeline. It is very secure and will hold around small slick objects. The load can be at different angles. The Spar Hitch is also known as Ground Line Hitch, Picket Line Hitch and is the same basic construction as the Sack Knot. The knot dates back to the days of the Calvary and the horses needed to be tied to a line at night and it was also used to tie the neck of a sack closed.

The Spar Hitch can be tight right or left handed or "slippery". The Spar Hitch looks similar to a Clove Hitch but holds much better.

Start tying the Spar Hitch like a Clove Hitch. Loop the line around and cross over the standing part of the line. You can go either right or left, but once the line crosses over the standing part, the bitter end needs to stay on the same side. When coming around like a Clove Hitch, go over the crossing part of the line. After going over the crossing, duck under the line that goes to the working end or load, the Hitch can be made slippery by slipping a bight (loop) under the line gong to the load and then the Spar Hitch can be untied quickly. Snug the Hitch down. The bitter end is trapped by the line going to the load. The harder the load pulls, the more secure the Hitch holds. The Spar Hitch is quick to tie and more secure than the more commonly used Clove Hitch.

Reference - www.captnmike.com/2011/03/29/spar-hitch/

SHEET BEND (WEAVERS KNOT) - JOINING TWO ROPES



Uses: *The Sheet Bend (ABOK # 1431 p. 262) or Weaver's Knot (ABOKK # 485 p. 78) is recommended for joining two ropes of unequal size. The thicker rope must be used for the simple bight as shown. However, it works equally well if the ropes are the same size.*

Becket Hitch: *The Becket Hitch is a very similar knot. However, it is a "Hitch": it does not join two ropes, it attaches a rope to a Becket (a rope handle or an eye). In the animation the Blue Rope would be Becket and the Red Rope would be tied to it with a Becket Hitch.*

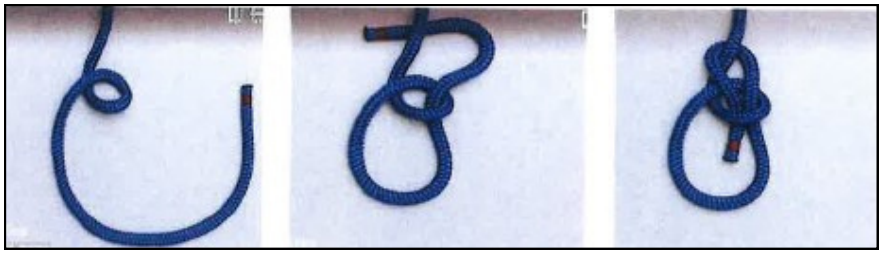
Tying It: *The Sheet Bend would replace the Square (Reef) knot except that it is not a binding knot - both ends must be loose in your hands with no load on the ropes. (The Square Knot - with all its faults - can be tied against a sail, or parcel, and usually stays tight while the second Half Hitch is tied) The Weaver's Knot is tied in various ways. One way is shown here. A slip knot or noose is tied in the end of the wool. The new piece is threaded through the loop. Pulling on the Noose ends draw the new piece in.*

Double Sheet Bend: *When the ropes are markedly different in size, the tail of the smaller rope can be taken twice around the bight in the larger rope to create the double sheet bend.*

Structure: *When correctly tied the two tails lie on the same side of the knot. The alternative version - with the tails on opposite sides - is less reliable.*

Reference - www.animatedknots.com/sheetbend/

BOWLINE KNOT - NON SLIP LOOP



Uses: *The Bowline (ABOK # 1010 p 186) makes a reasonably secure loop in the end of a piece of rope. It has many uses, eg., to fasten a mooring line to a ring or a post. Under load, it does not slip or bind. With no load it can be untied easily. Two bowlines can be linked together to join two ropes. Its principal shortcoming is that it cannot be tied, or untied, when there is a load on the standing end. It should therefore be avoided when, for example, a mooring line may have to be released under load.*

Name: *The name Bowline derives from " bow line". The Bow Line Knot secured the line holding the weather leech of a square sail forward to prevent it being taken aback.*

Shakes Undone if not Loaded: *When a bowline is unloaded, it can very readily work its way untied.*

Eskimo Bowline: *This an alternative method of creating a loop at the end of the rope. The knot is tied around part of the loop instead of around the Standing End. It is preferred when the loop will be stretched and is also claimed to better resist shaking loose.*

Eskimo Bowline and Kalmyk Loop

One Handed: *The bowline can be tied with one hand - useful if injured, essential if you are using the other hand to hold on to the line or the boat.*

Reference - www.animatedknots.com/anchor/index.php

BOWLINE KNOT - NON SLIP LOOP - Cont.

Length of Tail End: *An intermittent load, eg., on a mooring line, may cause knots to slip or loosen, The bowline is relatively tolerant of such stresses. Nevertheless some texts quote a rule of thumb which states that, for safety, the length of loose end should be 12 times the circumference. A half-inch diameter rope would require a tail more than eighteen inches long, but this is rarely seen in practice.*

Safety Knot: *A Bowline should be used with great care when climbing. It is too easily tied incorrectly and can also shake loose. A Safety Knot is essential, eg., a Double Overhand (Strange Knot) can be tied around either the adjoining loop (left) or the standing end (right).*

Yosemite Tie-Off: *A widely used alternative passes the tail around outside the loop and back under the collar to form a Yosemite Tie-Off.* ***Tighten the Bowline first*** *and then tighten the Yosemite Tie-Off.* ***Failure to do so can result in a slip knot.***

Error if Possible: *Whichever safety is used, it must be inspected and stress-tested - but not in the direction of fall!*

Left Handed Bowline: *When tied as shown in the image, the tail end lies in the middle of the loop. However, if the end is passed the opposite way round the standing end, it forms a "Left Handed" bowline (ABOK # 1034 1/2, 188).*

Reference - www.animatedknots.com/anchor/index.php

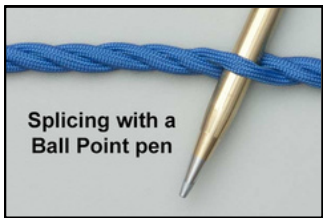
EYE SPLICE - FIXED LOOP

Important: *The Eye Splice and its variants are well described by Ashley (ABOK # 2725, p. 445). Modern synthetic materials, however, tend to be slippery and now a minimum of* ***five complete "tucks "*** *is required. For mooring towlines and other long term or critical applications,* ***seven tucks*** *are recommended.*

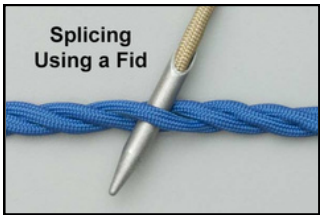
Essential Preparation: *Secure the end of each strand by heat, tape or whipping twine. Measure the length to be unraveled and secure the rope at that length with tape or twine. The correct length to unravel is about 3 times the diameter per "tuck", ie., for five tucks in half inch diameter rope, leave the free strands at least 7.5 inches long. For seven tucks at least 10.5 inches. Create the required size of loop and mark the rope.*

Technique: *In tightly laid or large diameter rope it may be difficult or impossible to pass each strand under the standing strand without a suitable tool. The following have all worked under different circumstances:*

- *Tape:* *One of the simplest methods is to merely wrap each end in masking tape. This can provide you with a short "spike" to help feed each strand under the standing end.*
- *Spike:* *Alternatively, use a suitable spike to open up a standing strand. It may stay open long enough for the strand to be threaded. You can use many different spikes, including marlinspikes, pencils, pens and needle nosed pliers.*



- *Fid:* *The best tool is undoubtedly a fid, a spiked aluminum bar with a hollow end, which opens up the standing strand. You then push the strand through inserted in the tail of the fid.*



Reference - www.animatedknots.com/anchor/index.php

EYE SPLICE - FIXED LOOP - Cont.

Structure: *As in weaving, each of the strands is passed first under and then over alternate standing strands. In the process, the free ends tend to untwist and become untidy. Handle each strand with care to retain its original twist. After each strand is threaded, it is helpful to twist it to keep its original form. However, after the first set of tucks, the strands should be allowed to spread and fit the form of the standing strands.*

Holding the Rope: *Having prepared the ends and chosen which strand to thread where, it is then all too easy to get confused after it is threaded. Hold the other two tails in your hand, one each side of the rope: they will then be in the correct place when you want to choose an end to thread next.*

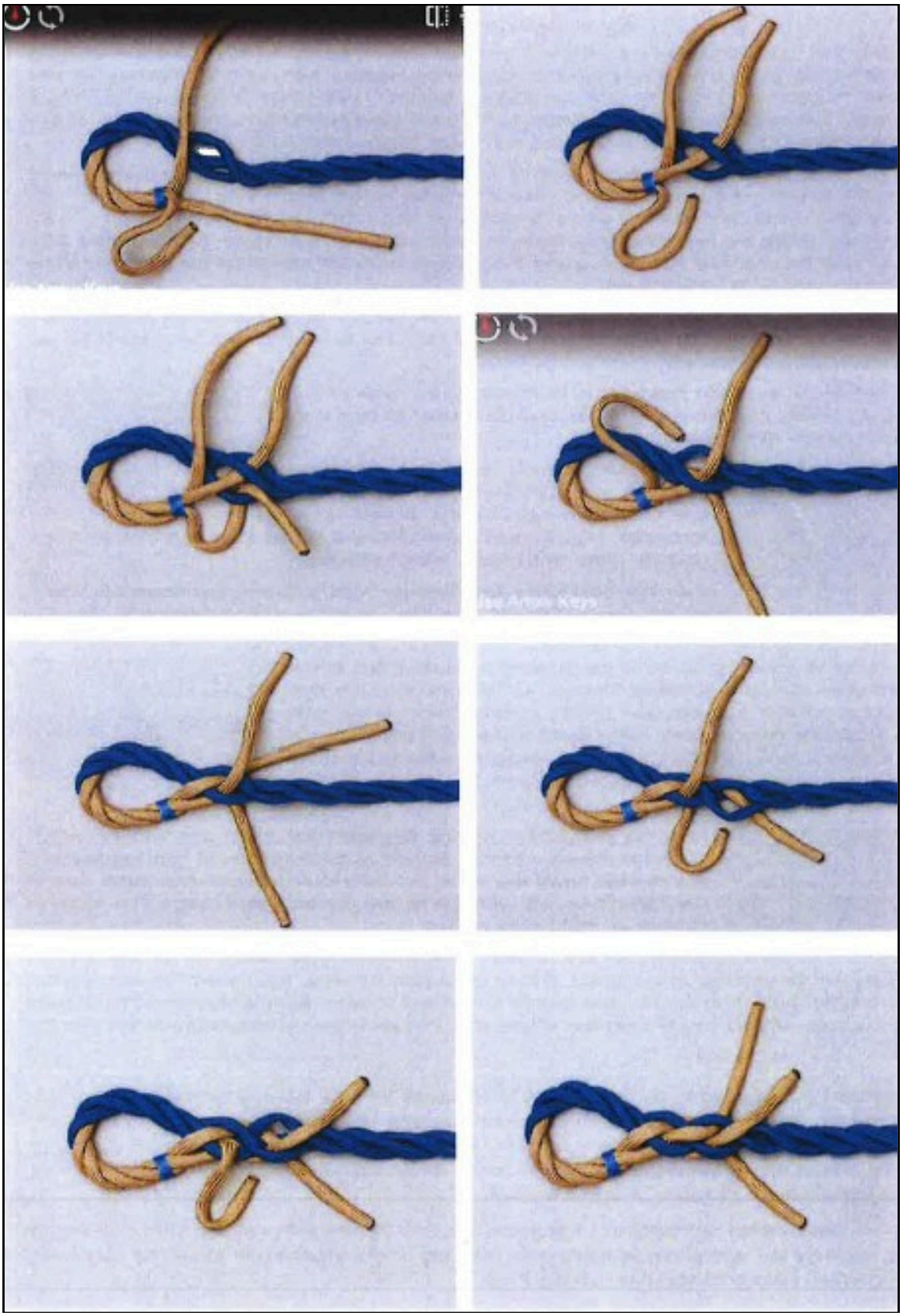
Finishing the Splice: *If the ends have been cut to the correct length, they will be used up in the splice. If they are a little too long, it is usually far less trouble to make another tuck than to cut them and re-burn them to stop them unravelling. The burned ends are usually slightly larger than the strand and this provides some additional security for the splice.*

Tapering the Tails: *It used to be fashionable to gradually thin the strands for an additional few tucks. In tarred hemp this made a very elegant tapered splice. Modern rope is sufficiently slippery to mean that the tapered tails tend to get dislodged and make the splice look very untidy. True tapering of individual strands is rarely done now and should probably never be attempted by amateur, occasional splice makers.*

Alternative Taper: *After sufficient tucks have been made for strength, cut and burn one strand and then continue the splice with remaining two strands. Cut and burn one more and splice the remaining strand before cutting and burning it too.*

Reference - www.animatedknots.com/anchor/index.php

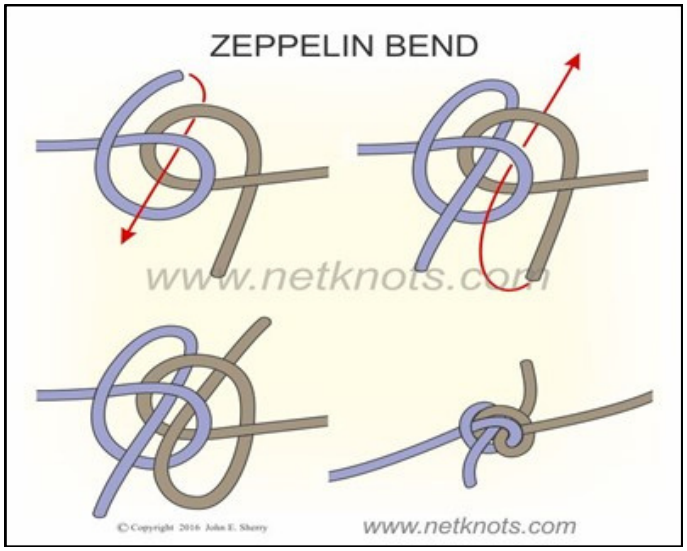
EYE SPLICE - FIXED LOOP - Cont.



Reference - www.animatedknots.com/anchor/index.php

ZEPPELIN BEND

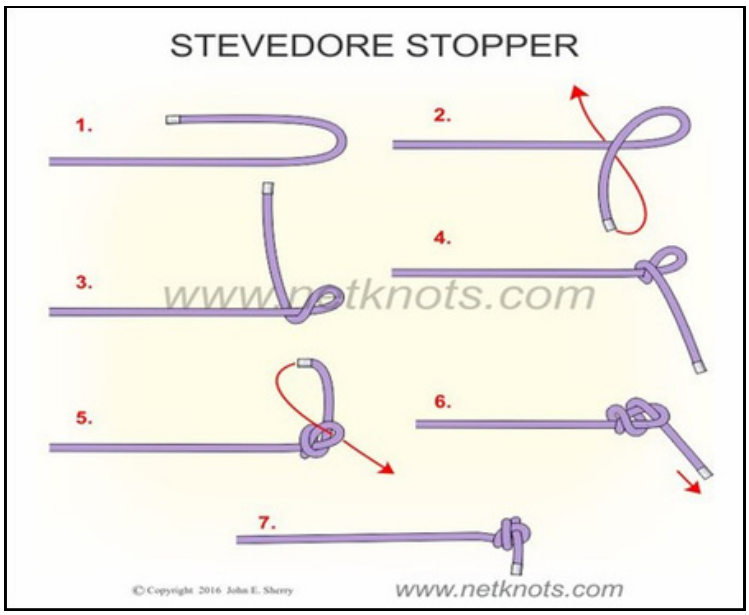
Zeppelin Bend Knot: Also known as the Rosendahl Bend Knot, is used to tie two ropes together. It is an easy knot to tie, very secure and jam proof. The Zeppelin Bend gets its name from its association with the great light than air ships, or dirigibles of the 1920's, which were commonly called "Zeppelins" in honour of Count Ferdinand von Zeppelin who was an early pioneer and advocate of the behemoths. Of immense size and filled with hydrogen or helium, Zeppelins had a huge lifting capacity; which also meant the knots used to tie them to the ground had to be completely secure, take massive strain, yet remain easy to untie when wanted. The knot commonly used that fulfilled all of these requirements was the Zeppelin Bend.



- *An easy way to start the Zeppelin knot is to form a "6" with one rope with the running line under and form a "9" with the other rope with the running line over. Then lay the 6 partially over the 9.*
- *Take the end of the 6 and pass it through the opening of the 9 and the 6.*
- *Repeat with the end of the 9 in the opposite direction - through the opening of the 6 and through the opening of the 9.*
- *Pull ends tight.*

STEVEDORE STOPPER KNOT

Stevedore Stopper Knot: The Stevedore Knot likely gets its name from its use as a stopper knot by stevedores (a person employed at a dock to load and unload cargo from ships). To raise and lower cargo they used large block and tackle and these required a rather large stopper knot to prevent the rope from running completely through the block. The Stevedore is an excellent stopper knot, quite bulky and is one of the three shown below (four if you include the Figure Eight tied at the end of the rope).
Pick one and learn it well as the use for a stopper knot at the end of a rope comes in handy.

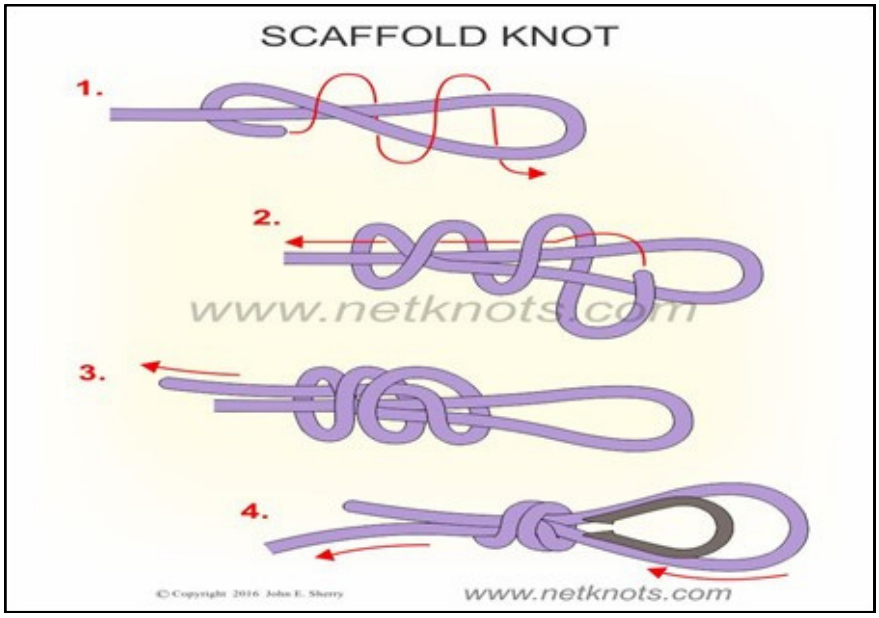


- *Form a bight in the end of the rope.*
- *Pass the working end over the standing line and continue around making one complete turn around the standing line.*
- *Repeat 2 -3 making a second complete turn around the standing line, working back towards the end of the rope.*
- *Pass the end down through the original bight and tighten down the turns.*
- *Pull on both ends to tighten down the stopper knot.*

SCAFFOLD KNOT

Scaffold Knot: The Scaffold Knot makes a sturdy loop that slides like a noose to fit snugly around a bar, rail or other object. It may be protected against wear due to chafing by the insertion of a lining called a thimble, creating what sailors refer to as a 'hard eye". Thimbles come in a range of sizes and are obtainable from boat and yacht chandlers. The Scaffold Knot is similar to the Poacher's Knot but it has an extra turn. It is sometimes called a Triple Overhand Noose, whereas the Poacher's is sometimes called a Double, Two-Turn or Scaffold.

Another simple sliding noose can be made with the Slip Knot.
Note - Never play "hangman" with this or any noose knot, they can kill.

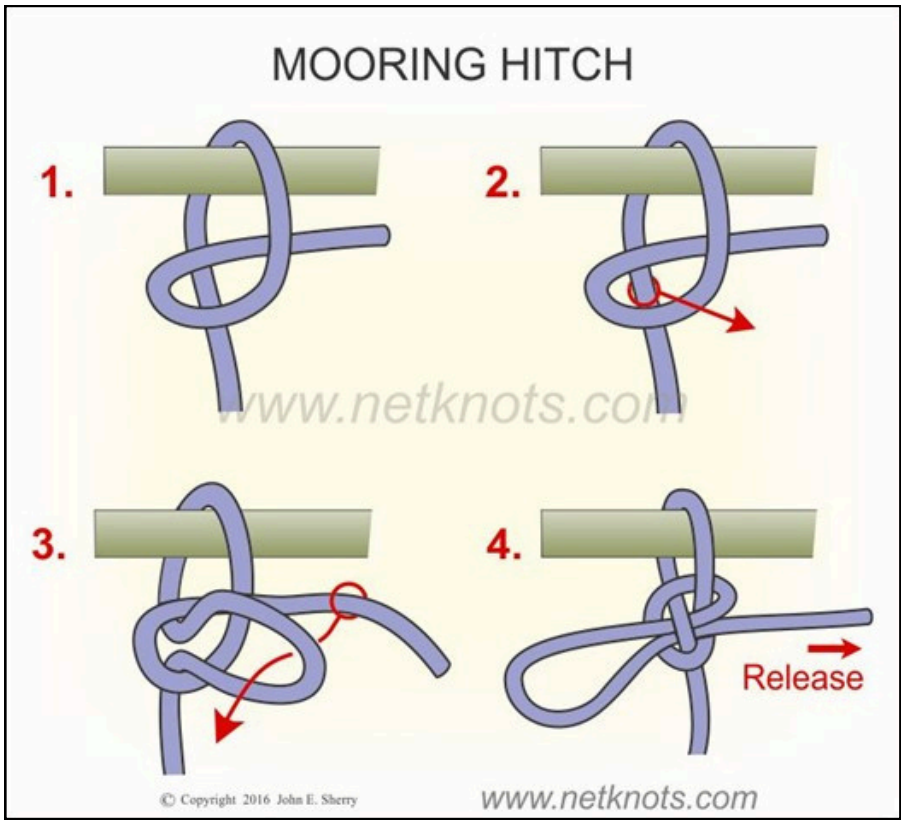


- *Form a loop at the end of the rope and wrap working end around both the standing line and the working end.*
- *You will be working back toward the loop, making three loose wraps around both lines. Note - That if you are securing the loop to an object such as a post, do so at the beginning of tying the knot.*
- *After the third turn, feed the working end back through the openings of the wraps, running parallel to the standing line.*
- *Pull the knot tight by the working end. If you are making a "hard eye" with a thimble, insert the thimble and tighten the loop down onto it by pulling on the standing line.*

MOORING HITCH

Mooring Hitch: A good temporary knot. Can be released quickly with a tug on the free end. The Mooring Hitch holds fast under load, yet comes apart instantly with a pull of the tag end. It can be tied up tight to an object or anywhere along the length of the rope so you can reach and release it without getting out of your boat.

The Slipped Buntline is another good quick release knot.

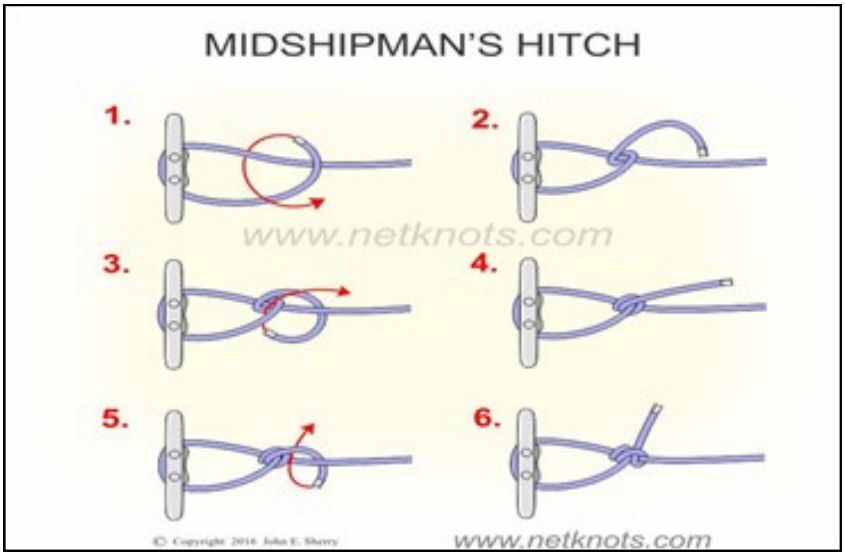


- *Make a turn around a post and then form a loop with the free end, exiting the loop on the inside (leave longer free end than illustrated).*
- *Grasp the standing line and pull a section through your loop.*
- *Grasp a section of the free end (but not the very end) and pull part way through the new loop.*
- *Tighten the knot by pulling down on the standing line. Release the knot by pulling the free end.*

MIDSHIPMANS HITCH

Midshipman's Hitch: The Midshipman's Hitch is an excellent knot to create an adjustable loop at the end of the rope. The knot can be slid up and down the standing line to increase or decrease the size of the loop (and thus the length and/or tightness of the standing line) but when the load is applied the knots holds securely.

The Midshipman's Hitch is similar to The Tautline Hitch but has one important difference and benefit. When tying the Midshipman's the second wrap forms an intermediate "Awning Hitch" which takes any strain on the rope while tying the final Half Hitch. The completed Midshipman's Hitch is also more secure than the Tautline.
This knot is relatively easy to tie or untie under load.

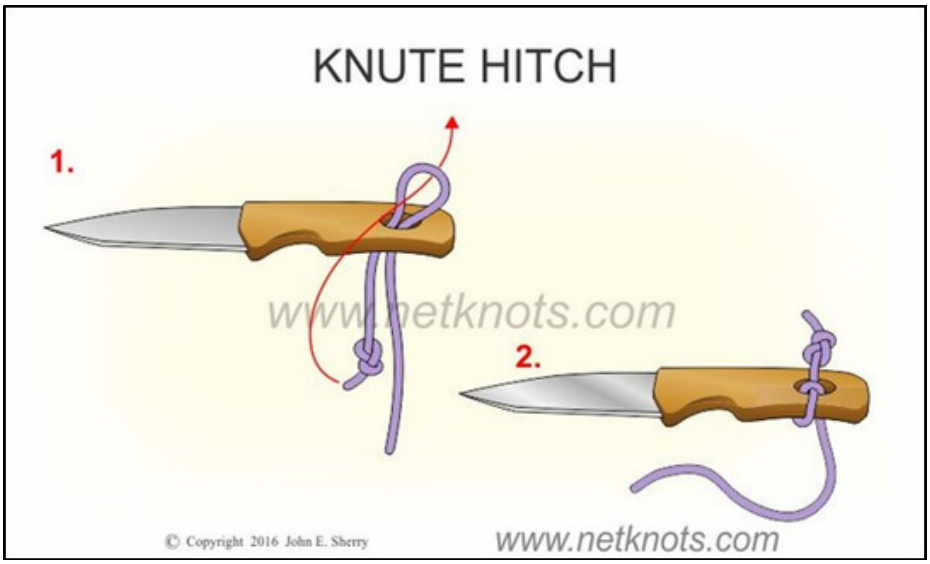


- *Pass the working end of a rope around an object such as a post or cleat.*
- *Pass the working end around the standing line creating the first Half Hitch.*
- *Pass it around again, working back away from the object toward the standing line.*
- *Pull tight. This forms an Awning Hitch that can take load while the next step is tied.*
- *Now make a half hitch in the same direction outside of the loop around the standing line.*
- *Pull the knot tight. The Midshipman's Hitch can now be slid on the standing line when there is no load and will hold tight when load is applied.*

KNUTE HITCH

Knute Hitch: The Knute Hitch is a knot used to attach a lanyard or paracord or other small diameter cordage to an object such as a knife, marlinspike (a marlinspike is a tool used in marine rope work) or other tool. Rigger Brion Toss is credited with naming the hitch after his favourite marlinspike of the same name, although the hitch is likely much older.

The lanyard line should be just small enough to fit doubled through the lanyard hold in the tool. The working end, with a figure-eight knot or any other stopper knot, is placed through the protruding bight and then the bight is withdrawn, jamming in the hole.

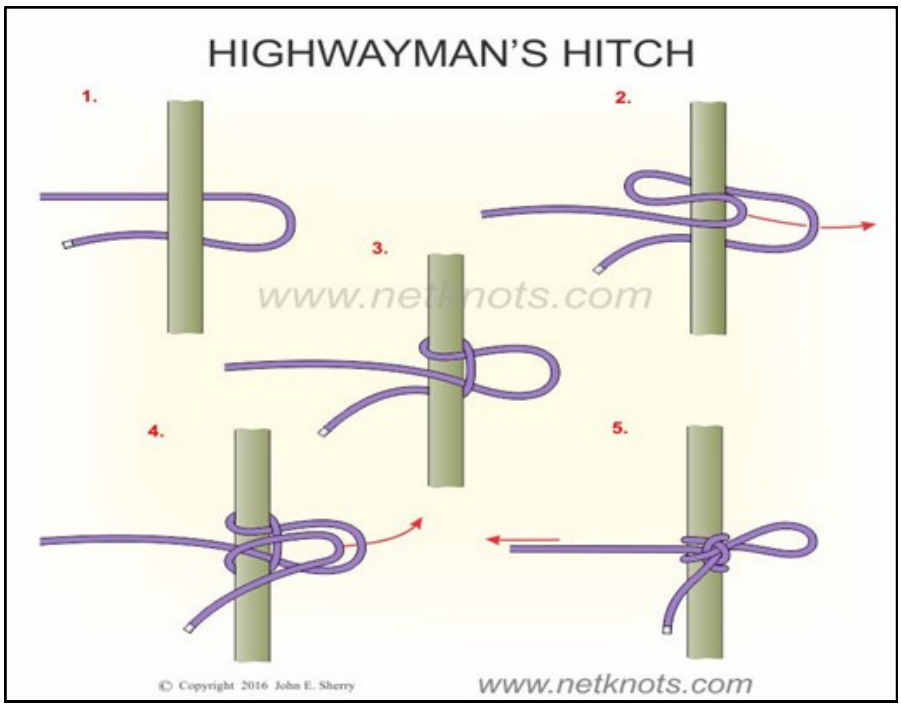


- *Tie a figure eight knot or other stopper knot in the end of the lanyard. Form a bight and pass bight through the hole in the tool.*
- *Pass the stopper knot through the bight and tighten the bight down by pulling on the standing line.*

HIGHWAYMANS HITCH

Highwayman's Hitch: The Highwayman's Hitch can be used as a temporary mooring knot for a small boat or to tether an animal. The standing part of the rope takes the load while the working end is tied to slip free with a tug.
It is similar to the Mooring Hitch.

The Highwayman's Hitch is not a safe knot for any type of human load as it can be released or slip accidentally.

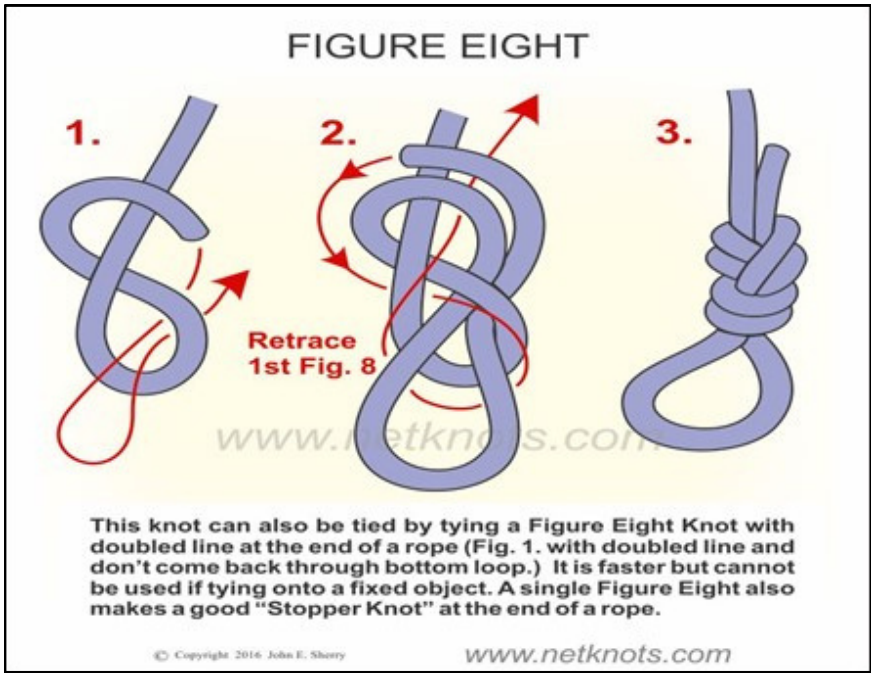


- *Double line to make the first bight in the rope and place bight behind post, rail or spar.*
- *Make a second bight in the standing line and pass that bight through the first bight. Give a little pull on the working end to tighten down on the second bight and hold it in place.*
- *Take the working end (which should be longer than it appears in the image) and make a third bight.*
- *Pass the third bight through second and pull on the standing line to tighten the knot.*
- *The knot holds with tension on the standing part and can be released with a tug on the working end.*

FIGURE OUT

Figure Eight: The Figure Eight follow through is one of the strongest knots. It forms a secure, non-slip loop at the end of the rope. Also known as the Flemish Bend, this is the most widely used tie-in knot by mountain climbers. The reason is that it is strong, secure and easy to visually inspect. Climbers often further secure it by tying a back up knot with the tag end.

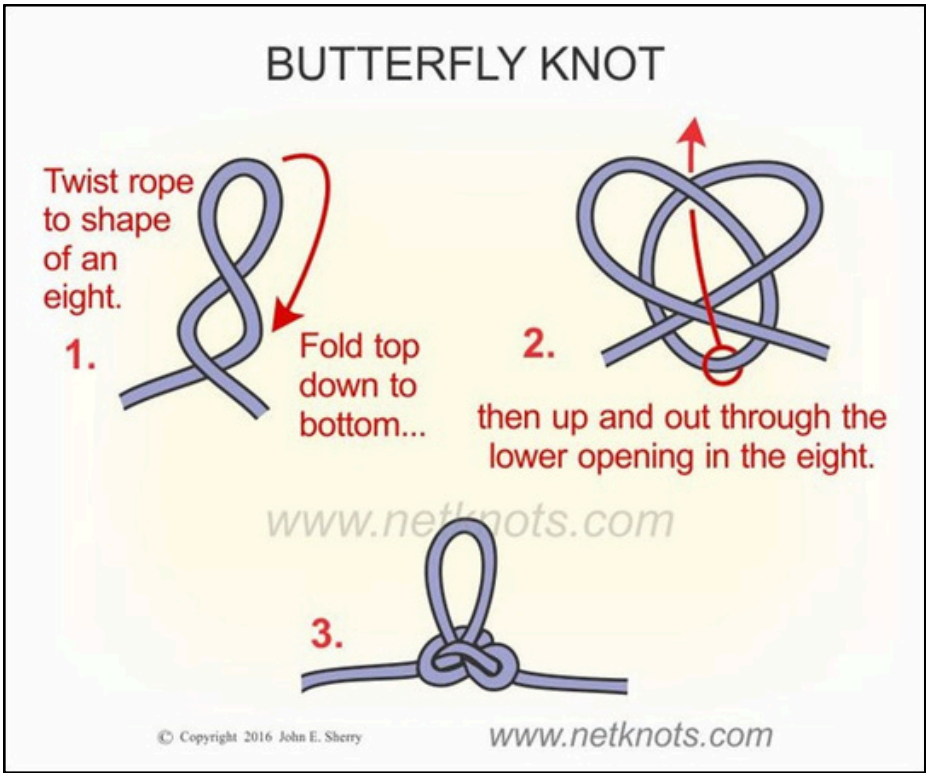
The knot can also be tied by tying a Figure Eight Knot with doubled line at the end of the rope (Step 1, but don't come back through the bottom loop). It is faster but cannot be used if tying into a fixed object, so it is good to learn to tie this knot as the "Figure Eight Follow Through". A single Figure Eight also makes a good "Stopper Knot" at the end of the rope (Step 1 with the single line but don't come back up through the bottom loop).



- *Tie a single eight in the rope two feet from its end. Pass the free end through any tie-in point if desired.*
- *Retrace the original eight with the free end leaving a loop at the bottom of the desired size.*
- *Pull all four strands of rope to cinch down the knot.*

BUTTERFLY KNOT

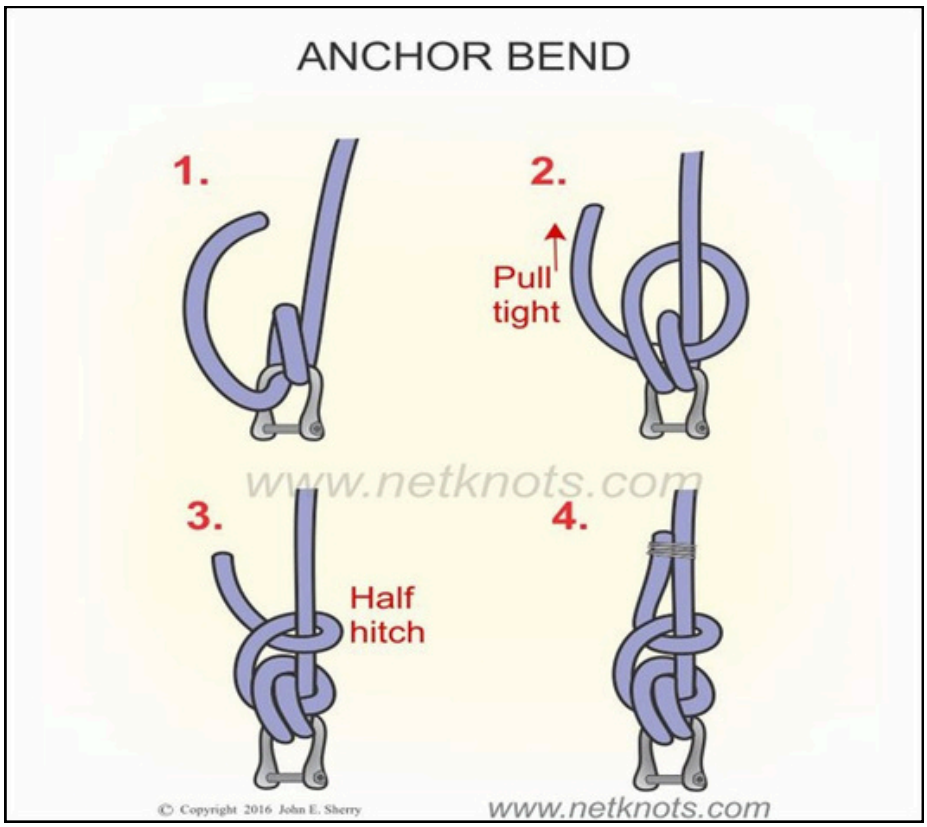
Butterfly Knot: Forms secure loop(s) in the middle of the rope. It will accommodate a load in any direction. Mountain climbers use the Butterfly Knot for tying-in the middle climber when travelling three to a rope. Also useful for making non-slip loops in the middle of a rope to attach carabiners to provide purchase points for a winch line - essential in canoe rescue work. It can take a load in any of the three directions, independently or together. The knot can also be used to isolate a damaged section of rope.



- *Make a loop in the rope and twist it one full rotation into an eight shape.*
- *Fold the tope of the eight down around the bottom of the eight.*
- *Now up and out through the lower opening of the eight and pull tight*

ANCHOR BEND

Anchor Bend: Also know as Anchor Hitch is the knot generally used to fasten a line to an anchor. The free end should be secured with seizing to the standing line for a permanent, secure knot. One side of the Double Fisherman's also makes a good backup knot to this and any knot.



- *Make two turns around the shackle, leaving turns open.*
- *Pass free end behind the standing line and feed the free end through the first turns and pull tight.*
- *Now tie a half hitch around the standing line and pull tight.*
- *Seize the free end or tie the knot with a long tag end and tie a backup knot such as one half of a Double Fisherman's.*