



Aquatic Consulting Services

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Boating Tip #61: Knot Know-How

Come “learn the ropes”. Learn about rope materials, rope construction, rope care, and :

- the difference between a line and a rope
- the difference between a knot, bend and hitch
- how to safely secure their boat to a cleat or rail using a cleat hitch
- how to Flemish or figure-8 the ends of their lines
- how to coil lines for storage
- how to tie the 5 most important knots for sailors (Bowline, Round turn and two half hitches, Figure 8 stopper knot, Clove hitch, Reef (square) knot), and as a bonus, a couple other useful knots and rope tricks

Cordage:

- Small stuff: Cord, twine, string, thread
- Rope is cordage > than 0.39” diameter in size
- Lines are ropes with functions and have names (Ex. Main halyard, genoa sheet)

Rope materials:

- Natural fiber: manila, hemp, flax
- Synthetic cordage: Dacron polyester, Nylon, polypropylene, Spectra, elastic shock (bungee) cord

Rope parts:

- Standing end
- Working or bitter end

Rope care:

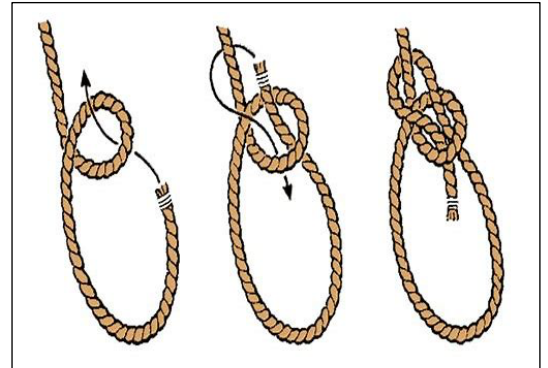
- Whip rope ends to prevent fraying
- Coil line
 - 3 strand (coil clockwise)
 - Braided (coil either clockwise or counterclockwise)
 - Flemish flake: Forms a neat spiral on the pier
 - Figure 8 flake: Lay out rope for use without tangles
 - Unattached coil (gasket hitch)
- Wash
 - Clean lines by hand in cold, fresh water and mild soap.
 - Soak in fabric softener then rinse.
 - Hang lines out to dry.
- Care
 - Keep off the ground and off of sharp surfaces
 - Alternate ends

Knots, Bends & Hitches

- Knots are tied in rope
- Knots weaken ropes
- Knot is the generic name for any cordage entanglement that is not a bend or hitch
- Bends join 2 ropes together
- Hitches attach lines to a fixed object (rail, post, spar, ring...)

Bowline

- Makes a secure loop in the end of a line
- Used to fasten lines to a sail grommet, ring or rail
- Two bowlines can be used to join two ropes together
- Does not bind, slip, or tighten under load
- Can be untied easily
- Cannot be untied under load
- To tie a bowline:
 - Form a B loop near the bitter end
 - Pass the bitter end up through the loop
 - Pass the bitter end around the back of the standing end
 - Pull the bitter end back down through the loop
 - (Bunny runs up the rabbit hole, around the back of the tree, and back down the rabbit hole)



Round turn and two half hitches

- Used to attach a line to a post or ring, to hang a coiled line, to attach a fender to a rail
- The round turns take the strain off the knot
- To tie a round turn and two half hitches:
 - Pass the bitter end around the post twice
 - Pass the bitter end of the line around the standing end and pull tight
 - Repeat passing the bitter end of the line around the standing end in the same direction
 - Pull tight

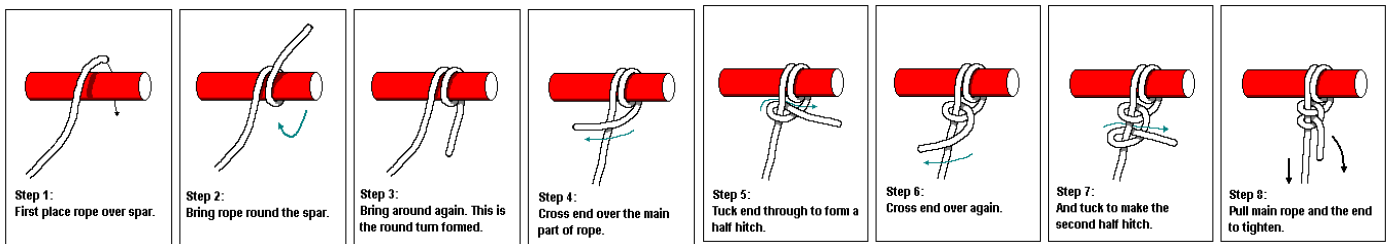
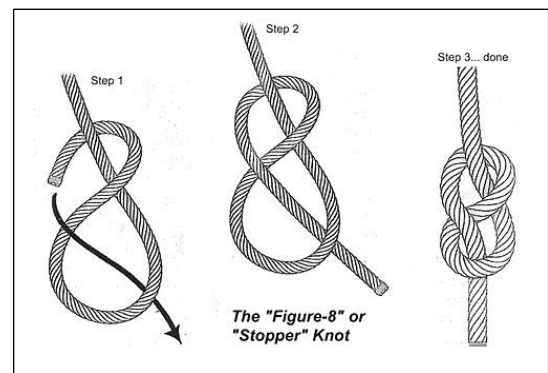
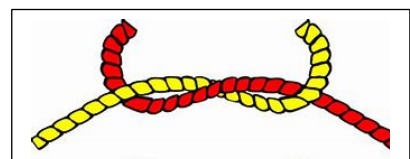


Figure 8 knot

- Quick stopper knot in the end of a line so the line doesn't slide through a clutch, pull out of the boom, or go to the top of the mast
- Doesn't bind and can be undone easily
- To tie a figure 8 knot:
 - Form a loop in the bitter end
 - Pass the bitter end around the standing end (making the number 8)
 - Pass the end back through the loop



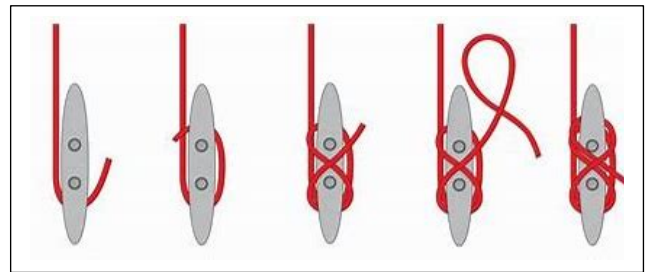
Reef (square) knot



- Secure reef points to hold a reefed sail to the boom
- Tie laces on deck shoes
- Holds two lines of the same diameter together
- Slips, jams and comes undone
- When tied incorrectly is called a granny knot
- To tie a reef knot:
 - Take the two bitter ends and cross them over and under each other
 - Keep the same rope on top then cross them over a second time
 - Pull the ends uniformly

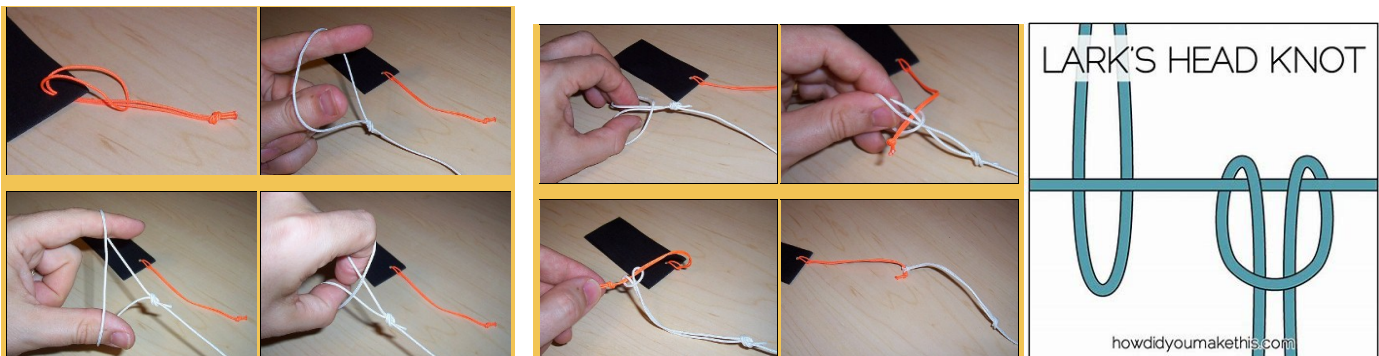
Cleat hitch

- Will stop a boat's movement
- Secures a docking line to a cleat
- Secures a halyard to a cleat
- Easy to undo
- Two conflicting methods with advocates for each. Method depends on whether you take an initial complete round turn first to hold the load, before making the figure eights and securing the line
- To tie a cleat hitch:
 - Pass the line around the aft horn away from the load or the direction of boat movement
 - Pass the line around the forward horn then aft horn again
 - Cross the line over the top middle of the horn and repeat alternating horns one or two more times to form the figure eights
 - Finish by turning the loop and securing with a half hitch
 - The hitch will lie parallel to the figure 8 below



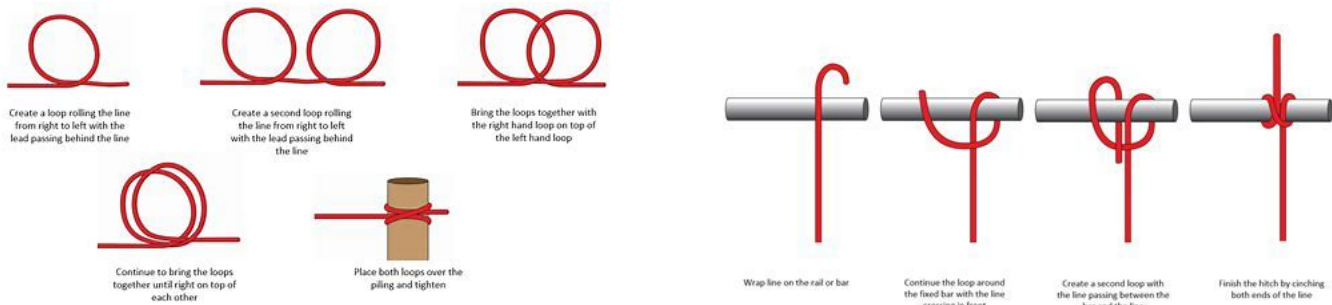
Lark's head

- Used to attach line to an anchor or flyline to a kite without tying permanent knots
- Stronger and eliminates the need for metal swivels
- Fold the line in half
- Slip the cord ends through the loop, pull ends and object in opposite directions to tighten

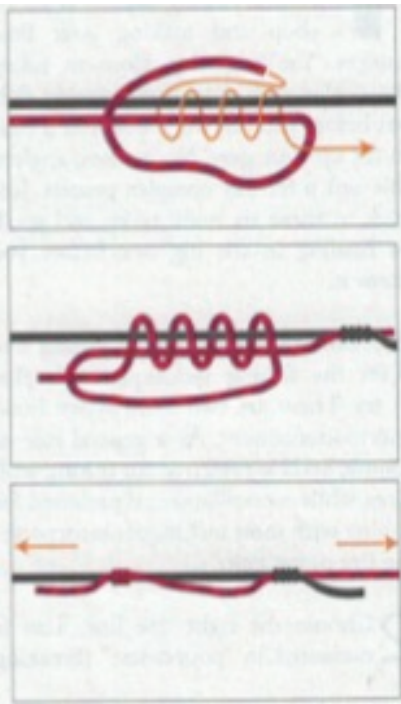


Clove hitch

- Secures a dock line to a vertical piling
- Slips undone and binds
- Hard to untie
- Better to use a round turn and two half hitches
- To tie a clove hitch:
 - Form a loop
 - Form a second identical loop and twist so it's facing the same way up
 - Cross the loops (instead of just stacking them on top of each other) and place over post



Double Uni Knot



Double Uni Knot

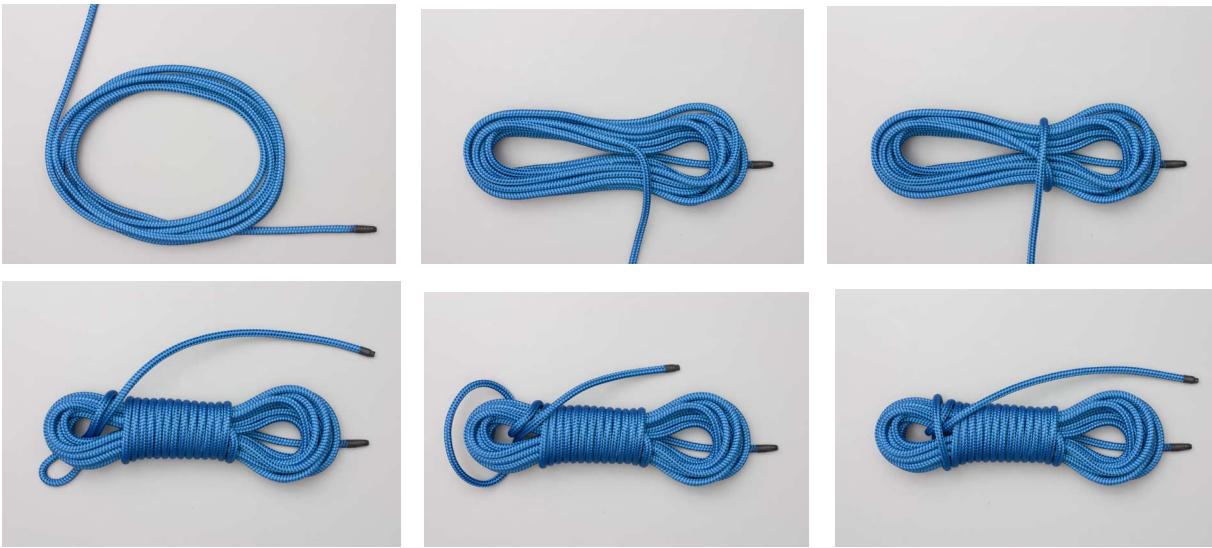
- Overlap the ends to be joined by several inches
- Take end of line from left, double back and make 3-4 wraps around both lines and through the loop
- Pull bitter end to tighten and make a uni knot
- Repeat using line on the right and make same number of wraps to make the second uni knot
- pull the 2 standing lines away from each other to slide the 2 uni knots together
- Trim the ends close to the knots



Rope Tricks: Knot-It

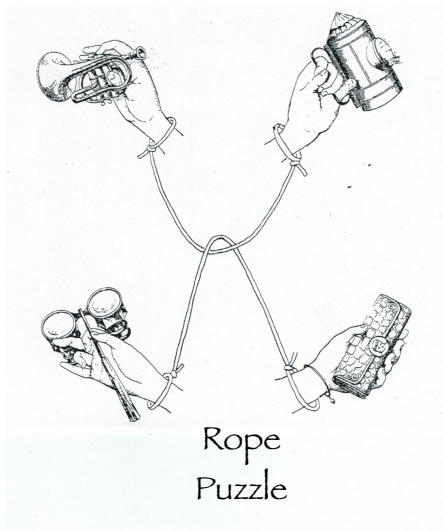
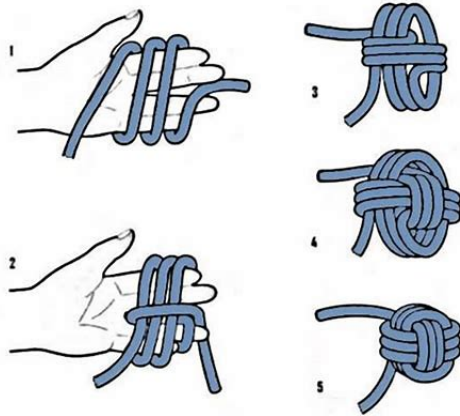
Best knot web site: www.animatedknots.com

Gasket Hitch



Monkey's Fist

- Attached to the end of a heaving line to serve as a weight to make it easier to throw



World's Best Rope Puzzle

To separate:
 Pass the loop of your rope through the loop which encircles one of your friend's wrists, slide it over the hand, and pass it back again through the loop.