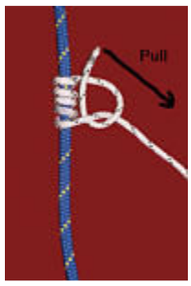
Helical Knot (Penberthy hitch)

The *helical knot* (*Penberthy hitch*, *ascender knot*) is a friction knot used with rope climbing systems to attach a smaller sling (7-8mm) to the main line (11mm). When there is no tension on the sling, the knot slides freely. When the sling is loaded (parallel to the main line), the knot grips the rope and will not slide.

- This knot is usually tied with four or five turns around the main line.
- The figures show the knot joined with a bowline. This is the most common way to tie the Helical knot, but careful attention must be paid to securing the bowline with an overhand knot, or better yet, a double overhand or Yosemite finish.
- A figure-8 tie can also be used.
- The helical knot may be adjusted without detaching the other end of the sling from your harness.
- The helical knot is a bit harder to tie than a Prusik knot, but moves easier and grips the main line more securely.
- If necessary, this knot can be used to attach a flat webbing sling to the main line.
- It is best to tie this knot with a minimum of slack. It will stretch when loaded.
- Never apply any downward pressure on the top coils of a loaded helical knot. This may cause it to slip. If it slips far enough to press down on the top of another knot, disaster may result.
- Slide a helical knot up the main line by pushing it up from the bottom, not by gripping the knot.
- Tie the top knot first and remove it last. That way you will not end up hanging by your heels if you slip.

The Helical

The helical starts with four or five wraps around the main line.



The overhand method of tying a bowline. Start with an overhand knot and pull the end to form a loop.

Finish the bowline.

Knot before setting and securing. Remove as much slack as possible and use one of the usual methods for securing a bowline.