

RIGGING  
WITHOUT  
EPICS



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## Introduction

This rigging guide is aimed at providing the caver with basic knowledge of the why, what and wherefores of rigging underground. It is assumed that the caver is competent enough to know his or her capabilities and limitations and thus their leadership potential. The guide should be read and fully understood before any rigging is attempted. However, this does not convert the ordinary caver into a fully fledged rigger and it is wise to have had some derigging experience first.

Sloppy rigging is inexcusable and a laissez-faire attitude will not be tolerated. Nevertheless, not all situations will be covered in this guide, as only the basic outlines are given, but whatever happens use your common sense for everybody's sake.

## The Tackle Store

The Tackle Store houses rope, ladders, tackle sacks rope protectors, wire belays and other bits of club gear. It is strongly suggested that personal gear (other than that belonging to those residing there) is not kept in the Tackle Store as is it likely to be swallowed by the infamous bottomless pit.

### Rules

1. Always sign tackle in and out
2. Dirty ropes must be rinsed before returning
3. It is your responsibility to replace rope in the cellar and to hang it up to dry.
4. **If you think any rope is damaged/furry you MUST ensure that the tackle person is clearly made aware of this fact.**

P.S. Rope protectors are available for use underground not just for decorating the tackle store.

## Types of caving rope

1. Lifeline

2. SRT rope

1. Lifeline is for use with ladders as it is dynamic. The degree of damage occurring to a caver during/after a fall depends on the energy involved. A dynamic rope is designed to stretch, absorbing energy as it does, thus reducing damage to the caver. Lifeline is more flexible than SRT rope, is red flecked and will be marked at either end with coloured tape.

2. SRT rope is static and must not be used for lifeline. However, it does have some stretch when weight is applied and this stretch increases with the length of rope. This must be borne in mind if the rope only just reaches the bottom of the pitch - you may not be able to reach the end of the rope once your weight is off it! Also if you are significantly lardier than the rest of your group then, for example, at rebelay, the loop may need to be slightly larger than normal to account for the difference in weight.

SRT rope is quite stiff and there are various colours. If ever in doubt which rope is which then ask!

## Packing the tackle sack

Tackle sacks should be used for transporting rope underground to protect them from abrasion and for safe

carrying purposes. "The same sack lined with a polythene bag closed with a rubber band will also exclude water, mud and grit" (D. Elliot). This is perhaps a little excessive as it tends to exclude the rope as well but may be practiced if so desired.

1. Ensure you know what units of length the guide book uses.

2. Check that there are 2 labelled ends to the rope - if there are not it means that the rope has been cut and it is not the length it pertains to be!

3. Unhank the rope and feed it through your hands to ensure there are no tangles.

4. It is imperative that a double figure of 8 is tied in the bottom of the rope. **This takes less than 5 seconds but could save a life.**

In the event of the rope being shorter than expected, the caver does not abseil off the end of the rope into oblivion below and the loop can be used for cow's tails whilst a change-over occurs.

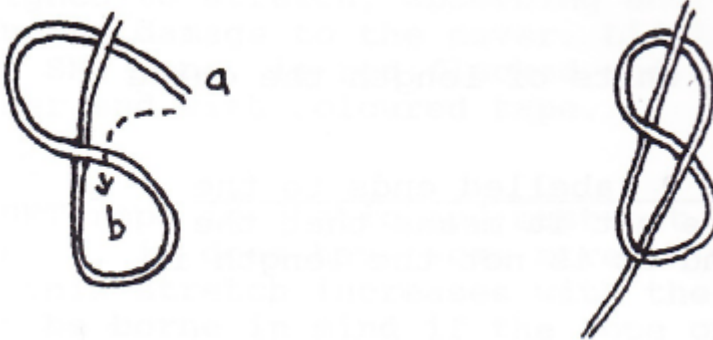
5. Pack the rope in reverse order of descent.
6. Tie the end of the rope to be used to the top of the tackle sack to ease rigging underground.
7. If you do not own a donkey's dick then check that the tackle sack has a bit of tat to carry it with along traverses etc. so that your cow's tails are on the traverse not the tackle sack.

If you do not know how to pack a tackle sack then please ask a member of the club as it is easier to show than describe in words.

## **Knots**

All knots reduce the strength of the rope by about 30% although this varies between types of knot. Outlined below are a few of the many types used underground. These should be sufficient for most situations encountered.

### **1. Figure of 8 - single**



Take end (a), put it into the page through loop (b)

Use - tying the end of rope to be used to the top of the sack.

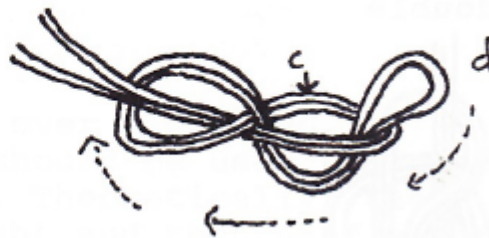
## 2. Figure of 8 - double



Tie as above but using double rope thickness to produce a loop.

Use - general rigging, e.g. start and end of traverse lines, back up to main belays, end of ropes, rebelay, tying round natural belays.

## 3. Figure of 8 on a bight



As fig. of 8 but exclude the last stage. Pull the 2 short lengths of rope part way through loop (c), then place loop (d) over the whole of the knot.

Use - main belay Y-hang.

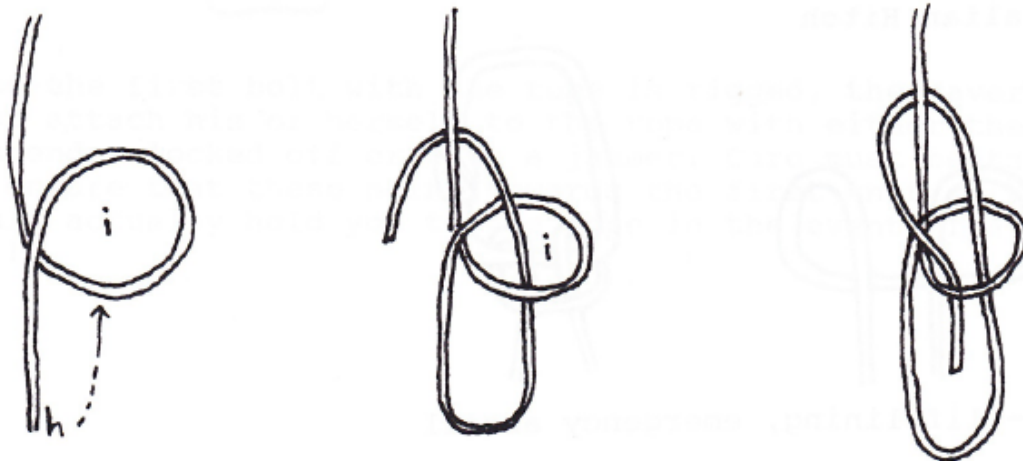
#### 4. Butterfly



Hold the top of the rope and twist in the same direction twice. (e) comes down under (g) and into the page to come out of loop (f).

Use - traverse lines, between main belay and back up. Then it is absolutely impossible to have the back up belay higher than the main belay (see later section).

#### 5. Bowline - single



Make a loop as shown. End (h) goes up out of loop (i) behind the main rope and back down into loop (i).

Use - around natural belays

## 6, Bowline - double



Tie as above but use double rope thickness

Use - lifelining

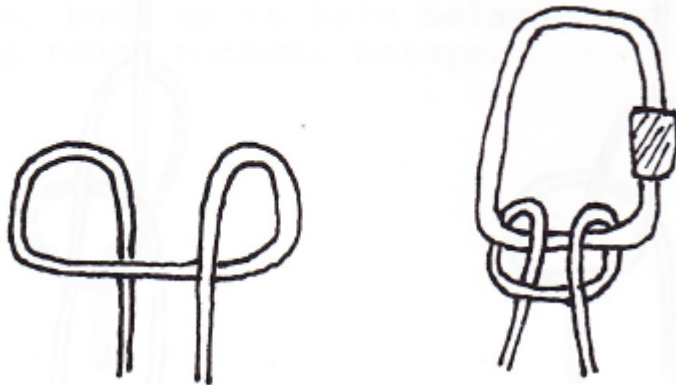
## 7. Bowline on a bight



Using double rope thickness bring loop (j) up out of loop (k). Take the loop (j) into the page and round the whole knot leaving 2 loops.

Use - this is the best knot for a Y-hang as it can easily be adjusted.

## 8. Italian Hitch



Use - lifelining, emergency abseil

### ... of triads and sausages

1. Generally, follow the cave guide book.
2. Spanner is 13 mm.
3. Bolts should not be over-tightened. Very little effort should be used to loosen a bolt with a spanner. Theoretically, they should be finger tight and then half a turn with the spanner.

### Main types of bolt

Twists or plate hangers - these are best loaded parallel to the rock but certainly no more than 4 degrees. These require the use of maillons with them.



Ring bolts - good, can be loaded in any direction.





Triads - for use on traverses but can easily be dropped and are therefore not used often.

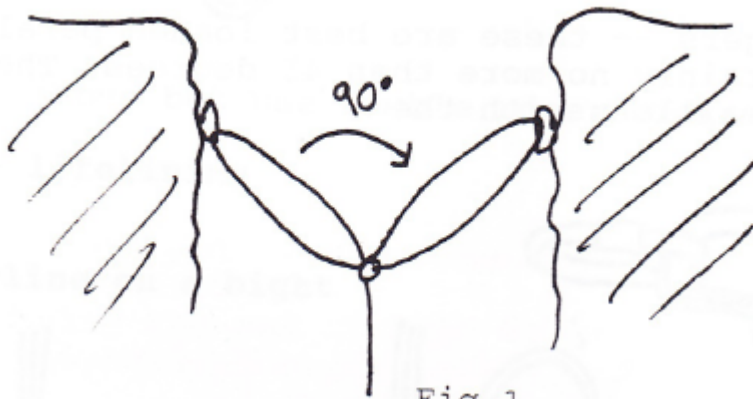


Once the first bolt with the rope is rigged, the caver must attach his or herself to the rope with either their descender locked off or with a jammer. Care must be taken to ensure that these point towards the first knot so they would actually hold you to the rope in the event of a fall.

## Pitches

The main belay must have a minimum of 2 hang points which may be bolts or naturals and a backup/traverse line of ideally two anchor points although this is not always possible. The back up line must be higher than the main belay to reduce the fall factor. If this is not possible, and only if not, a butterfly knot should be tied between the back up and the main belay as this will slip slightly, thus absorbing some energy if a fall should occur and reduce the risk of bolt/hanger failure.

The angle between the Y-hang should ideally be 90 degrees but never exceed 120 degrees.  
(Fig. 1)



Leave about 1-2m more rope you think you will need for the Y-hang as more often than not you will find you have not got quite enough rope.

Be aware of rub points i.e. how to avoid them using rebelays or deviations.

Whenever a new knot is started close to where one has finished, tie a figure 8 in the end not to be used e.g. at rebelays where there are huge ledges.

It is best to rig as dry as feasible as it may rain whilst you are underground.

At all times it is better to be safe than sorry so just use your common sense!

## **De-rigging**

Make sure everybody who is meant to be is out of the cave.

Remove the knot from the bottom of the rope. At the top of the pitch, once in a safe position pull the rope up. Using jammer/locked off descender as appropriate, remove the bolts.

On particularly long pitches you may attach the rope to yourself so only half the length of rope is to be hauled up, but beware of the loop catching.

Leave the bolts on the rope to sort out above ground.

## **Ladders**

In most cases ladders follow the traditional route i.e. wet route, through a cave. This must be borne in mind when considering the aquatic nature of the cave, the weather in the hours to come and the number and competence of the party.

Ladders and lifeline must not be attached to the same anchor point.

The angle between the wire and rung should preferably be 90 degrees. Too much tension either side of 90 degrees will weaken the ladder. (fig. 2 and 3)

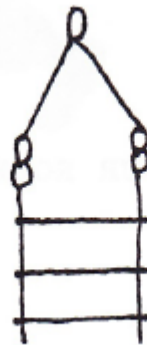


Fig.2

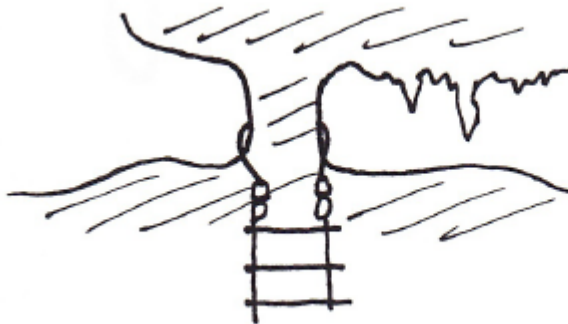


Fig.3

Use a double bowline as a minimum for lifelining but, if possible, a belay belt or harness should be used.

The belayer must attach his or herself to a safe anchor.

Body belays are not wise - a descender, stitch plate or Italian hitch is preferable. The latter twists the rope most but when tied directly to an anchor point it has the advantage that it is easy to hold a fall and there is no strain on the belayer.

Self-lining should be avoided if possible. It is best to use a double length of lifeline hung over a krab or pulley and to be belayed from the bottom. If this is not possible, then attach your chest jammer to the rope.

## General

Maillon rapides and ring bolts can be loaded (i.e. the pull of the rope) in any direction.

Karabiners can only be loaded in one direction. You should be attached to the rope at 2 points simultaneously.

## **Summary**

- 1. Always tie a knot in the end of your rope**
- 2. If ever in doubt, ask.**
- 3. Use your common sense at all times.**
- 4. If all else fails, retire to the nearest hostelry.**