# CEM Knot

## The Mexican recoverable anchor, by Chanock

This document I made with the intent to disclose more technical and detailed features and proper preparation of the knot CEM, as for many who have had the opportunity to see the field application of the knot seems to be too many steps and very complex but is relatively simple and easy to learn to do without errors ...
Within this document you will find the application of the lump in one of the most common scenarios in the world of adventure and sports verticals: Pin to a tree for a rappel rope and then recover easily without leaving your computer or use a extra material than our rope.
The behavior of this node varies by the characteristics of the string to be used either by diameter, be dynamic or static even in the same condition as found (wet abarrada, dirty or dry) and we should consider these factors when when applying the knot.
This type of harnesses recoverable are referred to as "techniques of fortune", and that is why I invite you to be installed and used by the responsible member of the group, you know and have full experience in the installation of the knot and being used only for the last to do the rappel.
I invite you to meet, learn and use ...

**CONTENT**


WARNING: It would be unwise to descend a canyon only interpreting the data contained in this document and inexperienced previa.cañonismo.com not responsible for any incidents arising from the interpretation of the data.

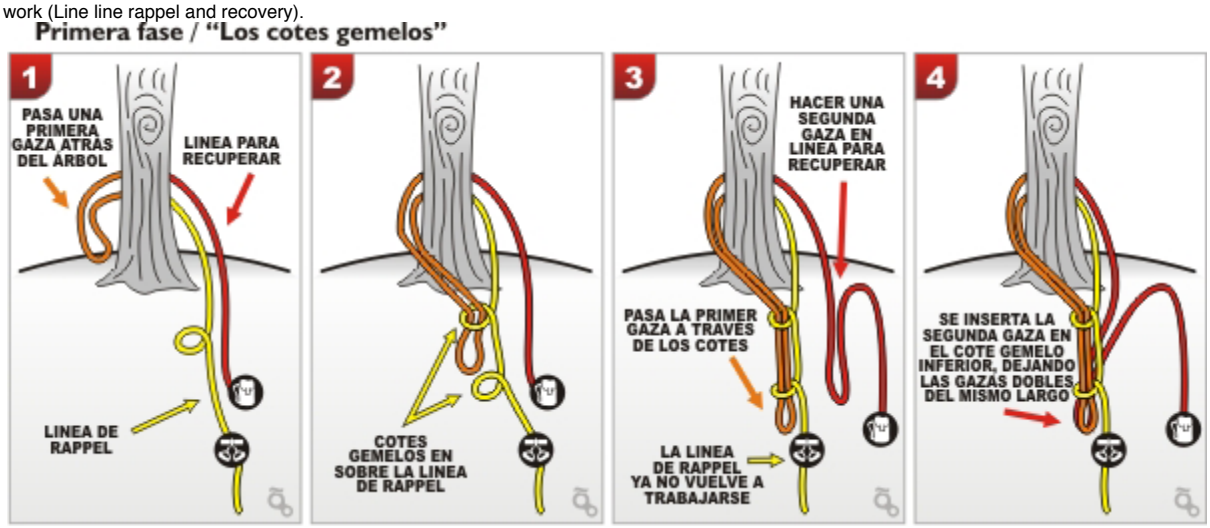
**BACKGROUND OF THE KNOT CEM**

Since I was in the Scouts in the group 16 Grecos clan in the province Jalisco (1989), I always present the mystery of power "overthrow" the rope without touching it climbing over the surface of the rock to the top of the rock or wall and the risk of rubbing off so that no matter what harm he suffered rope definitely not succeed to recover.

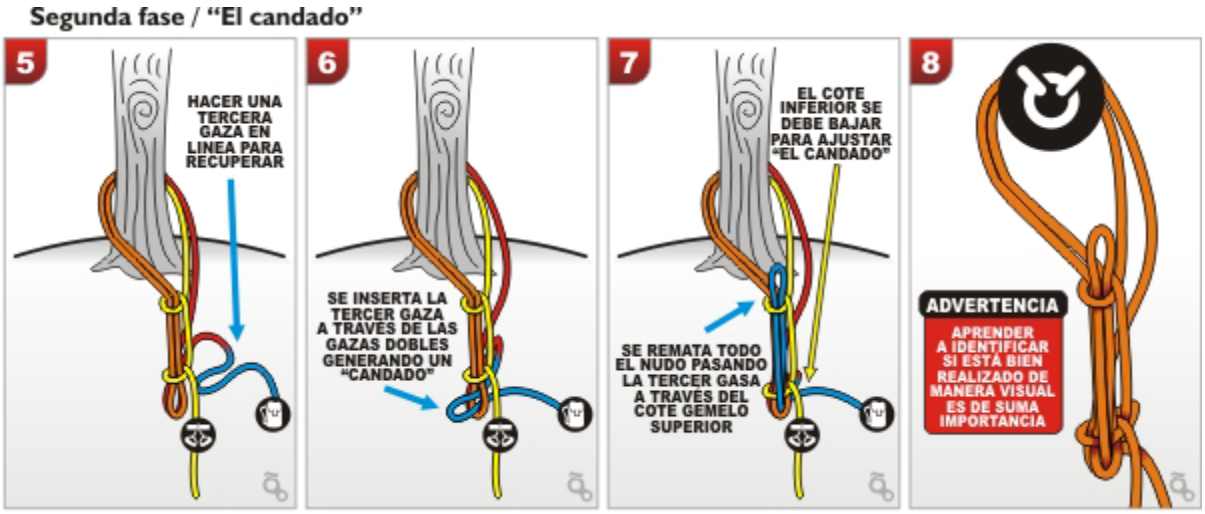
In 2005 my friends and fellow of the Association, CEM / AC Cannons in Mexico, Jose "Pepe" Navarro and Agustin Lizarraga, having taken their first years of canyoneering with ACA / American Canyoneering Association, talked about some techniques I learned to retrieve the rope after a rappel done, a situation that inspired me to learn and start using these harnesses of fortune, this being sparking in me the idea of developing *"A recoverable harness that offers solutions for both alternatives com canyon caving, climbing and vertical work. "*
With the experience already gained with other anchors recovered, I had to do some tests with the knot in their infancy and with my fraternity brothers every experience with my knots resulted: more information and disadvantages, so making adjustments was very important because during the testing process was raised in an accident with a "Fetus knot", a situation which led to a detailed analysis of the failure and subsequent resolution of them resulting in CEM knot, it was later adopted above other good knots for my fellow gunners, having its official launch at the International Meeting of ACA canyoneering 2006 in Sierra de Quila, Jalisco, Mexico, where he was welcomed by the gunboat community, especially by my friend William "Sonny" Lawrence.

**CEM ELABORACIÓND THE KNOT**

To start with the first phase of the node will need to follow these first four steps, which are performed sequentially and respecting each of the lines of work (Line line rappel and recovery).



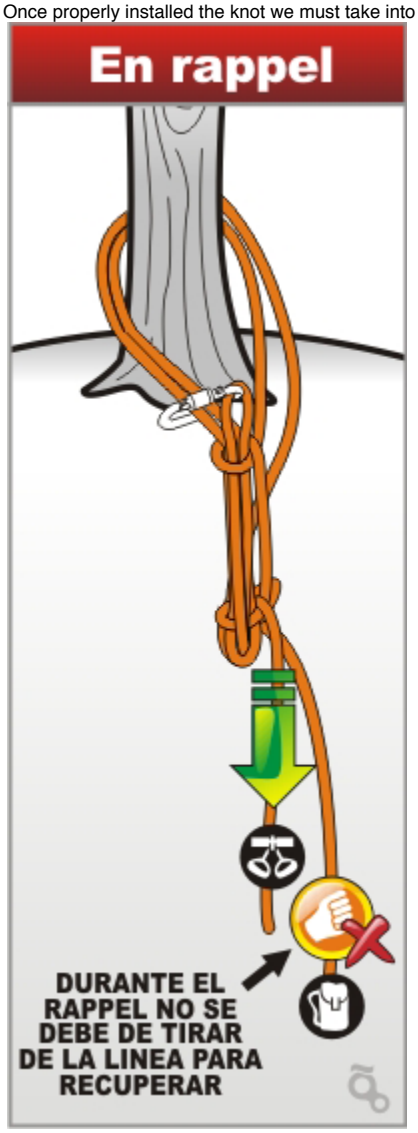

After completion of first phase of the knot pa we will do what is commonly known as "lock" system that makes the knot CEM is solid and does not collapse.




Once the knot is of utmost importance to make sure it is well made and has no error in the preparation, this should be visually and only with practice and repetition of the knot, we recommend using this knot spaces checked prior to putting it into practice in a real scenario that could endanger your physical safety.

**OBSERVATIONS ON RAPPEL**

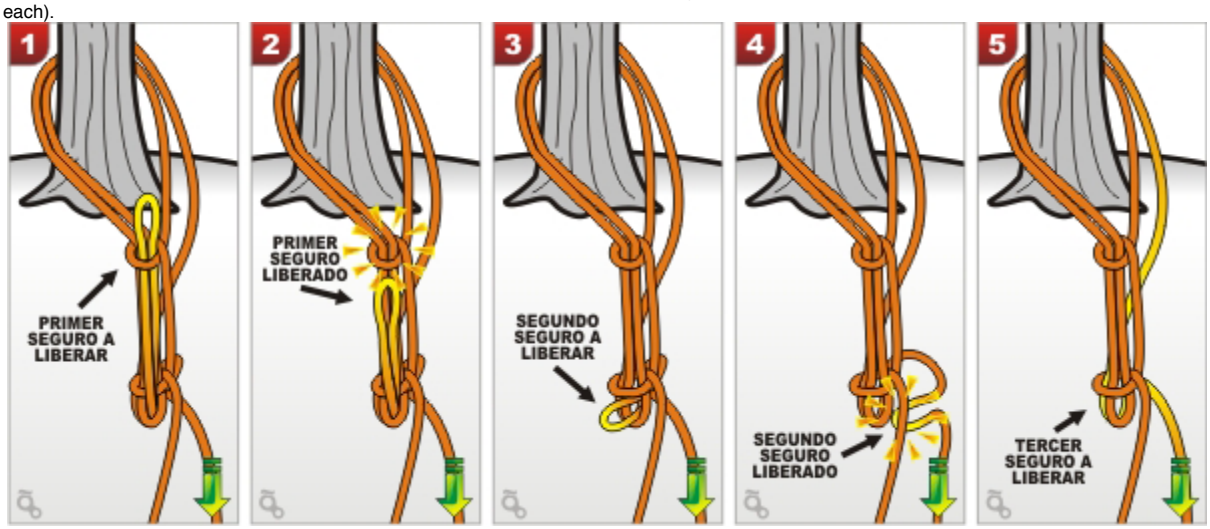
Once properly installed the knot we must take into account the following observations:



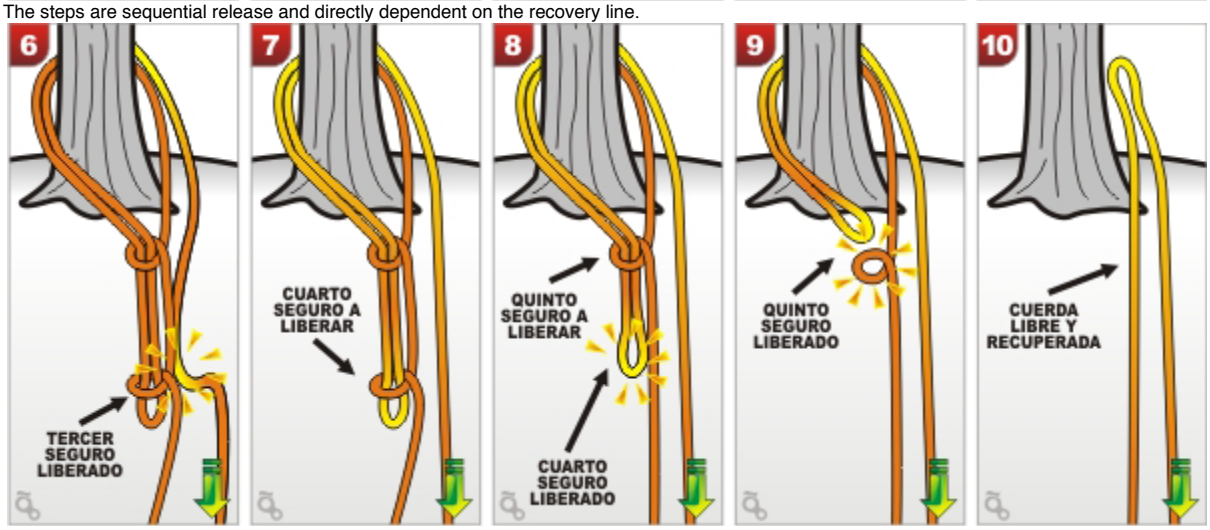
- As extra insurance you can install a hook on the last loop.
(In order not to collapse the node fails over to pull the line of recovery)
- Perform the decline rectilinearly and uniformly.
(To avoid friction on the rope as we descend in single rope)
- Keep the tension on the rappel line to steady the knot.
(Although it does not undo the knot, the knot is important to continue to work well)
- Do not pull the retrieval line as we descend.
(It is difficult to collapse the knot when you have tension on the rappel line, but not impossible)

**RECOVERY OF THE ROPE**

The recovery of the rope with the knot CEM is quite simple because we just have to pull the retrieval line. In case that when we do not have to retrieve it the knot will be easy to identify the safe release of the five that has the knot through the contact with the rope (It's very notorious secure the release of each).



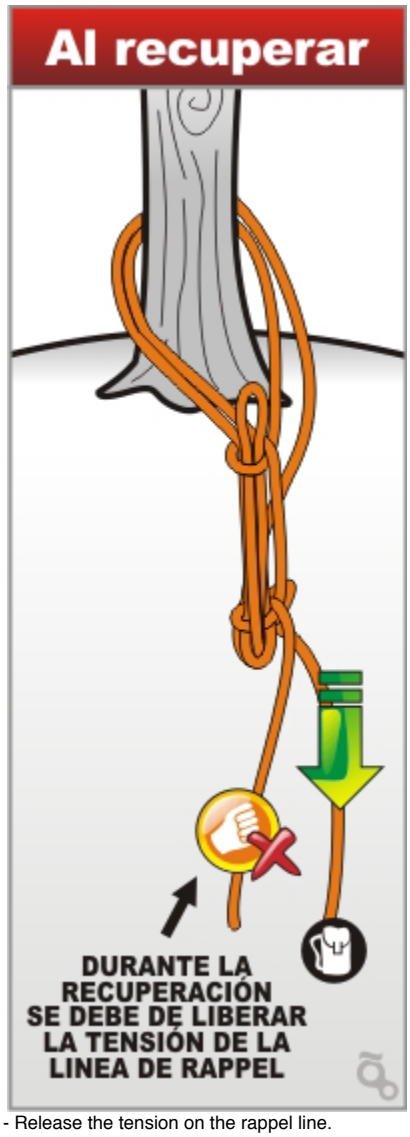

The steps are sequential release and directly dependent on the recovery line.




In tests at EMF knot in a controlled environment have been shown to load on the rappel line, you can try to collapse the node and even having released the first safe, the system remains completely collapse ... (This scenario was conducted in 2007 by EMC / Guns in Mexico Association BC).

**NOTES TO RECOVER**

Once the rappel we take into account the following observations to take back the string:

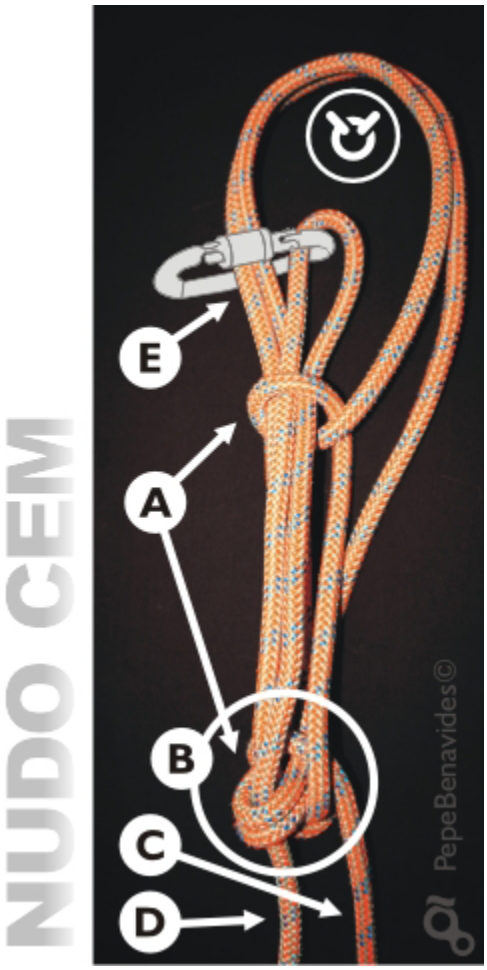



- Release the tension on the rappel line.
(To avoid counterbalance and tighten the knot on the memento to recover)
- Pull the line evenly recovery.
(The time to be pulling the rope will feel the release of insurance)
- Take into account that the string section that will be rolled rope.
(We leave the two parallel lines and without obstacles between them to make the rebate)
- Keep away from likely spot where you can drop the rope
(Regardless of the length of our rope, we avoid the shock of it)

**OVERVIEW OF THE KNOT**

It is important before using any retrieval system, we have the dedication to learn how to make it, install it and retrieve it in a controlled environment in order to carry it out abroad.

The knot EMC has some general aspects that must be taken into account to identify when well done or which follow:



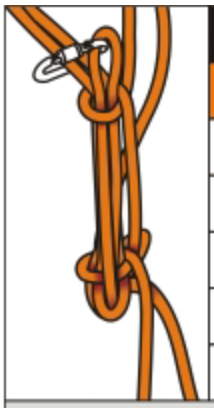

- "Cotes twins"
(Part fundamental essence of CEM knot, are made with the rappel line "A")
- "The Lock"
(Section of insurance that prevents the collapse of the "B")
- Identification of the lines
(We identify the rappel line "C" recovery line "D")
- Additional Security
(Carabiner prevents the collapse of the knot, the last to fall to remove "E")

**KNOT STRENGTH CEM**

Extract from email I sent William "Sonny" Lawrence with the results of the dynamometer endurance test that was performed to knot the EMC in May 2007.

"Manuel is impressive, I have the intention of using it, Jason Martinez, Paul Stovall and me, we test the Knot CEM. Using a rope EasyBend 9mm PMI. The rope was suspended in the air from the branch of a tree, and was loaded with a weight of 0.778kN (175.0 pounds = 79.3 kg) The knot was tied to a large pear-shaped maillon, the system was strained as if a person was in line rappel line while the recovery was slowly strained in the order of steps for the release of EMC Knot, the first insurance freed 0,815 kN (183.2 pounds = 83.0 kg), the second was released less safe of that value and was not registered on the machine, the safe third was released to 0.75 kN (168.6 pounds = 76.4 kg), the safe room was released at 1.25 kN (281.0 pounds = 127.4 kg), the fifth insurance is released to 1.28 kN (287.7 pounds = 130.4 kg) subsequently left the anchor rope dropping the weight. "

William "Sonny" Lawrence
ACA member in California, USA
canyonear@gmail.com



| Fuerza necesaria para liberar los seguros del Nudo CEM | | | |
|---|---|---|---|
| **SEGUROS** | **kN** | **Libras fuerza** | **Kg** |
| Primero | 0.815 | 183.2 | 83.0 |
| Segundo | --- | --- | --- |
| Tercero | 0.75 | 168.6 | 76.4 |
| Cuarto | 1.25 | 281.0 | 127.4 |
| Quinto | 1.28 | 287.7 | 130.4 |

Datos recabados de las pruebas realizadas por William "Sonny" Lawrence al nudo CEM en Mayo de 2007.

**CREDITS**

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THE KNOT CEM. The Mexican recoverable anchor. . PDF. © Manuel Gomez Lopez. Technical Training. Mexico, 2012. / technicaltraining@hotmail.com / Www.technicaltraining.com.mx and was adapted by cañonismo.com for Latin America, all artwork contained within this document are made by Jose Guadalupe Benavides del Rio / Mexico, 2012.

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