

# TECHNICAL NOTICE ANCHOR NAIL

## PLATFORMS AND ELEMENTS

REF. CPTFA & C.I.PL.F.A.M22



Revision Index	Date	Detail
<b>A</b>	November 2020	Creation
<b>B</b>	December 2020	Modification of Paragraph 2.2
<b>C</b>	January 2021	Comments on photos in paragraph 3 (Checks)
<b>D</b>	January 2022	Creation of § 1.1, 2.2.1 & 2.2.2. Modification of § 1.1 to 1.4, 2.3 and 4.1. Deletion of § 1.5.
<b>E</b>	February 2022	Update to the new version of the Anchor Nail and addition of an appendix.
<b>F</b>	June 2022	Creation of a new § 1. Modification of § 2.1, 3.1, 3.2.2 and 4.1. Removal of the appendix.
<b>G</b>	October 2022	Modification of §§ 1.1, 1.3, 1.4, 2.2, 2.3 and 3.1 to 3.5
<b>H</b>	March 2023	Change of document layout, Addition of §1.4 Modification of §3.2 to 3.5 Modification of §5.1 Addition of part 6: resistance tests. Add end page. Change of name for the newest version of the Anchor Nail.

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N° DOC : NT-CPTFA-F

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# THE DIFFERENT TYPES OF ANCHOR NAILS

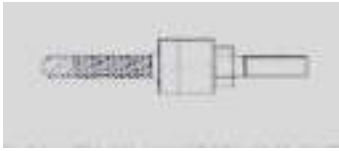
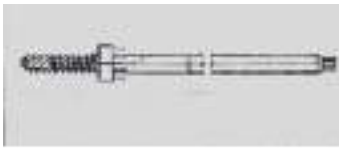


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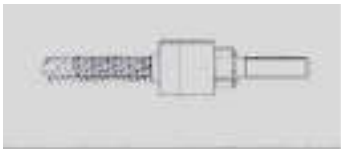
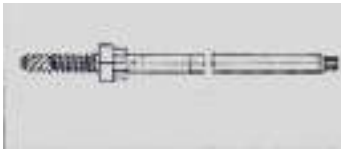
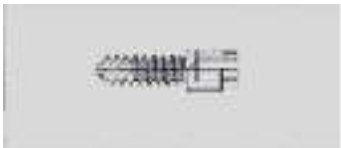
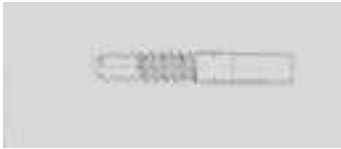


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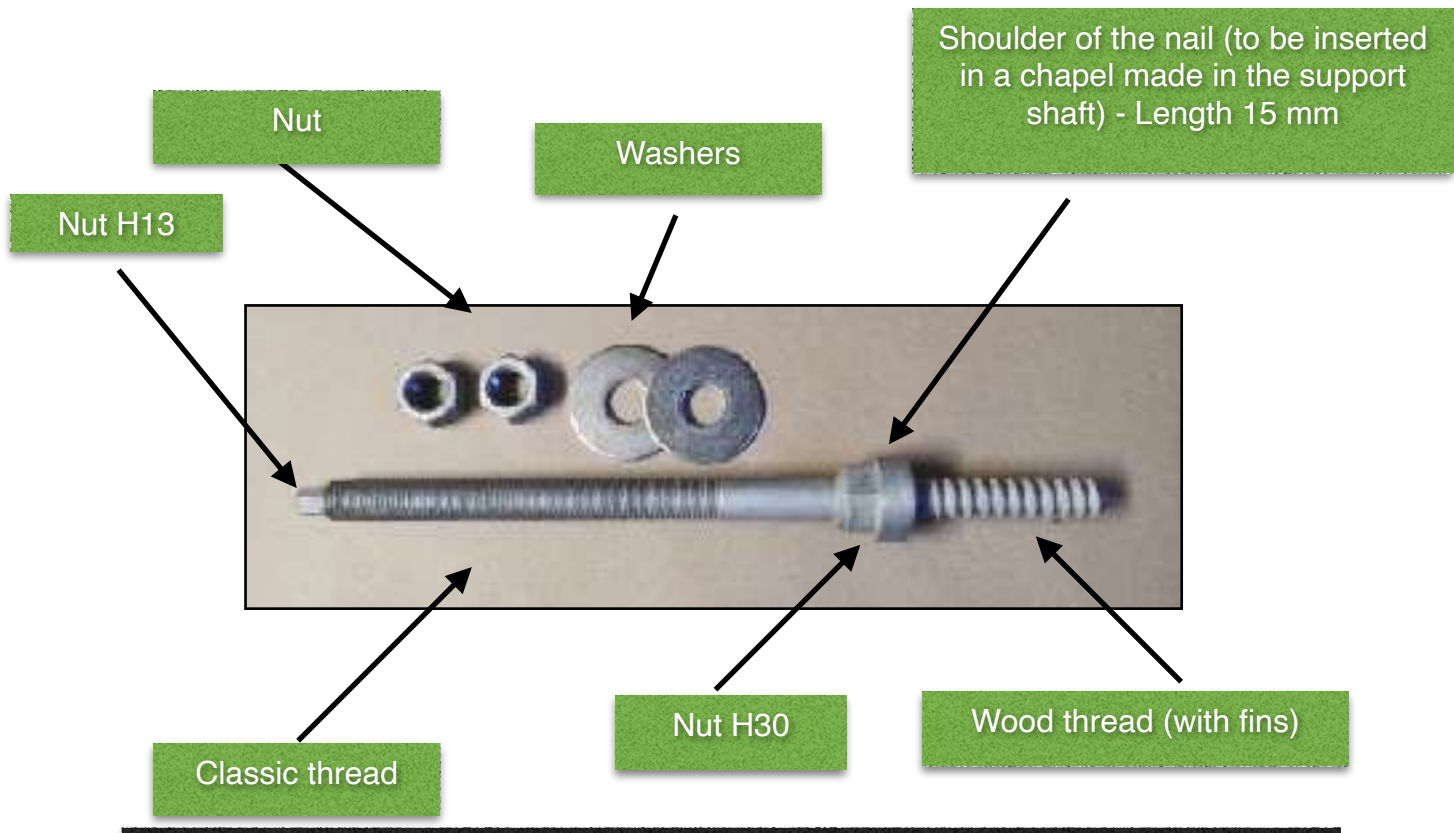
## 1.1 Nomenclature

	Anchor Nail	Name	Ref.	Shoulder	Ø Shoulder	Ø Metric thread	Total Length
1		SAFETY LINE	C.LDV	YES	60 mm	M22	29,7 cm
2		PLATFORM AND ELEMENTS	CPTFA V1	YES	40 mm	M20	38,3 cm
3		PLATFORM AND ELEMENTS	CPTFA V2/ C.I.PLFA. M22	YES	40 mm	M22	14,0 cm
4		SPACER	C.E.M22	NO	/	M22	20,5 cm

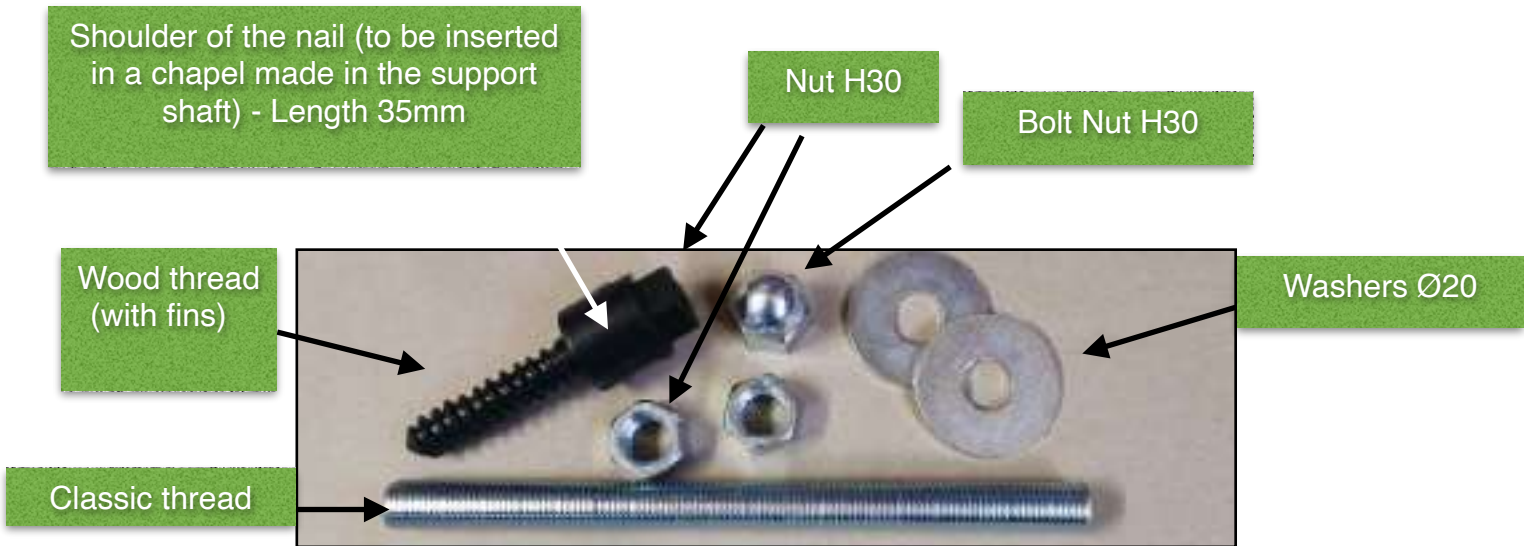
	Anchor Nail	Name	Ref.	Use
1		SAFETY LINE	C.LDV	<p>Connections of Safety Lines and other critical applications (eg: heavy elements, stay lines, tree houses, ...)</p> <p><b>Reference Notice :</b> NT-C.LDV</p>
2		PLATFORMS AND ELEMENTS	CPTFA V1	<p>Connections of platforms structures and support wire ropes.</p> <p><b>Reference Notice :</b> NT-CPTFA</p>
3		PLATFORMS AND ELEMENTS (INSERT)	CPTFA V2/ C.I.PL.F.A. M22	<p>Connections of platforms structures (including tree houses) and support wire ropes</p> <p><b>Reference Notice :</b> NT-C.I.PL.F.A M22</p>
4		SPACER	C.E.M22	<ul style="list-style-type: none"> <li>- Avoid contact between a wire rope and support tree.</li> <li>- Keep the height of a safety line buckle.</li> <li>- Connections of support wire ropes.</li> </ul> <p><b>Reference Notice :</b> NT-C.E.M22</p>



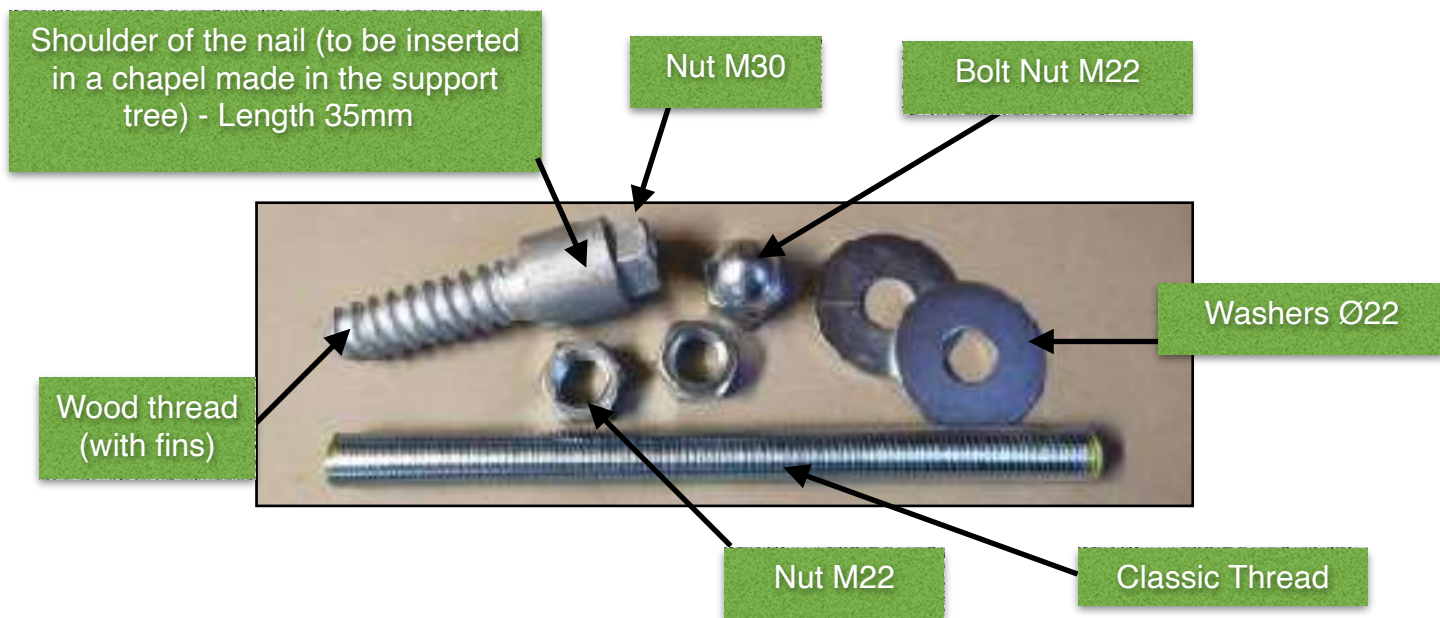
1.2 The Anchor Nail Platform & Elements - (Version 1)



1.3 The Anchor Nail Platform & Elements M20 - (Version 2)



## 1.4 The Anchor Nail Platform & Elements M22 - (Version 2.2)



## 1.5 Comparison between the different versions the Anchor Nail Platform & Elements

Version	Caractéristiques principales
Version 1 (Ref. CPTFA)	One-piece nail with M20 threaded rod.
Version 2 (Ref. CPTFA V2.1 & C.I.PLF.A.M22)	Insert with larger wood thread. Separate Threaded Rod Diameter (M20/M22)



# MOUNTING THE ANCHOR NAIL PLATFORM & ELEMENTS

2



## 2.1 Foreword

Make sure that the Anchor Nail installed is in accordance with this manual.

The Anchor Nail platform and Elements must be installed in a healthy tree checked annually by a phytosanitary expert.

The Anchor Nail platform and Elements must not be installed in a tree whose diameter is inferior to 25cm.

The Anchor Nail platform and Elements cannot be used for mounting a lifeline or any other critical application.

## 2.2 Tooling

The tools required to install the anchor nail Spacer are the following:

- 1x Spray with disinfectant solution (Eg: DAKIN, MILTON, ...)
- 1x Screwdriver.
- 1 x Wood wick with integrated lamination device (must use the wick supplied by LE CLOU SVA - Ref. M.PLF.M22 in the catalogue)
- 1x Graduated steel rule or measuring tape.
- 1x Pencil.
- 1x vaseline jar
- 1x brush
- 1x Open-end wrench M32 (or socket for powered wrench).



## 2.3 Mounting Steps

Steps 1 to 9 concern the two versions of the Anchor Nail Platform & Elements (References CPTFA and C.I.PLF.A.M22 ).

**1. Anchor Nail Location:** Using the pencil, note the final location of the Anchor nail.



**2. Disinfecting the drill bit:** Using the spray bottle containing the disinfectant solution, spray the drill bit as well as the lamination device integrated into the drill bit.

**3. Drilling:** At the location defined for the Anchor Nail's position, drill the shaft.

NOTE 1: Drilling should always be done toward the center of the tree, in the direction of the tree's largest diameter.

It is recommended that the nail be installed to work in the main axis of the applied load. A slight

NOTE 2: Attention, in case of presence of black shavings, do not continue the operation. It is a good indicator to show that the tree is sick and/or dying.

tilt may be required.

**4. Lamination:** When the bit is driven down to the lamination device (widest part of the bit), begin making a chapel (\*) in the shaft to insert the shoulder of the nail. The depth of this chapel is shown below. This depth is always the same, whether the nail works in shear or in axial traction.

(\*): The chapel is the part of the hole where the shoulder of the nail is housed.

NOTE 1: The depth of the lamination for the Anchor Nail Platform & Elements version 1 (Ref. CPTFA) is 17 mm. This depth is measured without taking into account the thickness of the bark

NOTE 2: The depth of the lamination for the Anchor Nail Platform & Elements version 2 (Ref. CPTFA V2.1 / C.I.PLFA.M22 ) is 37 mm. This depth is measured without taking into account the thickness of the bark.

NOTE 3: A drill depth as listed above that is slightly greater than the length of the shoulder will allow the tree to heal faster.

**5. Verification of the depth of the lamination:** Check with a ruler or a tape measure the depth of the shoulder made using the drill bit. Repeat step 4, if necessary, until the indicated depth is reached.



**Reminder:** Do not consider bark thickness when measuring depth.

6. **Shavings Residue Disposal:** Dispose of residual chips. Check that the surface of the bottom of the chapel is flawless and identical to that of the nail.

**7. Nail disinfection:** Using the spray bottle containing the disinfectant solution, spray the part of the nail that will be inserted into the shaft.



**8. Nail Lubrication:** Using a brush, apply sufficient lubricant (see NOTE 2) to the wood thread of the nail as well as to the inside plane of the shoulder (see diagram below).



Lubricant location.

NOTE 1: The lubricant facilitates the placement of the nail but also provides the tree with additional protection.



NOTE 2: Placement of the lubricant on the surface of the shoulder makes it possible to check that the nail is fully inserted into the chapel. Indeed, if applied in sufficient quantity, part of the lubricant appears on the outside of the tree at the time of screwing, demonstrating that the shoulder is well supported at the bottom of the chapel.

**9. Driving the nail:** Start driving the nail by hand (check the orientation of the nail one last time). Once positioned, screw the nail using the M30 nut placed on the shoulder.

NOTE 1: The surfaces (the bottom of the chapel with the shoulder of the nail) must be in perfect contact. This can be easily checked if the lubricant is placed in the right place (see previous point).

NOTE 2: The hardware supplied by LE CLOU SVA should be used with the equipment purchased because they have mechanical properties suited to their use. If you wish to use your own hardware (in the event of loss of the hardware supplied or other), contact LE CLOU SVA to install hardware with equivalent properties.



The following step concerns only the Anchor Nail Platform & Elements Version 2 (Reference CPTFA V2 & C.I.PLFA.M22):

**10. Screwing the threaded rod:** Apply threadlocker to the part of the threaded rod to be inserted into the nail and screw the threaded rod completely into the threaded part of the nail (approximately 40 mm).

NOTE 1: Choose a length of threaded rod corresponding to the use of the Anchor Nail Platform & Elements

## 2.4 Connectors

The Working Load Limit (WLL) of the connector must be adapted to the tension of the cable to which the connector is connected (working load).

Depending on the device connected to the Anchor Nail, it is necessary to adapt the connectors to be installed on the nail.

These connectors can be (non-exhaustive list):

NOTE 1: If the Anchor Nail works in shearing, it is recommended to install the connector as close as possible to the tree in order to reduce the forces transmitted to the tree and improve the holding of the Anchor Nail.

IF THE CONNECTOR IS SCREWED TO THE END OF THE NAIL (e.g. Eyebolt), IT MAY BE NECESSARY TO CUT THE METRIC THREADED PART IN ORDER TO REDUCE THE LEVER ARM.

- Eye bolts.

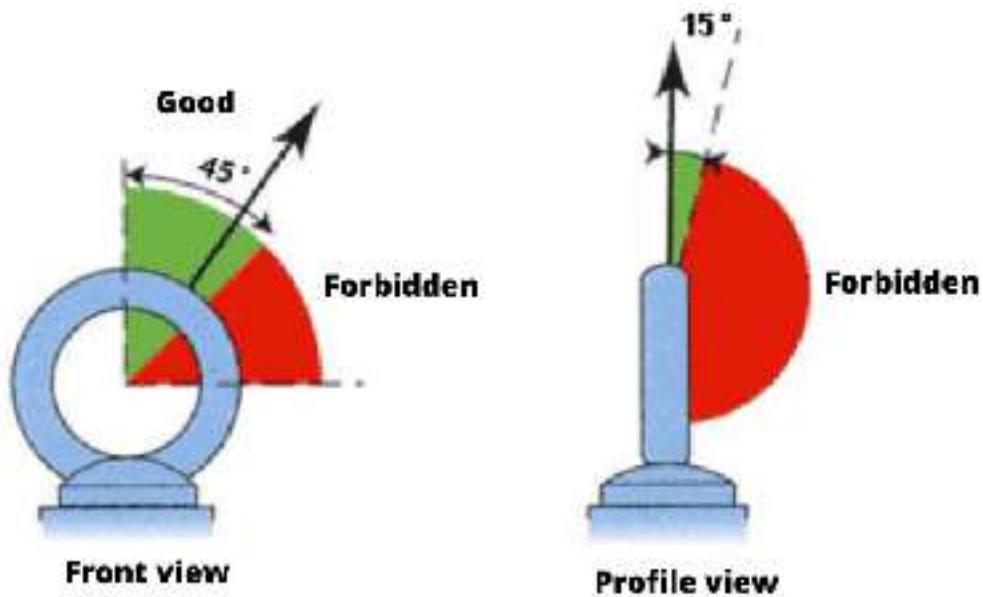
NOTE 2: For connectors screwed at the end of the nail (e.g. stop nuts, etc.), it is recommended to use threadlocker, locknuts (outside) or counter nuts (inside). The nuts must be placed in contact with the connector.

- Junction link.

NOTE 3: If eyebolts are used, consideration should be given to good practice as described in the diagram below:

- Chain.

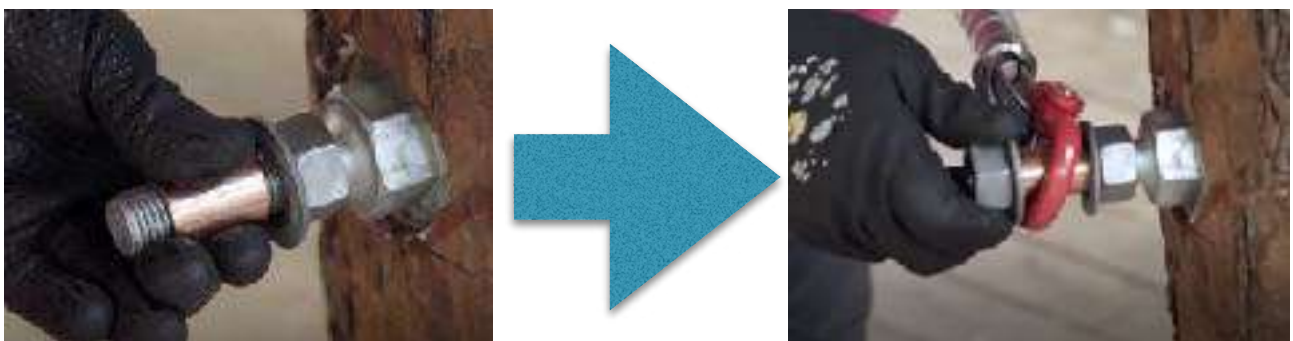
It is possible to have several different connectors attached to the same nail. They must all meet the same requirement in terms of minimum WLL.



However, refer to the technical notice of the connector which defines the limits of use.

It is recommended to use Eye Bolts only in case of mainly axial load. For nails working in shear, then prefer the connection of the cables by another more suitable connector (junction link or other), placed directly on the nail as close as possible to the tree.

To prevent the connecting link from damaging the thread, it is possible to use a ring.





# LIMITS OF USE

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### 3.1 Generalities

The installation of the Anchor Nail must comply with this manual. LE CLOU S.V.A cannot be held responsible for the consequences of an assembly that deviates from the recommendations of this manual and/or that has not been validated by an inspection body before being made available to the public.

Note: The lot number is located on the end of the nail (see photos below).



NOTE: For the Anchor Nail Platform & Elements Version 1, if the part with metric thread must be cut (see Note 1 of § 2.4), the batch number of the nail will no longer be visible and it is therefore advisable to REPORT this number on the site maintenance log.

### 3.2 Conception and Construction

#### 3.2.1 Number of Anchor Nail to install for Platforms BY TREE

- 2 nails minimum for "simple" or "square" platforms (2 nails on vertical mast).
- 4 nails minimum for "triangular" platforms (2 nails per triangular frame).
- 4 nails minimum for "Traditional" or "Flat" platforms (2 nails per frame with top frame offset 90°).



Double Square

Triangular

Traditional

**IMPORTANT NOTE:** For a better hold of the ANCHOR NAIL PLATFORM AND ELEMENTS, it is not recommended to use the same Anchor Nails for hanging the platforms AND the Elements on the "Square" or "Triangular" type platforms.

### 3.2.2 Maximal Load

The installations for which the nail is used must comply with the requirements of EN 15 567-1. The use of the nail in different applications should consider the pullout strength values provided below:

- Maximum load to be applied to a nail working in shear alone: 1,000 daN
- Maximum load to be applied to a nail working in shear forming part of a platform: 2,000 daN
- Max load to be applied to a nail working in axial traction (alone and/or part of a platform): 2,000 daN.

#### Example of Anchor Nail used on a platform



**IMPORTANT NOTE:** For Anchor Nails working in shearing, the load on the nail should be applied closest to the tree to minimize the flexure moment.

Refer, if applicable, to "Note 1" of paragraph 2.4

For the installation of platforms, the maximum distance between the tree and the framework of the platform must be 5 cm maximum (see photo below).

**It should also be noted that (FOR INFORMATION ONLY):**

- Axial tensile tests carried out on trees with a high density (Beech) showed a pull-out value of 4,800 daN. Nevertheless, this result indicates a "high" axial tensile pullout value which cannot be taken as reference.
- Shear tests carried out on these same trees did not show any improvement in the results compared to the same tests carried out on other tree species.



**Special case:** The following values should be referred to in the event that a Anchor Nail Safety Line is used for the same application as a platform or Elements:

- Max load to be applied to an Anchor Nail working in shear ONLY: 3,000 daN
- Maximum load to be applied to an Anchor Nail working in shear forming part of a platform: 3,000 daN
- Max load to be applied to an Anchor Nail working in axial traction (alone and/or part of a platform): 3,000 daN.

### 3.3 Cable Tension

Particular attention must be paid to the tensions of cables connected to the Anchor Nail. Tension-related loads are added to any other loads applied to the nail and must remain below the values indicated in paragraph 3.2.2.

When installing the cables, the tension of the cable must in no case lead to the deformation of the Anchor Nail itself or of the shoulder (in the tree) in which the shoulder of the Anchor Nail is inserted.

### 3.4 Use of Elements

In regard to the use of the Elements, it is advisable to refer to the instructions for use drawn up by the manufacturer of the installations, in accordance with appendix B of standard EN 15 567-1.



# VERIFICATIONS

4





## 4.1 Generalities

In the event of an anomaly detected, contact LE CLOU S.V.A to obtain an opinion on the corrective measures to be taken, if necessary.

Installations presenting a risk to user safety must be temporarily closed pending corrective maintenance operations.

## 4.2 Routine Visual Checks (daily)

- Tree: Check that there is no space between the shoulder of the nail and the tree (or its scarring beads, if applicable).



Photo taken during pull-out test on the Anchor Nail

## 4.3 Functional Checks (monthly)

The functional check includes all the checks required for a routine visual check. You should additionally check:

- Anchor Nail:
  - Check that the Anchor Nail does not show any deformation. Check the tension of the cables connected to the nail (visual check with reference to the initial state). In the event of an anomaly, carry out a more thorough check in order to determine the origin of the overtension.
  - Check for the appearance of any damage (cracks) or traces of rust.

- Connectors:
  - Check that they show no deformation. Carry out a functional check, in particular on the moving parts (swivel, articulated Eyebolts, etc.).
  - Check for the appearance of any damage (cracks) or traces of rust. Check the tightening (if applicable) as well as the condition of the various welds or connections (if applicable).

NOTE: When tightening is carried out with nuts, a marking on the two parts in contact makes it easy to validate that the tightening has been maintained.

- Tree:
  - Check for cracks in the fibers around the anchor.

- (Note: Example photo taken during nail pull-out test)



#### 4.4 Periodic Annual Checks

In accordance with the requirements of standard EN 15 567-1, it is recommended to use a type A inspection body according to ISO 17 020 ("third party" type inspection body) to carry out the Periodic Annual Inspection.



# MAINTENANCE

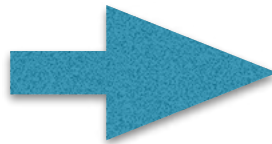
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## 5.1 Modification of the Anchors When the Growth of the Tree Has Become Too Important

When the scarred bead of the tree shows no more than 4 centimeters of thread on the PLATFORM AND AGREEMENT NAIL, it is necessary to add a "PLATFORM AND ELEMENT ANCHOR NAIL EXTENSION".



This PLATFORM AND ELEMENTS ANCHOR NAIL EXTENSION consists of a threaded rod connected with thread lock to a connection sleeve (see photo below):



The PLATFORM AND ELEMENT ANCHOR NAIL EXTENSION designed in this way must be connected to the remaining thread of the platform or rigging nail using the connection sleeve and threadlocker.

The nail and its PLATFORM AND ELEMENT ANCHOR NAIL EXTENSION can then be used under the same conditions as before.

**NOTE 1:** The Anchor Nail batch number will no longer be visible once the coupling sleeve has been installed and this number should therefore be REPORTED on the site maintenance log or the coupling sleeve.

NOTE 2: PLATFORM AND ELEMENT ANCHOR NAIL EXTENSION supplied by LE CLOU SVA should be used as they have mechanical properties suited to their use. If you want to use your own hardware, you should contact LE CLOU SVA to install hardware with equivalent properties.

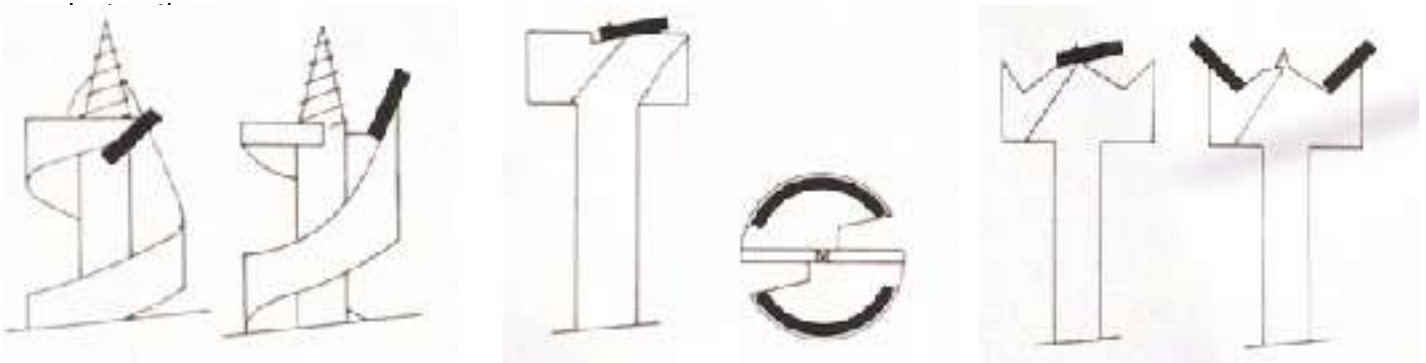
Insert a nut between the tree and the extension and when the assembly is complete, tighten the nut against the coupling sleeve (nail/inside side).



NOTE 3: A marking between the nut and the connection sleeve makes it easy to validate that the tightening is maintained.

## 5.2 Drill Bit

After a certain number of cycles of use, drill bits should be sharpened according to the following





# RESISTANCE TESTS

6



RESISTANCE  
LABS





**Anchor Nail Platform**

From the 28th of October 2022



**Axial Pull**

	28/09/2022				
Observations	Larch tree	Beech tree	Oak tree	Poplar tree	Pine tree
usage limit	1100 daN	1800 daN	1300 daN	1000 daN	1000 daN
rupture	3525 daN	5040 daN	4120 daN	3050 daN	2015 daN

Only the "lowest reference values" are to be taken into account.

The values designated "As an indication" are to be taken for information only and cannot be taken as a reference.

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## Anchor Nail Platform

### Vertical Shearing

26/09/2022

Observations	larch tree	Pine tree	Oak tree	Beech tree
usage limit	1000 daN	800 daN	1000 daN	1200 daN
rupture	5906 daN	3411 daN	5006 daN	6601 daN

### Horizontal Shearing

28/09/2022

Observations	Poplar tree
usage limit	1000 daN
rupture	3775 daN

Only the "lowest reference values" are to be taken into account.

The values designated "As an indication" are to be taken for information only and cannot be taken as a reference.

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Certificate of verification and testing of the Corderie d'or



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Société à responsabilité limitée au Capital 1 500 000 €

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Téléphone : **04 91 18 11 00** - Télécopie : **04 91 44 60 91** – [marseille@corderiedor.fr](mailto:marseille@corderiedor.fr)

**CLIENT : GRIMP IN FOREST**

**N° Dossier : M09-2006CO-0126**

**ATTESTATION de VERIFICATION et D'ESSAIS**  
(*CHECK and TEST REPORT*)

Désignation du matériel : 2 tiges filetées M22 avec écrou M22 et 2 anneaux femelles M22 DIN 582

Date de l'essai (date) : 05/06/2020



ESSAI DE RUPTURE (BREAKING TEST)

Nombre essayé : **1**

Charge de rupture obtenue : **12 100 Kg**

Localisation de la rupture (localisation of the break) : Nous observons un arrachement du filet de la tige filetée, ainsi qu'une déformation plastique des 2 anneaux femelles M22 DIN 582.



Le Responsable Essai/Contrôle

*Control & Test Surveyor*

LATIL ARTHUR

Technicien CORDERIE DOR



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11, Rue des Frères Lumière - 69680 Chassieu  
ZAC des Hauts de Couëron - 31, Rue des Imprimeurs - 44220 Couëron  
135, Route de Portet - 31270 Villeneuve Tolosane  
Rue Clément Ader - BP 80077 - 57970 Yutz  
Rue Lech-walesa - 50120 Equeurdreville  
PA de Ravenne les Francs - 5, Avenue de Poincaré, lot 4 - 59910 Bondues  
139, Rue de l'Industrie - 38170 Seyssinet-Pariset

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Tel : 05 61 72 53 09  
Tel : 03 82 86 64 64  
Tel : 02 33 94 47 31  
Tel : 03 82 86 64 64  
Tel : 04 76 75 92 27

Fax : 04 91 44 60 91  
Fax : 01 39 92 96 29  
Fax : 04 78 90 74 30  
Fax : 02 40 94 83 79  
Fax : 05 61 76 29 30  
Fax : 03 82 86 64 60  
Fax : 02 33 94 47 76  
Fax : 03 82 86 64 60  
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[grenoble@corderiedor.fr](mailto:grenoble@corderiedor.fr)

F-122-00



## Break Test Certificate



**BUREAU  
VERITAS**

### ATTESTATION DE TEST DE RUPTURE

**ENTREPRISE : CORDERIE DOR**

adresse : **7 AVENUE DE SAINT-MENET  
13011 MARSEILLE**

**LIEU DES ESSAIS : BANC DE TRACTION – ATELIER**

adresse : **7 AVENUE DE SAINT-MENET  
13011 MARSEILLE**

**PERSONNES PRESENTES (PRESENT PERSONS) :**

**M. FLORIAN STAUB**

**Responsable CLOU SVA**

**M. Bernard ASSENTE**

**Opérateur banc d'essai C.DOR**

**M. Grégoire USANNAZ-JORIS**

**Technico-commercial C.DOR**

#### IDENTIFICATION DE L'EQUIPEMENT

**MODELE : cLOU**

**N° SERIE : - PLATEFORME ET AGRES N° 20959  
- LIGNE DE VIE N° 19413**

**DATE : 06/09/2022**

**LES TESTS ONT ETE EFFECTUES POUR LA SOCIETE « LE CLOU SVA »**

#### TESTS DE RUPTURE

**2 CLOUS PLATEFORME ET AGRES (N°20959).**

**ESSENCE D'ARBRE : HETRE**





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