LE CLOU S.V.A
SAUVEGARDE VOS ARBRES

TECHNICAL NOTICES

REVISION INDEX	DATE	DÉTAIL
B	SEPTEMBER 2026	REVISION

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N° of doc : NT-SVA-B

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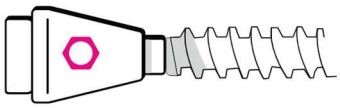
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UNICLOU

NOMENCLATURE

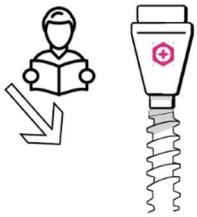


DESCRIPTION	UNICLOU
REF	UC
SHOULDER	Yes (Conical)
Ø SHOULDER	35 mm / 45 mm
Ø METRIC THREAD DIAMETER	M22
TOTAL LENGTH	18,6 cm
TOTAL WEIGTH	520 g

Use : Securing lifeline cables and other critical applications (e.g. heavy activities, guy wires, tree houses, …). Securing platform frameworks (including tree houses) and support wires for activities.
Other use : Any other applications requiring anchoring in trees (shade sails, speaker, CCTV, lighting, …).

GENERALITIES

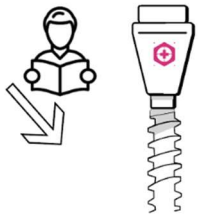
LE CLOU S.V.A cannot be held liable for the consequences of any installation that deviates from the recommendations in this manual and that has not been approved by an inspection body (prior to making available to the public) or by the operator as part of their risk assessment.



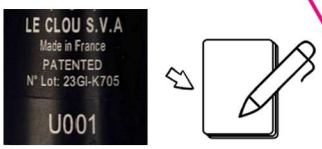
Read the UNICLOU Instructions before installation and comply with it.



Comply with current national regulations, best practice and standards.



Refer to the current regulations for working at height.



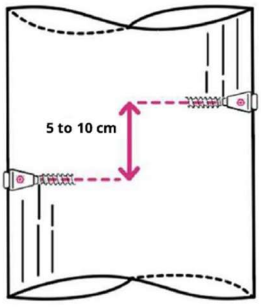
Record the information on product traceability in the maintenance logbook before installation.



Healthy tree inspected annually by an expert.
Ø ≥ 25 cm measured without the bark.



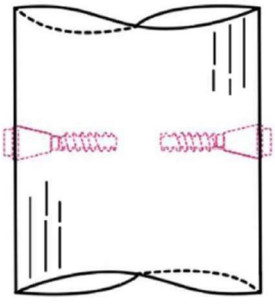
25 cm ≤ Ø ≤ 35 cm
measured without the bark



MANDATORY OFFSET

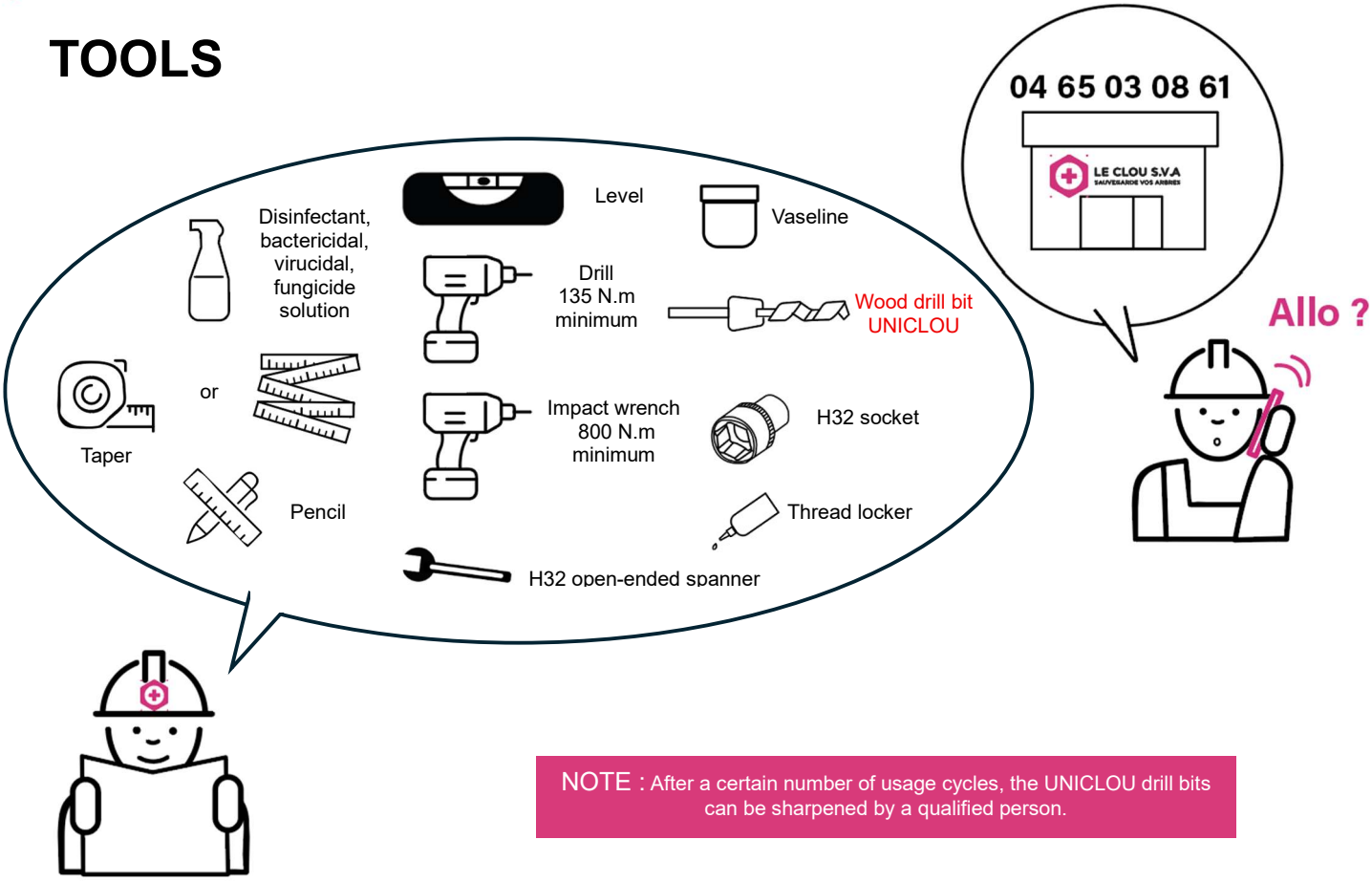


Ø ≥ 35 cm
measured without the bark



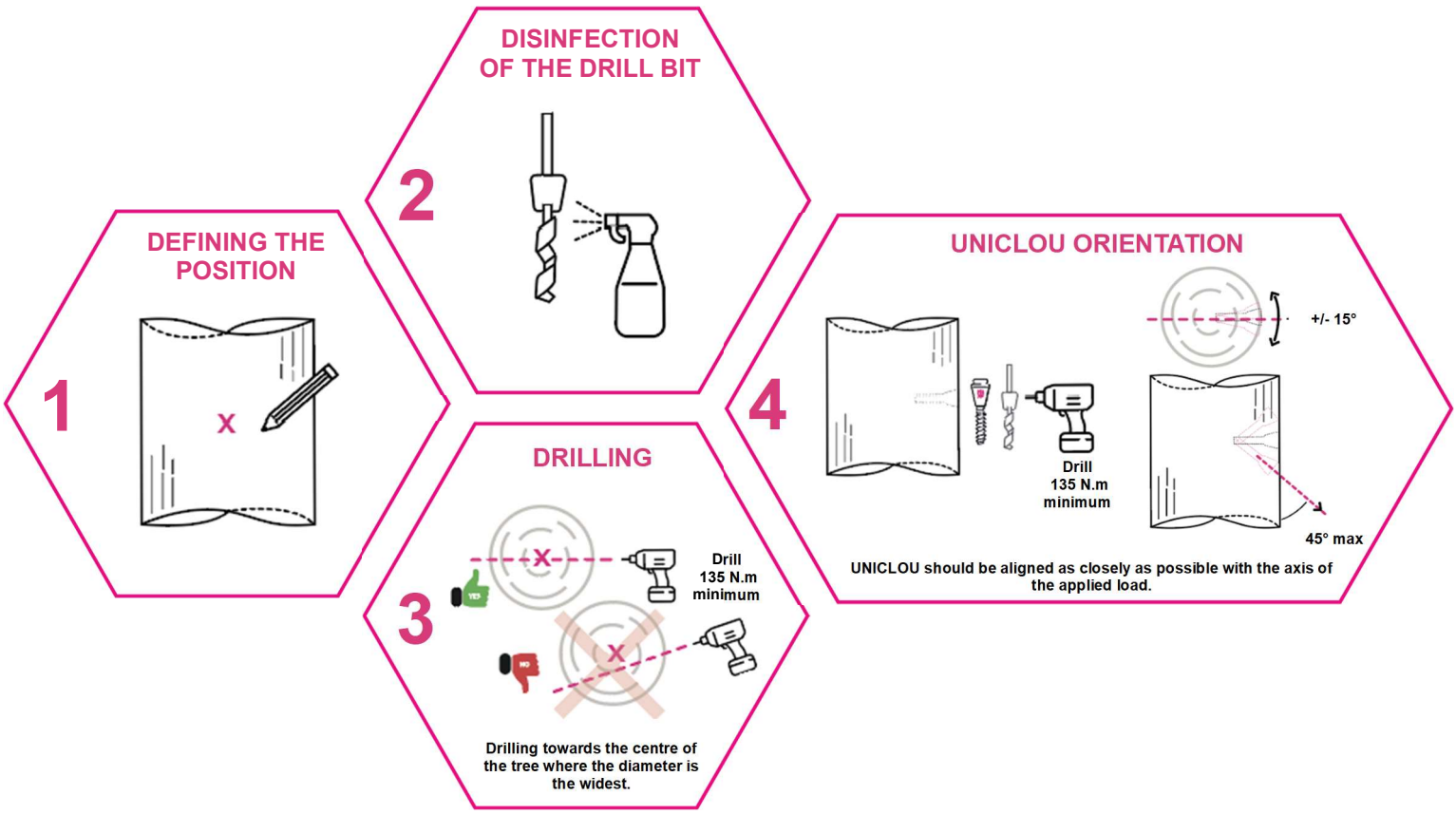
OFFSET NOT REQUIRED

TOOLS

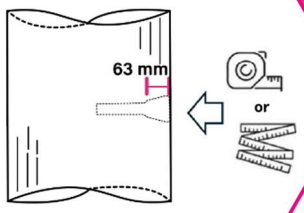


NOTE : After a certain number of usage cycles, the UNICLOU drill bits can be sharpened by a qualified person.

ASSEMBLY



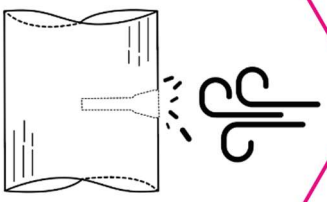
5 DRILLING DEPTH



Distance measured without the bark.

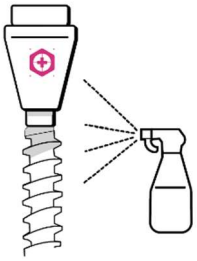
NOTE :
A drilling depth of 63 mm, which is greater than the length of the shoulder (62 mm), will allow the tree to heal more quickly.

6 CLEANING

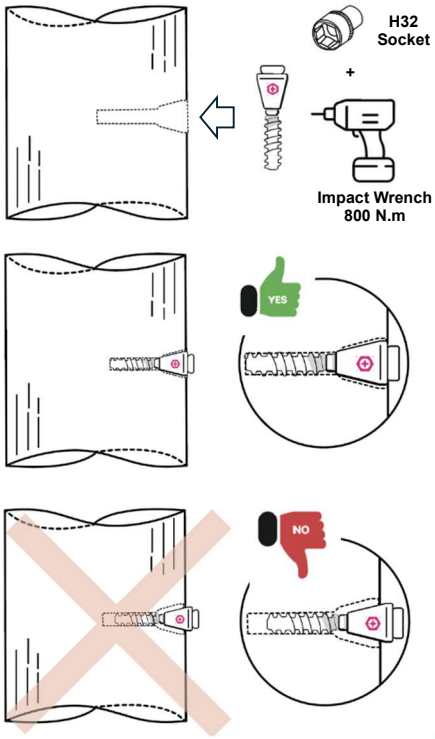


Wood shavings removal

7 DISINFECTION OF UNICLOU

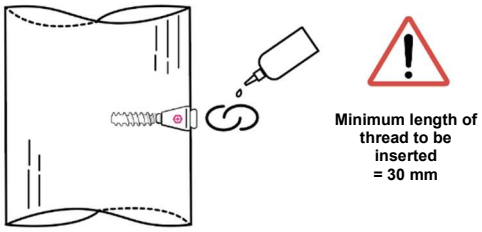


8 UNICLOU SCREWING



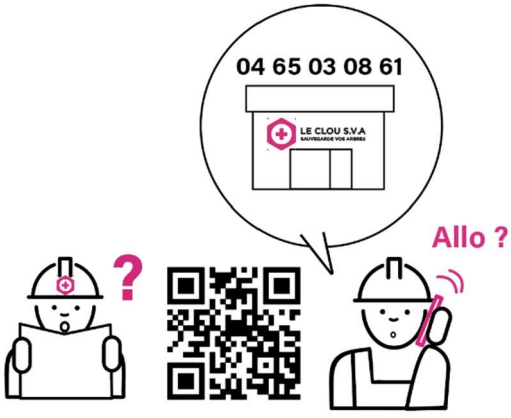
NOTE :
When installing the cables, the tension shall never cause deformation of either the connectors attached to UNICLOU (in particular the threaded bar) or the drilled hole in the tree into which the UNICLOU shoulder is inserted.

9 CONNECTOR(S) SCREWING



Characteristics and dimensions of the connector(s) shall be suitable for use with UNICLOU.

NOTE :
It is recommended to use the hardware supplied by LE CLOU SVA, as they have mechanical properties suited to this application.
If you want to use your own hardware, please contact LE CLOU SVA to ensure that hardware with equivalent properties is fitted.



NOTE :
The use of a Vaseline-type lubricant applied on the UNICLOU's wood thread is strongly recommended.

CRITICAL APPLICATIONS

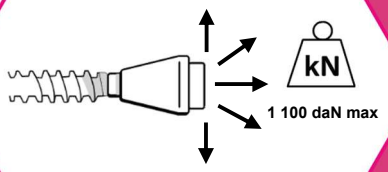
A critical application is defined in standard EN 15 567-1 as a situation in which the consequences of a failure are likely to cause serious or fatal injury.

NOTE : A guy line deemed necessary by the tree expert or by tree strength assessment (§ 4.3.3.3.1.1 of standard EN 15 567-1) shall be considered as a critical application.

NOTE :

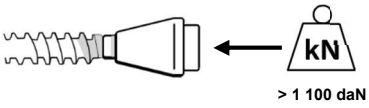
Loads resulting from cable tension are added to any other loads applied to the UNICLOU and shall remain below the values indicated below.

Maximum static tensile Load = 1 100 daN (1,1 tonne) regardless of load direction.



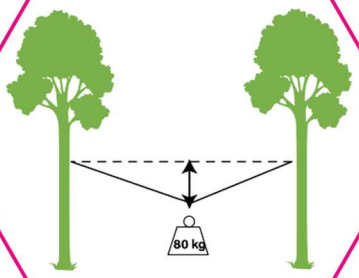
This maximum load takes into account a safety factor of 3.

Maximum static compression Load > 1 100 daN (1,1 tonne) when applied along UNICLOU axis.



This maximum load takes into account a safety factor of 3.

RECOMMENDATION



Static sag for the wire ≥ 5% of the span

NOTE :

These maximum loads are applied to UNICLOU base.

It is important to consider leverage in relation with the distance from UNICLOU base over which the load is applied.



Examples of connectors (non-exhaustive list)



Lifting eyes (male or female)



Connecting link



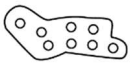
Lifting shackle



Lifting chain



Rapid link

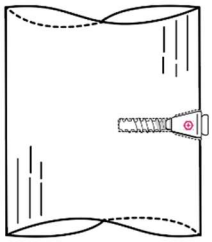


Continuous safety line plate

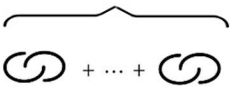


Articulated cable guide

Threaded bar



Connectors chain



Critical application



CT/WLL 11 kN minimum for each connector and suitable for the application connected to UNICLOU



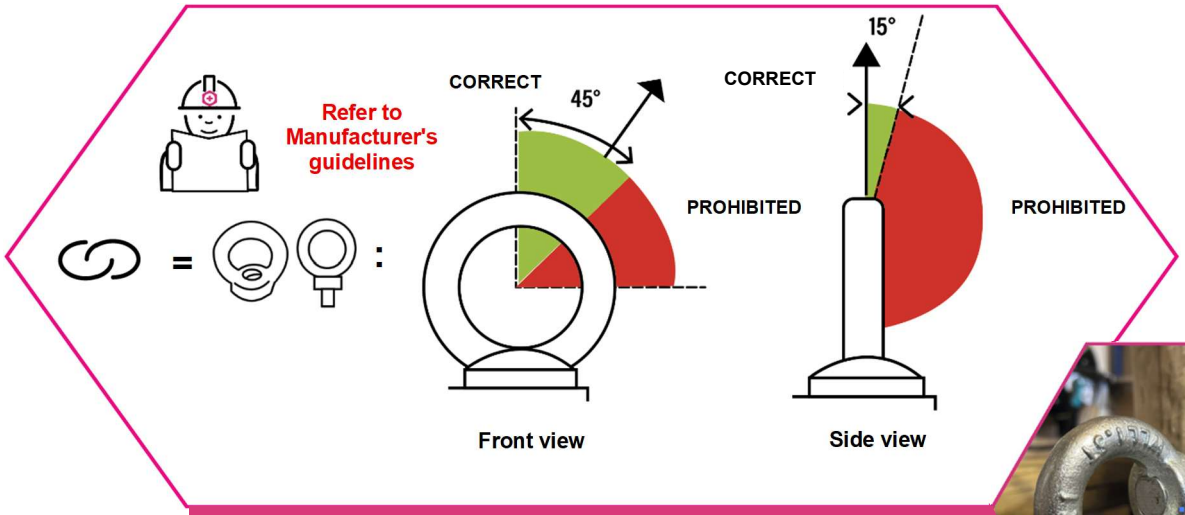
For loads involving mainly tension or compression, the recommended connector is a lifting eye or a LE CLOU SVA articulated cable guide.



For loads involving mainly shear, the recommended connector is a connecting link or a LE CLOU SVA articulated cable guide.



Shear load shall be applied as close as possible to the tree
And with a maximum distance of 50 mm from the bark.



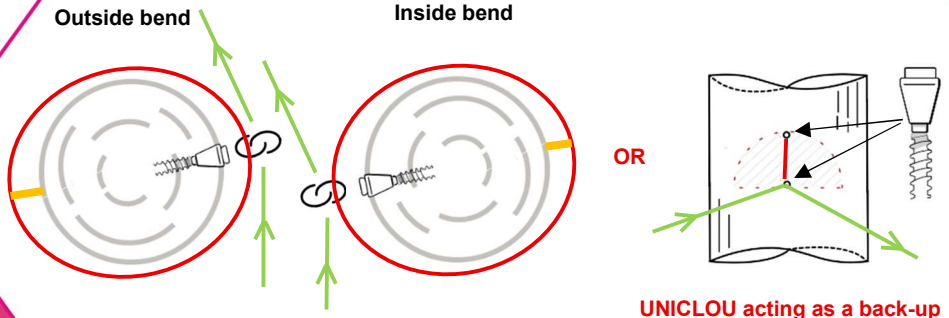


NOTE : Tighten the lifting eye until it rests against the UNICLOU.
If necessary, insert washers under the base of the lifting ring to ensure the eye is correctly aligned with the load's axis.
If the lifting eye is not positioned against the UNICLOU, a lock nut must be placed in contact with the base of the lifting eye (male or female).

BACK-UP

BACK-UP MANDATORY FOR CRITICAL APPLICATIONS.

CASE N°1 : ONE UNICLOU ON THE SUPPORT TREE



The back-up runs a full cycle around the tree.

UNICLOU acting as a back-up cannot also be used as anchor for another critical application

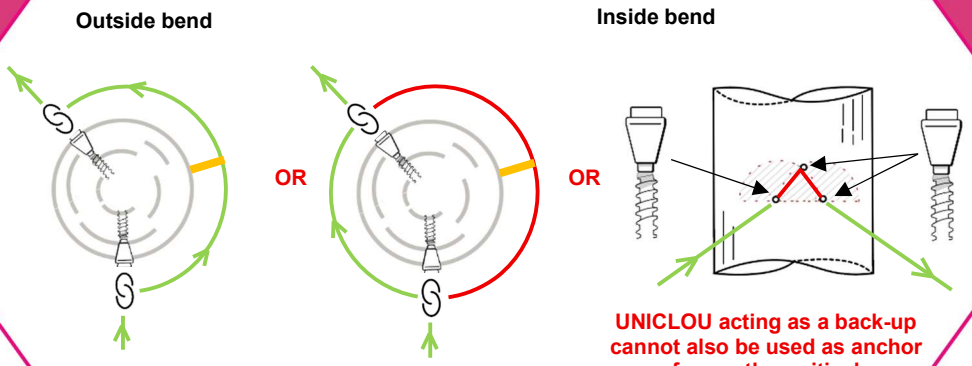
NOTES :

- The back-up shall be considered as a critical application.
- CT / WLL of back-upshall be suitable for the application connected to the UNICLOU.

NOTES :

- The retention system (see diagram key below) shall have a minimum shear resistance of 300 daN.
- The retention system shall be compatible with the safety system when installed on a safety buckle.

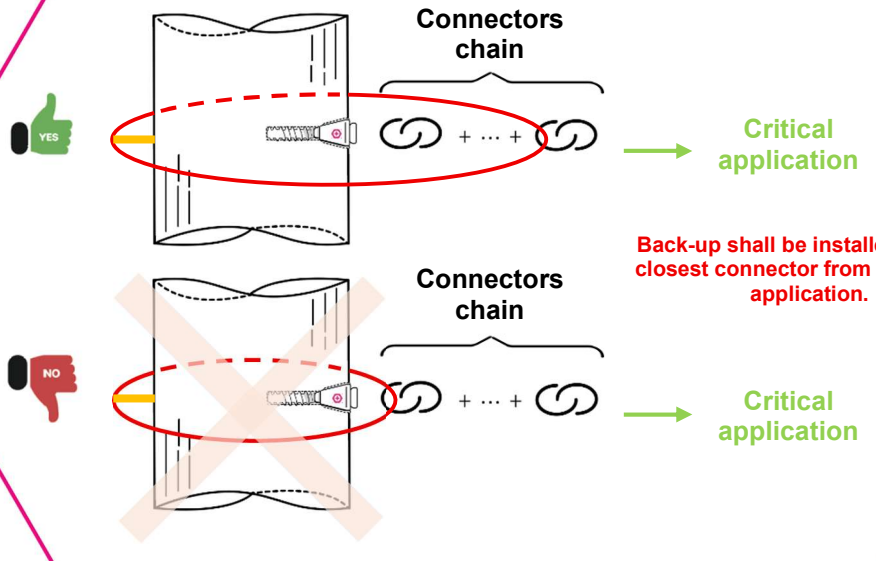
CAS N°2 : DEUX UNICLOUS SUR L'ARBRE SUPPORT



UNICLOU acting as a back-up cannot also be used as anchor for another critical application

Back-up
Critical application
Retention system = SPACER or equivalent

Permitted area for the position of the back-up UNICLOU = a semicircle with a radius of 50 cm, whose centre is the anchor UNICLOU.



Back-up shall be installed into the closest connector from the critical application.

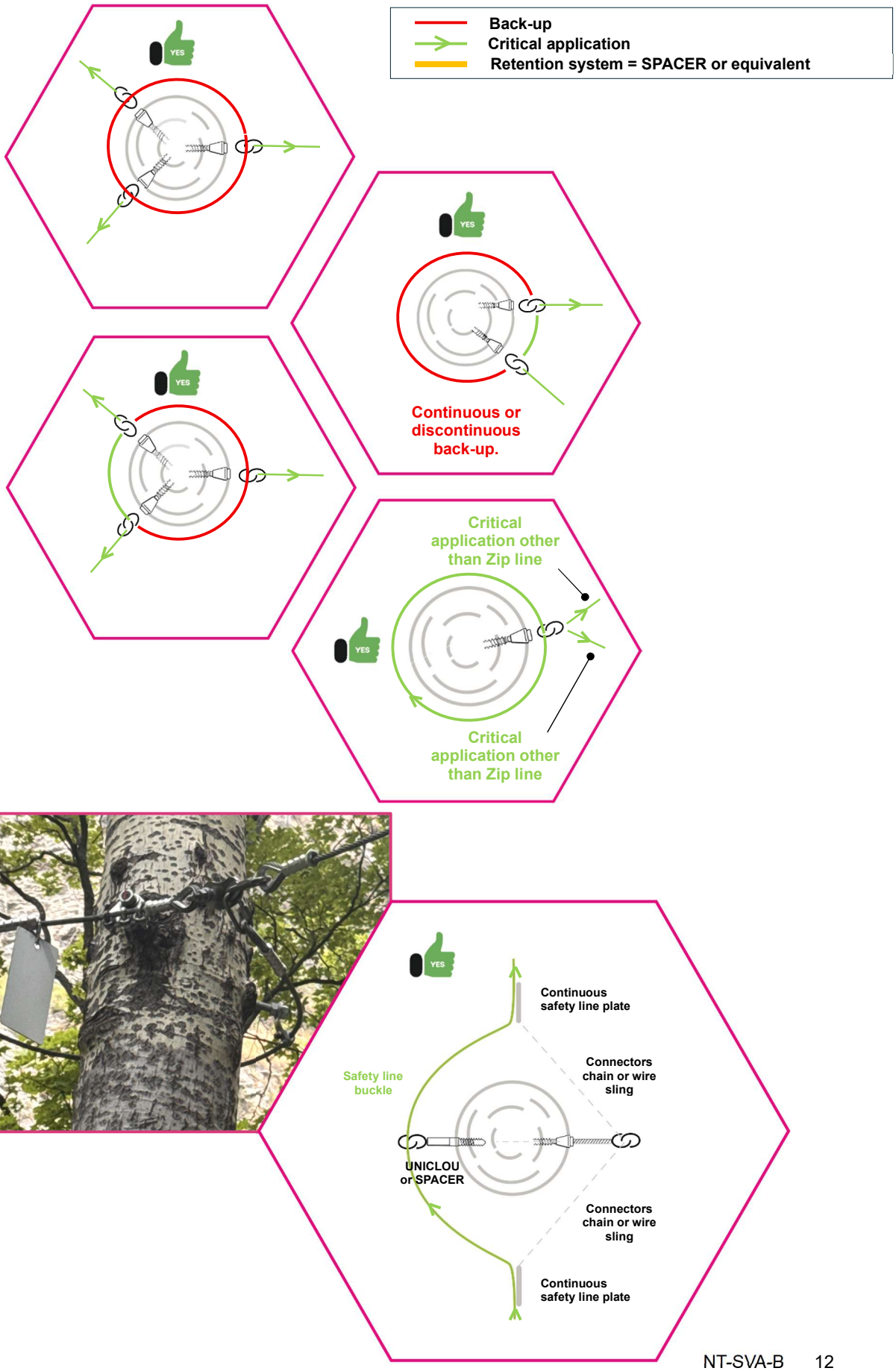
NOTE :

Consequences of a failure of UNICLOU's anchorage on the support tree shall be taken into consideration when defining the back-up type as well as the back-up tension.

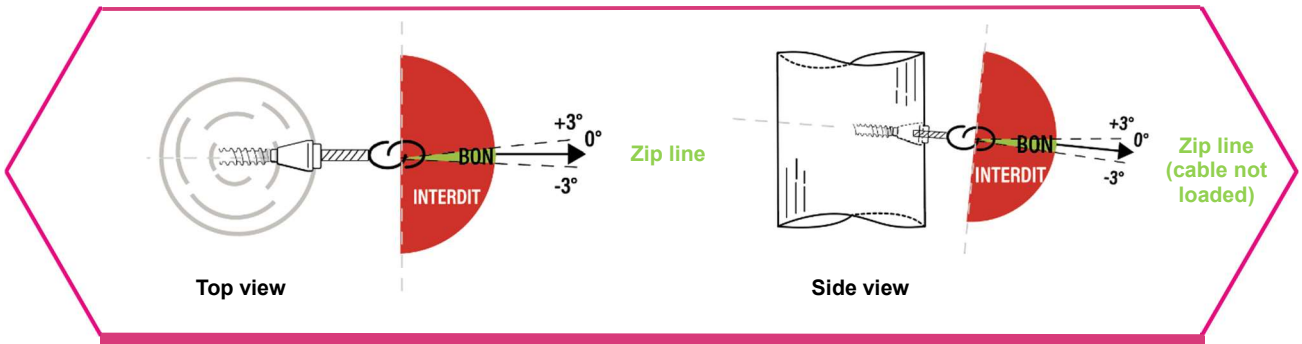
Specific attention shall be paid to the back-up tension if a participant could be injured in the event of a failure of UNICLOU's anchorage on the support tree.

This shall be carefully assessed when the application connected to the UNICLOU is a Zip line.

Examples for back-up systems :

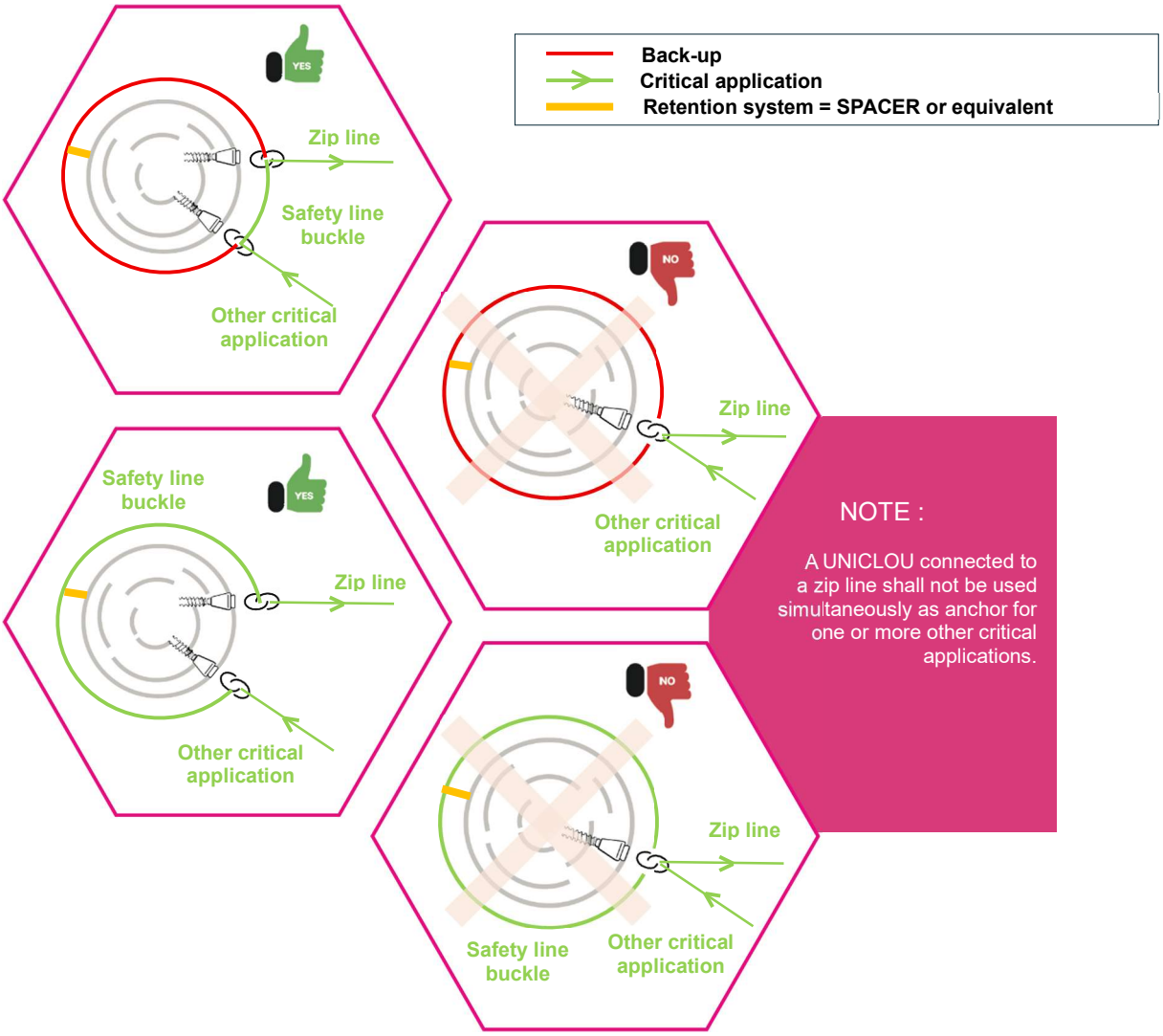


SPECIAL CASE OF ZIP LINES



NOTES :

- For a zip line, the load (1.1 tonnes max) must be applied as an axial tensile force only.
- Particular attention must be paid to the back-up tension (see note at the bottom of page 11).



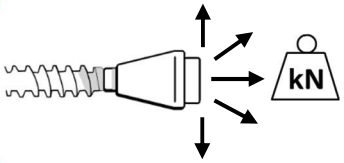
NOTE :

A UNICLOU connected to a zip line shall not be used simultaneously as anchor for one or more other critical applications.

NON CRITICAL APPLICATIONS

EXAMPLES : Activities, platforms, …

Maxium static tensile Load = 3 300 daN (3,3 tonnes) regardless of load direction.

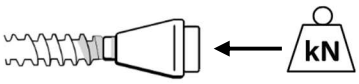


This maximum load doesn't takes into account any safety factor.

NOTE :

Loads resulting from cable tension are added to any other loads applied to the UNICLOU and shall remain below the values indicated below.

Maximum static compression Load > 3 300 daN (3,3 tonnes) when applied along UNICLOU axis.



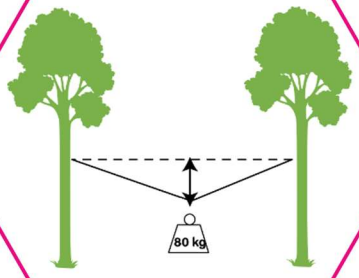
This maximum load doesn't takes into account any safety factor.

NOTE :

These maximum loads are applied to UNICLOU base.

It is important to consider leverage in relation with the distance from UNICLOU base over which the load is applied.

RECOMMENDATION



Static sag for the wire ≥ 5% of the span



=

Examples of connectors (non-exhaustive list)



Lifting eyes (male or female)



Connecting link



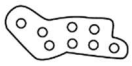
Lifting shackle



Lifting chain



Rapid link

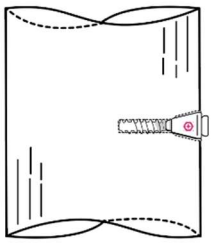


Continuous safety line plate

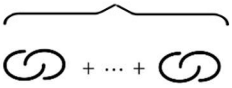


Articulated cable guide

Threaded bar



Connectors chain



Non critical application



CT/WLL 11 kN minimum for each connector and suitable for the application connected to UNICLOU

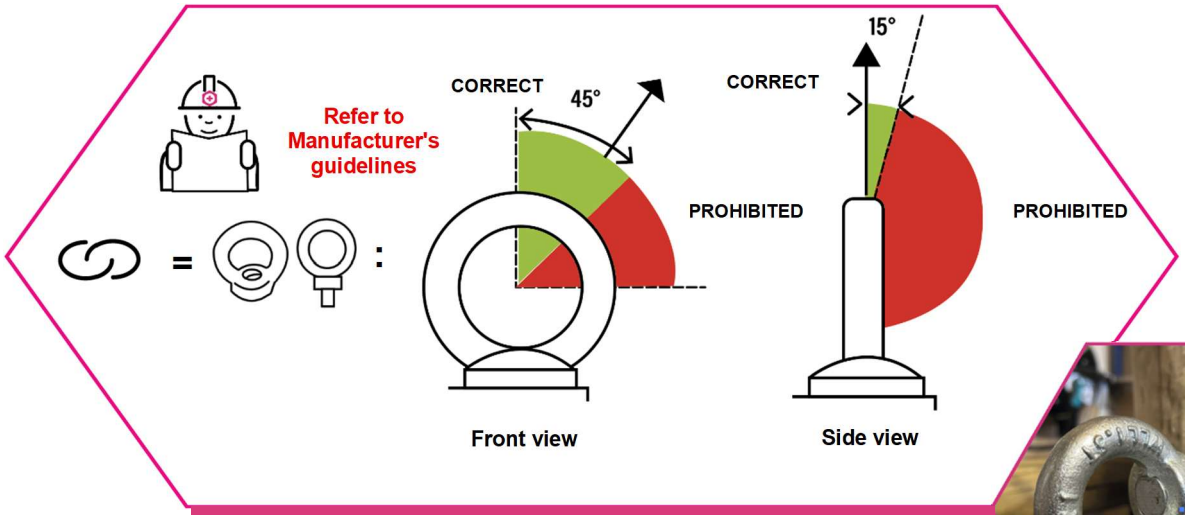
For loads involving mainly tension or compression, the recommended connector is a lifting eye or a LE CLOU SVA articulated cable guide.



For loads involving mainly shear, the recommended connector is a connecting link or a LE CLOU SVA articulated cable guide.



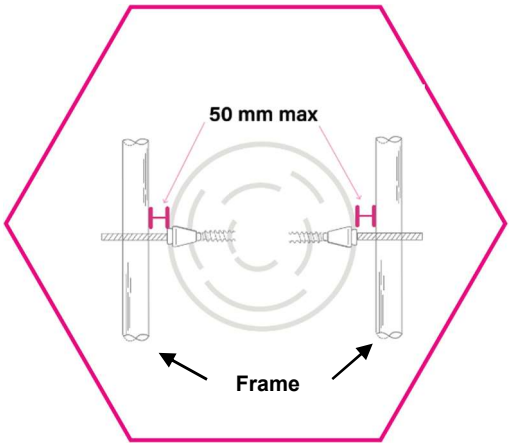
Shear load shall be applied as close as possible to the tree
And with a maximum distance of 50 mm from the bark.





NOTE : Tighten the lifting eye until it rests against the UNICLOU.
If necessary, insert washers under the base of the lifting ring to ensure the eye is correctly aligned with the load's axis.
If the lifting eye is not positioned against the UNICLOU, a lock nut must be placed in contact with the base of the lifting eye (male or female).

DISTANCE TREE – PLATFORM FRAME



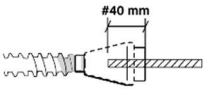
NOMBRE D'UNICLOUS POUR LES PLATES-FORMES

GENERAL COMMENTS

- UNICLOUS position

Use a level when installing platforms frames





Minimum length of thread to be inserted # 40 mm

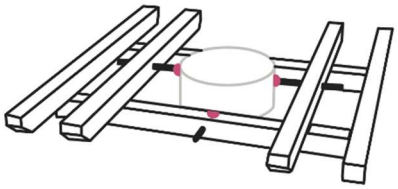
Please check that the threaded bar is fully tighten (locked) in the UNICLOU to ensure the platform stability.

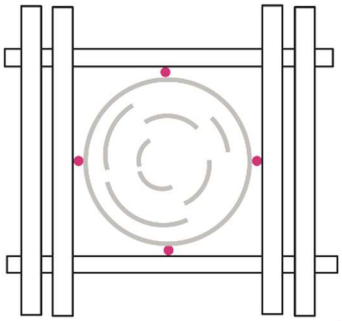


NOTE IMPORTANT NOTE :

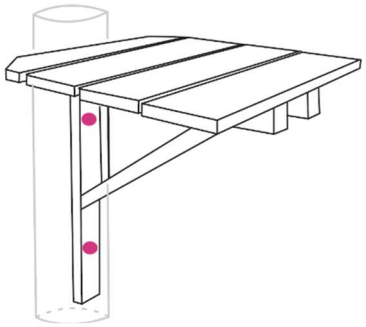
For a better holding of the UNICLOU, it is recommended not to use the same UNICLOUS for platforms AND activities on «square» or «triangular» platforms.

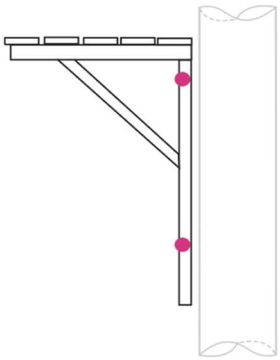
TRADITIONAL PLATFORM





SQUARE PLATFORM



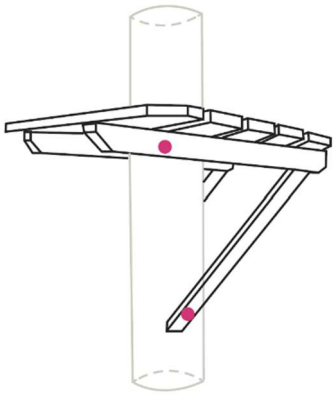


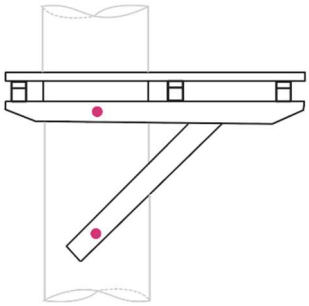
NOTE :

Where UNICLOUS are positioned, respect a distance between bark and platform frame distance of 50 mm max. (See bottom of page 15).

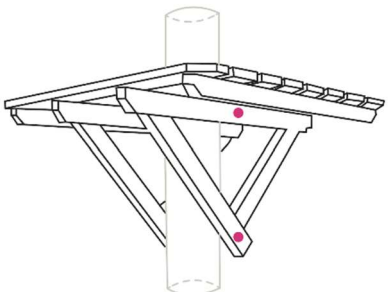
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« T » PLATFORM

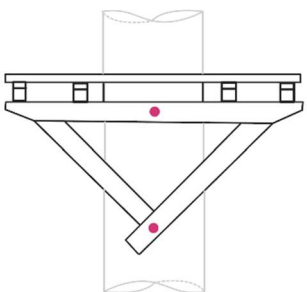




TRIANGULAR PLATFORM

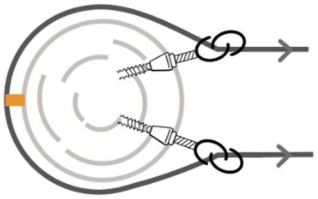


ou



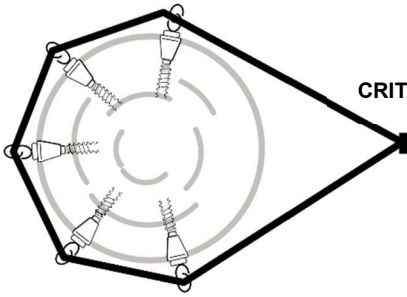
MISCELLANEOUS INFORMATION – ASSEMBLY EXAMPLES

DOUBLE CABLE



Retention system = SPACER or equivalent

SIMPLE CABLE



CRITICAL APPLICATION OR NOT

Termination compliant with standard EN 13 411

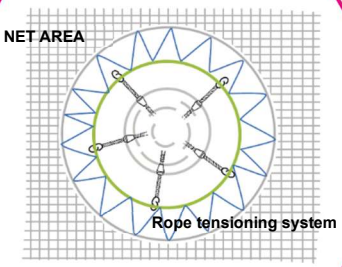
EXEMPLE OF THREADED BAR PROTECTION :





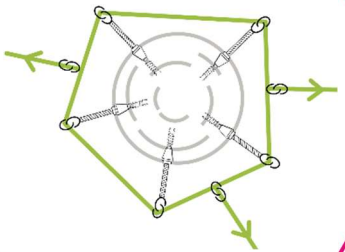
In order to prevent the connector from damaging the threaded bar it is possible to use a ring sold by the LE CLOU SVA .

MULTIPLE NET ANCHORS



The number of UNICLOUS around the tree depends on the tree's diameter

MULTIPLE ROPES COURSES ANCHORS

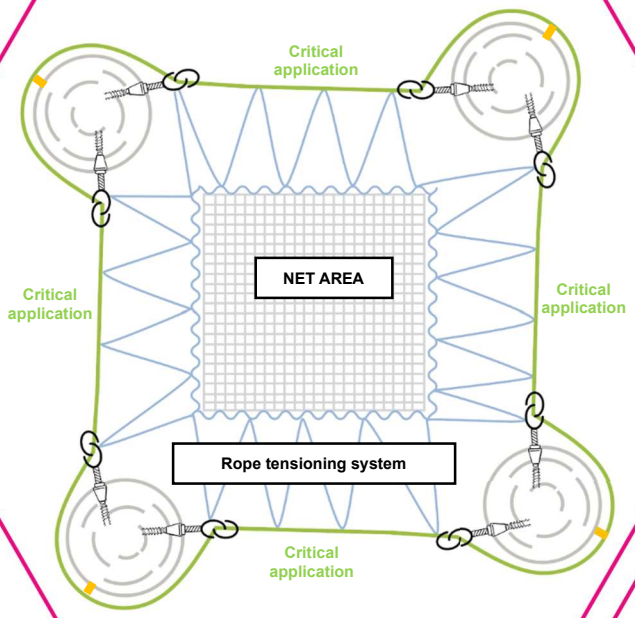


The number of UNICLOUS around the tree depends on the tree's diameter

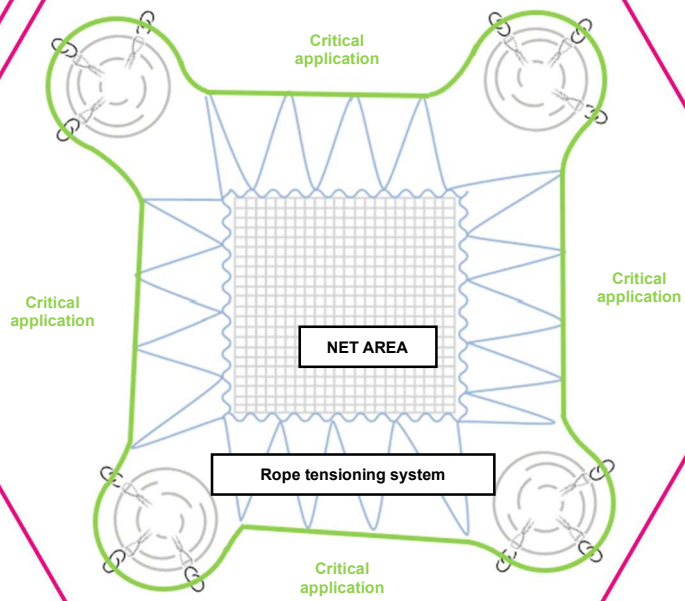
NOTE :

The choice of the device connecting the UNICLOUS must take into account any deformation that may occur on the device where the loads are applied.

NET AREA : EXAMPLE 1



NET AREA : EXAMPLE 2





SPACER

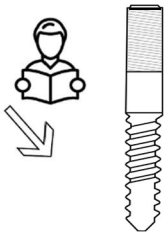
NOMENCLATURE



DESCRIPTION	SPACER
REF	CECT
SHOULDER	No
Ø SHOULDER	/
Ø METRIC THREAD DIAMETER	M22
TOTAL LENGTH	20,5 cm
TOTAL WEIGTH	510 g (anchor) / 578 g (with 1 nut)

Use : Spacing of a wire rope to avoid contact with a support tree.
Securing support wire ropes for activities and other non-critical applications.
Used in combination with a UNICLOU : Keep the height a safety line buckle or a back-up.
Other use : Any other applications requiring anchoring in trees (shade sails, speaker, CCTV, lighting, …).

GÉNÉRALITIÉS

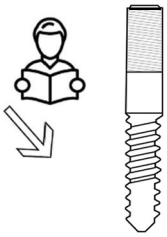


Read the SPACER Instructions before installation and comply with it.

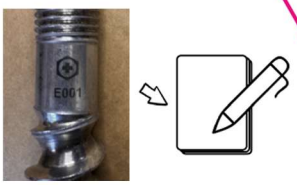
LE CLOU S.V.A cannot be held liable for the consequences of any installation that deviates from the recommendations in this manual and that has not been approved by an inspection body (prior to making available to the public) or by the operator as part of their risk assessment.



Comply with current national regulations, best practice and standards.



Refer to the current regulations for working at height.



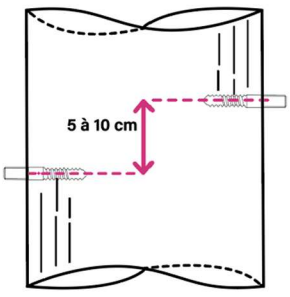
Record the information on product traceability in the maintenance logbook before installation.



Healthy tree inspected annually by an expert.
Ø ≥ 25 cm measured without the bark.



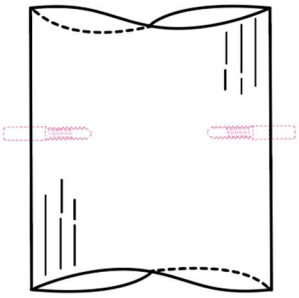
25 cm ≤ Ø ≤ 35 cm
measured without the bark



MANDATORY OFFSET

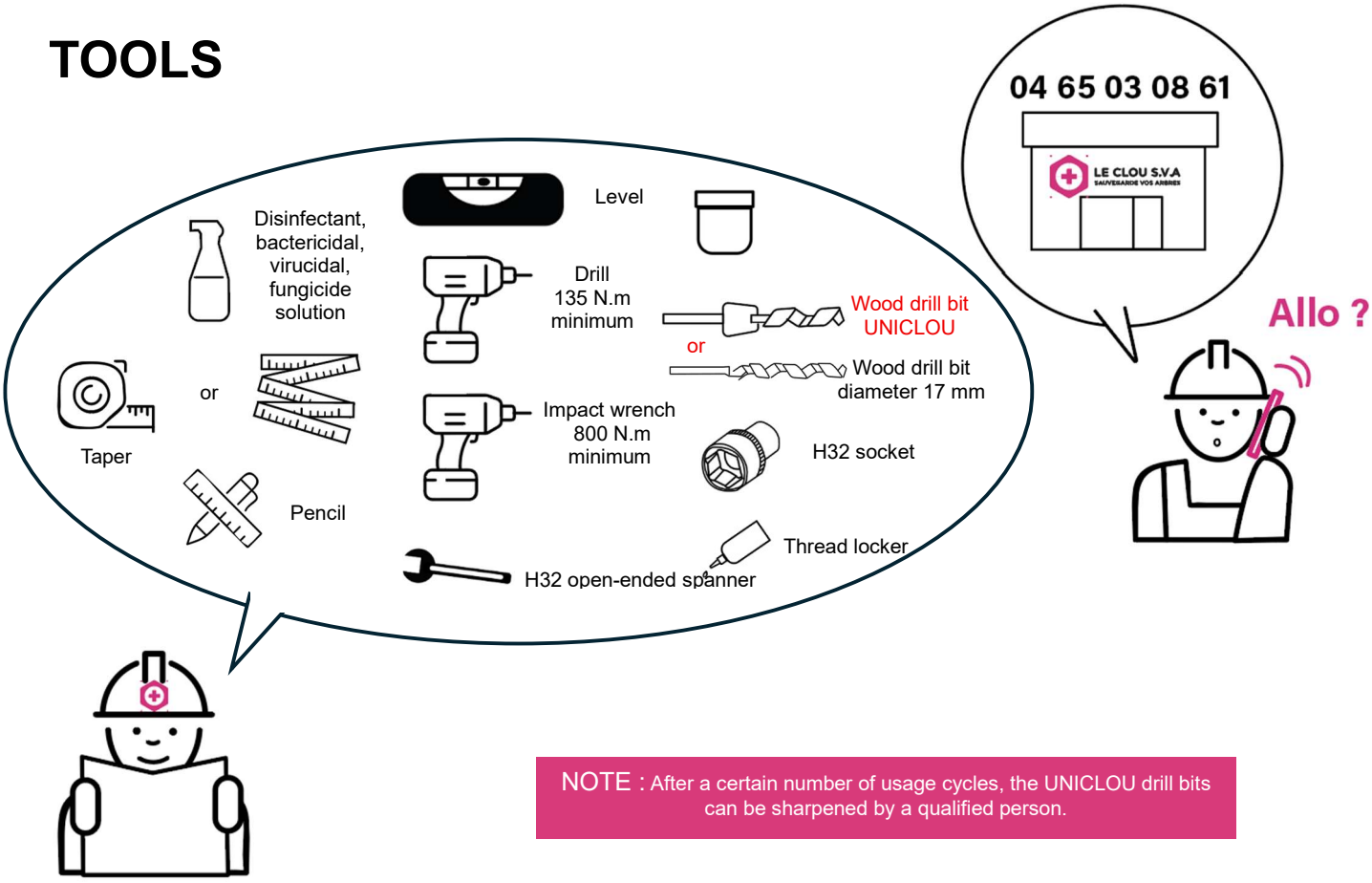


Ø ≥ 35 cm
measured without the bark



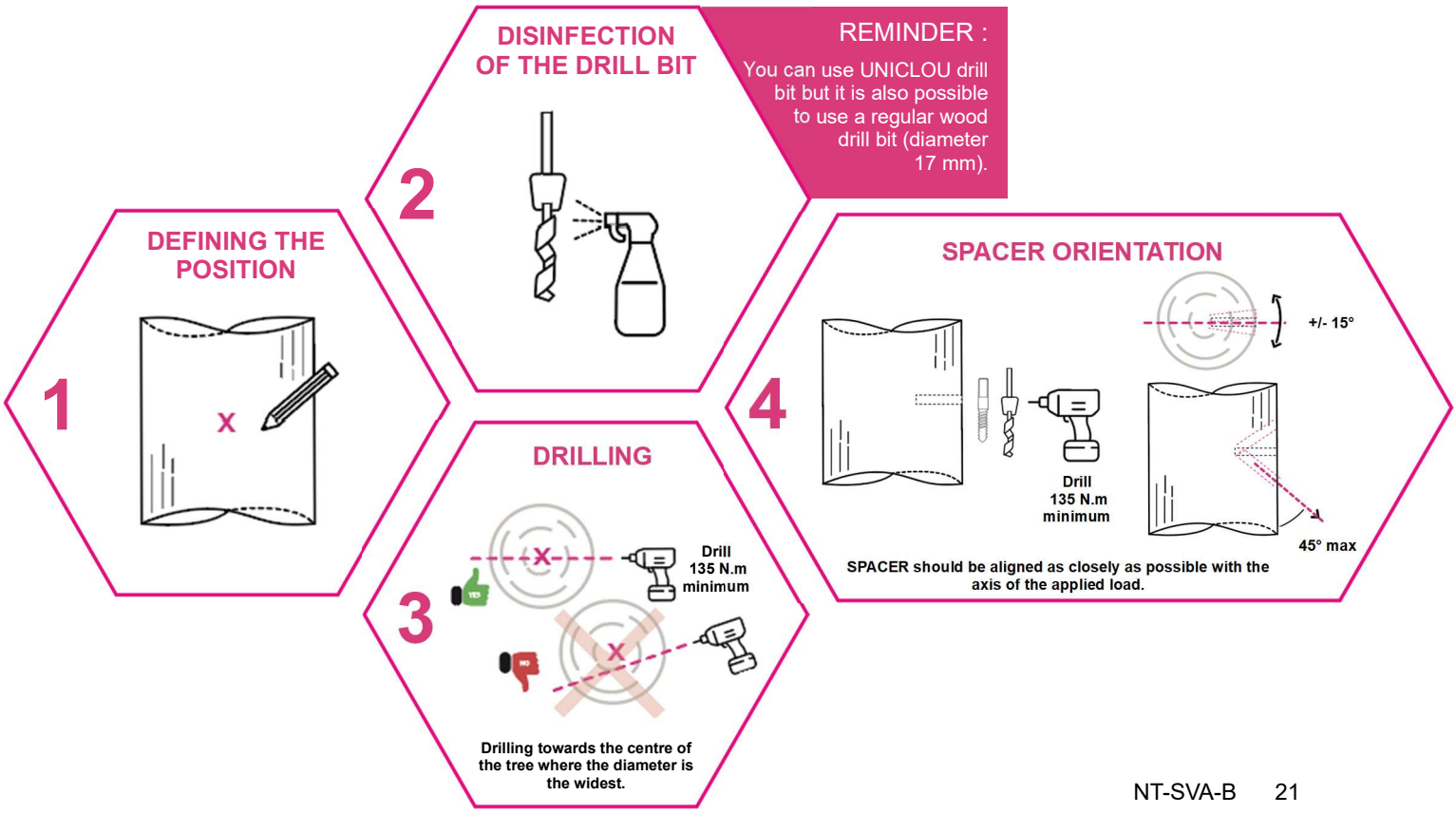
OFFSET NOT REQUIRED

TOOLS

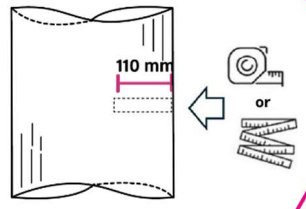


NOTE : After a certain number of usage cycles, the UNICLOU drill bits can be sharpened by a qualified person.

ASSEMBLY

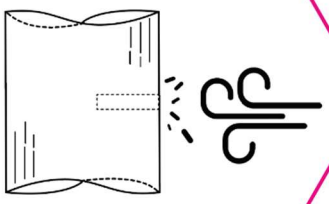


5 DRILLING DEPTH



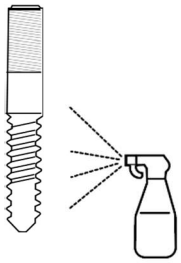
Distance measured without the bark.

6 CLEANING

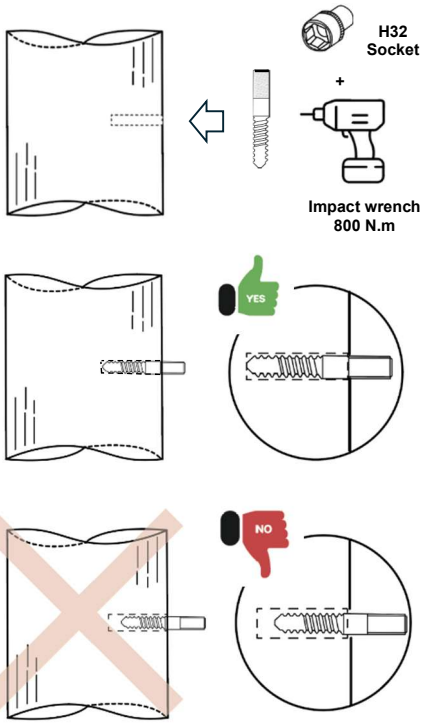


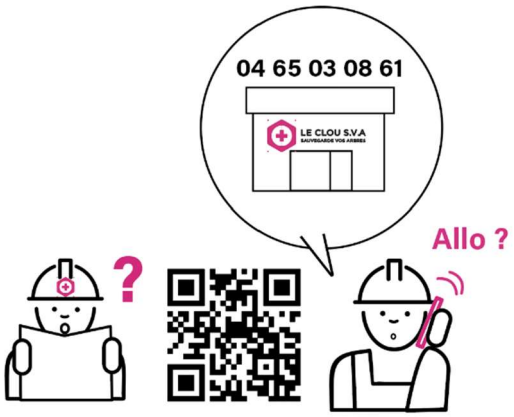
Wood shavings removal

7 DISINFECTION OF SPACER



8 SPACER SCREWING





NOTE :

It is recommended to use the hardware supplied by LE CLOU SVA, as they have mechanical properties suited to this application. If you want to use your own hardware, please contact LE CLOU SVA to ensure that hardware with equivalent properties is fitted.

NOTE :

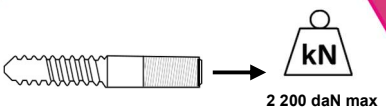
The use of a Vaseline-type lubricant applied on the UNICLOU's wood thread is strongly recommended.

APPLICATIONS

NOTE :

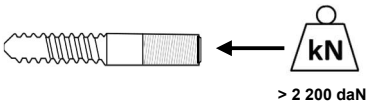
Loads resulting from cable tension are added to any other loads applied to the UNICLOU and shall remain below the values indicated below.

Maximum static tensile Load = 2 200 daN (2,2 tonnes).



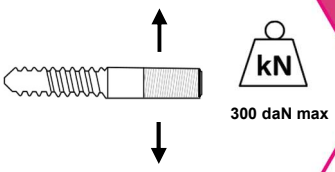
This maximum load doesn't takes into account any safety factor.

Maximum static compression load > 2 200 daN (2,2 tonnes) when applied along SPACER axis.



This maximum load doesn't takes into account any safety factor.

Maximum static Shear load = 300 daN (0,3 tonne).



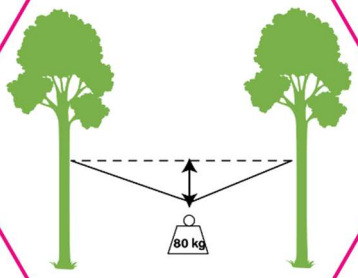
This maximum load doesn't takes into account any safety factor.

NOTE :

These maximum loads are applied to UNICLOU base.

It is important to consider leverage in relation with the distance from UNICLOU base over which the load is applied.

RECOMMENDATION



Static sag for the wire ≥ 5% of the span



=

Examples of connectors (non-exhaustive list)


Lifting eyes (male or female)


Connecting link

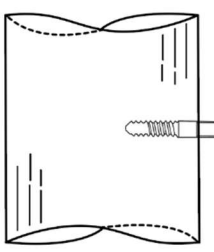

Lifting shackle


Lifting chain


Rapid link


Spacer plate


Articulated cable guide



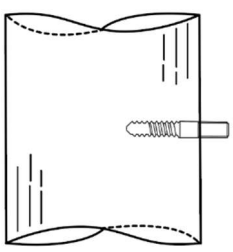


Only 1 connector authorised for each SPACER



Application





Connectors chain



Application

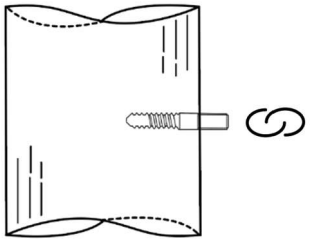




CT/WLL suitable for the application connected to SPACER

APPROVED ASSEMBLIES

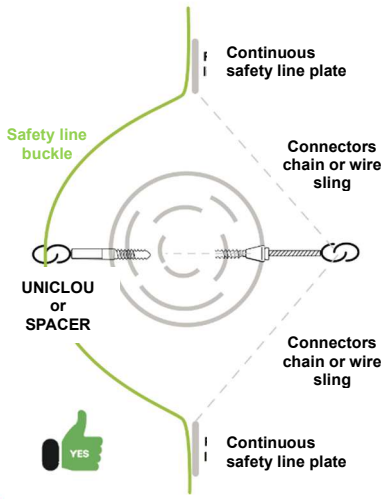
CASE NUMBER 1



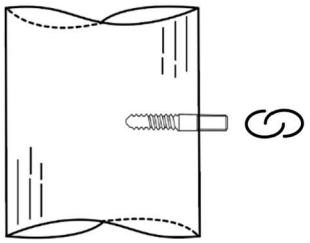
CRITICAL APPLICATION = BACK UP or SAFELY LINE BUCKLE

NOTE : In that case, SPACER is used in addition to a UNICLOU.

EXAMPLE :



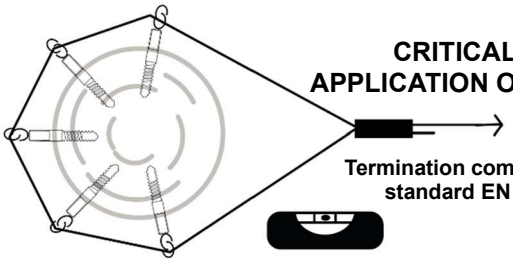
CASE NUMBER 2



NON-CRITICAL APPLICATION

NOTE : In that case, maximum load (defined in page 23) applied to SPACER shall be respected.

CASE NUMBER 3



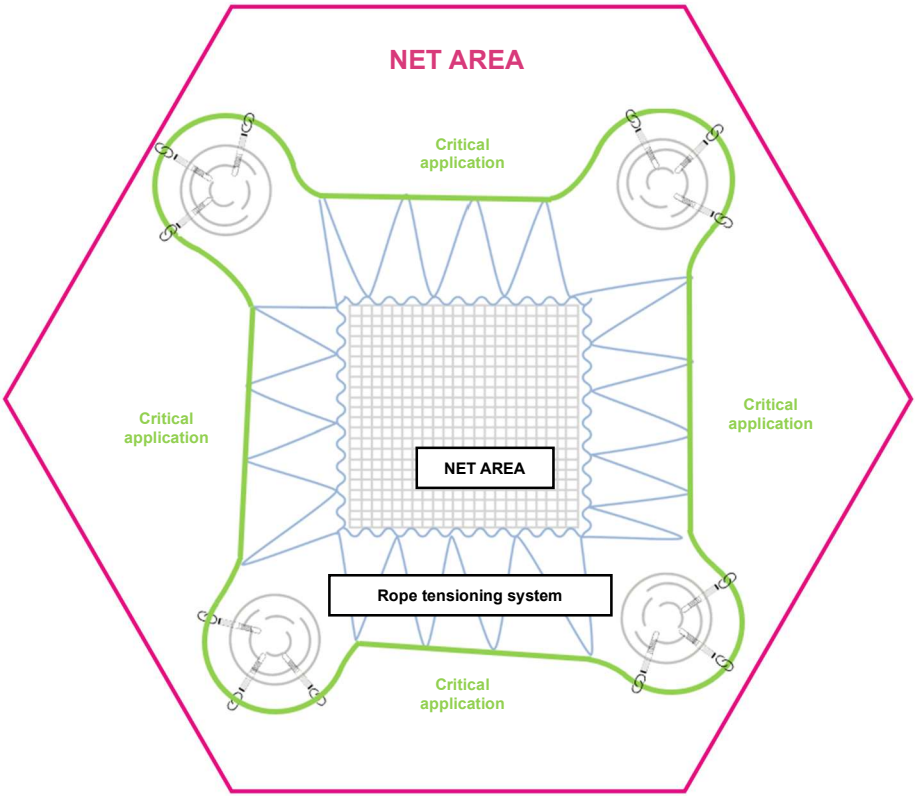
CRITICAL APPLICATION OR NOT

Termination compliant with standard EN 13 411

SPACERS must be perfectly level (both vertically and horizontally).

NOTE :
In thta case (and in this case only), SPACER can be used without being combined with a UNICLOU for a critical application.

MISCELLANEOUS INFORMATION - ASSEMBLY EXAMPLES



INSPECTION

INSPECTION

The recommendations in the following paragraphs apply only to UNICLOU and SPACER.
They are in addition to the other manufacturer's inspection guidelines related to the other components of the safety system.

If any problem is detected, please contact LE CLOU S.V.A in order to get an opinion on the appropriate corrective measures to be taken, if needed.

When facilities are presenting a risk to the user safety, they shall be temporarily closed pending corrective maintenance operations.

Routine visual check (daily)

UNICLOU and SPACER
Check that the anchor does not show any deformation.
Check safety line tension connected to the anchor (visual check with reference to the initial condition).
If any problem is detected, carry out a more detailed inspection in order to identify the origin of the over tension.

CONNECTORS
Check that the connectors do not show any deformation.
Perform a functional test, specifically on moving parts (swivel, articulated lifting eye, ...).

TREES
Check that there is no space between the anchor and the support tree (or the cicatricial bulge, if any).

Operational inspection (monthly)

The operational inspection includes all the checks required for a routine visual check. In addition, the following points shall also be checked.

UNICLOU and SPACER
Check for the appearance of any alterations (cracks) or corrosion.

CONNECTORS
Check for the appearance of any alterations (cracks) or corrosion. Check the tightening (if relevant) as well as the general condition of the various welds or connections (if relevant).

TREES
Check that there are no cracks in the tree fibres around the anchor.



NOTE :

When tightening is carried out with nuts, a marking on the two parts in contact makes it easy to check that the tightening is still correct.

Annual periodical inspection

To comply 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 annual periodical inspection.

MAINTENANCE

MAINTENANCE

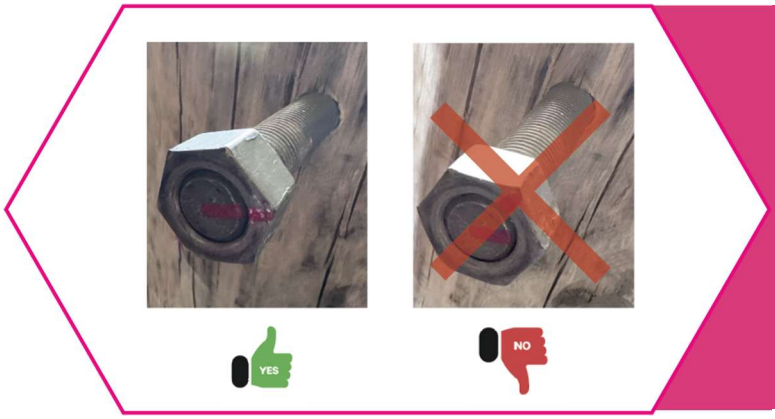
When the tree cicatricial bulge around the anchor is such important that only 4 cm of the threaded part of the anchor is visible (threaded bar connected to UNICLOU or SPACER), an « EXTENSION » shall be added to the anchor.
This EXTENSION is composed by a threaded bar M22 attached with thread lock to a connecting sleeve (see picture below) :



ASSEMBLY STEPS

1. Position a locknut on the termination of the UNICLOU threaded bar or SPACER BEFORE installing the EXTENSION.
2. Connect the EXTENSION to the UNICLOU threaded bar or to SPACER using the thread lock.
3. Tighten the lock nut against the connecting sleeve (on the tree side).

The assembly thus constituted can then be used in the same conditions than before (see certificate of resistance of 12 tonnes page 32)



NOTE :

When tightening is carried out with nuts, a marking on the two parts in contact makes it easy to check that the tightening is still correct.

APPENDIX

RÉPUBLIQUE FRANÇAISE

INSTITUT NATIONAL DE LA PROPRIÉTÉ INDUSTRIELLE

Brevet d'invention

Code de la propriété intellectuelle - Livre VI

DÉCISION DE DÉLIVRANCE

Le Directeur général de l'Institut national de la propriété industrielle décide que le brevet d'invention n° **20 03580** dont le texte est ci-annexé est délivré à :
LE CLOU S.V.A. Société par actions simplifiée

La délivrance produit ses effets pour une période de vingt ans à compter de la date de dépôt de la demande, sous réserve du paiement des redevances annuelles.

Mention de la délivrance est faite au Bulletin officiel de la propriété industrielle n° 22/17 du 29.04.22 (n° de publication 3 109 189).

Fait à Courbevoie, le 29.04.22

Pour le directeur général de l'Institut National de la Propriété Industrielle

Philippe CADRE
Directeur de la propriété industrielle

Siège : 15 rue des Minimes - CS 50001 - 92677 COURBEVOIE Cedex - Téléphone : +33 (0)1 56 65 89 98 - Télécopie : +33 (0)1 56 65 86 00
www.inpi.fr - contact@inpi.fr
Établissement public national créé par la loi n°51 - 444 du 19 avril 1951

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

inpi

Brevet d'invention

Code de la propriété intellectuelle - Livre VI

DÉCISION DE DÉLIVRANCE

Le Directeur général de l'Institut national de la propriété industrielle décide que le brevet d'invention n° **22 09792** dont le texte est ci-annexé est délivré à :
LE CLOU SVA Société par actions simplifiée

La délivrance produit ses effets pour une période de vingt ans à compter de la date de dépôt de la demande, sous réserve du paiement des redevances annuelles.

Mention de la délivrance est faite au Bulletin officiel de la propriété industrielle n° 24/48 du 29.11.24 (n° de publication 3 140 142).

Fait à Courbevoie, le 29.11.24

Pour le directeur général de l'Institut National de la Propriété Industrielle

Jérémie FENICHEL
Directeur de la Propriété Industrielle et des Entreprises

Siège : 15 rue des Minimes - CS 50001 - 92677 COURBEVOIE Cedex - Téléphone : +33 (0)1 56 65 89 98 - Télécopie : +33 (0)1 56 65 86 00
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Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPÄISCHES PATENT | EUROPEAN PATENT
BREVET EUROPÉEN

Es wird hiermit bescheinigt, dass für die in der Patentschrift beschriebene Erfindung ein europäisches Patent für die in der Patentschrift bezeichneten Vertragsstaaten erteilt worden ist.

It is hereby certified that a European patent has been granted in respect of the invention described in the patent specification for the Contracting States designated in the specification.

Il est certifié par la présente qu'un brevet européen a été délivré pour l'invention décrite dans le fascicule de brevet, pour les Etats contractants désignés dans le fascicule.

Europäisches Patent Nr.
European patent No.
Brevet européen n°

EP4133187

Tag der Bekanntmachung des Hinweises auf die Erteilung des europäischen Patents;
Date of publication of the mention of the grant of the European patent;
Date de la publication de la mention de la délivrance du brevet européen;

19.08.2026

ELÉMENT DE FIXATION AMÉLIORÉ

Patentinhaber | Proprietor(s) of the patent | Titulaire(s) du brevet

LE CLOU S.V.A.
46 rue Joseph Silvestre
05100 Briancon
FR

António Campinos

Präsident des Europäischen Patentamts | President of the European Patent Office | Président de l'Office européen des brevets

München, den | Munich, | Munich, le **19.08.2026**

URKUNDE | CERTIFICATE | CERTIFICAT

EPAEPOOEB 2031 0626

ISO 9001
BUREAU VERITAS
Certification

CORDERIE DOR

Société à responsabilité limitée au Capital 1 500 000 €

7, Avenue de Saint-Menet 13011 MARSEILLE
Téléphone : **04 91 18 11 00** - Télécopie : **04 91 44 60 91** – marseille@corderiedor.fr

CLIENT : GRIMP IN FOREST	N° Dossier : M09-2006CO-0126

ATTESTATION de VERIFICATION et D'ESSAIS

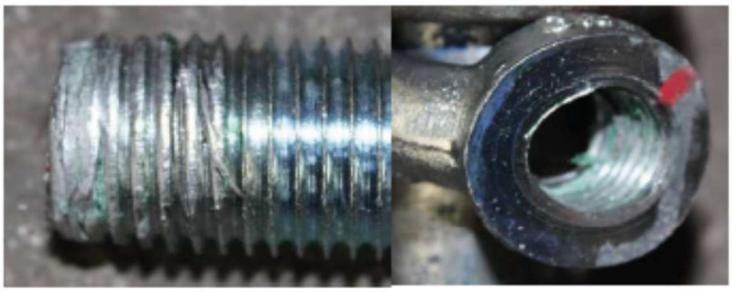
(CHECK and TEST REPORT)

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

Agences :

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GRENOBLE	139, Rue de l'industrie – 38170 Seyssinet-Pariset	Tél : 04 76 75 92 27	Fax : 04 76 75 91 28	grenoble@corderiedor.fr

F-122-00

RAPPORT n° 24R0066 — Réception n°24C0037

Version initiale du 18/01/2024

Historique : Réception du 10/01/2024
Version initiale du 18/01/2024

Le Responsable Technique : R. LEDRU

Signé numériquement par Raphaël LEDRU
Date : 2024.01.18 11:20:45+01'00'

La Responsable Qualité : E. LEDRU

Client :
LE CLOU S.V.A

Données fournies par le client :

Repère client : **Commande 4284 du 09/01/2024**

Identification de(s) l'échantillon(s) :
Vis bois Inox + Manchon Aluminium

Essai(s) demandé(s) :
→ Essai de traction jusqu'à rupture

Cahier des charges :
→ Non communiqué

Destination des échantillons à l'issue des essais : Mise à disposition à l'accueil du Laboratoire pour une durée de 3 mois

Essai de traction jusqu'à rupture

Technicien : R. LEDRU – Date(s) de l'essai : **18/01/2024**
Machine : **AMSLER n°699/378** – Vitesse de mise en charge : **10mm/min**
L'échantillonnage a été effectué par le client.
Montage : tige filetée + écrous Cl8.8 de chaque côté.

Résultats :

Repère	$Fe_{apparente}$ kN	Fm kN	Lieu de rupture
			Rupture de la vis bois. Pièce en aluminium intact : les filetages fonctionnent de chaque côté.
1	Environ 110	205 kN	



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Identification : IMP/016 Indice : 14

Les résultats et les conclusions éventuelles s'appliquent uniquement à l'échantillon tel qu'il a été reçu.

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SCIC SAS à capital variable – SIRET : 30801798700022 – APE : 9499Z – TVA : FR60308017987 – RCS SEDAN 308017987

Prestation réalisée sous système de management de la qualité certifié AFNOR Certification ISO 9001 : 2015 n°QUAL/2004/21789

HIGHDEA
highlight the way

CERTIFICATE REGARDING MAXIMUM LOADS TO BE APPLIED TO ANCHOR NAILS

Since January 2020, HIGHDEA has been regularly conducting tests with the company LE CLOU S.V.A to study the behavior of anchor nails when subjected to different load cases.

The objective is to characterize the various criteria impacting the anchor nail's pull-out resistance when installed in a tree (for the development of new products) and also to define the limits of use.

Description of the different tests carried out :

- ✓ The nails tested are installed according to various installation instructions established by the manufacturer.
- ✓ The tests are mainly divided into two categories : axial pull-out tests and shear pull-out tests.
- ✓ The tests are carried out by applying a static load.
- ✓ Tests have been conducted on different species with varying densities, volumetric masses, and mechanical properties. These species are mainly PINE, POPLAR, LARCH, BEECH, and OAK.
- ✓ Tests have been carried out on both living wood ("in situ") and dry wood (construction wood).
- ✓ Shear tests have been carried out by testing different bending moments (distance between the point of load application and the tree).
- ✓ Shear tests have been carried out in both longitudinal and radial directions relative to the wood fibres direction.
- ✓ Tests have been carried out with different anchoring depths in the supporting tree.
- ✓ Tests have been conducted with different anchoring heights in the supporting tree.

Conclusions :

- ✓ There is a proven link between the tree species used as support and the pull-out values of the nails.
- ✓ There is a variation in results among subjects of the SAME species.
- ✓ There is no proven link between pull-out resistance values and the anchoring height (besides the fact that the higher a nail is anchored, the more it mobilizes the tree's bending capacity during the tests).

- ✓ The maximum load values indicated in the technical notices established by the manufacturer comply with the **MINIMUM** pull-out values obtained from all the tests described above, and they take into account (when relevant) the safety factors mentioned in the EN 15 567-1 standard.

HIGHDEA
12, Route de la Fougère - 73160 VIMINES
SAS au capital de 10.000€
SIRET : 877 867 192 00024 - RCS de CHAMBERY
TVA FR 81 877867192 - APE : 7490A

RAPPORT n° 25R0691 — Réception n°25C0632

Version initiale du 14/05/2025

Historique : Réception du 13/05/2025
Version initiale du 14/05/2025

Personne autorisant le rapport : Le Responsable Technique : R. LEDRU

Client : LE CLOU S.V.A SAUVEGARDE VOS ARBRES

Données fournies par le client :

Repère client : **Commande 5105 du 05/05/2025**

Identification de(s) l'échantillon(s) :
Ecarteur à Arceau en aluminium

Essai(s) demandé(s) :
→ Essai de traction jusqu'à rupture

Cahier des charges :
→ Non communiqué

Destination des échantillons à l'issue des essais : Mise à disposition à l'accueil du Laboratoire pour une durée de 3 mois

Essai de traction jusqu'à rupture

Technicien : R. LEDRU – Date(s) de l'essai : **13/05/2025**
Machine : **INSTRON n°600LXL4577** – Vitesse de mise en charge : **10mm/min**
L'échantillonnage a été effectué par le client. Les manilles et la tige filetée ont été fournies par le client

Montages :

Dans l'axe de l'ensemble :

Manille Lyre HR CMU4750 diamètre d'axe 22mm



Tige filetée M22x140mm

En opposition sur l'arceau :

Manille Lyre HR CMU2000 diamètre d'axe 16mm



Manille Lyre HR CMU2000 diamètre d'axe 16mm

Sur un coté :

montage fourni par le client



Manille Lyre HR CMU2000 diamètre d'axe 16mm

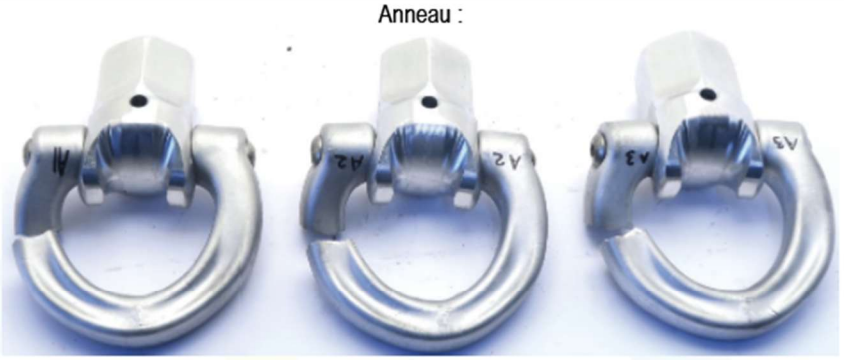
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Identification : IMP/016 Indice : 15

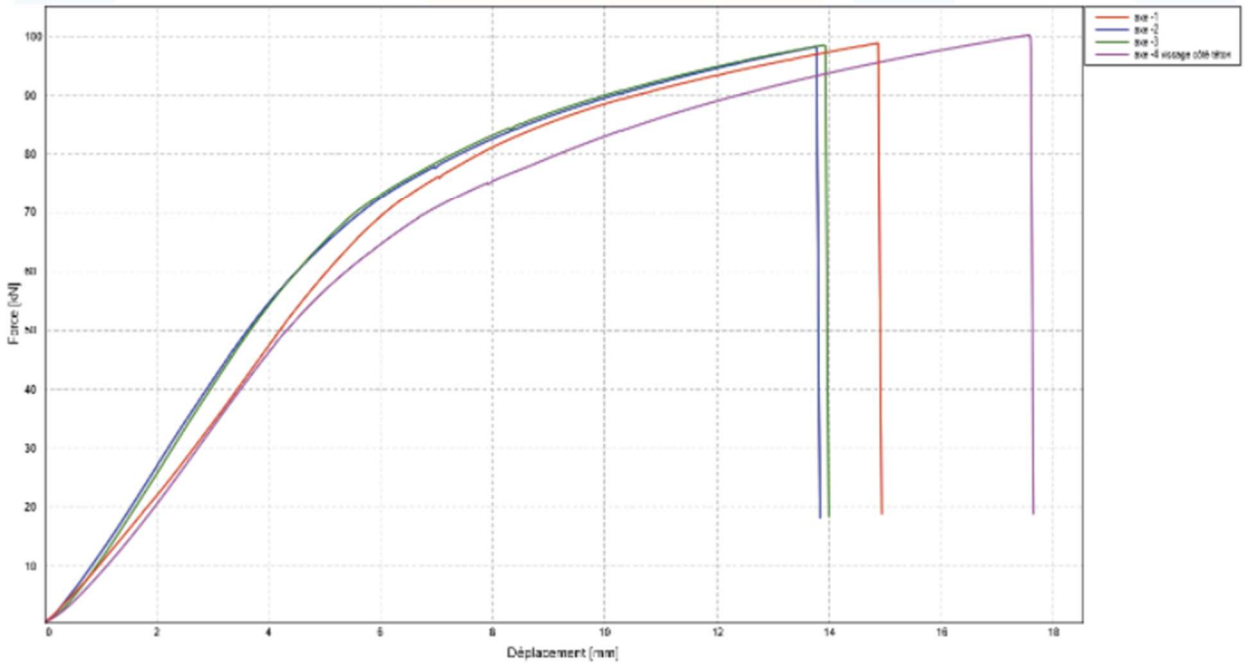
Les résultats et les conclusions éventuelles s'appliquent uniquement à l'échantillon tel qu'il a été reçu.

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Résultats dans l'axe de l'ensemble :

Repère	$Fe_{apparente}$ à titre indicatif kN	Fm kN	Lieu de rupture
A1	environ 55	98,92	Anneau : 
A2	environ 40	98,31	
A3	environ 45	98,58	
A4	environ 45	100,30	



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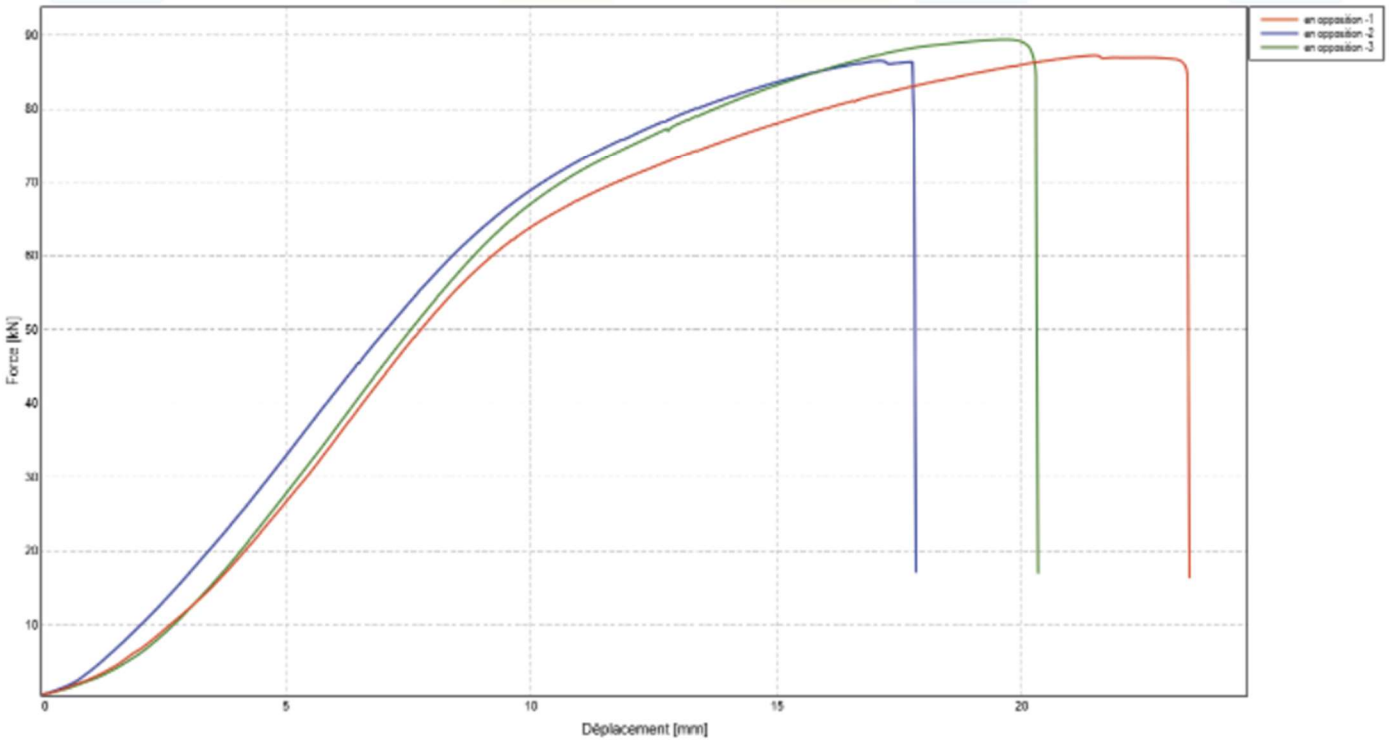
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Résultats en opposition sur l'arceau :

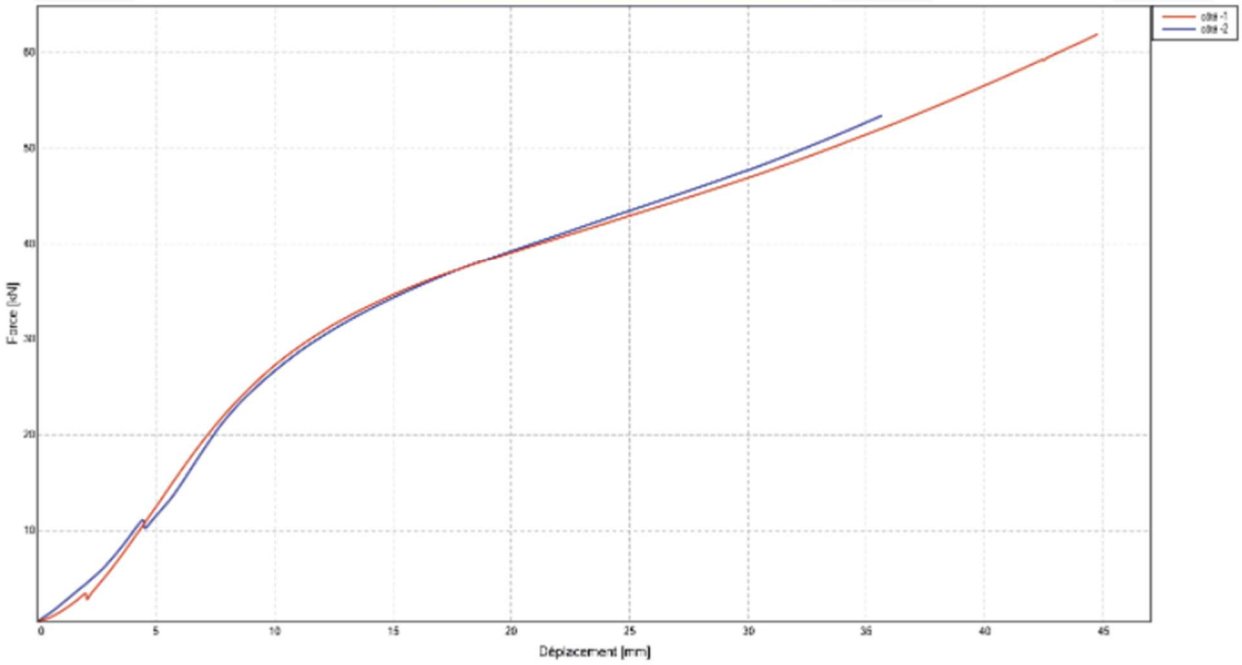
Repère	$Fe_{apparente}$ à titre indicatif kN	Fm kN	Lieu de rupture
O1	environ 50	**87,25**	Rupture de la vis
O2	environ 45	**86,53**	Rupture de l'arceau
O3	environ 55	**89,40**	Rupture de l'arceau et de la vis





Résultats sur un côté :

Repère	$Fe_{apparente}$ à titre indicatif kN	Fm kN	Lieu de rupture
C1	environ 20	**>61,79 (non rompu)**	Déformation de la tige filetée, essai interrompu pour préserver les outils. 
C2	environ 20	**>53,33 (non rompu)**	Déformation de la tige filetée, essai interrompu pour préserver les outils. 



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ARTICULED CABLE GUIDE

NOMENCLATURE

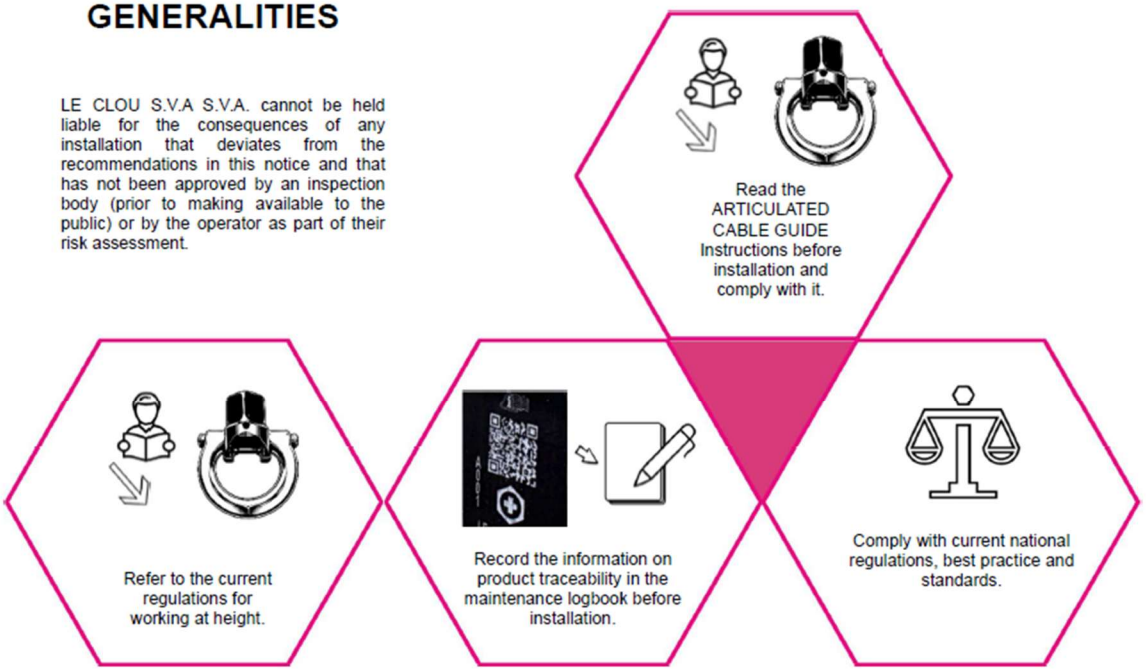


DESCRIPTION	ARTICULATED CABLE GUIDE
REF	GCA
Ø METRIC THREAD DIAMETER	M22
TOTAL WEIGHT	341 g

Use : Anchor for safety line wire rope and other applications (critical or not).

GENERALITIES

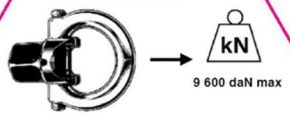
LE CLOU S.V.A S.V.A. cannot be held liable for the consequences of any installation that deviates from the recommendations in this notice and that has not been approved by an inspection body (prior to making available to the public) or by the operator as part of their risk assessment.



ARTICULED CABLE GUIDE

APPLICATIONS

Maximum static tensile load = 9 600 daN (9,6 tonnes).

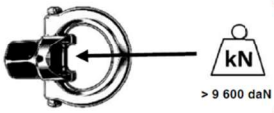


9 600 daN max

This maximum load doesn't takes into account any safety factor.

With a safety factor of 3, the maximum static tensile load is 32 kN

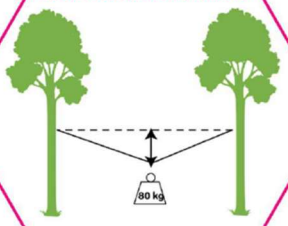
Maximum static compression load > 9 600 daN (9,6 tonnes) when applied along tree anchor axis.



> 9 600 daN

This maximum load doesn't takes into account any safety factor.

RECOMMENDATION



Static sag for the wire ≥ 5% of the span

Maximum static shear load = 8 400 daN (8,4 tonnes).



8 400 daN max

This maximum load doesn't takes into account any safety factor.

With a safety factor of 3, the maximum static tensile load is 28 kN

NOTE :

Loads resulting from cable tension are added to any other loads applied to the ARTICULATED CABLE GUIDE and shall remain below the values indicated hereafter.

NOTE :

Each ARTICULATED CABLE GUIDE can't be connected simultaneously to :

- ✓ more than 3 wire ropes performing tensile load.
- ✓ more than 2 wire ropes performing compression load.

ASSEMBLY

ASSEMBLY OF ARTICULATED CABLE GUIDE

1



Step 0 : **ARTICULATED CABLE GUIDE** entirely dismantled.



Step 1 : Inserting the pin used to connect the **ARTICULATED CABLE GUIDE** to its base.



Step 2 : Secure the pin in its housing using the screw supplied (fitted with thread locker) and an Allen key.

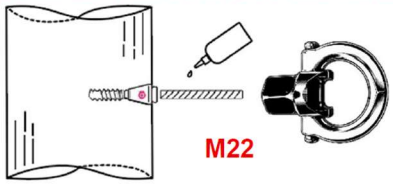
NOTE :

It is recommended to use the hardware supplied by LE CLOU SVA, as they have mechanical properties suited to this application.

If you want to use your own hardware, please contact LE CLOU SVA to ensure that hardware with equivalent properties is fitted.

ARTICULATED CABLE GUIDE SCREWING (EXAMPLE WITH A UNICLOU AND THREADED BAR)

2





The threaded bar should be visible through the 'opening' created in the **ARTICULATED CABLE GUIDE.**

The specifications and dimensions of the connector(s) must be suitable for use with the **UNICLOU.**

NOTES :

A QUESTION… ?

LE CLOU S.V.A
SAUVEGARDE VOS ARBRES

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