IL CONSOLIDAMENTO DEGLI ALBERI

PREVENZIONE DEI CEDIMENTI E CONSERVAZIONE DI UN BENE AMBIENTALE

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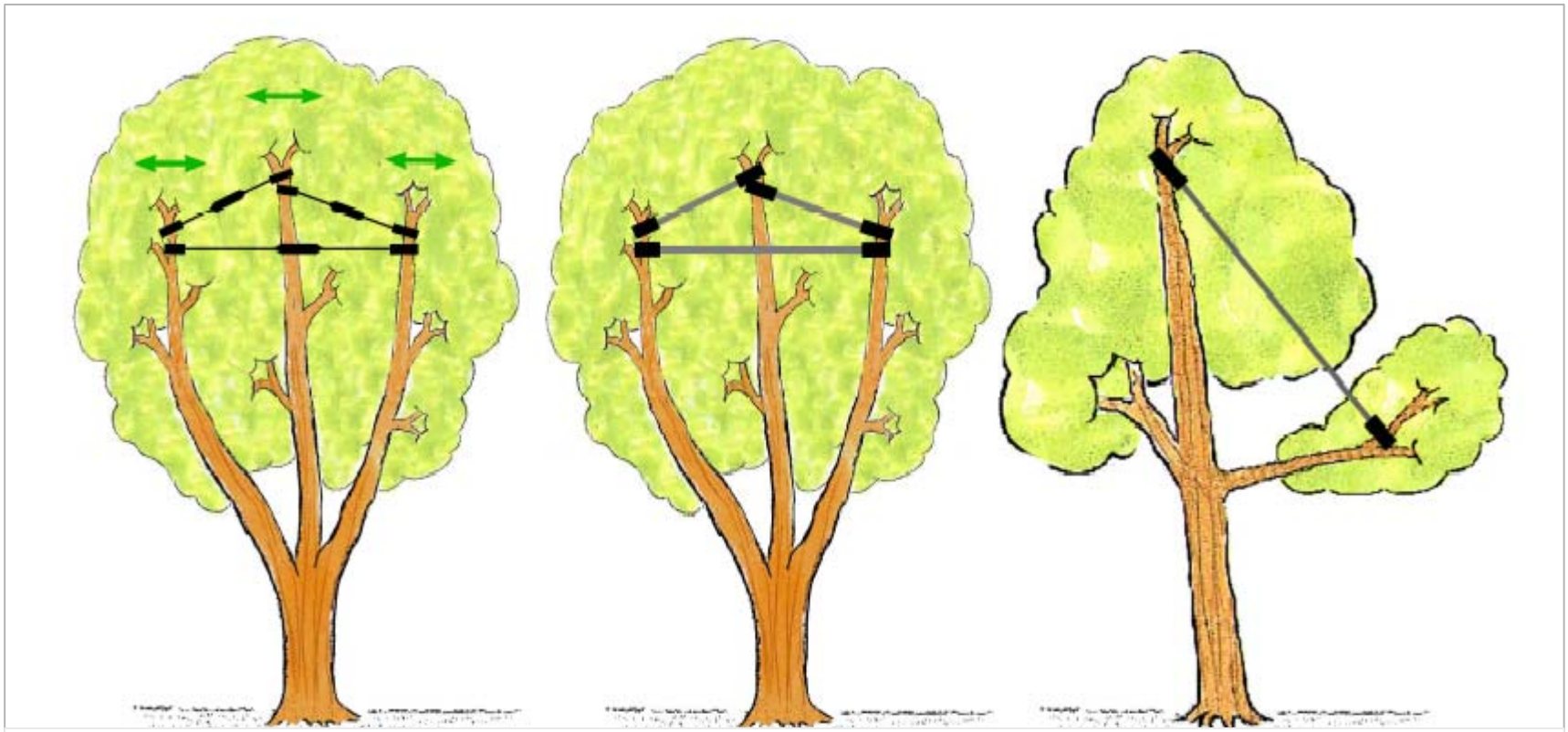
I tre tipi di consolidamento secondo ZTV_2006



1.a Consolidamento dinamico *orizzontale*

1.b Consolidamento statico *orizzontale*

2. Consolidamento di tenuta ± *verticale*

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Tipi e materiali di consolidamento aereo

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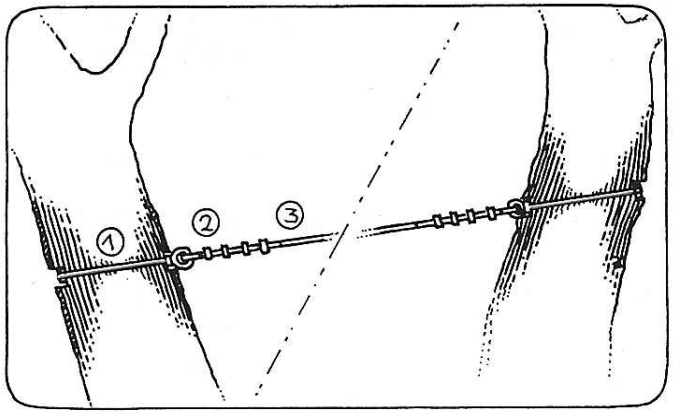
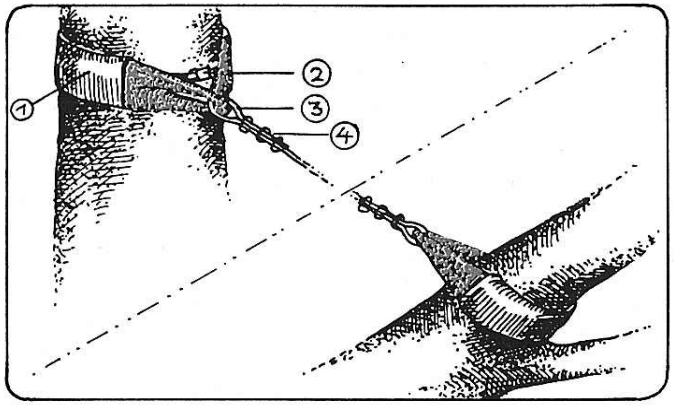


A



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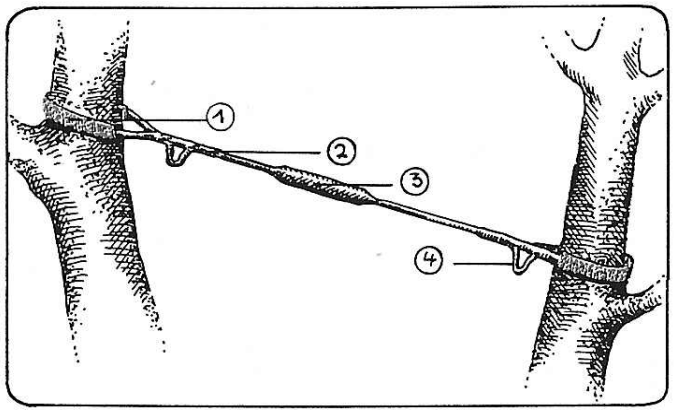

C

A **I Steel Rope Bracing**

① Steel Bolt ② Thimble/connectors
③ Steel Rope

I Tirante con cavo in acciaio

① perno in acciaio ② morsetti
③ cavo in acciaio

I Cableado con cable de acero

① Perno metálico ② Unión al cable ③ Cable de acero

B **I Belt Support**

① Branch Protection ② Belt
③ Thimble ④ Connector

I Tirante con fasce

① protezione del ramo ② fascia
③ redancia ④ morsetti

I Soporte con anillos

① Protección de la rama
② Cinturón ③ Unión al cable
④ Material de conexion (perrillos)

C **I Hollow Rope Cabling**

① Rope Spreader and Protection
② Hollow Rope ③ Shock Absorber
④ Adjustment Loop

I Tirante sintetico tubolare rinfilato

① fascia di protezione ② tirante tubolare ③ ammortizzatore ④ anello di regolazione

I Cuerda hueca

① Cinturón protector de cuerda
② Cuerda hueca ③ Amortiguador
④ Lazo de reserva

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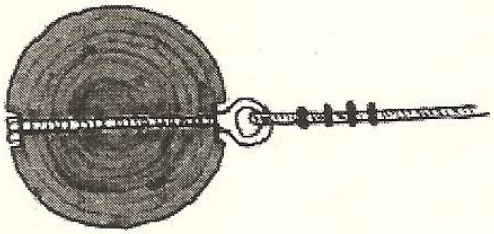
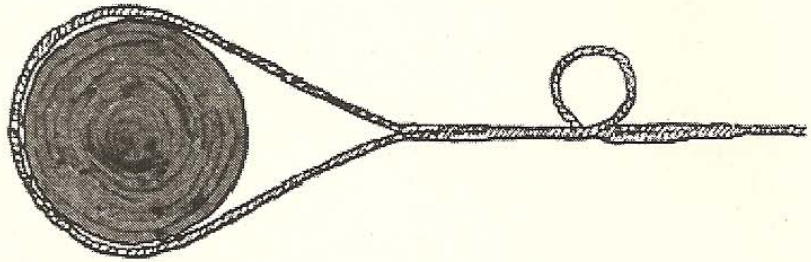
Illustration of Crown Securing Systems

(Figures and parts of the text in support of the German rules and regulations for tree care methods - volume 2001 – "ZTV-Baumpflege- Ausgabe 2001"-)



Crown Anchoring System: Made of threaded bolts, steel cable, and fastening material. NONE-injury free installation.

The extent of injury caused by the installation of crown anchoring systems is so great that this system should not be used in the future



Hollow Rope Securing Systems: Made of braided synthetic fibre. The rope is spliced back through the hollow rope and is fixed by tension. Therefore, no additional fastening elements are necessary (Single Component Securing System). **Injury free installation.** (VETTER & WESSOLLY, 1994)

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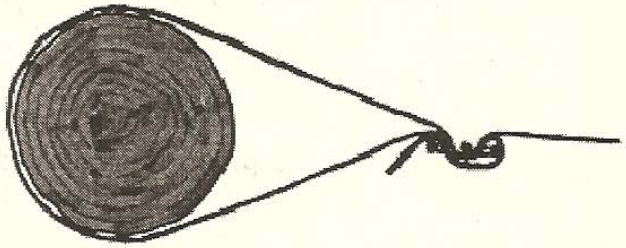
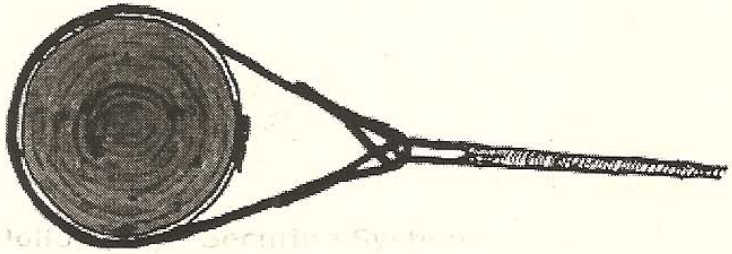


Band Securing System (Gurtbandsicherung): Made of woven synthetic fibres, and slung around those parts of the tree crown which are to be secured. The belt is locked with a buckle (Single Component Securing System). **Injury free installation.** (SINN, 1989)



Multi Component Securing System (Double Belt Securing System): Made of separate belts, with a loop on each end. Most of these products consist of a strong, outer holding belt and a second inner fastening belt, which includes a stretch element in some cases. The connecting elements (e.g. synthetic hollow ropes, steel cable) are pulled through the end loops. **Injury free installation.** (SCHRÖDER, 1993)

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Materiali e nomi commerciali

- **Polipropilene - PP** **(elasticità ca. 3% + 20 cm)**
  (Cobra, Boa)

- **Poliestere - PES** **(meno elastico)**
  (Gefa*, Libre, Treesave, Arboline, Crown Tex,)
- **Poliammide - PA** **(più elastico)**
  (Gefa*, Treesave,)

**Gefa = Tree Guardian (Italia)*

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PP

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PP

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PA e PES

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PA e PES

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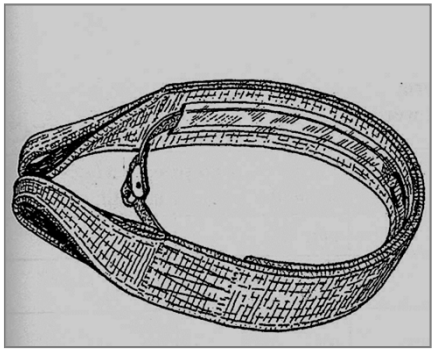
Tirante tessile tubolare con fascia asolata

(sistemi a 2 componenti)

1) Tiranti sintetici tubolari in combinazione con **2a** oppure **2b**



2a) Fascia asolata
(ev. con cinturino elastico di posizionamento)

2b) Guaina di protezione
per. es.. GEFAprotect

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Tirante tessile tubolare

(sistemi a 1 componente)

Tirante sintetico tubolare con ammortizzatore

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Dimensionamento dei tiranti

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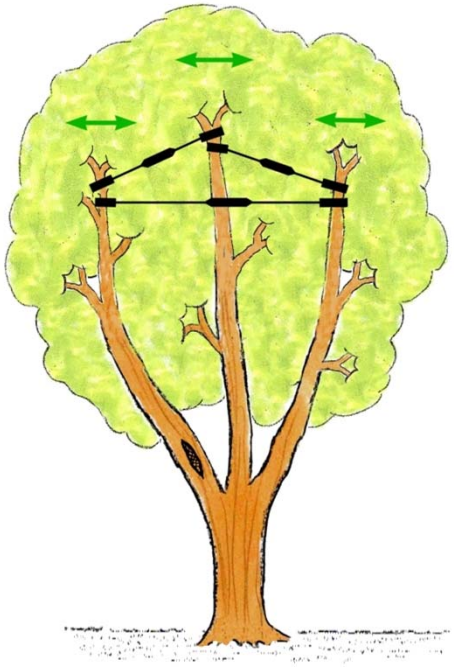

Dimensionamento dei tiranti secondo ZTV_2006

Consolidamento dinamico Diam. alla base della branca / fusto	**Carico di rottura min.**
fino a 40 cm	2,0 tonnellate
oltre 40 cm fino a 60 cm	4,0 tonnellate
oltre 60 cm fino a 80 cm	8,0 tonnellate
oltre 80 cm caso particolare da valutare singolarmente	

In caso di ancoraggio statico: carico di rottura sopra riportato x 2

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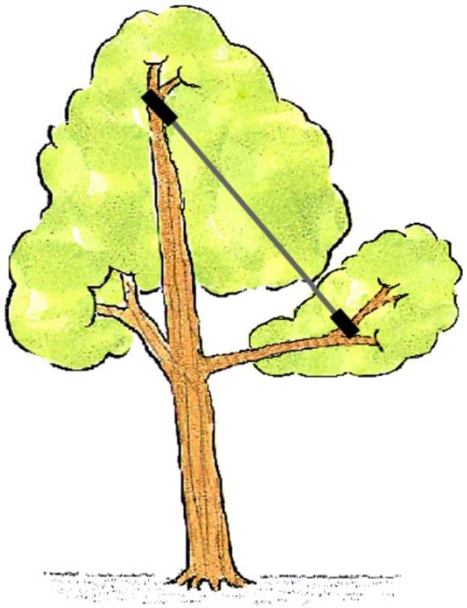

Dimensionamento dei tiranti secondo ZTV_2006

Consolidamento di tenuta Diam. alla base della branca / fusto	**Carico di rottura min.**
fino a 30 cm	2,0 tonnellate
oltre 30 cm fino a 40 cm	4,0 tonnellate
oltre 40 cm fino a 60 cm	8,0 tonnellate
oltre 60 cm fino a 80 cm	16,0 tonnellate*
oltre 80 cm caso particolare da valutare singolarmente	

**possono essere installati due tiranti da 8 ton.*

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Determinazione dell’altezza dei tiranti in chioma

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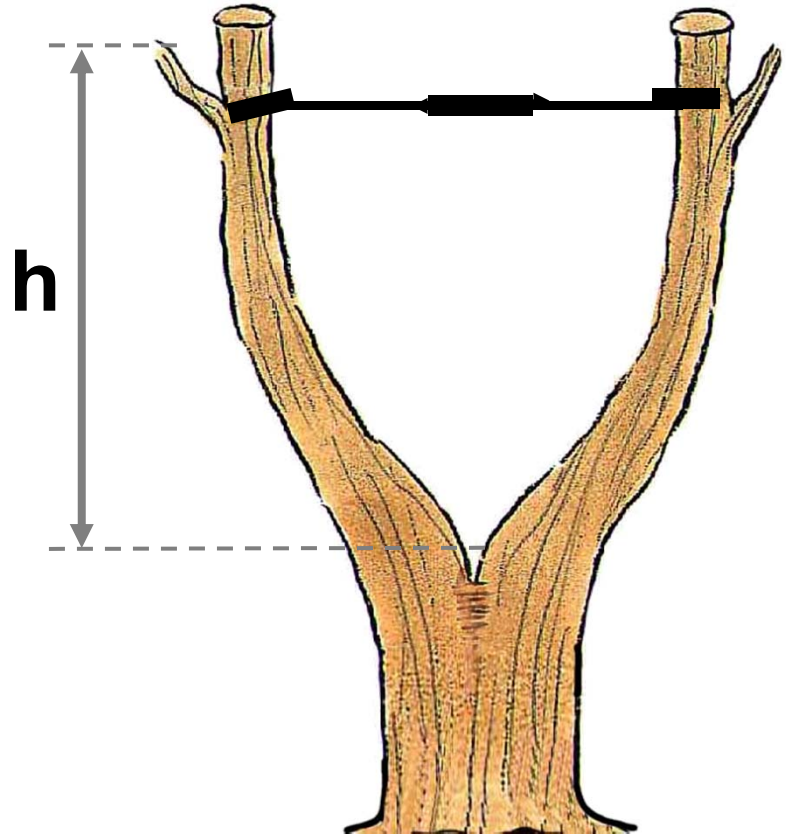
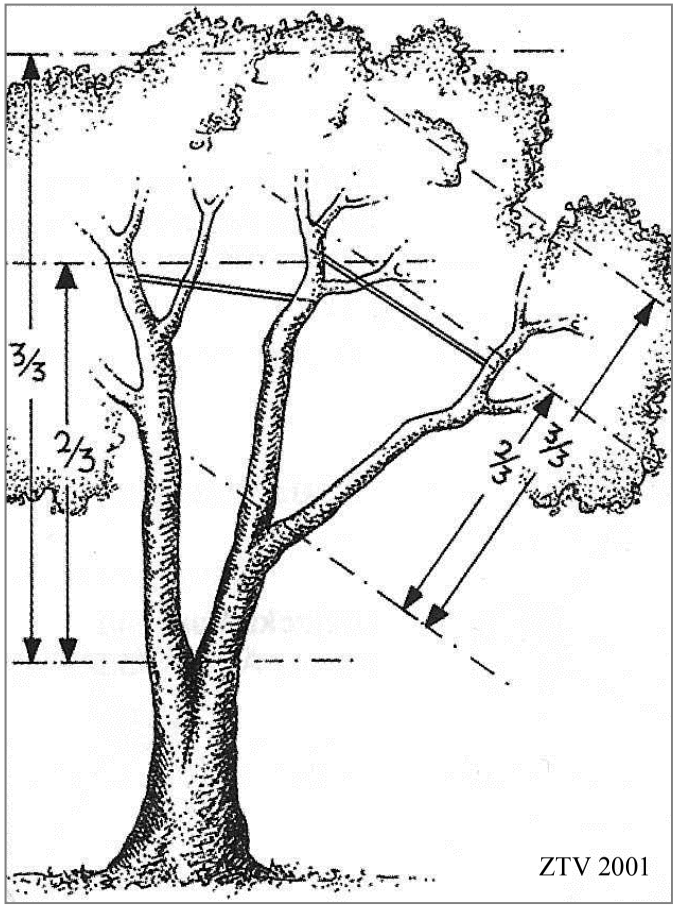
Altezze per l'installazione dei tiranti

L'ideale sarebbe determinare l'altezza a 2/3 della lunghezza dei rami/fusti da ancorare





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