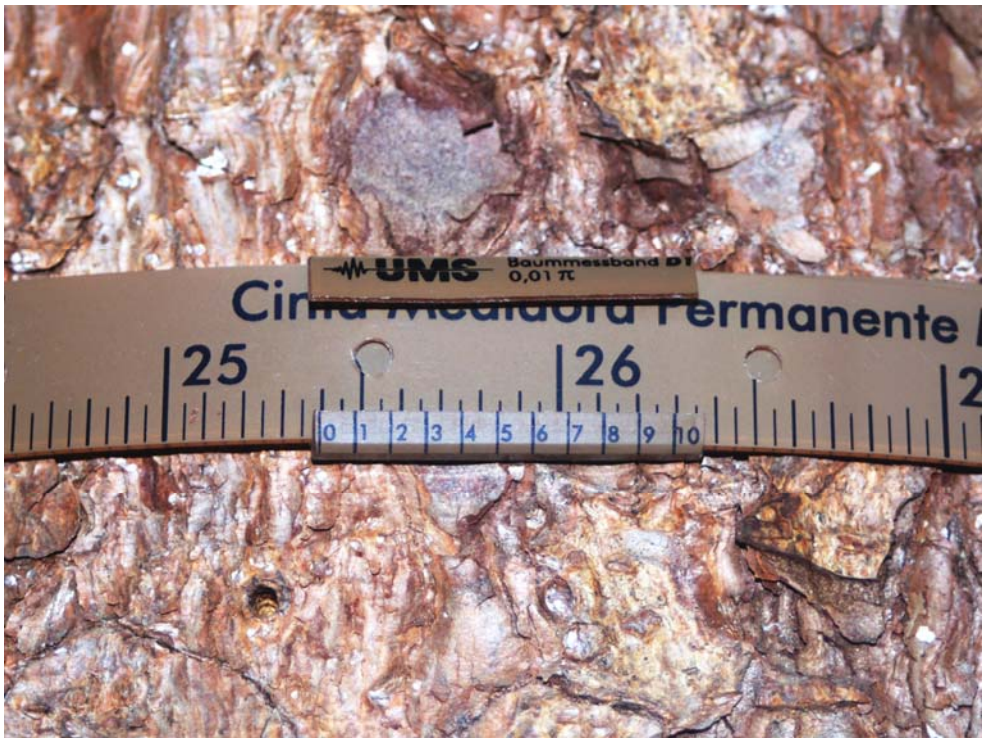
User Manual



D1

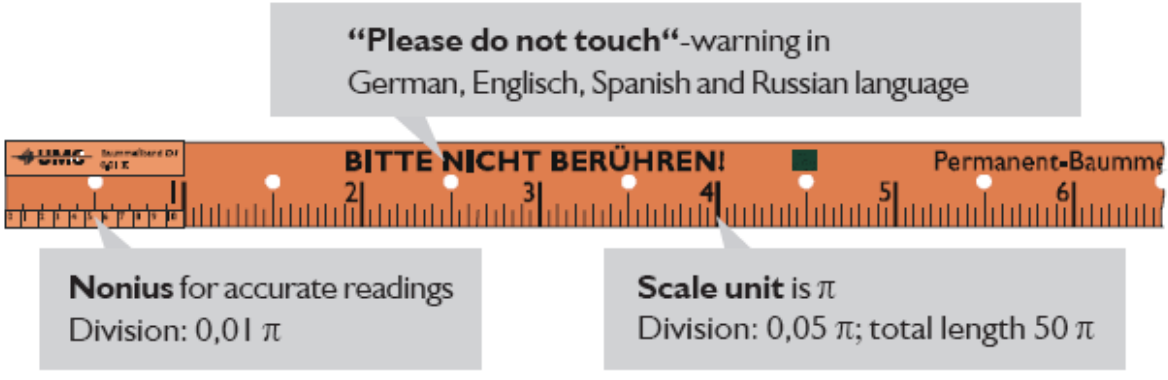
Permanent tree girth band

- **Easy and quick installation**
- **Scale reading already shows diameter**
- **Vernier for accurate readings**
- **Minimised friction**
- **Low thermal expansion**

The girth tape D1 was designed in co-operation with forest scientists for permanent manual readings of the diameter of trees through the circumference.

The scale division is 0,05 πcm and the vernier reading 0,01 πcm. The unit is π/1 [cm]. Therefore, the measured value already indicates the diameter of the trunk.

The installation is easy and quick. Lead the loose end of the tape-measure around the trunk and through the vernier. Then, hook in the spring to one of the eyelets with an initial spring expansion of min. 2 cm.



An exceptional feature of this girth tape is the minimised friction. There is only a printing on the top side to reduce the friction between the backside and the bark. The vernier is specially shaped for a frictionless guidance and the eyelets are manufactured without burr.

The girth tapes are made of Astralon, which has a thermal elongation of $\alpha = 75 \times 10^{-6}\ K^{-1}$. The accurate length is granted at 20°C. A shift of temperature will lengthen/shorten the band for only 0,075‰ per °C.

A single girth tape-measure is applicable for trunks with diameters from 10 to 66 cm. For larger trunks two tapes can easily be connected. Use the short spring for diameters below 40 cm.

The warning "Please do not touch" is printed on in German, English, Spanish, Chinese and Russian language.

Type (spring size)	***- K***	***- L***
Length, unexpanded	75 mm	150 mm
Max. allowed expansion	18 cm	36 cm
For trunks with diameter	< ∅ 40 cm	> ∅ 40 cm

Easy extension
by connecting several bands

Installation of D1 bands

Span the band around the tree ...

and lead the end through the vernier.

Tighten the band and hook the spring into one of the 3 last eyelets.

Span the spring ...

One end of the spring with a length of 75mm (or 150mm) is latched to the 3rd (6th) eyelet following the guidance.

The other end of the spring is attached to the tied around band with a spring excursion of 30mm (60mm). The spring's tension then is approx. 0.2N.

Important: Move the belt a few times for a tight fit.

Read the value of a D1 tree girth band

Integer value *1/10 value* *5/100 value* *Vernier scale with 1/100 value*

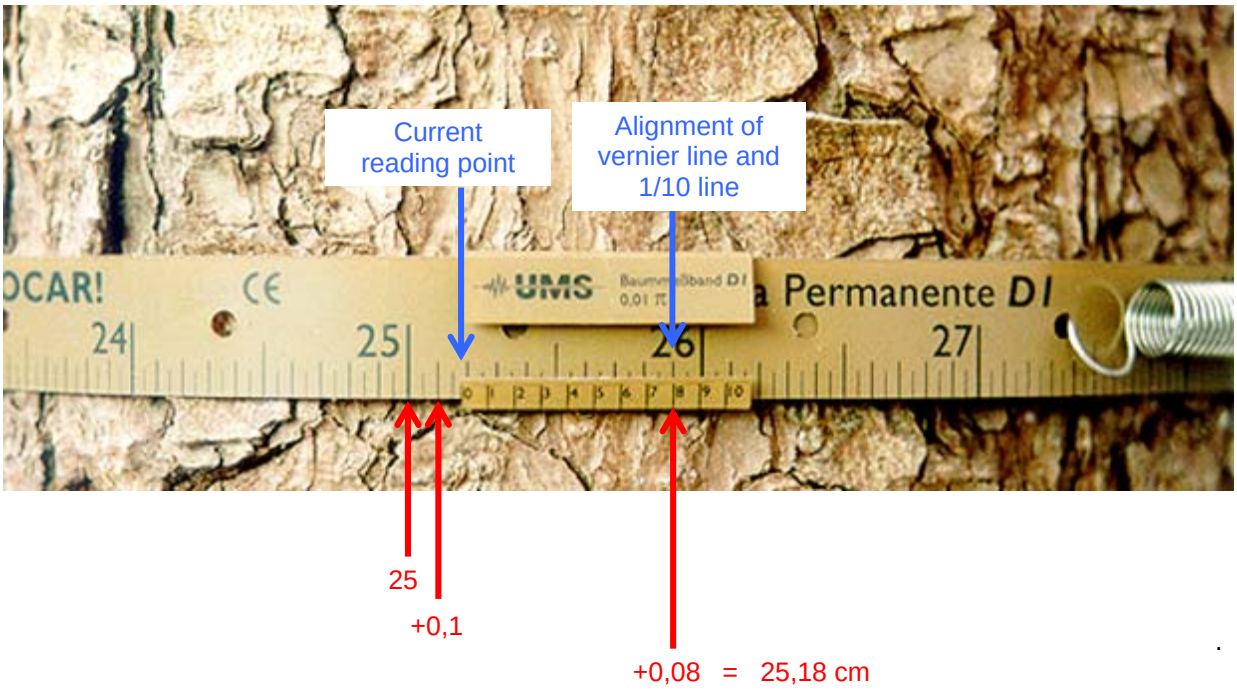
On the band, the numbered lines are the integer value. The longer of the short lines is the 1/10 value, and the shortest line is the 5/100 value. On the vernier scale you can read the 1/100 value.

Photo below: The left edge of the vernier is the current reading point - you see that the edge is between 25.15 and 25.2 cm.

To get the 1/100 value find the closest alignment of a line on the vernier and a 1/10 line on the band.

In the photo the 8 on the vernier matches with the 1/10 line, therefore the 1/100 value is 0.08.

So the reading in the photo is 25.18 cm.



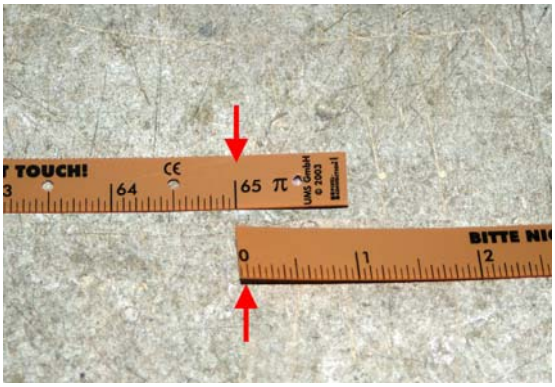
Extending D1 tapes – bonding 2 bands

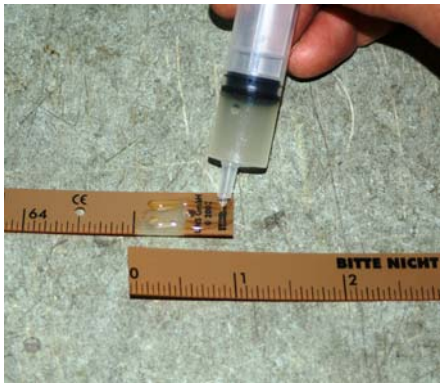
For tree diameters of more than 66 cm two D1 tapes can be glued together.
We recommend a proper PVC adhesive, for example the "Tangit" adhesive from Henkel. For better handling you might fill some adhesive into a small syringe.
Clamps are required to clamp the glued parts, for example clothes pegs

Please observe the safety notes for adhesives:

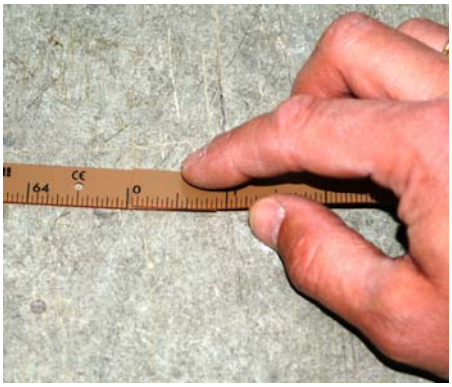
- Vapour can cause irritation of eyes and respiratory system. Avoid skin contact. Keep away from children. If swallowed contact a physician immediately and show the adhesive tube.
- Adhesives might contain Tetrahydrofurn, 2-Butanon, Cyclohexanon.
- Readily flammable material: keep away from any ignition source and do not smoke.
- Treat adhesive leftovers as hazardous waste, do not remove through sewage.

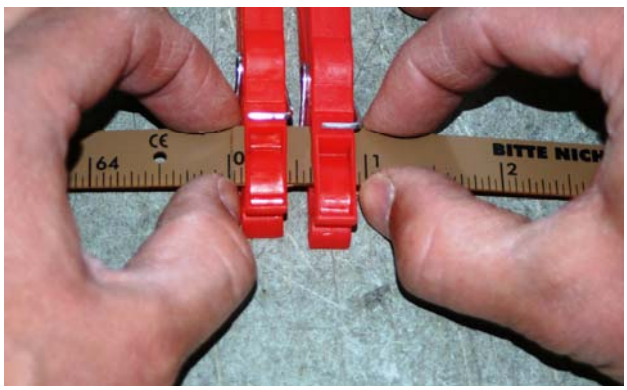
1, Evenly apply a thin layer of adhesive on the first tape from the end to the mark "65", and on the second tape between the marks "0" to "1" (inside the vernier if there is one).



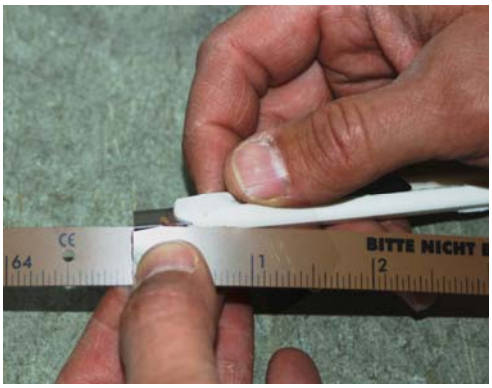


2, Put the tape ends on top of each other and make sure that the mark "65" at the mark "0" are absolutely aligned. Fix with clamps and allow the glue to dry for at least 10 minutes. (Check drying time on the instructions of your adhesive.)





3, Check the result and cut off overlaying remains of the adhesive.



Technical specifications

Delivery includes:

- D1 Permanent tree girth band
- 1 spring long or short

Technical Specifications	
Length	2100 mm
Width	15 mm
Thickness	0,5 mm
Thermal elongation	75 x 10^{-6} / K
Tensile strength	64 N/mm^2
Coefficient of friction	0,5 on dry bark
Working temperature	-30 °C ... + 60 °C
Colour of tape / print	brown / black
Weight of band	16 g
Weight of spring	7 g (-K); 14 g (-L)
Max. tension at max. allowed expansion	6 N

Contact

Sales	Georg v. Unold	Tel:+49-89-126652-15 Email: gvu@ums-muc.de

UMS GmbH
D-81379 München
Gmunderstr. 37
email: info@ums-muc.de

Ph.: +49-89-126652-0
Fax: +49-89-126652-20