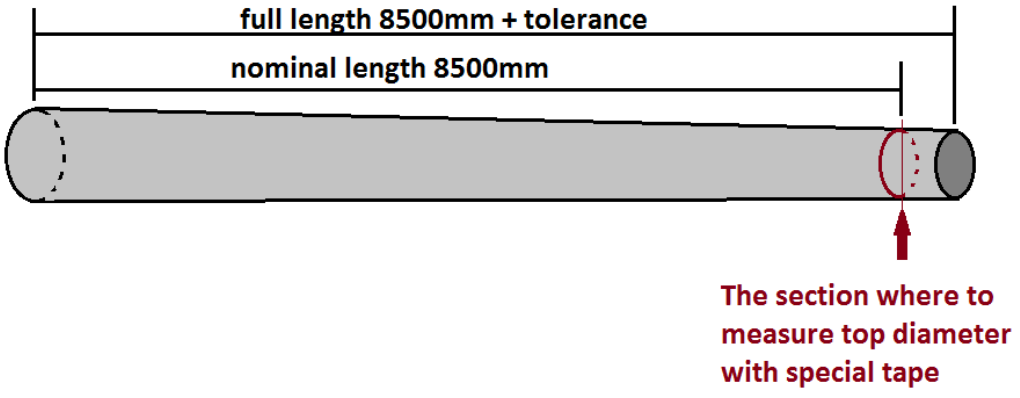
Instructions for correct top diameter measurement for wooden poles

Wood is a natural product with irregular forms, therefore it is important to use correct measurement method for top diameter determination. The most popular mistake is to measure the width of two sides cut top end like shown in this picture:

It is wrong because:

1) The top of the sharp end is not always in the center, which is the widest part.
2) Poles are always a little bit longer than ordered nominal length, therefore it isn't a nominal length top diameter.
3) Poles are never perfectly round, therefore top of sharp end can be made not in the widest part of the pole.
4) Above mentioned mistakes can make few mm deviation from real diameter, but the most important fact is that pole debarking machine cuts much more wood at the very end of the pole and last centimeters therefore can loose up to 1,5-2cm from the tree diameter. That's why tolerance for length is needed and that's why the diameter measurement at the very end of the pole doesn't show the real top diameter of the product.

The correct way to measure top diameter is show in this picture:



1. Measure the nominal length from the butt end and mark the section for diameter measurement;
2. Use the diameter tape to wrap arround the pole to determine the top diameter like shown in this picture (the diameter for sample is 196mm):

After long storage in hot conditions due to wood shrinkage the top diameter can be reduced by up to 8%, but this natural deformation of the wood doesn't change the bending strength of the pole, which should be minimum 8,20kN for 8,5m poles and 8,13kN for 10m poles, if the top diameter had to be 150mm (table 2 of BS 1990). So in case there are still suspicions that poles are too weak, it is suggested to make the bending load test (see figure 2 of BS 1990).

Conclusion: there are too many factors why it is difficult to determine precise the top diameter, because it depends on the moisture content from 25-28% at the time of production up to 10-12% if poles are stored in extremely hot conditions. That's why BS1990 table 1, where the diameters for each grade are fixed, is named: "PREFERRED sizes of the poles". So this is only the suggested size for the moisture content 28%, which is mentioned in BS 1990 point 8. Most important is not the diameter, but the bending load, which shows how big load the poles can hold.