

## Notes

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**The HAGA altimeter**

## Description:

The altimeter developed by us consists of a **easy-to-handle** light metal housing in the shape of a gun containing the sealed pointer and scale system. The special shape of the housing guarantees a less exhausting handling which is important for the accuracy of the measurement during the recordings.

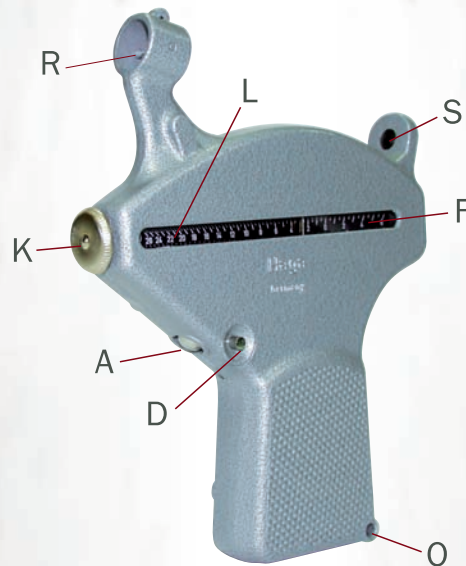
The dimensions are approx. 14,5 x 17 x 2,5 cms having a weight of 320 grs.

Determination of height in a known way is based on the measuring of the angle from the position of the person who makes the measuring to the upper boundary of the subject which has to be measured. The scale behind the window is calibrated in meters to determine fixed distances of a measured object.

This instrument shows the following measuring ranges:

Standing position in meters	Positive height in meters above the horizontal line	Negative height in meters below the horizontal line
15	up to 26	up to 6
20	up to 34	up to 8
25	up to 43	up to 10
30	up to 52	up to 12

Besides there is a scale showing the gradient in % (up to + 150 % resp. 40 %). Another empty area on the scale bar can be provided as desired with an additional 35 or 40 meter scale. For a standing position of 40 meters the scale for the standing position of 20 meters can be used by doubling the height values of the scale. The height values of another standing position can be used in a similar way.



The a.m. height resp. increase values are engraved on a rotating scale bar. The different measuring ranges are adjusted by turning button „K“, so that on window „L“ on the left side only the adjusted range will appear.

The advantage is that reading mistakes - which may happen – are avoided by combined scales and easily adoptable by your eye. Therefore a better accuracy of reading is achieved.

During measurement the altimeter has to be held tight with the forefinger on trigger „A“. The highest point has to be adjusted by your eye, aperture „S“ and prongs „R“ and then the meanwhile arising measurement is made by trigger „A“. The indicator points at the scale on the value of the height which has to be measured.

Parallactic deviations are avoided by the fact that the knife edge of the pointer is coloured white and with proper reading position of your eye - the red coloured sides of the pointer - will disappear. Releasing of the pointer is achieved by pressing button „D“.

For measurements **in flat terrain** the height of the person who measures (up to eye-level) has to be added.

For measurements **in uneven terrain** first the lower point of the height has to be measured (please remember the result!) and afterwards the upper point of the height has to be measured.

For measurements on a **rise** (lower height point ABOVE the person who makes the measurement, positive result) the first measured value has to be deducted from the second one.

For measurements on a **fall** (lower height point BELOW the person who makes the measurement, negative result) both measured values have to be added up.

It is foreseen to fix an optical rangefinder to the altimeter which can also be assembled later. As the opening view for the distance measurement is in a short gap to the aperture of the height measurement, an easy and fast fix of the correct position is possible.

Another advantage for permanent use is the opening „O“ down on the right side of the housing, through which the instrument can be clinged to the right wrist by means of a hanger.

When the altimeter is not in use it is recommended to lock the pointer system by pressing trigger „A“.

It has to be pointed out that the altimeter will oscillate perfectly only in vertical position.



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**Rangefinder**

suitable for the HAGA altimeter

It has to be measured as follows:

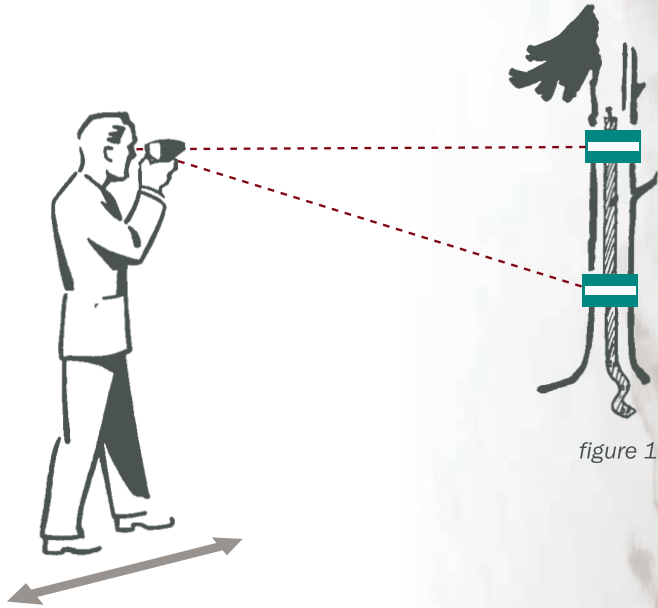


figure 1

The included measuring tape has to be adjusted to the desired distance. A viewing plate is fixed to the tape. The second plate can be buttoned to the distance of 15-20-25-30 meters which is marked on the tape. Then the tape has to be fastened by a nail or a drill to the tree which has to be measured (figure 1). For this purpose there is a hole in the fixed plate through which the drill can be leaded. The scale of the altimeter has to be adjusted in accordance with the measuring tape.

Example:

Measuring tape	25 meters
Scale of the altimeter	25

Now the distance has to be paced up or down until both plates coincide (see figure 2). From this point the measurement of the tree will be made.

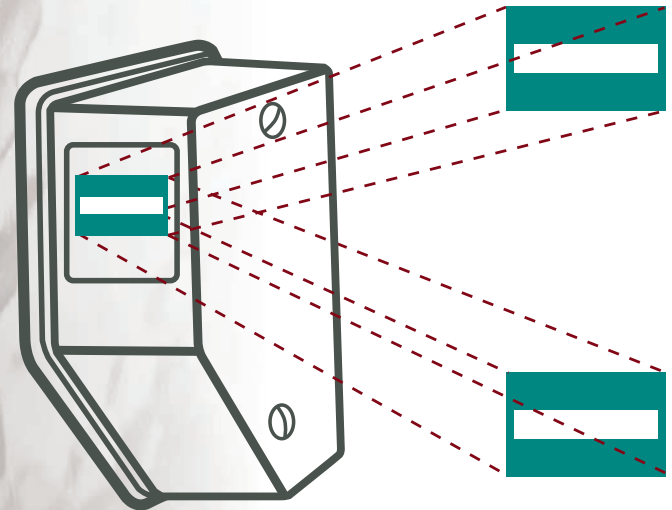


figure 2