AOFAR®

COMPASS

Model #:AF-4580

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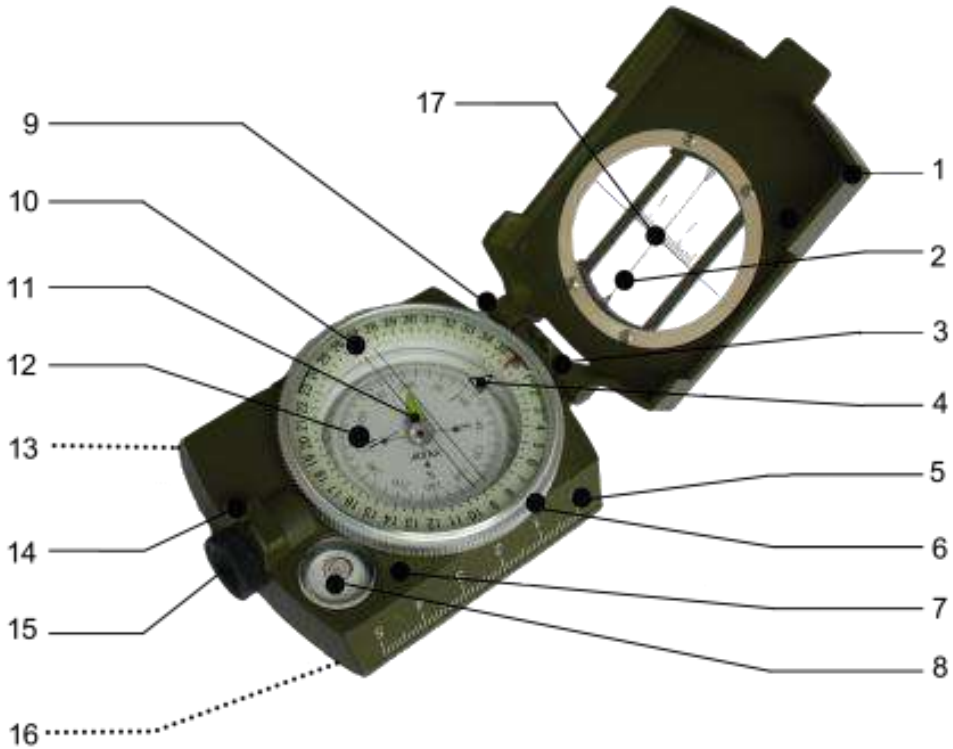
1. COMPONENTS NAME



1. Lid
2. Window with Aiming line
3. Hinge
4. Arrow No1
5. Scale (Centimeter Ruler on opposite side)
6. 360° Rotating Bezel
7. Heavy-duty zinc Die-Cast
8. Spirit level
9. Holding Ring
10. Glow-in-the Dark Circle （Fixed tip point）
11. Glow-in-the Dark Arrow No2
12. 360°compass card（Thermoelastic Liquid-Filled Capsule with Floating Dial）
13. Tripod Connection
14. Aiming Point
15. Sighting Lens with Adjustable Diopter
16. Conversion chart:Angle /Gradient/Distance
17. Distance-measuring notches

2. Product specification

1.	Model	AF-4580
2.	Color	Army green
3.	Size	85x63X30mm
4.	Dial diameter	53mm
5.	Weight	190g
6.	Material	Zinc alloy
7.	Waterproof	Yes
8.	Luminous	Yes

The compass consist of a Zinc alloy housing and a metal lid(1) with a glass window with the Aiming line etched into it.The window is attached to the compass housing by a vertical spring holder which allows approx 3mm of vertical movement using the screw.

The Window(2) is mounted in the lid(1) with a robust hing that can be turned through 180°.This allows the Window to be moved into reading position and be folded back after use.

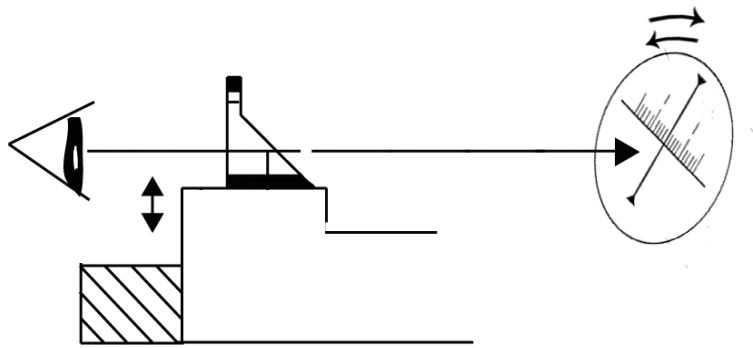
The compass is provided with an integrated spirit level(8).

It can be screwed on a tripod (at the back) that means often threaded fitting in the base and serve as theodolite for simple terrain surveys.

This lens system(15) being provided with an integrated index line and an excellent magnifier allows extremely precise reading.Problems inevitably caused by mirror reading and potential parallax errors are eliminated by prismatic reading.

Excellent damping of the dial system ensures rapid and precise reading to the fraction of a degree.

3. Use tips



Move the the lid(1), adjust the lid either up or down until the Aiming Point(14), aiming line (2) and the object on a straight line.While doing so keep the compass exactly horizontal by using the integrated spirit level(8).

By skillfully handing the compass the Arming line(2) corresponds to the Aiming Point(14), thus ensuring that eyes,compass dial and object are at same level and resulting in utmost accuracy.This method allow to read the fraction of an angular degree.

Adjust the position of the prism or lens which on the 360° Rotating Bezel Ring (6) until you see distinctly the numbers of the compass card(12).In models with adjustable eyepiece,the Sighting Lens(15) must be rotated until numbers in degree are clearly visible.

Optimeal results are obtained when you keep the compass at a distance of 1-2cm from your eyes.

4. Taking a bearing

With your compass in reading position,aim at an object,sighting it through the Aiming Point (14) and the aiming line(2).Now read the value of your marching direction on the compass card (12) which also correspond to the azimuth of the object.

5. Walking a given bearing or direction of travel

When the bearing is known, simply look at compass card(12)and turn your body until you can read the known bearing on the dial. The sighting line then intersects the object.

6. Orienting the map

For more complicated operations to be camied out on the topographic map, it is necessary to orientate the geographic north of the map with that magnetic of the earth .

Place the compass on the map.Align the centimeter-marked line(5) with that meridian closest to your position,so that the upper lid (1) points to the north of the geographic map.

Meridians are parallel lines running from the upper to the lower part of the map .

Holding the compass in position ,rotate the map until the north-seeking needle(11) on the dial coincides with the index line of the Glow-in-the Dark Circle(10) .

The map is now oriented with the ground.The magnetic declination has however ,not been taken into account .

7. Determining the direction of travel on the map

a) After you aligned you map with the north pole(the description in point 6），draw a line on the map starting from you position to your final destination.

b) Place the compass on the map with one contact edge along the line which is running from your own position to the objective .the compass lid indicates the direction of the objective.

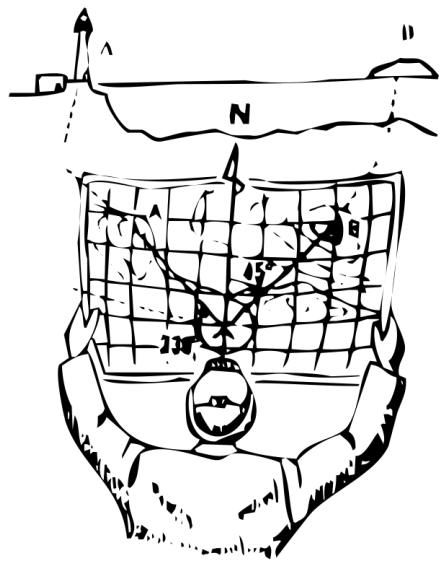
c) Read the value of marching direction on the compass card (12) which corresponds to the index line of the Glow-in-the Dark Circle(10) .

d) Remove the compass from the map ,look at the compass card (12)and turn around until the value of your marching direction(defined as described point C)

e) Find an auxiliary destination point which must be on the same survey line and start following it .

f) Repeat this operation until you reach your final destination.

The longer your route,the more you have to repeat the above operation which will help you keep the direction you defined.



8. Determining your own position in the field

Select two well visible points on the ground and mark them on the map .Once the map is orientated (operated as Point 6),with your compass measure the value in degree of position (A) and draw a line on the map in accordance with said value.Now pass through point (B).

9. Estimate the distance on the map

Measure the distance to the object on the map by Centimeter Ruler (5), Multiply the scale of the map.

Example:

Map Scan:1:25000

Distance(M) =Distance (mm)on the map X 25000÷1000

Map Scan:1:50000

Distance(M) =Distance (mm)on the map X 50000÷1000

10. Measuring angles

Measure the right side of the object . Keeping in mind the value in degree that you defined ,slowly orientate the compass towards the left side of the object.From the first value in degree deduct the second value you just defined . The difference represent the value in degree of the angle between the left and right sides of the object.

N.B:Measure of the angle through the north .If the value 360°(north)come across the direct line on the Glow-in-the Dark Circle(12) during your measuring operation,consider 360°=0°.The calculation will be 360°-second value in degree +first value in degree.

Example: If the first value in degree is 4 and the second is 354,the angle will be 10.（360-354+4=10）.

TABLE FOR CALULATE

Table1

I Angle 0-360	II Angle 0-400	III Gradient %	IV Height(width) distance
1	1	2	1/60

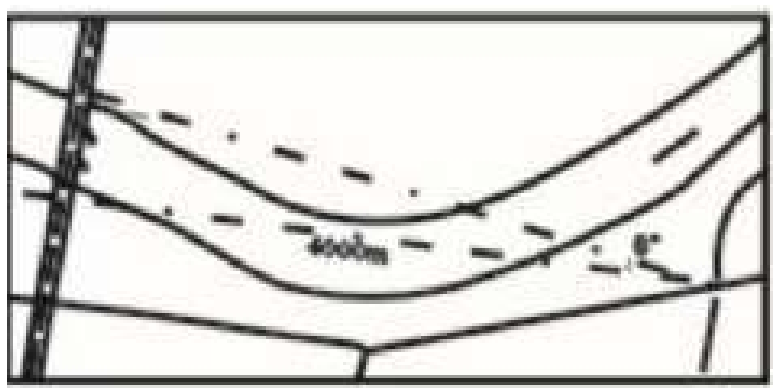
2	2	3	1/30
3	3	5	1/20
4	4	7	2/30
5	5	9	7/80
6	6	10	1/10
7	8	12	1/8
8	9	15	1/7
10	11	18	1/6
12	13	21	1/5
14	16	25	1/4
17	19	30	3/10
18	20	33	1/3
20	22	36	3/8
22	25	40	2/5
24	27	45	4/9
27	30	50	1/2
31	36	60	3/5
34	38	66	2/3
35	39	70	7/10
37	41	75	3/4

40	45	84	5/6
42	47	90	9/10
45	50	100	1/1
50	56	120	1+1/5
I	II	III	IV

11. Measure the distance on the ground

In accordance to the principle mentioned under point 9 10 ,it is possible to define the distance on the ground between two well-visible points on the ground.

For example ,you can measure the width of a farm house ,the length of a bridge,etc.There is one necessary condition to measure the distance from your own position to that of the object:the line running from these two positions must be as perpendicular as possible to the side of the object to be measured.



Example:

At a distance of 4000m, a bridge spans a river,transverse to the line of vision.How long is the bridge if an angle of 6°is measured from the right to the left river bank?

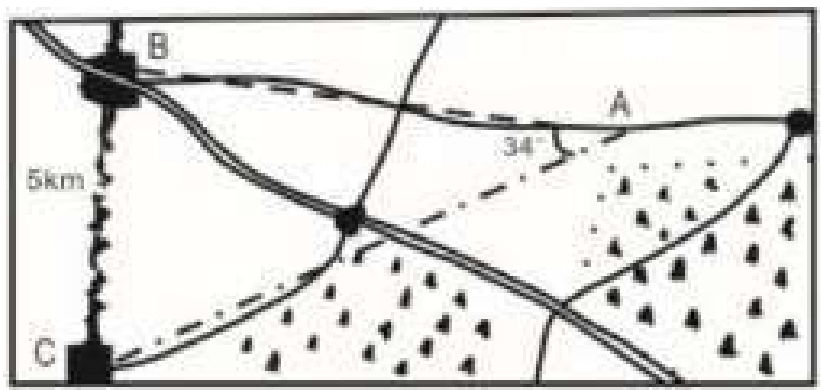
6°=10% or 1 /10

4000x10%=400m OR 4000X1 /10=400m

12. Determining the distance to an object of known width

If the height or width of an object is known or drawn from a map,it's distance will be defined by simply inverting the calculation mentioned above the description in point 9 10 and11 .

In other words ,if the width of an object with an angle of 8,is 1/7 of the distance according to the table 2 ,the same will be reverse case , the distance is 7 times wider than the width or height.



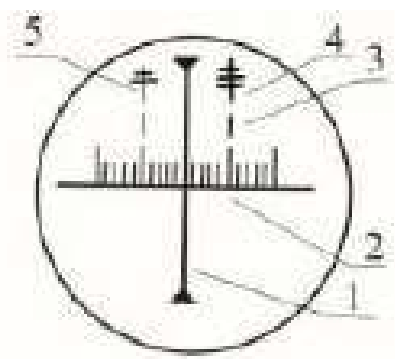
Example

The angle measured between object B and C (see figure) is 34°. The distance between B and C is 5 km according to the map column IV ,Table 2 indicates 66%.

$$\frac{100\% \text{ X } 5\text{km}}{66\%} = 7.5\text{km}$$

OR 5km X 3/2 = 7.5km

When using this method,the object of known width must be perpendicular to the line of sight.



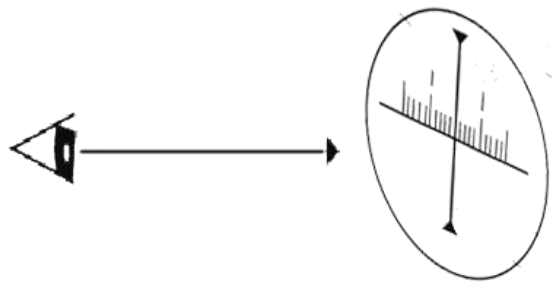
13. Determining the distance with scale-marked glass

1. Aiming line
2. Horizontal line with measuring notches

3. Measuring line
4. First object
5. Second object

The glass cover with the aiming lines ,is provided with notches which allow you to measure the distance from an object when the distance between the target and another visible object on the same level of the observer on the horizontal line of the glass .

10 notches is 0.9cm，each notch is 1/9cm,the distance between eyes and the Aiming line is 12cm.



For example ,if the distance between two objects is 36m and the notches on the glass are 12 .

$$\frac{12CM}{0.09cm \quad X \quad \frac{12}{2}} \quad X \quad =400m$$

400m is the distance between you and the object.

The simple formula is

$$\frac{1200 \text{ X } 36m(\text{ distance between two objects})}{9X \quad 12(\text{quantity of the notch})} \quad =400m$$

Of course ,if the distance between two objects is 36m,and and the notches on the glass are 12,and the other object is some distance from you on the same level ,and the notch is 18. 36/12*18=54m

14. WARNING!

In superior quality compass the oscillation of the needle is stabilized by the liquid in which it is totally dipped(13). Strong variations in temperature or pressure can cause the formation of small air bubbles around the compass card (13) .These bubbles do not interfere with the compass functioning and ,they will disappear in 24-48 hours under normal temperature conditions .

Avoid anyhow to use the compass at temperatures much under 0°centigrade.

Make sure to be always far from magnetic fields created by iron parts ,magnetic cores or electric wires which cause the compass to show wrong values.

Prevent your instrument from falling or getting damaged and never tamper it (so as to keep your guarantee always valid)

15. Contact us

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