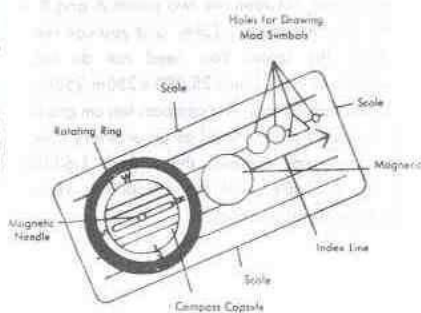




## HOW TO USE MAP READING COMPASS

A compass is often used together with a map. MAP READING COMPASS has a special function for using it with a map. To compare with any other conventional pocket compass it provides you higher accuracy and easier handling. MAP READING COMPASS consists of a liquid-dampened transparent compass capsule and scales. With this compass measuring direction, finding your location on the map and measuring distance on the map can be done very easily with high accuracy.



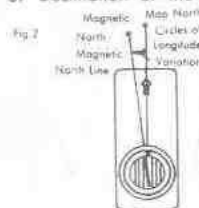
Dimensions: 60 x 140 x 17 mm.  
Weight: 56 gr.

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## GENERAL KNOWLEDGE FOR USING A COMPASS

### Geographical North (Map North), Magnetic North and Variation (Declination)

Ordinarily we use the words "North", "South", etc. unconcernedly, however, we must realize there are two kinds of North, i. e. Geographical North and Magnetic North. Geographical North is established geographically and it is common to all over the world. The circles of longitude of a map are drawn in correlation to the geographical poles and the lines show the direction of the Geographical North. The direction of these lines is different from the direction that magnetic needle points to. On an ordinary map upside is the direction of the Geographical North and downside is the Geographical South. Accordingly, right side and left side are East and West respectively. The magnetic poles are close to the geographical poles, but are not coincident. The angle between the straight lines pointing from the place of observation to the geographical and magnetic North Poles is called variation or Declination of the place, Fig. 2.



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The variation differs from place to place in the world.

The lines of equal variation are very irregular, however, topographical map of each place gives the local variation.

When you say a direction of such and such degree, you must either subtract or add the local variation depending on which side of zero declination line you are on for getting the geographically correct degree of the direction. For obtaining the true map bearing read the bearing on your compass and if the local variation is Western, subtract the variation from the reading, if it is Eastern, add it to the reading.

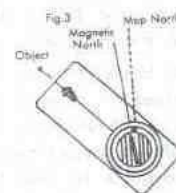
However, it is more practical for you to use the bearing you get when you set the Magnetic North as 0°

## HOW TO USE MAP READING COMPASS

How to maintain the direction of an object  
Suppose you can see an object, say, a lake. If you can see the lake all the way while you are walking, there is no problem. However, on the way to the lake you may have to go through such a place as woods, hallows, etc. from where you cannot see the lake. In such case, you may lose the direction of the lake and your compass becomes very useful.

- 1) Before you start walking, hold your compass as level as possible and point the arrow on the scale to the direction of the lake.
- 2) Turn the rotating ring and put N (0°) in the direction of the N end (the luminous end) of the magnetic needle.
- 3) Read the bearing at the index line. This is the bearing of the lake and simply keep this bearing until you reach a place from where you can clearly see the lake again.

For instance, in Fig. 3 the direction of the object is 320° (For expressing it exactly you



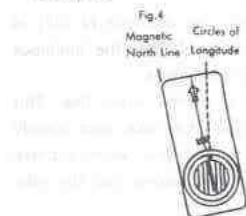
-4-

must adjust the local variation as explained formerly. However, as long as you understand the meaning of variation you can say the direction of the object is  $320^\circ$  from the magnetic North).

#### How to reach the destination shown on map

For going to the destination shown on a map merely find the present place, direction of the destination and the magnetic north.

1) First of all spread the map and draw directional lines of magnetic north according to the variation given on the map. For drawing lines use the sides of the compass.

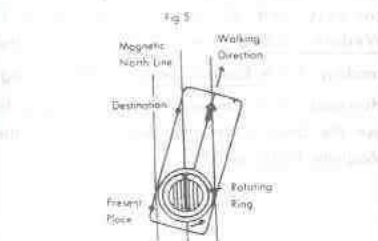


For instance, if the variation of the place is  $5^\circ$  Western, subtract  $5^\circ$  from  $360^\circ$  and set the bearing graduation  $355^\circ$  to the index line. Then make the arrows in the compass capsule parallel to the North-South line of the map (longitude line or up-down frame lines of the map) without moving the rotating ring and draw a line as shown in Fig. 4. It is quite advisable for you to draw several lines parallel to the first magnetic North line you just drew by using the

co-ordinates lines.

2) Find the present place and the destination on your map and draw a straight line between these two places on the map. Place your compass on the line so as to point the index line (arrow mark) to the destination.

Then, turn the rotating ring and make the arrows in the compass capsule parallel to the magnetic North lines you drew in the step 1). (At this stage you do not have to mind the position of the magnetic needle.)



Next, hold your compass and turn yourself slowly until the North end (the luminous end) of the magnetic needle becomes parallel to the arrows in the compass capsule, Fig. 5.

Now proceed toward the direction the arrow of the travel line points to by keeping the magnetic needle parallel to the arrows of the compass capsule. Simply keep going in this direction until you reach the destination.

When you arrive at the first destination repeat the same procedure for going to your final destination.

While you are proceeding toward the destination you have to make sure of the direction by looking at your compass and go as straight as possible. If the deviation to right or left from the correct course is large the error at your goal becomes large.

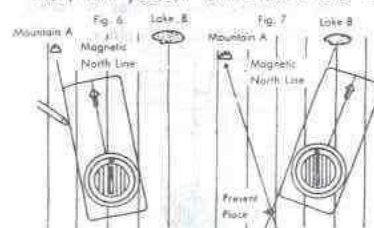
#### Finding Your Location On The Map

Locate yourself on a high point from where any of two distinctive features of the landscape are visible. The two distinctive features must be shown on the map.

Suppose you can see a mountain A on the left and a lake B on the right side.

Point the index line (arrow) toward the Mountain A. Then, rotate the rotating ring and set "N" of the dial to the North end of the compass needle. Place the compass on the map and adjust the map so that the magnetic north line on the map becomes parallel to the magnetic needle and the N-S lines in the compass capsule. By keeping the state slide the compass on the map until one side of the scale points to the mountain A on the map and draw a line, Fig. 6.

Then, turn yourself to the lake B and repeat



the same procedure and draw a line. The point of intersection of these two straight lines is your present location on the map, Fig. 7.

#### Measuring Distance and Length

For mountain climbing, hiking and orienteering a local topographical map of 1:25000 scale or 1:50000 scale is commonly used.

Since the compass has scales of 1:25000 and 1:50000\* for measuring distance on a map you need not do troublesome calculation. You can simply read a distance at the scale.

For instance, suppose on a 1:25000 scale map the distance between the two points A and B is 5cm. The distance is 1.25km, and you can read it from the scale. You need not do such calculation as:  $1\text{cm} \times 25,000 = 250\text{m}$ ,  $250\text{m} \times 5 = 1250\text{m} = 1.25\text{km}$ . The compass has cm graduations and it can be used as an ordinary ruler. \*For inch type compass the scale is 1:63360 (scale 1"=1mile) and the 1:25000 is replaced by inch graduations.