

Tips on using a Brunton compass

To measure an azimuth without direct contact (*e.g.*, the azimuth of a distant object from an observer):

1. Take a comfortable stance facing the object. Cup the Brunton in your hands just above belt level and rest your arms against your sides.
2. Holding the compass housing horizontal by keeping the bubble in the middle of the bulls-eye level, (a) tilt the mirror until the reflection of the object can be seen in the mirror, and (b) tilt the pointer arm of the Brunton so that the reflection of the tip of the 'gunsight' can just be seen in the mirror.
3. Align (a) the tip of the 'gunsight' at the end of the Brunton pointer, (b) the line in the mirror, and (c) the reflection of the object in the mirror.
4. Check to make certain that the compass is horizontal and read the azimuth on the azimuth ring, directly opposite the white end of the compass needle.

To determine the angular height (vertical angle):

1. Fold the compass mirror back till it forms a $\sim 45^\circ$ angle to the compass housing.
2. Extend the pointer straight out, parallel to the compass housing. Bend the 'gunsight' at the end of the pointer up a bit.
3. Hold the compass out at arm's length and align the face/top of the compass housing parallel to a vertical plane running from you to the object whose height you are measuring. The compass pointer should be pointed back toward you.
4. View the object through the peep hole window through the compass mirror, and align (a) the object, (b) the line in the middle of the peep hole window, and (c) the tip on the 'gunsight' at the end of the compass pointer.
5. Keeping all those ditties in alignment, move the clinometer arm until the bubble moves to the middle of the bar level. Although it may be difficult to see, look for the reflection of the bubble and bar level in the mirror.
6. Return the compass to a comfortable viewing position without moving the clinometer. Read the dip angle on the $90^\circ-0-90^\circ$ scale on the bottom of the compass case. Use the long line halfway between the two 60° marks on the arm of the clinometer as a pointer to the dip angle.

To measure a strike by direct contact on a plane dipping $>5^\circ$:

1. Place the compass so that the side edge of the compass is in contact with the surface in at least 2 places.
2. Move the compass, maintaining contact with the surface until the compass housing is horizontal (*i.e.*, the bubble is in the middle of the bull's-eye level).
3. Read the azimuth on the azimuth ring, directly opposite the white end of the compass needle.

To measure a strike by direct contact on a plane dipping $<5^\circ$:

1. Set the clinometer to 0° (horizontal).
2. Place the compass on the surface, with the compass resting on its side. With the compass housing vertical, and maintaining contact between the compass and the surface, rotate the compass until the bubble moves to the middle of the bar level on the clinometer.
3. Using the compass housing as a ruler, draw a line on the surface -- this is the strike line.
4. Rotate the compass housing so that it is horizontal, and the side of the compass is parallel to the strike line.
5. Read the azimuth on the azimuth ring, directly opposite the white end of the compass needle.

To measure a dip angle:

1. Set the compass housing on its side, 90° from the strike line.
2. Rotate the arm of the clinometer (located on the back of the compass housing) until the bubble is in the middle of the bar level.
3. Pick up the compass without moving the clinometer and read the dip angle on the $90^\circ-0-90^\circ$ scale on the bottom of the compass case. Use the long line halfway between the two 60° marks on the arm of the clinometer as a pointer to the dip angle.

To determine the direction of dip:

1. Determine the direction that a ball would roll down the surface.
2. Holding the compass housing horizontal, by keeping the bubble in the middle of the bull's-eye level, point the compass pointer in the direction a ball would roll down slope.
3. Read the direction of dip by looking at the position of the white end of the compass needle relative to the star (north), E (east), and S (south) marks printed on the bottom of the compass housing.