

## COMPASS MANUAL

### MIRROR SIGHTING COMPASSES

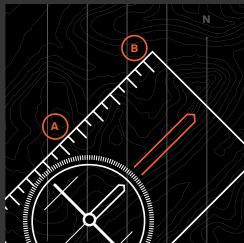
## HOW TO NAVIGATE

### ORIENTING THE MAP TO NORTH

The easiest way to use a map and compass together is to orient the map towards North. Simply align the map meridians with the compass needle so that "up" on the map is pointing North. Now everything on the map is in the same direction as on the ground. When travelling along your route, remember to keep the map oriented at all times. By doing this it will be very easy to follow your route since turning right on the map also means turning right on the ground! Properly orienting the map is quick, easy and the best way to avoid unnecessary mistakes during your trip!

## EASY AS 1-2-3

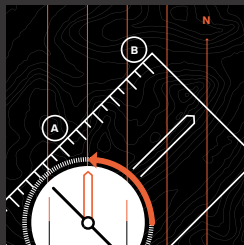
### THE SILVA 1-2-3 SYSTEM



#### 1-2-3

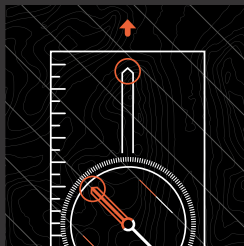
Place your compass on the map and use the **baseline** to make a straight line between your current position and your destination.

Make sure the part with the mirror points towards your destination.



#### 1-2-3

Turn the **compass housing** until the red part of the **north/south arrow** is parallel with the **map meridians** and points north on the map.



#### 1-2-3

Lift your compass from the map and hold it horizontally in your hand. Turn yourself and the compass until the **red end of the needle** is inside the **red north/south arrow**. Now the **sighting cross** and **sight** will point towards your destination. Take a landmark and start moving.

When using a mirror sighting compass, hold the compass with the mirror tilted to a 45° angle, so that you can check your direction by looking at the bezel in the mirror while sighting in the correct direction of travel.

## MAGNETIC DECLINATION

When compass and map are used together it's important to know the local magnetic declination and how to compensate for it. Magnetic declination is the difference between Geographic North/True North (where the map meridians point) and Magnetic North (where the North end of the compass needle points). In areas with significant declination, adjustments must be made to walk a correct bearing. Information concerning the amount and direction of magnetic declination is shown on topographical maps with a diagram. Use an up-to-date map for current declination.

Declination can be handled either with a **fixed declination scale** or **declination adjustment** in the compass capsule. Read more further down in this manual.

## BEFORE HEADING OUT

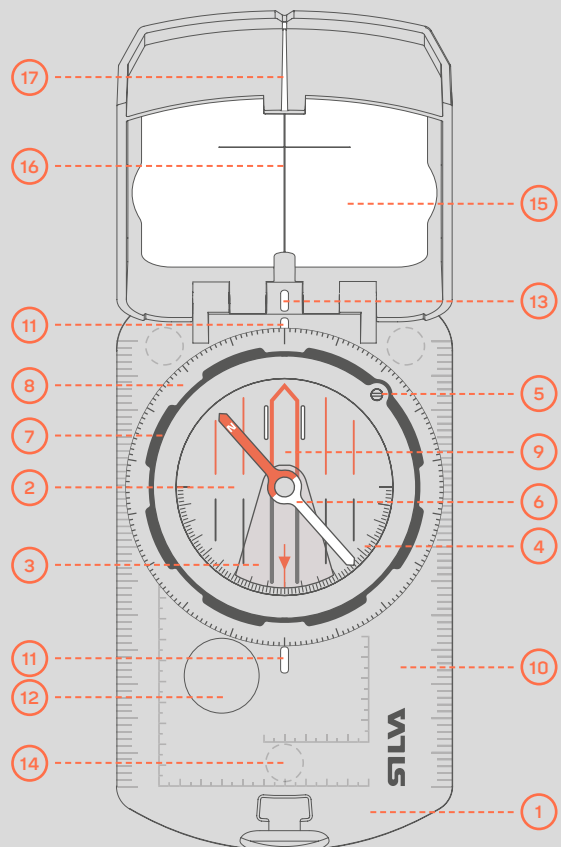
- Always check that your compass is functioning properly before heading out.
- Never expose your compass to extreme temperatures (high or low) or to magnetic fields such as knives, mobile phones, radio speakers, magnets etc. Such exposure can cause permanent damage to the compass.

## BASIC COMPASS FEATURES

### MIRROR SIGHTING COMPASSES

The mirror compass features a mirror that allows you to view the compass dial and the background at the same time. The fact that the compass dial can be seen at the same time the reference point is aligned makes mirror compasses more desirable for taking accurate bearings.

A mirror-sighting compass is at its best in open terrain where you must determine direction over long distances. Because you needn't lift your eyes from the compass in order to look into the terrain, the direction determined with the Silva 1-2-3 System® becomes more accurate.



- |    |                                    |    |                         |
|----|------------------------------------|----|-------------------------|
| 1  | BASEPLATE                          | 11 | INDEX LINE              |
| 2  | LIQUID FILLED CAPSULE              | 12 | MAGNIFYING LENS*        |
| 3  | CLINOMETER*                        | 13 | LUMINOUS MARKINGS/RING* |
| 4  | DECLINATION SCALE (FIXED)          | 14 | RUBBER FRICTION FEET*   |
| 5  | DECLINATION ADJUSTMENT*            | 15 | SIGHTING MIRROR         |
| 6  | COMPASS NEEDLE                     | 16 | SIGHTING CROSS          |
| 7  | TURNABLE COMPASS HOUSING           | 17 | SIGHT                   |
| 8  | GRADUATION RING / GRADUATION SCALE |    |                         |
| 9  | ORIENTING LINES / ORIENTING ARROW  |    |                         |
| 10 | SCALES                             |    |                         |

\* Features may vary between different compass models

## COMPASS MANUAL BASEPLATE COMPASSES

### BASIC COMPASS FEATURES

#### MIRROR SIGHTING COMPASSES

#### 1 BASEPLATE

Highly durable baseplate in transparent acrylic plastic. Use the edge of the baseplate to get your bearing. Most SILVA compasses has a curved up back end to make it sit more ergonomic in your hand.

#### 2 LIQUID FILLED CAPSULE

The capsule is filled with anti-static liquid (customized formula) that ensures clear reading, fast settling time, perfect dampening, stability and accuracy of the needle.

#### 3 CLINOMETER

The clinometer can be used for measuring slopes of terrain, heights, etc. Rotate the **Graduation ring** until "W" (270°) is at the **Index line**. Open cover completely and hold compass at eye level, on its side. The clinometer needle should move freely. Tilt the compass upward, with the terrain. Read inclination from where the inclination needle meets the **declination scale**.

#### 4 5 DECLINATION SCALE (FIXED) / DECLINATION ADJUSTMENT

When compass and map are used together it's important to know the local **magnetic declination** and how to compensate for it.

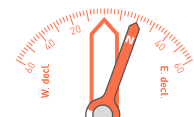
Magnetic declination is the difference between Geographic North/True North (where the map meridians point) and Magnetic North (where the North end of the **compass needle** points). In areas with significant declination, adjustments must be made to walk a correct bearing. Information concerning the amount and direction of magnetic declination is shown on topographical maps with a diagram, identifying Magnetic North (MN) and the degree variance from True North (TN). Use an up to date map for current declination.



#### FIXED SCALE

Most SILVA compasses have a fixed declination correction scale inside the capsule to simplify the calculations required.

How to:  
Identify the declination variance from your map.  
In this example, 20° east.

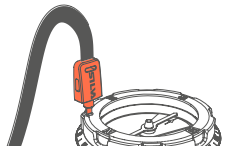


Follow the instructions in the SILVA 1-2-3 system. Before taking a landmark in step 3, turn yourself until the red end of the **compass needle** points to 20° on the "E. decl." scale. Keep the compass steady and turn the **compass housing** until the **North arrow** coincides with the red end of the **compass needle** once again. Now the **sighting cross** and **sight** will point towards your destination. Take a landmark and start moving.

#### ADJUSTMENT SCREW

Some SILVA compasses have a declination adjustment screw, located on the **bezel**. A small screwdriver can be found inside the safety release of the included **lanyard**.

How to:  
Identify the declination variance from your map.  
In this example, 20° east.  
Turn the screw on the **bezel** until the bottom side of the **North Arrow** meets the 20° at the "E. decl." scale. Remember to use the **orienting lines** at the bottom of the capsule and NOT the **North Arrow** as map North reference lines when taking the bearing on the map. After you have adjusted your compass for declination, the **compass needle** still points towards magnetic north.



#### 6 COMPASS NEEDLE

Swedish high quality, stainless steel, magnetic needle. The combination of a sapphire jewel bearing and a hardened steel pivot minimises friction, which in turn gives rapid and accurate movements. Magnetic North direction accuracy: 1 degree.

The red end points to magnetic north!

#### 7 TURNABLE COMPASS HOUSING (BEZEL)

Use the turnable compass housing to set your bearing or when navigating with the SILVA 1-2-3 system. Some of our compasses are equipped with a rubber, tactile grip ring to make the housing easier to adjust.

#### 8 GRADUATION RING / GRADUATION SCALE

The angle between true North and the direction of travel is called bearing (the direction from where you are, to where you want to go). The value of this angle can be read directly off the scale on the graduation ring. Our compasses have either a graduation scale divided into 360 degrees or 6400 mils. The Graduation ring is also marked with the cardinal points (N-S-E-W) on some models.

If you rotate the **graduation ring** to line-up the red north of the **compass needle** to the **North arrow**, a bearing can be taken from the **graduation scale** at the **index line**.

#### 9 ORIENTING LINES/ORIENTING ARROW (NORTH ARROW)

All our outdoor compasses have red/black north-south lines and arrow in the **capsule** bottom ensure easy and safe settling. The lines and arrow are fixed within the compass housing, aligned to north on the **graduation ring** and designed to be aligned with the map meridians. Half the lines/arrow are coloured red to indicate north. The lines are used to align the compass housing with the map in step 2, when navigating with the SILVA 1-2-3 system.

#### 10 SCALES

On the **baseplate** you'll find scales for measuring distances etc. on a map. The type and number of scales varies between each SILVA compass model. The scales and prints on most SILVA compasses are "hot stamped" to ensure extra durability.

#### MAP MEASURING SCALES

A map is a reduced picture of the terrain. The determined proportion between the distances on the map and the corresponding distance on the ground is called a map scale. To obtain the corresponding distance in the field, the distance on the map must be multiplied by the divider of the scale. The most common scales are 1:10 000, 1:15 000, 1:25 000 and 1:50 000. For example, the scale 1:10 000 means that 1 cm on the map corresponds to 10 000 cm = 100m in the terrain.

#### RULER

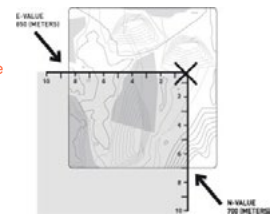
If the map scale is 1:50 000, and your compass has the corresponding **map measuring scale**, use this to measure distance.

If your compass lacks the corresponding **map measuring scale**, use the regular Metric or Imperial Ruler found on the edge of the **baseplate**.

Example: If the map scale is 1:50 000, then 1 mm on the map = 50m in the terrain. Example: If the map scale is 1:24 000, then 1 inch on the map = 24000 inches (2,000 feet) in the terrain.

#### ROMER SCALES

Use the Romer coordinate scales on the **baseplate** to measure distance or accurately work out a six-figure grid reference that lets you determine the coordinates of a known position on the map (or to determine the position of known coordinates on the map).



#### 11 INDEX LINE

The index line is fixed beneath, or at the outer edge of the **graduation scale** as an extension of the **sighting cross** and **sight**. It marks the bearing you set by rotating the **compass housing**.

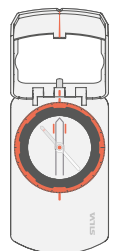
If you rotate the **graduation ring** to line-up the red north of the **compass needle** to the **North arrow**, a bearing can be taken from the **graduation scale** at the **index line**.

#### 12 MAGNIFYING LENS

Built in magnifier for detailed map reading.

#### 13 LUMINOUS MARKINGS/RING

Our compasses have luminous markings and/or graduation ring for compass reading in the dark. Once activated by daylight/flashlight they will give light up to 4 hours of light. The markings are commonly placed at the **North arrow**, the **index line**, the **sight** and north part+pivot of the **compass needle**.



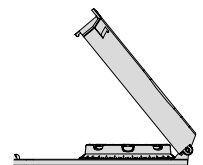
#### 14 RUBBER FRICTION FEET

Silicon rubber friction feet for precision map work. Placed at the bottom side of the **baseplate**.

#### 15 SIGHTING MIRROR

Using a Sighting compass increases the accuracy in the compass field work. The mirror enables the user to simultaneously sight the bearing in the terrain while checking that the compass needle is aligned with the **North arrow** in the compass housing. A mirror-sighting compass is at its best in open terrain where you must determine direction over long distances. Because you needn't lift your eyes from the compass in order to look into the terrain, the direction determined with the Silva 1-2-3 System® becomes more accurate.

When using a sighting compass with a mirror, hold the compass at eye level with the mirror tilted to a 45° angle (the horizontal part of the **sighting cross** shall align with the center of the **compass housing**). Now you can check your direction by looking at the bezel in the mirror while sighting in the correct direction of travel at the **sighting cross** and **sight**.



#### 16 SIGHTING CROSS

The vertical part of the sighting cross shows the direction that you want to travel along or the bearing you are taking. It is aligned with the **index line** and the **sight**. The horizontal part helps you setting the mirror at a correct angle.

#### 17 SIGHT

See 15, **Sighting mirror**.



# COMPASS MANUAL

## BASEPLATE COMPASSES

### COMPASS ACCESSORIES

## FEATURES

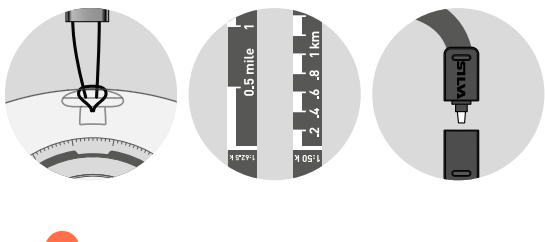
#### MIRROR SIGHTING COMPASSES

#### SCALE LANYARD

The scale lanyard makes it easier to quickly make a distance judgement of your route or to plan your route in advance. The distance lanyard has 2-4 scales on it; 1:24 000, 1:25 000, 1:50 000, and 1:62 500, which facilitates to measure the distance of your hike. Since the lanyard is soft and bendable it's easy to place it directly on to your route on the map.

The lanyard has a safety release that opens if the lanyard gets stuck.

For compasses that have **declination adjustment**, simply use the screwdriver in the lanyard's safety release to make the adjustment. Pull the safety release apart and use the screwdriver to turn the screw on the bezel.



#### SLOPE CARD

The slope card is great both for detecting avalanche risk and for determining how challenging your journey will be. By knowing the slope you can also judge any extra distance that you need to go due to the slope.

**Left side** is for the following map scales:  
1:25k, Contour Interval 5  
1:50k, Contour Interval 10  
1:100k, Contour Interval 20  
1:24k, Contour Interval 20 (US version)

**Right side** is for map scale:  
1:25k, Contour Interval 10  
1:24k, Contour Interval 40 (US version)

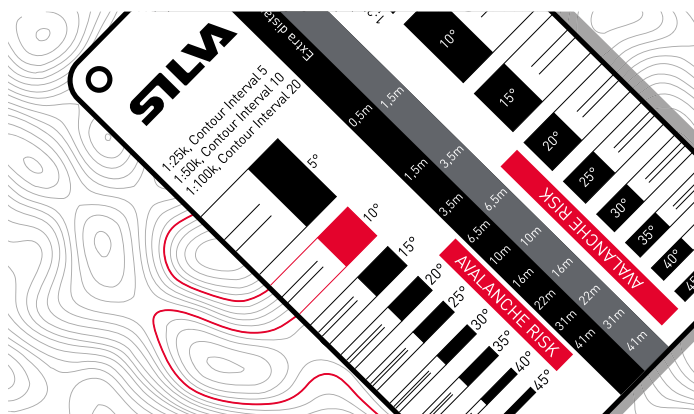
Contour interval is the number of contours in between the index contours (thicker contours on the map)

The centre of the slope card gives you information on the extra distance you need to walk per 100 meter (yards, US version) at that specific angle. For example when walking a slope with an angle of 45 degrees you need to walk an extra 41m (yd) per 100 meters (yards).

How slope card is used:

Determine map scale and contour interval that is written on the map  
Determine the angle that matches the index contours (thicker contour lines). This will give you the actual angle on that specific place on the map. If the map are missing index contours you can measure between the individual contours. This measurement is not as exact.

By matching the map index contour or contour lines with the lines on the card, the slope angle can be determined. Below example shows matching of the index contour lines.



## MORE INFORMATION

#### CAN I USE MY COMPASS IN ANY PART OF THE WORLD?

Most SILVA compasses are balanced for one of three magnetic zones. Using your compass in the "wrong" zone will cause the needle to tilt and may result in it getting stuck against the roof/floor of the capsule and showing an incorrect north.

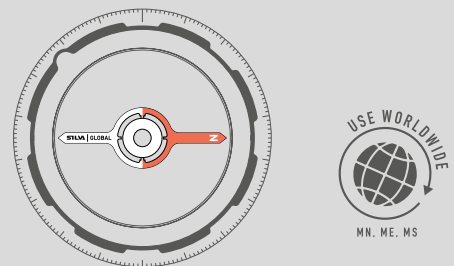
SILVA's compasses are balanced in three different zones:  
MN (Magnetic North), ME (Magnetic Equator), MS (Magnetic South).  
Make sure to buy a compass for the magnetic zone you will navigate in.



#### SILVA GLOBAL COMPASSES

Some of our most popular compasses have now been equipped with a global needle that can be used in all three magnetic zones.

The global needle makes the compass flexible and possible to use all around the world. Read more at [www.silva.se](http://www.silva.se).



#### TAKE CARE OF YOUR COMPASS

A SILVA compass will, if treated carefully, be a navigation partner for many, many years. Always check that your compass is functioning properly before heading out.

- Never expose your compass to extreme temperatures (high or low) – this can deform the plastics with a leaking compass capsule as a result.
- Avoid dropping the compasses on hard surfaces and handle it with care.
- Don't store or place the compass close to strong magnetic fields such as knives, mobile phones, radio speakers, magnets etc. This can cause reversed polarity of the compass needle which will result in it pointing south instead of north.

#### WARRANTY

SILVA warrants that, for a period of five (5) years, your SILVA product will be substantially free of defects in materials and workmanship under normal use. SILVA's liability under this warranty is limited to repairing or replacing the product. This limited warranty extends only to the original purchaser. If the product proves defective during the warranty period please contact the original place of purchase. Make sure to have your proof of purchase on hand when returning the product. Returns cannot be processed without the original proof of purchase. This warranty does not apply if the product has been altered, not been installed, operated, repaired, or maintained in accordance with instructions supplied by SILVA, or has been subjected to abnormal physical or electrical stress, misuse, negligence or accident. Neither does the warranty cover normal wear and tear. SILVA is not responsible for any consequences, direct or indirect, or damage resultant from use of this product. In no event will SILVA's liability exceed the amount paid by you for the product. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This Warranty is valid and may be processed only in the country of purchase.