

# Compass Use and Selection for Emergency Travel



**In an emergency situation**, a good compass is an essential tool. Even if you have lived in the area for your entire life, the effects of a disaster will often change the appearance of the terrain, sometimes radically. Street signs, business signage and the appearance of buildings can look completely different, and trees, foliage, and landmarks can disappear. In addition to this, during a natural disaster or humanmade problem such as social unrest, you may be forced to find a new route to your destination. In either of these scenarios, even those who have a good sense of direction will need a compass to help them get to their destination safely.

A good compass can tell you more than which direction is north. Combined with a map, it can help you pick the shortest, safest route to your destination. Then it can help you get there quickly.

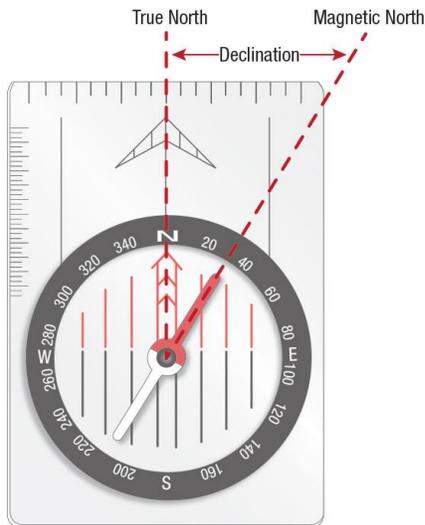
Unfortunately, compass use, map reading, and land navigation are lost skills. Many of us have become so dependent on electronics for finding our way that we are debilitated when they fail. And, they will. Even if we know how to use paper maps and a compass, most of us don't carry them in our vehicles or GO-Bags, anyway.

Even if you have a compass and know how to use it, do your family and friends have these items and skills? Those who want to be self-reliant must regain these tools and skills, and we need to help others prepare, too.

Fortunately, this isn't difficult. And thankfully, a quality compass needn't be expensive, either. Cheap or expensive, a suitable compass will have features which make it useful for finding magnetic north and an assortment of other critical land-navigation uses. (Test your compass for accuracy before putting it to use in the field.)



## Compass Features and Types



### Desirable Features

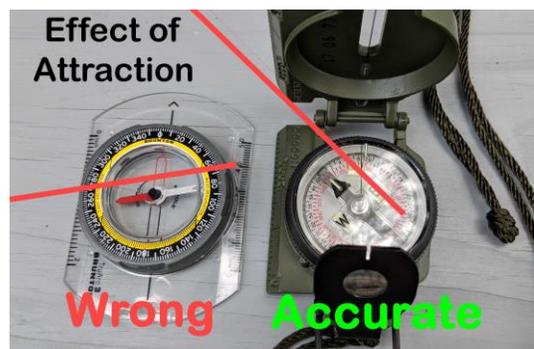
**Adjustable for 'Declination'.** If you want to use a compass for navigation, it should be adjustable for *declination*. This capability lets the user adjust the compass for the difference between true north and magnetic north. If this is new to you, watch the below video, "Introduction – How to Use a Compass." Note: A common mistake is to adjust the declination in the wrong direction.

[Click Here](#) to Calculate Declination for your location. This link will take you to a free online tool which you can use to calculate the declination for the place where you will be using your compass. Though the declination change is

usually only 1-degree every 9-years, this can adversely affect the plotting of your route since most maps are made from old data. This is a common problem.

The data used to create many of our modern maps is more than 50-years old. To solve this problem, use the USGS calculator found through the above link, and then plug this information into your compass. Once you update your compass with the current declination, then it can be used for navigation in the entire region, not just the city or zip code you used for the calculation. Note: The method used for adjusting the declination of a compass may be different from one compass model to another. Check your adjustment results closely, to see if you should make a clockwise or counterclockwise adjustment.

**All compasses do not provide the same precision.** In addition to the earth's magnetic pole, a compass's direction-finding needle is also influenced by nearby metal objects and magnets. A quality compass will have a needle which is not as easily influenced by nearby metal objects. However, all compasses are affected by metal objects such as cars, so readings should be taken with this potential problem in mind. This photo of two compasses illustrates this point.



**Take Two.** Due to the close proximity, the military compass (right) has adversely affected where the needle points on the other compass. (The red lines were added to make it easy to see the needle's direction on each compass.) In this example, the strong needle of the military compass is providing an accurate reading, but the other compass is not. If a user isn't aware of

this potential problem, it can result in heading off in the wrong direction. Therefore, a compass reading should be taken twice, with the second reading a short walk away, just to make sure that the first reading was accurate and not influenced by something in the environment.

**False Readings.** In addition to metal objects such as cars and iron ore mineral deposits creating false readings, simple objects such as a screw or nail in the table under the compass, or the proximity of a mobile phone, television, radio speaker, or other electronics, can skew the compass reading. A compass is designed to be used outdoors.

**New Compass.** Check your new compass against the reading taken from another compass, to verify that the new one is giving an accurate reading. Don't assume. Even an expensive compass can be defective.

**Other Features to Look for in a Compass.** In addition to an adjustment for declination, find a compass that has a rotating bezel. This feature makes it easy to orient the compass to your map. Indicator lines and degree-markings at 5-degree increments, or less, will provide a distinct advantage for land navigation (orienteering). Your compass should have a needle that set for the Northern Hemisphere (or Southern, if you live south of the equator), or a universal needle. Liquid filled to stabilize the needle. A needle pivot which allows the needle to find north unencumbered, even when the compass is not entirely level. A bearing index line, and a straight edge to set the direction of travel or triangulate your location.

**Optional Features:** A sighting-tool which lets you view the compass dial while pinpointing a waypoint is helpful for navigation. If your vision isn't perfect, a magnifying glass for inspection of small details on a map is helpful. Grid alignment lines. A ruler to calculate distances; metric, Imperial (US/British), or both. Tritium microlights for night use (battery-free). Attachment hole for a string that can be used to measure distances on a map, or as a lanyard to accommodate wearing it around the neck. It must be durable, so the needle's balance, its dial, and case are not easily damaged. You probably won't find all of these optional features on the same compass, so identify those which are important to you before you shop.

## Pros and Cons of Various Compass Types

### Compass Recommendations



#### **Military compass vs. a plastic-plate “orienteering”**

**compass.** More accurately referred to as a Lensatic Compass, a genuine military compass is exceptionally durable yet a precise instrument, designed to be used outdoors in any weather with a topographic map. As the term suggests, this type of compass has a lens which is used to read the compass dial and set a direction of travel.

Armed with a quality topographic map and a Lensatic-style Compass, even a minimally trained person can establish a route (bearing) to a destination. No roads or signposts, no problem. A Lensatic-style compass can also be used to find the user's location on the map.

Most military Lensatic compass use metric measurements and were designed to be used with military maps which are also metric, but some non-military Lensatic-style compasses use inches/miles, or both. Either way, it is not difficult to convert metric readings to the American/British (Imperial) system if necessary.

*Unfortunately, the market is flooded with knock-off military-looking Lensatic Compass replicas which are of poor quality and provide inaccurate readings, so buyers must be discerning.*

### The Best Military Compass

[Cammenga 3H Tritium](#) is the Lensatic Compass used by the U.S. Military, NATO, and many military forces worldwide. It has seven battery-free microlights powered by tiny radioactive Tritium cells which will illuminate the dial and needle for about 12-years. More to the point, this means the compass is useful at night, even without a flashlight.



The body of the 3H is a heavy duty aluminum casting, waterproof, and so durable that a truck can drive over it without damaging the compass dial. But not only is it rugged, but it is also a precision instrument and has a dial that provides for precise adjustments, and has graduation indicators in both degrees and mils.

A legitimate military-grade compass will have the procurement number NSN 6605-01-196-6971 cast into the body of the compass. This number indicates that it has met the U.S. Army's rigorous testing standard, MIL-PRF-10436N.



[Cammenga 27CS](#) Lensatic Compass. This is the same compass as the 3N but without the Tritium microlights. For those who want to save \$20, the 27CS is an almost-as-good option. It is equal to its counterpart in accuracy and durability. It only lacks the expensive-to-produce Tritium microlights. But since this model uses phosphorescent glow-in-the-dark paint rather than Tritium, it does not qualify for sales to the U.S. military. Therefore, the NSN validation is not cast into the case.

**Night Travel Consideration.** During an evacuation, it may become necessary to travel at night, and it is difficult to illuminate a compass with a flashlight. Besides, unless your flashlight has a

night-vision-saving red or green light, the white light from your flashlight can also reduce your ability to see at night for 5-30 minutes.

**Phosphorescence vs. Tritium:** A compass which uses phosphorescent paint requires sustained exposure to light to glow for a few minutes, whereas Tritium inserts shine continuously and do not need a battery for power. Both the Cammenga 3N and 27CS can withstand generations of use, but the Tritium used in the microlights has a half-life of 9-years; when the microlights cease to glow it essentially becomes a 27CS.

### The Best Lensatic-style Compass - Non-Military Model



[Silva Ranger S](#) and the [Suunto MC2G Navigator with Global Needle Metric](#). The purchase price of the 'best' Lensatic-style compass is astronomical, so we have selected the *Ranger S* and the *Navigator* as the two best reasonably-priced non-military Lensatic compasses because they are precise, versatile, easy to learn and use, and they represent a good value for a feature-rich compass.

Unfortunately, they are not as durable, and they are not easy to use at night because they do not have the Tritium microlights of the [3N](#) military compass. But, an advantage they do offer is that they are designed specifically for the needs of civilian orienteers. Since these compasses do not utilize a lens for sighting, they are technically not Lensatic (lens) compasses, but they do perform the same function using a mirror and a sighting aperture. For many, this style of a compass is the best choice because they often incorporate many additional features designed for USGS topo maps.

### The Best Orienteering Compass (Basic Land Navigation)

[Brunton Eclipse Compass](#) is compact and lightweight, yet full-featured and fast to use in the field. Though it will work with any map, it is explicitly designed for the 1:24,000 scale USGS "Quadrangle" maps, and other maps which use UTM. The Eclipse is a solid compass which is also popular with trail runners.





## The Best Hiking Compass

[Suunto M-3/360 Compass](#) is a minimalist design for simplicity in use. A built-in magnifying glass makes this compass particularly useful for reading small details on large-scale maps. This is a workhorse compass favored by many backpackers.

## The Best Budget Compass

[Brunton TruArc 3 Compass](#) is a small pocket-size compass that is reliable, reasonably accurate, and suitable for basic orienteering and land navigation. The TruArc3 is our top pick for a low-cost 'budget' compass. With both metric and American/British (Imperial) measurement scales, and a global-needle which makes it suitable for use in both northern and southern hemispheres, this is a multipurpose travel compass. It



is a prudent choice if you are looking for an entry-level hiking compass, and its small-size qualifies it as the best EDC / Kop Kit (Keep on Person) compass choice. It is small enough to carry in a pocket, purse, or attached to a lanyard and worn around the neck under clothing. And, it is also worth considering as a spare backup compass to include in a GO-Bag. In an emergency situation, having a second compass that is small and lightweight, is an insurance policy against the loss or damage to your main compass.

## The Best Watchband Compass



In our tests, the \$2 [Type-3 compass](#) functioned equally well to the \$16 Suunto Clipper compass for finding North. Frankly, that is the only use for a watchband compass--*but this simple little task is still an important one*. It is easy to get turned around while traveling through difficult urban or wilderness terrain, so these little gems can be worth their weight in gold if you become disoriented.

Note: The reading of a little compass such as this can be adversely affected by both the watch itself and the buckle on the strap, so test it, and reposition the compass to correct the problem.

## Wristwatch with Built-in Electronic Compass

Suunto and Casio are known for their multifunction watches which have a built-in electronic compass. The [Casio Pathfinder PRW3500](#) not only has a compass, but also provides altitude, barometric pressure, and thermometer readings. It is water resistant to 200-meters *and is solar powered*. No batteries to replace. Our test watch has been in use for 8-years of field use without a power problem. Nevertheless, all electronics can fail, so adding a small compass to the band is only prudent. The [Suunto Ambit3 Peak](#) is another highly rated watch. It has similar sensors but is not solar powered, but it does have a built-in GPS.

As with all electronics, they should be used in an emergency situation if they work. But these tools do not take the place of a magnetic compass and paper maps.

## Short Video Tutorials and Recommended Books

**Video:** [Introduction – How to Use a Compass](#) (7-minutes) REI

**Video:** [How to Use a Military Lensatic Compass](#) (30-minutes)  
U.S. Army



This video is an old U.S. Army training film which teaches direction finding and navigation using the [military-issue compass](#) and military grid map ([MGRS](#)). Despite the age of this video, the content is excellent. Note: There are [various map grid methods](#) in addition to the one used by the military. For more on this topic, refer to Part-1 in this series, “Maps – Navigating an Emergency Situation.”

**Video –** [Using a Compass to Set Your Direction of Travel](#) [Bearing] (3-1/2 minutes)  
MapTools.com

**Book:** “[Be Expert With Map and Compass: The Complete Orienteering Handbook,](#)” by Bjorn Kjellstrom (founder of the Silva Compass Company), and his daughter, Carina Kjellstrom Elgin. This book contains simple and straightforward instructions for the novice. Don’t be misled by the chapter titles as they don’t adequately describe the content of that portion of the book.

**Book:** “[Map Reading and Land Navigation, FM 3-25.26,](#)” U.S. Army Training Manual

This manual is particularly useful for anyone who will be using a military-style Lensatic compass such as the [Cammenga 3H Tritium](#), [Cammenga 27CS](#), or similar compass.



### **Practice is Necessary.**

Just as owning a football doesn't make you a football player, owning a compass does not prepare you to navigate in an emergency situation. A compass looks deceptively simple to use. And it is, as long as you only need to use it to find North. Every other use requires instruction and practice. The above video tutorials are an excellent place to start, followed

by either reading an instruction manual or book, or taking a navigation class from [REI](#) or an orienteering club ([Orienteering USA](#), [Orienteering Canada](#), [British Orienteering Federation](#), or [International Orienteering Federation](#)).