

Using The Cammenga Lensatic Compass With U.K. Maps

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Aims and Objectives

I am an experienced navigator and keen walker resident in the West Midlands, UK. Now formally retired, I have even more time to devote to walking and mountain biking, and in October 2004, I commenced a six-month field trial and critical evaluation of the Cammenga Lensatic Compass Model 3H. This is a totally independent evaluation and I have no commercial affiliations with Cammenga Corporation based in Michigan, USA.



My first objective was to compare the handling and technical performance of the Lensatic compass against various protractor base-plate compasses.

And, secondly, I wanted to confirm that the Lensatic compass could be used effectively with the excellent range of Ordnance Survey Explorer™ 1:25,000 scale (4cm to 1km) maps that most outdoor enthusiasts use in the UK. The Ordnance Survey is the national mapping agency of Great Britain and details of its products and useful technical data on the National Grid System can be found at:

www.ordnancesurvey.co.uk.

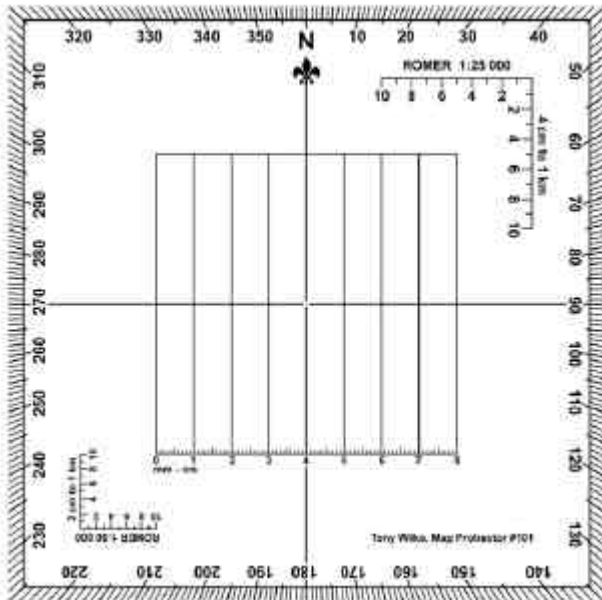
If you are visiting the U.K. and intend using GPS to augment your map and compass work, I recommend you checkout The National GPS information pages on the Ordnance Survey website.

Initially, I put the Cammenga Lensatic 3H to one side and compared my own well-proven Eschenbach BW2 Sherpa mirror-sighting Sports-Compass against seven similar-priced protractor base-plate compasses loaned to me by friends. These compasses included mirror-sighting models from Silva and Suunto and they all performed equally well when taking azimuths and working on the Explorer maps – but none performed any better or were more accurate than my own Sherpa. So, after ten-days of comparative testing, I returned the loan compasses and used the Sherpa as my baseline unit. In the rest of this evaluation I will use ‘bearing’ instead of ‘azimuth.’

Grid Lines and Protractor

I have been using the Sherpa with O.S. Explorer maps for over three years and found it is sometimes difficult to locate the light-blue north-south map grid lines through the rotating compass capsule. The problem is, the 1.0km spaced grid squares on a 1:25 000 scale map are 4cm wide, and the total width of the black N-S orienting arrow (and six red declination) lines in the capsule is only 2.5cm. So, when taking bearing between points on the map, the compass capsule may be inside a 1.0km square and there are no visible grid lines underneath to align the N-S arrow to.

About a year ago I made a 16x16cm square map protractor for 1:25,000 scale maps so that the Sherpa capsule could be lined up quickly and accurately even in poor light conditions. This, the Tony Wilks© Map Protractor #101, illustrated below at about half-size, has an 8cm square central box with 1.0cm spaced N-S lines. These lines, and the 360-180 base line and 090-270 reference, provide a clear and rapid aid to lining up the capsule on any base-plate compass. The protractor also has Romers for 1:25,000 and 1:50,000 scale maps. I don't need a 6400mil scale, so the degree numbers are printed quite large from N clockwise through 360 degrees.



I designed the protractor on my laptop computer using Adobe Photoshop, and I print copies as required onto 0.10mm overhead projection acetate film. To protect them for outdoor use I get these laminated at a local art shop.

As the Lensatic compass doesn't have a transparent capsule you may feel that the 8cm square box and 1.0cm lines are not required – but they do provide clear additional reference points when aligning the protractor to the map grid.

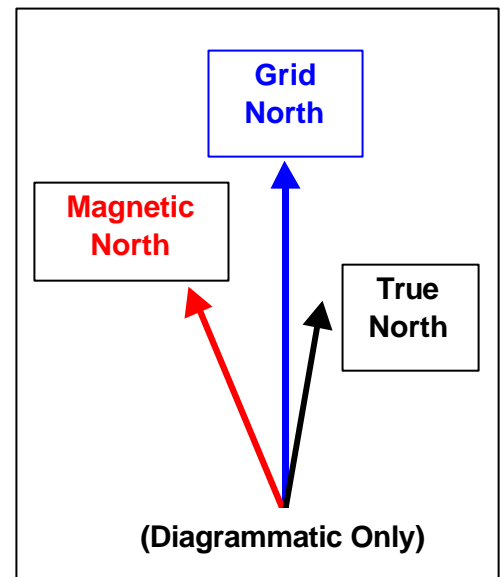
If you don't want to make your own protractor, get a military issue GTA 5-2-12-1981 protractor. These are available from several U.S. websites for just a few dollars.

The Three Norths

When working with a map and compass we come across three different 'Norths'. **True North** is located at the geographic pole. When using Ordnance Survey maps for leisure purposes we can ignore this figure.

Grid North is the direction to which all Ordnance Survey maps are orientated. All bearings we take on the map are referenced to grid north.

Magnetic North is the direction that a compass points to. The magnetic north pole is currently located near Baffin Island in Canada and this location moves over time. **From the U.K. the magnetic pole is always west of Grid North.**



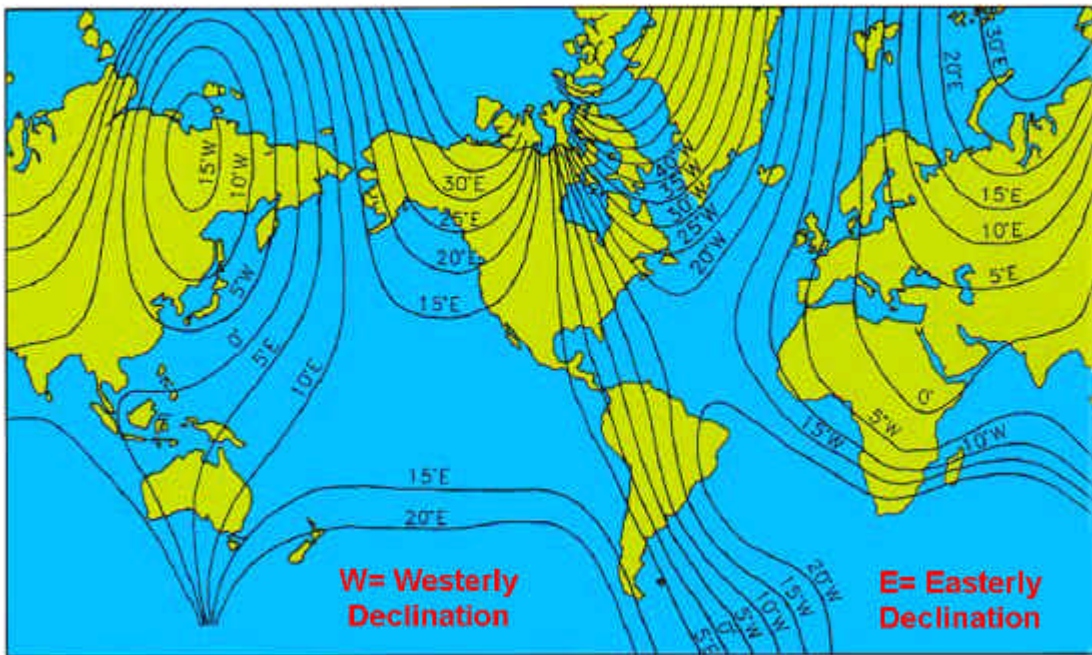
Magnetic Declination – Variation

The difference between true north and magnetic north is called **magnetic declination**. The map below indicates how east and west magnetic declination values vary widely around the world.

When using Ordnance Survey maps we reference our bearings to grid north rather than true north – and we call the difference between grid north and magnetic north **magnetic variation** or **grid-magnetic angle**. I personally prefer 'magnetic variation' for compass work with O.S. maps.

Magnetic variation is currently some 2° to 6° west of grid north depending on where you are located in Great Britain – and many walkers and other leisure users often tend to ignore it. However, for greater accuracy, you do need to take variation into account when translating bearings from or onto maps. In the information panels on O.S. maps you will find a rough schematic of the three norths – and a note that states something like '*Magnetic north is estimated at 3°35' west of grid north for July 2004. Annual change is approximately 12' east.*' Which means the variation is decreasing every year.

If you need an accurate figure for Grid Magnetic Variation anywhere in the U.K. go to the British Geological, Geomagnetism website at www.geomag.bgs.ac.uk. Then select Models, Charts, and Magnetic Data – and click-on the Grid Magnetic Angle Calculator. Here you can obtain magnetic values covering all of Great Britain for the present and near future.



Map and Compass Work

When we work on a map we use grid bearings – the angle from grid north. When using a compass in the field we employ magnetic bearings – the angle from magnetic north. When shifting from one format to the other we must take these two different angles into account. To convert grid to magnetic and magnetic to grid – all we do is either subtract or add the magnetic variation. For **westerly** magnetic variation (**which covers the whole of Great Britain**) we **ADD** the variation when going from map to compass. When going from compass to map we **SUBTRACT** the variation. An easy system to remember this is:

Grid to Mag - ADD Mag to Grid - GET RID

So, assume the magnetic variation is 4° west. We measure a bearing between two points on the map and find it is 120° grid. Simply **add** the variation to get 124° magnetic, which will be our compass course. At a different location the magnetic variation is 3°40' west – and we take a compass bearing of 275° to a fort on a hilltop. To plot the bearing on the map we **subtract** the variation from 275° magnetic and get 271°20' grid. Always round bearings up or down to the nearest degree.

Compass Variation at Zero

Although the Sherpa BW2 has an adjustment for magnetic variation – I always set the adjuster at zero and correct for variation manually as detailed above. Once I started using my Map Protractor TW #101 to read and transfer bearings on O.S. Explorer maps, I very rarely use the Sherpa – or any other compass – without a separate protractor. If you want to write notes or draw lines on the protractor, use a C-DR fine point marker pen. The lines can be removed with methylated spirits.

Cheap Lensatic Copies

When I tried to buy a genuine **CAMMENGA LENSATIC COMPASS** from websites in the U.K. I came across a whole raft of cheap imitations that are manufactured in China or Taiwan. Most outlets tell you they are selling '*Military Style*' Lensatic compasses – but some claim to offer U.S. Government Military Lensatic compasses for just £14.95 including VAT.

I visited two of these shops in the U.K. Midlands and examined the goods. Their website images showed a genuine Lensatic Compass on a map – but the products for sale were just cheap liquid-filled copies. I e-mailed the stores and politely asked them to remove the misleading advertisements from their websites – or sell me the genuine compass at the advertised price. They did neither – so I notified the U.K. Trading Standards Authority.

Buy the Genuine Article

Purchasing a genuine **CAMMENGA LENSATIC COMPASS** is easy: go to www.cammenga.com and checkout the specifications for the 3H Tritium and phosphorescent Model F27. At the time of writing this evaluation the 3H was priced at \$89.95 and the Model F27 at \$49.99. Cammenga also supply a Tritium black painted S.W.A.T. model B3H at \$99.95. Shipping within the U.S. is free – e-mail Cammenga for shipping charges to the U.K. and other destinations. Whichever version you buy – these are superb compasses and you will be delighted with their handling and performance! I went for the Tritium Model 3H, which was delivered promptly by UPS.

During this evaluation, I also visited several U.S. military-supply and adventure websites that advertise genuine Cammenga Lensatic compasses. All of the companies I checked out did actually stock fresh supplies of Cammenga 3H Tritium or Model 27 compasses at competitive prices. If you are considering purchasing from U.S or other websites – just confirm that the compass has Cammenga NSN 6605-01-196-6971 stamped on the top cover.

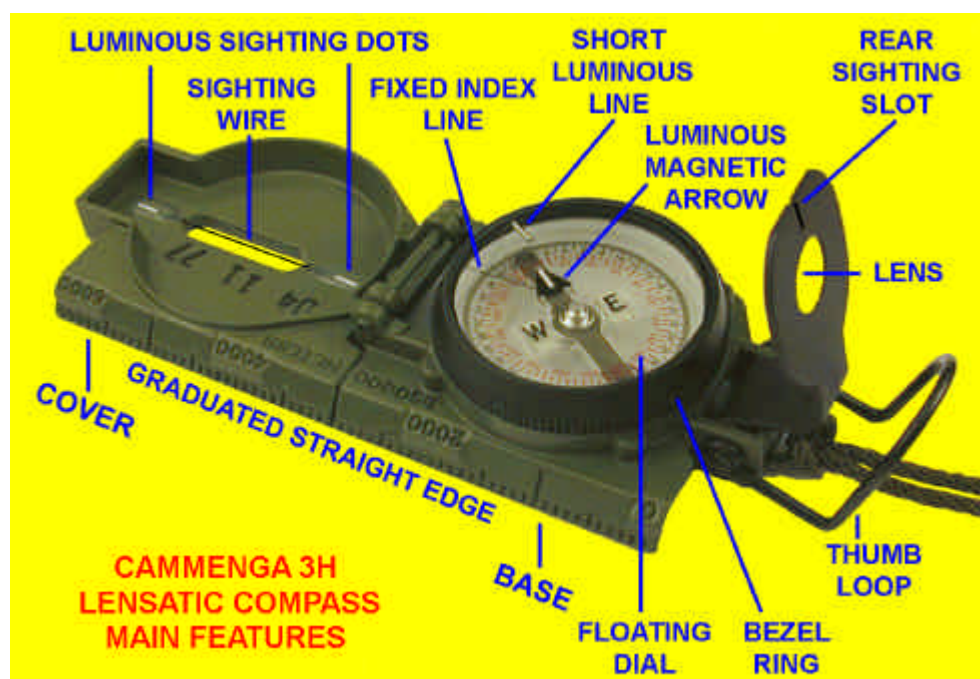
Cammenga Pedigree

The website at www.cammenga.com, highlights the integrity of the company and the excellent pedigree of its products. **CAMMENGA LENSATIC COMPASSES** are designed to rigid U.S. Military Specification and have been tested by GI's worldwide. Cammenga has been the U.S. government's exclusive manufacturer for Lensatic Compasses since September 1992. The compasses are currently distributed by the U.S. Army and Troop command – and are also used by foreign militaries, law enforcement agencies, Special Forces, and a large number of outdoor enthusiasts. All Cammenga compasses are accurate, rugged, versatile and totally dependable.

Model 3H Cammenga Lensatic Compass – Specification

Official current genuine GI Issue U.S. Military Compass, Mil. Spec. # MIL-C-10436L, NSN 6605-01-196-6971 (Night proof Tritium model). Self-luminous Tritium gas-filled tubes, no light source required, 10-Year luminous life expectancy. Induction damped needle stabilizes in 6 seconds or less (Uses no liquids). Synthetic sapphire jeweled bearing. Bi-directional rotating bezel. Dial reads in both degrees and mils. Hairline guide-wire sighting slot. Magnifying lens mounted in sighting bracket for dial reading.

Heavy-duty aluminum alloy case with thumb loop for stability. Ruled 1:50,000mm scale. Waterproof and designed to work in extreme climates - 50 to +160 degree F. Weight: 7oz. Includes nylon neck lanyard, LC-1 Compass/First Aid Pouch with ALICE belt clip (10 page Instruction Booklet included with Tritium model). 1-year warranty. Note: The lower priced **Model 27** has the same mechanical specification, except that the self-luminous Tritium is replaced with light activated phosphorescent paint.



Lensatic Overview

The floating dial is mounted on a pivot so it can rotate freely when the compass is held level. The dial carries a north-pointing arrowhead and the cardinal letters E and W. The arrowhead and E and W marks are all luminous.

The dial is printed with two scales: the outer black scale is graduated in mils (6400 mils to a circle) and is used for military operations. The inner red scale is graduated in 360 degrees. It has marker lines at 5 degree intervals and numbers every 20 degrees. This scale can be read easily to 2 degrees or better.



The floating dial is covered by a tough 'glass' with a fixed black index line at 360°. The serrated edged bezel ring has a ratchet that clicks every 3 degrees – 120 clicks when rotated fully.

A short luminous line within the glass rotates with the bezel and is used in conjunction with the north-seeking arrow during navigation.

A silicone rubber cap around the copper induction shell ensures the compass is completely waterproof.

The rear-sight slot and front sight wire are for taking accurate bearings of objects. The lens built into the rear-sight has a focal length of about 64mm and provides a clear magnified view of both scales plus the **N** magnetic arrow and E and W points. When the rear-sight is pushed down onto the bezel glass it lifts the dial off the pivot – and locks the dial securely for travelling. The rear-sight must be opened more than 45 degrees to allow the dial to float freely. The thumb loop helps to hold the compass steady when using it a waist or eye level.

The main aluminium body of the Lensatic is hinged in the centre. When folded and locked with the thumb-loop it measures 8.0 x 6.0cm overall including the lanyard hook. With the cover and base opened flat, the left-hand 120mm-long straightedge provides a 1:50,000 co-ordinate scale. The straightedge is used to orient the compass to the map grid and align bearings.

Rear Sight Position to Lift and Clamp Dial



The Genuine Lensatic – Folded Down



Tritium Light Source



Tritium (Hydrogen-3) is a radioactive isotope of hydrogen. It's a pure beta-emitter with a half-life of 12.3 years.

The Hydrogen-3 Tritium Micro Light 120-millicuries sources used in Cammenga Lensatic 3H compasses are manufactured by MB-Microtec AG who are renowned for their Traser Permanent Light Technology used in high quality watches

The Tritium is encapsulated in small laser sealed borosilicate glass vials coated with a phosphorescent material.

Beta rays from the Tritium gas hit phosphors in the vials, where the radioactive energy is converted to very bright green visible light. Cammenga advise customers they can anticipate ten years service from Tritium Micro Lights. And, of course, with normal mechanical care, after the Tritium light sources have decayed, these compasses should be performing well for a long time after that.

Phosphorescent Light Source

The 'long glow life' phosphorescent paint used in the Model 27 uses an Alkaline Earth Metal Aluminate Oxide Europium Doped pigment. It is rated to glow for over 100 hours with one 'charge' by a suitable exposure to daylight or artificial light.

Which Do You Buy?

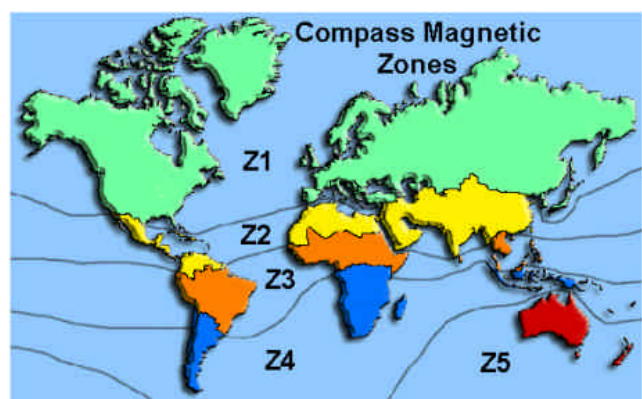
Well, as the two Cammenga compasses are mechanically identical, you can't go wrong with either. The Model 27 glows for 100 hours on each charge – the ultra-bright self-luminous Tritium 3H glows for some 87,600 hours straight out of the box! At less than \$10.00 a year over ten years the 3H is outstanding value for money!

Geographic Magnetic Zones & Dip

The horizontal and vertical components of the earth's magnetic field vary considerably at different locations on the Earth. This causes the compass needle to point down vertically into the Earth at the magnetic poles – while the needle stays horizontal near the equator. This vertical magnetic component is called Inclination or Dip.

To get an accurate reading from a compass, the needle or dial card needs to be 'balanced', so it does not drag on the top or bottom of the capsule. Because of the variations of the Earth's magnetic field, a compass needle that 'balances' perfectly in North America will drag or stick in South America. To accommodate for these magnetic variances, the compass industry has divided the Earth into 5 Zones:

Compass Magnetic Zones	
Zone 1: MN	– (Magnetic North)
Zone 2: NME	– (North Magnetic Equatorial)
Zone 3: ME	– (Magnetic Equatorial)
Zone 4: SME	– (South Magnetic Equatorial)
Zone 5: MS	– (Magnetic South)



Most compasses are compensated for magnetic Inclination or Dip across these Zones by a counterweight on one end of the needle. This keeps the needle level and prevents it from dragging on the top or bottom of the capsule. Some compass manufacturers, Silva and Suunto for example, offer normal models that are set for specific Zones – and ‘Global Dip-corrected’ compasses that will operate just about anywhere.

Being a military specified piece of equipment, Cammenga Lensatic compasses are designed to function anywhere in the world. Most of the compasses they manufacture are balanced for Zone 1 – but even these have been tested and used successfully even in Zone 5 by holding the compass at a slight angle. However, Cammenga do supply models balanced specifically for the Southern Hemisphere. For details, e-mail matt@cammenga.com.

Magnetic Deviation

When a compass is used near ferrous metal objects or electrical equipment, it may not point in the correct direction. The angular difference between the direction of magnetic north, and the direction the compass points to, is called magnetic deviation. A compass mounted on a boat, for example, can be influenced – or deviated – by the proximity of the engine, metallic fittings, electrical cable, and radio equipment.

When out in the countryside we also need to look out for objects that may affect the accuracy of our hand compasses. The obvious ones that can cause local compass errors include vehicles, bikes, steel fences, and overhead power lines. But we must not overlook the personal items we carry with us in backpacks or pockets. I ran tests with the Lensatic compass to see how much it was affected by items I carry on most field trips. These items include: mobile phone – GPS unit – camera – digital wristwatch – binoculars – penknife – hand torch – keys – and spare batteries.

Each item listed deviated the compass several degrees at a distance of 3 to 8cm. I normally carry most of these items stowed in my backpack and this places them over 40cm from the compass. At this distance I noted no deviation at all. My Casio G-Shock wristwatch doesn’t deflect the compass when taking bearings at eye or waist level, but the 8x40 binoculars around my neck can cause a slight deviation depending on which direction the compass is pointing. Now, when taking bearings, I have got into the habit of slinging the binoculars from the crook of my arm. This keeps them over 30cm from the compass.

Liquid-Filled Compasses

To stop the magnetized needle quickly and prevent it from oscillating back-and-forth around magnetic north, most of the hand-compasses available today have a needle inside a liquid-filled capsule. This liquid is generally a mixture of distilled water and ethyl alcohol, glycerine or a refined petroleum distillate.

The liquid-filled compass has been around for quite a while, and Tuomas Vohlonen, the Finnish outdoor enthusiast and founder of Suunto, is often credited with inventing the system in 1936.

Also, in the 1930s, the Swedish team of Gunnar Tillander and brothers Arvid, Alvar and Björn Kjellström invented the transparent base-plate protractor compass and that featured a liquid-filled capsule. They of course, went on to form Silva – and the rest, so they say, is history. Well, not quite when it involves who got there first with a liquid-filled compass!

The liquid-filled compass was actually invented by American physicist Edward S. Ritchie who developed the first U.S. manufactured marine compass. In 1861 the U.S. Naval Observatory solicited tenders for American manufactured navigational instruments and Ritchie won an order from the U.S. Navy for 26 compasses, 10 of which were liquid-filled. He then began selling compasses under the name E.S. Ritchie & Co., and in 1867 the company changed its name to E.S. Ritchie & Sons. In addition to Navy contracts, by 1930, the company had sold over 30,000 compasses around the world. Currently the company, now run by the Sherman family, offers over 100 compass models for power and sail boats as well as commercial, work and fishing boats. If you are looking for the best magnetic compass for marine use, checkout their website at www.richienavigation.com.

Sherpa BW2 Compass Used In This Evaluation



Today, walkers and other outdoor enthusiasts are spoiled for choice when it comes to purchasing a protractor base plate liquid-filled compass. Silva and Suunto, for example, each manufacture some 15 different models offering various technical or operating benefits and spanning a broad price range.

All of these perform well and represent good value for money. However, none of the Silva or Suunto products I tested performed any better than my Sherpa BW2. See www.kasper-richter.de

Silva has an informative and easily navigated website at www.silva.se.

Getting around the Suunto website at www.suunto.com takes time and patience.

Induction Damped Lensatic Compass

When the U.S. Government specified the Military Lensatic Compass they obviously knew all about the features and benefits of a magnetic needle in a liquid-filled capsule. So why did they go for an induction damped floating dial compass without any liquid? The short non-technical answer is simple – it works just great!

Let's review how you use a protractor type compass to find East. With a compass, like my Sherpa, you set the bezel to zero (**N**) under the indicator mark and turn around until the needle is pointing to magnetic north. Now turn your body clockwise 90 degrees – you are facing East, but the compass needle is pointing West. Now you have to rotate the bezel anti-clockwise and align the capsule North-South arrow with the needle. The indicator mark and Direction of Travel arrow on the base plate will now be pointing 090°.

With a Lensatic compass you first align the short luminous line with the fixed index line. Turn around until the magnetic **N** arrow is under the fixed index – you are now pointing at magnetic north. Now turn your body clockwise 90 degrees – and read 090° off the floating card below the index line. It's very quick and accurate. Also, you can now point the Lensatic in any direction and it will indicate the bearing straight off. Anyone who has used a marine card type compass, or a surveyors compass, will be immediately impressed with the Lensatic.

But, as the Lensatic doesn't have a fluid filled-capsule, how does the compass card come to rest so quickly? It's all done by induction damping. The Lensatic has a copper damping shell surrounding the compass card – and as the magnetic needle swings it generates very small eddy currents in the shell. The eddy currents produce their own magnetic fields that have a braking effect on the needle and it comes to rest within six seconds. The beauty of induction damping is that it's a velocity dependent force – so as the dial comes to rest the damping force is zero.

To see the induction damping in action, place the compass on a table and align the **N** magnetic arrow under the fixed index mark. Now quickly spin the compass around through 180 degrees. The card rotates rapidly seeking north again – and then slows down and comes to rest. If, however, you initially set up the compass on a bearing of 060° and rotate the compass housing slowly between 055° and 065° as you would to read a bearing very accurately – the magnet generates only small eddy currents in the shell and the damping effect is minimal.

Orienting the Map with Lensatic Compass

As mentioned earlier, because magnetic variation is currently quite small across Great Britain, many walkers and outdoor enthusiasts ignore it when orienting or 'setting' the map to line it up with the terrain. This quick method is often more than adequate for checking the direction of paths or locating features in the landscape. Open the Lensatic flat and place it on the map with the fixed index line pointing away from you towards the top (North) of the map. Align the straightedge of the compass parallel to a North-South grid line or the edge of the map. Now turn the map and compass together until the magnetic **N** arrow is lined up with the fixed index line. Your map is now set and you should be able to identify features in the landscape.



Of course, what you have actually done is align the map grid with magnetic north – but you can quickly refine this set up to take account of magnetic variation. Let's assume the local variation is 6 degrees West – just turn the map and compass together (clockwise) until the **N** arrow is pointing 6 degrees West of the fixed index line (at 354°). Another method is to zero the short luminous line over the fixed index mark – and then turn the bezel ring west two clicks (6 degrees). Now turn the map and compass together until the **N** arrow is on the short luminous line. Your map grid is now set exactly to the terrain.

Set a Course on an Oriented Map

Having oriented your map to the terrain as described above, leave the map in position and select a clearly marked object on the map – for example, a church tower. Place the Lensatic straightedge between your present position and the target – check the compass is pointing towards the church. Read off the bearing under the compass black index line – let's say it's 120°. Hold the Lensatic in position, and rotate the bezel until the luminous line is over the **N** arrow of the dial. Move off on your course of 120° towards the church and check now and then that the luminous line remains directly over the **N** arrow.

Set a Course with Map and Protractor

You have the map open in a pub bar and plan to walk a certain course after lunch. Place the protractor centre index on your start point and read off the bearing to your target – assume it's a foot bridge over a stream on 290° – and note that this is a Grid bearing. The magnetic variation is 5 degrees west. Remember the rule: Grid to Mag – ADD. So, your corrected bearing will be 295° magnetic. Walk outside the pub and clear of metal objects – hold the Lensatic and turn around until the black index line is over 295° on the floating dial. Rotate the short luminous line over the **N** arrow and start your walk. Check periodically that the luminous line is still on the **N** arrow.

Using Protractor and Lensatic to Set Map



Reading the Bearing to a Target



Taking a Bearing with the Lensatic

Open the Lensatic so the cover is perpendicular (90 degrees) to the base. The lens bracket should be about 30 degrees from the vertical to ensure the dial floats freely. Insert your thumb through the loop and hold the compass horizontal on the platform formed by the thumb and bent index finger. Raise the compass to eye level – and align the centre of the sighting slot in the lens bracket with the front sight wire and distant object. Without moving your head – look through the lens and read the bearing in degrees on the red scale.



Taking bearings with the Cammenga Lensatic compass is **very fast** and, most importantly, **extremely accurate**. It takes just a few seconds to place the front sight wire on the target and read the bearing off the dial.

Unlike a protractor mirror compass, you don't have to fiddle around rotating a bezel to align the needle with the reflected N-S orienting arrow. With the Lensatic – you just point and shoot one target – and immediately move on to the next.



Locate Position by Intersecting Bearings

Orient the map to the terrain as described earlier. Sight a bearing to any visible feature that appears on the map – call this bearing ‘A’. Place the fully open compass on the map with the ruled straightedge running through the terrain feature – and on the same bearing as ‘A’. Draw a line along the ruled edge. Pick another visible terrain feature at about right angles to ‘A’ and sight its bearing – label this ‘B’ and draw a line through it to cross the first line. The point of intersection is your current position. Three bearings to objects are even better and give you a triangulation plot.

Lensatic Centrehold Technique

With your thumb through the loop and elbows pulled firmly into your sides – the images below illustrate the grip on the Lensatic you will use for many operations. It’s very fast and easy to use – it can be used under all conditions of visibility – and when travelling over any type of terrain.



Youngsters and the Lensatic Compass

The kids of today are very smart – many of them can programme your TV and video player and send text messages all at the same time. And my neighbours kids, Thomas and Hannah Richardson, are no exception. So I had them round one afternoon to give them a quick hands-on period with both the Lensatic and Sherpa compasses. I showed them how to use both compasses at waist and eye level for ten minutes – and just gave them the gear. Thomas, who is eight, got first go with the Lensatic and it took him at least 10 nanoseconds to take bearings at waist or eye level.



Hannah meanwhile got to grips with the Sherpa – and did incredibly well for a seven-year old. Both she, and Thomas, who used the protractor compass later, had trouble aligning the orienting arrow in mirror sighting mode. But they did okay with the Sherpa at waist level. Hannah preferred the Lensatic to the Sherpa – and I had difficulty wrestling the Lensatic from Thomas when their mother came to collect them. You can see why Scouts and other adventurous youngsters just love the Cammenga Lensatic compass.

The Sherpa at Waist Level



Plotting Lensatic Bearings



Conclusions and Recommendations

I started this evaluation because I read an article on a U.K. Walking website that stated Lensatic compasses were not suitable for leisure use – and the only type of compass to consider for walking were protractor models as sold by Silva, Suunto, and others. I questioned this statement – and I have spent the last six-months running critical side-by-side comparative trials with the Cammenga Lensatic 3H and one of the best mirror protractor compass available. During this period, I have been on numerous field treks in the Midlands and Devon – and I've also been out and about on my mountain bike and used both compasses on a daily basis.

My conclusions are:

The Cammenga Lensatic 3H is the best hand compass I have ever used for navigation on walking and cycling expeditions.

The Lensatic compass – used alone or in conjunction with a separate protractor, – interfaces perfectly with U.K. Ordnance Survey Explorer maps.

No other compass I tried during this six-month evaluation period came anywhere close to the Lensatic for shooting accurate bearings at eye level – it's fast and very accurate.

It is also superb at waist level for following bearings during the day in any weather conditions – and at night, the reliable and ultra bright Tritium light source cannot be bettered.

I have two key recommendations:

First: don't consider cheap imitations – only buy a genuine CAMMENGA LENSATIC COMPASS. Get it direct from Cammenga or via one of their bona fide distributors.

Second: if you haven't done it already – put a CAMMENGA LENSATIC COMPASS at the top of your Christmas or Birthday Wish List!

Tony Wilks