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## 7×50 Compass Binoculars on test

Ben Meakins

<http://www.pbo.co.uk/author/benmeakins>

September 21, 2016


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[compasp](#)

**Alex Bell and a PBO test team focus their attention on 10 sets of compass binoculars checking them for efficiency, accuracy, clarity of image and ease of reading**

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There can be no doubt that there are many occasions at sea when the use of binoculars greatly enhances safety. On passage, the ability to identify another vessel in the distance – in particular its direction – gives early peace of mind.

As you approach another vessel it will of course get larger, but a fishing boat may take

some time before its direction can be identified by the naked eye.

Boat navigators, being able to recognise a buoy at a distance reassure the navigator that he is on course – or not, as the case may be. Of course, for those racing around the cans, the ability to spot the next mark is essential: and even if you are not leading the fleet, there is no guarantee that the boats in front are actually heading in the right direction!

Article Continues Below

Being able to read a compass bearing is also a useful feature, whether for determining position or deciding if there is a risk of collision from a closing vessel.

So, for this test we chose to look at binoculars with a built-in compass, also giving ourselves a price limit of £600.

The 10 sets of binoculars tested use Porro prisms (see terminology panel, below) and, with one exception, are of the fixed-focus type which is typical for water-resistant marine binoculars. All but one come with a carry case and a neck strap, sometimes of the floating type – optimistically referred to as a swim strap – which may save the binoculars if dropped overboard.

## Magnification and objective lens size

It is generally accepted that the maximum magnification that can be successfully utilised with handheld binoculars on an unsteady platform such as a boat is x7. Similarly, the maximum size of the objective lens that can comfortably be accommodated with handheld binoculars is 50mm. (The objective lens is the large-diameter lens at the other end from the eyepiece, from which light is transmitted.)

Although binoculars with a smaller objective lens can be purchased, this size is better for use in restricted light conditions. For this reason, most binoculars sold for marine purposes are designated 7x50.

## Waterproof or non-waterproof

Another important requirement for use of binoculars on a small craft is that they are waterproof! This can never be assumed.

Many years ago, I purchased a pair of binoculars at a popular high street camera store, and as they were rubber-clad I assumed they would be waterproof. When I first used them on my boat they acquired some salt spray, so I carefully rinsed them off in fresh water back at home. To my horror some water droplets got inside – they were obviously not waterproof at all. To the store's credit they did exchange them, but this pair is now only used when I am at sea in the safe environment of a cruise ship's observation lounge.

So, rubber covering is fine to protect from knocks and stop them sliding around, but it's no guarantee they are waterproof. Our sensible choice is limited to waterproof versions, and this will put the price up. Such binoculars are usually filled with nitrogen gas – all the versions we tested were. This is to ensure that there's no internal moisture that might cause the lenses to fog up inside.

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## Focus

Most waterproof binoculars have a fixed focus: this solves the problem of sealing the nitrogen gas within moving parts. The fixed focus is achieved in the same way as the depth of field on a camera is maximised with a small aperture. Effectively, the binoculars will be in focus from, for example, 20m to infinity. However, since an individual's eyes may differ in their focus, each eyepiece can be adjusted individually to correct for different focus.

Most 7x50 binoculars have a field of vision of around 7°. That is the width of vision you can see either side. The further the distance you are looking at, the wider this view will be. Most manufacturers quote this as width of view, typically 120m at 1,000m.

## Spectacle wearers

Most binoculars today are fitted with soft rubber eyecups. These eyecups should be folded back for using with spectacles in order to obtain the same field of view as those not wearing spectacles. This puts the eye in the correct position for focus.

## Lens coating

Recent developments in lens coatings have improved them to the point where up to around 90% of the light gathered by the objective lens can be delivered to the ocular lens. This makes them particularly good for reduced visibility and night vision.

## Compass binoculars

Modern compass binoculars are reckoned to be much more successful than earlier ones. A key factor is the damping. The compass bearing is viewed by one eye, usually below the lens, as you look through them. The skill is to be able to read the bearing at the same time as viewing the object. Most binoculars have a built-in light for night use, usually red

## Using the reticle scale to calculate distance or height

To determine distance if you know the height of the object, read the number of divisions on the vertical scale, then:

Distance in metres = object height x 1,000  
/scale reading

Article Continues Below

To work out height if you know distance:

Object height in metres = distance in metres x scale reading  
/1,000

## How we tested them



Our test team of five went out on Alan Watson's Nelson 42 Trinity Star. We picked up a mooring in Southampton Water off Calshot Spit where we tested the binoculars during the daytime by, for example, reading the names of buoys or looking at distance detail. At dusk and at night we compared them by looking at distant objects: Ryde church tower was a favourite. We also checked out the built-in compasses for ease of reading, damping,





## 7x50 compass binoculars on test

Lankhorst Taselaar Talamex



PRICE: £89.95

CONTACT: Force 4 ([http://www.force4.co.uk/force-4-waterproof-7x50-binoculars-with-compass.html?sqr=binoculars&#.V-KqVaZZW\\_k](http://www.force4.co.uk/force-4-waterproof-7x50-binoculars-with-compass.html?sqr=binoculars&#.V-KqVaZZW_k))

Article Continues Below

These good-value, rubber-coated binoculars have eye adjustment on both lenses and fold-back eyepieces for spectacle wearers.

They feature a range finder for calculating distances (note the graduated ring behind the right-hand objective lens), and are non-floating although a swim strap is provided.

On test these gave a double image as their collimation was out: a reminder of the need to check out binoculars on purchase, ideally while in the shop. That aside, the optics were good and the compass well dampened. The compass light was at the right level for night-time viewing, although there was some flare into the line of vision. The girls found them on the heavy side, and while the case has no grips, the rubber casing has a non-slip

## Konus Tornado



PRICE: £139.69

CONTACT: [www.meridianzero.co.uk](http://www.meridianzero.co.uk) (http://www.meridianzero.co.uk)

The Tornado from Konus is their premier model. The binoculars float, are compact in design and are identical to the Gael Force and Talamex Lankhorst Taselaar Floating binoculars except for the colour and the pattern of the grip inserts. They have a range finder.

The Konus Tornado's lightness and neat dimensions merited praise, although some testers expressed reservations about compass legibility and damping. The blue compass light emits some flare into the field of view.

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## Fujinon Mariner WPC-XL





**PRICE:** £199

**CONTACT:** Monk Optics (<http://www.monkoptics.co.uk>)

The Fujinon Mariner WPC-XL's polycarbonate casing makes for light weight and the ability to float even without the floating neck strap provided. These were the only binoculars on test that did not come with a carry case as standard (instead this is offered as an accessory). They have no grip on the casing: all the testers commented on this, some regarding the binoculars as 'slippery'. The female testers praised their light weight and Oksana liked the soft eye shields, but both found the compass light button hard to press.

The compass light was also criticised for giving flare out into the field of view, but on the plus side the illumination of the compass scale itself was described as just about perfect.

Danubia Nautical



**PRICE:** £109.95

**CONTACT:** Harrison Cameras (<http://www.harrisoncameras.co.uk>)

The Danubia Nautical binoculars are waterproof down to 0.3m for a maximum of 10 minutes. They don't float, but the swim strap included provides support.

These were the only binoculars on test with a central focus adjustment wheel. The dioptic adjustment was only available on the right eye lens, so to adjust for both eyes it was necessary to use the central focus wheel first and then adjust the lens. Some testers found this easier than the fixed focus models, others more complicated. There is a tripod socket, and a reticle scale is provided with a built-in slide rule to calculate distance or length. The compass worked well but was difficult to see with the red light. The girls found them heavy, although the grip was praised.

Minox BN 7x50C





**PRICE:** £219

**CONTACT:** Minox (<http://www.minox.com>)

This is the base model of Minox's Nautic line, offered with or without an analogue compass. It floats and is waterproof down to 5m. It comes with a reticle scale but no built-in calculator ring, and is available in all-black or black and white.

The testers liked its grip and light weight and found the optics virtually as good at night as the more expensive DCM model. The compass was well damped and the light easy to operate, but the compass light was found to be too bright and created flare into the field of vision. This was the first choice for both Adriana and Oksana.

## Minox 7x50DCM



PRICE: £469

CONTACT: Minox (<http://www.minox.com>)

Minox's top model comes with a range of digital features including compass display, with precise tilt compensation; the measurement and recording of air pressure; a thermometer, an altimeter and a watch/stopwatch function. When switched on, the digital compass display is placed in the centre of the field of view like a head-up display, and there is no obscuring of the field of vision as with the analogue compasses.

An on/off button sits on top of a rotating knob which selects the different functions. A further button is used to memorise up to three bearings to help take a fix. The compass display has two modes, either a horizontal scale or a centre mark: these and other functions are accessed through further up/down navigation buttons. The binoculars are available in an all-black or all-white casing.

Testers praised the optics, both for daytime and night vision, and liked the digital compass, although it could be difficult to read the digits in very bright light (the readout has five levels of brightness).

The girls found them heavy to hold, the heaviest binoculars on test. If you like the idea of a digital compass, the DC version is easier on the purse and just includes the tilt feature. These binoculars were Peter's first choice.





**PRICE:** £149.95

**CONTACT:** Force 4 ([http://www.force4.co.uk/force-4-deluxe-7x50-waterproof-floating-compass-binoculars.html?sqr=binoculars&#.V-KrUaZZW\\_k](http://www.force4.co.uk/force-4-deluxe-7x50-waterproof-floating-compass-binoculars.html?sqr=binoculars&#.V-KrUaZZW_k))

These are floating binoculars with a compass and reticle range finder. They are 100% waterproof and have good-quality multicoated lenses. They have rubber armouring and come with a zipped, padded carry case. They are identical to the Gael Force and Konus Tornado except for grip pattern and colour. Testers' comments were favourable regarding the compact size and light weight, but some had a little difficulty reading the compass – the blue compass light sent some flare into the field of view – and the damping was found to be less effective than some of the others.

## Steiner Navigator Pro





**PRICE:** £475.00

**CONTACT:** [www.steiner-binoculars.co.uk](http://www.steiner-binoculars.co.uk) (http://www.steiner-binoculars.co.uk)

The base model of the Steiner marine range is available with or without an analogue compass. The construction utilises a two-way valve technology that makes maintenance possible at any time, even after many years of use.

The Makrolon material used in the construction makes the housing shockproof and rugged. The prisms have 'floating' mountings: they are fixed with a durable, flexible silicone material to protect the valuable optical components inside. The NBR long-life rubber armouring is resistant to the effects of oil, acid or weathering. All Navigator models resist water ingress to a depth of 5m.

The testers commented on the quality feel and optics of these binoculars. All found them good to grip, although they were on the heavy side for the girls. Others commented on the need to get the inter-pupillary distance just right to obtain a good image, and the necessity to keep them level for the compass to be in focus. However, the compass was well damped, although some found the light on the dim side.

### **PBO's Picks**

#### **Gal Force with Compass**

Gael Force with Compass

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(http://www.pbo.co.uk)



PRICE: £89.99

Gael Force Marine ([http://www.gaelforcemarine.co.uk/en/Gael-Force-7x50-Floating-Waterproof-Binoculars-wCompass/m-511.aspx?gclid=CjwKEAajw34i\\_BRDH9fbylbDJw1gSJAAvIFqUdxUjE-](http://www.gaelforcemarine.co.uk/en/Gael-Force-7x50-Floating-Waterproof-Binoculars-wCompass/m-511.aspx?gclid=CjwKEAajw34i_BRDH9fbylbDJw1gSJAAvIFqUdxUjE-)

XtPpmPAeUcAZhclOavJ1k5Cvz1p8IkDI4KBRoC6Nfw\_wcB&utm\_source=google&utm\_medium=New from Gael Force, these focus-free, waterproof BaK4 prism binoculars are buoyant and include an illuminated compass with distance calculator. They are identical to the Konus Tornado and Talamex Lankhorst Taselaar Deluxe binoculars, except for a different hand grip and colour, but are quite a bit cheaper.

As with the other binoculars mentioned above, these were popular with the testers for their light weight and compact size, although some found the compass hard to read and the damping not as effective as some of the others. The compass light is blue and gives out some flare into the field of view.





## Bynolyt Searanger II



PRICE: £224.99

CONTACT: [www.cfmservices.co.uk](http://www.cfmservices.co.uk)

The Bynolyt Searanger II comes with a reticle viewer, but no calculation scale ring. The Searanger will float in the water and comes with a choice of a conventional strap or a buoyant yellow carry strap. The lens protectors fit and hold in well. The Searanger II has been used by the RNLI for some years.

Testers praised the grip, but Adriana and Oksana found them heavy to hold. No handbook was provided, just a single page on how to change the battery and how the reticle could be used. The compass view and damping were good and the red compass light was effective in the dark. This was Alan's first choice.

## PBO Verdict





Distinguishing between the optical performances of the different binoculars is difficult and subjective. The two key factors are clarity and brightness, both indicators of the optics' quality. All the binoculars tested had very good optical qualities but the testers felt that the Steiner Navigator and Minox DCM had the edge in this respect, as you would expect from the price. Other important factors include 'feel', which combines the binoculars' weight and size with balance, tactility and grip.

All pairs passed our 'dunk' test for floating (with swim strap where appropriate) and waterproofness. The compass bearings did differ slightly between different makes, but usually only between 2° to 4°, and some of this could be accounted for by boat swing. The Minox DCM compass can be calibrated to remove errors.

Each tester had their favourite, often influenced by the shape and size of the binoculars: a bit like shoe size. You need to try them: people's inter-pupillary distance does vary.

As a budget buy, the Gael Force wins the day, while the Bynolt Searanger II takes top honours as an excellent moderately-priced product. The Minox DCM and Steiner Navigator take some beating as premium products, but are substantially more expensive than the others on test. Most of the prices quoted can be bettered except the budget versions, which are catalogue street price.

#### **TERMINOLOGY**



The more you pay for a pair of binoculars, the more technical information you're likely to be given. Here's a brief explanation of some of the terms:



(/feed)



([https://www.youtube.com/playlist?](https://www.youtube.com/playlist?list=PLzuE6AGzwmIm8zU6Ti2dXW44infuaNF71)

[list=PLzuE6AGzwmIm8zU6Ti2dXW44infuaNF71](https://www.youtube.com/playlist?list=PLzuE6AGzwmIm8zU6Ti2dXW44infuaNF71))



(<https://www.facebook.com/motorboatandyachting>)



(<https://www.twitter.com/mbytimeinc>)

### **BaK4 prisms**

This is a specification for the prism glass. BaK4 is superior to BaK7: it shows a truer round view, which translates to better light transmission and edge-to-edge sharpness.

### **Close focus distance (minimum focus)**

The closest point the binoculars can focus on.

### **Dioptre adjustment**

This allows for differences between a user's individual eye focus by rotating the eyepiece, which is designated by + and –.

### **Eye relief**

Eg 18mm, the distance between your eye and the eyepiece for comfortable focus. This is a critical performance factor, especially important for those wearing spectacles: the longer the distance, the better.

### **Exit pupil diameter**

Eg 7.14mm, obtained by dividing the objective lens diameter by the magnification. It should equal the typical diameter of the dilated iris of a human eye. A large diameter is important as it helps to pick up an image from a moving deck and for night vision when pupils are fully dilated. You can see the exit pupil by holding the eyepiece about 200mm away from your eye and looking into the lens.

### **Field of view**

Usually specified by the number of metres width that can be viewed at 1,000m distance, or as angular view: the number of degrees that can be viewed.

**Fixed focus or focus-free binoculars** These have no focusing mechanism other than the adjustments on the individual eyepieces (dioptre) used to allow for differences in eye focus. The binoculars have a large depth of field and are in focus from around 20m

Focus from around 20m.


<http://www.pbo.co.uk>


Binoculars can be adjusted for variations in the distance between different users' pupils by rotating the lenses about a central hinge. Range is typically 50 to 70mm, and can be found on the hinge of some binoculars.

### **Lens coating**

Used mainly to reduce light lost through reflection of light at each surface. Such loss would make the image appear hazy (less contrast) and dim. Modern lens coatings consist of complex multi-layers.

### **Magnification**

Eg, x7 produces an image as if it were 7 times closer. The larger the magnification, the smaller the field of view.

### **Objective lens**

The large lens at the front of the binoculars.

**Porro prism binoculars** (named after the Italian who invented them, Ignazio Porro) have two prisms which invert the image the right way up. They produce the dog-leg shape of typical marine binoculars. Opera-type glasses, which are cheap to produce, just have a convex and concave lens, which limits the amount of magnification possible.

Roof-prism binoculars have objective lenses approximately in line with the eyepiece and lead to a more compact design: they are however harder to shock proof and more expensive to produce than Porro prism binoculars.

### **Relative brightness index**

This is used to compare how well binoculars with different size exit pupils can perform under dark conditions: equals the square of the exit pupil diameter.

### **Reticle (or reticule) scale**

A linear vertical and horizontal scale visible in one lens which enables distances or heights to be determined, either by reading of a scale marked on the casing or by calculation.

### **Vignetting**

A darkened or obscured view that occurs when the light path is partially blocked.

Ghostery a bloqué les commentaires émis par Disqus.





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Miss Isle Too sailor Natasha Lambert completes 'Sea and Summit, Scotland' (http://www.pbo.co.uk/news/miss-isle-sailor-natasha-lambert-completes-sea-summit-scotland-42278)

Disabled sailor Natasha Lambert, 19, has climbed Cairngorm mountain, sailed through Lochs and Sounds in the Highlands and negotiated the... (http://www.pbo.co.uk/news/miss-isle-sailor-natasha-lambert-completes-sea-summit-scotland-42278)

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Summer 2017 (http://www.pbo.co.uk/publication/pbo/summer-2017)

In the Summer 2017 issue of Practical Boat Owner magazine...

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## Affordable 20 to 23ft family cruisers

Peter K Poland checks out the market for appealing, economical, family-friendly and potentially sporty second-hand cruisers in the 6m (20ft) to 7m (23ft) range

While British builders were quick to respond to the boom in the 1970s and 1980s, they were giving British builders a run for their money. Cautious sailors tended towards simpler and more imaginative designs than the typical British

offerings of that era, many of which leaned towards solid reliability – usually with more than one keel. It could be argued that the more modern character of French boats has been responsible for the survival of the more French builders, but even so, British and Dutch naval architects in the 1970s (with smooth hulls) and they're still with us now, although they've suffered financial

troubles along the way and now appear to be larger models. What continued builders who did well with smaller boats such as the G20, G25, G28, G30, G32, G34, G36, G38, G40, G42, G44, G46, G48, G50, G52, G54, G56, G58, G60, G62, G64, G66, G68, G70, G72, G74, G76, G78, G80, G82, G84, G86, G88, G90, G92, G94, G96, G98, G100, G102, G104, G106, G108, G110, G112, G114, G116, G118, G120, G122, G124, G126, G128, G130, G132, G134, G136, G138, G140, G142, G144, G146, G148, G150, G152, G154, G156, G158, G160, G162, G164, G166, G168, G170, G172, G174, G176, G178, G180, G182, G184, G186, G188, G190, G192, G194, G196, G198, G200, G202, G204, G206, G208, G210, G212, G214, G216, G218, G220, G222, G224, G226, G228, G230, G232, G234, G236, G238, G240, G242, G244, G246, G248, G250, G252, G254, G256, G258, G260, G262, G264, G266, G268, G270, G272, G274, G276, G278, G280, G282, G284, G286, G288, G290, G292, G294, G296, G298, G300, G302, G304, G306, G308, G310, G312, G314, G316, G318, G320, G322, G324, G326, G328, G330, G332, G334, G336, G338, G340, G342, G344, 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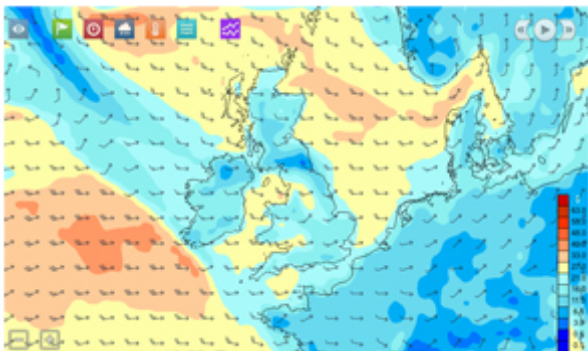
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- Practical (<http://www.pbo.co.uk/expert-advice>)
- Podcast (<http://www.pbo.co.uk/dave-selby>)
- Seamanship (<http://www.pbo.co.uk/seamanship>)
- YBW.com (<http://www.ybw.com>)



(<http://www.ybw.com>)

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