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Binoculars Terminology - How to choose binoculars for bird watching, hunting, or other special applications.

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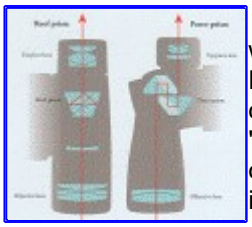
Binoculars Terminology - How to Choose Your Binoculars

What to Know for Bird Watching, Hunting, Whale Watching, or Other Special Applications

With so many brands and models in all price ranges, it's hard to know which set of binoculars is best suited for you. This brief article should put some of the finer points into clearer understanding. This information should help you to better understand the numbers in our Binoculars Specification Charts too.



Porro vs. Roof Prism - The old fashioned style of binoculars where the eyepieces are not lined up with the objective lenses are called "Porro" prism. The new in-line style of binoculars is called "Roof Prism". There are advantages to each. The Porro Prism style is less expensive to achieve top optical clarity and brightness. However, Roof Prism binoculars can now match this when they have "phase coatings". Porro will also have better stereoscopic depth perception due to the wider apart objective lenses. Roof Prism binoculars have the advantage in being more compact and lightweight in design.

Magnification - The optical power of binoculars is written like this: "8X36" or "10X36". The first number is the magnification... 8X means things would appear 8 times closer when you look at them through the binoculars. 8X-10X are the most popular magnifications for hand held use... which is 90% of binocular use.

Objective Lens Size - The second number in "10X50" is the size of the objective lenses... 50mm in this case. This is at the opposite end from the eyepieces. The objectives are where light enters the binoculars. Generally speaking, the bigger the objective lenses, the more light or image detail that will be captured... Compared to the relatively tiny size of the pupil in your eye, even 21mm compact binocular objectives capture far more image detail than your naked eyes. The **Pentax 6.5X21 Papilio** captures remarkable image detail... Better than many top quality full size binoculars.

8x vs. 10x... Which is Best? Comparing binoculars with the same size objective lenses (i.e. 8x36 vs. 10x36): The 8x will always be about 50% brighter with a significantly wider field of view. On the other hand, the difference in magnification between 8X and 10X is not as significant as many people think... An image at 10x is only 1.25X larger than an image at 8x. Taking the 10x to a larger objective (ie 10x50) does improve the brightness but it quite often is still not as bright as the 8x with a smaller (and lighter) objective. With all other specifications being equal, "brightness" will give an advantage in low light viewing situations. Summary: ***An 8x image is brighter and wider, 10x image is darker and 1¼X larger***.

Image Clarity - Customers often mistake high magnification or large objective lenses for the measure of how clearly they'll see through binoculars. Clarity... the ability to see fine details without fuzziness, distortion, or flaring is more a function of glass quality and lens coatings. Magnifying a poor quality lens just gives a bigger version of an unclear image. A larger objective of poor quality just gives a brighter version of an unclear image. The purity and precision of the glass enhances clarity. And the quality of the lens coatings will enhance brightness by reducing or eliminating loss of light through inner surface reflection. Summary: ***Brightness is One Thing, But... CLARITY IS EVERYTHING!***

Lens Coatings - Every lens surface has the potential to reflect rather than capture light. Lens coatings reduce or eliminate reflections and increase light capturing capability. Nowadays, most binoculars have some sort of lens coatings applied... but there are varying degrees of coverage. "Multi-" coating means that multiple layers of coatings have been used to give enhanced anti-reflective affects. "Fully" multi-coating means that all lens surfaces have been multi-coated... the most desirable degree of anti-reflective lens coating for binoculars.

Phase Coating - This is a special treatment for roof prism binoculars that results in higher resolution and clarity. For bird and butterfly watchers, phase coating enhances color resolution and close focus detail. Excellent phase coated roof prism binoculars are available from **Hawke**, **Swift** and **Pentax**.

BaK4 and BaK7 Prisms - These refer to "Barium Crown Prisms" which are a premium type of Binocular prism that enhances light and image capturing capability. BaK7 is good... But, BaK4 is best due to its outstanding refraction index. The BaK4 glass prism is famous for its perfectly round exit pupil and clear, unvignetted image.

Eye Relief - This is the distance from the eyepiece to where your eye sees the full field of view. Eyeglass wearers need the longest eye relief because their glasses limit how close they can get to the eyepiece. Eyecups also play a role in how close you can get to the eyepieces. Especially if you're an eyeglass wearer, you will be amazed at the improvement in viewing when using long eye relief binoculars like the **Pentax 10X50**. These are advanced WAY BEYOND the traditional binoculars you may be familiar with.

Eye Cups - On the eyepieces of binoculars, the eyecups allow automatic positioning of your eyes for optimal eye relief. Cheaper binoculars have fold-down rubber eyecups. The more premium binoculars have some sort of adjustable eye

Cheaper binoculars have fold down rubber eyecups. The more premium binoculars have some sort of adjustable eye cups such as "twist-up" or "pop and lock". With these you can set the eye cups for your personal best eye relief and the binoculars are always ready for use.

Close Focus - This is the closest distance you can look at and still be able to focus your binoculars. For example, a close focus of 9 ft means you can look at something that's only 9 feet away and still be able to focus the binoculars. It's especially critical to bird and butterfly watchers, but equally desirable to brush country hunters. I have owned some great open country binoculars that were useless in the woods because they wouldn't focus close enough. The **Pentax 8X36** binocs feature superb close focus capability. **Papilio 6.5x21** focuses as close as 1.6 foot away!

Locking Diopter - The right eyepiece is a "diopter" that adjusts to equalize your eyes for center focusing. On more premium binoculars, this will have some sort of locking or click-stop capability. Binoculars with a locking right diopter are more likely to be ready when you need them... without fumbling to re-adjust the diopter.

Relative Brightness - A misleading specification based purely on lens mechanics. Without considering lens quality nor lens coatings, relative brightness is simply the square of the exit pupil. And the exit pupil is simply the size of the objective divided by the magnification. A poorly made set of binoculars can have a high "Relative Brightness" specification and deliver poor clarity and resolution. ***Brightness is One Thing...Clarity is Everything!***

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