

JOHN ROBINSON

# New Nighteater Binoculars



One of a hunter's essential tools is a good set of binoculars, and of all the applications, hunting is perhaps one of the toughest jobs that outdoor optics need to do.

**M**ost binoculars suitable for hunting need to be fairly compact, be reasonably weatherproof and be able to resist damage through rough handling and competing with other items usually hanging off a hunter's body.

Three new Nikko Nighteater binoculars have been introduced to the Nikko Stirling lineup by Highland Sports in 2009 that are well suited to heavy duty hunting applications. They are Nighteater 8x36, 10x42 and 10x50 Roof prism binoculars.

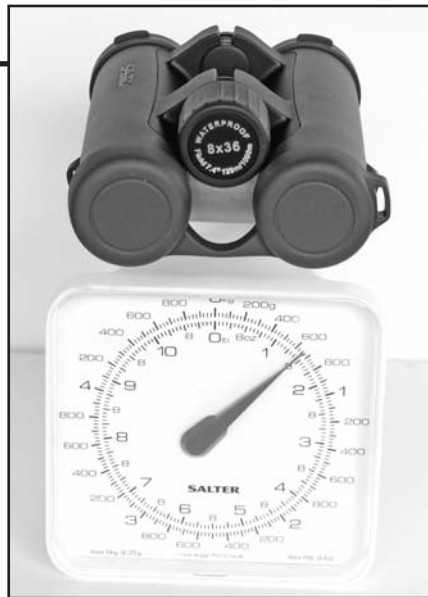
There are two lens systems used in most

binoculars made today; the Porro prism system and the Roof prism system. The Porro prism was named after Italian optician Ignazio Porro who patented this image erecting system in 1854.

While this was an optical advance, it was not all that practical for binoculars as the image is inverted. Carl Zeiss solved this problem in the 1890's by using a double Porro prism to re-invert the image, and that system has been used every since. This design results in binoculars that are wide, with objective lenses offset from the eyepieces. Porro prism designs have the added benefit of folding the

optical path so that the physical length of the binoculars is less than the focal length of the objective and wider spacing of the objectives gives better depth perception

Binoculars using Roof prisms may have appeared as early as the 1870s in a design by Achille Victor Emile Daubresse. Most Roof prism binoculars use either the Abbe-Koenig prism (named after Ernst Karl Abbe and Albert Koenig and patented by Carl Zeiss in 1905) or Schmidt-Pechan prism (invented in 1899) designed to erect the image and fold the optical path. They have objective lenses that are approximately in line with the eye-



**ABOVE: Nighteater lens coating** All lens elements in the Nighteaters are multi-coated for superior light transmission.

**OPPOSITE PAGE: The new Nighteaters – 8x35, 10x42 and 10x50 roof prism rubber armored binoculars.**

**LEFT: The 8x36's weigh 650g and are the most compact of the series.**

pieces. While of a similar vintage, Porro prism binoculars were the most dominant design throughout most of the 20th Century.

The cost of production may have been a factor in this, although there are technical reasons for the earlier preference for Porro prisms over Roof prisms.

Roof-prisms designs create an instrument that is narrower and more compact than Porro prisms. There is also a difference in image brightness. Porro-prism binoculars will inherently produce a brighter image than roof-prism binoculars of the same magnification, objective size, and optical quality, because the roof-prism design employs silvered surfaces that reduce light transmission by 12% to 15%.

Roof-prism designs also require tighter tolerances in alignment of their optical elements (collimation). This adds to their expense since the design requires them to use fixed elements that need to be set at a high degree of collimation at the factory. Porro prism binoculars occasionally need their prism sets to be re-aligned to bring them into collimation. The fixed alignment in roof-prism designs means the binoculars normally won't need re-collimation.

The development of higher performance lens coating and other optical materials has brought the optical performance of both types of binoculars closer together, and like the Nighteaters, the trend in hunting binoculars is definitely towards Roof prism designs.

There may be 16 glass/air surfaces in a binocular lens system and lens coatings are vital to the light transmission performance of the lenses. The Nighteaters use a proprietary ETE Microlux coating (same as the scopes) and compared to the traditional magnesium fluoride lens coatings, light transmission losses are reduced from around 5% to about 0.25%.

Each of the Nighteater models is very similar in appearance and design in other than the obvious physical size and weight variations between the models.

The Nighteaters are listed as waterproof and have an open hinge design and are rub-

ber armoured. Each has a quick adjustable eyecup to allow them to be used with or without spectacles, to put the eyes in position to get a full field of view.

Assessing the performance of binoculars without the aid of sophisticated optical testing equipment is purely subjective. My tests simply involved using the Nighteaters in various light conditions and comparing their performance. One design feature that was missing from each was independent eye focus. There was no provision to accommodate different focus conditions for those with left and right eye variations.

My left eye is much stronger than the right, but with the Nighteaters focused on infinity I could not detect any variation on acuity from one side to the other. The image in the 8x36's and 10x50's was sharp and clear to the edges while there was a slight falling off on the perimeter of the image on the 10x42's.


Each Nighteater model comes with a harness, and a very heavy-duty one at

that. My samples were all pre-delivery models and came without instructions. The harness is quite a complex design and some people may find it difficult to figure out. It consists of two heavy-duty elastic loops with bayonet connectors on the loose ends. The loops go around each shoulder and connecting straps that attach to fixed mounting rings on the binocular bodies have mating bayonet connection that attach the binoculars to the shoulder harness. This allows them to lie against the chest at whatever level the straps are set at.

With the weight distributed on the shoulders on the wide straps, the Nighteaters are little load to carry for long periods, and remain instantly accessible. The only downside of this arrangement is if the wearer undertakes a fairly radical vertical movement – jumping down of height, etc. If the binoculars are not restrained, they may well bungee jump into your face on the stretch straps.

There is about \$50-\$60 difference in price between the three models, with the 8x36's being the cheapest. With the fluctuating currency, RRP is a moving target, but starting process for the 3x36 Nighteaters should be around \$400 give or take some dollars. This is a good deal for roof prism binoculars of this type.

My personal preference lies with the 8x36 because of their more compact dimensions, good optical performance and slightly lighter weight, added to the fact that I have been hunting with 8x30 binoculars for 25 years and have no complains with that magnification for most practical hunting applications.

The test products were supplied by Highland Sports and its Nikko Stirling optical products are available throughout Australia wherever shooting equipment is sold. 



**BELOW: The Nighteater binoculars have quick-adjustable eyepieces to facilitate setup with or without spectacles.**

**LEFT: The Nighteater binoculars each comes with a heavy duty shock-absorbing harness.**