OPTICS TRADE

Low Light Binoculars

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HUNTING IN LOW-LIGHT SITUATIONS

- Especially popular in **Europe**

- **Low light binoculars properties:**
- 50 or 56mm objective lens diameter
- 7x or 8x magnification
- Exit pupils with a diameter of at least **6mm**
- High light transmission rates
- Porro prism or Abbe Koenig prism system

IMPORTANCE OF LIGHT TRANSMISSION RATE

- It is very important that all the **light** captured by the objective lens comes to the eye!

The light transmission rate depends on:

- The quality of the **glass**
- The quality of the **coatings**
- The **prism type**

CONFIGURATIONS

- Large input lens (most often **50 or 56 mm**)
- Higher the magnification → narrower the exit pupil → less bright image

Optimal configurations:

- **8x56 and 7x50**

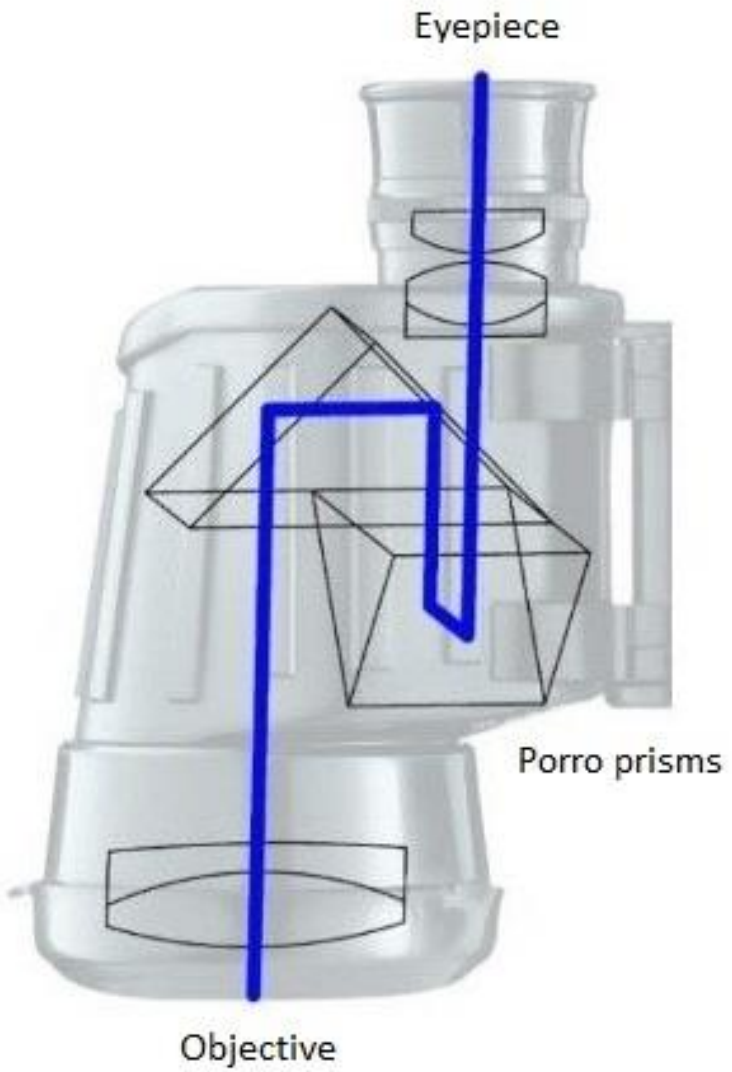
IMPORTANCE OF EXIT PUPIL DIAMETER

- The **optimal** exit pupil diameter is exactly as large as the **eye** can widen
- Human pupil can expand up to 7mm → **100%** gain of light
- With aging, human pupil lose the ability to expand → light gets **lost**
- 8x50 and 8x42 configurations for older people (still **bright image**, but not so massive binoculars)

PRISM TYPE

Porro prisms

- Separate focusing for each eye
- Watertightness
- Good price
- Large size and less comfortable



PRISM TYPE

Abbe Koenig prisms

- Modern with long barrels
- Ergonomic, good light transmittance
- High price
- Zeiss, Docter, Swarovski

INDIVIDUAL FOCUSING

- Only on **Porro** binoculars
- Waterproof

Advantage of individual focusing:

- Focus is only set once → in good light conditions; afterwards the system works well in **all conditions**
- Once the system is set, the eyes focus on different distances by **themselves**

Binoculars with central focusing (left) and binoculars with individual focusing (right)

LOW LIGHT BINOCULARS AND NV OPTICS

- Low light binoculars perform great at dusk or down → in complete darkness seeing with NV Optics is much better
- NV Optics can not be used when there is light → light cause damage to the cathode
- Image resolution and details are better with low light binoculars
- NV Optics has lower magnification → affects image details
- Low light binoculars can be adjusted to different **light levels**
- Binoculars are more prominent and much more **massive** than NV Optics.

IMPORTANCE OF LENS COATING

- Coatings are used to **minimize** the loss of light → applying coatings helps to improve **light transmission rate** and the optical performance of the device

Different ways of applying the lens coatings:

- **Coated:** some lens surfaces are coated with one anti-reflective layer of material (usually metal or similar)
- **Fully coated:** all the surfaces on all lenses in the optical device are coated with one layer of material
- **Multi-coated:** some lens surfaces are coated in multiple layers
- **Fully multi-coated:** all glass surfaces are coated in multiple layers

LOW LIGHT PERFORMANCE OF RANGE FINDING BINOCULARS

- Rangefinding technology lowers the light transmission of binoculars → Only devices with the highest optical performance do not have a problem with the light transmission rate

The best rangefinding binoculars:

- Leica Geovid 8x56 3200.COM

- Leica Geovid 8x56 HD-R 2700

- Zeiss Victory RF 8x54

BEST LOW LIGHT BINOCULARS

- Zeiss **Victory HT** series (Abbe Koenig prisms, HT glass)

- **Nighthunter** series from Steiner (Porro prisms, individual focusing system)

- **SLC** series (Abbe Koenig prisms) and **Habicht 7x42 GA** from Swarovski (Porro prisms)

Fujinon 7x50 (Porro prisms, individual focusing system)

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