



# Binoculars

## A Short Primer

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# Why use Binoculars



- Not expensive
- Easy to carry around
- No set up knowledge needed
- Wow factor of a wide field view

# Disadvantages

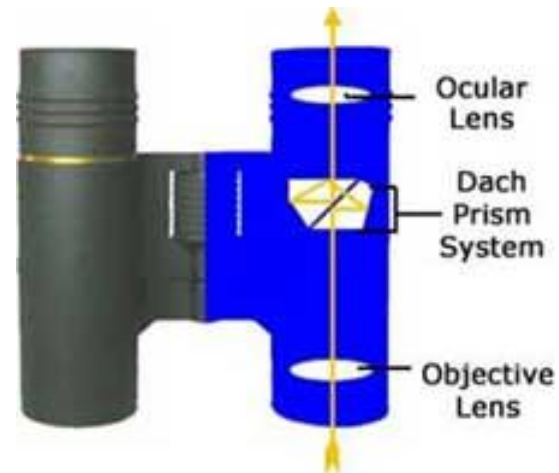


- Difficult to hold still
- Cannot see distant astronomical objects
- Not practical for photography

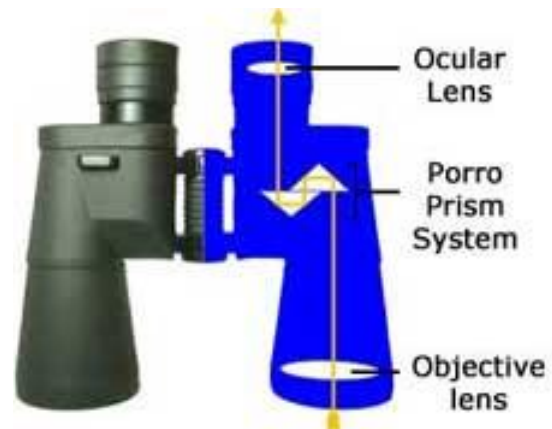
# Types of Binoculars



- Roof Prism



- Porro Prism



# Power/Light



- For Astronomy 7x35 or 10x50
  - Magnification x Diameter of Objective (front)
- Note ratio Mag to diam = 1 to 5
  - 5 is the Exit Pupil which is the size of the image hitting the eye (needs to be 5 to 7 mm)

# Optics



- Porro Prism for astronomy as tend to give more light transmission
- BAK 4 glass for the prisms
- Multi coated optics – give better light transmission

# Eyepiece and Field of View



- Eye Cups especially for spectacle wearers
- Dioptre adjustment  $\pm 2$  dioptre (on one eye only)
- Long Eye Relief normally 9 to 13mm (more than 14mm for spectacle wearers)
- Field of View –and is the diameter in feet of the circle of view measured at 1000yds. Can also be in degrees.

Binoculars normally  $5^\circ$  (263 feet) to  $11^\circ$  (578 feet).  $1^\circ$  is 52.5 ft at 1000yds

# Construction



- Reputable make
- Rugged construction
- Weight
- Tripod mount
- Lens covers





# Other aspects

- Twilight Factor.....
  - Measure of low light capability
  - Square root of the magnification\*aperture  
eg 10x50 gives  $TF = 22.4$
  - But exit pupil and general transmission properties are a big factor

# Accessories



- Parallelogram Mount



# Accessories



- Mirror mount





# In Conclusion

- Binoculars are a great tool for observing
- Inexpensive , portable, easy to use
- Wide field view and help you find your way around the sky
  
- Do not buy the biggest pair possible
- Go for a reputable make
- Tend to get what you pay for