

# **BUYING A TELESCOPE**

## **The Memphis Astronomical Society**

### **HOW TELESCOPES WORK**

<https://www.youtube.com/watch?v=qQsbxX7OZEo>

(A Video on “Optics and Telescopes” from our Short Course in Astronomy)

[http://memphisastro.org/forms/New\\_Scope\\_Help.PDF](http://memphisastro.org/forms/New_Scope_Help.PDF)

(Basic Telescope Information; How to Set Up and Use a Telescope)

### **FEATURES TO CONSIDER WHEN BUYING A TELESCOPE**

The telescope should have a large enough aperture (diameter of the mirror or objective lens) to be useful, but not so large as to be too heavy to carry. A reflector telescope should be at least 4 inches in diameter; a refractor should be at least 2.5 inches. A 10-to-12-inch reflector is about all one person can conveniently carry and set up. A 4-to-6-inch refractor is considered a large telescope.

An equatorial mounting (German or fork) makes finding and tracking objects much easier, especially for beginners, than does a Dobsonian or other altazimuth mounting. An equatorial mount allows you to move across the sky in a north-south or east-west direction, following the celestial coordinate system used on star charts. After you find an object, it allows you to track the object across the sky (as the Earth rotates) with one motion, rather than having to use a combination of zig-zag motions. However, altazimuth mountings (up-and-down; back-and-forth) are much lighter, and some people actually prefer them. A solidly-made Dobsonian altazimuth mount is preferable to a flimsy equatorial.

A straight-through optical finder, at least 30 mm in diameter, is best. A right-angle finder doesn't give you anything to aim with at a particular point in the sky. A red-dot (“Telrad”) finder, while straight-through, has no light-gathering power; in fact, it slightly diminishes the light coming through. As a result, you can't see any more through it than with the naked eye. An optical finder has far more light-gathering power than the human eye, and usually magnifies about 5 to 7 times (similar to binoculars), making objects easier to see.

A rack-and-pinion focuser is much better than a push-pull drawtube. It's very hard to focus a drawtube at high powers without shifting the telescope.

Don't be fooled by high-power eyepieces. You will normally need a low-power (25-40X) eyepiece, and at least one high-power eyepiece (about 100-150X). The maximum power for any telescope is about 50 times the diameter of the telescope (in inches).

Finally, a reflector telescope should not have a “contraption lens” permanently installed in the eyepiece holder. This kind of lens tends to distort the field of view, and makes collimation (alignment) of the optics more difficult. Manufacturers seldom mention this lens, but you can tell if one is there, without seeing it, if the tube length is much less than the specified focal length of the mirror.

## ASTRONOMY VENDORS

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Adorama

[www.adorama.com/c/Binoculars-and-Scopes](http://www.adorama.com/c/Binoculars-and-Scopes)

Anacortes

[www.buytelescopes.com/](http://www.buytelescopes.com/)

Astrostuff. Telescopes and Software (Arkansas)

[www.telescopemart.com/](http://www.telescopemart.com/)

Celestron International

[www.celestron.com/](http://www.celestron.com/)

Explore Scientific

[www.explorescientificusa.com/](http://www.explorescientificusa.com/)

Mallincam

[www.mallincam.net/](http://www.mallincam.net/)

Meade Instrument Corporation

[www.meade.com/](http://www.meade.com/)

Oceanside Photo and Telescope (OPT)

[www.optcorp.com](http://www.optcorp.com)

Orion Telescopes

[www.telescope.com/](http://www.telescope.com/)

Russell Optics

<http://russell-optics.com/index.html>

Scope Stuff

[www.scopestuff.com/](http://www.scopestuff.com/)

Tele Vue Optics Inc. (Mainly eyepieces)

[www.televue.com/](http://www.televue.com/)

Telescope Warehouse

[www.ebay.com/usr/scopehed1](http://www.ebay.com/usr/scopehed1) or <http://shop.telescope-warehouse.com/>

**PLEASE NOTE:** The Memphis Astronomical Society does not **endorse** any commercial businesses. We provide this list (in alphabetical order) as a service to beginners in the field of amateur astronomy. The companies listed above have demonstrated over the years that they are reputable, and our members have had good experiences with them.

If you have good experiences with other vendors, please let us know, and we will consider adding them to the list.

On the other hand, if you experience poor service or quality from a vendor on the list, do let us know.