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## The Reflex Finder Shootout

5/2004 Tom Trusock - [Click to e-mail author](#)

Unit Power Finders, Reflex Finders, Reticule Finders and Red Dot Finders or RDF's call them by any name you like, many amateurs today have one of these units on their scope. For some, it replaces the traditional optical finder scope, for others it supplements it. Depending on the size and the focal ratio of the telescope, I personally find that I either prefer a reflex finder or both optical and reflex units.

A reflex finder allows me to quickly and accurately place an object in the FOV of most of my eyepieces (even at moderate to high powers) without having to fish around and determine exactly where in the sky my optical finder is pointing. In short – it allows you to spot a star in the night and point your telescope – “there”.

The reflex finder craze started in the late 70's when amateur Steve Kufield designed a unit power finder based on the World War II era Norden bombsight, and the whole concept has come a long way since then.

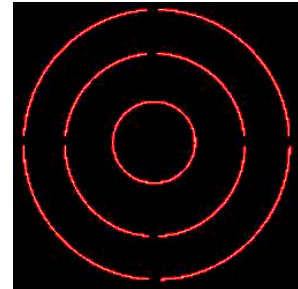
In this article, I'll take a look at nine different reflex sights. Some are reticule based – this means they project a series of concentric circles on the night sky like a bulls eye, while others only project a dot – usually red. The red dot sights are also commonly referred to as RDF's for Red Dot Finders.

Every single unit in this review worked as advertised. They all enabled me to find objects in the night sky, however some were markedly better than others. You can pay anything from \$12 to \$240 for a reflex sight, and then turn around and buy accessories for some models. What you buy in the end should best fit your scopes and observing style.

To give you some impression of scale, I've shown a Canyon Diablo meteorite that's 47.43mm long at its longest point, and 28.56mm at its widest in each picture. I also show you a scaled image of the pattern that is projected on the night sky. Please note, the apparent size of the reticule finders depend on how close your eye is to the finder, but this will give you an idea of how the patterns relate to one another size wise. Note that the dot is smaller on the Giant Mars Eye Finder than on the other RDF's in our line up. Additionally, all measurements of physical size include the base. I mixed mm and inches in my units because most US citizens still tend to think in inches (and because most of our overseas / out of country friends are (by this time) used to putting up with the foibles of Americans), but the millimeter measurements are more accurate and still easy to grasp when talking comparison of clear aperture.

## Telrad

**Rating: \*\*\*\***



**Price:** \$39.95

**Includes base:** Yes

**Weight:** 10.8 OZ

**Clear Area:** 35.95mm x 62.98mm

**Window Tint:** Clear

**Accessories available:** Pulser (\$21), Kendrick Telrad Heater(\$26), Dew Shield+ (\$25), Spare Base, Sun Spotter

**Reticule Size:** Held 6" from nose, reticule size is 16.5mm

**Ring Scale:** four degrees, two degrees, half degree (exact)

**Other Features:** Three rings, Red, adjustable brightness

**Batteries:** 2 AA

**Physical size:** 8.25 1 / 5 h / 2.25 w (inches)

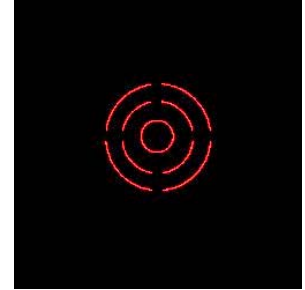
**Alignment:** three finger knobs allow for hand adjustment

The largest, oldest, and one of the most rugged unit power finders in our round up, the Telrad is also one of the nicest to use for star hopping with it's precisely calibrated reticules – IF you have a large scope. Due to it's rather large size and weight (which ironically is quite unnecessary – it's mostly empty ABS plastic) it tends to be a bit awkward to use on smaller scopes or refractors. The exposed window is also extremely prone to dew in wet environs.

Recommended for large scopes only

## Galileo CIR (Calibrated Image Reticule)

**Rating: \*\***



**Price:** \$19.95

**Includes base:** yes

**Weight:** 6.3 OZ

**Clear Area:** 40.77 x 34.90

**Window Tint:** Clear

**Accessories available:** None

**Reticule Size:** Held 6" from nose, reticule size is 6.5mm

**Ring Scale:** not calibrated

**Other Features:** Three rings, red, adjustable brightness

**Batteries:** 2 AA

**Physical Size:** 5.25 l / 4.25 h / 2 w (inches)

**Alignment:** two finger knobs allow for hand adjustment

A cross between the Telrad and the Rigel, this little unit is between the two in physical size and priced lower. I found it a bit harder to use (it was more sensitive to eye placement, and the reticules are tiny), and was dismayed to find that (contrary to the name of the finder) the reticules did not appear to be calibrated to any standard. In practice, that makes it no better than a much smaller and lighter dot finder. The exposed window is also prone to dew.

Not Recommended.

## Giant Mars Eye Finder

**Rating: \*\*\*\* and 1/2\***



**Price:** \$24.95/\$15.95 (sale)

**Includes base:** No (uses weaver type)

**Weight:** 2.1 OZ

**Clear Diameter:** 29.95 mm

**Window Tint:** very light grey

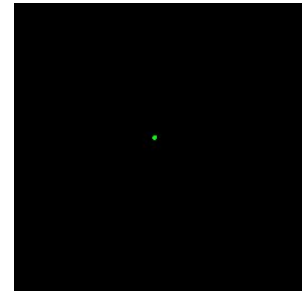
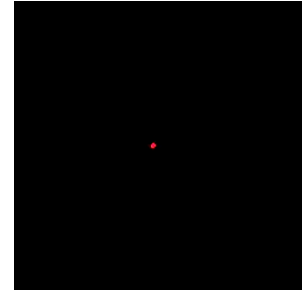
**Accessories available:** None

**Other Features:** Red or Green Pinpoint, adjustable brightness

**Battery:** CR2032

**Physical Size:** 4.25 l / 2.5 h / 1.5 w (inches)

**Alignment:** two finger knobs allow for hand adjustment

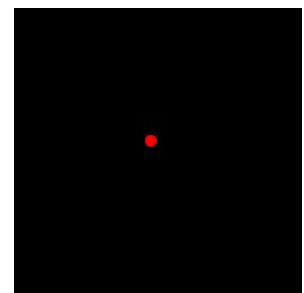


The Giant Mars Eye does everything that a RDF should – and offers you a color option to boot. The large clear window of the finder made lining up objects a snap, and the dot got dim enough for use at a dark site. You will need to pick up a mounting block (any weaver type base will do – either the TeleVue or StellarVue block/base units will work fine) or plan on using double sided tape to secure it to your scope. It, like most of the rest of the reflex finders, is prone to dew.

Highly Recommended

## TeleVue QuickPoint

**Rating: \*\***



**Price:** \$29.99

**Includes base:** yes (uses weaver type)

**Weight:** 1.4 OZ

**Clear diameter:** 13.86 mm

**Window Tint:** grey

**Accessories available:** None

**Other Features:** Red Dot, adjustable brightness

**Battery:** CR2032

**Physical Size:** 4.75 l / 1.75 h / .9 w (inches)

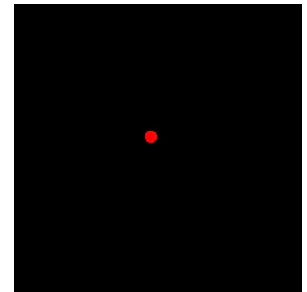
**Alignment:** screwdriver necessary

Made by Daisy and sold by TeleVue, the QuickPoint is one of the older RDF's on the market. I found its tiny dark tinted window often made finding objects a bit of a chore, and I was afraid I would snag the exposed PCB for the dimmer circuit on my clothing. Although I've personally owned two of these units over the years, I find it hard to recommend given the other options available on the market.

Not Recommended

## Vixen Red Dot Finder

**Rating:** \*\*\*\*



**Price:** \$69.95

**Base included:** No (uses Vixen/Synta type)

**Weight:** 7.4 oz

**Clear Diameter:** 24.1mm

**Window Tint:** Grey/Blue/Green/Red depending on angle

**Accessories available:** None

**Other Features:** Red Dot, 11 brightness settings

**Battery:** CR2032

**Physical Size:** 4 1 / 3.75 h / 1.25 w (inches)

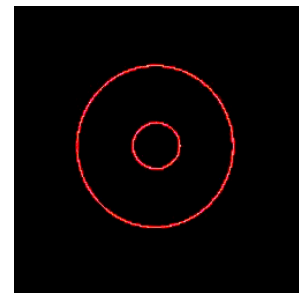
**Alignment:** One knob allows for hand adjustment

Although this unit may look more at home on a CAR15 than a telescope, it works very well for astronomical use. The truly unique thing about this finder is that it's adjusted by the hand knob on the bottom. Loosen the knob, point the finder where you want and tighten. It took a few tries to get used to it, but afterwards, I was able to consistently align this finder quicker than any others on the list. A blend of metal and plastic, it's a good intermediate step in quality between the standard RDF's and the StarBeam. My only gripes are that the dot, even on the lowest setting, was still just a little brighter than I prefer for use from my rural site, and the exposed window is prone to dew.

Recommended

## Rigel QuikFinder

**Rating:** \*\*\*\* and 1/2 \*



**Price:** \$39.95

**Base Included:** Yes (and a spare)

**Weight:** 3 OZ

**Clear Aperture:** 36.11 x 23.85

**Window Tint:** Clear

**Accessories available:** Kendrick Heater

**Reticule Size:** Held 6" from nose, reticule size is 9.75mm

**Ring Scale:** two degrees, 1/2 degree (exact)

**Other Features:** Two rings, Red, Variable brightness, pulse, comes with spare base

**Battery:** CR2032

**Physical Size:** 2.5 1 / 5 h / 2 w (inches)

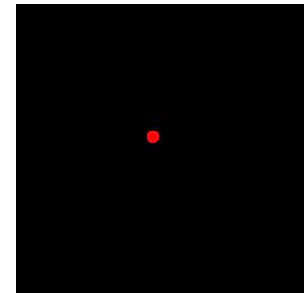
**Alignment:** three finger knobs allow for hand adjustment

One of my favorite reflex sights, the Rigel Quikfinder has many of the advantages of the Telrad, but is a fraction of the weight, and has a much smaller footprint. Alignment is accomplished via three dials on the front, and as a bonus, the Rigel can also be set to pulse to assist you in using those extremely faint guide stars. It's dim enough for my tastes at dark sites, and even comes with a spare base so you can swap it between scopes. Mounting is done via a single screw hole (which can be prone to rotation) or that old standard – double sided tape. It's slightly less prone to dew than the Telrad.

Highly Recommended for all scopes.

## TeleVue StarBeam

**Rating:** \*\*\*\* and 1/2 \*



**Price:** \$205 - \$240 depending on base

**Includes Base:** Yes

**Weight:** 9.8 OZ

**Clear Aperture:** 38.31 mm

**Window Tint:** Clear

**Accessories:** none

**Other Features:** Red Dot, adjustable brightness, flip mirror

**Batteries:** LR44 (2)

**Physical Size:** 9.5 1 / 3 h / 2.25 w (inches)

**Alignment:** three finger knobs allow for hand adjustment

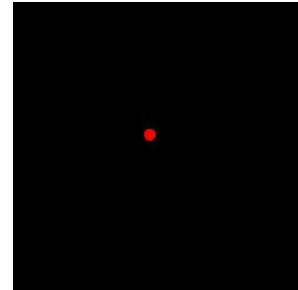


Leave it to Tele Vue to take a simple concept and turn it into perfection. The Starbeam is unquestionably the Cadillac of the RDF's. It's also one of the priciest. The StarBeam can set you back up to \$240 depending on the type of scope you want to mount it on. But for your money, you get all metal construction, one of the largest clear apertures on the market, and a recessed projection window that helps to prevent dew. Newer models also come standard with the flip mirror to help you keep the kinks out of your neck when finding objects high in the sky (it really works too), and you can buy this separately for older units. This finder was one of the few RDF's dimmed enough for use from my seim-dark site. It's down sides? It's large size and high price tag. Still – if you have a high end refractor, there's really nothing else that would match it in terms of quality. It's a bit on the heavy side, but usually it's mounted on the rings of a refractor (the center of balance for the scope) so weight is not typically much of an issue.

Highly Recommended for Refractors

## Celestron Star Pointer

**Rating: \*\***



**Price:** \$24.95

**Includes Base:** No (uses weaver type or vixen / synta type)

**Weight:** 2.3 OZ

**Clear Aperture:** 19.73mm

**Window Tint:** very light grey

**Other Features:** Red Dot, adjustable brightness

**Accessories:** None

**Battery:** CR2032

**Physical Size:** 4.5 l / 2.25 h / 1.25 w (inches) Note: the Vixen base adds another 1.5 inches to height

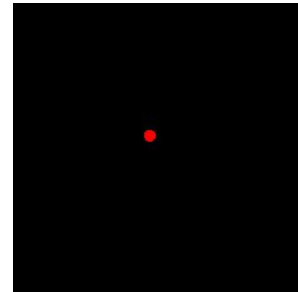
Similar to many of the other units on the market, the Celestron Star Pointer window has a very light grey tint which can make some faint stars hard to see. Additionally, I found

the red dot did not dim enough for my tastes, and like the other units in the line up, was prone to dew.

Not recommended.

## Crossman

**Rating: \***



**Price:** \$12.95

**Includes Base:** No (uses weaver type)

**Weight:** 2.2 OZ

**Clear Aperture:** 29.72 x 19.87 (mm)

**Window Tint:** Grey

**Other Features:** Brightness is non-adjustable

**Accessories:** None

**Battery:** CR2032

**Physical Size:** 4.5 l / 2 h / 1.4 w (inches)

Many moons ago, when I was strapped for cash and wanted to save money, I (along with many others) decided to save some dosh and buy a BB gun sight from one of my local discount stores. Combined with a visit to radio shack, a drill and some time, I had a very nice little RDF. Is this still a valid option for the frugal astronomer? One of the better and cheaper units on the market is the Crossman Site available from any of the larger department stores. Because it's designed for day use, there is no brightness adjustment, but if someone were so inclined, it would be a simple thing to install a variable pot from Radio Shack and/or an inline resistor to reduce the brightness to a tolerable level, and allow for adjustment. However, with the price of units like the Giant Mars Eye finder, you really don't wind up saving much if any money at all. If you are an ATM who would

rather make their own than buy an existing product this remains a viable option. For the rest of us, you might find better ways to spend your time.

Not recommended

## Afterwords

It's important to note that while some sights are better than others, every single one in this roundup did work as advertised.

Your choice will probably come down to your personal preferences and your scope choice.

If you do a large amount of star hopping, you may want to choose the Quikfinder or the Telrad as they have calibrated reticules which make hopping easier. If you can mount a Telrad on your scope, more charts and software packages support the Telrad Reticule as an overlay than the Quikfinder, but you can always make your own.

Personally, I tend to prefer the Quikfinder to the Telrad. In my opinion, there really is no reason for the Telrad to be as big, heavy and bulky as it is: Aside from that, I have my own reasons to prefer the Quikfinder even on a large dob – see the inset: *Stupid Scope Tricks* for an explanation.

As far as the RDF's were concerned, the things that I found to most affect usability were tint on the finder window (the darker the window the harder it was to locate the pointer stars), size of the finder window (with larger windows it's easier to align), and the brightness of the dot.

Overall, my three favorite units are the Giant Mars Eye, the TeleVue StarBeam and the Rigel QuikFinder. My choice would depend on the particular scope and budget, but typically, I'd choose the Rigel for Dobs, the StarBeam for refractors, and the Giant Mars Eye for Compound scopes.

Similarly, your choice will depend in large part on your telescope and budget. Fortunately, given the plethora of units on the market, there's one available for just about everyone.

### Recommended Reflex Finders:

- **Small to medium dobs:** *Rigel, Giant Mars Eye Finder*
- **Large dobs:** *Telrad, Rigel*
  
- **Refractors:** *(depending on budget) Giant Mars Eye Finder/ Vixen RDF / StarBeam*
  
- **Small to Medium Compound Scopes:** *Rigel, Giant Mars Eye Finder*
- **Large Compound Scopes:** *Telrad, Rigel*

## Stupid Scope Tricks

I was observing one fall with my 15", a scope on which I had been meaning to replace the Telrad with a Rigel (due to balance and space issues) in order to mount my computer up near the eyepiece, I had just never gotten around to it. As it was, I was taking the lazy way out and storing the computer on the lower lip of the UTA - just resting it there up there while I observed. That was working fine for all my observing (or so I thought) and I wasn't in a huge rush to sell the Telrad and buy a Rigel.

Well, it had been a long night, and I was finishing an observing session with the 15". The last target I hit that night was Mars, and while I didn't use the computer to get there, I didn't put it away either just in case I found the energy to hit some more DSO's later that night. I observed Mars for around 45 minutes, and proceeded to completely forget that my Sky Commander was sitting on the ledge. Mars was about 40 deg up at the time - and I was tired after already having been out for several hours. Eventually, I decided it was time to hit the sack. Without thinking, I immediately took the binoviewer out of the scope and turned around to put the eyepieces and bino away.

I forgot basic physics.

The scope needed an extra couple of pounds of counterweight on the mirror box to, well, counter the weight of the binos. When I took the binos out, the scope was suddenly WAY overbalanced at the base.

Recall where I said I'd taken to storing my Sky Commander.

In essence, I reinvented the catapult.

I heard a thunk - the mirror box slapping against the rocker box, a thwack - the sky commander hitting the garage, and finally a crunch clatter clatter as the computer landed in the middle of the driveway. (This was followed by a rather odd, yet loud wail from the owner who figured out what he'd done with the first thunk.)

All told, I figure the computer flew about 10 - 15 feet. If you add roll distance, I might have hit 20+.

I put a "Wanted to trade my Telrad for your Rigel" ad up on astromart that night.

## *Suggested Reading / Further Resources*

History of the Telrad:

<http://www.company7.com/telrad/>

Using a Telrad:

[http://www.novac.com/Jon/RA/ra\\_telrad.html](http://www.novac.com/Jon/RA/ra_telrad.html)

David Kniesly's In-depth comparison of the Rigel QuikFinder vs the Telrad:

<http://www.cloudynights.com/premium2/accessories.htm>

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