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# Tele Vue Ethos

The Ultimate in  
Wide-field  
Observing!



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**The Ultimate in Wide-field Observing!**



By Erik Wilcox

I still remember observing through a Nagler for the first time. The difference in AFOV between a Nagler and the plossls I was using at the time was like night and day, but I don't think I fully realized the other differences until I began using fast scopes. Suddenly, the plossls that worked well enough at  $f/8$  looked like warp drive at  $f/4$  and I knew I needed something better. Over the years, I've owned many, many eyepieces but despite

my tendency to experiment, my eyepiece case always contains mostly Tele Vue products.

I also remember the first night observing with the then just released 13-mm Ethos. At a star party at Mount Pinos in Southern California a while back, veteran observer Don Pensack had a brand new 13-mm Ethos, and I think he spent nearly the entire night with that one eyepiece in the focuser of his 12.5-inch truss Dob. I remember com-

paring it with a 13-mm Nagler, and in terms of AFOV, the Nagler seemed plossl-like by comparison! Yet the correction was every bit as perfect as the Nagler; sharp right to the overwhelmingly wide field stop. So it was with great anticipation and excitement when Tele Vue began to announce other focal lengths. And I was even more excited when I found out I was going to get an opportunity to review the whole line!

The eyepieces arrived well packed, and in perfect condition, with the exception of the 17-mm, which had a small “rattle”. A quick note to David Nagler provided easy instructions to correct the problem without tools. I’ve purchased many Tele Vue eyepieces and other products in the past, and this was the first time I’d ever had anything arrive with something wrong. So it was nice to experience the excellent customer service that Tele Vue is known for firsthand. I’d also add that it’s likely the rattle developed on the 5,500 mile journey from New York to Hawaii, and other than the one minor issue, the eyepieces arrived in flawless condition (believe me, with the great distance and time spent in transport, I’ve seen many lesser products arrive completely destroyed). The skies were clear and the light from dusk was waning, so I went outside with the prized Ethos. It was a dark moonless night with a temperature in the low 60’s, and the only sounds were of an occasional breeze that rustled through the trees.

I had a few Naglers, Panoptics, a Radian, and other wide-fields of similar focal length set out, and was planning on comparing them with the Ethos, but frankly, there wasn’t much comparison. The AFOV of the Ethos is just so much wider, about 50% wider in area than a Nagler (!), it was like comparing apples and oranges. Most of my observing on this night was done with my homebuilt 16-inch *f*/4.5 truss dob equipped with a Tele Vue Paracorr (the Paracorr corrects both the coma and field curvature of a Newtonian’s parabolic mirror, thereby allowing evaluation of the eyepiece without introducing these aberrations inherent in the telescope). It didn’t seem to matter that I was looking at an AFOV that seemed like twice that of my Naglers, all of the Ethos were perfectly, and I do mean perfectly corrected right to the field stop. Stars looked exactly the same in the center of the field as they did right at the edge. To look at the edge, I often had to physically move my eye around. However, concentrating on the center of the field allowed me to naturally see the field stop with peripheral vision since it is 50 degrees to each side of the center. Even more so than the Naglers, the Ethos seemed to make me more

aware of my peripheral vision and how much it adds to the overall viewing experience.

Sweeping through Sagittarius with the Ethos in my dark skies and low latitude was utterly mesmerizing. Extended dark nebula like B92 suddenly “came to life” in my small refractor because I could use higher power to darken the sky background and still see the entire object at once through the massive 100 degree AFOV. Favorites like the Swan, Lagoon, and Trifid Nebulae were suddenly surrounded by a plethora of stars where before there was just a field stop. Throughout the rest of the sky, the Veil was more haunting than ever, and framing multiple objects (like M81/82) could be done at a higher magnification, yielding more detail. The Double Cluster was ablaze with tiny diamond-like pinpoints, and since I could frame both sections at a higher magnification, I observed color subtleties in stars that I usually only noticed with a “close-up” view of one section.

Ethos eyepieces are designed to keep planet size and shapes uniform across the entire field. This is done by correcting for “angular magnification” distortion as described in the book “Telescope Optics” by Rutten and van Venrooij. Although the pincushion or “fishbowl” effect is detectable because of the very wide field of view, it is much smaller than in some other eyepieces such as the 31-mm Nagler or 35-mm Panoptic.

Eye relief is something that I should mention; considering the parameters of these eyepieces, the eye relief is quite good. I don’t wear glasses, and I found I could just take in the entire FOV in all the Ethos before the view started to “black out” a bit. There is a roll down eyeguard (similar to that on the 31-mm Nagler), which could be utilized for those with eyeglasses. Eye relief seems nearly identical in the entire Ethos line, and indeed, they are all listed at 15-mm on Tele Vue’s website. That seemed about right to me, and I found the eye relief to be satisfactory. The Ethos also accept the Tele Vue Dioptrix, which can compensate for astigmatism in one’s eyes.

I was also curious to see how well the Ethos barlowed. With my 2.5X Powermate

(which technically isn’t a barlow), they performed flawlessly; exactly as if I was using just the eyepiece, but of course with more magnification. Yet I was also impressed at how well the Ethos works even with inexpensive “shorty” type barlows. There was no vignetting, and the 15-mm eye relief is just short enough so that even a shorty barlow doesn’t make the Ethos uncomfortable; it seems that Tele Vue thought of everything!

The 13-mm, 10-mm, 8-mm, and 6-mm Ethos can all be used in either 1.25-inch or 2-inch format. To use in 2-inch format, a setscrew must be removed. I like the idea of staying in the 2-inch format; I’ve often found myself searching for the 2/1.25-inch adapter in the dark when changing eyepieces. The 2-inch barrel also feels more securely attached in my focusers, and requires a bit less outward travel. There is also a safety undercut to keep it in the focuser even more securely. Like all Tele Vue products, the build quality is exceptional in every regard.

The 6-mm and 8-mm Ethos are parfocal with each other, and with all Tele Vue 1.25-inch Plossls, Panoptics, Radians and Nagler Type 6 eyepieces, when used with the 2-inch - 1.25-inch Tele Vue “High-Hat” adapter (ACR-2125, ASF-8125). The 10-mm and 13-mm are parfocal with each other, and the 17-mm and 21-mm are essentially parfocal with the 31-mm Nagler Type 5.

The Ethos are also much lighter in weight than they look, though they are physically large. With the high level of correction, I’d suspect that there must be some exotic glass inside, and likely have aspherical lens elements incorporated into the design. There certainly doesn’t seem to be 8 or more elements in each of these eyepieces, but I haven’t found any specifications on exactly how many elements there are in the Ethos. In any case, none of the eyepieces caused any balance problems in my big Dob, or weighed down my small refractor. They just got out of the way and allowed me to observe. Speaking of size and weight, the 13-mm, 10-mm, 8-mm, and 6-mm can all be used in a binoviewer.

The coatings are positively exquisite. When viewed at an angle, I could see a touch

**ETHOS SPECIFICATIONS**

	21mm	13mm	17mm	10mm	8mm	6mm
<b>Focal Length:</b>	21mm	13mm	17mm	10mm	8mm	6mm
<b>Apparent Field:</b>	100°	100°	100°	100°	100°	100°
<b>Eye Relief:</b>	15mm	15mm	15mm	15mm	15mm	15mm
<b>Effective Field Stop Diameter:</b>	36.2mm	22.3mm	29.6mm	17.7mm	13.9mm	10.4mm
<b>Barrel Size:</b>	2"	2"/1 1/4"	2"	2"/1 1/4"	2"/1 1/4"	2"/1 1/4"
<b>Weight:</b>	2.25 lb	1.3lbs.	1.55 lbs	17.7 oz	15.2 oz	15.5 oz

(All accept DIOPTRX eyesight astigmatism corrector)

of green and violet, but looking at the lenses straight on, they almost seemed to disappear. Through the scope at night, there is no glare, reflections, or ghosting. I spent a good deal of time comparing my 16-mm T5 Nagler to the 17-mm Ethos, as well as the 8-mm and 10-mm Ethos to my 9-mm T6 Nagler. I'd read much about the newer coatings and glass in the Ethos and differences compared to Naglers, so I decided to do my own comparison. Indeed, the Ethos coatings have some different characteristics than Naglers. Stars appear slightly whiter, but star color is still easily seen (even through my somewhat color challenged eyes). The vibrant whites and cooler view don't obscure fine details; rather, it makes them easier to distinguish. When viewing low contrast features on Jupiter's disk one night, I felt that the views through the Ethos were ever so slightly better than that through the Naglers and other eyepieces I was using. Objects with low contrast simply stand out slightly better through the Ethos. When I compared the 6-mm Ethos to a 6-mm wide-field (brand not mentioned to protect the innocent), I was shocked at the difference. Some say that wide-field eyepieces aren't meant for planetary observing; those people need to try an Ethos!

I spent a few more moonless nights observing through an 80-mm f/6 "ED" refractor. While this telescope has great optics, it does show a touch of color, so I didn't evaluate that when viewing through this scope. Through the refractor, I noticed a vague touch of field curvature if I REALLY looked for it. This was seen through all of the Ethos, and when comparing it to the Naglers, I noticed that the slight field curvature in the

Ethos was in the last 10 or so degrees closest to the field stop. With the Naglers narrower AFOV, it wasn't seen in them at all. Still, I really had to look for it in the Ethos. At first glance, stars looked sharp at the edge when compared to those in the center of field: upon closer observation, I found just a slight tweak of the fine focus knob brought them into true focus. Ethos are flat-field eyepieces and because they show more true field of view at a given magnification some might see field curvature in a telescope that other narrower eyepieces won't show. In my Paracorr corrected Dob stars were sharply focused to the edge of the field. In my 80-mm f/6 refractor, I did notice a touch of field curvature, most notably with the longer focal length Ethos. I've also noticed that as I've gotten older, my eyes don't accommodate for field curvature like they used to. So some observer's eyes may be able to accommodate for it better than mine do.

One thought I had when comparing the Ethos with my current eyepiece arsenal is how one could get by with fewer eyepieces when using the Ethos exclusively. The price of the Tele Vue Ethos has been a topic of discussion, but if you're only buying 3 eyepieces instead of 6, the price isn't much of a factor to consider. It reminds me of the time I bought a telescope and got a half dozen eyepieces (with a free case!) for an extra hundred bucks. I quickly learned that quality was better than quantity when it comes to eyepieces, because many of the cheap plossls I got for "such a deal" were nearly unusable. The Ethos can't be compared to such eyepieces, of course, but even compared to Naglers, one could certainly get by with fewer

eyepieces in their case.

In conclusion, I think it's obvious that the bar has been raised immensely, and likely to a similar extent that Tele Vue raised it when they released the very first Nagler so many years ago. It really is a complete sensory overload the first time to see that 100 degree AFOV, and every time thereafter when you switch back to an Ethos after using a narrower field eyepiece. Correction is nearly perfect in any scope, and Ethos even work well as planetary eyepieces. With the introduction of the 21-mm, Dob owners, especially those in light polluted skies, will appreciate the smaller exit pupil and wide TFOV. The wider AFOV of the Ethos allow the observer to use more magnification while still maintaining a wide TFOV. With the parameters of these eyepieces, the Ethos are positively revolutionary in terms of design and weight. If you like wide-field eyepieces, you really have GOT to own the Ethos; it's not just wide-field, super-wide, or ultra-wide; it's something we might need a new name to describe (hyperultramegawide?). Or we could just agree with Tele Vue and simply call it "The Majesty Factor". I'm here to tell you that it's a real phenomenon.

As I was wrapping up my review on the Ethos line, I got the news that I'd be receiving the new 21mm Ethos as well. Though I ended up not having quite as much time with it under the stars as the rest of the Ethos, I probably could've squeezed it into the article. However, I feel that it's such a special eyepiece that it deserves its entirely own article and review. So look for a comprehensive write-up of the brand new 21mm Ethos in the next issue of *Astronomy Technology Today*. ☐