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Nagler Mythos...

4/2004 Tom Trusock - [Click to e-mail author](#)

Eyepieces have personalities... - Al Nagler



9mm T1, 13mm T6 and 7mm T6 Naglers

What exactly are the differences between the Naglers? Why is the 17mm type 4 preferred to the 16mm type 2? Or is it? What do you mean I don't have a 9mm type 2?

I've been asked these questions a lot. No other eyepiece line seems to stir interest like the Naglers. And there have been so many different ones over the years, you need a scorecard to keep track – especially if you are buying used, because you are faced with choosing not only between all the eyepieces currently being sold, but all the eyepieces that have ever been sold. (Whew!)

First things first; the type actually refers to the optical design. This explains how a new focal length T5 can be introduced after the T6's have come to market. Certain lines like the t5's are scaled designs – meaning it's the same optical configuration for every focal length. For others like the T2's and T4's the design is dependant on the focal length, and every eyepiece is a little different. So why should you care about it being a scaled line? Well, if the design is the same, performance is the same. In other words, if you like how the 31mm t5 performs, odds are you will also like how the 16mm t5 will perform. If the line isn't scaled then certain members of the line may perform quite differently from others.

Ok, now let's set the stage for the introduction of the original Naglers. Think back to the late 70's – no, not disco – after that. No not *Star Wars*... Just after *The Empire Strikes Back*... Whaddaya mean you weren't born yet?? Well... Let's just say that in the late 70's eyepiece design had been stagnant for decades and not much new had been done since World War II. In fact, the most common wide field design was the Erfle, which has

from 4 to six elements and provides an apparent field of view somewhere between 60 and 65 degrees. The Erfle had in fact, been around for decades BEFORE WWII. Astronomy was ripe for change. Amateurs were ready for an innovative new line of eyepieces. Almost. There was only one small problem. At this point in history, an expensive eyepiece ran around \$45, and the original Nagler would cost \$200. Could a fledgling Tele Vue Optics survive by selling extremely expensive eyepieces that were completely different from anything amateurs had previously seen?

The Designs

Nagler Type 1

Not wanting risk his business on the introduction of an eyepiece that would cost the amateur so much more than what they were accustomed to paying, Al Nagler wisely decided to shelve the Nagler prototype for a few years while he building up Tele Vue's reputation for excellence by marketing the patented Tele Vue Plossl. The TV plossl is an improvement over the original design that allows for better edge performance and reduced eyepiece astigmatism.



7mm T1 Nagler

The very first Nagler was a 13mm, seven element, fully corrected eyepiece that was dual barreled (both 1.25 and 2" barrels). Designed by Al Nagler in 1979, revised in 1980, it was commercially produced and sold in 1981/1982. The Nagler design was revolutionary in that it provided a wide, sharp field even in fast scopes. For many amateurs this was the beginning of an entirely new way to view the stars. While the prototype Naglers were made in the USA, Tele Vue made the decision to hold costs down by having future Naglers made in Japan with operations in Taiwan coming later.

By 1982, T1's were available in the original 13mm (dual barrel), 9mm (dual barrel) and 4.8mm (1.25" only). The first designs had a smooth body, with no eyecup or finger grips. In 1984, Tele Vue introduced the 11mm (dual barrel) and the 7mm (1.25") to complete the initial line up. Performance was amazing and completely unlike anything else available at the time. A Nagler's massive well corrected field of view provided an intense immersive experience. Even compared to today's eyepieces, there are/were amazingly few drawbacks. The biggest complaint involved kidney bean – particularly in the 13mm, while others grumbled about light loss when compared to simpler eyepieces (fewer elements).

Kidney Bean is used to describe a blackout area that takes the shape of a kidney bean, and is very sensitive to eye placement. With the initial pricing of the 13mm at \$200, the 9mm at \$175 and the 4.8mm at \$150, these were far more expensive than any other eyepiece then on the market. Early ads touted them as “

...Even Better than you imagined!", "A new dimension in observing" and the "Closest thing to a spacewalk". But any way you cut it, these wide-field, well corrected eyepiece that worked just as well at f4 as it did at f10 were revolutionary.

Only the 4.8mm and 7mm remain in production as of 2004. The 13mm and (especially) the 11mm are considered collectors' items. You can expect to pay a premium on the used market if you are looking to acquire a bit of history. But these aren't just worth collecting for historical reasons - even today, the venerable 9mm T1 is still one of my personal favorites.

Nagler Type 2

1986 saw the introduction of the 20mm, 16mm and 12mm T2's. This was an improved design to reduce kidney bean and extend the available focal lengths. Many consider the 20 to be better optically than its replacement the 22mm T4, and some go so far as to consider it the sharpest Nagler ever made. It's also as big as a small house (only recently being beat into submission by the 31mm T5). None of the T2's remain in production, and the 20mm is another that's moved to the collectors list. The T2's design specifications called for 12mm of eye relief, a little tight when compared to most longer focal length eyepieces.



7mm t6 and 13mm t6 Naglers

Nagler Type 3

This is the "missing Nagler". Nothing that's come out of Tele Vue has ever officially been labeled a T3.

Electronic pundits who haunt the various e-groups have hinted that the Radians could have been initially slated as the T3 Naglers but that Tele Vue eventually decided to keep the Naglers speced at 82 deg. This does fit the timeline as the Radians were released just before the T4's. However, Al Nagler's recent comment to me on this subject was a not so cryptic: "Not everything we've ever done has made it to the marketplace." Readers are left to draw their own conclusions, and until our agents deep inside the TVO facility discover the truth, we'll never know. Until that distant day, beware of astromarters offering t3 Naglers.

Nagler Type 4

Introduced in 1998 these are the first of the "modern Naglers" and the oldest complete line remaining in production, and they replaced the earlier T2's. Building on experiences learned from the Radians, the Type 4's tout increased eye relief for improved comfort, the click stop insta-adjust eye guard (love it or hate it), and reduced size and weight as compared to the T2's. They are available in 12mm (dual), 17mm (2"), and 22mm (2"). The 17mm is often called the sharpest of the T4's, and since the T4's are not a scaled design, it's quite possible. In fact, my personal experience agrees. Contrary to rumor,



these eyepieces are not outdated and are not scheduled to be phased out (See Myth #1). They will remain in production for users who wish to have more eye relief. Personally, I'm exceedingly fond of all the T4's and would like to collect the set, but I have a special place in my heart for the 17mm.

Nagler Type 5

Introduced in 2001, the 31mm (2") and 16mm (1.25") offer some of the biggest TFOV's of any eyepiece in their class. The 2.2 pound 31mm is a true King Kong, and eats other eyepieces for lunch. Probably it's closest competition is the 35 Panoptic – another Tele Vue design. The 26mm (2") was released in 2002, and the 20 (2") in 2003. Pundits rate the 20mm t5 as the spiritual successor to the 20mm t2 – every bit as sharp, but significantly lighter.

*Terminagler – 31mm Nagler T5
– Courtesy John Crilly*

Nagler Type 6

Also introduced in 2001, the 5, 7, 9 and 13mm T6's (all 1.25") finally effectively replaced the T1's and provided increased contrast, higher throughput and better eye relief in comparison. To top it off, they work wonderfully in binoviewers. In 2003, Nagler introduced the 2.5, 3.5 and 11. In a way, TVO has come full circle, in that the seven element optical design of the original T1 Naglers has now been revised for the Type 6's.

Some Nagler Myths Dispelled:

Myth #1 - The type 6's and 5's are better than and/or are replacing the older type 4's.

According to Al Nagler, the current t4's, 5's and 6's all use the same materials and coating technologies. All provide top notch performance, and the t4's will remain available for a long time to come because of the increased eye relief they offer. Personally, the t4's are my favorites for monocular astronomy.

Myth #2 – Japanese made Naglers are better than Naglers made in Taiwan.

Contrary to some statements you see on the net, there is no basis to the “the Japanese Nagler is optically superior to the Taiwanese Nagler” mindset. Both eyepieces are made to stringent Tele Vue specifications, and both have to pass Tele Vue quality control. Still, this myth abounds, and in fact one can frequently see the words “made in Japan” advertised as a selling point for used Naglers. And in the perception becomes reality department, Japanese made Naglers still tend to command higher prices in the used market.

Myth #3 – I just bought a 9mm Type 2

The 9mm gets the vote for “Most confused Nagler.” Several folks seem to think that there is a 9mm T2, and I’ve heard a few confused souls even claim they purchased a 9mm T3. This is NOT the case. If you have a 9mm and it’s not a T6, it’s a T1. Tele Vue added



One of the last 9mm t1’s made...

eye guards, grip rings and such over the years, dramatically changing the look, but they remained t1’s.

Myth #4 – Why waste the money for a Nagler? – No one can see the edge of field anyway...

- 1) Several folks are quite capable of taking in the edge of field even in the huge 82 deg afov of the Naglers, including myself.*
- 2) Move your eyes. The fact that most folks need to move their eyes to take in the entire field of view greatly adds to the immersive experience.*
- 3) Performance (in most models) is extremely well corrected to the edge even in fast scopes, and thus you don’t have to build an eyepiece collection around a particular scope – Naglers work well in all of them...*

Myth #5 – The multiple elements rob light, as well as decreasing contrast and resolution when compared to the classic inexpensive (UO) ortho.

While there was an element of truth to this with the original Naglers, I’ve compared the modern t6 Naglers to the classic UO Orthos, and have discovered that the t6’s lose absolutely nothing to the orthos – in resolution, contrast or throughput. To beat the Naglers on planetary performance, you have to go to a modern specialized minimum-element eyepiece such as the TMB Supermono, and even then the differences are miniscule.

Myth #6 – The T6 Naglers are superior to the T5 Naglers.

The T6's are simply a different design with differing focal lengths. The T6's and the T5's get along quite well together, thank you.

Some Common Questions Answered:

1) What are the differences between the Naglers?

Haven't you been paying attention? Oh – I suppose you want the short version – don't blame ya. Well, generally it's the optical design as well as the materials and coatings used. The higher type number indicates a more recent optical design.

2) Why is the 17mm type 4 preferred to the 16mm type 2?

Typically because of the eye relief, but the 17mm t4 also has something of a reputation for being one of the true jewels in the entire Nagler line up.

3) What do you mean I don't have a 9mm type 2?

See Nagler myth #3.

4) Why are the 4.8mm and 7mm t1's still in production?

To offer a lower cost alternative to the t6's.

5) If I shove my dual barrel Nagler all the way into the diagonal will it hit my mirror?

No.

6) My Nagler isn't labeled, what type is it?

In general - if your Nagler isn't labeled, it's probably a T1.



17mm T4 – Courtesy John Crilly



Note the marking next to the 9mm – Courtesy John Crilly

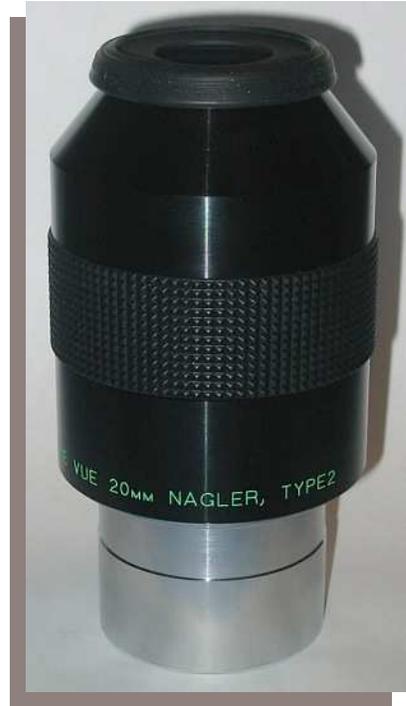
7) What's a NEAF blem Nagler? Is this a new type of Nagler eyepiece?

Every April the NorthEast Astronomy Forum sponsors the NorthEast Astronomy and Telescope Show. This event is most commonly referred to as NEAF. Each year Tele Vue attends and

brings eyepieces which typically have some cosmetic goof that while preventing the resale of the equipment through normal channels does not degrade performance much - if at all. These “blemmed” units are marked by TeleVue as shown in the picture (to prevent resale at non-blem prices) and sold at a reduced cost to the public.

8) If two inch eyepieces are better are better than 1.25” eyepieces, then why are so many of the newer Naglers in 1.25” format?

It’s not quite that clear cut. A 2” eyepiece isn’t necessarily better than a 1.25” just because of the barrel size. It really depends on what you are trying to do. There are two main advantages to the 2” format; 1) you need a larger barrel to have a larger field size above a certain focal length and AFOV, and 2) there is added security by having a beefy two inch focuser and diagonal to hold onto all that glass. There are some subjective reasons to prefer a large 2” eyepiece to a small 1.25” version as well. Personally, I find that the physically larger eyepieces tend to produce a more immersive feel in monocular viewing than their 1.25” counterparts.



9) Can I unscrew the skirt on my Nagler to provide a true 1.25/2” eyepiece?

You can unscrew the skirts on some of the dual barrel Naglers, but it’s most CERTAINLY not recommended –Not unless you like to hear the tinkle tinkle of expensive glass hitting the ground.

10) I’ve heard some Naglers have built in barlows. Can I unscrew the barlow element and effectively create a different focal length eyepiece?

Yes, this trick can be pulled with some of the older Naglers (case in point, the 13mm became a 30mm), but edge performance suffered. Additionally, you risk ruining the threads on the eyepiece by potentially cross threading them while screwing the barlow element back in. It’s not recommended. If you want to barlow Naglers, buy a barlow or PowerMate and do it in the conventional way.

The 20mm T2 – Courtesy John Crilly

11) If I do something silly like cross threading the barlow element when screwing it back in, unscrewing my 9mm Nagler, or dropping one of my eyepieces on the cold hard ground can Tele Vue fix my eyepiece?

Usually. Contact Tele Vue and find out. If you're lucky, you'll get to talk to Al Nagler himself.

12) Do I have to pay Nagler Prices to get Nagler- like views?

Well, it depends. There are other eyepieces out there that will deliver similar views and cost less but there is a catch: In order to get acceptable edge performance out of them you really have to be using a longer focal length scope. The real kicker to Naglers is the great performance across a wide range of focal lengths. I keep looking for those \$20 eyepieces that provide Nagler like views, but I haven't found them yet.

13) I have an 8" SCT or a small dob, and I want to try a Nagler. Can you recommend one?

Well, it really depends on your scope and it's focal length, but Al Nagler has eyepiece recommendations for both setups on the Tele Vue web site listed in the sources for this article.

14) Do I have to have a Nagler eyepiece to enjoy astronomy?

In 2003, The US Congress passed PA-31T5, a bill that required every amateur astronomer in the United states was required to buy at least one Nagler eyepiece... Sound silly? Well of course it is. You most certainly don't have to own any particular piece of equipment to enjoy yourself in this hobby, and don't ever forget that enjoyment is what a hobby is all about.

Al Nagler's vision with the Nagler eyepieces was to "...approach the wide angle perspective of naked eye vision, while maintaining the highest degree of sharpness, contrast, and viewing comfort. The goal is to allow the telescope to virtually "disappear," leaving the impact of "spacewalk" viewing." In my opinion, and the opinion of amateurs worldwide, he succeeded, and succeeded admirably. Not only did that small business survive, they thrived and in doing so and greatly influenced amateur astronomy.

On behalf of all the amateurs who have ever an unforgettable night under the stars with your eyepieces, Al Nagler – We thank you.

Sources

- Tele Vue
<http://www.TeleVue.com>
- Al Nagler

- Tele Vue: A Historical Perspective – Details on Tele Vue’s history, as well as the unpleasantness with Meade
<http://www.company7.com/Tele Vue/telal.html>
- The Tele Vue Yahoo Group
<http://groups.yahoo.com/group/Tele Vue/>

Additional resources and websites of interest.

- Astro-Ads – Vintage astronomy ad’s from the 60’s, 70’s, 80’s and 90’s
<http://mysite.verizon.net/gpiepol/astroads.html>

Thanks to John Crilly, who contributed photos from his collection of Naglers, but more importantly his thoughts and time. Thanks most of all to Al Nagler for taking the time to patiently answer my questions. Any errors in this article are mine, and mine alone.

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Have you viewed Asteroid Nagler?