



TECHNICAL NOTES

Tele Vue DIOPTRXä

Your prescription for better viewing
— Al Nagler



The visual experience in astronomy is maximized by stripping away limitations:

- the limitations of the observing location (dark skies and steady seeing)
- the limitations of the telescope (aperture, field, resolution and contrast)
- the limitations of the eyepiece (field, resolution and contrast)
- the limitations of our eyesight (e.g., astigmatism)

Tele Vue has historically been dedicated to overcoming the first three of these limitations:

- with wide angle, flat field telescopes easily portable for traveling to great observing locations
- matching ultra-wide angle eyepieces with full field image quality to generate what we call “spacewalk” viewing
- and a variety of long eye relief eyepieces to allow eyeglass wearers to enjoy the maximum visual experience

To overcome the fourth limitation (astigmatism), Tele Vue has developed a corrector which fits directly onto the eyepiece. Just as Dobsonian owners could not fully appreciate the performance of Tele Vue eyepieces until installing the Paracorr to compensate for mirror coma, the majority of the population (which has some eyesight limitations due to astigmatism) had no way to correct for this except by wearing eyeglasses. That is, until now. Introducing the **DIOPTRX™** Astigmatism Correcting Lens Accessory, which extracts the maximum visual performance from matching eyesight to eyepiece.

Tele Vue **DIOPTRX™** lenses attach to the top of all long eye-relief Tele Vue eyepieces to compensate for eyesight astigmatism from $\frac{1}{4}$ - to $2\frac{1}{2}$ -diopters in $\frac{1}{4}$ diopter steps and then in $\frac{1}{2}$ -diopter steps to $3\frac{1}{2}$ -diopters.

Observers do not need eyeglasses to compensate for near- or far-sightedness, since telescopes can focus out these limitations. Further, other eyeglass characteristics, such as bi-focal, tri-focal, or vari-focal (progressive) designs are severely detrimental when trying to view a large field at infinity.

In the past, we have recommended getting a special pair of “astronomy-only” eyeglasses that only has your astigmatism correction and multi-coatings. However, frame styles may still limit field sizes, and be uncomfortable in certain telescope orientations.

We suggest a procedure (see “Determining When to Use Eyeglasses” which you can find at televue.com) to determine at what size exit pupil your astigmatism needs correction, since at higher powers (with their smaller exit pupils) eyeglasses may not

be necessary. Note, however, that large exit pupils are typical for viewing with large aperture instruments, such as Dobsonians, and for wide angle viewing with small refractors.

Through experimentation, we have found that 2 diopters of eyesight astigmatism is detectable down to a 1mm exit pupil, and 1 diopter is detectable at a 2mm exit pupil.

DIOPTRX™ lenses, therefore, obviate the need for a dedicated “astronomical eyeglass”, but are there any other benefits, aside from eliminating frame or comfort problems?

The primary benefit is the potential of optimized correction in the amount and orientation of astigmatism for eyesight in astronomical viewing. The ability to compensate for both orientation and astigmatism, as our eyesight changes, is another advantage. See “Understanding Your Eyeglass Prescription for Astigmatism”, by Barry Santini. With multi-coated high quality lenses accurately aligned to the eyepiece, the serious enthusiast now has another tool to maximize the potential in seeing the faintest stars over wide fields, subtlest small planetary details, and the satisfaction of knowing they have the very best visual experience possible with their prized telescope and eyepieces.

What is the procedure in choosing a **DIOPTRX™** lens?

- First, look at your eye prescription for any astigmatism in your dominant eye (the one you primarily use for observing).
- Second, note the longer focal length Tele Vue eyepieces that apply and obtain a **DIOPTRX™** lens for that value of astigmatism on the prescription.

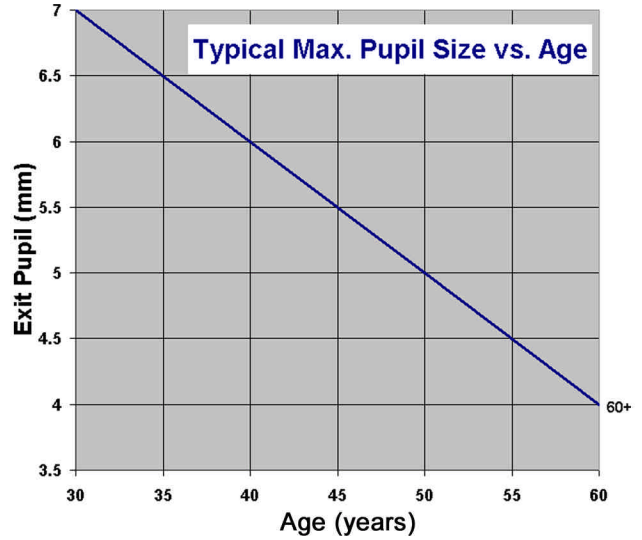
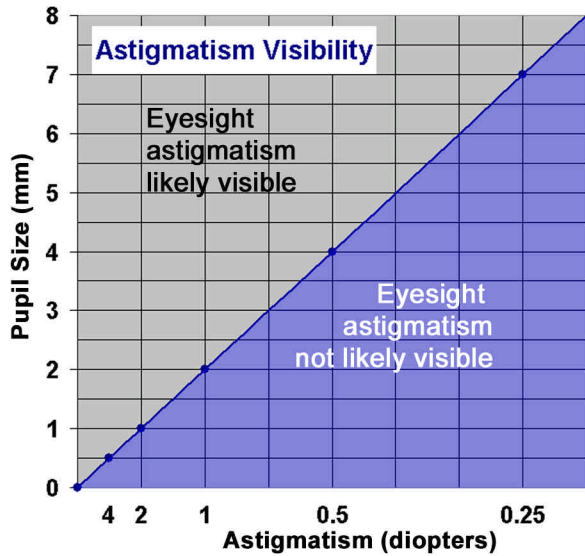
HOW TO CHOOSE DIOPTRX™ MODELS

Your prescription may look like this, with different numbers.

		SPHERICAL	CYLINDER	AXIS
Right Eye	O.D.	+1.50	-0.50	45
Left Eye	O.S.	-0.50	+1.50	135

- Ignore spherical and axis values.
- Ignore all ± signs.
- Simply choose **DIOPTRX™** to match the cylinder (astigmatism) value of your preferred viewing eye. In the example above, you would choose 0.5 diopter model for your right eye and 1.5 diopter model for your left eye.

Reference Tables



DIOPTRX™ lenses will apply to all Tele Vue eyepieces recommended for digiscoping (because of their long eye relief):

- 31mm Nagler type 5
- 26mm Nagler type 5
- 41mm Panoptic
- 35mm Panoptic
- 27mm Panoptic
- 22mm Panoptic
- 55mm Plössl
- 40mm Plössl
- 32mm Plössl
- All Radians (18mm thru 3mm)
- All Nagler type 4 (22mm, 17mm, 12mm)



Adapters are also available to use DioptRx™ on Panoptic 24mm, 19mm and Nagler Type-6 eyepieces; however eye-relief may be too short to comfortably see the full field.