
THE TELE VUE POWERMATE CONCEPT

- taming the Barlow to unleash its power



Thank you for purchasing a POWERMATE: 1¼" (2.5x or 5x) or 2" (2x or 4x).

I thought you might be interested in the development of this project:

Barlows amplify the power of a telescope. They can be considered "focal reducers" for eyepieces, or "focal extenders" for objectives.

Terence Dickinson, in his Barlow test report in Sky and Telescope, July 1997, says: "Technology has erased the old objections. A modern Barlow will not degrade your telescope's optics. Anyone telling you otherwise is using outdated information. Moreover, the highly regarded Nagler eyepieces and their clones have built-in Barlows, ample evidence that the lens is not some detrimental intruder." Thanks, Terence, for laying the myth of the degrading Barlow to rest.

Barlows do more than just increase magnification; they also retain eye relief (or in the case of long focal length eyepieces, actually INCREASE eye relief). A high quality Barlow must be properly designed and manufactured in order to avoid compromising a telescope's color correction and spherical aberration correction. The "invisibility" of Tele Vue's 2-element Barlows have been noted in test reports in the astronomy magazines.

Barlow lenses, regardless of the number of elements, have negative power that diverge field rays. If Barlows are made too short or with too much magnification, the diverging rays can cause severe vignetting and image degradation in eyepieces due to mismatched pupils. I had to go beyond the simple Barlow concept to achieve the goal of a compact, high power, fully corrected image amplifier.

Enter POWERMATE: My approach yielded a 4-element parfocal, compact amplifying lens system. POWERMATE consists of a negative achromatic doublet plus a positive "pupil-correcting" doublet. While it looks and functions like a Barlow, your eyepiece will operate with pupil locations where the designer intended, avoiding mismatch problems. POWERMATE optimally mates its power to your eyepiece. No additional "interface lens" is needed, since POWERMATES have it built-in.

In addition to full multi-coating, POWERMATE includes other Tele Vue special touches such as a safety undercut on the chrome barrel where practical (2x and 2.5x POWERMATES do not insert fully on certain diagonals) and captive lock screws that can't fall out. Our 100% QC program at f/4 insures that POWERMATE will add dramatic power (and NOTHING ELSE) to your favorite eyepieces. If, for example, you own a 22mm Panoptic, you'll have the power of an 11mm focal length eyepiece (with the 2x Powermate), an 8.8mm focal length eyepiece (with the 2.5x POWERMATE), a 5.5mm (with the 4x POWERMATE), or a 4.4mm (with the 5x POWERMATE)!

Both 1¼" POWERMATES are constructed to be parfocal with Tele Vue's 1¼" 90° diagonal (often used in smaller telescopes) adding convenience not previously available with any Barlow. The 2.5x and 5x POWERMATE are threaded for 1¼" filters.

I hope you enjoy your new POWERMATE. If you have any interesting experiences with it, kindly drop me a note at your convenience.

For Dobsonian/Newtonian owners using Tele Vue's Visual Paracorr coma corrector and a POWERMATE

- 1¼" POWERMATES (2.5x or 5x): Insert the 1¼" POWERMATE into the Paracorr's 2"-1¼" adapter and set the Tunable Top at its highest position.
- 2" POWERMATES (2x or 4x): Insert the 2" POWERMATE into the telescope's 2" focuser, then insert the Paracorr into the POWERMATE.

Please note that using heavy 2" eyepieces with the 2x or 4x POWERMATE could result in size and weight combinations which may make it difficult to achieve proper balance on smaller instruments.

NOTE: For 35mm photography or CCD imaging, POWERMATES are ideal alternatives to "eyepiece projection". For 1¼" Powermates (2.5X & 5X), unscrew the bottom portion of the black barrel, thread it onto the special Powermate 1.25" T-Ring adapter and screw it into your camera's T-ring adapter. For 2" 2X Powermate, unscrew the chrome barrel, thread it into the special Powermate 2X T-Ring Adapter, and screw it onto your camera's T-Ring adapter. For 2" 4X Powermate, unscrew top half of black barrel and thread on the 4X T-Ring adapter.

Clear skies,

Al Nagler, CEO