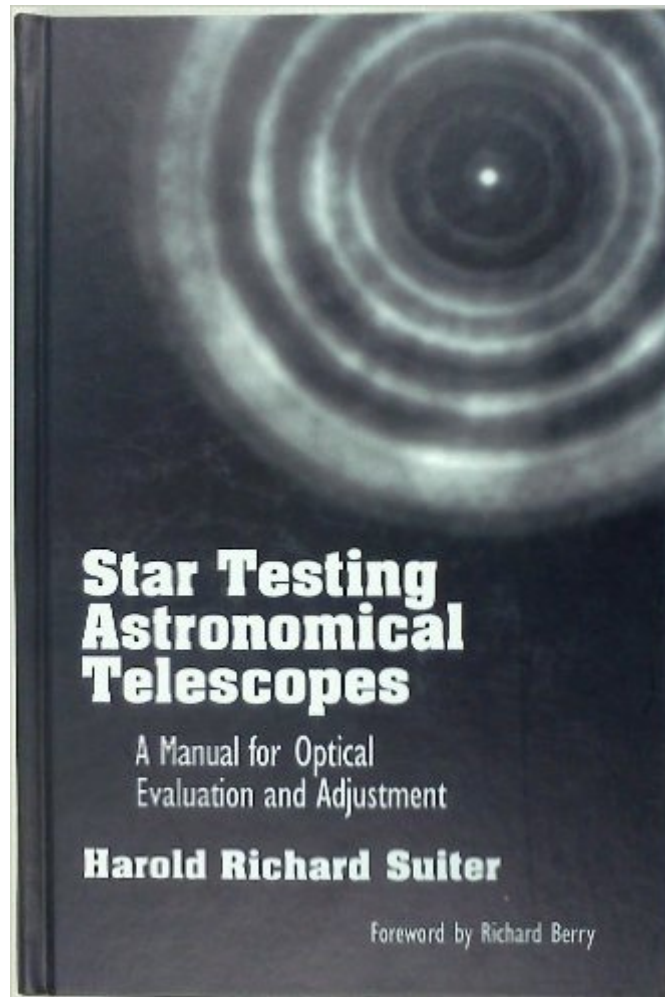


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# Star Testing Astronomical Telescopes: A Manual For Optical Evaluation And Adjustment



## Synopsis

Many observers harbor misgivings about their telescope. The manufacturer may have guaranteed accuracy to one-quarter wavelength or as diffraction-limited but most telescope users have, at best, only a hazy idea of how to personally verifying such claims. Sure, there are ways to check the accuracy of individual components but for many they are hard to understand or require costly reference optics and other test equipment. Besides, telescope users are interested in the performance of the entire optical train, not just the main optical element. What is really needed is a test that can be used at the observing site, so that all the problems that impact on a telescope's performance can be diagnosed. Isn't there a simpler and more complete way than the complicated shop tests? Yes, the star test is such a method. It uses the entire working telescope. It is not a poor substitute or a work-around that uses bits and pieces of the optical system. It is the oldest and most sensitive of the optical tests an inspection of the diffraction image itself. Star-test results apply to the complete imaging performance of the telescope. The star test is lightning-fast and requires only a good high-power eyepiece. It tests the telescope for precisely what it was meant to do. Bad or poorly-aligned instruments fail the star test unambiguously. The star test often allows you to correct the optical difficulty immediately in the field, when you might be frantic t

## Book Information

Hardcover: 364 pages

Publisher: Willmann-Bell; 1st English ed edition (1994)

Language: English

ISBN-10: 0943396441

ISBN-13: 978-0943396446

Product Dimensions: 0.5 x 6.2 x 9.2 inches

Shipping Weight: 2 pounds

Average Customer Review: 4.6 out of 5 stars [See all reviews](#) (16 customer reviews)

Best Sellers Rank: #940,399 in Books (See Top 100 in Books) #24 in [Books > Science & Math > Astronomy & Space Science > Telescopes](#) #274 in [Books > Science & Math > Astronomy & Space Science > Star-Gazing](#) #920 in [Books > Textbooks > Science & Mathematics > Astronomy & Astrophysics](#)

## Customer Reviews

This is THE definitive book on the topic (outside of professional literature), and Suiter does an excellent job of presenting the material in a logical way, with clear diagrams, excellent photos, and

in-depth discussion of the theory behind the technique. For those amateurs looking for basic information on how to star test their own telescopes quickly, Chapter 2, *An Abbreviated Star Test Manual* (17 pages) will give you all the information needed to accomplish this goal. Subsequent chapters expand on specific problems and (most importantly) advice on correcting the observed problems, as well as providing a theoretical basis for tests. Of special note is section 5.2, which describes the use of artificial sources, allowing "star" testing to be done in the daytime. The formulas in this section allow one to construct and use an artificial source with confidence. Appendix A includes a review of other common optical tests, and discusses their strengths and weaknesses. Not sure your telescope is working as well as it should? With its extensive and easy-to-compare diagrams, this book, a high-powered eyepiece and a star should quickly tell you how well your telescope measures up. In many cases, it will also give you sound advice on how to fix the problems you may find. And for those readers who want to understand the theory, it's all there also.

Mr. Suiter is a professional physicist whose avocation is star-gazing with modest amateur astronomical telescopes. His book bridges the gap between amateur and professional on the subject of telescope optics and performance. This book is NOT for the beginner! It is dense, highly technical, very educational, and really is better suited to advanced amateurs with a strong technical affinity. Though it is printed upon high quality paper with some very good computer-generated graphics, it remains relatively slim, no more than an inch thick. The book covers all the theory and practice needed to help align and collimate most amateur telescopes to the peak of their optical potential. He begins with the wave theory of light, and ends with a discourse on interpreting the multi-circular images one often sees of a star in and out of focus. He creates a wonderful "model" of seeing as a stack of filters between your eye, and the objects you look at. Every sort of optical degradation imaginable is represented by one filter or another - air turbulence, optical misalignment, diffraction, optical imperfections, etc. Beyond this, he manages to sum up the effects of these filters in one all-encompassing concept, call the Modulation Transfer Function. Essentially this conveys a sense of how well the telescope will perform varying feats of resolution and contrast. In some cases, a "defective" wavefront may provide superior resolution than is otherwise theoretically possible, though only at the expense of other image properties such as contrast. Beginners, save your money. Advancing amateurs, this book is for you. This book requires hours of thoughtful study. An excellent tome for the library, or the continuing ed program at the University of Porcelain.

If you are an amateur telescope maker, avid amateur astronomer with a jones for hardware, or are

just interested in optics--YOU NEED THIS BOOK. Some rather technical sections do not detract from the hands-on user knowledge that makes it popular. Your friends will think you are an optics expert when you critique their scopes, but more importantly, it will help you get the best performance from your own equipment. It MUST be a GREAT book, as some used book dealers are asking double the new cost...and it's still in print!.

I really think the writing is at times rather poor. The explanations could be done much better. I particularly think the analogies with audio concepts just don't correlate very well with optics. The organization of topics is a bit herky jerky at times too. For content organization issues, mediocre explanations, and overwrought analogies I would rate this a 3 and barely that. On the other hand, this info is just invaluable to an amateur telescope owner. The star test is so revealing and so highly useful to evaluating your scope. And the book is about more than just that. Lots of info beyond just the star test. About how that test works, why it is so revealing, what it reveals etc. etc. and etc. The underlying content sometimes takes a real effort on the reader's part to understand. But is so highly useful it is very much worth the effort. Don't know of another source that compares. The info content I would rate a solid 5. So in the end I give it a 4 all things considered. If you want to know more about basic telescope optics, then "Telescope Optics : Complete Manual for Amateur Astronomers by Harrie G. J. Rutten and Martin A. M. Van Venrooij" is a better book. Yet it is more theoretical and explanatory. So much of Suiter's book has info that is pertinent and useful to you as a telescope owner. I really think any amateur astronomer owes it to himself to own both. I would suggest the Rutten and Venrooij book be read first. Follow it up with Suiter's book.

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