

R. E. Brandt
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Telephone 602-445-5469

In the past, the large aperture refractor has been pushed aside because of the so-called color correction problems, and the high costs in mounting. With today's technology, mainly the computer, the color problems can be studied and manipulated. With modern polishing techniques, high quality optical flats can be made allowing you to fold the light path for easy mounting.

R. E. Brandt achromatic objective lenses have optimum color correction with little or no coma or spherical aberration over a large $\frac{1}{2}$ degree field. We chose to correct the peak of the visual range (5100-6500 angstroms). We were able to achieve excellent color between these wave lengths.

The refractor having an inherent closed tube, alleviates the open tube currents found in most reflectors. This along with no secondary mirror and spider obstruction, causing unwanted diffraction, is the the reason the refractor is noted for finer resolution than any other type of optical system.

The Brandt 8" objective lens, with its' 106.5" fl. is short enough to be very easily mounted in a straight through tube and would perhaps be the best design because of its' simplicity. However, if you prefer a portable telescope, we recommend the comfort of the folded design, as shown in Figure 1. The optical flats in the folded design are an added expense and have to be of very high quality (1/0 wave or better), otherwise high magnification cannot be used. The error in the flats is magnified along with the focal length. Your tube design determines the number, position and sizes of the flats. We will be happy to assist you free of charge in determining the best possible design to meet your specific needs. See enclosed price list on optical flats.

Each objective personally hand aspherized by R. E. Brandt. The credentials of Mr. Brandt are well known. With over 15 years experience in the fields of astronomy and optics, and his long association as Senior Optical Instrument Maker for the dept. of astronomy of one Americas' leading Universities, Brandt has developed and personally fabricated many exotic spectrographic cameras and telescopes of all types up to 24" in diameter. The R. E. Brandt objective lenses are a result of this vast experience.

The design of these achromats is a joint effort of R. E. Brandt and of Optical Engineer Dr. P. J. Peters. With the vast knowledge of Dr. Peters and the long time practical experience of Mr. Brandt, we believe we have something exciting to offer in large aperture objective design.

Spot diameters for the 8" f/13.3 and the 12" f/16.6 achromatic objective lenses.

All diameters shown in mills. i.e. (.001" = 1 mill)

8" f/13.3 106.5" focal length

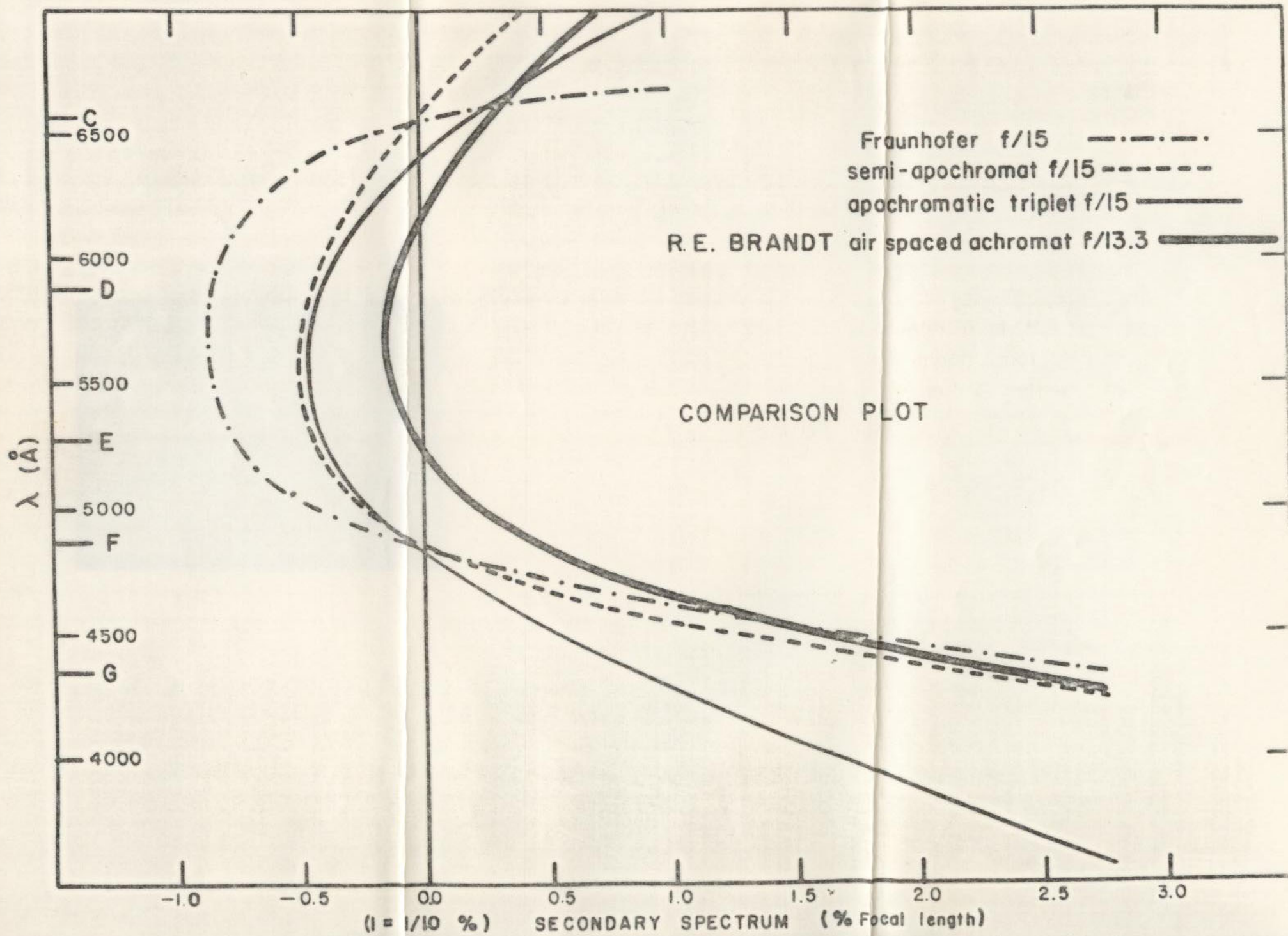
4400-4600-4800-5000-5200-5400-5600-5800-6000-6200-6400-6600-6800-	angstroms = 8" f/13.3 = 106.5" fl.
16.0 10.0 5.2 1.8 0.25 0.8 0.9 0.8 0.6 0.35 1.2 2.4 4.8	mills. on axis
16.0 10.0 5.2 1.8 0.2 1.0 1.0 1.0 0.4 0.2 0.9 2.0 4.0	mills. 4 degree off axis

12" f/16.6 200" focal length

4400-4600-4800-5000-5200-5400-5600-5800-6000-6200-6400-6600-6800-	angstroms = 12" f/16.6 = 200" fl.
25.0 15.0 8.0 3.2 0.17 1.7 2.5 2.6 2.0 0.8 0.6 2.1 4.0	mills. on axis
25.0 15.0 8.0 3.2 0.6 2.0 2.6 2.5 2.0 1.5 0.7 2.0 4.4	mills. 4 degree off axis

The color aberration of a lens is usually plotted in % of the focal length. To do this, simply multiply the spot diameters by the "f" number, (in the case of these two lenses, either 13.3 or 16.6 would be used.) After doing this, divide each one by the proper focal length (106.5" or 200"). These numbers can then be plotted on a graph (wave length vs focal length). An example of a plot number would be as follows: A 1 mill spot would be (.001" times 13.3 divided by 106.5") or .0001248% of the focal length of the 8" f/13.3. The resolution of the lens at any given wavelength is approximately 0.45 times the spot diameter at that point.

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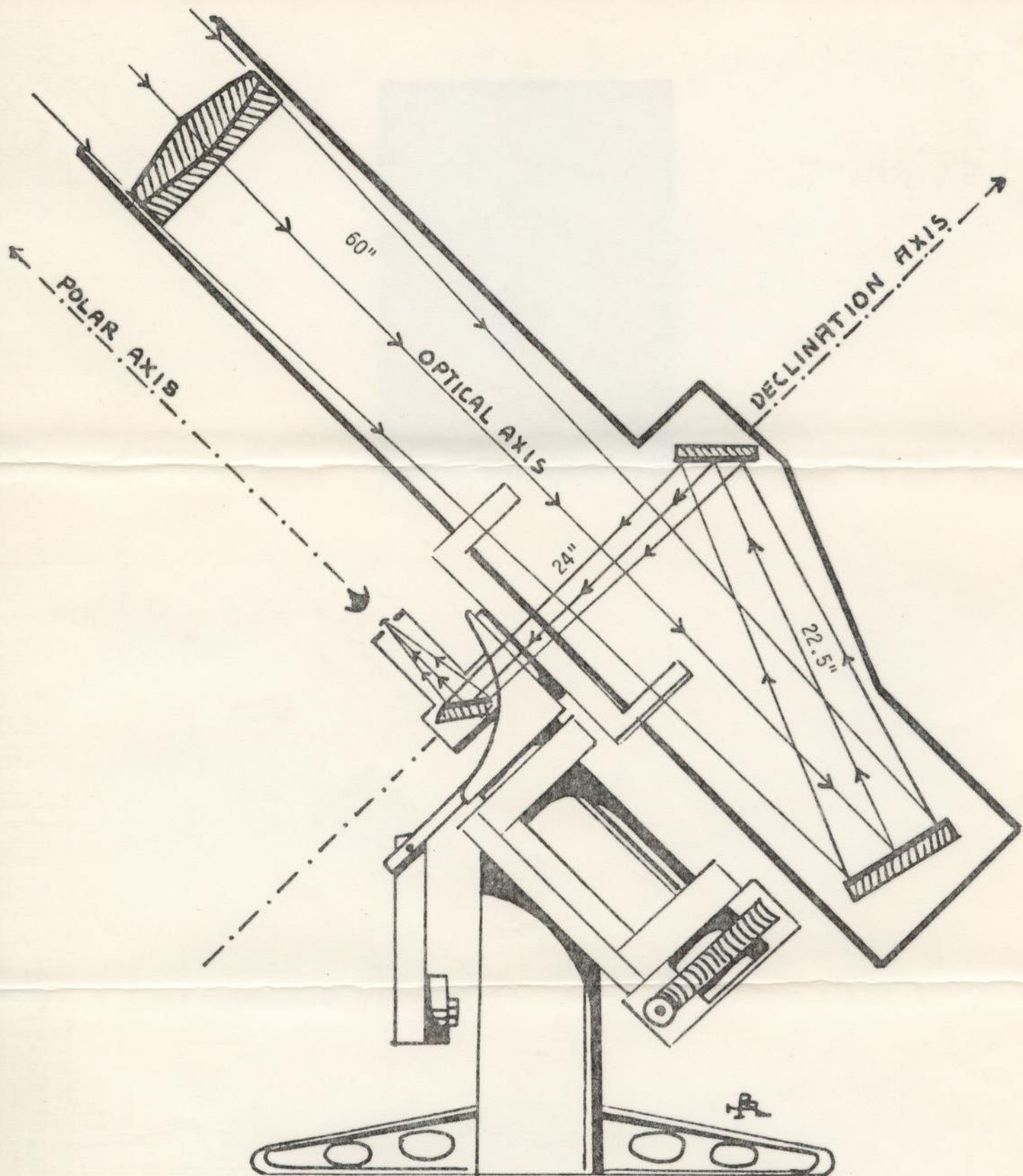


FIGURE 1

The 8" R. E. Brandt objective lens, shown here housed in a three mirror folded tube design on a modified Springfield mount. The above can be scaled to accommodate other size objectives.

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Prices on Objectives

6"	f/13.3	\$425.00
8"	f/13.3	\$995.00
10"	f/16.6	\$2,450.00
12"	f/16.6	\$4,950.00

If other f/ratios are desired,
add 20% to the above prices.

Prices on Optical Flats

	<u>4"</u>	<u>5"</u>	<u>6"</u>
Pyrex	\$85.	\$100.	\$125.
Ceruit	\$175.	\$200.	\$225.

Curve Generating Service

Mirrors or Tooling

Up to and including 8" in diameter - \$15.00 per surface
Above 8" to 14" - \$20.00 per surface

Lenses and Maksutov Correctors

Up to and including 6" in diameter - \$40.00 two surfaces
8" through 10" \$50.00 two surfaces
12" to 14" \$75.00 two surfaces

The above curve generating prices apply only to lens blanks that are reasonably close to desired thickness. Pricing for sizes not listed, i.e., 7", applicable price would be the next size up, 8". Add 30% for f/ratios under f/3.

All R. E. Brandt objective lenses are custom made, therefore, please allow six to eight months for delivery. Each objective lens comes uncoated in a machined aluminum cell. We do not recommend coating, therefore we do not offer it. We require 25% down, with the balance due at time of delivery, no C.O.D. Arizona residents add 4% sales tax, shipping prepaid in U.S.A., all others F.O.B. Prescott.

PRICE SCHEDULE

THERE WILL BE A PRICE INCREASE EFFECTIVE SEPTEMBER 1, 1981 ON ALL R.E. BRANDT PRODUCTS. ORDERS RECEIVED PRIOR TO SEPTEMBER 1, 1981 WILL BE HONORED AT CURRENT PRICES WITH A DELIVERY DATE OF 12 to 24 MONTHS. ALL SALES FINAL.

ACHROMATIC DOUBLETS

	Current	September 1, 1981
6" f/13.3	\$ 550.00	\$ 750.00
8" f/13.3	1,650.00	1,995.00
10" f/16.6	4,750.00	5,750.00
12" f/16.6	8,500.00	9,995.00

FOLDED REFRACTOR COMPLETE TUBE ASSEMBLIES

This folded refractor comes ready for mounting easily on any standard telescope mount.

	Current	September 1, 1981
6" f/13.3	\$1,250.00	\$1,550.00
8" f/13.3	3,200.00	4,200.00
10" f/16.6	6,200.00	7,550.00

This tube assembly consists of achromatic lens, Zerodur low expansion optical flats of test flat quality with H.R. coatings, rack and pinion focuser and one eyepiece.

OPTICAL FLATS

All R. E. Brandt optical flats are made of Zerodur ultra low expansion material and are of test flat quality 1/16 wave or better, therefore they can be used quite successfully in folded refractor design.

4"	\$400.00
5"	500.00
6"	600.00
7"	700.00

All prices on flats effective immediately.
(Unaluminized)

TERMS: 30% down with balance due upon notification of completion, shipping charges collect only. Arizona residents add 5% sales tax. Other than our quality guarantee, ALL SALES FINAL. DOWN PAYMENT NON-REFUNDABLE.



R. E. BRANDT
LENS WORKS

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