Binocular Stand Magnifier Strategies

Gregg Baldwin, OD
2020

Internal magnifier lighting increases contrast and decreases the effects of glare from external lighting sources. This is normally important for those patients who are not abnormally sensitive to glare from direct light sources. However, there are patients for whom this is not necessary, and who would benefit from maintaining binocular vision while using a stand magnifier.

This is especially true for those with non-congruent central field loss, but it is also true simply due to the added familiarity and comfort binocular vision can provide for those accustomed to it. For these patients, standard prism-compensated readers with paperweight magnifiers can provide a binocular option.

Paperweight magnifiers have other unique benefits. In Dr. Lewis Reich's 1991 article on compound magnifiers, he referenced Coburn "Visolette" paperweight magnifiers, stating, "Although the transverse magnification [enlargement] produced by these devices is limited, their proximal image positions permit the use of powerful reading additions or substantial accommodation. Therefore, the maximum equivalent power can be quite significant."*

*The Journal of Vision Rehabilitation; Vol. 5, #2, Spring, 1991; Compound Magnifiers, Lewis N. Reich, OD, MS

and, “The Visolette represents the original ergonomic stand magnifier [because] viewing angles of greater than 20° can be obtained. In addition, the Visolette can actually intensify illumination of the reading material.”* Their large viewing angles make paperweight magnifiers particularly suitable for binocular viewing, as they must be placed between the eyes relatively close to the spectacle plane.

*The Journal of Vision Rehabilitation; Vol. 5, #2, Spring, 1991; Compound Magnifiers, Lewis N. Reich, OD, MS

A paperweight magnifier’s enlargement factor, E, equals the magnification produced by a spectacle add with the paperweight magnifier, divided by that produced by the spectacle add alone. This enlargement factor can then be used to predict the magnifier’s result with other spectacle adds, since it is a constant.

The following enlargement factors are based on my own subjective magnification measurements using high plus aspheric trial lenses, and bracketing results. The binocular maximum add does not occur at the spectacle plane, as does the monocular maximum add, due to the physical positioning required by the stand magnifier for binocular use.

Paperweight Magnifiers	Diameter	Binocular Max Add/ Enlargement
Reizen	50mm	+14/ 1.5
	65mm	+12/ 1.7
	80mm	+10/ 1.6
	95mm	+10/ 1.6
Coil 5850 “Bright”	50.5mm	+14/ 1.6
Coburn Visolette	55mm	+14/ 1.6
Coburn Visolette	40mm	+14/ 1.6

Standard prism-compensated readers are shown here with their corresponding standard prism. Remember that these powers themselves do not represent the spectacle add used in enlargement calculations, since the distance refraction must first be incorporated.

+4	6^ BI OU
+6	8^ BI OU
+8	10^ BI OU
+10	12^ BI OU
+12	14^ BI OU
+14	16^ BI OU

The customary limits of binocular convergence limit the maximum standard prism-compensated readers to a power of +14D. As seen on slide eight, the larger Reizen paperweight magnifiers can not be used with powers quite that high, but this is due to the height of their dome lenses, not convergence requirements.

Dr. Reich’s article stated that the Coil 5428 stand magnifier has an enlargement factor of 3.6.* This is close to my measurement of 3.4. Using approximations that are clinically useful, I created the following table for clinical reference.

*The Journal of Vision Rehabilitation; Vol. 5, #2, Spring, 1991; Compound Magnifiers, Lewis N. Reich, OD, MS

	Monocular	Binocular
3.5X	Coil 5428/ +4D	Paperweight/ +8D
4X	Coil 5428/ +5D	Paperweight/ +10D
5X	Coil 5428/ +6D	Paperweight/ +12D
6X	Coil 5428/ +7D	Paperweight/ +14D