

## **Cros-Vision Glasses for People Sighted in One Eye**



### **Field-Expanding Cros-Vision Eyeglasses Have Been Helping People Sighted in Just One Eye . . . since 1968**

**by THE NATIONAL INSTITUTE FOR REHABILITATION ENGINEERING**  
An IRS Section 501c3 Organization Helping People With Disabilities Since 1967

A basic, low-cost version of the "Cros-Vision" glasses has the appearance of ordinary eyeglasses and require no special user training. Yet the CV glasses greatly improve the vision and safety of people sighted in only one eye. These field expander eyeglasses enable people who see with one eye, to see farther toward their blind sides, and to see ahead with centered vision. These simple, attractive and inexpensive glasses expand the user's vision by 5 to 10 degrees (actual amount depends on age) toward the blind side. Also, an additional component can be added to the glasses to increase the overall field expansion to as many as 35 to 45 degrees. These glasses are equally useful to people totally blind in one eye, to people with light perception in poorer eye, and to people with some residual vision in the poorer eye.

**The basic CV Glasses** shown above, can be prescribed by any eye doctor and be ordered from and fitted by a local optician. The glasses have proven so helpful since their development in 1968 that we believe

everybody who sees with just one eye should obtain and use them. These basic glasses, and a variety of more advanced versions, were developed by this Institute over the years, from 1968 on, as part of the job training and placement programs of this non-profit organization, and to fill the needs of people newly blinded in one eye, who need prompt help in becoming able to resume working and driving, safely and legally.

**Cros-Vision Glasses for people sighted in one eye** were developed, dispensed, and followed-up by medical and optometric staff in this Institute's New Jersey Low-Vision Clinics. Since these clinics closed, we have continued to actively track research and clinical developments, and analyzing and reporting on new developments, their applications, costs, safety, usefulness, and their availability to the public. The N.I.R.E. does not, now, make, sell or dispense any materials or equipment, and does not now operate any clinical facilities. **This Institute does provide, on request, information, advice and referrals.** It is the intention of this Institute's medical and optometric staff that, with publishing of the NIRE papers, many practitioners all throughout the world will start to provide these eyeglasses and services to local residents sighted in one eye..

**Basic Construction** - The most basic CV glasses are made using a standard frame and temple bars, and normal-looking prescription lenses. The prism characteristics (strength and direction) expand the person's vision toward his blind side. The prismatic lenses can be single vision, bifocal, trifocal or progressive types, as the person may already be comfortable using. The lenses for any monocular person should always be of composite material or plastic - never glass. They are safety glasses to protect the one good eye from accidental injury.

**BASIC USE** - The Type-1A Cros-Vision glasses, shown above, can be used as is, without an added-on, external prism. The eyeglass lens will still expand central vision 5 to 10 degrees toward the person's blind side and the overall unit will appear to others as a normal spectacle. Similar lenses should be used for both the good eye and an even totally blind eye, for best appearance to others.

**ADVANCED USE** - For greater field expansion, to an angle in the range 35 to 45 degrees, these same Type-1A glasses can be fitted with a Type-2B clip-on prism - positioned over the nose as shown on the next page. The user can then see clearly through both the Rx flat prism lens and the clip-on prism, - over his nose - and to his blind side - with his one good eye. Because the external prism and its mounting clip require extra hand labor by the dispenser, these items can be more costly and some busy dispensers do not accept orders. The 1" high clip-on prism, shown, is the largest prism used and is best for new-users. Later, some users change the 1" prism for a smaller ( $\frac{3}{4}$ " or  $\frac{1}{2}$ " high) prism which is still mounted on the front-of-the-frame, as fixed or removable.

**The basic CVG lenses** (without clip-on prism) give clear central vision that is 5 to 10 degrees wider toward the blind side. It also centers vision so the user can look a person in the eye, not over the shoulder.

**The optional Type-2B clip-on prism** (shown below) gives a much wider view toward the blind side, adding as many as 35 to 45 degrees, for safer driving. A specially selected frame is needed to ensure proper positioning of the Type-2B clip-on, over-the-nose prism. These glasses, without the clip-on prism, are very comfortable and are useful for almost all activities except driving. Some people wear the basic glasses all the time, clipping on the prism (Type-2B) for driving or bicycle riding .. and removing it when not needed. If the Type-2B clip-on is never to be used on the basic glasses, then smaller, more stylish eyeglass frames can be used. **For Safety . . .** the front-mounted prism should be fastened to the eyeglass frame so as to be non-removable for engaging in certain rough sports activities (such as football, motor boating, horseback riding, etc.



**TYPE-2B CV GLASSES** are shown above - with a standard frame and normal looking lenses to which conventional corrections are added, along with the special functions of the attached but removable prism. These glasses expand the person's central vision 5 to 10 degrees (depending on

the age) toward his blind side. Whether fixed or removable, the one-inch high prism (shown) is the easiest and fastest type to learn to use - and it is the best prism for driving because it gives the driver 30 to 40 added degrees of vision toward his blind side while not reducing perceived image sizes or visually perceived distances. It also cover a large vertical area, a plus for driving. While driving, the user simply turns is head and eyes to his left and back, and he can see, with his right eye, over his nose and through the prism, the pavement, people and traffic the full sweep from his left to his left rear.

**When he loses the sight of one eye, a person loses these important visual functions: (1) vision toward his blind side; (2) the ability to judge distances, depths and object sizes; and (3) binocular 3-D vision, causing everything to appear flat rather than 3-dimensional. CV glasses significantly improve (1). With practice and time, perception of distances, depths and sizes are regained. But nothing now known restores (3) above.**

**User Expectations** - CV Glasses of any type will not restore normal binocular vision. They will immediately expand the angle of vision up to 10 degrees (no training needed) - or up to 45 degrees (with training to deliberately and frequently shift gaze - as done by bifocal users) toward the user's blind side. However, even though they do not restore normal vision, these glasses have proven, time and time again, to be extremely useful. This is what potential users should hope for, expect and work for, vastly improved but still not "full" or "normal" vision. Monocular distance depth, size and distance perception abilities usually re-develop, with over time. Isn't every shooter aiming while using only one eye? Gunners and hunters always develop monocular depth, size and distance perception. So, anyone else can do so when binocular vision is lost.



**Type-3A CV Glasses** are shown above - with a standard decorative metal frame to which these changes were made, mostly for improved appearance. (1) the temple bars and nose pad legs were extended to maintain the frame firmly in place, part-way down the

nose with the frame about ½ inch from the forehead. (2) a small (¼" high) and very thin quartz prism is used, permanently fastened (with epoxy cement) to the rear surface of the frame, over the nose. Being recessed, most people don't even notice the prism. Some who do, ask if it is a decorative jewel.

CV Glasses Type-2A and 2B are front - mounted high-quality industrial quartz prisms. No prescription lenses need be attached to any prism surface so they are less costly to buy and easier to mount and use. The only custom work needed from the dispenser is making and attaching a clip or other type prism-to-frame fastener. To see thru the prism, over the nose, toward the blind side - the user must look through his main lens, which has in it the needed Rx corrections and prism, base toward blind side.

CV Glasses Type-3A have a behind-the-frame quartz prism, also high quality but low in cost, as a commonly used component in optical instruments. However, the user sees directly into the prism without seeing thru his main Rx lens. Therefore, people who need correction must bear the added cost of a small custom-made Rx lens that must be cemented onto a surface of the prism. .

Some **RELATED PAPERS** for reference are listed below. We recommend you download, save and print them if they can be of help to you:

**Complete list of papers:** (go to bottom of this page)

<http://www.abledata.com/abledata.cfm?pageid=89079>

**Partial list of papers:**

### **Vision Aids for People Sighted in One Eye**

(Companion to This Paper - a very important reference)

[http://www.abledata.com/abledata\\_docs/One\\_Eye.pdf](http://www.abledata.com/abledata_docs/One_Eye.pdf)

### **Vision Aids for People Sighted in One Eye that is Hemianopic**

[http://www.abledata.com/abledata\\_docs/Hemi-MonoVision-Aids.pdf](http://www.abledata.com/abledata_docs/Hemi-MonoVision-Aids.pdf)

### **Visual Distance Perception and Depth Perception**

[http://www.abledata.com/abledata\\_docs/Distance-Perception.pdf](http://www.abledata.com/abledata_docs/Distance-Perception.pdf)

### **Vision Aids for People Having Homonymous Hemianopsia**

[http://www.abledata.com/abledata\\_docs/Homonymous\\_Hemianopsia.pdf](http://www.abledata.com/abledata_docs/Homonymous_Hemianopsia.pdf)

For additional information, please email: [nire@warwick.net](mailto:nire@warwick.net) or contact:

**The National Institute for Rehabilitation Engineering**

**Box 1088 – Hewitt, NJ 07421 Tel. (800) 736-2216**

**This paper is copyright © 2006 by the N.I.R.E.**

Permission is herewith granted for its free duplication and distribution provided that all copies are complete and unaltered