

Introduction

3M™ Press-On™ Optics offer eye care professionals several benefits:

- A simple, therapeutic, inexpensive way to correct several visual disorders.
- An immediate correction.
- A more comfortable, more cosmetically appealing treatment for strabismus than conventional prisms.
- An optic that adds no noticeable weight or thickness to the spectacle.
- Useful in treating temporary and/or variable visual problems without damage to the patients' spectacles.

If you think an optic with these advantages may help your patients and your practice, read on

3M STICK-ON PRISMS

Available from:

EYELINE OPTICAL

Call toll free: 0508 11 44 77

or Fax free: 0800 11 44 77

PO Box 14341, Kilbirnie, Wellington

The Benefits of Press-On Optics

- A simple, therapeutic, inexpensive way to correct several visual disorders.

You can use Press-On Optics (prisms or spheres) to treat several ocular motility disorders, including strabismus. The Press-On lenses are useful for some refractive corrections, and you can use both types of optics for either temporary or long-term corrections.

- An immediate correction.

You can fit the optic in one sitting in your office, sparing the patient the multiple sessions associated with conventional prism prescription adjustments. Patients will be satisfied sooner with less frustration.

- A more comfortable, more cosmetically appealing treatment for strabismus than conventional prisms.

If you have been referring patients with strabismus and other ocular motility disorders elsewhere, you can now use Press-On prisms to treat some of these patients in your clinic and expand your practices.

- An optic that adds no noticeable weight or thickness to the spectacle.

Regardless of the prism or spherical power, the Press-On Optic is only 1 mm thick.

The Press-On Optics system for creating prismatic and spherical corrections is simple, inexpensive, and fast.

You can apply a Press-On sphere or prism to the back surface of one or both lenses of the patient's glasses. It can be applied to the entire lens or to any region of the lens.

A full range of seventeen powers from 1.00 to 40.00 prism diopters allows you to broaden therapeutic uses and provides additional treatment options in your practice.

You can also use Press-On prisms for several indications other than strabismus, and you may find Press-On spheres useful for either near or distance short-term correction. You will find both types of Press-Ons, spheres and prisms, easy to use, and economical.

Background of the Fresnel Lens

In 1822, Augustin Fresnel, a French engineer, articulated the principle of Fresnel optics:

A prism's angle of refraction depends only upon the angle of the surfaces and the index of refraction of the material of which the prism is made. *The angle of refraction is independent of the prism's thickness.*

3M Press-On Prisms

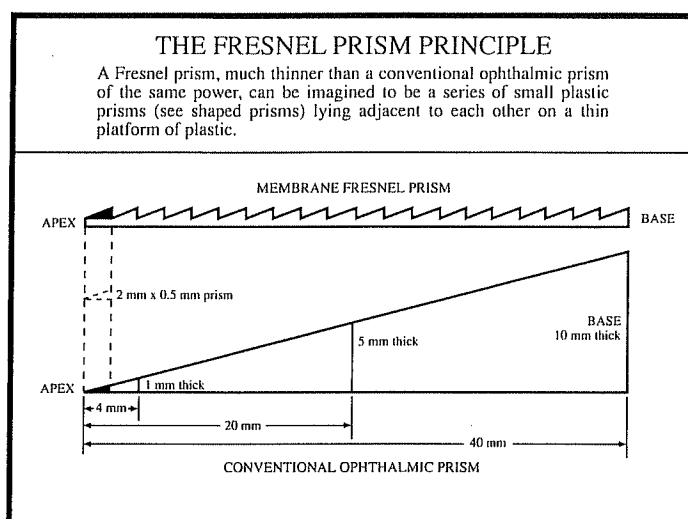


Figure 1

The 3M Press-On Optic, whose design is based upon the Fresnel Principle, is a thin transparent plastic sheet, with one face consisting of a series of angular grooves. Figure 1 compares a conventional glass ophthalmic prism to a 3M Press-On Optic. This diagram demonstrates how the application of the Fresnel Principle to the Press-On Optic provides a thin, light weight lens with the comparable power of a thicker conventional ophthalmic prism.

Indications for Use of Press-On Prisms

Ocular Motility Disorders

Condition	Relevant Issues	Function of 3M Press-On Prism
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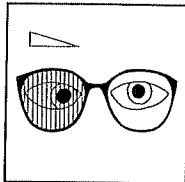
STRABISMUS

Early onset strabismus	Surgical over- and under- correction is a common problem.	Preoperative prism adaptation enhances surgical outcome or establishes fusion non-surgically.
Mild amblyopia	Requires early intervention to avoid progression.	Applied over the preferred eye as a weak patch.
Nystagmus	Can allow the patient to assume a more normal head position to find the null point of the nystagmus.	Prisms with the base away from the direction gaze preference can allow the eyes to rotate into position without a large head turn.
Inoperable strabismus	Fragile health or patient concerns may delay or preclude surgery.	Provides cosmetic improvement by shifting the apparent position of the eye in a desirable direction.
Incomitant strabismus	Deviation varies with gaze direction.	Applied over part of a lens to allow correction in specific gaze positions.

Suggested Use of 3M Press-On Prisms

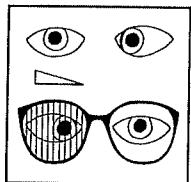
To obtain presurgical fusion without the weight, thickness, and inconvenience of conventional prisms.

To provide a fusion lock and stability for post-surgical residual deviations.



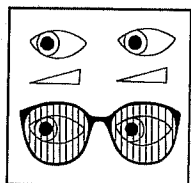
Small image degradation of prism serves as weak occluder.

Prism blurs visual acuity in dominant eye.



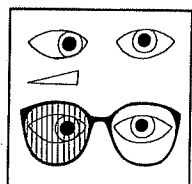
Redirects the visual gaze toward the field of minimal tremor.

Requires placement of prisms over both lenses. In absence of strabismus, the power needs to be matched.



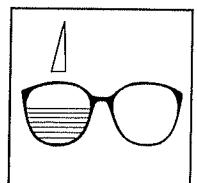
For cosmetic improvement of certain tropias with an inverse prism applied before the deviating eye (e.g., base-in prism for esotropia).

For constant or intermittent tropias where surgery is not contemplated and binocular fusion is not possible.



For incomitant strabismus, which demands different prism power in certain fields of gaze.

Prisms can be easily cut and placed on spectacles for correction where needed.

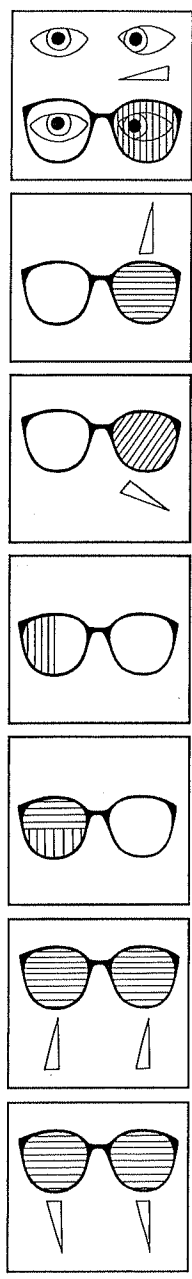


Indications for Use of Press-On Prisms

Ocular Motility Disorders (continued)

Condition	Relevant Issues	Function of 3M Press-On Prism	Suggested Use of 3M Press-On Prisms
DIPLOPIA*	Associated with several health issues, i.e. including mechanical restrictions, neurologic disorders (nerve palsies), poststroke skew deviation, postretinal detachment, scleral buckles, thyroid ophthalmopathy, injuries such as blowout fractures and brain injuries.		
3rd, 4th, and 6th nerve palsies	May recover with time.	Allows binocularity during recovery period. May be changed as muscle function returns.	To eliminate diplopia resulting from recent-onset strabismus (e.g., stroke, ocular muscle paresis, systemic disease).
Following cataract surgery	Diplopia	Temporary correction until eye alignment stabilizes. In cases with small deviations, a Press-On prism is an inexpensive therapy, even as a permanent choice.	The flexibility of the prism allows for correction even in one gaze position. Also allows easy changes with improvement.
Myasthenia Gravis, Multiple Sclerosis, Graves Disease	Prism requirements vary with disease progression.	Corrects variable diplopia. Prism can be applied at an oblique angle to correct horizontal and vertical diplopia.	Patient can be instructed to select from a variety of prism powers (cut in advance) based on daily needs. Gives patient control of their medical situation, and greater freedom from symptoms.
PHORIAS			
Symptomatic or Decompensated phorias	Fusion disruption causes eyes to deviate.	Promotes fusion. Reduces deviation.	For symptomatic phorias with different distance and near angles, apply prism to upper and/or lower portions of spectacle lenses.
Other Medical Indications for Press-On Prisms			
Bed-ridden patients	Cannot elevate head to read or watch television.	Base-down prisms on both lenses change image's angle.	Apply 30Δ prism base down to each spectacle lens.
Ankylosing spondylitis other postural deformities	Limited head movement.	Prisms change image's angle.	Apply prism base up to spectacle lens.

*Note: For correction of certain types of diplopias, you have the choice of applying different strength optics to each spectacle lens. In conditions such as nerve palsies, this adjustment is necessary to address down-gaze or lateral gaze.

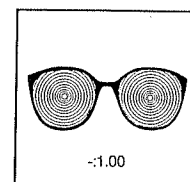


Medical Indications For Press-On Spheres*

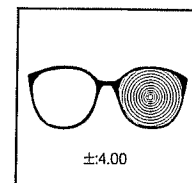
Condition	Relevant Issues	Function of 3M Press-On Spheres
Diabetes Mellitus	Acute refractive changes due to varying blood sugar levels.	Press-On spheres enhance patients' vision while the blood sugar is being normalized without changing the spectacle prescription.
Post cataract surgery	Vision will be stabilizing over several weeks post-operative.	Reverse high power in pre-op spectacles while awaiting final post-op spectacle correction.
Low vision	Requires magnification	Press-On spheres can create a reading addition without adding weight to the spectacles; spheres help avoid decentration. See "Orthoptics and Vision Training", p. 21.
Accommodative esotropia	May have residual near deviation after correction of hyperopia.	Add Press-On bifocals to eliminate residual near deviation.

Suggested Use of 3M Press-On Spheres

Temporary changes in refractive error from elevated blood sugar can be corrected with Press-On spheres.

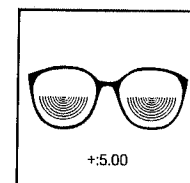


Spectacle correction can be adjusted with spheres to enhance post-operative visual acuity.

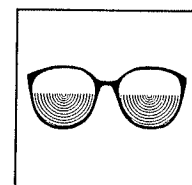


Apply spheres to the lower portion of each lens.

Acts as a high plus reading loupe.



For the correction of residual deviations in accommodative esotropias following full correction of the refractive error.



*See "Other Practical Uses of 3M Press-On Optics", pp. 18-21.

Recreational and Occupational Uses For Press-On Spheres*

Optical Use	Function of 3M Press-On Spheres
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Bifocal wearers	Flexibility in location of near correction; facilitates acceptance of presbyopia*.
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Sunglasses	Allows addition of bifocal segment to single vision sunglasses.
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Divers' masks/safety glasses, ski or swimming goggles	Adds correction.
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Hobby/Sports	Adds mid-distance correction.
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NOTE: Many eye care professionals have developed their own uses for 3M Press-On Optics, which lend themselves to experimentation because:

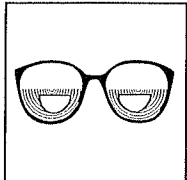
- the optics make on-the-spot changes possible;
- they are thin and lightweight;
- both spheres and prisms have an extensive range of powers;
- they are inexpensive.

We welcome your innovations.

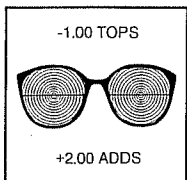
*See "Other Practical Uses of 3M Press-On Optics", pp. 18-21.

Suggested Use of 3M Press-On Spheres

Variety of power, shapes, heights, and positions. Apply Press-On Optic to location appropriate to patient's vocational demand. Intermediate segment over bifocal before deciding on optimum multifocal lens.



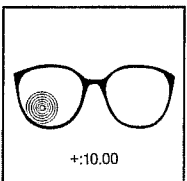
Converts over-the-counter sunglasses for temporary use, for single vision or bifocals, i.e., map reading in the car, spheres cut for top and adds.



Apply hyperopic or myopic corrections to inside surface.



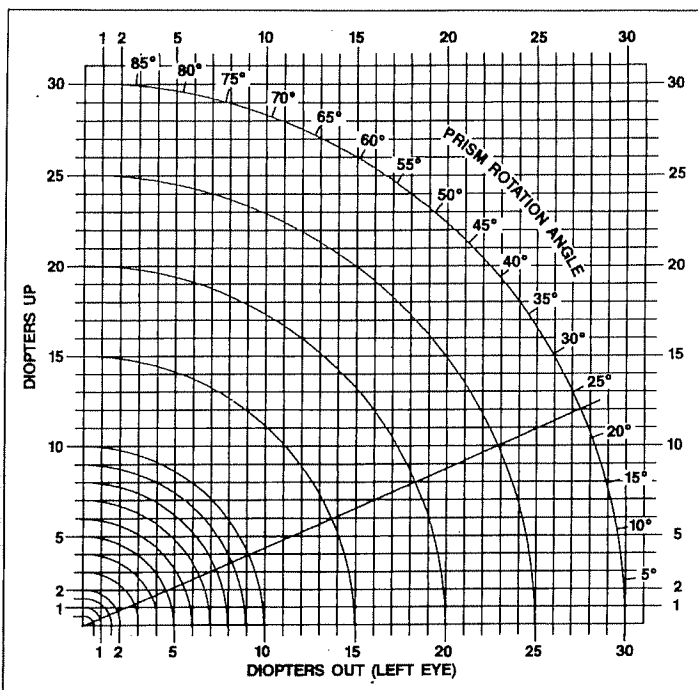
Small out-of-the-way segment for unique needs.



Apply small sphere segments for magnification: reading golf score cards, tying fishing flies, sorting stamp collections, etc.



Rotation Nomograph for Achieving Proper Vertical and Horizontal Prism



Procedure for Achieving Proper Vertical and Horizontal Prism

1. Determine the amount of vertical and horizontal prism required, and locate the intersection on the nomograph.
2. The quarter circle nearest this intersection is the proper total prism power required.
3. Locate the intersection of this quarter circle and the exact vertical prism required, and draw a diagonal line from the lower left corner through this intersection, continuing to the Prism Rotation Angle scale. The angle showing on the scale is the correct orientation of the prism axis in order to obtain the exact vertical prism required.
4. The exact amount of horizontal prism obtained can be found by noting where the intersection of the quarter circle and the diagonal line falls on the horizontal scale.

Example:

Rx. 6 Δ vertical and 13 Δ horizontal. The intersection of the 6 Δ line and the 13 Δ line falls near the 15 Δ quarter circle. A line from the lower left corner to the intersection of the 15 quarter circle and the 6 Δ vertical prism line intersects the Prism Rotation Angle scale at 23°. This intersection lies at 13.8 Δ of horizontal prism. Thus, the application of a 15 prism with its axis at an angle of 23° from the vertical achieves 6.0 Δ of vertical prism and 13.8 Δ of horizontal prism.

For accurate calculations of small vertical and horizontal prism, imagine a mental decimal point on the vertical and horizontal scales. Thus, in the examples above, the same line would be drawn for a prescription of 6.0 Δ of vertical prism and 1.3 Δ of horizontal prism. Instead of a 15 Δ Press-On prism, a 1.5 Δ prism would be applied at 23° to give 0.6 Δ of vertical prism and 1.38 Δ of horizontal prism.

Geometric Calculations

The eye practitioner frequently prescribes both vertical and horizontal prisms in a single lens. Such a prescription is achieved by locating the axis of the prism diagonally.

With Press-On Optics you can apply prisms in your office while the patient waits. This has obvious advantages in convenience as well as patient satisfaction.

Consequently, the **nomograph** offers a simple method of determining the angle at which a prism can be applied to achieve both vertical and horizontal prism placement. The nomograph assists the practitioner to obtain the resultant power and desired direction.

Since vertical prism is more critical than horizontal prism, the procedure is designed to achieve exact vertical prism while allowing fractional variations in horizontal prism, using the limited number of prism strengths available.

How to Select a Lens Complete Diopter Listing

Prisms	
1.00 ^Δ	9.00 ^Δ
2.00 ^Δ	10.00 ^Δ
3.00 ^Δ	12.00 ^Δ
4.00 ^Δ	15.00 ^Δ
5.00 ^Δ	20.00 ^Δ
6.00 ^Δ	25.00 ^Δ
7.00 ^Δ	30.00 ^Δ
8.00 ^Δ	35.00 ^Δ 40.00 ^Δ

Aspheric Plus	
+0.50	+5.00
+1.00	+6.00
+1.50	+7.00
+2.00	+8.00
+2.50	+10.00
+3.00	+12.00
+3.50	+14.00
+4.00	+16.00

Aspheric Minus	
-1.00	-8.00
-2.00	-9.00
-3.00	-10.00
-4.00	-11.00
-5.00	-12.00
-6.00	-13.00
-7.00	-14.00

Indications for Use and Application of D-25 Segs

May also be referred to as flat-top D-25 bifocal segs

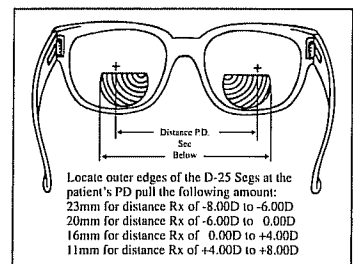
Selecting Bifocal D-25 Segs

D-25 Segs	
+1.00	+3.00
+1.50	+4.00
+2.00	+5.00
+2.50	+6.00

Press-On D-25 Seg, +3.00D and above, when properly positioned horizontally, include compensating prism values as an aid to fusion for singular binocular vision. Press-On D-25 Segs +2.50D and below do not include the compensating prism and should be centered at the patient's near PD.

Horizontal Placement

To ensure proper horizontal positioning of D-25 Segs +3.00D and above, dot the front surface of the spectacle lens in the conventional manner to indicate the distance PD. Referring to the illustration below, determine the appropriate distance between the outside edges of the segs and mark this distance on the front surface of the spectacle lenses. For example, Distance PD = 61 mm and distance Rx = -3D; so the distance between the outside edge of segs should be equal to 81 mm.



Lens Selection

Before finalizing the prescription try several powers at various angles. **Better outcome is achieved if the prism is applied to only one lens.**

For correction of certain types of diplopia, you have the choice of applying different strength optics to each spectacle lens. In conditions such as nerve palsies, this adjustment is necessary to address down-gaze, up gaze or lateral gaze.

Segment Height

If the prescribed height of the D-25 Seg requires trimming, the vertical dimension should be reduced by cutting from the bottom of the seg rather than from the top. This will preserve the optical correction of the D-25 Seg. Place a razor blade at the desired position on the segment and press straight down against a flat, hard surface to obtain an even, sharp edge.

Each package contains both a right and a left seg. Be sure the optical center of each seg is decentered nasalward. The optical center is easily identified by the position of the smallest concentric circle in each segment. Normally the top edges of the segs should be level with each other.

Application of 3M Press-On Optics

Quick and Easy to Apply

Both sphere and prism Press-On Optics can be applied to either part of or the entire carrier lens inner surface. Following are step-by-step instructions for shaping and applying Press-On Optics. Special positioning instructions for D-25 Segments are outlined in the section titled "Indications for Use and Application of D-25 Segs" on page 15.

Avoid exposing Press-On Optics to dust, dirt or grease during application.

How to Apply Press-On Optics

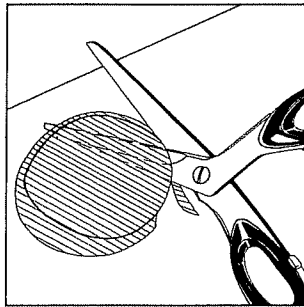
1) With a felt-tip pen place a mark on the patient's glasses, indicating the optical center for placement of the Press-On Optic. This is important with sphere placement only.

The optical center is the smallest concentric ring. The base orientation of the optic is indicated with the word "base."

2) The smooth surface should face the inside surface of the spectacles. Align the optical center with the mark on the spectacles. Gently shape to the desired location.

3a) With the Spectacle Lens Out of Frame:

- With scissors, cut the Press-On Optic as close as possible to the size of the carrier lens.
- With a razor blade held at the angle of the bevel, carefully trim optic flush with the beveled edge of the spectacle lens. The optic is now ready to be applied. (See Step 4, "Attachment of Press-On Optics to Spectacle Lens.")
- Reinsert into frames.

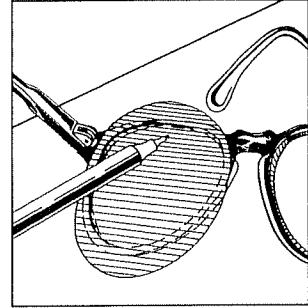


3b) With Spectacle Lens In Frame:

- With a felt-tip pen, trace the shape of the spectacle lens onto the Press-On Optic just inside the rim of the frame.

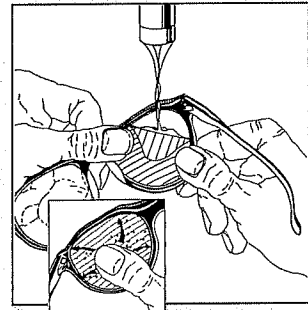
NOTE: The Press-On Optic, after cutting, must not overlap the bevel or touch the frame.

- Remove the Press-On Optic from the spectacle lens and carefully cut out the Press-On Optic – inside the line. The Press-On Optic is now ready to be applied.



4) Attachment of Press-On Optic to Spectacle Lens

- Wash both the spectacle lens and the Press-On Optic with a weak solution of liquid dish detergent (free of lotion) to remove grease and soil. Rinse thoroughly.
- Submerge the spectacles and Press-On Optics in a bowl of warm water or under a stream of running water. Wipe away any air bubbles clinging to either surface.
- Position the Press-On Optic with the smooth side toward the inside surface of the spectacle lens. Remove the spectacles from the water, holding the Press-On Optic in place. Adjustments can be made by sliding the Press-On Optic.
- Press dry.



NOTE: When applying to a plastic spectacle lens, the Press-On Optic may be difficult to slide. Repositioning may require removal and re-application. Gently squeeze any remaining water with the ball of the thumb.

- Inspect the edges of the Press-On Optic so no overlapping occurs on the spectacle frames. Remove and re-apply if dust particles or air bubbles (easily seen against a dark background) are trapped between the Press-On Optic and the spectacle lens.
- Advise patients to handle spectacles gently for 24 hours following application.
- Faint, gray patches that may develop are temporary and usually disappear as drying is completed.
- Alcohol is not recommended for repeated application of the optics.

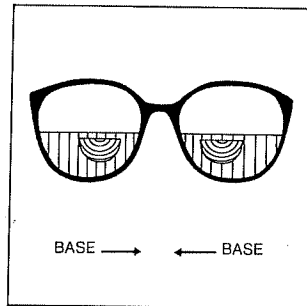
Other Practical Uses of 3M Press-On Optics

For Low Vision Patients

Press-On prism has applications for the low vision patient with a high add (e.g., +4Δ and greater). The near viewing distance required to use the add creates a high convergence demand which is problematic for most elderly patients. This is countered by the application of base-in prism (in an amount roughly equal to two prism diopters for each Diopter of optical power, e.g., 8 BI for +4Δ add). The prism is applied only to the bifocal portion of each lens.

Low vision patients can obtain needed magnification for reading with Press-On lenses.

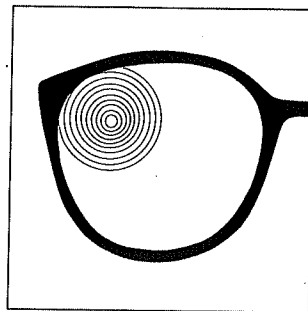
- Apply the Press-On Optics to the entire ocular surface, or to the lower half, as needed.
- For newspaper print prescribe a plus line equal to the reciprocal of the patient's distance acuity (e.g., 20/20 indicates a +10 lens).



For Recreational Uses

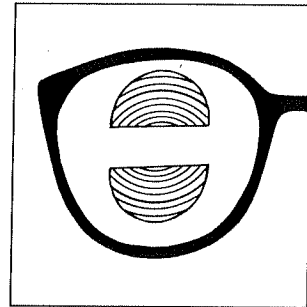
Hobby and sport enthusiasts will welcome Press-On Optics' versatility.

- Small, out-of-the-way bifocal segments for golfers to read score cards.
- Small, high-power segments for fisherman tying flies, stamp collectors, etc.
- Hyperopic or myopic spherical corrections applied to the inside surface of masks or goggles (for skiers, skin divers, swimmers, welders, etc.).
- Applied to sunglasses for map reading.



Suggestions for Vocational Uses

Flexibility of bifocal positioning is possible by using the D-25 Segs instead of a regular bifocal. They would be attractive to a specific group of patients, such as electricians, for placement of the Seg in the top portion of their glasses, but with the advantage of removing it when not at work.



Bifocal in traditional position at bottom of lens, with Press-On D-25 Seg at top of lens.

For Use in Rehabilitation of Head Trauma and Stroke Patients

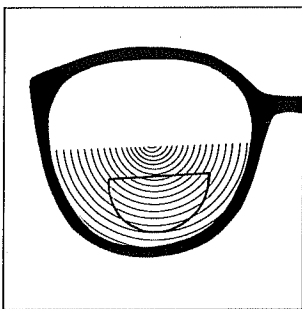
For Neglect: Press-On prisms can be placed with the base towards the patient's neglect to make the patient more aware of the neglected side. Also for patients who tend to lean toward one side, placing the prism base in the direction of the inappropriate posture can help alleviate some postural deficits related to vestibular movements.

Yolk prism base down, base left, base right, or base up can also be an added benefit to improve a patient's centering, balance, and spatial localization.

For Bifocal Wearers

Satisfy bifocal patients with a wide variety power segment sizes, shapes, heights, and positions.

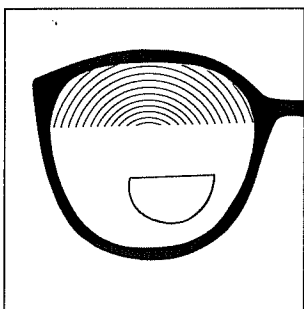
- For the beginning presbyope hesitant to wear bifocals, use a D-25 Seg Press-On Optic to add to single vision spectacles, demonstrating the usefulness and promoting the acceptance of bifocals before grinding the prescription in plastic or glass.
- For the bifocal wearer hesitant to wear trifocals, use a Press-On sphere that can both increase the patient's reading power and create an intermediate segment before the optimum multi-focal lens is determined. (e.g., +1Δ)
- Converts single-vision sunglasses (both polarized and photochromic) to bifocals with Press-On spheres.
- Large fashion frames are now usable with any segment made from a Press-On sphere.



For Occupational Uses

Patients whose vocations demand specific directions of gaze will benefit from the flexibility of location possible with the Press-On Optic.

- For the gaze requirements of computer workers, librarians, dentists, inventory clerks, and others, place the Press-On sphere in the appropriate location on the patient's spectacle lens.
- The Press-On sphere can provide magnification, either in the whole lens or a segment, for the fine work of jewelers, machinists, inspectors, and others.



For Orthoptics and Vision Training

The Press-On Optic Systems has several specific beneficial uses in the area of binocular vision:

- In strabismic and highly heterophoric patients, apply Press-On prisms in the base direction and magnitude necessary to achieve clear, comfortable, binocular vision (e.g., 10 BO for a 15 pd esotrope with at least 5 pd of base-in recovery vergence ability).
- For a fusional vergence device apply prism in the base direction desired to create a compensating vergence demand (e.g., 20 BO with a suppression check for an exophore who has received some convergence therapy). You may also wish to utilize the prism in conjunction with a particular vergence technique to increase the demand, e.g., eccentric circles.
- Overcorrecting prism has proven to be an effective adjunct to orthoptics in eliminating anomalous correspondence. For example, in an esotrope with typical anomalous correspondence, attach a sufficient amount of base out prism to create an "optical exotropia" after allowing about 30 minutes of prism adaptation. If after the adaptation period the "optical exotropia" remains prescribe the Press-Ons for home use (about 30 minutes per day) in between office visits to monitor the status of correspondence. Depending on the strength of anomalous (vergence) movements the strength of the prism may need to be increased if the esotropia recurs with the original Press-On prism in place.
- For eccentric fixation therapy occlude the normal eye and apply a small amount of Press-On prism (5 to 10 pd) in conjunction with fast pointing activities. Vary the base direction of the prism at frequent intervals to stimulate foveal fixation in association with the tactual demand of the fast pointing exercise.

Other Uses for Prism Press-On Optics

- Bifocal wearers with vertical anisometropia can read with comfort using prism Press-On Optics, eliminating the need for slab-off prisms. Apply the optics base up or base down to the lower portion of the spectacle lens.
- For patients with hemianopsia or a large scotoma, apply a Press-On prism several degrees off the central gaze with the base toward the non-seeing eye.
- For bedridden patients, apply 30Δ Press-On prism base down to each spectacle lens.
- To help low vision patients with high-prescription binocular adds (e.g., +4Δ) obtain fusion, apply prism (e.g., 7Δ base in) to the lower portion of each lens. This approach helps avoid large decentration of the segments or other related problems, such as nearpoint field of view limitation or the need for prism-controlled segments.

Patient Instructions

Patients should be informed that Press-On Optics will modify their spectacles. Their vision may be slightly different, particularly in unusual lighting conditions. Patients will quickly become accustomed to the change.

Cleaning procedure for Press-On Optic:

Do not remove Press-On optics from spectacle lenses for cleaning.

1. Rinse spectacle lenses under a gentle stream of warm running water.

If contaminants remain after rinsing, use a brush to clean grooves.

2. Pat or blot dry with a soft, lint-free cloth.
3. Follow any special cleaning procedures as instructed by your eye care specialist.

For proper care of your Press-On Optic, use the above procedure often.

If Press-On Optic becomes discolored or detached, see your eyecare professional.

The Press-On Optics system for creating spherical corrections is simple, inexpensive, and fast:

- *Press-On Optics can be applied to the back surface of one or both lenses of the patient's spectacles.*
- *Press-On Optics can be applied to the entire lens or any region of a conventional lens to satisfy many specialized optical requirements.*
- *Press-On Optics are only 1 mm thick, regardless of the prescription strength, and add no noticeable weight.*
- *Press-On Optics provide on-the-spot application for trials, changes or therapy.*