Visionary Optics
uniquely specialized contact lenses

Jupiter Scleral™

the ultimate tool for irregular corneas

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Indications

- When alternative GP designs will not center or cause intolerable bearing forces on the central cornea and soft lenses cannot provide good vision.
- Fitting of irregular corneas with conditions such as keratoconus, trauma, or post-surgical deformities consequent to a graft, RK, PRK, and LASIK.
- In conditions where the cornea and/or sclera are extremely dry and need protection from direct exposure.

Description

The Jupiter Scleral falls into two main design categories—the 15 mm diameter (mini-scleral) series and the 18 mm diameter series. Both series are true scleral lenses which 1) bear on the sclera and 2) vault the cornea. A lens that bears on the cornea in any way is not a scleral lens (although it may be a corneo-scleral or semi-scleral lens).

The Jupiter series is designed to be a semi-sealed lens and does not need to closely contour the cornea. The scleral portion is designed to allow adequate tear exchange but hold a much larger volume of tears. It can address the most irregular and asymmetric corneas as well as provide a large tear volume for severe dry eye cases.

The Jupiter 15 mm and Jupiter 18 mm series lenses usually have 5 curves organized into 3 zones:

1. The Corneal Zone, comprised of the central corneal curve and the ASPHERIC peripheral corneal curve.
2. The Limbal Zone, comprised of an ASPHERIC scleral curve.
3. The Scleral Zone, comprised of an ASPHERIC scleral curve and the ASPHERIC edge curve.

The Jupiter 15 mm and Jupiter 18 mm series lenses come in 3 configurations to address different corneal geometries by varying the posterior design.

1. The Jupiter Standard Design, where the central corneal curve has the same apical radius as the peripheral corneal curve. Most cases of corneal irregularity (keratoconus, post surgical, etc) are fit with the Standard design.
2. The Jupiter Advanced Keratoconic Design has the central curve relatively STEEPER than the peripheral corneal curve.
3. The Jupiter Reverse Geometry Design has the central curve relatively FLATTER than the peripheral corneal curve.

Toric scleral zones are available to enhance the alignment on eyes with a very irregular sclera. When residual astigmatism indicates that a front toric lens is needed, double slab-off ballasting is used to stabilize lens rotation.

The anterior portion is designed for a constant thickness outside of the optic zone. All Jupiter 15 and 18 mm series lenses use aspheric optics to reduce spherical aberrations for enhanced VA. This aberration reduction technology may be modified by the fitter who has aberration measurements in order to further optimize visual acuity.

Parameters Available

Base curves	Any
Diameter	13.5 mm to 24.0 mm
BV powers	+50.00 D to –75.00 D in 0.25 D steps
Cylinder (toric)	–0.25 D to –15.00 D in 0.25 D steps
Axis (toric)	1° to 180° in 1° steps
Diagnostic lenses	14 pre-designed lenses for each of the 3 configurations

Our guarantee: All lenses are manufactured to specification and free from defects.

Diagnostic Lens Fitting Method, Part 1

Fitting sets

Since instrumentation to measure the sagittal depth of the total cornea and limbus is not available, fitting the Jupiter 15 and Jupiter 18 lens is done by the use of diagnostic lenses. 14 lens pre-designed fitting sets for each of the 3 configurations mentioned above are available in the Jupiter 15 and Jupiter 18 series.

In these sets, the corneal zone of the different lenses varies while the limbal and scleral zones remains are designed for the average eye. When the lens is ordered, the scleral zone may be steepened or flattened to improve scleral alignment.

Although the fitting sets are pre-designed, the Jupiter 15 and 18 mm lenses may be made to any configuration, zone shape, or diameter possible, given the restrictions of materials and manufacturing technology.

Fenestrations can be added to any 15 mm series lens upon request when lens removal may present a problem.

Fitting theory and objectives

Most patients can be successfully fit with the Jupiter 18 mm series lens. It can accommodate great amounts of corneal asymmetry and/or irregularity. It is usually the most efficient lens for difficult contact lens fittings. It is an GP lens that is designed to rest upon the sclera and vault the cornea, providing a greater tear pool than the 15 mm Jupiter mini-scleral. The ideal fit is one in which the lens demonstrates:

1. 40 to 200 microns of clearance over the cornea;
2. Increased limbal clearance (as evidenced by a brighter fluorescein layer);
3. Scleral alignment with the edge just above the scleral epithelium (as shown by a thin fluorescein meniscus at the edge).

The Jupiter 15 mm mini-scleral series lens is generally used when the full sized sclerals are found to be difficult for the patient to insert. The lens should closely contour, but not rest on, the cornea. The ideal fit is one in which the lens demonstrates:

1. 50 to 200 microns of clearance (as evidenced by a light fluorescein layer) over the entire cornea;
2. Increased limbal clearance (as evidenced by a brighter fluorescein layer in the limbus);
3. Scleral alignment with the edge just above the scleral epithelium (as shown by a thin fluorescein meniscus at the edge).

The Jupiter 15 mm mini-scleral is designed to closely contour average diameter corneas. Smaller corneas may require the 14.4 mm diameter Jupiter lens to reduce clearance and prevent bubbles when the HVID is less than 11.4 mm. Larger corneas may require a 15.6 mm diameter Jupiter lens to ensure adequate limbal clearance when the HVID is greater than 12.0 mm.

Diagnostic Lens Fitting Method, Part 2

Fitting procedure

The vault reduction method (VRM) is the most efficient means to fit the Jupiter 15 and 18 mm lenses. Simply start with a trial lens that is steep enough to rest on the sclera and completely vault the cornea. Then select progressively FLATTER lenses (reduce the vault) until any area in the corneal zone ALMOST touches the cornea. In many cases, this will be the best fit.

1. Select the initial trial lens

Select a BASE CURVE which is equal to the STEEPEST Corneal curve PLUS 1.00 D (Round up—for example, keratometry of 46.00 x 48.75 would yield a 50.00 D BC).

Note: When the central corneal shape is significantly different from the peripheral cornea, central keratometry readings alone are not usually a good source of data to design the fit of this lens. If reliable keratometry or corneal topography data is not available, select the 48.00 D (7.03 mm) lens from the diagnostic lens set as this will vault most central corneal areas. It is necessary that the base curve of the lens does not rest on the central cornea when determining the fit.

2. Instill saline and fluorescein and apply the lens. (see Insertion and Removal Tips)

With the lens concave side up, instill saline solution into the lens and add a small amount of fluorescein. Have the subject tilt their head down, looking at a tabletop. Place the lens directly on the cornea so that the solution stays in the lens.

3. Evaluate the three zones of the lens

Corneal zone: base curve and first peripheral curve. Observe the fluorescein under the central curve. A lens that is too flat will rest upon the cornea and show little or no fluorescein in this area. To correct this, choose a steeper base curve. A lens that is too steep will vault the cornea excessively; you will see deep pooling of fluorescein under the central area. A 15 mm Jupiter lens will form large bubbles when the clearance is excessive, as the capillary forces cannot hold the tear layer intact. Bubbles under the 18 mm lens may be eliminated by re-filling and re-inserting the lens.

Select progressively FLATTER lenses (VRM – vault reduction method) until any area in the corneal zone ALMOST touches the cornea. Although mild corneal touch will usually cause no problems, corneal bearing is not acceptable. If the diagnostic lenses demonstrate a situation where one base curve appears too flat and the next steeper base curve appears too steep, order a base curve that falls somewhere between the two diagnostic lenses. The final fit should be slightly steeper than ideal because scleral lenses settle into the eye and lose vault during the first few hours of wear.

Note: Many distorted or irregular corneas will not show optimum corneal clearance with lenses in the diagnostic set. We can adjust any specification of the lens to accommodate most conditions. Please contact our consultants for design assistance. For more complex corneal geometries, a Jupiter Advanced Keratoconic or Jupiter Reverse Geometry or a completely custom design may be needed to provide the best fit. Please contact our fitting consultation service by phone, fax, or email.

Limbal zone: Complete, generous limbal clearance insures good tear circulation. If there is very little fluorescein in the limbal area of the lens, the lens is too small and you should select a larger diameter. If there is too much clearance, large bubbles will form in the 15 mm Jupiter lens, and a smaller diameter should be selected.

Scleral zone and edge: The lens should rest evenly on the bulbarconjunctiva with the edge appearing just above the conjunctival epithelium (as shown by a thin fluorescein meniscus at the edge). No fluorescein will be seen under a well-fit scleral zone except at the edge. If vascular compression is seen near the EDGE, order a flatter scleral zone. Conversely, if vascular compression is seen near the limbus, order a steeper scleral zone. Logical increments for flattening and steepening the scleral zones in the Jupiter lens have been determined and ordering in these steps usually results in the correct modifications to the fit. If the edge is burrowed into the conjunctiva, the lens should be ordered with a flatter edge lift to allow for adequate tear exchange. If the edge rises significantly above the conjunctiva, the lens should be ordered with a steeper edge lift to prevent excessive edge awareness.

4. Determine lens power

Once the radius of the base curve is determined, the power of the lens is determined by a spherocylinder over-refraction. A cylinder component in the over-refraction usually indicates lens flexure and can be corrected with the final lens design. Over-keratometry is the best way to confirm lens flexure. When modifying the base curve radius, the lens power must be changed accordingly.

Insertion and Removal Tips

When handling the Jupiter Mini-Scleral lens, always wash your hands and follow the lens care instructions provided by your eye care practitioner. There are two methods of insertion and removal. The first described here uses a contact lens insertion and removal tool. The DMV Classic (DMV, Zanesville, Ohio, 800-522-9465) is recommended. It has a medium sized hole that allows you to control the suction pressure of this device.

METHOD 1: INSERTION

Before INSERTION, it is best to rinse the lens and use a non-preserved or sensitive-eye saline rinsing solution to apply the lens. Tear circulation is less with a scleral lens than with a smaller corneal lens. Therefore, preservatives in the soaking solution remain in contact with the cornea longer and this increases the chance of a reaction to these solutions.

1. Center the lens on the DMV tool.
2. Squeeze out only a little of the air in the DMV. Do not use the full suction because this will make it difficult to remove the DMV tool.
3. Look down into a mirror and open eyelids as wide as is needed.
4. Apply the lens.
5. Squeeze the DMV tool to release.

METHOD 1: REMOVAL

Since the Jupiter lens is large, the capillary forces which hold the lens on the eye are powerful. Removal is always best done by first lifting the edge to release this force. Attempting to pull the lens from the center will add a negative pressure force and will rarely be successful.

1. Squeeze and hold the DMV tool to allow for maximum suction.
2. Place the DMV tool on the lens at the outer edge so that the DMV tool is just inside the lens.
3. Release pressure on the DMV tool so that it suctions onto the lens.
4. Lift the EDGE of the lens and remove the lens from the eye.

METHOD 2: INSERTION

Before INSERTION, it is best to rinse the lens and use a non-preserved or sensitive-eye saline rinsing solution to apply the lens. Tear circulation is less with a scleral lens than with smaller corneal lens. Therefore, preservatives in the soaking solution remain in contact with the cornea longer and this increases the chance of a reaction to these solutions.

1. Since it is difficult to balance a large lens on a single finger, it is best to form a "tripod" with the thumb, index, and middle finger and place the lens on these fingers.
2. Look down into a mirror and open eyelids as wide as is needed.
3. Apply the lens.

METHOD 2: REMOVAL

Since the Jupiter lens is large, the capillary forces which hold the lens on the eye are powerful. Removal is always best done by first lifting the edge to release this force. This method uses the eyelid to lift the lens edge.

1. With the head held in the straight ahead position, look up slightly, about 20 degrees.
2. With the index finger, pull the lower eyelid temporally and then up to get the eyelid under the lower edge.
3. Lift the EDGE of the lens.
4. With the other hand, grab the lens and remove it from the eye.

Following removal of the Jupiter Mini-Scleral lens, follow the lens care instructions provided by your eye care practitioner.

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Boston®
Materials

Visionary Optics
uniquely specialized contact lenses

Please contact our consultants for design assistance at 877.533.1509.

We can adjust the parameters of the lens to accommodate most situations.

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