Jupiter
Fitting Guide

Dallas  800-366-3933
Denver  800-362-4233
Tulsa   800-685-5367
**Sagittal Depth**

Fitting the Jupiter lens design is based upon sagittal depth. Relative sagittal depth is not just the steepness of the base curve; instead it’s the overall “vaulting effect” of the lens across the ocular surface. For instance, a Jupiter lens with a base curve of 48.00D can vault a cornea that has a 52.00D steep topographical measurement. The overall sagittal depth of the cornea and sclera may be less than the overall sagittal depth of the 48.00 diopter lens. Not every eye with the same corneal measurement will have the same sagittal depth.

1. Choose the initial diameter based on corneal size (HVID). Unless the cornea is unusually large begin with the 15.6mm trial lens.
2. Select a base curve from diagnostic set approximately one diopter steeper than the mean keratometric (or sim K) measurement. *(Note: if the patient is aware of the diagnostic lens it is probably not vaulting the cornea enough.)*
3. Observe the fluorescein under the corneal chamber
   - **Too Flat:** A lens that is too flat will rest upon the cornea or show little or no fluorescein in the Base Curve area. To correct this, choose a steeper Base Curve.
   - **Too Steep:** A lens that is too steep will vault the cornea excessively (you will see deep pooling of fluorescein under the central area). To correct this choose a flatter Base Curve. *(Note: if you have difficulty clearly seeing the iris through the fluorescein, it is probably too steep.)*
4. Observe the limbal area
   - Vaulting should occur
5. Observe the Landing Curve
   - Should align with the conjunctiva
6. Observe Edge Lift (if any)
7. Over-refract
8. Call Essilor lab consultant to design final lens parameters.

**The Jupiter Lens Design**

The Jupiter Scleral Lens falls into multiple overall diameters: 15.0mm, 15.6mm, 16.6mm, 18.2mm, 18.8mm, and 20.2mm. All of these designs are true scleral lenses sharing the characteristics of a) bearing on the sclera and b) vaulting the cornea.

**The Jupiter 15.0mm, 15.6mm, and 16.6mm series lens** require a closer contouring to the cornea as the corneal chambers are smaller. The lower volume of tears means tear exchange must be constant to maintain adequate wearing time.
The Jupiter 18mm series is designed to be a semi-sealed lens and has a much larger corneal chamber. The lens 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 lenses usually have 5 curves organized into 2 zones: the Corneal Zone, comprised of the central corneal curve and the second corneal curve; and the limbal curve; and the Scleral Zone, comprised of the landing curve and the edge lifting curve.

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

1. The Jupiter Standard design, where the second corneal curve is .2mm (approximately 1.00D) flatter than the central 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 second corneal curve that is 4.00D or 8.00D flatter than the central corneal curve.

3. The Jupiter Reverse Geometry design has the second curve 4.00D steeper than the central corneal curve.

Photo courtesy of Corey Dickson

Parameters Available:

- Base Curve: 4.0mm to 9.00mm
- Diameter: 15.0mm to 20.8mm
- Back Vertex Power: +20.00 Diopters to -20.00 Diopters

Jupiter has 5 curves:

- Three curves form the Corneal Chamber: the Base Curve, the Second Corneal Curve, and the Limbal Curve.
- The Corneal Chamber needs to clear the entire cornea and is custom designed to clear the many different irregularities that may be encountered.
- Two curves form the periphery of the lens: the Landing Curve and the Edge Lifting Curve.

The last two curves are the true fitting curves in a Jupiter lens. The landing curve is the only curve to touch down on the eye. This curve should rest evenly (parallel) to the scleral conjunctiva. The edge appears just above the conjunctiva epithelium.
**Corneal Chambers for Standard Jupiter Designs**

15.0mm Jupiter = 13.2mm Corneal Chamber  
15.6mm Jupiter = 13.8mm Corneal Chamber  
16.6mm Jupiter = 14.2mm Corneal Chamber  
18.2mm Jupiter = 14.2mm Corneal Chamber  
18.8mm Jupiter = 14.8mm Corneal Chamber  
20.2mm Jupiter = 15.0mm Corneal Chamber

*(Note: as the diameter of the corneal chamber is increased adjustments need to be made to the base curve to maintain sagittal height relationship.)*

**Indications**

- When smaller 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 advanced 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.

**Benefits**

- Easy-to-determine initial fit from Fitting Set.
- Provides crisp, clear optics.
- Has proven successful for the correction of many corneal irregularities including post surgical cases.
- Fits well in cases of corneal flattening inserts to offer good VA and comfort unsurpassed with soft lenses.
- Provides initial comfort that lasts all day long.
- Can be custom-designed for any ocular surface.
- Manufactured in Boston XO® or Boston XO²®, providing hyper-transmissibility to a larger area of the ocular surface than most hybrid lenses and many soft lenses.
### Fit Set Parameters (Example: 15.6mm Standard)

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### To successfully fit the Jupiter contact lens, you must meet three objectives:
- Must vault the cornea, have complete limbal clearance, and align with the scleral conjunctiva (parallel landing curve).
  - 15.6mm: fits 90% of eyes
  - 15.6mm & 18.2mm: are the most common sizes used
  - 18.2mm: is harder to get on straight
  - 18.2mm: used on Steven Johnson disease

### How to apply fluorescein to a Jupiter lens

A yellow Wratten filter with cobalt illumination will enhance the appearance of fluorescein under a Jupiter lens, improving the ability to interpret the fluorescein pattern.
For diagnostic lens evaluation, instill the appropriate solution into the bowl of the lens, add a small amount of fluorescein, then place the lens on the eye as you would normally.

**Bubble Formation**

- If a bubble moves around outside the center of the lens, check to ensure it is not from insertion. A bubble can occur:
  - If lens is placed off center on insertion then pushed to center on the cornea.
  - If lens does not have enough liquid in bowl of the lens.
  - If the patient does not bend over parallel with the floor to insert the lens.
- If there is a small central bubble – usually from the lens being too steep – try a lens one diopter flatter.
- If there is a large bubble, try a lens two diopters steeper.

**Judging a good fit**

- Is the lens tall enough (adequate sagittal depth) to jump all irregularities?
- Is it wide enough and tall enough to clear the limbus?
- Is the Scleral Zone/PC3 parallel to the conjunctiva without blanching any blood-vessels?

*photo courtesy of Roddy Hamilton*

**Lens should settle about 20 minutes once a good fit is achieved to check for settling in the conjunctiva area.**

- If the Jupiter lens is a good fit, let the lens rest on the eye for about 20 minutes; some patients have a soft conjunctiva and the overall sagittal depth will decrease as the lens settles into the conjunctiva.
- To judge the fit use a wetted fluorescein strip to stain the tears in the lower cul-de-sac without adding fluid to the eye. During the blink tear pumping should allow the fluorescein to flow under the contact lens. If fluorescein is not completely under the lens there may be a mismatch between the landing area (steeper or flatter) causing blanching of the outer blood vessels at the edge of the lens.

**Blanching of the blood vessels** at the landing area of the lens (Scleral Zone/PC3)

If the fit shows a touch of blanching after settling on the conjunctiva and still exchanges tears under the lens no change is indicated, as the flexure that pumps tear film under the lens will relieve the pressure.

- But if ¼ or ½ of the scleral zone has blanching, then change the landing zone by choosing a flatter Scleral Zone/PC3 and Edge/PC4.
- Recheck in a week if there is blanching.

*photo courtesy of Roddy Hamilton*
Compression Ring

- If a compression ring is noted, document the patient’s wearing time. If decreased you may want to change the edge.
  - If more than ¼ of the scleral zone shows compression, make a change in the landing area.
  - If it is an even compression, ask the consultant to provide a larger landing zone.
- Some patients’ scleral conjunctiva are quite a bit softer and may show some compression signs with no resulting problems.
- If the tear pump is working then the compression may be acceptable. The flexing that occurs during the blink allowing tears under the contact lens (providing the fluorescein uptake) results in the compression being relieved.

Cylindrical over-refraction usually means you have too much flexure.
- On a 15.6mm lens increase to .50mm thick and on an 18.2mm increase to .70mm thick.

Limbal touch occurs when there is not enough clearance around the Corneal Chamber. In this case change the Corneal Chamber size.

Touch is acceptable as long as it is not true pressure.
- Does the touch change with each blink?
- Does it slide over and touch but with the blink the touch is relieved?
- If the touch does not go away it is probably pressure.
- Look for blanched blood vessels when you are seeing touch or pressure.

Movement on a Jupiter lens is mostly with flexure; any movement should be minimal. It should not be immobile but also it should not be sliding or moving much with a well fit lens.
- Moves too much
  - Usually the lens is not settled down.
  - If the lens is too big it may slide a little too much on the sclera.
- After a lens has settled about 20 minutes and the lens is steep enough and the edges are sitting on the sclera, but yet it is still moving a little too much (other than that the fit appears to be good) then look at the Scleral Zone/PC3. Fluorescein will not be visible at the PC3 Scleral Zone with a good fit. (This Scleral Zone should be parallel to the conjunctiva and the edge should show a small fluorescein pool).

Pumps too hard or too much means the lens is flexing too much or the fitting relationship is too tall and needs to be made thicker. On a 15.6mm lens increase to .50mm thick and on an 18.2mm increase to .70mm thick.

Soft Conjunctiva is where you touch the sclera and it moves under finger pressure. With a Jupiter design it is possible that with the lens flexure during the blink conjunctiva can be sucked in under the lens. If this happens the lens may be too tight, or it may just be normal for the patient, or it could be too much flexure is occurring with the blink.