



Your partner in saving sight®

FitGuide®

For 16-19mm scleral lenses

Achieve a smart, efficient, and predictable fit that provides optimal vision and comfort for your patients.

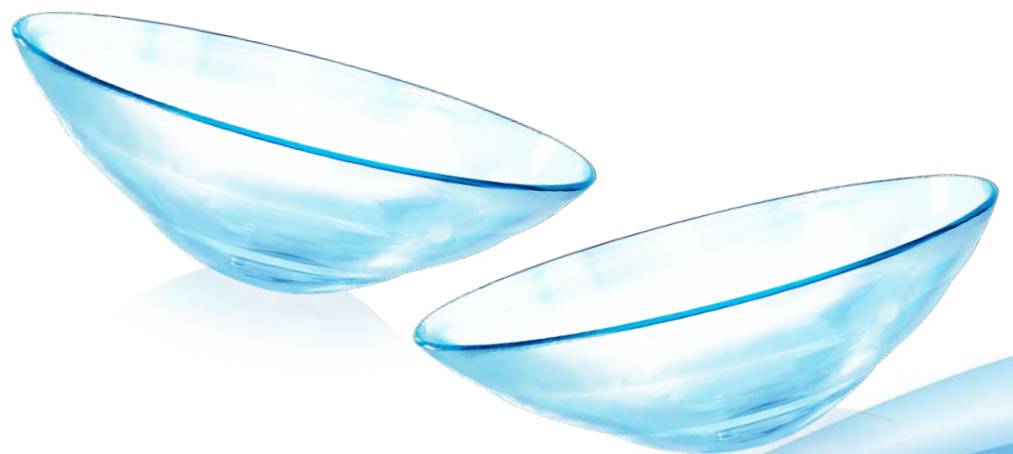
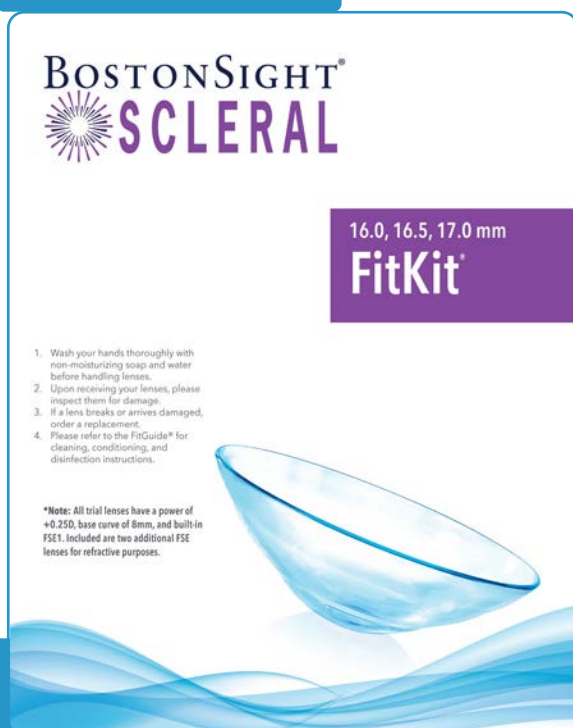


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Diagnostic lens sets come with three specific diameters and include nine fitting lenses for each eye.

16.0, 16.5, and 17mm



18, 18.5, and 19mm



DIAGNOSTIC LENS SET

Each BostonSight SCLERAL FitKit® includes a total of 28 diagnostic lenses. Nine lenses for each eye constitute the primary fitting set, with one additional sagittal depth option for each diameter; an additional two lenses per eye are included for residual high aberration control to achieve best corrected visual acuity. Diagnostic sets come with three specific diameters: 16, 16.5, and 17mm or 18, 18.5, and 19mm.

Lens selection and fitting is designed to simplify the fitting process as described in the schematic on the next page. Our fitting system is based on scleral anatomy and driven by clinical data. Specific lenses are provided for the left and right eye.

EMPIRICAL FITTING with SMART360®

Design a custom lens for your patient, with no trial lenses required. BostonSight's Smart360 feature integrates your profilometer with FitConnect® to transfer scan data to BostonSight's manufacturing lab. Our fitting philosophy remains the same and you may use this guide for trouble-shooting.

DIAMETER RECOMMENDATIONS

You know your patients best, however it can be helpful to have a quick reference for which diameter may work well for your case. The following are general guidelines.

16, 16.5 and 17mm

Small HVIDs
($\leq 11.0\text{mm}$)

Small apertures

Tight lids

Regular corneas

Pediatric
patients

Difficulty
handling lenses

DIAMETER RECOMMENDATIONS

18, 18.5 and 19mm

Large HVIDs
($\geq 11.5\text{mm}$)

Compromised
ocular surface

Highly ectatic
corneas

Chronic
exposure

Compromised/
fragile grafts

Severe dry eye

18, 18.5, and 19mm FitKit®

19.0 mm 3.2 Sag E-R90-1e1 FLAT	19.0 mm 3.2 Sag E-R90-2e1 STANDARD	19.0 mm 3.2 Sag E-R90-3e1 STEEP	19.0 mm 3.6 Sag E-R90-10e1 STANDARD	SmartSight® Lenses Additional front surface eccentricity options for refractive purposes	
18.5 mm 3.0 Sag E-R85-4e1 FLAT	18.5 mm 3.0 Sag E-R85-5e1 STANDARD	18.5 mm 3.0 Sag E-R85-6e1 STEEP	18.5 mm 3.4 Sag E-R85-11e1 STANDARD		18.0 mm 3.2 Sag FSE0 E-R80-12e0 STANDARD
18.0 mm 2.8 Sag E-R80-7e1 FLAT	18.0 mm 2.8 Sag E-R80-8e1 STANDARD	18.0 mm 2.8 Sag E-R80-9e1 STEEP	18.0 mm 3.2 Sag E-R80-12e1 STANDARD		18.0 mm 3.2 Sag FSE2 E-R80-12e2 STANDARD

Fitting Lenses RIGHT

All trial lenses have a power of +0.25D, base curve of 8mm, and built-in FSE1.

Included are two additional FSE lenses for refractive purposes.

SmartSight® Lenses Additional front surface eccentricity options for refractive purposes	19.0 mm 3.6 Sag E-L90-10e1 STANDARD	19.0 mm 3.2 Sag E-L90-1e1 FLAT	19.0 mm 3.2 Sag E-L90-2e1 STANDARD	19.0 mm 3.2 Sag E-L90-3e1 STEEP	
	18.0 mm 3.2 Sag FSE0 E-L80-12e0	18.5 mm 3.4 Sag E-L85-11e1 STANDARD	18.5 mm 3.0 Sag E-L85-4e1 FLAT	18.5 mm 3.0 Sag E-L85-5e1 STANDARD	18.5 mm 3.0 Sag E-L85-6e1 STEEP
	18.0 mm 3.2 Sag FSE2 E-L80-12e2	18.0 mm 3.2 Sag E-L80-12e1 STANDARD	18.0 mm 2.8 Sag E-L80-7e1 FLAT	18.0 mm 2.8 Sag E-L80-8e1 STANDARD	18.0 mm 2.8 Sag E-L80-9e1 STEEP

Fitting Lenses LEFT

16, 16.5, and 17mm FitKit®

Fitting Lenses RIGHT

All trial lenses have a power of +0.25D, base curve of 8mm, and built-in FSE1.

Included are two additional FSE lenses for refractive purposes.

17.0 mm 3.0 Sag D-R70- 1e1 FLAT	17.0 mm 3.0 Sag D-R70- 2e1 STANDARD	17.0 mm 3.0 Sag D-R70- 3e1 STEEP	17.0 mm 3.4 Sag D-R70- 10e1 STANDARD	SmartSight® Lenses Additional front surface eccentricity options for refractive purposes	
16.5 mm 2.8 Sag D-R65- 4e1 FLAT	16.5 mm 2.8 Sag D-R65- 5e1 STANDARD	16.5 mm 2.8 Sag D-R65- 6e1 STEEP	16.5 mm 3.4 Sag D-R65- 11e1 STANDARD		16.0 mm 3.0 Sag FSE0 D-R60- 12e0 STANDARD
16.0 mm 2.6 Sag D-R60- 7e1 FLAT	16.0 mm 2.6 Sag D-R60- 8e1 STANDARD	16.0 mm 2.6 Sag D-R60- 9e1 STEEP	16.0 mm 3.0 Sag D-R860- 12e1 STANDARD		16.0 mm 3.0 Sag FSE2 D-R60- 12e2 STANDARD

Fitting Lenses LEFT

SmartSight® Lenses Additional front surface eccentricity options for refractive purposes	17.0 mm 3.4 Sag D-L70- 10e1 STANDARD	17.0 mm 3.0 Sag D-L70- 1e1 FLAT	17.0 mm 3.0 Sag D-L70- 2e1 STANDARD	17.0 mm 3.0 Sag D-L70- 3e1 STEEP	
	16.0 mm 3.0 Sag FSE0 D-L60- 12e0	16.5 mm 3.2 Sag D-L65- 11e1 STANDARD	16.5 mm 2.8 Sag D-L65- 4e1 FLAT	16.5 mm 2.8 Sag D-L65- 5e1 STANDARD	16.5 mm 2.8 Sag D-L65- 6e1 STEEP
	16.0 mm 3.0 Sag FSE2 D-L60- 12e2	16.0 mm 3.0 Sag D-L60- 12e1 STANDARD	16.0 mm 2.6 Sag D-L60- 7e1 FLAT	16.0 mm 2.6 Sag D-L60- 8e1 STANDARD	16.0 mm 2.6 Sag D-L60- 9e1 STEEP

FITTING PRINCIPLES OF THE BOSTONSIGHT SCLERAL LENS

The process of fitting the BostonSight SCLERAL lens is based on identifying the best fitting trial lenses and adapting their geometries and power to create eye-specific lenses. The steps are as follows:

- ① Identify the trial lens having the best initial fit.
- ② Re-evaluate the fit after the appropriate settling time.
- ③ When indicated, replace with one having more appropriate parameters.
- ④ Repeat the process until the best fitting trial lens is identified.
- ⑤ Perform spherical over-refraction to determine lens power. Vision may be optimized using a different trial with different front eccentricity values or by performing sphero-cylindrical refraction over the final diagnostic lens.
- ⑥ Order the lens with any modifications as needed in FitConnect®.

E-R80-1e1

LENS SET
SERIES

EYE
R vs. L

DIAMETER

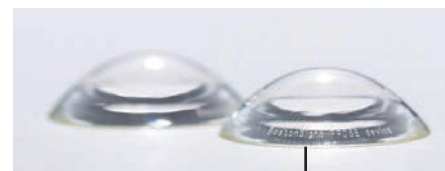
LENS
NUMBER
1-12

ECCENTRICITY
FSE0, FSE1 OR
FSE2

Easy diagnostic lens ID with
unique laser-engraved
model number

Example shown:

Lens Set Series: E
Right Lens
18.0mm diameter
Lens #1
FSE1



Laser-engraved model number location

FITTING ALGORITHM SCHEMATIC

Choose diameter.

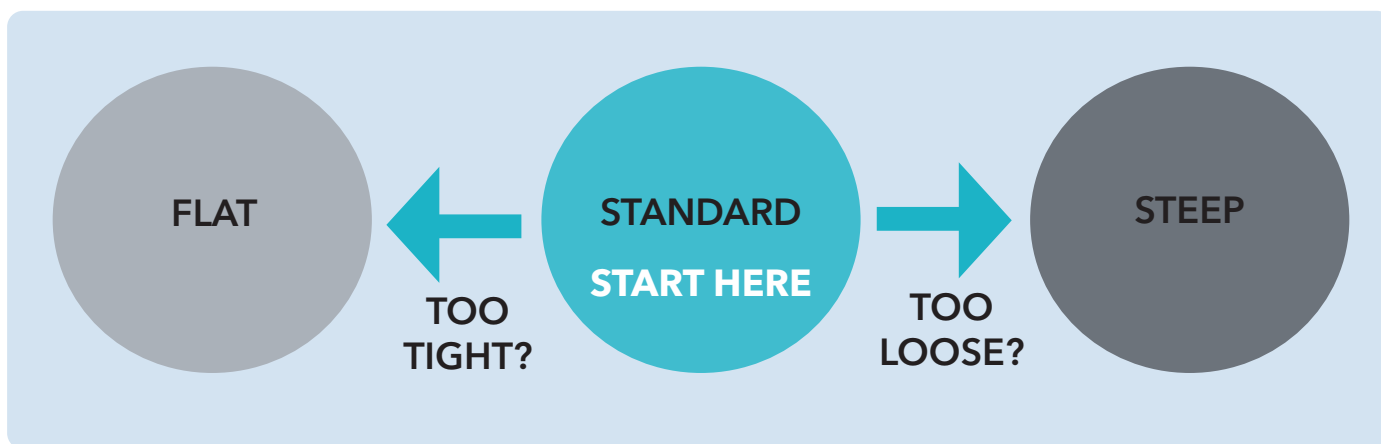
Start at the center with a Standard lens and standard sagittal height at each given diameter.

If the Standard lens fits loose, choose the Steep lens.

If the Standard lens fits tight, choose the Flat lens.

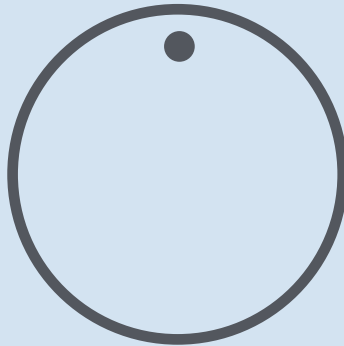
Once the best diagnostic lens is identified, sagittal height and individual hemi-meridians can be modified as needed for design customization, using the graphical representations for each individual hemi-meridian provided in your FitConnect account.

Fitting guide is based on a simplified system for each eye.

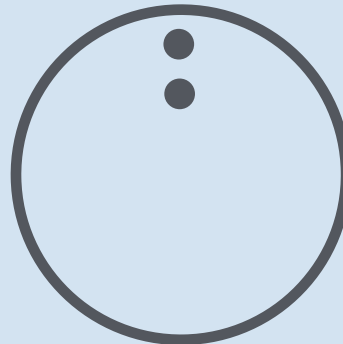


LENS MARKINGS - USING DOTS TO IDENTIFY RIGHT AND LEFT LENSES

Right vs. left lens identification

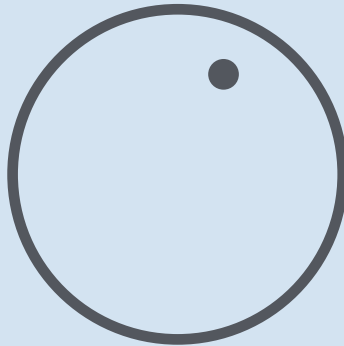


One dot = RIGHT lens

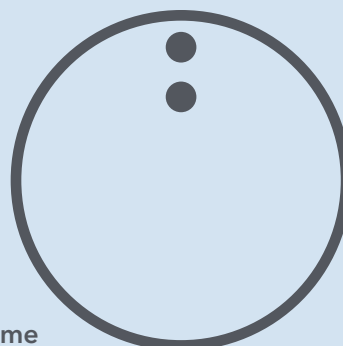
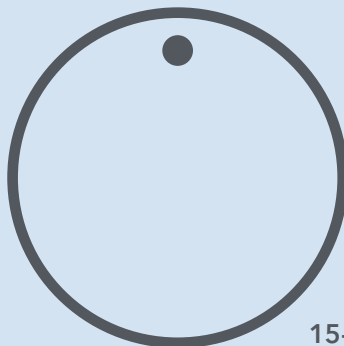


Two dots = LEFT lens

Expected lens positioning in the eye



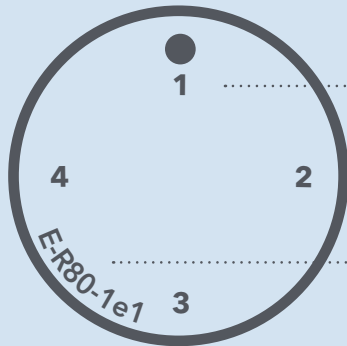
60-85% of the time



15-40% of the time

LENS MARKINGS (continued)

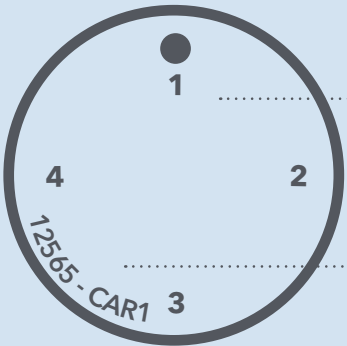
DIAGNOSTIC LENS



Easy ID with Arabic numerals to identify each individual hemi-meridian

Diagnostic lens model number laser-engraved for positive ID

PATIENT'S LENS



Easy ID with Arabic numerals to identify each individual hemi-meridian

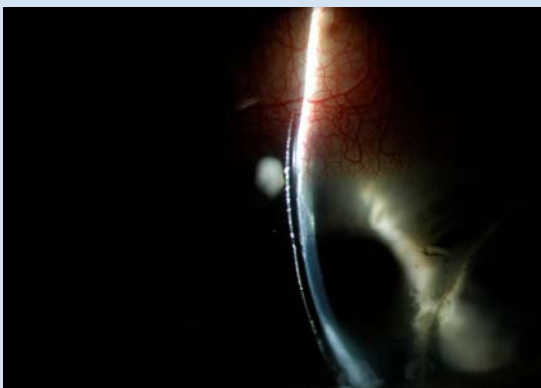
Laser-engraved unique identifier = order number + first 3 letters of patient's last name + lens number

DIAMETER SELECTION

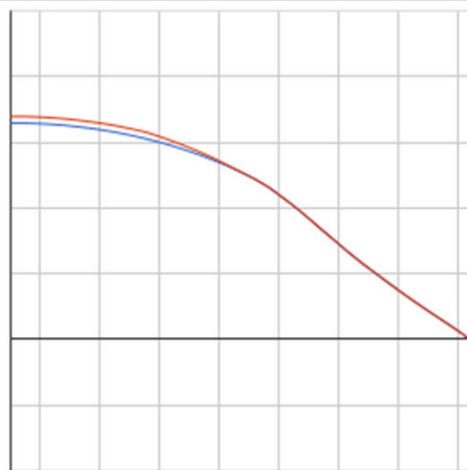
Smaller diameter lenses are suitable for smaller HVIDs, regular corneas, smaller apertures, and/or tighter lids. As lens diameter is decreased, the haptic bearing surface area becomes smaller. This is less significant for lenses having diameters 18.0mm or larger. Larger sizes, i.e. 19.0 mm, are useful for large globes such as those with significant keratoectasia, high myopia, and large horizontal visible iris diameters (HVID's), and for cases of chronic exposure and fragile and compromised ocular surfaces and disease eyes. See the Diameter Recommendations on pg 4-5.

SAGITTAL HEIGHT

Sagittal height should be modified in FitConnect with the goal of achieving the suggested 200 - 300 μ clearance. For reference, refer to the center thickness of the lens, which is 300 μ . Our recommended starting point is the Standard Distribution sagittal height lens. Once the best trial diagnostic lens for both haptic alignment and sagittal height is determined, proceed to make 50 micron adjustments in FitConnect as needed. For example, if you note corneal touch as shown below, for a desired 200 μ clearance, increase sag value by 200 μ in your FitConnect account as shown.



Example of corneal touch



- 200 +

Sag increase by 200 μ in FitConnect

FRONT SURFACE OPTICS

Multiple front surface eccentricity options are provided. For optimal best corrected visual acuity results, it is imperative that the best fitting trial diagnostic lens has been identified and assessed before proceeding to fine-tune best corrected visual acuity. Once a rotationally stable diagnostic lens has been identified, perform spherical over-refraction. If spherical over-refraction does not achieve expected visual acuity with the built-in FSE1 value, then attempt over-refraction with the front surface eccentricity lens options provided, FSE0 or FSE2. If best-corrected vision is improved, proceed to order the lens based on the best fitting diagnostic lens and choose the best front surface eccentricity option (FSE1, FSE2, or FSE0) from the drop down menu provided in FitConnect.

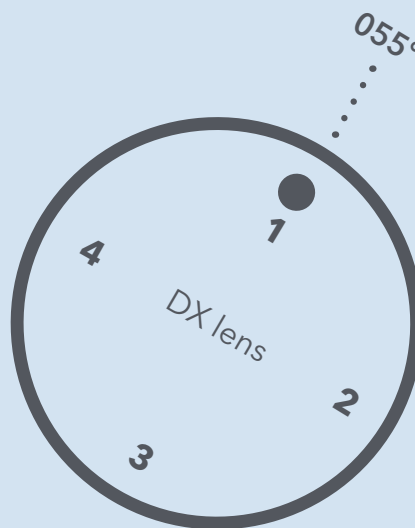
BostonSight SCLERAL lenses in astigmatic powers up to 6D are available for order. If the patient is unable to achieve satisfactory vision after attempting all front surface eccentricity options, then it is important to check for residual astigmatism. *Astigmatic corrections can only be applied to rotationally stable lenses.* To measure astigmatic power, use trial diagnostic lens that provides best haptic alignment and perform sphero-cylindrical over-refraction. Document both the sphero-cylindrical over-refraction and the location of the lens dot in degrees using the slit rotation control ring in your slit lamp (see example below). *The latter measurement in degrees is crucial in order to obtain accurate results.*

Scenario | Residual astigmatism correction

Example One

Sphero-cylindrical over-refraction

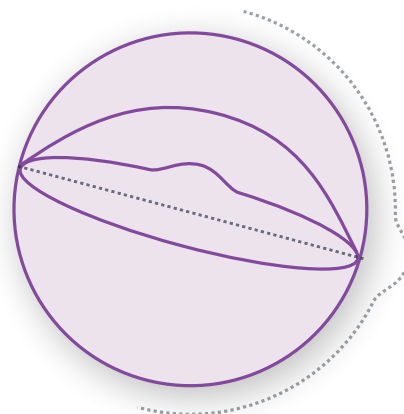
-1.00 -1.25 x 075



- ① Measure the location of lens dot in degrees using your slit-lamp as shown above (in this example, dot location is at 055°)
- ② Enter sphero-cylindrical value and lens dot location in the order screen of FitConnect

SmartChannel® TECHNOLOGY

With BostonSight SCLERAL SmartChannel Technology, you can easily customize your lens to facilitate fits over anatomical obstacles, promote tear exchange, and reduce suction.



VAULTING OVER ANATOMICAL OBSTACLES: 3 Easy Steps

- ① Adequately fit the lens until you achieve a rotational stable fit with aligned peripheral haptics.
- ② Notate the location of the dot in degrees using the slit rotation control ring in your slit lamp. The channel will be adequately positioned regardless of where the dot is resting on the eye.
- ③ Determine the position of the dot (in degrees), the width (in degrees), and the depth (mm) required to vault the anatomical obstacle. You can add up to 4 SmartChannels per lens, and they can be positioned in any location in the lens. If you need to add another channel, simply click "Add Channel" in the SmartChannel window and repeat steps.

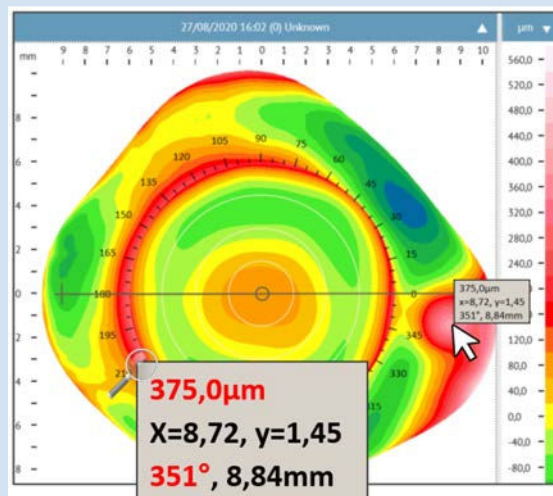
NOTE: If you have a corneo-scleral profilometer, move the cursor to the area of elevation to find information about location and depth, and determine starting point and end point of your SmartChannel in degrees.

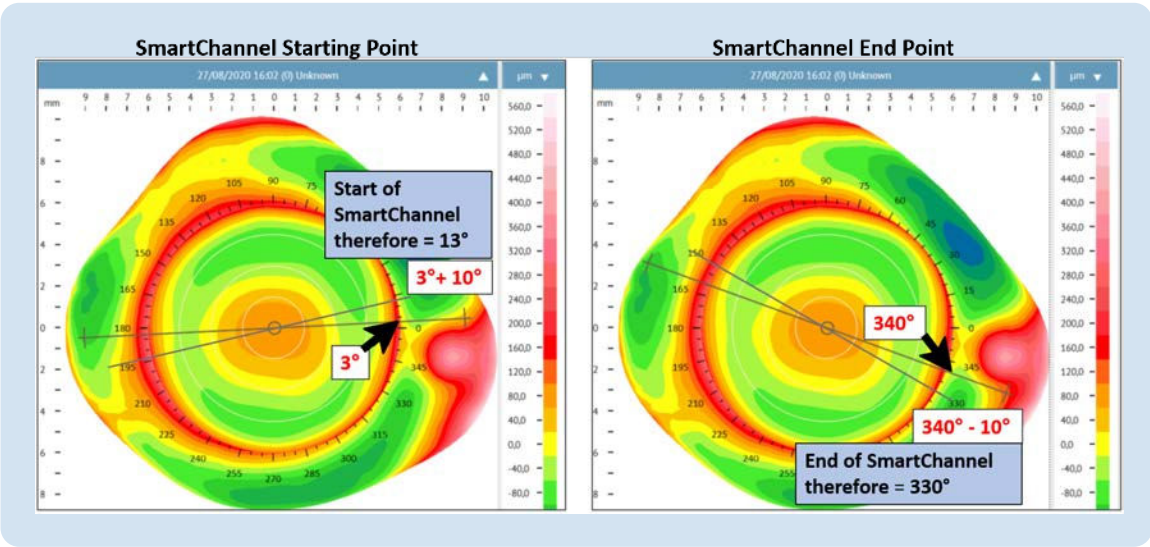
We recommend adding 10° to each side, as shown on next page.

Pinguecula example

Data obtained from Eaglet Eye's ESP:

- ① Location: 351°
- ② Depth: 375μ
- ③ Move cursor to the superior and inferior edge of the pinguecula to determine starting point and end point of SmartChannel in degrees.





Channels

Channel	Start	End	Depth	Meridian
1	13	330	0.4	Graph Remove

How to enter data in FitConnect®

Add Channel Clear Reset

Dot Location (0 - 360) 90

Close Save changes

PROMOTING TEAR EXCHANGE AND REDUCING SUCTION

The same 3 steps apply when designing SmartChannels to promote tear exchange and reduce suction. The only difference is the width and depth.

- ① The standard initial width is 20-30 degrees and depth is 150-200µ.
- ② Typically, channels to relieve suction are added in the temporal and nasal locations in the eye (180 deg and 0 deg). If more channels are needed, a total maximum of 4 total channels can be added.

FITTING GOALS FOR BostonSight SCLERAL

After lens has settled for 20-30 minutes.



The lens centers well and is virtually motionless on blinking. Air bubbles do not intrude under the haptic or optic zone after the lens has been applied.



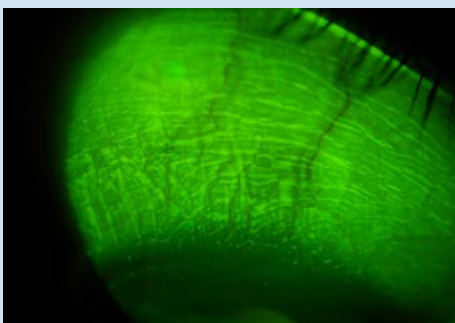
Corneal clearance: The thickness of the fluid compartment over the corneal apex is approximately 200μ to 300μ (in comparison, the center thickness (CT) of the lens is 300μ). Also, vaulting should occur at the limbal area.



Episcleral blood vessels underlying the haptic are not compressed for adequate haptic scleral alignment.



The edge of the lens does not impinge on the bulbar conjunctiva.



There should be minimal-to-no imprint of the edge of the lens on the bulbar conjunctiva upon lens removal.

TROUBLESHOOTING

Accumulation of debris in the fluid reservoir

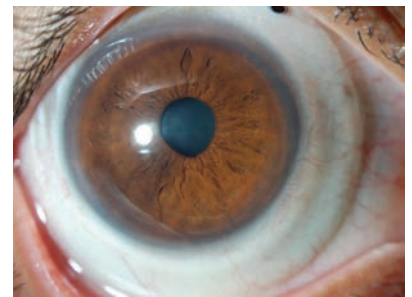
This is common in eyes with distorted corneas that also have a dry eye component, or in ocular surface disease. This should be managed stepwise, as suggested below:

- ① Apply fluorescein over the device to determine excessive exchange or vector for debris intake. If this occurs, then re-evaluate the haptic toricity distribution and steepen haptics as needed, using the graphical representations for each individual hemi-meridian in your FitConnect account.
- ② Minimize central sagittal depth if excessive.
- ③ Consider the use of more viscous fluid in the lens reservoir, such as preservative-free Refresh Celluvisc mixed with preservative-free saline.



Hoarding of the limbal bulbar conjunctiva

Loose bulbar conjunctiva is often seen overlapping the peripheral cornea during lens wear. This can be quite impressive. Nevertheless, if the redundant conjunctival tissue is flat, the condition is benign. However, if it is a function of excessive lens suction, this requires a re-design to establish adequate venting by improving haptic scleral alignment.



Diffuse, fine SPK

(The following should be ruled out for lens related causes.)

- ① Residual hydrogen peroxide. This is always associated with stinging on lens application and may indicate the need for a more thorough saline rinse prior to lens application, or the need to replace the platinum catalyst, if this system is used for neutralization.
- ② Sensitivity to wetting/soaking solution used for overnight storage (if any). In these cases, overnight hydrogen peroxide disinfection is recommended.

Development of hypertrophic bulbar conjunctival lesion coincident with the edge of the lens

This may be due to chronic edge impingement and its resolution requires a significant flattening of haptic or change in the lens diameter – either smaller by at least 1mm if this avoids any edge impingement in this area, or larger so that the lens rides over the hypertrophic tissue.

Discrete round or oval depression of the corneal surface present immediately after lens removal

If it pools fluorescein dye, does not stain, and resolves rapidly, it is most likely a dellen due to a sequestered air bubble during lens wear.

TROUBLESHOOTING, continued

Rippled texture of the corneal surface immediately after lens removal

This is common and benign. It probably is due to the absence of the normal shearing forces of blinking that serve, among other things, to smooth the mucin layer on the corneal surface.

Lens-related bulbar conjunctival injection

Common causes include:

- ① Pinguecula, especially the more diffuse type.
- ② Excessive haptic compression and/or edge impingement, most often evaluated upon lens removal as rebound injection.
- ③ Inadequate neutralization of hydrogen peroxide.
- ④ Sensitivity to constituents of contact lens wetting solutions if used for lens soaking.

Edge Impingement

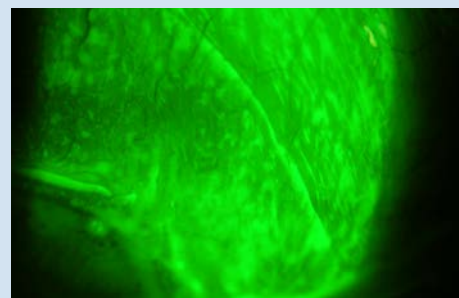
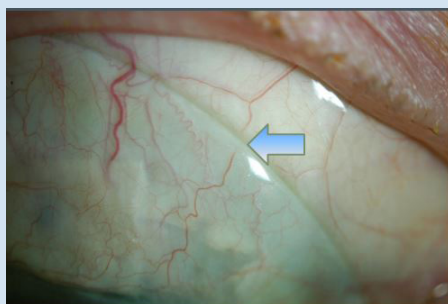
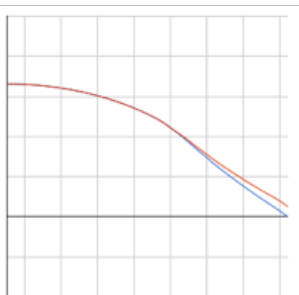
The following are possible causes of localized peripheral edge impingement:

Sectorial/meridional localized edge impingement. This is usually resolved by flattening the haptic in the specified meridian. If you notice edge impingement in a specific meridian, first identify the meridian: 1, 2, 3, or 4, and flatten accordingly using your FitConnect account.

If the impingement noted looks like the one below, and upon lens removal, there's conjunctival staining similar to the image below, the minimal suggested amount of haptic flattening is **200 μ if working with the 18-19mm FitKit and 150 μ if working with the 16-17mm FitKit.**

Example shown is for
18-19mm FitKit.

- 200 +

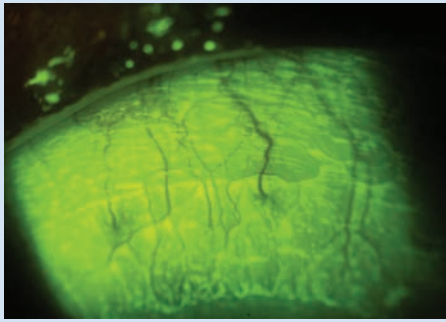


Login to your FitConnect account and use the graphical representations at each meridian to help guide your decision.

For example, if the amount of impingement noted and the conjunctival staining pattern after lens removal looks like the picture above, and it corresponds to Meridian 1, then the haptic should be flattened by at least 200 μ at Meridian 1. Refer to the graphical representation to the left.

TROUBLESHOOTING, continued

If the impingement noted looks like the one below upon lens removal, then the amount to flatten haptic is **150 μ** if working with the 18-19mm FitKit and **100 μ** if working with the 16-17mm FitKit.

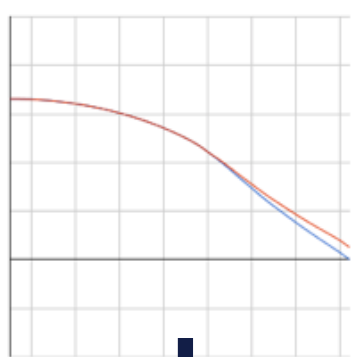


Staining pattern upon lens removal

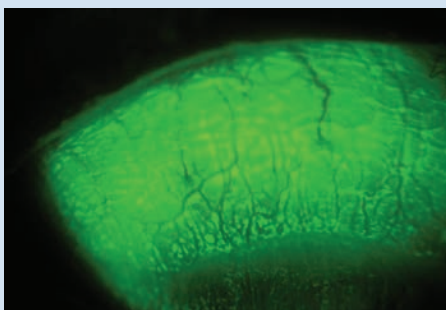


- 150 +

Flatten haptics
by 150 μ



Example shown is for
18-19mm FitKit.



Fitting endpoint after
modification:
No conjunctival staining

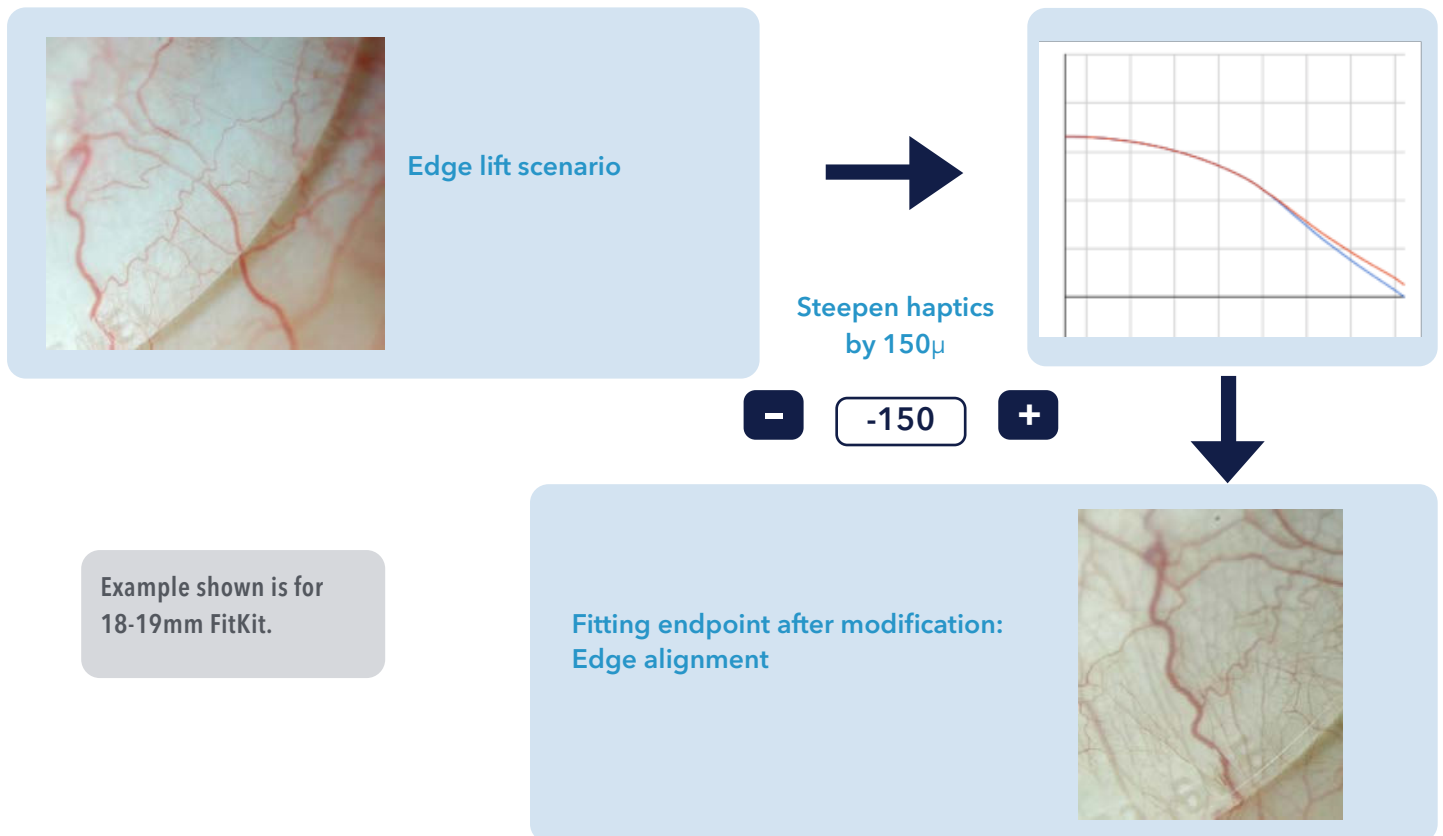
TROUBLESHOOTING, continued

Edge Lift

If edge lift occurs, the haptic should be steepened in the corresponding meridian. First identify which meridian corresponds to the observed edge lift: 1, 2,3, or 4.

For example, if the amount of edge lift noted looks like the picture below, and it corresponds to Meridian 1, then haptic should be steepened by at least **150 μ at Meridian 1 for 18-19mm FitKit and 100 μ for the 16-17 FitKit.**

Log in to your FitConnect account and use the graphical representation at Meridian 1 as shown below.



BostonSight
464 Hillside Avenue, Suite 205
Needham, MA 02494
888-SCLERAL
BostonSightSCLERAL.org

Lens Parameters

DIAMETERS	16.0mm, 16.5mm, 17.0mm, 18.0mm, 18.5mm, and 19.0mm
SPHERE POWER	-25.00 Diopters to +35.00 Diopters
SAGITTAL HEIGHT	2.0mm to 6.0mm in 0.1mm (50 μ) steps
CYLINDER AND AXIS	-0.50 to 6.00 Diopters, 5° to 180° in 5° increments
CENTER THICKNESS	0.3mm, unless otherwise noted
PERIPHERAL HAPTIC SYSTEM	Customizable
OPTIONS	Quadrant-specific toric PHS; Front-surface toric Rx, SmartSight® FSE, SmartSight HOA®, SmartChannels®, Tangible Hydra-PEG (incurs additional fee)

Lens Materials

PRODUCT	MATERIAL	DK
Contamac	Optimum Extra	100
Contamac	Optimum Extreme in clear or ice blue	125
Contamac	Optimum Infinite	180
Bausch + Lomb	Boston® EQII (<i>cannot be used with Hydra-PEG</i>)	85
Bausch + Lomb	Boston® XO2 in clear or ice blue	141