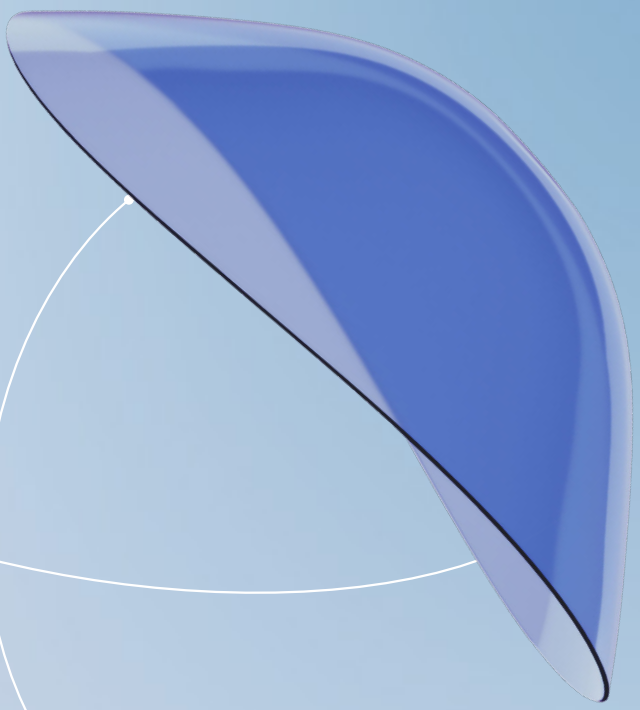
BostonSight® SCLERAL

The only lens you'll ever need.



FitGuide® Advanced

FOR 14.5mm-19.0mm SCLERAL LENSES

Use for guidance on Fit Modifications and Adjusting Optics, including Quad-Elevation™, Quad-Limbal™, SmartChannels®, SmartSight® FSE, SmartSight HOA®, and SmartFocus™ multifocal.

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Fit Modifications

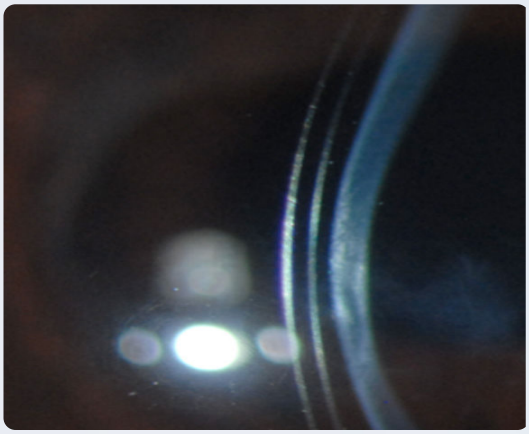
Sagittal Depth

Ideal sagittal depth should have 200–300µm corneal clearance, post-settling, as seen in figure 1a.

- For lenses ≤18.0mm in diameter, lens settling is ~130µm after 4 hours of wear.
- For lenses >18.0mm, lens settling is ~85µm after 4 hours of wear.
- For reference, refer to the center thickness of the lens, which is 300µm.

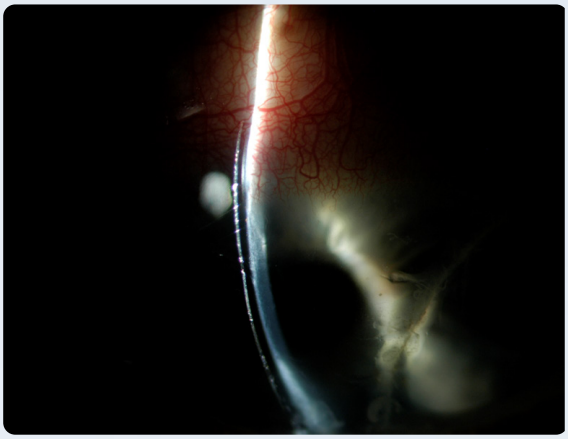
Sagittal depth may be adjusted by 50µm increments. If you note corneal touch as shown in figure 1b, increase sag value by 300µm for 200-300µm corneal clearance.

Fig.1a



Example of adequate corneal clearance

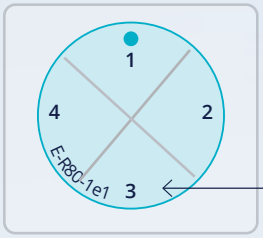
Fig.1b



Example of corneal touch

Quadrant-Specific Parameters

Independently modify the haptic, limbal, and mid-peripheral zone in each quadrant. We refer to each quadrant as a meridian.



Quadrant ID is laser-engraved on the lens for easy reference.

QUADRANT-SPECIFIC HAPTICS

Lens haptics should properly align to the conjunctival-scleral surface to achieve a centered and rotationally stable fit and obtain an ideal physiological endpoint. Lens haptics can be modified in a quadrant-specific manner in 50µm increments. See recommended quadrant-specific haptic changes based on diameter and presentation in table 1. If issue presents 360°, return to trial lens assessment in FitGuide Basics.

Table 1

Issue	14.5mm-15.5mm	16.0mm-17.0mm	18.0mm-19.0mm
Edge awareness (*often dissipates without change after lens adaptation)*	↓Decrease 50µm	↓Decrease 50–100µm	↓Decrease 100–150µm
Mild edge lift	↓Decrease 100µm	↓Decrease 100µm	↓Decrease 150µm
Significant edge lift	↓Decrease 150µm	↓Decrease 150–200µm or more as needed	↓Decrease 200–250µm or more as needed
Mild edge impingement	↑Increase 100µm	↑Increase 100µm	↑Increase 150µm
Significant edge impingement	↑Increase 150µm	↑Increase 150–200µm or more as needed	↑Increase 200–250µm or more as needed

QUAD-LIMBAL™

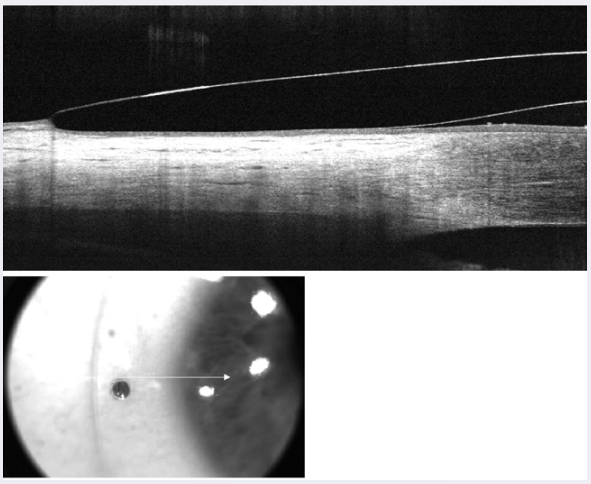
Limbal clearance can be modified in a quadrant-specific manner with Quad-Limbal™. All trial lenses have our Standard limbal clearance values with built-in oval optic zone. If there is over-vaulting or touch at the limbus, proceed to modify each quadrant per our recommended adjustments as shown in table 2. Ideal limbal clearance should be 100–150µm, post-settling, as seen in figure 2.

Table 2

HVID	Lens diameter	Adjustment goal	Step to use
<11.0mm	14.5–17.0mm	↓Decrease ~100–140µm	Narrow 1
11.0–12.0mm	16.0–19.0mm	↓Decrease ~100–140µm	Narrow 1
11.0–12.0mm	16.0–19.0mm *	↓Decrease ~150–200µm	Narrow 2
11.0–12.0mm	14.5–17.0mm	↑Increase ~100–140µm	Wide 1
12.0–13.0mm	16.0–19.0mm	↑Increase ~100–140µm	Wide 1
>13.0mm	16.0–19.0mm*	↑Increase ~150–200µm	Wide 2

**Narrow 2/Wide 2 steps are not available in <16mm diameters.*

Fig. 2



Example of adquate limbal vault

QUAD-ELEVATION™

The mid-peripheral corneal zone can be modified in a quadrant-specific manner with Quad-Elevation™. This feature is useful for highly irregular corneas including tilted grafts, pellucid marginal degeneration, or post-surgical corneas.

Decrease mid-peripheral clearance (STEEPEN)	< 8.0 BC to make lens more prolate
Increase mid-peripheral clearance (FLATTEN)	> 8.0 BC to make lens more oblate

Quad-Elevation is NOT meant to address lens centration. It is meant specifically to address clearance customization in the mid-peripheral corneal zone. Quad-Elevation is not available on lenses with toric power, SmartFocus™, or SmartSight HOA®.

SmartChannels®

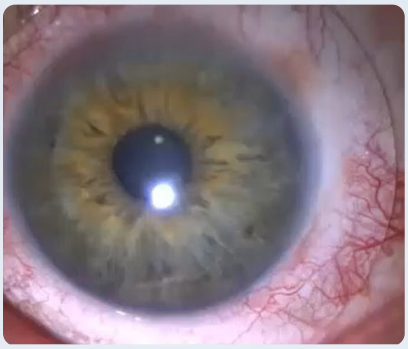
SmartChannels are used to reduce lens suction and promote tear exchange, and/or vault anatomical obstacles. One SmartChannel is allowed per meridian, up to four SmartChannels per lens.

REDUCE SUCTION

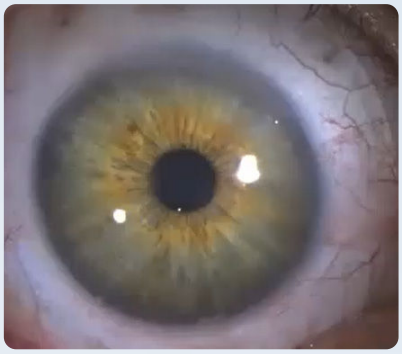
SmartChannels designed to reduce suction and promote tear exchange can help reduce microcystic corneal edema, neovascularization, and/or hyperemia as seen in figure 3.

Fig. 3

Without SmartChannels



With Two SmartChannels



VAULT ANATOMICAL OBSTACLES

SmartChannels designed to vault anatomical obstacles require a rotationally stable fit with aligned peripheral haptics. The dot location in degrees is crucial to obtain accurate placement of the SmartChannel(s).

Measurements via Slit Lamp Exam

① Measure the degree location of the lens dot using your slit lamp.

② Determine the width of the SmartChannel by identifying the start and end point in degrees. We recommend expanding the width by 10° on each side as shown in figure 4.

③ Determine the required depth of the channel 0.1-0.4mm (100-400µm) to adequately vault the anatomical obstacle.

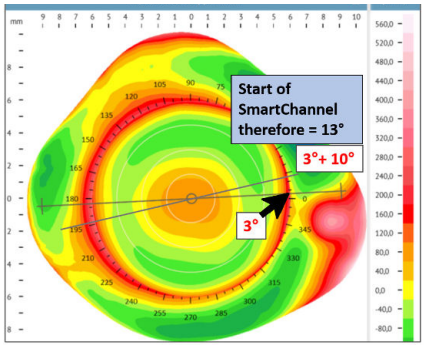
Measurements via Diagnostic Equipment

Pentacam CSP or Eaglet ESP data may be used to design a SmartChannel.

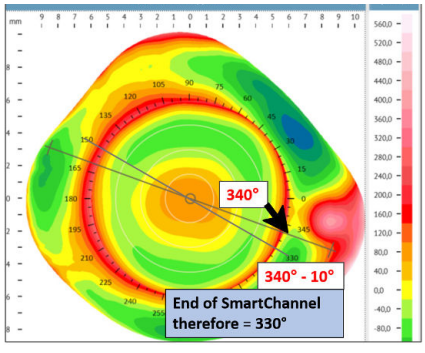
① Follow the equipment manual to determine location of the anatomical obstacle, the start and end point in degrees, and the required depth of the channel 0.1-0.4mm (100-400µm) to adequately vault the anatomical obstacle. We recommend expanding the width by 10° on each side as shown in figure 4.

Fig. 4

SmartChannel Starting Point



SmartChannel End Point



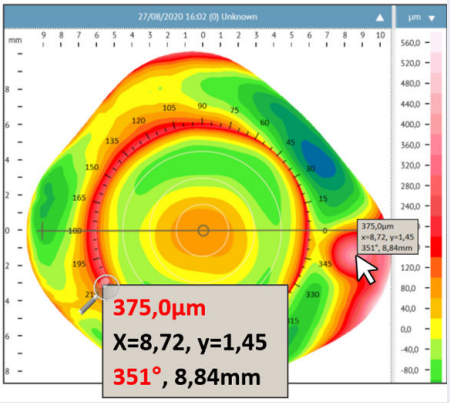
Measurements via Diagnostic Equipment Example

Eaglet ESP

Corneo-scleral elevation map showing the presence of a pinguecula

1. Hover the cursor over the pinguecula to get the location and required depth of the SmartChannel as shown in figure 5.
    a. Location: 351°
    b. Depth: 0.375mm (375µm)
2. Determine the width of the SmartChannel by moving the cursor to the top and bottom edge of the pinguecula to identify the start and end point in degrees, expanding the width by 10° on each side as shown in figure 4.
    a. Starting Point: 3° + 10° = 13°
    b. End Point: 340° - 10° = 330°

Fig. 5



ESP corneo-scleral elevation map showing the presence of a pinguecula

Final Fit Assessment

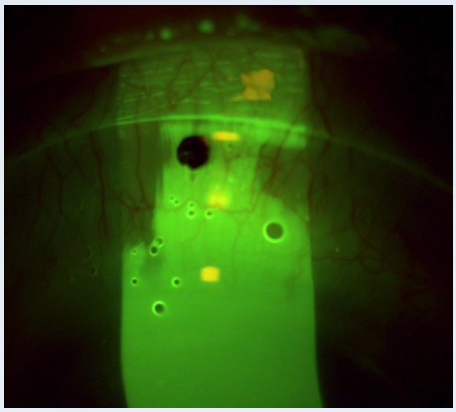
Prior to removing the lens, we recommend staining with sodium fluorescein, and assessing with a blue light and wratten yellow filter #12 to:

1. Assess the physiological impact of the lens fit on eye.
2. Determine if there are staining patterns that require additional fit modifications.
3. Assess for marks or staining patterns present after lens removal.

Assessment 1: Identification of rapid influx of fluorescein in a quadrant-specific manner

1. Stain over the lens.
2. Assess fluorescein diffusion in a quadrant-specific manner.
3. A rapid influx of fluorescein indicates edge lift and vectors for tear debris intrusion into the lens reservoir as shown in figure 6.

Fig. 6



Recommended changes:
14.5-17.0mm: Tighten haptics, decreasing by 150um
18.0-19.0mm: Tighten haptics, decreasing by 200um

Assessment 2: Lens removal for identification of staining patterns

1. Remove the lens.
2. Assess the cornea and conjunctiva for signs of fluorescein staining that could signal corneal touch, limbal touch, solution hypersensitivity, negative staining from cornea/limbal edema, and/or haptic impingement. Make the appropriate fit modifications or contact Fitting Consultation at 888-SCLERAL or fitting-consultation@bostonsight.org for assistance.

The staining pattern in figure 7 shows signs of nasal and temporal haptic conjunctival impingement and temporal limbal touch. To address the conjunctival impingement and limbal touch, loosen the nasal and temporal haptics and use Quad-Limbal technology to increase limbal clearance temporally.

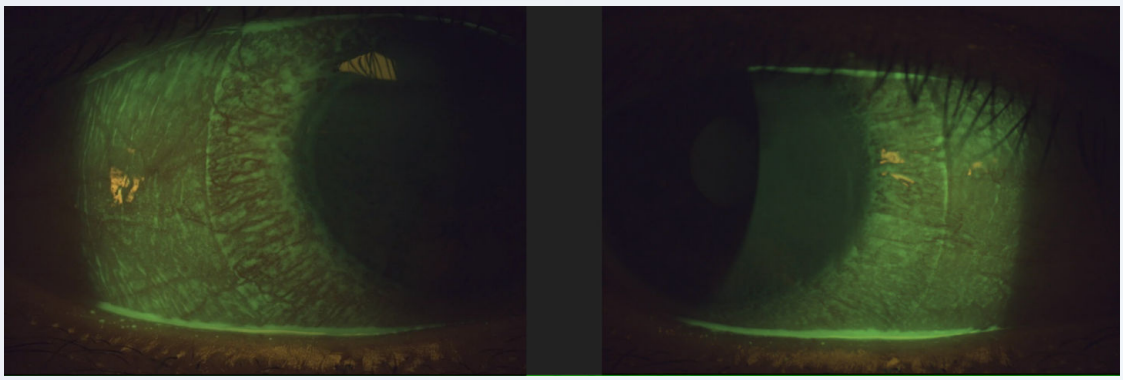
Recommended changes:

14.5-15.5mm: Loosen nasal and temporal haptics by 150mm, increase temporal limbal clearance from Standard to Wide 1

16.0-17.0mm: Loosen nasal and temporal haptics by 150mm, increase temporal limbal clearance from Standard to Wide 2

18.0-19.0mm: Loosen nasal and temporal haptics by 200mm, increase temporal limbal clearance from Standard to Wide 2

Fig. 7



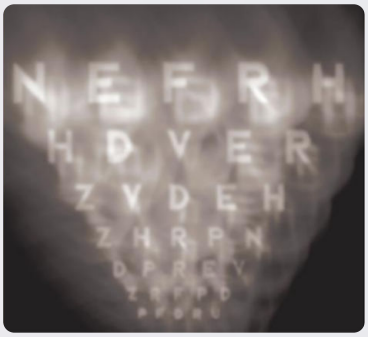
Adjusting Optics

SmartSight® FSE

BostonSight offers multiple front surface eccentricity (FSE) options for aberration control. Figure 8 shows the letter simulation aberrometry pattern of a non-BostonSight SCLERAL lens without FSE (a) and a BostonSight SCLERAL lens with built-in FSE1 value (b).

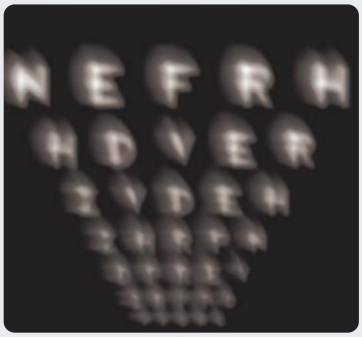
FSE0 and FSE2 trial lenses are in the Standard scleral shape and are for refractive purposes only.

Fig. 8a



Without SmartSight FSE

Fig. 8b



With SmartSight FSE1

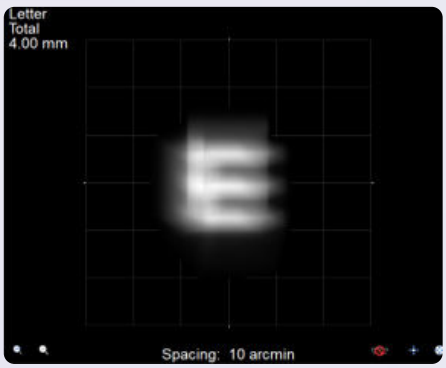
1. Identify the best fitting trial lens.
2. Perform sphero-cylindrical over-refraction and note the dot location. If visual acuity is acceptable, do not change FSE value.
3. If the patient is reporting ghosting, halos, or fuzzy visual symptoms, remove the FSE1 lens and apply a different FSE lens based on corneal condition.
    - For regular corneas, apply FSE0 and over-refract. If no improvement, test the FSE2 lens and over-refract.
    - For irregular corneas, apply the FSE2 and over-refract. If no improvement, test the FSE0 lens and over-refract.
    - Note which FSE value provides the best corrected visual acuity.

SmartSight HOA®

SmartSight HOA is an open aberrometer platform for custom HOA correction when HOA control cannot be sufficiently addressed by SmartSight FSE. BostonSight SCLERAL is compatible with Ovitz, iTrace, Nidek OPD III (*not the OPD III VS)*, and iDesign aberrometers. We recommend being comfortable fitting BostonSight SCLERAL lenses prior to utilizing SmartSight HOA technology. ***SmartSight HOA cannot be used with SmartFocus™ or Quad-Elevation™.***

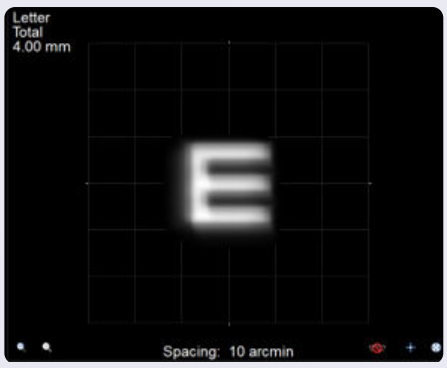
Figure 9 shows the letter simulation aberrometry pattern of a scleral lens without custom SmartSight HOA (a) and with custom SmartSight HOA (b).

Fig. 9a



Without custom SmartSight HOA

Fig. 9b



With custom SmartSight HOA

SmartSight HOA training is required prior to FitConnect HOA account activation. Contact BostonSightSCLERALTeam@bostonsight.org.

SmartFocus™ Multifocal

Multifocal optics are available on 14.5–17.0mm BostonSight SCLERAL lenses. SmartFocus multifocal requires a rotationally stable fit with aligned peripheral haptics. ***SmartFocus cannot currently be combined with SmartSight HOA®, Quad-Elevation™ or Smart360®.***

SmartFocus ordering requires:

1. A rotationally stable fit with aligned peripheral haptics.
2. Optimized distance visual acuity prescription.
3. ADD power and mesopic pupil size.

SmartFocus lens assessment

1. Assess binocular distance visual acuity (DVA) and near visual acuity (NVA).
2. If binocular DVA and NVA is adequate, dispense the lens and allow for neuroadaptation by having the patient wear the lens for at least 1 week before re-assessing during a follow-up visit.
3. To troubleshoot visual acuity at distance or near:
    a. Determine eye dominance.
    b. Re-assess DVA OU and NVA OU.
    c. Measure DVA OD/OS and NVA OD/OS (monocularly).
    d. Over-refract and notate only if over-refraction improves both distance and near visual acuity.
    e. Report findings in the Hold for Consultation section in FitConnect before submitting your order.

Placing an Order

Order lens(es) with any Fit or Optical Modifications as needed in FitConnect®, BostonSight's lens design and order management platform. Refer to the FitConnect Guide for more information.

Fitting Consultation is available by contacting 888-SCLERAL or emailing fitting-consultation@bostonsight.org.

Fitting Process Checklist

This page may be printed to assist with fitting.

1. Measure patient HVID/VVID.
2. Select trial lens diameter.

   Diameter recommendations based on HVID:
   - HVID ≤11.5mm choose from the 14.5–17.0mm diameter range.
   - HVID ≥11.5mm choose from the 18.0–19.0mm diameter range.

   Diameter recommendations based on condition:
   - High ectatic corneas, exposure keratopathy, severe dry eye, or ocular surface disease, choose from the 18.0–19.0mm diameter range.

   Tip: The higher the corneal elevation, the larger the diameter recommendation.

3. Apply the **Standard** scleral shape trial lens in the selected diameter with the dot(s) at the 12 o'clock position.
4. Assess haptic alignment, lens centration, and corneal clearance.
   - If the **Standard** scleral shape trial lens fits loose and drops on release, remove the lens and apply the **Steep** scleral shape trial lens in the same diameter.
   - If the **Standard** scleral shape trial lens fits tight, remove the lens and apply the **Flat** scleral shape trial lens in the same diameter.

   Tip: A tight fitting lens is difficult to move up when pushed, or shows significant edge impingment or blanching of blood vessels.

5. Allow the best fitting trial lens to settle for at least 20 minutes.
6. Assess central and mid-peripheral clearance. Ideal corneal clearance should be 200–300µm, post-settling. Ideal limbal clearance should be 100–150µm, post-settling.
7. Assess haptic alignment and lens centration.
   - If lens is aligned and centered, proceed to Step 8.
   - If lens decenters, rule out a haptic that is too loose and causing pseudo-impingement by:
     a. Pushing the lens up to a centered position.
     b. Reassessing all haptics while holding the lens in a centered position. Pay close attention to inferior and temporal haptics.
        - If edge lift is observed, those haptics are loose, causing pseudo-impingement. Steepen the loose haptics. ***Do not further loosen the haptics, as this will cause more decentration.***
        - If lens is centered and impingement is seen, loosen the associated quadrant-specific haptic.
8. Perform sphero-cylindrical over-refraction and note the dot location.
   - If visual acuity is acceptable, proceed to Step 9.
   - If the patient is reporting ghosting, halos, or fuzzy visual symptoms, remove the FSE1 lens and apply a different FSE lens based on corneal condition.
     - For regular corneas, apply FSE0 and over-refract. If no improvement, test the FSE2 lens and over-refract.
     - For irregular corneas, apply the FSE2 and over-refract. If no improvement, test the FSE0 lens and over-refract.
   - Note which FSE value provides the best corrected visual acuity.

   Note: FSE0 and FSE2 trial lenses are in the Standard scleral shape and are for refractive purposes only.

9. **Stain over the lens with sodium fluorescein, assess fluorescein diffusion, and remove the lens.**
   - If no staining is observed, proceed to Step 10.
   - If staining is observed, see Final Fit Assessment section on page 7.
10. Order lens(es) with any Optical or Fit Modifications as needed in FitConnect®, BostonSight's lens design and order management platform. Refer to the FitConnect Guide for more information.

Fitting Consultation is available by contacting 888-SCLERAL or emailing fitting-consultation@bostonsight.org.

NOTES

LENS PARAMETERS

DIAMETERS	14.5mm–19.0mm in 0.5mm increments; 17.5mm available only with Smart360®
SPHERE POWER	-25.00 to +35.00 diopters in 0.25D steps
BASE CURVE	6.0mm to 10.0mm in 0.1mm steps
CYLINDER	Up to -8.00 diopters in 0.25D steps
MULTIFOCAL	+1.00 to +3.00 diopters in 0.25D steps
OPTIONS	SmartSight Technology: SmartSight® FSE SmartSight HOA® SmartFocus™ Multifocal SmartChannel® Technology: Reduce suction Vault anatomical obstacles Front surface toric Rx

LENS MATERIALS

PRODUCT	MATERIAL	DK
Contamac	Optimum Extra	100
Contamac	Optimum Extreme in clear or light blue	125
Contamac	Optimum Infinite	180
Bausch + Lomb	Boston® EQII	85
Bausch + Lomb	Boston® XO2 in clear or ice blue	141
Acuity Polymers	Acuity 200™ in clear or ice blue	200

COATINGS

PRODUCT	AVAILABILITY
Tangible® Hydra-PEG	On all materials except Boston® EQII

BostonSight® SCLERAL

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