

Important Safety Information about the WaveLight® FS200 Laser System

CAUTION: Federal (USA) law restricts this device to sale by, or on the order of, a physician.

INDICATIONS: The WaveLight® FS200 Laser System is indicated for use in the creation of a corneal flap in patients undergoing LASIK surgery or other surgery or treatment requiring initial lamellar resection of the cornea; in patients undergoing surgery or other treatment requiring initial lamellar resection of the cornea to create tunnels for placement of corneal ring segments; in the creation of a lamellar cut/ resection of the cornea for lamellar keratoplasty; and in the creation of a penetrating cut/incision for penetrating keratoplasty and for corneal harvesting.

The WaveLight® FS200 delivery system is used in conjunction with a sterile disposable Patient Interface, consisting of pre-sterilized suction ring assemblies and pre-sterilized applanation cones, intended for single use.

The WaveLight® FS200 Laser System should only be operated by, or under the direct supervision of, a trained physician with certification in laser safety and in the use of the WaveLight® FS200 Laser.

CONTRAINDICATIONS: LASIK treatments are contraindicated in: Pregnant or nursing women; patients with a diagnosed collagen vascular, autoimmune or immunodeficiency disease; and patients who are taking one or both of the following medications: isotretinoin (Accutane®), amiodarone hydrochloride (Cordarone®).

Flap Contraindications: Lamellar resection for the creation of a corneal flap using the WaveLight® FS200 laser is contraindicated if any of the following conditions exist. Potential contraindications are not limited to those included in this list: corneal edema; corneal lesions; hypotony; glaucoma; existing corneal implant; and keratoconus.

Keratoplasty Contraindications: Penetrating cut/incision (for penetrating keratoplasty) is contraindicated in: any corneal opacity adequately dense to obscure visualization of the iris; descemetocoele with impending corneal rupture; previous corneal incisions that might provide a potential space into which the gas produced by the procedure can escape; and corneal thickness requirements that are beyond the range of the System.

Other Considerations: The following conditions should also be considered: severe corneal thinning; subjects with pre-existing glaucoma; a history of steroid responsive rise in intraocular pressure; preoperative intraocular pressure greater than 21 mmHg in the operative eye; subjects with more than 1000 µm corneal thickness at the 9 mm peripheral

zone; active intraocular inflammation; and active ocular infection.

WARNINGS: Any treatment with the WaveLight® FS200 is not recommended in patients who have: systemic diseases likely to affect wound healing, such as connective tissue disease, insulin dependent diabetes, severe atopic disease or an immunocompromised status; a history of Herpes simplex or Herpes zoster keratitis; significant dry eye that is unresponsive to treatment; severe allergies; and a history of glaucoma or ocular hypertension.

COMPLICATIONS: Possible complications which may result from flap cutting include (potential complications are not limited to those included in this list): corneal edema; corneal pain; epithelial ingrowth; epithelial infection; flap de-centration; incomplete flap creation; flap tearing or incomplete lift-off; free cap; photophobia; corneal inflammation, such as diffuse lamellar keratitis (DLK), corneal infiltrates and iritis; thin- or thick flaps; flap striae; and corneal ectasia (secondary keratoconus).

ADVERSE EVENTS:

Transient Light Sensitivity Syndrome (TLSS): Transient Light Sensitivity Syndrome is characterized by symptoms of mild to severe light sensitivity which manifests between two and six weeks postoperatively. Patients experience no decrease in uncorrected or best spectacle-corrected visual acuity. The incidence of this sensitivity was observed in approximately 1% of patients who undergo flap creation with a femtosecond laser. Patients respond to the use of hourly topical steroids such as prednisolone acetate, and most report improvement within one week of treatment.

Peripheral Light Spectrum (PLS): Peripheral Light Spectrum is a temporary phenomenon whereby patients report the perception of a spoke-like spectrum of light in the periphery of their vision. PLS has no clinical examination findings and no effect on visual acuity; however the potential diffractive effects may be bothersome to some patients. Reported in only a small amount of cases, the onset of symptoms occurs during the immediate postoperative period, and typically resolves within three months but may be slightly persistent in rare cases. The visual impact of PLS is clinically inconsequential for the vast majority of patients.

ATTENTION: Please refer to a current WaveLight® FS200 Laser System Procedure Manual for a complete listing of the indications, complications, warnings, precautions, and side effects.

*Trademarks are the property of their respective owners.

Important Safety Information about the WaveLight® family of diagnostic devices

(WaveLight® Topolyzer™ VARIO and WaveLight® Analyzer II).

Caution: Only practitioners trained in proper calibration and operation of these devices and who have experience in the use of the diagnostic information in the proper care and treatment of patients should use these devices.

Description and Intended Use: The WaveLight® Topolyzer™ VARIO and WaveLight® Analyzer II diagnostic devices are measuring instruments intended for use in eye examinations to measure corneal topography. Data from these systems may be exported and used to support refractive surgical procedures with the WaveLight® laser systems.

Important Warnings and Precautions: Refer to the User Manuals for the WaveLight® Topolyzer™ VARIO and WaveLight® Analyzer II diagnostic devices for a complete description of proper use and maintenance of these devices as well as a complete list of Warnings and Precautions. Refer to the Instruction For Use WaveLight® Excimer Laser Systems for a complete list of Indications, Warnings, Precautions and potential Adverse Effects associated with refractive surgical procedures.

These are sensitive measuring devices that require installation, calibration, operation and maintenance in accordance with the instructions and schedules provided in the User Manuals. If the systems have potentially been exposed to any type of shock that may have caused a misalignment of the instrument, it should be checked and, if necessary, appropriately serviced prior to use.

Users should take precautions when handling and using all accessories, disposable articles and agents that come into contact with the patient to prevent potential exposure to infectious agents.

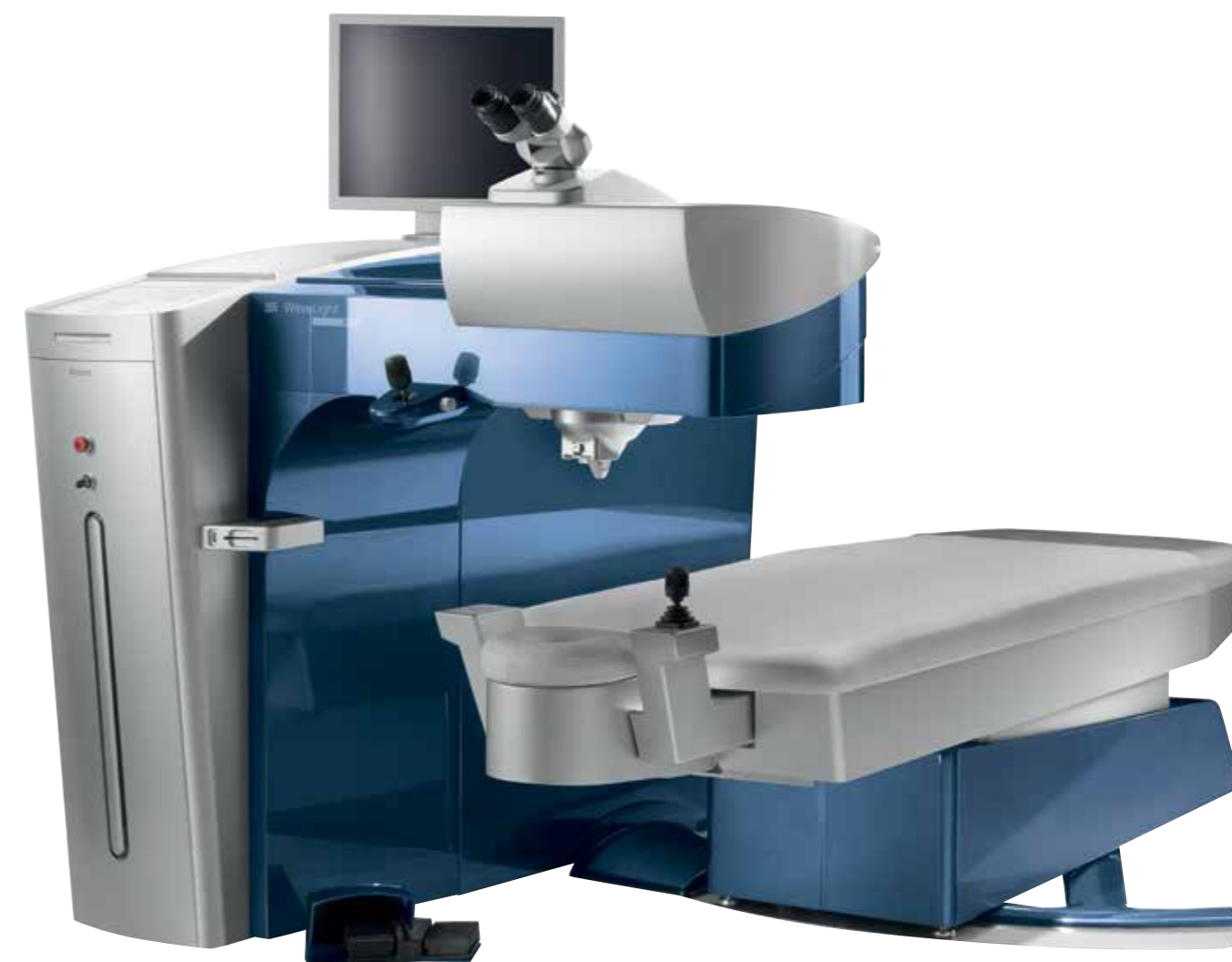
Paper covers for the headrest should be properly discarded after each use and a new one used with each patient. The headrest should be cleaned after each patient use. Patients with open wounds and/ or sores that may contact the headrest should not be treated.

Prior to measurement, the operator should verify the patient is not wearing contact lenses and only uninjured eyes are measured to ensure proper measurement.

The systems should only be installed and used in appropriate environments to ensure accurate measurement (e.g., use in a reflection-free surrounding outside of direct light).

These devices should not be used in the presence of combustible anesthetics or volatile solvents.

WAVELIGHT® FS200 FEMTOSECOND LASER



1. Kanellopoulos J. Innovations in femtosecond laser technology – the use of the WaveLight FS200 Laser for flap cutting during LASIK surgery. *European Ophthalmic Review*. 2010;4:40-43.
2. Winkler von Mohrenfels C. First clinical results with a new 200 kHz femtosecond laser system. *Br J Ophthalmol*. 2012;96:788-792. Originally published online December 16, 2011.
3. Data on file

4. Shetty R. WaveLight FS200 vs. Hansatome LASIK: Intraoperative determination of flap characteristics and predictability by hand-held bioptigen spectral domain ophthalmic imaging system. *J Cataract Refract. Surg*. 2012;28(11):815-820.
5. Mrochen M. Technical aspects of the WaveLight FS200 Femtosecond Laser. *Journal of Refractive Surgery*, 2010;26(10):833-840.

WaveLight® FS200 Femtosecond Laser

Next Generation Femtosecond Laser Technology

The WaveLight® FS200 femtosecond laser integrates many new functions for fast, effective and reliable femtosecond laser treatments.

Besides **circular and custom shape flap parameters**, the WaveLight® FS200 femtosecond laser also features various additional applications, such as **intracorneal ring segments** as well as **lamellar and penetrating keratoplasties**.

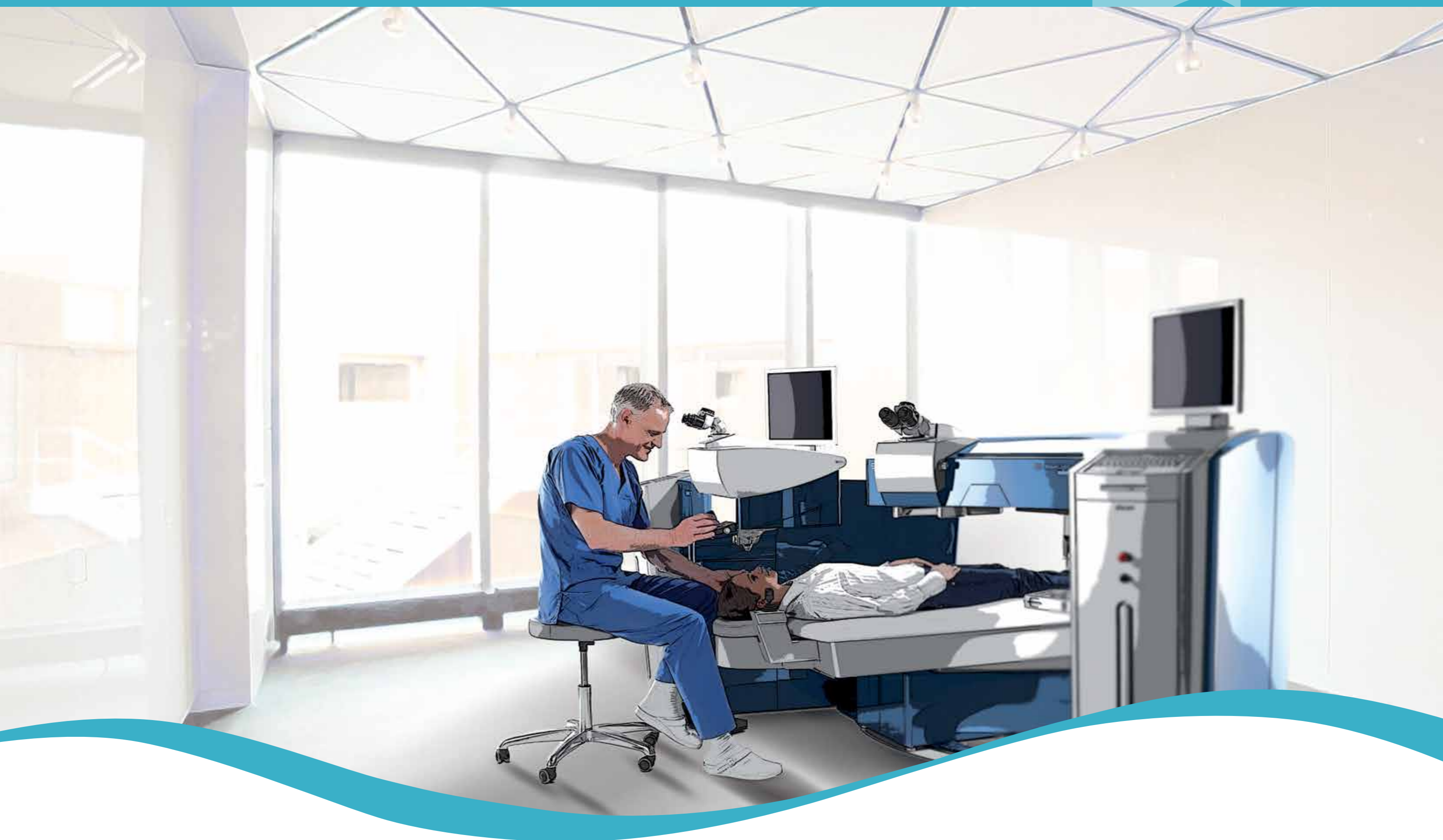
With a short "suction on" to "suction off" time, it enables **standard flap creation in approximately 6.0 seconds**.*

Ergonomically optimized to combine with the WaveLight® EX500 excimer laser within the **WaveLight® Refractive Suite**, the WaveLight® FS200 femtosecond laser is designed to provide both physician and patient with a high level of precision and reliability.

The **WaveNet™** integrated computer network links both laser systems with the WaveLight® diagnostic products for seamless and efficient data transfer and treatment planning.

*Based on typical treatment parameters.





Advancing the Speed of Sight

Fastest Laser Vision Correction Procedures

The combination of an optimized repetition rate at 200 kHz, a special scanning algorithm, and customizable energy and spacing parameters make the WaveLight® FS200 femtosecond laser the **fastest flap creation laser platform in the U.S.**^{1,2}

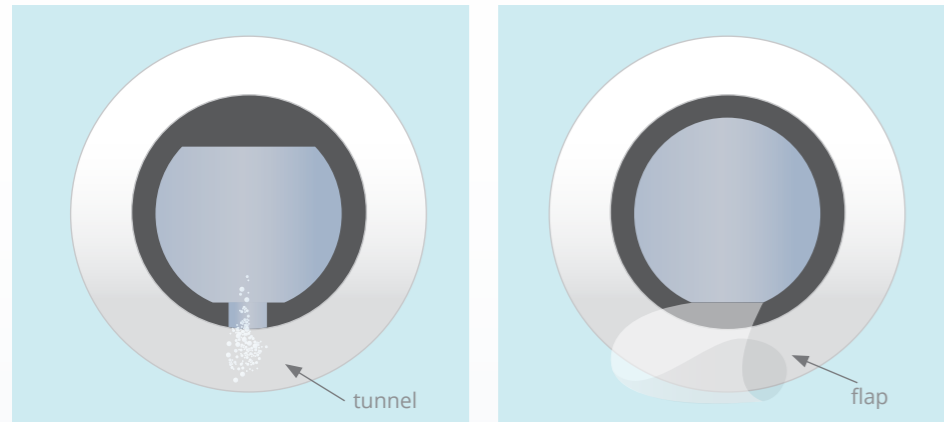
Its **unique treatment speed in approximately 6.0 seconds** for a standard flap results in*:

- A minimization of increased intraocular pressure time
- Potentially less stress for the patient
- Optimized clinic workflow

Enhanced OBL Management

By forming a tunnel to vent gas produced during flap creation, the WaveLight® FS200 femtosecond laser minimizes OBL issues, resulting in fast total refractive procedures.

With OBL issues minimized, the excimer laser treatment can be performed right after the flap cut, which may help facilitate patient flow.



*Based on typical treatment parameters.

WaveLight® Refractive Suite — An Efficient Total Refractive Procedure

The WaveLight® Refractive Suite is designed to **optimize your patient flow** with a smooth transition between the laser platforms.

The WaveLight® FS200 femtosecond laser is designed and ergonomically optimized to be combined with the WaveLight® EX500 excimer laser. Bringing together the fastest femtosecond

laser with the fastest excimer laser, the WaveLight® Refractive Suite provides the **fastest LASIK procedure in the U.S.**¹⁻³

In addition, using the most modern equipment and offering faster treatments is a unique **marketing approach for your clinic.**

LASIK Treatment Time Breakdown

Femtosecond laser creation of a standard flap:
6 seconds*

Patient transfer from femtosecond to excimer laser:
7 seconds*

Excimer laser treatment of -5.0 D:
7 seconds*

Total technology-related LASIK treatment time for a -5.0 D correction:
~ 20 seconds*



*Treatment times are approximate. Based on typical treatment parameters for myopia.

WaveNet™ Computer Network

Unique Patient Administration & Treatment Planning Tool

The unique WaveNet™ computer network **connects the WaveLight® systems**, including the WaveLight® FS200 femtosecond laser, the WaveLight® EX500 excimer laser and a full range of surgical diagnostics, for seamless transfer of patient data as well as treatment and diagnostic parameters.³

Patient data **only needs to be entered once** and is electronically transferred, resulting in¹:

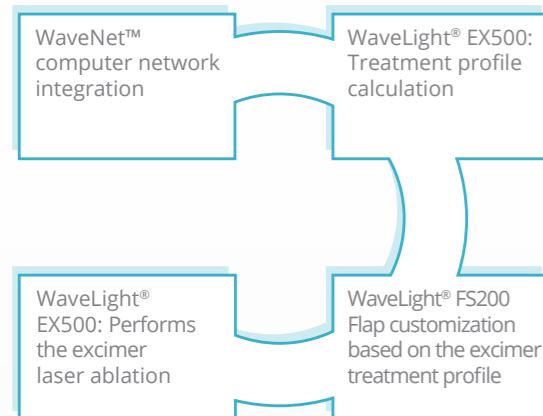
- **Fast patient throughput and enhanced patient flow** by eliminating the re-entry of data or the transportation of patient data via USB stick or other data carriers
- **Minimized potential** for data entry errors

All treatment parameters will be transferred automatically to the WaveLight® laser and diagnostic

systems. This results in **smoother data flow** throughout the procedure, **enhanced patient flow**, **optimized flow within the clinic**, and **reduced opportunity for data entry errors**, which can compromise patient outcomes.³

The WaveNet™ interface allows for export of patient data to electronic medical record systems. This allows for multi-user centers to customize their electronic medical records to accept data from the WaveNet™ interface.

Integrated network printing provides another option for **simplifying patient documentation for smoother data flow** through the procedure and an **optimized patient flow**.



Easy treatment planning and performance through seamless data transfer.



With the ability to overlay the flap on the calculated ablation profile, the WaveNet™ computer network enables the customization of the flap size and form as well as the hinge position.



PerfectPulse Technology™

Precise Treatments⁴

High-precision treatments require precise pulse creation. Therefore, the WaveLight® FS200 femtosecond laser system utilizes **PerfectPulse Technology™** to help ensure **precise work at high speed**.

PerfectPulse Technology™ combines a variety of technical innovations for precise treatments, such as **advanced line scanning, smart calibration, beam control and a unique patient interface design**.

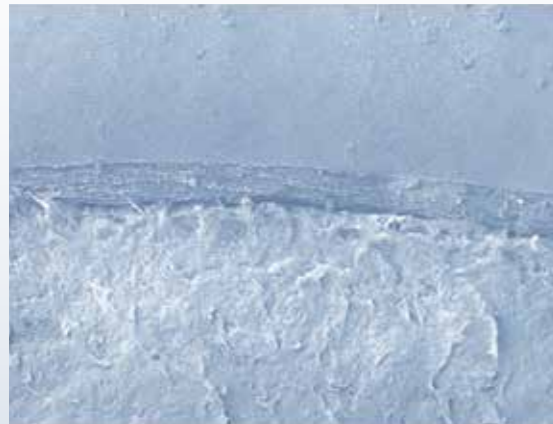
Further enhancing precision, every single applanation cone is individually calibrated prior to the treatment through the automated **Beam Control Check (BCC)**.

The WaveLight® FS200 femtosecond laser's motorized laser arm is moveable in all three axes for **easy, fast and exact patient centration**, while the Gaussian beam profile provides a **smooth ablation without grooves and ridges**.

For a stable performance, the system is fully enclosed with **less sensitivity to temperature and humidity**, enabling efficient performance in a variety of surgical practices.



Smooth stromal bed allows for easy lifting of the flap.¹



The sharp edge helps ensure accurate flap alignment.¹



Optimized Pulse Creation

Stable & Reliable Treatment Results

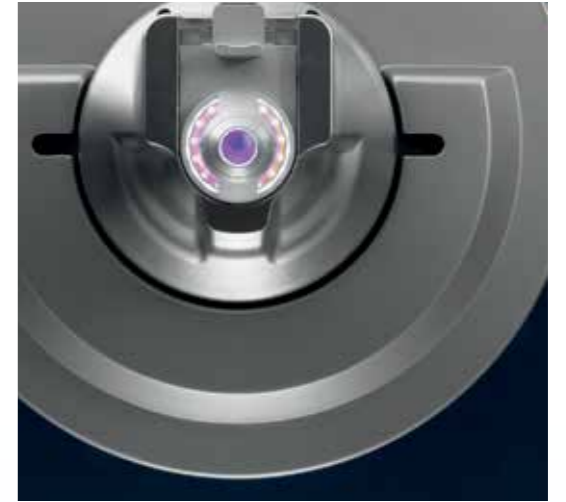
Smart Calibration & Beam Control

The WaveLight® FS200 femtosecond laser is designed to enhance reliability and predictability through a **precise calibration procedure**. While performed by the technician, the calibration process is not influenced by individual operator technique.

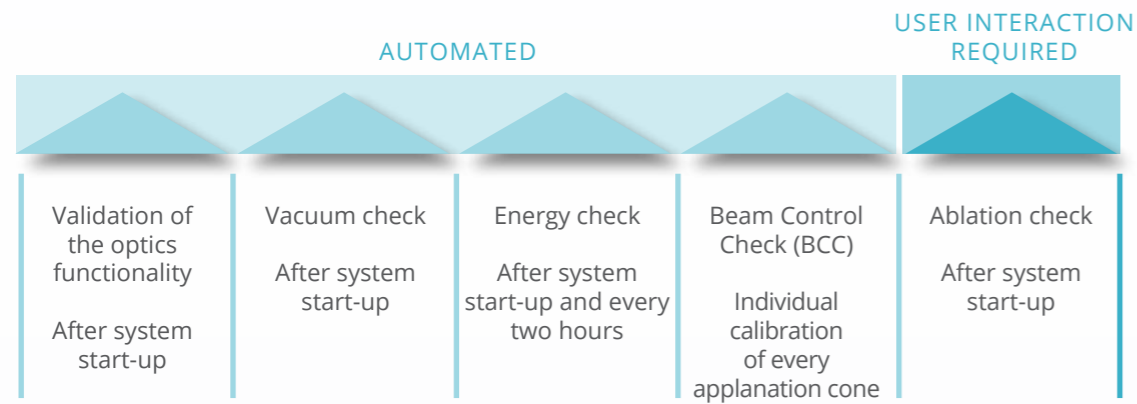
Energy and beam quality are controlled through **several measurement sensors** at different points in the beam path, designed to provide a high quality beam profile and precise spot formation.

The **objective calibration routine**, in combination with the **energy and beam quality control**, results in:

- A reliable depth calibration and confirmation procedure
- Ease-of-use
- Precise and objective calibration
- Stable and reliable treatment results
- Precise laser alignment
- Easy and precise laser set-up



Smart Calibration and Beam Control Through a Five-Step Calibration Routine



Advanced Line Scanning

The WaveLight® FS200 femtosecond laser features **advanced line scanning** through one axis interpolation, thereby minimizing the induction of errors. Customizable line and spot separation with adjustable energy settings provides a smooth stromal bed.

Keeping the laser spot physics stable during the entire treatment leads to optimized pulse creation for each cutting profile.

The efficiency of the photodisruption effect in combination with the steepness of the induced shockwave leads to an **optimal separation of tissue by minimum energy induction**.

Unique Patient Interface

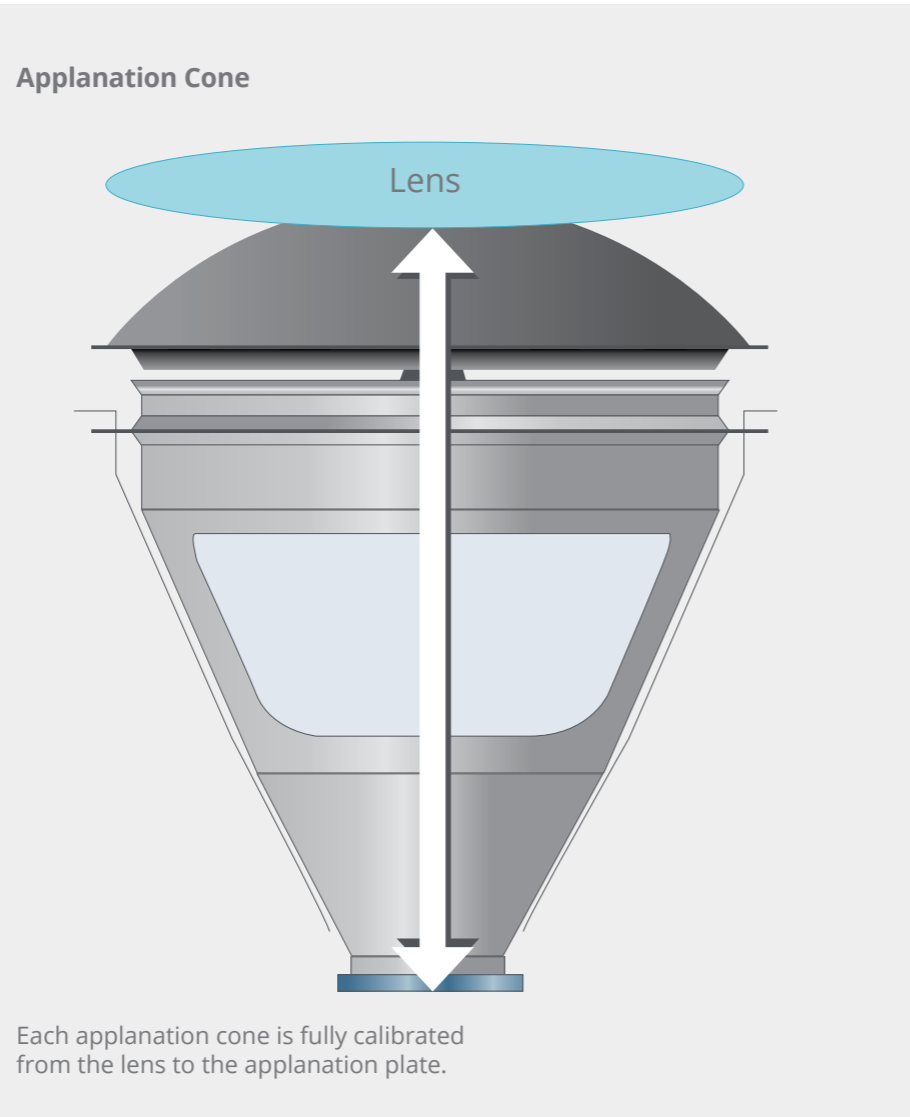
Advanced Applanation Cone Technology

The WaveLight® FS200 femtosecond laser's patient interface kit consists of an **applanation cone, a suction ring and vacuum tubing.**

The applanation cone enables a **flat applanation**, leading to consistent, stable energy, a reduced standard deviation, planar flaps and a minimization of decentered flap creation. This results in high, reproducible flap creation quality.⁴

It also features an **effective scanning algorithm** through movement in one axis, leading to solid and reproducible flap creation quality.

The automatic **Beam Control Check (BCC)** calibrates every applanation cone before the treatment to minimize production tolerances and thermal influences of the room temperature on the procedure.



Beam Control Check (BCC)

Applanation cones, **manufactured with high precision**, are integral in attaining accurate outcomes. Alcon's proprietary Beam Control Check (BCC) **automatically calibrates every applanation cone** before the treatment by laser-adjusted interferometry to minimize manufacturing variability as well as room temperature influences. The result is precise, predictable flaps which facilitate **optimized flap lifting**.

The WaveLight® FS200 femtosecond laser's Beam Control Check (BCC) addresses the following issues:

Changes in surgery room temperature

System and hardware tolerances

Production tolerances of the cone

Are eliminated by compensating variations of up to 70 μm of depth of field³

Are eliminated by compensation of the Z-position³

Are eliminated by calibrating the laser for every applanation cone before each procedure³

Every applanation cone is fully calibrated automatically, resulting in:

- Precise cutting depth of +/- 5 μm standard deviation
- High quality of spot and beam profile formation
- Optimized flap lifting

Unique Patient Interface

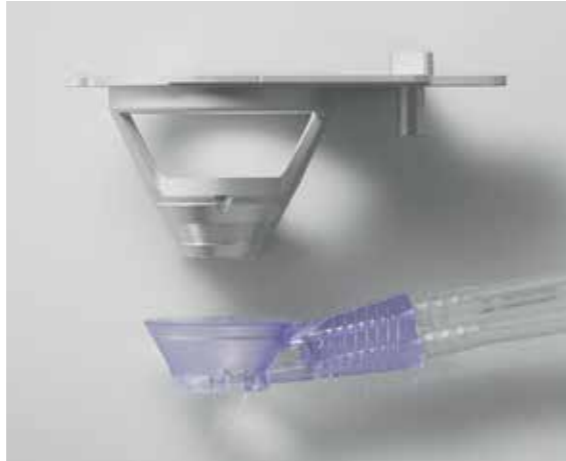
Advanced Suction Technology

The WaveLight® FS200 femtosecond laser's unique patient interface enables **short "suction on" to "suction off" time.**

Advanced suction technology is designed to provide:

- Easy docking procedures
- Less irritation of the sclera
- Gentle treatments for the eye

Patients **maintain the ability to see even after the suction ring has been applied**, which contributes to better cooperation with the surgeon throughout the applanation process.

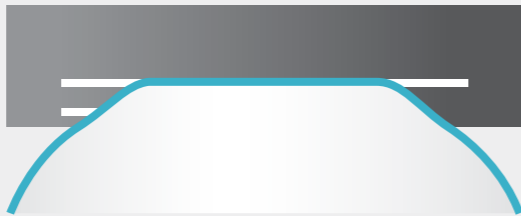


Unique Suction Ring Design

The computer-controlled vacuum maintains consistent suction levels and is designed to enhance patient safety.



Detailed view of distance separators within the suction ring.



The special design of the WaveLight® FS200 femtosecond laser's suction ring features distance separators to minimize the change of the natural shape of the eye during suction.



Suction rings without distance separators severely change the natural shape of the eye. This results in high intraoperative pressure and slow visual regeneration.

Advanced Suction & Vacuum Technology

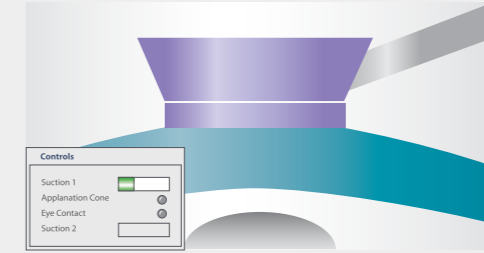
For easy handling and precise application, the WaveLight® FS200 femtosecond laser's patient interface provides **automated applanation.**

The suction ring and applanation cone are combined by a **fully controlled vacuum** instead of manual applanation and docking.

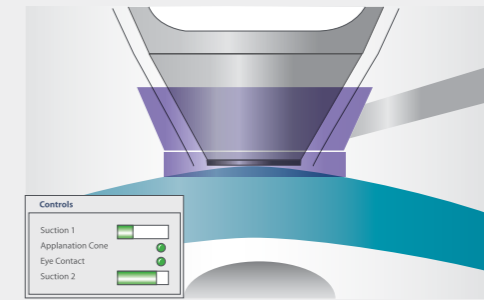
The efficient and well-engineered suction and docking system **enhances patient cooperation**, which facilitates the femtosecond procedure.

The WaveLight® FS200 femtosecond laser features **two vacuum pumps that are sensor-controlled** and monitored. The target vacuum can be selected according to the surgeon's preference.

Designed to enhance safety, a traffic light principle indicates the vacuum level throughout the entire procedure.



Manually started by the surgeon, the first vacuum connects the suction ring with the patient's eye.



The second vacuum starts automatically when the applanation cone contacts the eye. Reacting to the motorized movement of the laser optics, the eye contact sensor is activated during the entire procedure. Correct applanation is achieved automatically by the design of the ring and cone; manual adjustment is not required.

Ease-of-Use Docking Process

The WaveLight® FS200 femtosecond laser's patient interface design enables easy handling and a short learning curve.

The applanation cone is easily nested inside the suction ring due to the cone design.



First Class Design

Practicality and Each-of-Use

The WaveLight® FS200 femtosecond laser offers many features that **support comfort, practicality and ease-of-use.**

An easy-to-clean operator interface, including **keyboard, control panel and high-resolution monitor**, is integrated into the laser device. The keyboard facilitates data entry while the monitor provides additional visibility for the surgeon and the staff. The ready-access control pad provides immediate laser control to the surgeon throughout the procedure. All parts are suitable for clean room requirements and feature an ergonomic design as well as an all-integrated look.

In order to maintain the **highest possible hygienic standards**, all parts of the laser system that might be touched during surgery can be fitted with sterile covers.

Greatly enhancing the clinic workflow as well as the surgeon's comfort, the **operator joystick can be moved for right and left hand application**, depending on the treated eye.

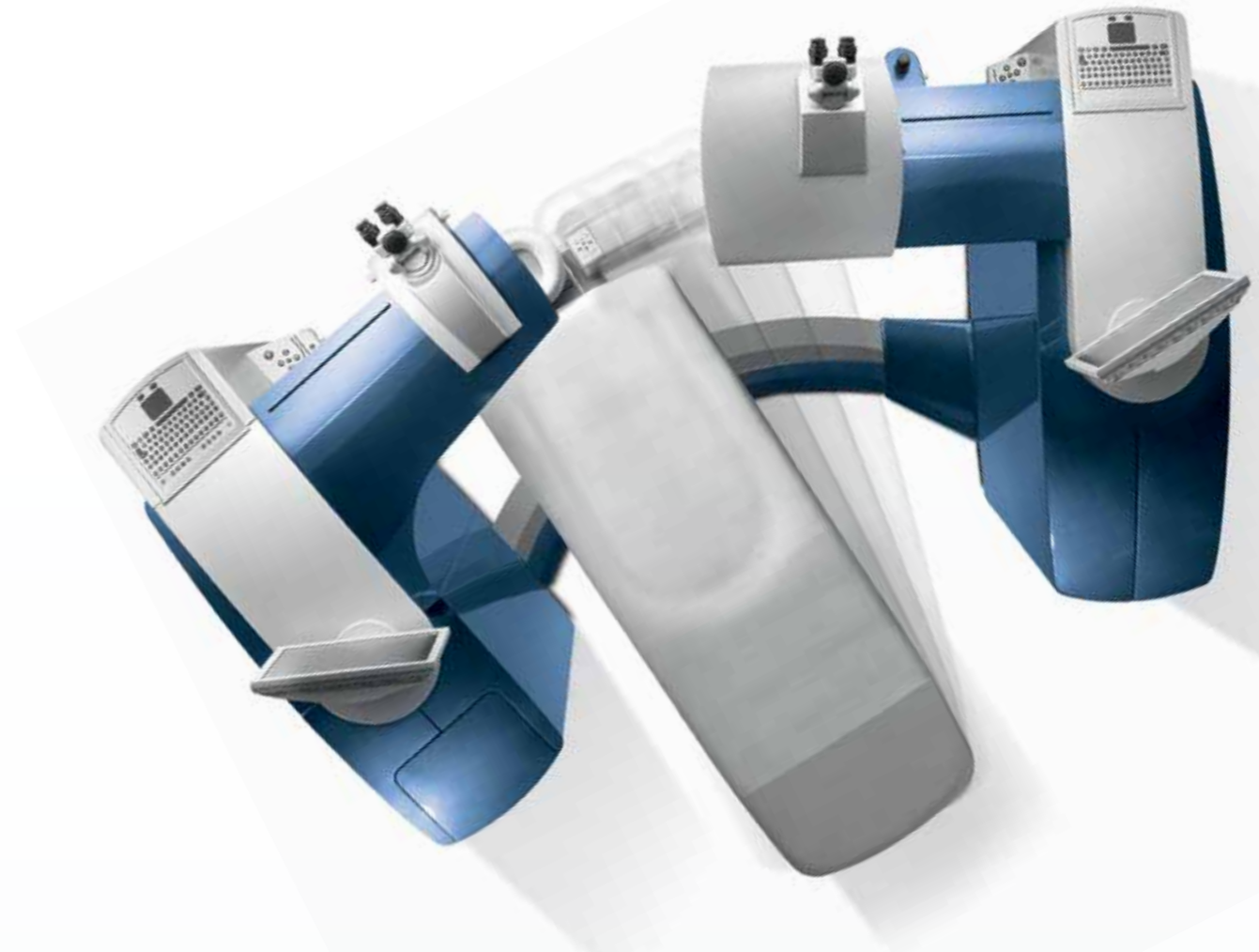
A broad array of surgical suites can accommodate the WaveLight® FS200 femtosecond laser due to **reduced space requirements.** Expensive architectural changes to the operating room are, in most cases, not needed because of the laser's **sealed beam path**, which is just one of the reasons for the WaveLight® FS200 femtosecond laser's **tolerance towards humidity and temperature fluctuations.**



Highly Advanced Microscope

The WaveLight® FS200 femtosecond laser's advanced surgical microscope enables total control of all parts of the procedure by providing **excellent visibility during the entire docking and cutting process.** Two predefined magnifications are automatically selected for each step of the process, enabling a seamless and smooth procedure.

An **S-video output** is integrated for documentation and display purposes.



Comfort Swiveling Patient Bed

The comfort swiveling patient bed was especially created for treatments with the WaveLight® Refractive Suite.

A **fast swivel speed** with **adjustable height** optimizes the patient flow between femtosecond and excimer laser devices to provide precise and easy patient positioning. **Individual angle and height adjustment of the head rest** for exact positioning improve patient comfort while compensating for patient-specific anatomies.

Variable bed swiveling angles (30 or 45 degrees) allow optimized adaption to room space requirements and a **central position mode** provides optimal workspace for patient preparation and easy patient access.

While performing surgery, the bed is secured against undesired movements through the integrated interlock safety function.

Designer to Meet Patient Needs

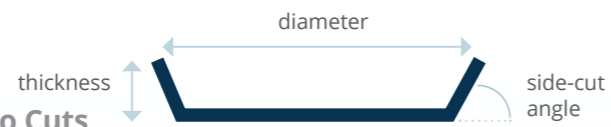
Highly Customized Treatments

Increasing your treatment options, the WaveLight® FS200 femtosecond laser enables **a large variety of femtosecond treatment capabilities:**

- Custom shape flap creation
- Intracorneal ring segments
- Keratoplasties: lamellar (open platform, all different kinds of cutting patterns possible), penetrating (extremely large penetration depth, suitable for thick donor materials) and self-sealing keratoplasty that can be performed with individual keratoplasty shapes

For highly advanced LASIK treatments, the WaveLight® FS200 femtosecond laser offers **customized flap creation** options relative to individual adjustment of flap size and shape, adjustable hinge position and hinge size, and variable angles for the side-cut incision.

With the unique patient interface design, **very large flaps of up to 10 mm** are possible, which is especially useful for hyperopia treatments.



WaveLight® FS200 Femtosecond Laser Demo Cuts

flapcut round (profile view)	9 mm/800 μm/50°	8 mm/500 μm/70°	9 mm/300 μm/120°	8 mm/100 μm/90°
flapcut elliptical (top view)	h: 10 mm, v: 5 mm 200 μm/70°	h: 8 mm, v: 4 mm 200 μm/70°	h: 6 mm, v: 3 mm 200 μm/70°	h: 4 mm, v: 2 mm 200 μm/70°
flapcut round (top view)	2 mm/200 μm/70°	4 mm/200 μm/70°	6 mm/200 μm/70°	8 mm/200 μm/70°
keratoplasty (profile view)	tube	mushroom	tophat	zigzag

h = horizontal, v = vertical

Individualized Flap Centration

Before starting the cutting process, the surgeon may **customize the center of the application** to the individual needs of the patient. The placement of the suction ring does not define the center of ablation. The large application area of >11 mm (depending on the cornea diameter) allows for individual flap centration of big flaps (e.g., 10 mm flaps for hyperopia treatments), even after suction has been applied, without the need to reduce the intended flap diameter.

The ability to center the treatment, even after suction has been applied, results in:

- A more accurate flap⁴
- Easy centration
- Increased surgeon comfort



Flap Cutting



Intracorneal Ring Segments



Lamellar Keratoplasty



Penetrating Keratoplasty



Self-Sealing Keratoplasty

Essential Feature

See the Difference

Engineered and manufactured in Germany with the **highest quality standards**, the WaveLight® FS200 femtosecond laser offers many essential features that confirm this laser device's singularity.

An **uninterrupted power supply (UPS)** compensates for power disruptions and fluctuations for safe laser operation in all environmental conditions.

To facilitate data exchange and video display, the WaveLight® FS200 femtosecond laser is equipped with a **variety of interfaces**, such as USB, S-video, card reader, door interlock and a LAN-connection.

The **modern and confidence-inspiring design** accommodates most surgical suite configurations and has a reassuring impression on the patients, which leads to a more relaxed pre-surgery atmosphere.

The electronic patient record module **provides details of the cutting procedure** and a picture taken with the last shots of the treatment. This unique feature provides the surgeon with the maximum amount of safety and documentation.

Low-Maintenance Operation

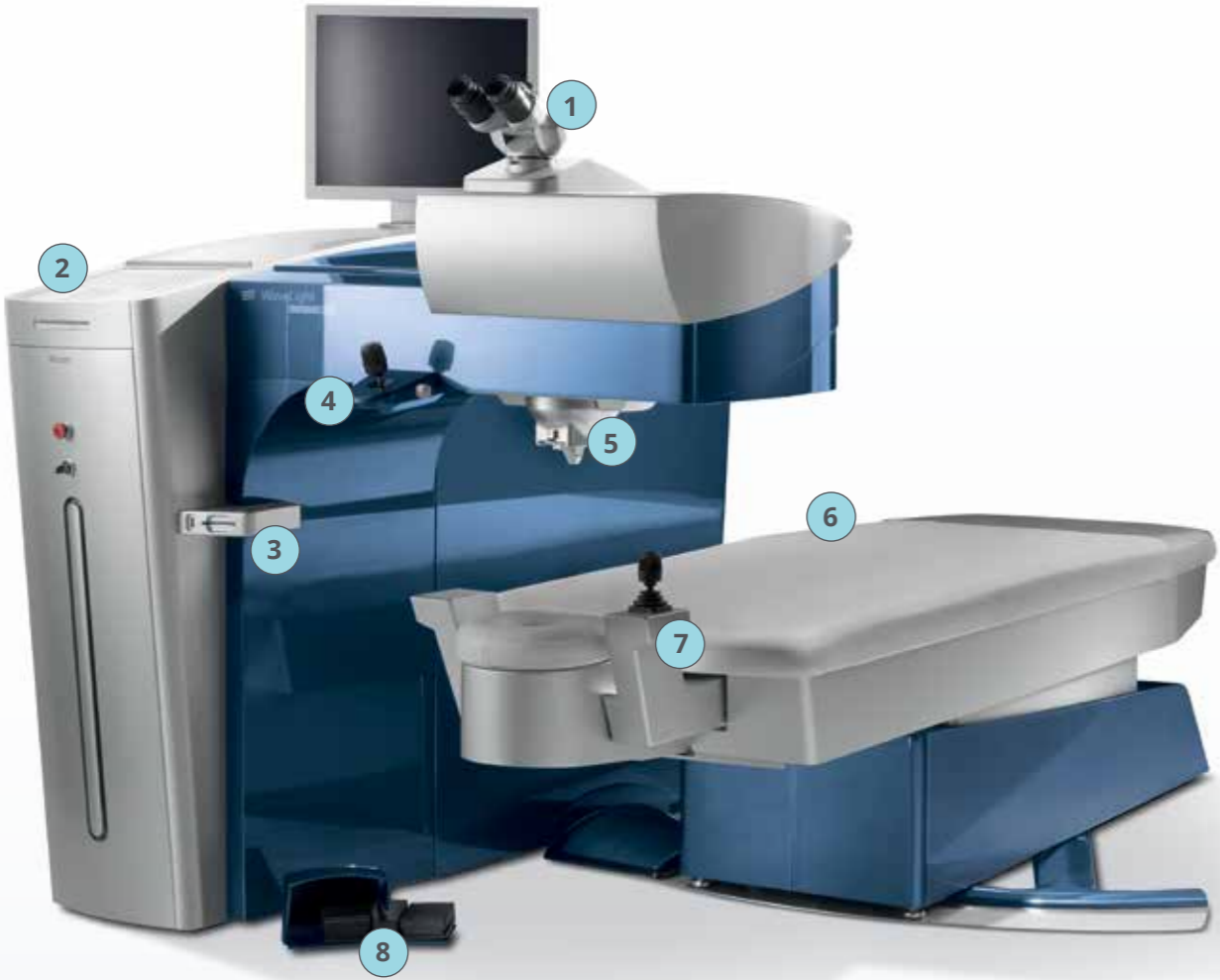
The WaveLight® FS200 femtosecond laser features **advanced laser head technology** to maximize the lifetime of the laser head and to promote a cost-efficient operation.

Reduced pulse quantity supports short treatment times and facilitates economical use of optics and laser head.

The patient interface features **one cone size for all patients**, which results in cost savings as well as better handling, storage and purchase logistics. Its special design also accommodates patients with **deep-set eyes**.



Details at a Glance



1 Highly Advanced Microscope



2 Keyboard



3 Control Panel



4 Moveable Joystick



5 Applanation Cone



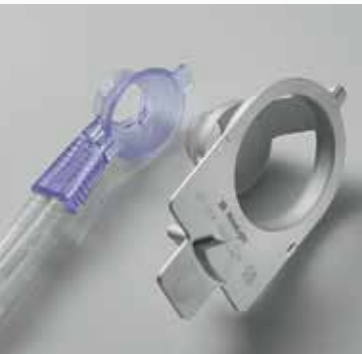
6 Comfort Swiveling Patient Bed



7 Control Panel Patient Bed



8 Laser and Center Pedal



WaveLight® FS200 Femtosecond Laser Patient Interface

Weights & Dimensions

WaveLight® FS200 Femtosecond Laser

Weight:

Basic laser console: 400 kg [882 pounds]

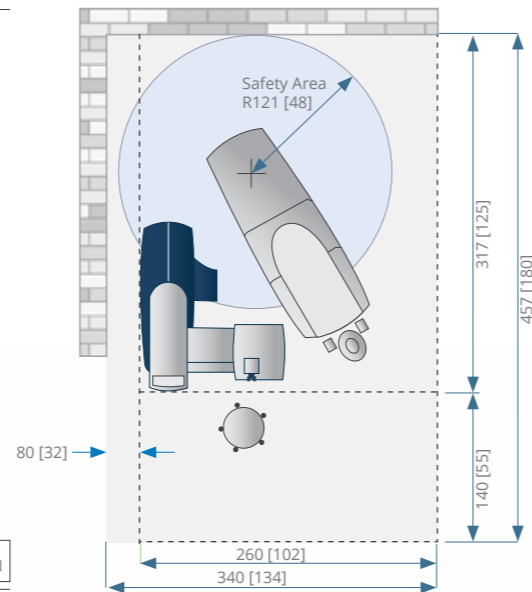
Swiveling patient bed: 250 kg [551 pounds]

Dimensions (L/W/H):

Basic laser console: 160 x 140 x 155 cm [63.0 / 55.1 / 61.0 inches]

Swiveling patient bed: 214 x 162 x 53 cm [84.3 / 63.8 / 20.9 inches]

All values in cm [inch]



WaveLight® Refractive Suite (30°)

Weight:

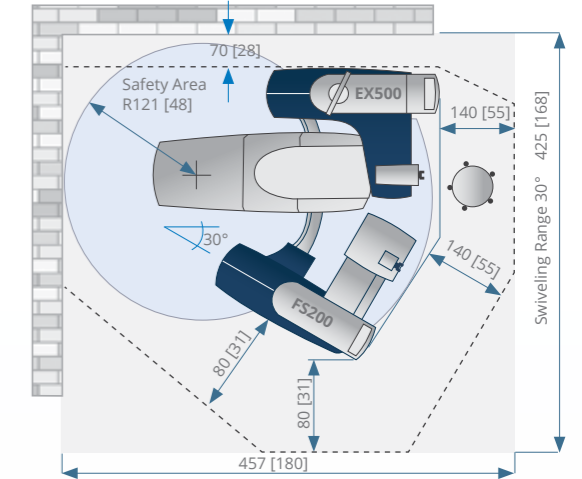
WaveLight® EX500 excimer laser: 360 kg [794 pounds]

WaveLight® FS200 femtosecond laser: 400 kg [882 pounds]

Swiveling patient bed: 250 kg [551 pounds]

Together: 1010 kg [2227 pounds]

All values in cm [inch]



WaveLight® EX500 Excimer Laser

Weight:

Basic laser console: 360 kg [794 pounds], without gas cylinders

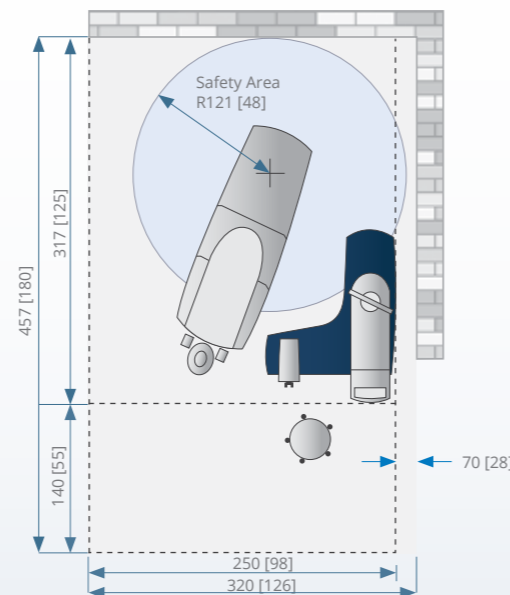
Swiveling patient bed: 250 kg [551 pounds]

Dimensions (L/W/H):

Basic laser console: 170 x 120 x 163 cm [67.0 / 47.2 / 64.2 inches]

Swiveling patient bed: 214 x 162 x 53 cm [84.3 / 63.8 / 20.9 inches]

All values in cm [inch]



WaveLight® Refractive Suite (45°)

Weight:

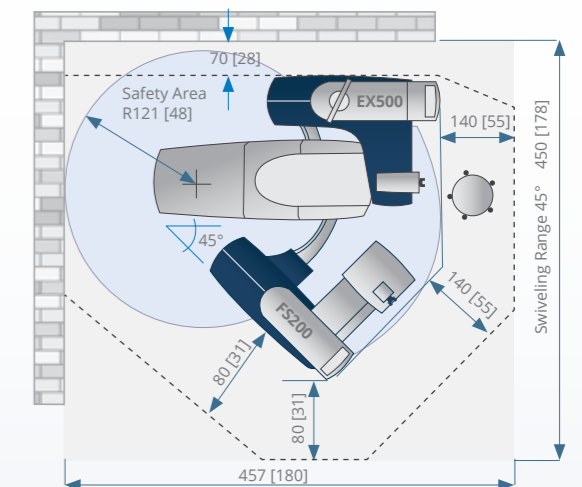
WaveLight® EX500 excimer laser: 360 kg [794 pounds]

WaveLight® FS200 femtosecond laser: 400 kg [882 pounds]

Swiveling patient bed: 250 kg [551 pounds]

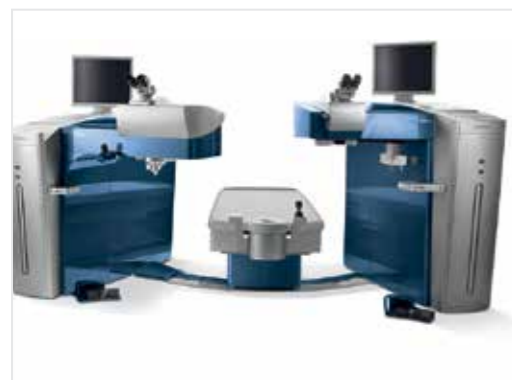
Together: 1010 kg [2227 pounds]

All values in cm [inch]



WaveLight® Product Portfolio

Laser Systems



WaveLight® Refractive Suite



WaveLight® FS200 Femtosecond Laser



WaveLight® EX500 Excimer Laser

Diagnostic / Therapeutic Systems



WaveLight® Topolyzer™ VARIO
diagnostic device



WaveLight® Analyzer diagnostic device

Technical Data

Laser Device	Pulsed femtosecond solid state laser Laser class 4 (IEC 60825-1)
Wavelength	1030 ± 5 nm
MPE	184.8 W/m ²
NOHD (Nominal Ocular Hazard Distance)	20.0 cm (8 inches) (IEC 60825-1)
Beam diameter (in laser focus, 1/e ²)	5.0 ± 0.5 μm Gaussian beam profile
Pulse duration	350 (+50 / -150) fs
Pulse frequency	200 kHz
Max. pulse energy (application to the eye)	2.4 μJ
Divergence beam output	480 ± 30mrad (full angle)
Distance diodes	Diode 650 nm, CW (red, continuous wave) Average power: < 0.1 mW Laser class 1 (IEC 60825-1)
Max. scanning field size (Ø)	11 mm (0.43 inches)
Suction ring diameter	19.0 mm (0.75 inches)
Flap diameter	3.0 - 10.0 mm (0.12 - 0.39 inches) (variable)
Hinge length	2.5 - 7.0 mm (0.10 - 0.28 inches) (variable)
Cutting depth (flap)	90 - 500 μm (variable)
Cutting depth (other applications)	90 - 1200 μm (variable)
Vacuum	420 - 800 mbar (at sea level)
Microscope	OPMI (Zeiss) Integrated camera system
Cooling	Ambient air Integrated water cooling in laser head

Controls	
Control panel and joystick panel	
Keyboard	
Integrated computer	
TFT-Monitor	
Calibration	Vacuum Check, Energy Check and Ablation Check Objective calibration with test disk

Power Supply	
Mains (Connected to the UPS)	230 V AC ± 10%, 1-phase, 16 A, 50 Hz ± 5%
Power consumption (Connected to the UPS)	1.1 kW (1.5 kW with patient bed)
Fuses	Integrated overcurrent circuit breaker

Operating Conditions	
Temperature (recommended)	+18°C (+64°F) to +26°C (+79°F) above dew point stabilized ± 1°C (±1.8°F)
Humidity (recommended)	20% to 65% at +25°C (+77°F), not condensing
Air conditioning (recommended)	2.5 kW thermal dissipation or more (Room temperature: +22°C /+72°F)
Ventilation	≥ 100 m ³ /h (≥ 3500 feet ³ /h)
Space utilization	≥ 75 m ³ (≥ 2650 feet ³)
Air pressure (Barometric)	800 hPa to 1060 hPa

Transport and Storage Conditions	
Ambient temperature	0°C (+32°F) to +40°C (+104°F) above freezing point
Relative humidity	0% to 65% at +40°C (+104°F), not condensing
Air pressure (Barometric)	800 hPa to 1060 hPa