



Femto Visum

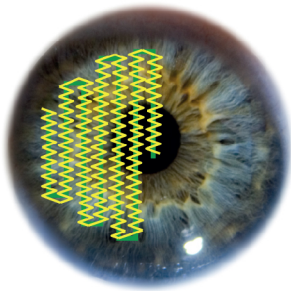
Ophthalmic femtosecond laser system

- LASIK with controlled side-cut angle
- Penetrating, Anterior and Posterior Keratoplasty
- Formation of corneal pockets for intrastromal lenses and rings
- Formation of tunnels for intrastromal corneal ring segments
- Corneal relaxing incisions

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ΟΦΘΑΛΜΟΛΟΓΙΚΑ ΜΗΧΑΝΗΜΑΤΑ



Simple and easy

- a built-in laser sight for pointing the docking zone of the patient's eye.
- rotary surgical bed couples to any currently available excimer laser.
- a built-in table for donor cornea keratoplasty can be easily disinfected with standard solutions.
- IP65 protected LCD monitor is compatible with regular wet cleaning.
- a built-in UPS (optional).
- the Femto Visum system has a small footprint, mobility and can be transported over a long distance without losing its functional characteristics.

Additional benefit of two keypads

The system is controlled using two symmetrical sterilizable keypads, which are designed in such a way to give equal convenience both to left-handers and right-handers when using them. One keypad can be used by sterile staff while the other by non-sterile. It is possible to perform treatment using keypads and a pedal only.



INNOVATIVE TECHNOLOGIES

Proprietary all-fiber femtosecond laser

Ensures:

- efficient operation of the system and an almost complete absence of corneal heating (pulse duration 200-400 fs – the minimum for currently available ophthalmic femtosecond lasers).
- high reliability, safety and low environmental impact on laser performance.

Complete absence of tissue bridges in corneal flap formation

- **Smooth Lines** technology eliminates the sharp edges of neighboring scan lines. This leads to smooth uniform laser cut.
- **Multi Overlay** technology facilitates scan line overlay. Each region is treated repeatedly in order to obtain distinct and uniform cut. As a result, formation of tissue bridges completely avoided.
- **Easy Lift** technology applied to increase laser density at the side-cut region during Femto-LASIK surgery, which allows obtaining an easily detachable flap. In this case, the harmful effects in the pupil area greatly reduced.

Short time of treatment and high-repetition-rate of laser pulses

The 1 MHz pulse repetition rate reduces treatment time while maintaining the distance between spots to only 2-3 microns. The standard flap formation time is about 15 seconds. Eye suction time is less than 25 seconds.

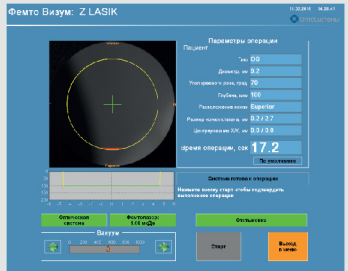
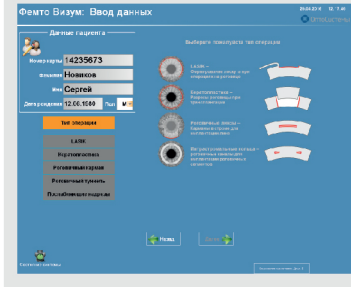
Low average output power allows to avoid active gas bubbles formation process between the corneal layers. As a result cut zone quickly reestablish optical transparency. This allows to use tracking system on the excimer laser almost immediately after flap formation.

Unique optical design with a focal spot size of less than 2 microns

The patented optical design allows to achieve a laser focal spot size of only 2 microns and reduce the laser cut thickness to the minimum possible value of 5 microns. This ensures the highest quality of corneal flap separation.

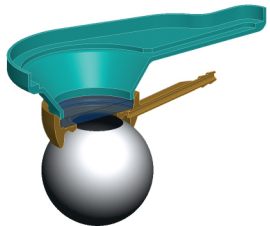
Software

- the software is optimized to operate with touch screen
 - a stylus, mouse or keyboard is not needed.
- the software uses large and easy-to-read fonts.
- surgeon can adjust operating parameters and flap centration after suction is applied.
- the software continuously estimates the time of laser treatment when changing operating parameters.



Delicate patient interface

- optimized patient interface only slightly alters the natural curvature of the eye, which leads to a small increase in intraocular pressure. At the same time, the patient's eye is firmly fixed, which significantly reduces the eye displacement during treatment.
- a weak vacuum is used for patient's eye fixation. This facilitates treatments without formation of hematomas in the sclera. For added convenience, the surgeon can quickly alter the vacuum value during the patient's eye docking procedure.
- the flat shape of the patient interface leads to uniform distribution of laser energy across the entire treatment area. Therefore, the laser cut thickness is the same along the entire diameter of the formed flap.
- the patient interface is attached to the docking cone with the help of vacuum. The interface can be easily and efficiently fixed with just one touch.
- there are several standard sizes of the patient interface to maximize applanation size.





Benefits of Femto Visum

- low energy, high-frequency laser pulses and special scanning algorithm allow for a smooth cut surface and an easy and rapid lift of the corneal flap during LASIK surgery.
- ultra-high laser repetition rate reduces surgery time.
- high accuracy of the diameter and thickness of the corneal flap, and the flap hinge width, regardless of corneal curvature.
- the flap hinge position can be chosen with regard to the shape of the ablation zone.
- increasing the diameter of the flap to the maximum (10 mm) can improve vision in twilight and at night.
- no risk of traditional LASIK complications, such as flap perforation or full cutoff of the flap hinge. Incomplete, irregular and decentered flap is eliminated.
- sub-Bowman Femto LASIK: formation of an extremely thin flap up to 90 microns.
- possibility of after-docking flap centration on a displaced pupil (including in the case of a small eyeball in hyperopia).
- reduced post-operative recovery period due to absence of mechanical damage to the epithelium.
- higher contrast sensitivity leads to better vision quality in low light conditions.

Specifications of femtosecond system Femto Visum



Operating parameters

Laser type	femtosecond fiber
Laser wavelength	1030 - 1040 nm
Laser pulse duration	300 – 400 fs
Laser pulse repetition rate	1 MHz
Output pulse energy level	250-750 nJ
Possible resection depth	0 – 1100 microns (pitch of 1 micron)
Focal spot size	maximum 2 microns
Spot separation distance	2.5 microns
Eye fixation vacuum	programmable, 400 – 600 mBar
Vacuum retention time on the patient's eye	maximum 25 sec
9.5 mm flap creation time	Z-LASIK – 17 sec, O-LASIK – 16 sec
Corneal flap diameter: range	8 – 10 mm (0.1 mm step)
Corneal flap thickness: range	90-200 microns (1 micron step)
Position of corneal flap hinge	Temporal, Superior, Nasal, Inferior
Vertical cut angle: range	30° - 150°
Keratoplasty	cone, mushroom, hat, zigzag with variable shape
Intrastromal pockets	freely programmable by diameter and length of tunnel
Arc relaxing incisions	freely programmable by angles and length

Performance parameters

Warm up time	25 min
LCD monitor	touch screen 22"
Compatibility with any excimer laser	yes
Dimensions WxLxH, weight	75 x156x153 cm, 215 kg
Power consumption	220 V (AC), 50-60Hz 400 W (maximum) 100 - 120 V (AC) – on customer's request
Climatic conditions in the operating room	temperature 20-35°C, humidity 90% (maximum)



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