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VisuMax from ZEISS

Defining the pulse rate in refractive surgery

ZEISS

Remarkable precision and detail

Defining new trends in modern corneal surgery

As a ground-breaking, high-performance femtosecond laser system, the VisuMax® from ZEISS is significantly shaping the world of refractive surgery. With its outstanding cutting precision, exceptional speed and gentle treatment approach, it is the ideal platform for cutting-edge corneal surgery applications, including Flaps, Keratoplasty, Incisions for ICR and SMILE.

Small incision lenticule extraction or SMILE is redefining refractive surgery as we know it. ZEISS is at the forefront of this 3rd generation laser vision correction – with the minimally invasive, flapless ReLEx® SMILE solution.

The combination of the VisuMax and a MEL® excimer laser from ZEISS addresses wide-ranging needs of the modern refractive surgical practice. In fact, it is the only refractive platform to perform all three generations of laser vision correction: PRK/LASEK (surface ablation surgery), Femto-LASIK/LASIK (flap surgery) as well as SMILE (minimally invasive, flapless surgery).

The result is a refractive platform that merges proven corneal surgical techniques with remarkable details as the basis for excellent, highly individualized treatment outcomes – the ZEISS VisuMax.

VisuMax from ZEISS

Precision in all its facets

The VisuMax is a truly innovative femtosecond laser system. With its perfectly coordinated components, it is well designed to support maximum cutting precision, efficiency, predictability and comfort for the most advanced corneal surgery applications.

ReLEx SMILE

The VisuMax is the first femtosecond laser system to perform the minimally invasive, flapless SMILE procedure. With ReLEx SMILE from ZEISS, a refractive lenticule as well as the incision through which it is extracted are created in a single step – without ablation or flap. Despite its proven predictability, a retreatment may be necessary in rare cases. If so, the initial SMILE incision can be extended into a flap with the option CIRCLE from ZEISS.

Flap

The VisuMax creates flaps of a highly predictable thickness and of adjustable geometries for Femto-LASIK and PRESBYOND® Laser Blended Vision from ZEISS – the recommended treatment option for presbyopic patients.

Keratoplasty

With the Keratoplasty option, the VisuMax covers several corneal transplant procedures, including lamellar and penetrating keratoplasty. High-precision cutting quality and rapid incision speed enable the efficient preparation of precision corneal grafts and recipient corneas.

Incision for ICR

The femtosecond laser technology of the VisuMax is also ideally suited for creating incisions in preparation of intracorneal ring (ICR) implantations. When defining tunnel parameters, it even performs inclined cutting geometries and ring tunnel segments smaller than 360° with a high degree of flexibility.

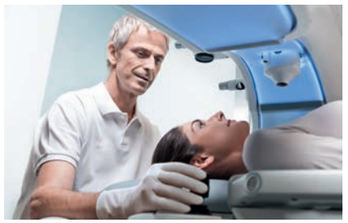
VisuMax highlights

The building blocks of state-of-the-art femtosecond technology

A contact glass designed for the cornea
Like the surface of the human cornea, VisuMax contact glasses are curved. Available in three different sizes (S, M, L), they are optimally designed to fit the anatomy of the eye. As a result, the cornea largely retains its natural physiological shape. Artifacts are avoided in the cutting result, as is unnecessarily high IOP for the patient.

Maximum cutting precision
High-precision ZEISS optics provide an extremely focused laser beam. The result: Minimum laser pulse energy at a high pulse frequency for unsurpassed incision control – at precisely the desired depth of the cornea, with three-dimensional, curved incisions.

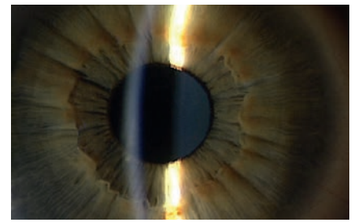
Brilliant visual control
The integrated high-quality ZEISS surgical microscope ensures precise and complete visual control during every manual surgical manipulation. It includes a digital video camera for recording surgical procedures right on the spot.



A smart unit
The sturdy, ergonomic pivoting patient supporting system is designed to provide maximum comfort during the treatment. It continuously monitors the patient's position, automatically making needed adjustments. ZEISS VisuMax also incorporates an easy-to-use, interactive touchscreen and intuitive software to assist the surgeon at every step throughout the procedure.

User-oriented intuition
With its easy-to-use, interactive touchscreen and intuitive software, the ZEISS VisuMax supports surgeons at every step throughout the procedure.

Efficiency that pays off
With a pulse frequency of 500 kHz, the ZEISS VisuMax enables short treatment times, making procedures more comfortable for both physicians and patients. The result is an efficient workflow and a higher throughput of satisfied patients.



Reassurance right on the spot
As a universal workstation for corneal surgery, the system features integrated slit illumination to monitor treatments and immediately control results – without the patient needing to be moved.

SMILE – 3rd Generation Laser Vision Correction

Minimally invasive, flapless surgery

SMILE is turning the world of refractive surgery on its head. This 3rd generation of laser vision correction is described as “LASIK without a flap and PRK without pain.”* And ZEISS is leading the way – with ZEISS ReLEx SMILE, the first ever SMILE solution.

Flapless
The ZEISS VisuMax is the first and – until now – only femtosecond laser system to support this unique laser vision correction procedure. Thereby, a highly precise, precalculated lenticule is created inside the intact cornea and removed via a small incision – all without a flap.

Minimally invasive
Requiring no flap, ReLEx SMILE offers the potential for fewer transected nerves, significantly reduced incidence of dry eye syndrome, and a lower risk of infection and epithelial ingrowth. Smaller incisions also improve epithelium healing.

Seamless
The lenticule creation and extraction are performed without interruption. Also, the patient doesn’t need to be moved. That’s what makes ReLEx SMILE a fast, seamless treatment method.

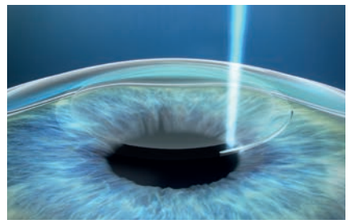
Excellent outcomes
Advanced laser vision correction with ReLEx SMILE promotes more efficient workflows, shorter treatment times and less stress for patients – as well as excellent outcomes with high predictability, including for higher refraction values.

Outstanding results with ReLEx SMILE
- Small incision of 2-4 mm
- Side-cut length up to 80 % shorter and cap incision area up to 30 % smaller than Femto-LASIK flap
- Potentially lower incidence of dry eye syndrome and less nerve transection thanks to smallest incisions without flaps
- Less risk of infections and epithelial ingrowth
- Good reproducibility of the lenticule, irrespective of individual corneal characteristics and ambient conditions
- Excellent predictability, particularly for higher refraction values
- Efficient treatment process without patient having to switch places

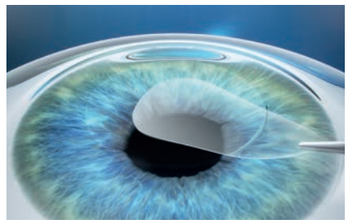
* Dr. Rupal Shah, Institute of Laser Medicine, Mumbai, India

ReLEx SMILE from ZEISS

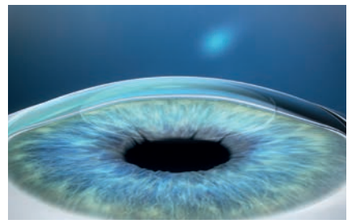
The three steps of small incision lenticule extraction



The creation of a refractive lenticule and a small incision of less than 4 mm in the intact cornea is performed in one step.



The lenticule is removed through the small incision. The disruption to the corneal biomechanics is minimal.



Once the lenticule is removed, the corneal shape is altered, thereby achieving the desired refractive correction.

ReLEx SMILE is not available for sale in the United States.

High-precision flaps, grafts and incisions

A new level of Femto-LASIK workflow efficiency

For treatments such as conventional Femto-LASIK and PRESBYOND Laser Blended Vision, the ZEISS VisuMax delivers highly precise flaps. Together with a MEL excimer laser and the CRS-Master® treatment planning station, ZEISS provides an optimal combination for efficient workflows and excellent results.

Cut right with ZEISS VisuMax

- High-precision flaps
- High reproducibility and flap thickness consistency
- Easy flap repositioning
- Smooth stromal bed surfaces
- Optimum workflow
- Prevents unnecessarily raised IOP

Pivoting patient supporting system

Move patients comfortably and quickly from the femtosecond to the excimer laser with the pivoting patient supporting system.

MEL excimer excellence

Precise, efficient, safe and fast – the ZEISS MEL 80 excimer laser is a true workhorse for performing a broad range of corneal surgical procedures. The ZEISS MEL 90 takes excimer excellence one step further, combining your experience with modern advancements like the FLEXIQUENCE switch function and outstanding intraoperative ablation speed of up to 1.3 seconds per diopter*.

CRS-Master for individual treatments

The ZEISS CRS-Master is an advanced treatment planning tool for the remote planning of regular and customized topography-guided treatments. PRESBYOND Laser Blended Vision, a treatment option for presbyopic patients, is another key application of the CRS-Master.

* LASIK, myopia, 500 Hz, OZ: 6 mm

Customized corneal grafts for keratoplasty

With the Keratoplasty option, the ZEISS VisuMax becomes a state-of-the-art workstation for customized corneal grafts, enabling smooth lamellar and circular incisions for Penetrating Keratoplasty (PKP), Deep Anterior Lamellar Keratoplasty (DALK) and Descemet's Stripping Endothelial Keratoplasty (DSEK).

The practical Keratoplasty adapter provides a robust and sterile work surface for preparing corneal grafts

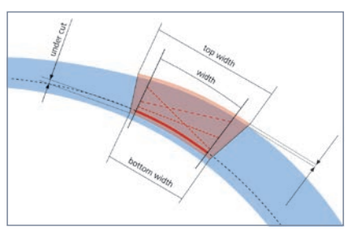
Specially designed curved contact glass (type KP) prevents unnecessary compression of the corneal tissue

Separation of the cut lamellae from the recipient cornea as viewed through the VisuMax surgical microscope

Flexible access for ICR incisions

Equipped with the Incision for ICR option, the ZEISS VisuMax offers unique advantages for intracorneal ring (ICR) implantations. Even inclined cutting geometries and partial segments from 90° to 270° are possible. Corneal tunnels are prepared quickly, precisely and with a high degree of flexibility.

- Easy-to-understand ICR user interface
- Rapid, intuitive entry of treatment parameters
- Stored user-defined cutting geometries for improved workflow



Freely variable cutting parameters, even for incisions parallel to the posterior corneal surface

The Keratoplasty and Incision for ICR options are not available for sale in the United States.

Technical data

Installation and operating instructions

VisuMax femtosecond laser system		
System components	Patient supporting system, including platform	
	Integrated uninterruptible power supply (UPS)	
	Surgical microscope with additional slit illumination	
	Video camera with integrated digital recording	
Laser parameters	Wavelength	1043 nm
	Pulse duration	220-580 fs
	Laser pulse rate	500 kHz

Installation and set-up conditions	
Weight	870 kg (including patient supporting system, platform, UPS)
Recommended space requirements	4.00 m x 3.70 m (stand-alone)
	4.50 m x 3.80 m (180° setup with MEL 80 / MEL 90)
	4.00 m x 4.00 m (90° setup with MEL 80 / MEL 90)
Electrical connection	100-240 V, 50/60 Hz, max. 16 A
	Separately fused circuit

Operating conditions	
Room temperature	18 to 25 °C
Atmospheric humidity	30 to 70 %
Accessories	Single-use contact glasses Treatment Pack (sizes S/M/L and type KP)
	Keratoplasty adapter for patient supporting system