



## **VisuMax from ZEISS**

Defining the pulse rate in refractive surgery



Seeing beyond

# Accelerating the pulse rate of your practice.

ZEISS VisuMax



// PRECISION  
MADE BY 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 cutting precision, exceptional speed and gentle treatment approach, as demonstrated in multiple published studies it is the ideal platform for cutting-edge corneal surgery applications, including Flaps, Keratoplasty, Incisions for ICR and Lenticule Extraction with SMILE® from ZEISS.

SMILE is redefining refractive surgery as we know it. ZEISS is at the forefront of this minimally invasive Laser Vision Correction.

The combination of the VisuMax and the MEL® 90\* excimer laser from ZEISS addresses wide-ranging needs of the modern refractive surgical practice. In fact, it is the first refractive platform to perform all options of laser vision correction: PRK/LASEK (surface ablation surgery), Femto-LASIK/LASIK (flap surgery) as well as Small Incision Lenticule Extraction (minimally invasive surgery).

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

# ZEISS VisuMax

## Precision in all its facets

The VisuMax® is a truly innovative femtosecond laser system. With its perfectly coordinated components, it has precise cutting capabilities as well as proven efficacy, predictability and comfort.

### **Lenticule Extraction**

The VisuMax is the first femtosecond laser system to perform the minimally invasive, Lenticule Extraction procedure. With 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 incision created with SMILE 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 options based on it, such as PRESBYOND®, a binocular planning tool for patients with presbyopia.

### **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.

# ZEISS 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.



### **Proven cutting precision**

High-precision ZEISS optics provide an extremely focused laser beam. The result: the well aligned system of laser pulse energy and high pulse frequency leads to accurate incisions - 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.



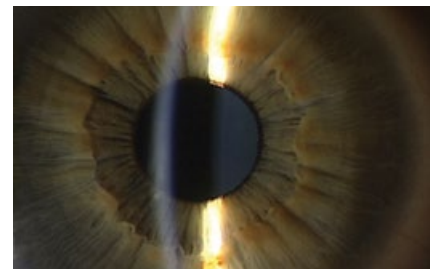
### **A smart unit**

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.



### **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.

# ZEISS SMILE

## Minimally invasive surgery

SMILE® from ZEISS is turning the world of refractive surgery on its head. The latest application is described as “LASIK without a flap and PRK without pain.”<sup>1</sup> And ZEISS is leading the way – with SMILE for Lenticule Extraction.

### Flapless

The ZEISS VisuMax® is the first femtosecond laser system to support this unique minimally invasive laser vision correction procedure. Thereby, a highly precise, precalculated lenticule is created inside the intact cornea and removed via a small incision.

### Minimally invasive

Requiring no flap, SMILE offers the potential for fewer transected nerves, significantly reduced incidence of transient 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 why SMILE offers a fast, seamless treatment.

### Excellent outcomes

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

### Highlights of SMILE and the corresponding method

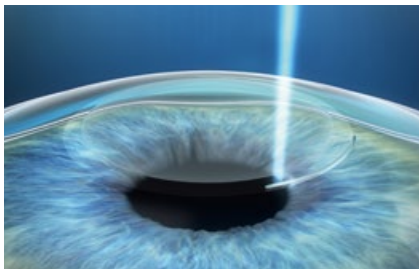
- Small incision of 2-4 mm
- Side-cut length up to 80 % shorter and cap incision area up to 30 % smaller than Femto-LASIK flap
- Potentially lower incidence of transient dry eye syndrome and less nerve transection thanks to smallest incisions without flaps
- Less risk of infections and epithelial ingrowth
- 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

<sup>1</sup> Rupal Shah, MD, Institute of Laser Medicine, Mumbai, India



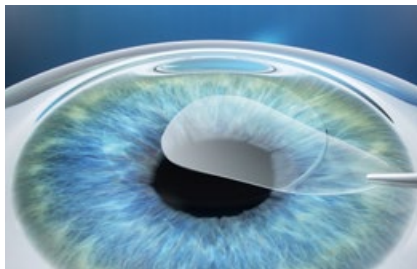
## Refractive correction with ZEISS SMILE

Three treatment steps



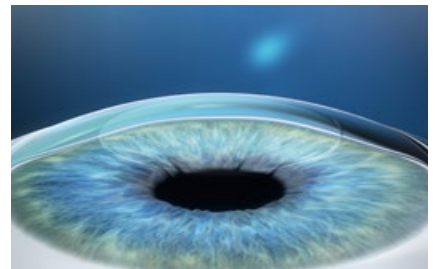
### **Lenticule creation**

*A small piece of corneal tissue (lenticule) and a small incision are created inside the intact cornea.*



### **Lenticule removal**

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



### **Impairment is corrected**

*Removing the lenticule changes the shape of the cornea, thereby achieving a vision correction.*

# High-precision flaps, grafts and incisions

## And a new level of Femto-LASIK workflow efficiency

For treatments such as conventional Femto-LASIK including PRESBYOND® Laser Blended Vision, the VisuMax® delivers highly precise flaps. Together with the MEL® 90 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
- Proven 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 90 excimer excellence

Precise, efficient, safe and fast – the ZEISS MEL 90 excimer laser is a true workhorse for performing a broad range of corneal surgical procedures. The MEL 90 is 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*

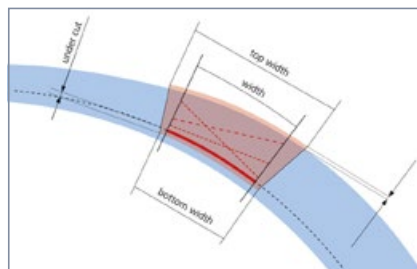


*Separation of the cut lamellae from the recipient cornea as viewed through the VisuMax surgical microscope*

## 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*

**\*MEL 90, CRS-Master, PRESBYOND and CIRCLE are not approved for sale in the United States.**



# Technical data

## VisuMax from ZEISS

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)	
Footprint standalone	L x W: 3.80 m x 4.40 m	
Footprint MEL® 90 with VisuMax® 90°	L x W: 3.92 m x 3.94 m	
Footprint MEL 90 with VisuMax 180°	L x W: 4.50 m x 3.79 m	
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



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VisuMax  
SMILE  
MEL 90  
PRESBYOND  
CRS-Master



**Carl Zeiss Meditec AG**

Goeschwitzer Strasse 51–52  
07745 Jena  
Germany  
[www.zeiss.com/med/contacts](http://www.zeiss.com/med/contacts)  
[www.zeiss.com/visuma](http://www.zeiss.com/visuma)

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