VisuMax from ZEISS
Defining the pulse rate in refractive surgery
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 refractive surgery applications, including corneal flaps, keratoplasty and the SMILE procedure.

Small incision lenticule extraction, or SMILE, is redefining refractive surgery as we know it. ZEISS is at the forefront of this form of laser vision correction with the minimally invasive, flapless ReLex® SMILE procedure.

The combination of the VisuMax and a MEL® excimer laser from ZEISS addresses wide-ranging needs of the modern refractive surgical practice. The result is a refractive platform that merges proven corneal surgical techniques with remarkable details as the basis for excellent, highly individualized treatment outcomes.
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.

Flap
The VisuMax creates flaps of a highly predictable thickness and of adjustable geometries for Femto-LASIK. Patients describe Femto-LASIK with the VisuMax laser as a very gentle treatment experience.

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 the recipient’s cornea.
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.

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.

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

SMILE is redefining refractive surgery as we know it. A unique, minimally invasive laser vision correction procedure, ReLEx SMILE is an innovative approach to myopia correction that is only available on the VisuMax femtosecond laser.

Flapless
The ZEISS VisuMax is the first and only femtosecond laser system to support this unique laser vision correction procedure. 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, and reduced incidence of dry eye syndrome. 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, making 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 < 6 mm
- Side-cut length up to 80% smaller and cap incision area up to 30% smaller than Femto-LASIK flap
- 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
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 6 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.
Flap
For best possible conditions

For Femto-LASIK, VisuMax means above all one thing: high-precision flaps. Combined with the excimer laser MEL 80 it offers an optimally coordinated refractive laser surgery system solution for refractive for a convenient workflow, efficient patient management and the best possible results.

VisuMax precision
- High-precision flaps due to high-performance femtosecond technology
- High reproducibility and consistency of flap thickness
- Easy repositioning of the flap
- Optimum workflow due to intelligently coordinated system components
- Smooth, finely structured surface of the stromal bed
- Prevents unnecessarily raised IOP and thus temporary losses of vision and trauma, due to the anatomically curved contact glass and the non-scleral suction

Pivotable patient supporting system – Optimum workflows for greater comfort
The shared use of the pivotable patient supporting system by the VisuMax and the MEL 80 saves the patient from having to move from one treatment location to another. The patient experiences the surgery as an integrated process. Unnecessary waiting periods are minimized and treatment efficiency increased.

MEL excimer excellence
All the parameters of this high-precision excimer laser are geared to increasing efficiency, achieving optimum treatment results and rapid visual recovery. Key factors here are the extremely high ablation speed, the high-performance eye tracker system and eye registration.
Femto-LASIK
Laser in-situ keratomileusis

The VisuMax femtosecond system creates the flap.

The patient moves to the MEL 80 excimer laser.

The flap is manually opened and folded back to expose the deeper corneal layer (stoma) beneath.

The MEL 80 excimer laser ablates the pre-calculated corneal tissue point by point.

The upper corneal layer is then repositioned following the refractive correction.
Keratoplasty
For high-precision tissue grafts

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) and Lamellar Keratoplasty.

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.
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

DANGER
VISIBLE OR INVISIBLE LASER RADIATION - AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION
193 nm 4.7 ns (CLASS IV LASER PRODUCT)