



ReLEx

The step towards flapless,
minimally invasive laser correction



We make it visible.

The moment flapless surgery
becomes clearly visible: in a smile.
This is the moment we work for.



ReLEx

Enjoy the benefits of this new flapless technique.

ReLEx® combines state-of-the-art femtosecond technology with high-precision lenticule extraction aiming at providing minimally invasive refractive correction in a single system: the Carl Zeiss VisuMax®. A refractive lenticule is created in the intact cornea and removed via a small incision. No ablation. No flap. The new flapless ReLEx smile procedure offers clear clinical benefits. The surgery is **Flapless**, **All-femto** and **Single-step**.



LASIK

approx. 20 mm
flap side-cut



Side-cut area up to 80% smaller

From flap-cutting to key-hole surgery. Previously a side-cut of roughly 20 mm had to be created, whereas a small incision of less than 4 mm is now sufficient. This means that the majority of the upper corneal layers remain untouched.

Cap incision area up to 30% smaller

The lamellar incision area is roughly 1/3 smaller compared to Femto-LASIK.

Areas of indication

ReLEx for myopia:

- Sphere: -0.50 to -10.00 D
- Cylinder: 0 to 5.00 D
- Spherical equivalent: -0.75 to -10.00 D

Note: This diagram is based on an optical zone of 6.5 mm.

Flapless.

ReLEx smile is turning the world of refractive surgery upside down. With ReLEx smile, one small incision – smaller than the earlier flap hinge – is enough to remove the refractive lenticule. The upper corneal layers remain practically unaffected. This is important as the upper corneal layers mainly contribute to the biomechanical stability of the cornea. The minimally invasive incision also suggests fewer transected nerves in the corneal surface and therefore to significantly reduced severity of dry-eye syndrome. Another advantage: a small incision can further reduce the incidence of infection, epithelial ingrowth or flap complications – and help the epithelium to heal much more quickly. ReLEx makes minimally invasive refractive correction possible for the first time.

All-femto.

ReLEx is based entirely on femtosecond technology. The procedure is not dependent upon complex nomograms or fluence tests. Intraoperative ambient conditions or individual corneal characteristics have virtually no influence on the reproducibility of the femtosecond lenticule incision. The VisuMax creates the pre-calculated lenticule incision with utmost precision and predictability in the cornea. With ReLEx, complex evaluation of empirical correction factors could soon be a thing of the past. In comparison to excimer laser-based procedures, this gives you both extra time and greater predictability – especially when correcting higher refraction values.

Single-step.

ReLEx brings together a number of factors which clearly belong together: the lenticule and its access incision are created in a single step. This means that, unlike in Femto-LASIK, only one treatment procedure needs to be planned. No margin of tolerance must be reserved for further treatment steps. The entire refractive correction is performed using the VisuMax, meaning that the patient does not need to be moved. You also benefit from shorter treatment times. Only slightly more time is required for the generation of the lenticule than for a simple flap cut – and removing the lenticule takes hardly any longer than opening the flap.

“**Perfection** is achieved not when there is nothing more to add, but when **there is nothing left to take away.**” Antoine de Saint-Exupéry

Up until now, refractive correction generally involved cutting a flap and folding it back in order to remove corneal tissue point by point. ReLEx® comes in two different versions: ReLEx smile and ReLEx flex. Both are based entirely on the high-precision VisuMax® femtosecond laser. This carries out the entire laser vision correction in a single procedure. Since the lenticule and access incision are created together, no margin of tolerance must be reserved and the largest possible portion of the cornea remains untouched.

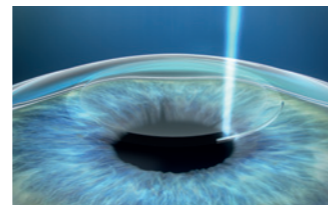
ReLEx smile is a further development of the ReLEx flex technique and is distinguished by its being flapless – and making complete minimally invasive refractive correction possible for the first time.

ReLEx smile

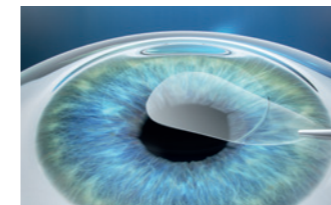
Small Incision Lenticule Extraction

System used

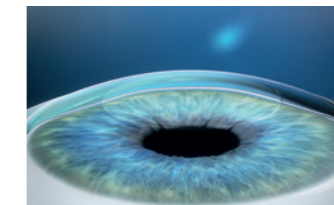
- VisuMax femtosecond laser



In a single step, the VisuMax creates a refractive lenticule and a small incision of less than 4 mm in the intact cornea – virtually regardless of the ambient conditions or corneal structure.



The lenticule is removed through the small incision. The disruption to the biomechanics of the cornea is minimal. No flap is cut.



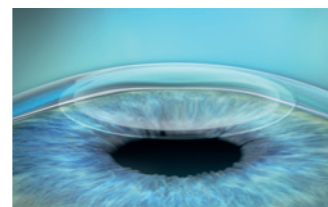
The removal of the lenticule changes the form of the cornea, creating the required change to the refraction.

ReLEx flex

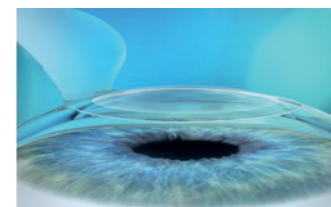
Femtosecond lenticule extraction

System used

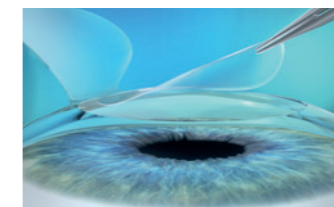
- VisuMax femtosecond laser



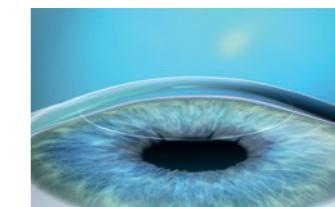
In a single step, the VisuMax creates the lenticule and the flap-like access incision in the otherwise intact cornea. You, the surgeon, benefit from the smaller incision diameter in comparison to that of a LASIK procedure.



The flap-like access incision is opened and folded back.



The lenticule is removed manually via the flap-like access point.



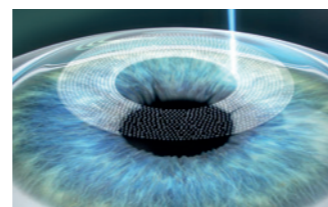
The upper corneal layer is now flipped back. The changed form of the cornea corrects the refraction error.

Femto-LASIK

Laser in-situ keratomileusis

Systems used

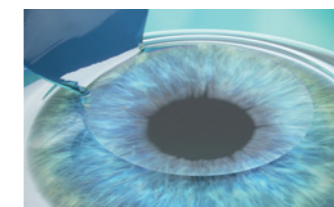
- Femtosecond laser
- Excimer laser



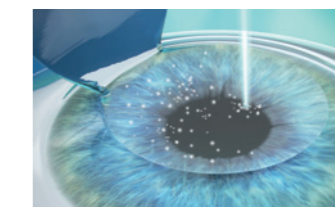
The femtosecond laser creates the flap.



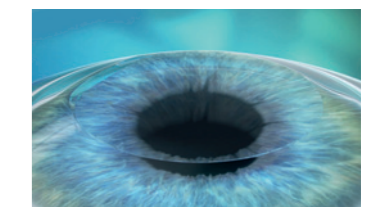
The patient is relocated to the excimer laser.



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



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



The upper corneal layer is then reapplied following the refractive correction.

Femtosecond pulses:
The shortest man-made phenomenon for creating outstanding vision

No microkeratome, no ablation products – these are the inherent advantages of ReLEx® smile and ReLEx flex. Because both techniques make exclusive use of the Carl Zeiss VisuMax® and its superior individual components – giving you access to the benefits of high-precision femtosecond technology: high-level reproducibility and predictability – even in the case of high corrections.



A contact glass as ingeniously designed as the cornea

The surface of the human cornea is curved. And so Carl Zeiss contact glasses are curved way, too. The curved design, available in three sizes (S, M, L), ensures an optimum fit to the anatomy of the eye. This ensures that the cornea is not forced into a deformed planar, non-physiological shape – and artifacts are avoided in the cutting result, as is unnecessarily high intraocular pressure.



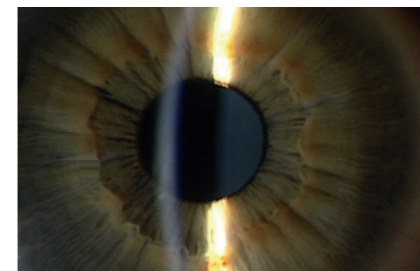
A unique light scalpel

High-precision optics from Carl Zeiss provide an extremely focused laser beam. The result: minimum laser pulse energy at a high pulse frequency for hitherto unsurpassed incision control – at exactly the desired depth of the cornea, even with three-dimensional curved incisions.



Close-up of a lenticule

The high-quality ZEISS surgical microscope, including digital video camera with live surgery recording, gives the surgeon a clear visual control during the entire treatment and during manual removal of the lenticule.

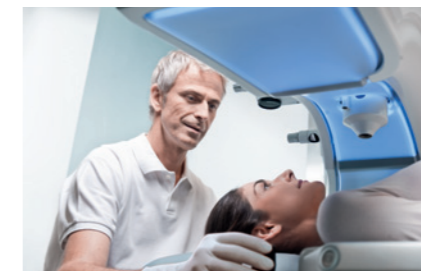


Slit illumination for greater detail

As a universal workplace for corneal surgery, VisuMax has a built-in slit illuminator for exact monitoring of lenticule removal.

Perfected lenticule form

Experience from over 25 years of refractive laser treatment, 150 years of innovative leadership and the most recent scientific findings have been incorporated in the design of the unique lenticule shape.



A smart unit

The patient's position is actively and continuously monitored during treatment and the sturdy yet comfortable patient supporting system is automatically adjusted during laser surgery.



Gentle but firm suction

The contact glass and corneal suction form a unit which does not come into contact with the patient's eye until just before the laser procedure. Thus, the period of active suction lasts hardly any longer than the time needed for making the incision itself. An internal fixation target for the patient and infrared illumination for targeted variation of pupil size facilitate centration of the eye to the contact glass of the VisuMax.



The best thing about the flapless technique: It works. Effectively.



*New marketing opportunities for your practice –
Attract and impress new patients with ReLEx*

ReLEx® impresses even the most demanding of patients. Because ReLEx is high-precision refractive correction which, especially in the ReLEx smile version, is also minimally invasive. For your patients this means maximum protection of healthy tissue and greater comfort as they embark upon a life without spectacles. The result: fully satisfied patients who are certain to recommend you to others.

Convince your patients of the benefits of innovative lenticule extraction

- The flapless ReLEx smile procedure makes minimally invasive refractive correction possible for the first time.
- No flap complications during or after surgery.
- ReLEx produces excellent results, even in the case of high refractive errors – irrespective of the individual characteristics of the cornea.
- Rapid treatment without the need to move the patient minimizes stress levels.
- The noiseless and odorless treatment helps ensure greater patient comfort.
- The anatomically curved contact glass and the non-scleral suction prevent loss of vision and trauma.

A moment of trust

Being able to take time for your patients, establish their trust and convince them – Carl Zeiss helps you achieve this by providing valuable patient information and materials about ReLEx. The materials are patient-oriented and put their desire for comprehensive information first. Clearly presented brochures, guides and consultation aids offer support in your discussions with patients and provide all necessary extra information for them to read later. The materials also give your staff the information they need to ensure that your patients receive professional advice from all members of your team. Because patients who feel that they are taken good care of during treatment are sure to recommend you to others.

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