

# SCHWIND AMARIS® 750S – Always innovative



## The SCHWIND AMARIS® 750S – The absolute best performance from the leader in technology

The demands patients are placing on treatment methods and the results attainable in corneal surgery are constantly increasing. If you can offer shortest treatment times with perfect results, you have the upper hand. With a pulse rate of 750 Hertz the SCHWIND AMARIS® 750S sets a new standard – so that your patients feel satisfied that you can do the best possible for them today.

### The new superlative in speed and precision

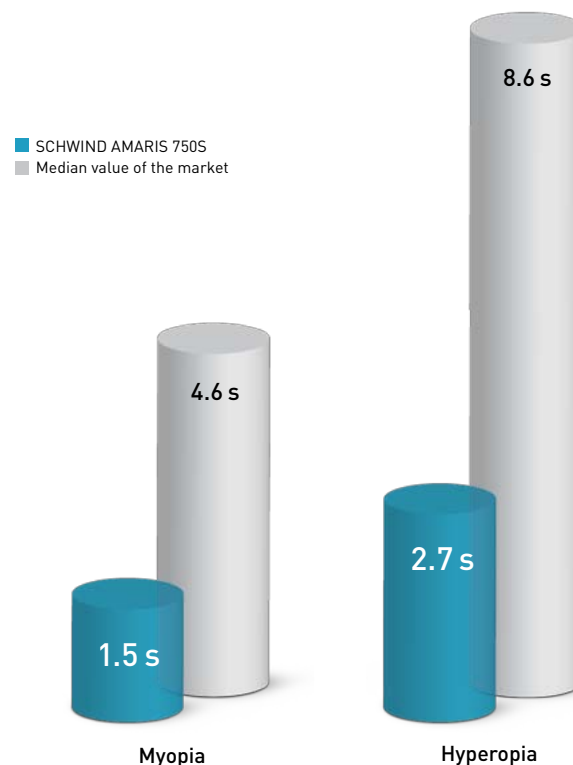
A pulse rate of 750 Hertz – the SCHWIND AMARIS 750S is a genuine TotalTech Laser. Thanks to the 6D turbo eye tracker, it combines superior speed with extremely high precision. The result is maximum comfort during treatment: short treatment times, an optimised workflow and a highly efficient patient management system. Your patients benefit from a substantially reduced treatment duration and you can ensure more efficiency in the surgical processes with the SCHWIND AMARIS 750S. Your patients only need to focus on the fixation light for a shorter time, relieving them of stress. The corneal stroma is only exposed for a very short time, which prevents it from drying out and accelerates the regeneration process. This is gentle on tissue, even at the highest ablation speeds.

### Innovative, tried and tested

From automatic energy adaptation thanks to the Automatic Fluence Level Adjustment right through to Intelligent Thermal Effect Control – the new excimer laser offers all the advantages of the tried and tested AMARIS technology. The online pachymetry safety system ensures controlled ablation. And the SCHWIND CAM software makes it possible for you to plan treatment individually for your patients. All of these plus points add up to one thing in particular: safe and perfect results for your patients.

» The results with the SCHWIND laser are the best I've ever seen. «

Michiel Luger, MD, VisionClinics, Utrecht, Holland



SCHWIND AMARIS 750S: ablation time per dioptre (s/D)\*

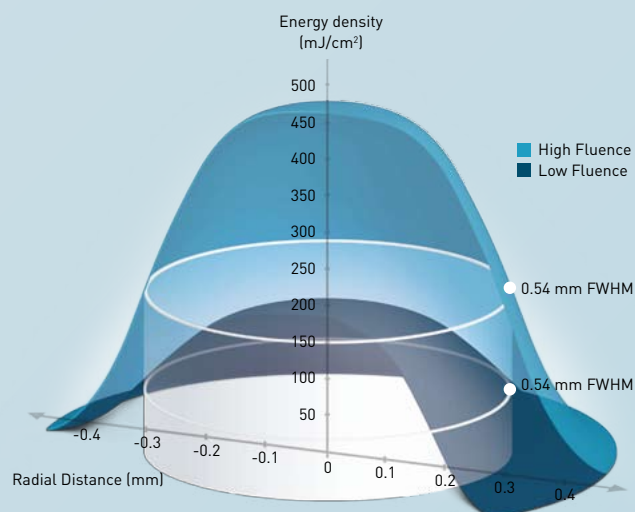
\* Without astigmatism, 12.5 mm vertex distance,  
6 mm optical zone

## AFLA

### An ideal balance

With the Automatic Fluence Level Adjustment (AFLA) the SCHWIND AMARIS 750S achieves perfect smoothness even at the highest ablation speed. Researchers at SCHWIND have developed an algorithm that ensures an ideally balanced ratio between the total number of laser pulses and the energy delivered. About 80 percent of the ablation is performed with a high fluence value. For the fine work – the remaining 20 percent – the SCHWIND AMARIS 750S automatically switches to a lower fluence. The result is optimum smoothing of the cornea.

Through the extremely small spot size and the Super-Gaussian beam profile you achieve an exceptionally smooth and tissue saving ablation.



### Automatic Fluence Level Adjustment

Ideal balance between the total number of laser pulses and energy delivered

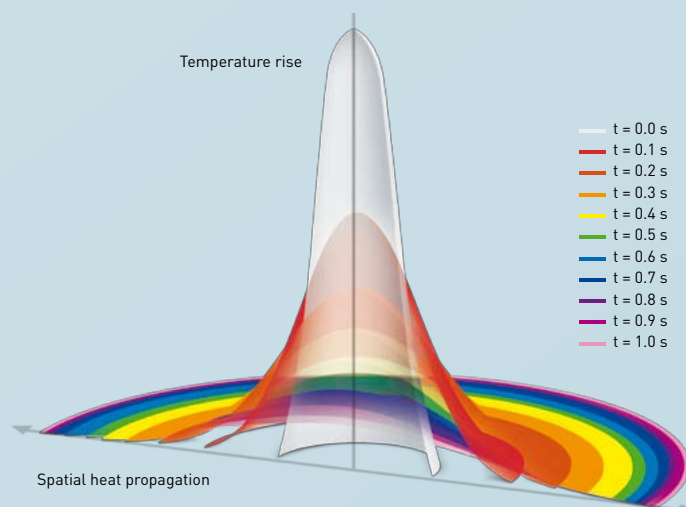
## ITEC

### Gentle even at the highest speeds

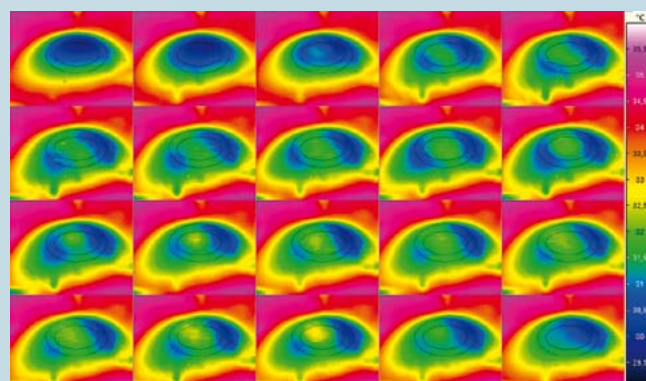
Intelligent Thermal Effect Control – ITEC – is the name of the thermal control process that prevents damage to the surrounding corneal tissue, even at the extremely high ablation speed of the SCHWIND AMARIS 750S. ITEC ensures that the laser pulses are distributed in a thermally optimised, dynamically adapted way, which gives the individual position on the cornea sufficient time to cool off. Following pulses can thereby approach an already cooled position faster. ITEC is clearly superior to the otherwise customary static processes: Studies using an infrared thermographic camera have proven that the corneal tissue only heats up by a maximum of 4° Celsius, even at high ablation speeds.

➤➤ The thermal control technology and ablation control with two fluence levels plays a very important role, especially in the biological aspects: the less biological interaction there is with corneal tissue, the more reliably wounds can heal. ⏪

Jorge Alió, MD, Visum Medical Ophthalmologic Corporation, Alicante, Spain



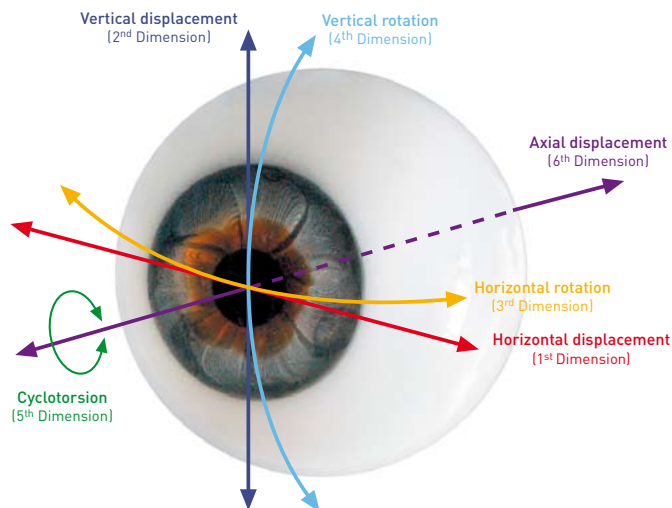
Heat propagation of a laser pulse with the ITEC method



Thermodynamic measurements

## The natural movements of the eye in six dimensions – the eye tracker of the SCHWIND AMARIS® 750S

An unrivalled safety feature: with 1,050 measurements per second, the six dimensional active eye tracker monitors the exact position of the eye, and whilst doing so compensates for every deviation with a typical reaction time of three milliseconds.

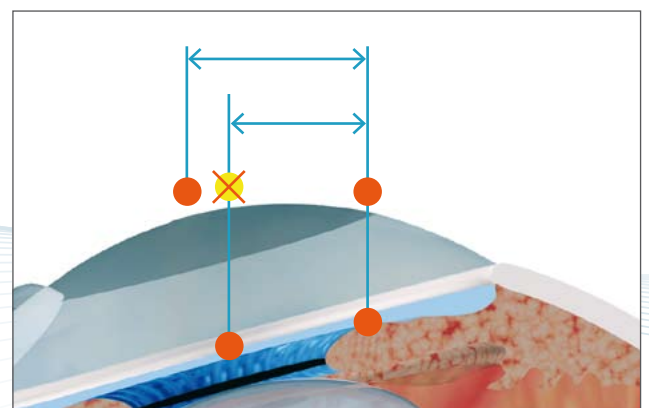


The more perfect the centring of the eye and the positioning of the laser spots are, the more precise the results of a refractive treatment will be. That is why the eye tracker of the SCHWIND AMARIS 750S ensures the highest safety.

Apart from the linear eye movements, i.e. the first and second dimensions, it can also exactly determine and compensate for horizontal and vertical rolling movements of the eye – the third and fourth dimensions. Compensation of cyclotorsion, the eye's rotation around its optical axis, is achieved by the eye tracker of the SCHWIND AMARIS 750S by means of the Advanced Cyclotorsion Control. In this fifth dimension, static cyclotorsion is compensated for, which is the torsion difference between the upright and the supine positions of the patient, as well as dynamic cyclotorsion, which is the rotating movement of the eye during the laser treatment.

➤➤ The main benefit compared with other systems is the 6D eye tracking. It is able to detect and compensate for patients' eye movements more effectively, and as a result, patients feel more secure during their treatment.

Minoru Tomita, MD, Shinagawa LASIK Center, Tokyo, Japan



Compensation of rolling movements (3<sup>rd</sup> and 4<sup>th</sup> dimensions)



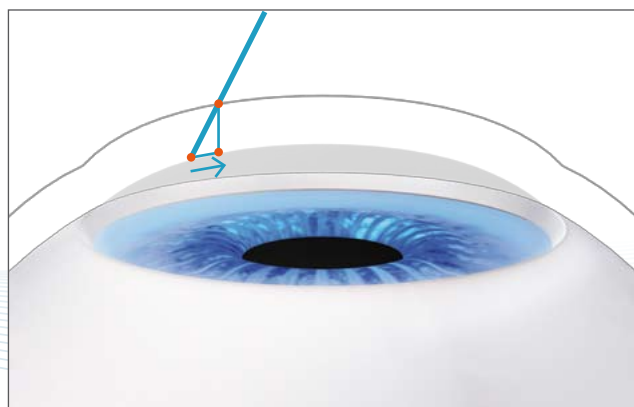
### One dimension ahead with z-tracking

The movements in the sixth dimension are caused by upward and downward movements of the head or the eyes. The eye tracker of the SCHWIND AMARIS 750S compensates for these by means of the z-tracking, which is why it is the only laser system that can actively compensate for all eye movements.

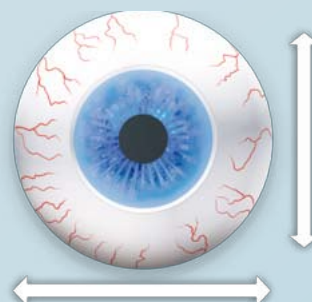
### Laser treatment without pupil dilating medications

Simultaneously with pupil detection, the eye tracker also detects the limbus, whose size always remains constant – unlike the diameter of the pupil. For this reason, the limbus is used as a reference for ablation, meaning that the original centre of ablation is maintained throughout the treatment. This has the great advantage for your patients that decentrations are prevented, and no pupil dilating medication is necessary prior to treatment.

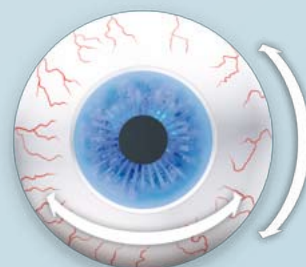
Automatic monitoring of the pupil size during static cyclotorsional control ensures additional safety. The illumination is automatically adjusted so that the pupil remains exactly the same size at the beginning of the treatment as it was at the preoperative examination.



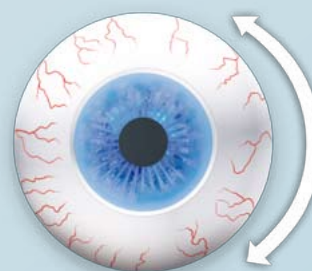
Z-tracking



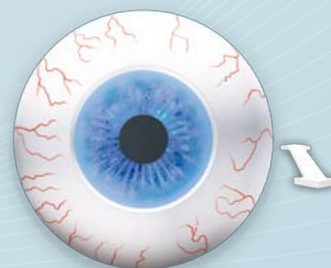
Linear movements (1<sup>st</sup> and 2<sup>nd</sup> dimensions)



Rolling movements (3<sup>rd</sup> and 4<sup>th</sup> dimensions)



Cyclotorsional movements (5<sup>th</sup> dimension)



Movements along the z-axis (6<sup>th</sup> dimension)







## Custom treatment planning

Each treatment is different: that is why the SCHWIND AMARIS 750S with the integrated and modularly designed SCHWIND CAM software makes it possible for you to plan treatment individually for your patients for a wide range of applications in corneal surgery.

Whether corneal or ocular wavefront – all the required diagnostic data are incorporated into planning. You can be sure that you will not leave out any detail important for the individual ablation.

### The advantages of the SCHWIND CAM modules:

#### ORK-CAM Module

A one-of-a-kind intelligent planning tool for extensive and customised refractive laser treatment. Whether “Aberration-Free” or customised treatments based on corneal or ocular wavefront data – aspheric ablation profiles are used. These minimise the induction of aberrations and ensure excellent contrast sensitivity.

#### PresbyMAX® Module

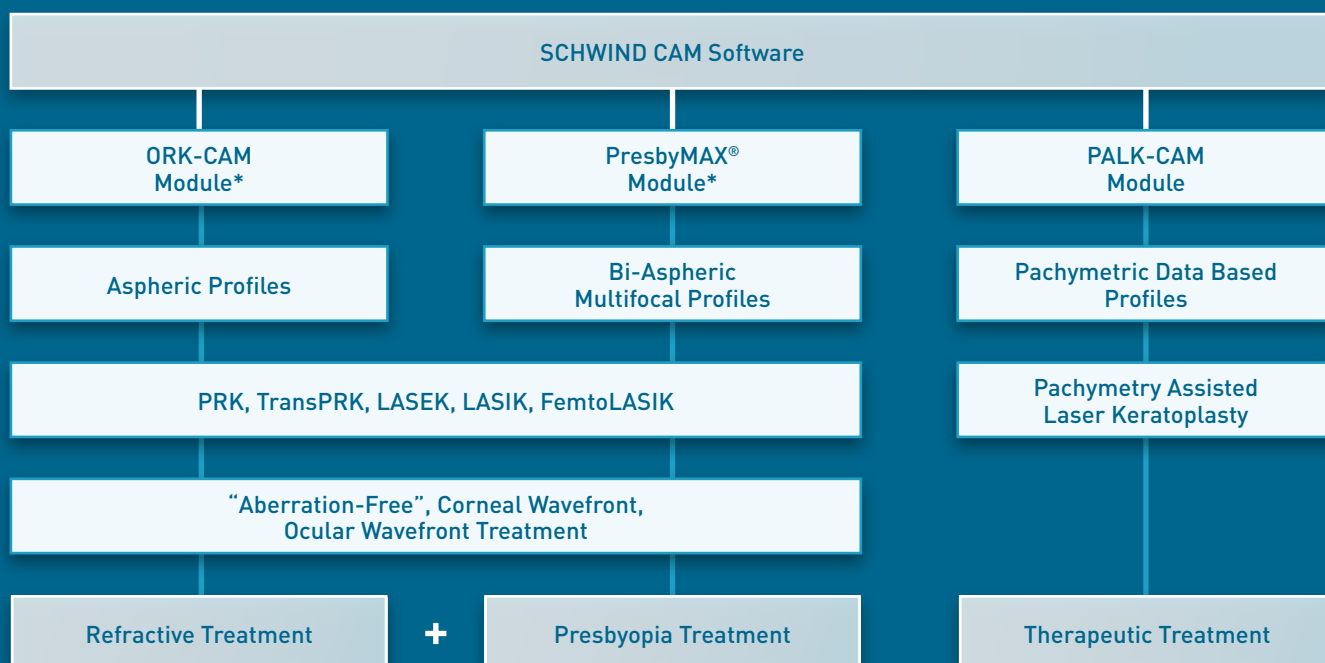
This makes it possible to safely and efficiently treat emmetropia, myopia and hyperopia, as well as astigmatism in patients whose accommodative response is limited. PresbyMAX is based on bi-aspheric, multifocal ablation profiles. Your patients will enjoy comfortable vision at any distance, as the depth of focus is increased as best as possible and contrast losses are minimised.

#### PALK-CAM Module

PALK-CAM allows for safe and extremely precise planning of lamellar keratoplasties. The innovative planning tool is based on the Pachymetry Assisted Laser Keratoplasty (PALK) method. It is suitable for patients who need a corneal transplant and whose endothelium is healthy. The procedure ensures a homogenous residual thickness of the stroma and results in excellent postoperative vision.



## Treatment spectrum with the SCHWIND CAM



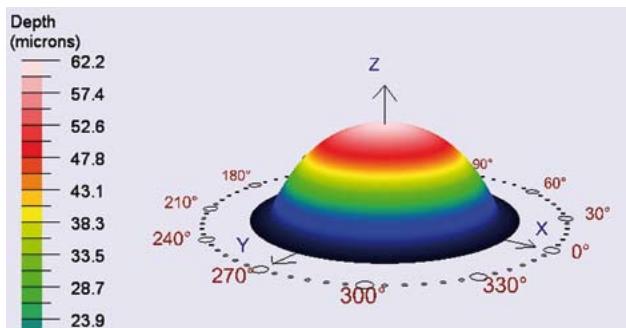
\* with Static Cyclotorsion Control



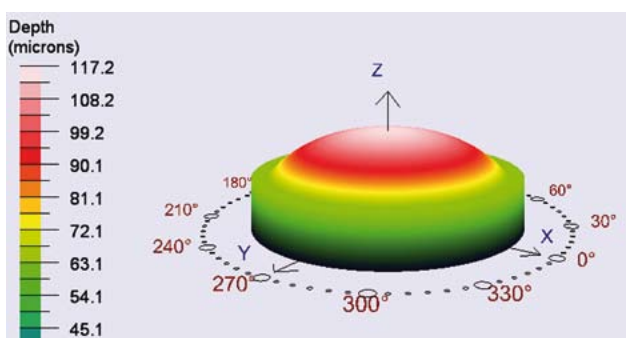
## The SCHWIND AMARIS® 750S – take the result as the benchmark for innovation

### TransPRK – “No-Touch” treatment

SCHWIND has further developed the established surface treatments and has adapted them especially for the ORK-CAM software module. The result is what we call TransPRK – the only surface treatment in which the epithelium is ablated with the laser. No instruments touch the eye, and the epithelium can be ablated more precisely and more easily than before. Smaller wound areas speed up the healing process. The ablation of the epithelium and the actual refractive laser treatment are performed in a single step. This substantially decreases the total treatment time. The ORK-CAM software module automatically calculates the ablation volume of the epithelium into the refractive ablation profile, and thereby takes into account that the epithelium is thicker in the periphery than in the centre.



PRK profile in myopia treatment



TransPRK profile in myopia treatment

### Ideal climatic conditions

That's innovation that works in practice: the unique particle aspiration system of the SCHWIND AMARIS technology ensures stable microclimatic conditions across the cornea. The SCHWIND flow design serves as the basis: a thin, laminar stream of air flows exactly 40 millimetres above the cornea.

Particles that could shield energy during the ablation are thereby effectively removed. At the same time, the climatic conditions remain constant, preventing the cornea from drying out.



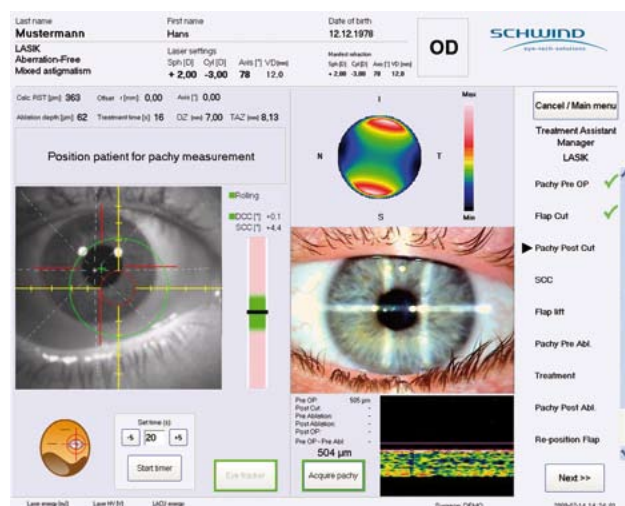
Innovative particle aspiration system – unique airflow design

» The SCHWIND laser fulfils a long list  
of crucial needs and wishes ex-  
pressed by eye surgeons in all areas. «

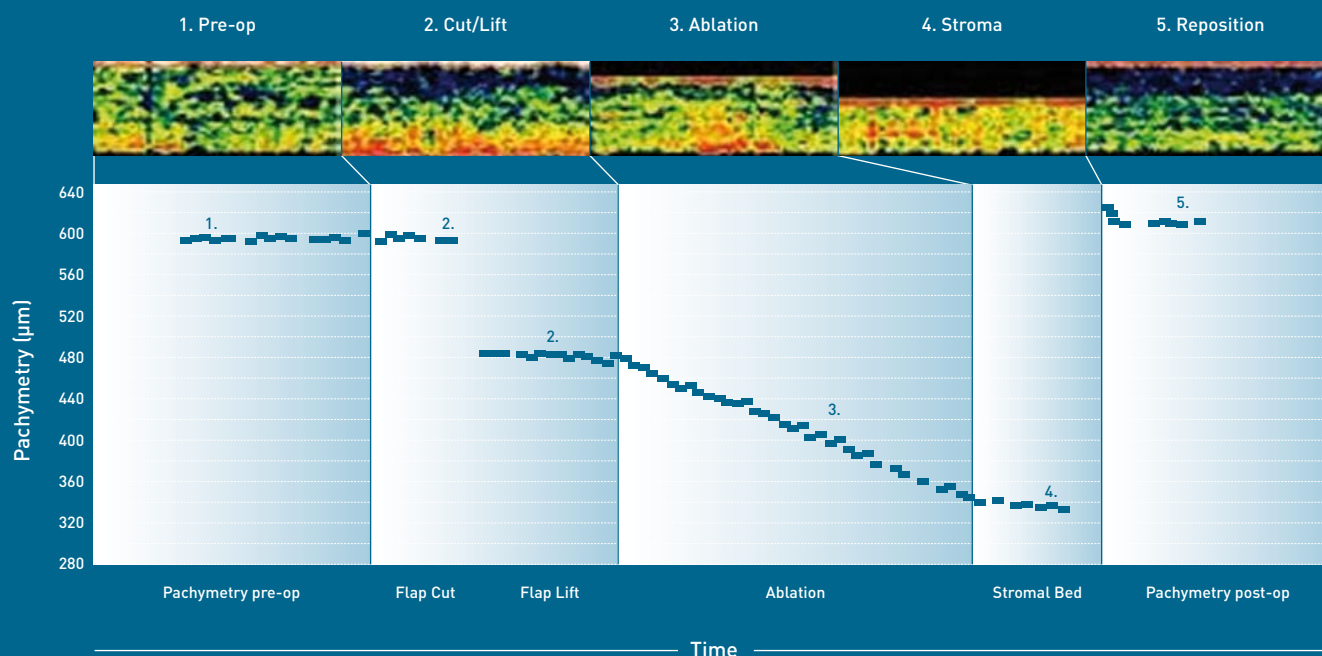
Thomas Neuhann, MD, EuroEyes ALZ Eye Clinic,  
Munich, Germany

### High resolution online pachymetry

The integrated contact-free optical pachymetry provides you with precise information about the thickness of the cornea throughout the entire duration of the treatment. The changes are measured and displayed on the treatment screen online. The measurements are taken before the preparation and after lifting of the flap, as well as during and after the laser treatment. This ensures that you know exactly how much you have already ablated at all times and how thick the remaining cornea still is, which increases the intraoperative safety in refractive treatments. All data are documented in the treatment log.



Display of changes in corneal thickness in real time



**A design that creates a new standard in quality**

You can tell just by looking at it that it is something special: The SCHWIND AMARIS 750S fulfils all the requirements placed on a modern and ergonomic design, and with its perfectly rounded shape, it is an asset to your practice in all aspects. All operating elements are easy to reach and clearly arranged – we have made working with the laser system as comfortable and as safe as possible for you.

**Many details – one goal: perfection in the result**

The 90 degree swivelling laser arm is also a contributing factor. It facilitates the preparation of the patient, as well as the use of other medical devices. This system is supplemented by the swivelling patient bed, which allows further stages of surgery without having to change the patient's position.

The software is operated in a straightforward manner via the touch screen. The monitor can be adjusted in any direction, making it easy for your assistant to work with it too. An additional display in the field of view of the surgeon always displays the most important information.

Our high-end microscope developed especially for the TotalTech Laser technology delivers good contrast, true colour brilliance and a superior depth of focus.



Height adjustable high-end microscope

The diagnostic slit lamp for flap checking is compactly designed and can be moved around two axes across the entire working area.



Diagnostic slit lamp

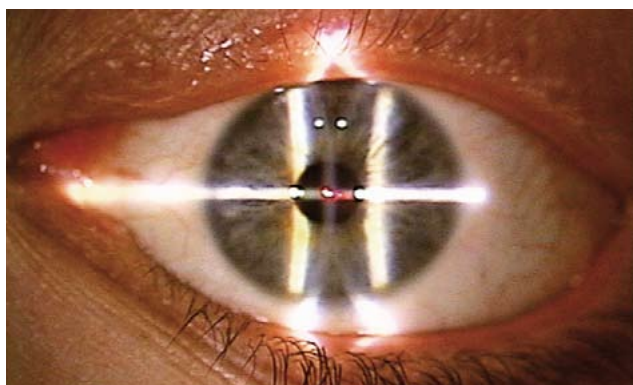


Swivelling patient bed



Swivelling laser arm





Integrated slit lights

You can verify the exact positioning of the patient eye with the help of the integrated slit lights. You can detect a tilting or decentration of the eye and easily adjust the position. At 235 millimetres, the free working distance between the

laser arm and the patient's eye is generously dimensioned. Your advantage: it is convenient and safe to work with the microkeratome.

Flushing with additional gas bottles can be dispensed with: within the system, the laser beam is passed through a vacuum.

With the SCHWIND AMARIS 750S, we take the security of your investment very seriously: the intelligent and sturdy construction ensures a high level of operational safety, low maintenance requirements and a long lifespan.

» The control elements are easy to reach and can be operated conveniently. «

Maria Clara Arbelaez, MD, Muscat Eye Laser Center, Muscat, Oman



SCHWIND AMARIS<sup>®</sup>  
750S

At a glance

Laser type	ArF-excimer laser, 193 nm, laser class 4
Beam size	0.54 mm Super-Gaussian profile (FWHM)
Repetition rate	750 Hz, with Intelligent Thermal Effect Control
Ablation time	1.5 s/D (Myopia, without astigmatism, 12.5 mm vertex distance, 6 mm optical zone)
Beam delivery	Flying spot, with Automatic Fluence Level Adjustment
Eye tracking	6D, 1050 Hz turbo eye tracking Reaction time: 3 ms Pupil and limbus tracking Compensation of lateral movements (1 <sup>st</sup> and 2 <sup>nd</sup> dimensions) Rolling balance (3 <sup>rd</sup> and 4 <sup>th</sup> dimensions) Optional: Advanced Cyclotorsion Control – static and dynamic (5 <sup>th</sup> dimension) Optional: Active z-tracking compensation (6 <sup>th</sup> dimension) Automatic pupil size control Pupil centre shift compensation
SCHWIND CAM software	ORK-CAM module – refractive treatment PresbyMAX® module – presbyopic treatment (PPF) PALK-CAM module – therapeutic treatment (PPF)
Refractive treatment range	PRK, TransPRK, LASEK, LASIK, FemtoLASIK, PTK "Aberration-Free" treatments Customised treatments based on corneal and ocular wavefront
Integrated online pachymetry	Optional
Particle aspiration system	Integrated
Laser arm	90° swivelling
Patient bed	Up to 90° swivelling
Treatment Assistant Manager	Course of treatment can be configured individually
Surgical microscope	Superior depth of focus Tube swivelling range 10° to 50° Camera beam splitter integrated Optional: Camera video system with DVD recorder
Computer	Panel PC – 17" touch screen monitor, pivotable on 2 axes, additional dot-matrix-display, washable keyboard with integrated touchpad
Diagnostic slit lamp	Optional Swivelling on 2 axes 4 selectable diaphragms (3 slits, 1 circle)
Working distance	235 mm
Voltage / power consumption	100, 110, 120, 127 VAC, 50/60 Hz, max. 20 A 208, 220, 230, 240 VAC, 50/60 Hz, max. 10.5 A
Footprint (LxWxH) including patient bed	2634 mm x 1443 (±50) mm x 1361 mm
Compliance	CE conformity in accordance with Medical Device Directive (MDD) 93/42/EEC

Optimum functionality, reliability and compliance with all legal regulations can only be assured through the use of products supplied by SCHWIND – whether as single items or as a combined system.