

# SCHWIND AMARIS – We have redefined perfection for you



# SCHWIND AMARIS – the TotalTech Laser

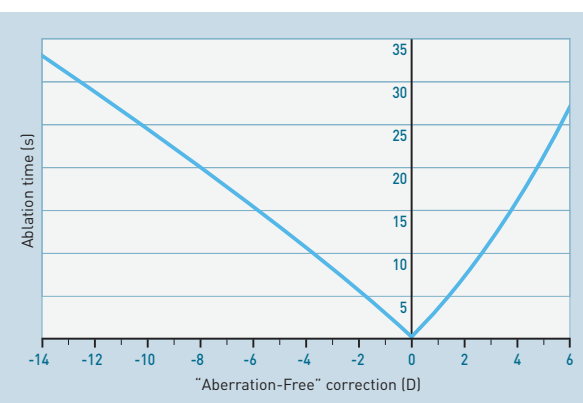
Not only can it do anything – it can do it outstandingly well, too. The SCHWIND AMARIS is a “TotalTech Laser”. It is the new generation of excimer lasers, redefining perfection in refractive corneal surgery.

## High performance in any discipline

Fast, strong, precise, and safe – in every situation, the SCHWIND AMARIS is a step ahead. It combines very high ablation speed with a turbo eye tracker actively compensating eye movements in all six dimensions. This ensures the perfect balance between extremely high speed and accuracy. The perfect solution: tailor-made treatment planning with the integrated SCHWIND CAM software. The concept of maximum safety is completed through the integration of online pachymetry. Unique ergonomic advantages optimize your treatment process. The benefit for you: The best possible prerequisites for excellent results.

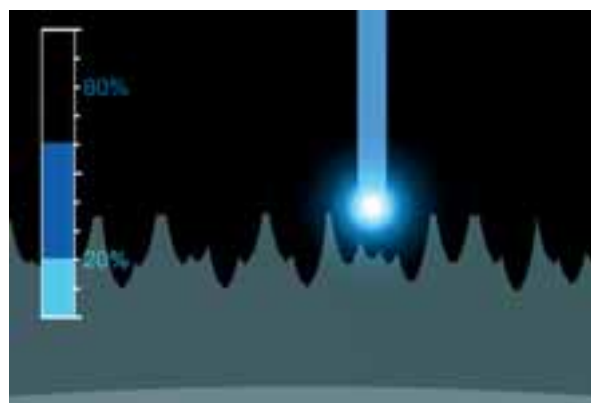
## Maximum precision – minimum treatment time

Trusted speed: Quick and reliable, the SCHWIND AMARIS has an impressive “true” repetition rate of 500 Hz. This incredibly high level of performance is achieved safely in combination with an unusually fast eye tracker. The system uses the “Automatic Fluence Level Adjustment” method for optimal ablation control. Depending on the planned refractive correction, about 80 percent of the corneal ablation is performed with a high fluence level, thus speeding up the treatment. Fine correction is performed with a low fluence level, improving the resolution. The advantage is that the laser treatment is significantly shortened, especially when higher refractions are corrected – without compromising on precision and safety.



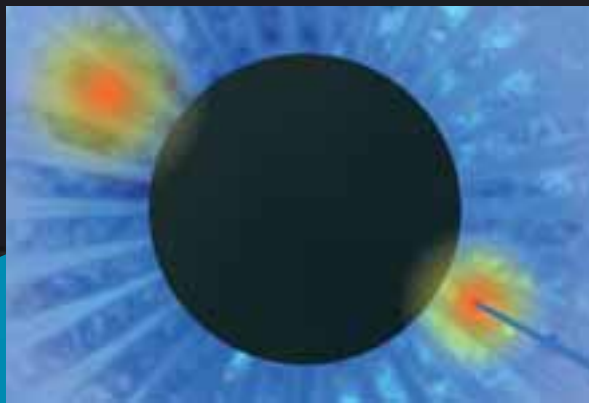
Ablation time with “Aberration-Free” correction\*

\*without astigmatism, 12 mm vertex distance, LASIK, 6 mm optical zone, nominal fluence



Automatic Fluence Level Adjustment

# Faster, stronger, more precise.



#### Gentle and effective

The "Intelligent Thermal Effect Control" ensures thermally optimized, dynamically adapted distribution of the laser pulses during the treatment. This means that there is always enough time for each area on the cornea to cool down between laser pulses.

#### Intelligent Thermal Effect Control

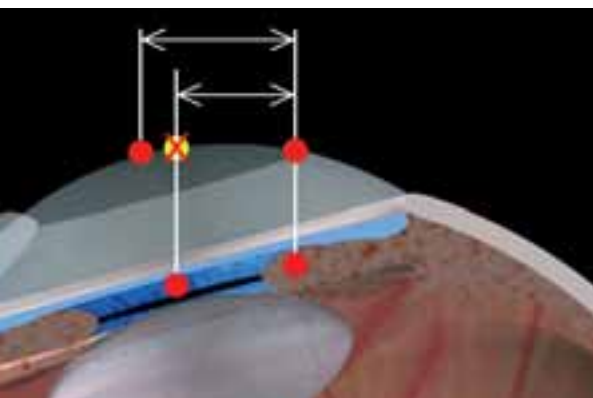
This prevents damage to the cornea after long exposure times – even with the SCHWIND AMARIS' very high ablation speed.

With its minimum beam size of 0.54 mm (FWHM) and its Super-Gaussian beam profile, the SCHWIND AMARIS ensures very high ablation accuracy, resulting in exceptionally smooth treatment surfaces.

## Six dimensions – six good reasons

The SCHWIND AMARIS eye tracker impresses with groundbreaking performance features. The position of the eye is monitored 1050 times per second with an unequalled reaction time of three milliseconds. Moreover, the eye tracker continuously follows eye movements in all six dimensions and compensates them actively, thus providing perfect treatment results.

Exact centration and spot placement is a key factor at all stages of a refractive correction. Besides the linear eye movements in the first and second dimensions (x/y axis), rolling movements (third and fourth dimensions) are determined and compensated. They are caused by a tilting of the head or of the eye.



Rotation balance

### Advanced Cyclotorsion Control

The SCHWIND AMARIS recognizes and compensates for eye torsions around the visual axis. These eye movements in the fifth dimension are referred to as cyclotorsion. Static cyclotorsion control compensates for torsional differences in eye positions between a patient in upright and supine position, whereas dynamic cyclotorsion control compensates for the torsional movements of the eye even during laser treatment.

### Z-Tracking

The unique active z-tracking feature of the SCHWIND AMARIS eye tracker follows and compensates for movements along the z-axis (sixth dimension) caused by upward and downward movements of the head or of the eye.

### Limbus tracking

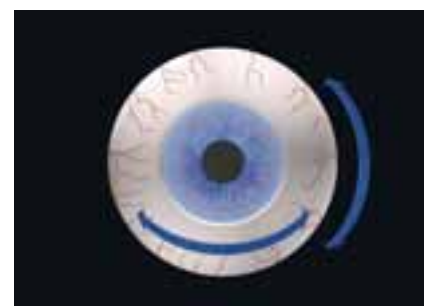
As well as recognizing pupil position, the eye tracker detects the limbus at the same time. In contrast to the pupil size, the limbus size remains constant. Therefore, the limbus is used as a reference for ablation, meaning that the original centre of ablation is maintained throughout. The great advantage for your patients is that decentrations are prevented, and no pupil-dilating medication is necessary prior to the treatment.

### Automatic pupil size control

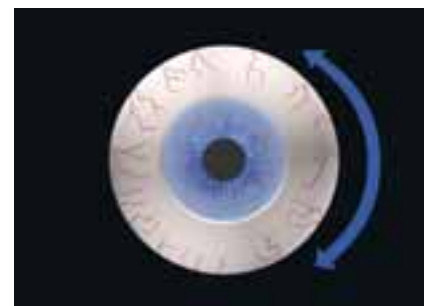
Automatic monitoring of the pupil size during the static cyclotorsional control makes for additional safety. The illumination is automatically adjusted in such a way that the pupil is exactly the same size at the beginning of the treatment as it was at the preliminary examination.



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



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



Cyclotorsion (5<sup>th</sup> dimension)



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



## Perfect Planning

The modular SCHWIND CAM offers you tailor-made treatment planning for a broad application range in refractive and therapeutic corneal laser surgery. Whether you perform corneal and ocular wavefront based treatments or corneal pachymetry based treatments – all required diagnostic data are incorporated into planning so that you don't miss out any important detail for individual ablation.

Practice-oriented settings support you in reaching optimum treatment results. Individual parameters can of course be changed. Every setting, like for example residual stromal thickness, is checked for plausibility for ensuring safe and comfortable treatment planning.

Planning files can be easily created even before the day of surgery. Treatments are planned on the SCHWIND diagnostic systems or directly on the SCHWIND AMARIS.

## SCHWIND CAM modules at a glance

### ORK-CAM

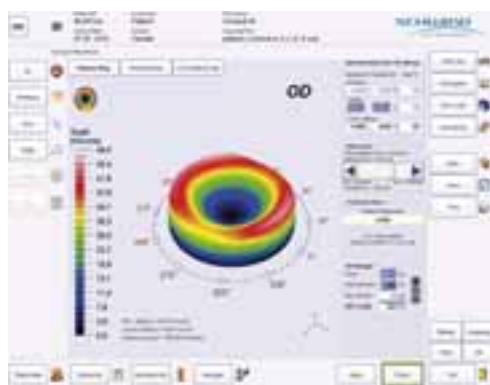
ORK-CAM is a unique planning tool for refractive laser corrections. It offers you individual and comprehensive treatment planning. Whether „Aberration-Free“ or „Customized“ treatments, aspheric ablation profiles are used, minimizing the induction of aberrations and providing superb vision and contrast.

### PresbyMAX®

PresbyMAX® allows the safe and efficient treatment of emmetropic, myopic and hyperopic as well as astigmatic patients whose accommodative response is limited. PresbyMAX® is based on bi-aspheric, multifocal ablation profiles. Patients obtain comfortable vision at all distances as PresbyMAX® enlarges the depth of focus and minimizes contrast losses.

### PALK-CAM

PALK-CAM allows for safe and extremely precise planning of laser-guided corneal transplants. The innovative planning tool is based on the new method Pachymetry Assisted Laser Keratoplasty (PALK). It is suited for patients who need corneal transplants and whose endothelium is intact.



Comprehensive treatment planning

### Particle-free climatic conditions

Pure innovation. The unique particle aspiration system of the SCHWIND AMARIS provides for stable environmental conditions over the cornea – independent of any air movement in the operating room. The result of SCHWIND's comprehensive flow analyses is that energy-reducing particles are removed during ablation with the aid of directed airflow. The laser beam is guided in a vacuum within the system.

### The safe companion

We've thought of everything when it comes to safety. The Treatment Assistant Manager (TAM) software module, especially developed for the SCHWIND AMARIS, guides you through the treatment safely and comfort-



each save their own settings. All treatment steps can be recorded in full.

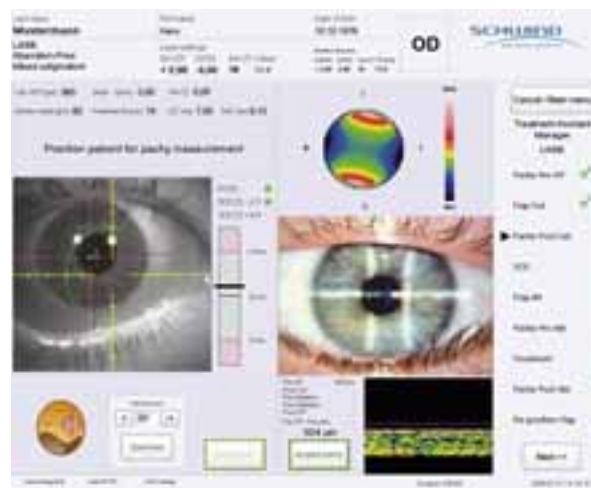
Innovative particle aspiration system

### High-resolution online pachymetry

This concept of maximum safety is completed through the integration of high-resolution online pachymetry. During the surgical procedure, changes in corneal thickness are displayed in real time. Besides the continuous recording, targeted measurements take place before flap



TAM – Comfortable treatment guidance



Integrated online pachymetry

ably. Each treatment step is defined and is displayed on the treatment monitor. The default settings, such as illumination intensity or microscope magnification, are set at levels that are practical for the surgeon, but can also be changed or expanded and saved. Naturally, several users can

prepare and after lifting of the flap, as well as during and after the laser ablation. This allows you to make on-the-spot decisions on the best way to proceed with a refractive correction – at any time. The data are documented in a treatment log.



Swivelling patient bed

### Flexibility and comfort

The design of the SCHWIND AMARIS follows ergonomic principles to make it as easy to handle as possible. All operational controls are easy to reach and clearly arranged.

The laser arm can be swivelled 90° – an invaluable advantage during patient preparation or for use with other medical devices.

The patient bed also offers excellent user comfort. It can be swivelled through variable angles of up to 90°, so that you can also use the bed separately from the SCHWIND AMARIS.

The treatment is monitored and controlled by a 17" panel PC with touch screen. The monitor is adjustable in any direction – assisting personnel can work with it comfortably too. An additional display within the operator's field of view shows the most important information.

### We've thought of every detail

The high-end microscope developed especially for use with the excimer laser boasts 14° stereopsis. It suits natural, three-dimensional vision and delivers good contrast, true color brilliance and a superior depth of focus. The infinitely variable tube swivel range of 10° to 50° always allows selection of the best possible sitting position.

The diagnostic slit lamp for flap checking impresses due to its compact construction. It can be rotated around two axes over the entire working area.

The free working distance between the laser arm and the patient's eye is, at 235 millimetres, generously dimensioned. You can work with the microkeratome comfortably and safely.



Swivelling laser arm



## SCHWIND AMARIS

## At a glance

Laser type	ArF Excimer laser, 193 nm, laser class 4
Beam size	0.54 mm Super-Gaussian profile (FWHM)
Repetition rate	500 Hz, with Intelligent Thermal Effect Control
Beam delivery	Flying spot (with Automatic Fluence Level Adjustment)
Eye tracking	6D, 1050 Hz turbo eye tracking Pupil and limbus tracking Compensation of lateral movements (1 <sup>st</sup> and 2 <sup>nd</sup> dimensions) Rotation 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) Optional: PresbyMAX module (presbyopic treatment) Optional: PALK-CAM module (therapeutic treatment)
Refractive treatment range	PRK, TransPRK, LASEK, LASIK, FemtoLASIK, PTK "Aberration-Free" treatments Customized 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	Leica-based 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 axis, additional dot-matrix-display, washable keyboard with integrated touchpad
Diagnostic slit lamp	Optional Swivelling on 2 axis 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

Optimal 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 system combination.