



NIDEK Advanced Vision Excimer Laser System

NAVEX Quest



THE ART OF EYE CARE

NIDEK Advanced Vision Excimer Laser System *NAVEX Quest*

Delivering Ultimate Solutions Today

NIDEK delivers the NAVEX *Quest*, the evolutionary customized refractive surgery platform.

The NAVEX *Quest* is a unique combination - incorporating the *Quest / EC-5000CXIII* excimer laser system, the OPD-Scan III refractive power / corneal analyzer, and the Final Fit™ software - that offers advanced technologies, superior engineering, excellent workmanship, and outstanding clinical outcomes.

With these advanced and innovative technologies, the NAVEX *Quest* provides all the tools needed for performing customized refractive surgery procedures and helps surgeons achieve the optimum visual outcome.



To provide easy alignment with greater accuracy and precision, using the advanced technology of the Torsion Error Correction (TEC), 1 kHz Eye Tracking System (ETS), and motorized magnification control.



To realize a uniform ablated surface and the optimized custom ablation with highest precision, using an innovative scanning technology including super flex scan and MultiPoint™ ablation systems.



To offer optimum refractive treatments with greater precision, using intelligent diagnostic technologies of the OPD-Scan III, and the Final Fit™ software.





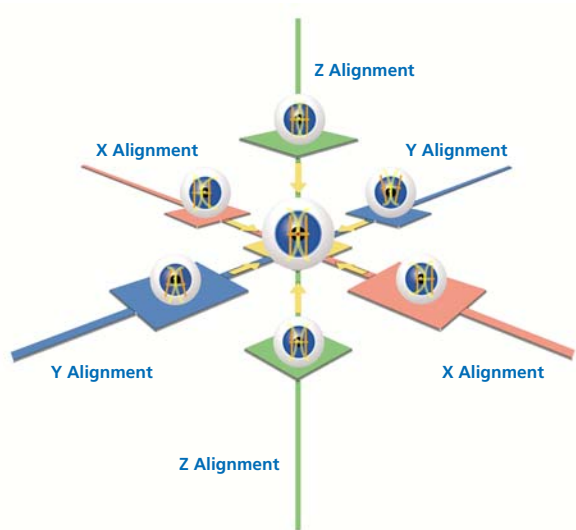
Begin & End Your Voyage with the NAVEX *Quest*
Delivering to You the Ability to Achieve
Your Quest with the NAVEX *Quest*



Excimer Laser System *Quest*



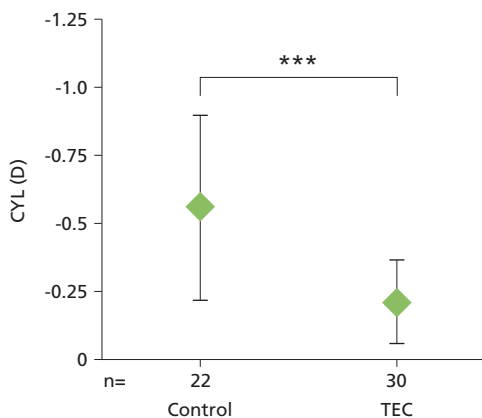
An advanced technology to provide easy alignment with greater accuracy and precision.



■ Torsion Error Correction

The Torsion Error Correction (TEC) detects and compensates cyclotorsion and improves cylinder correction accuracy while ensuring that the laser ablates the patient's eye with unparalleled precision.

The safety laser stop function automatically stops laser ablation, if the TEC cannot follow the patient's eyes.

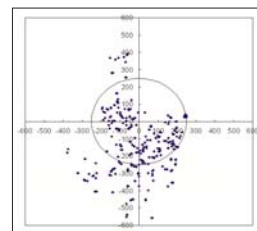


Manifest refractive cylinder at 3 months of eyes that underwent myopic LASIK or PRK with or without active torsion error compensation (TEC).

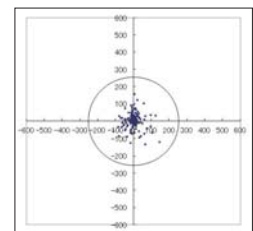
(*** $p < 0.001$, Welch's test)

■ 1 kHz Eye Tracking System

Built-in advanced 1 kHz Eye Tracking System (ETS) utilizes high-speed digital image processing technology to follow the patient's eye, ensuring accurate and precise laser alignment and delivery during the procedure. With the advanced offset function, the surgeon can set the tracking point at anywhere within ± 1 mm from the pupil center as needed. Also, the alignment speed has been greatly improved, allowing faster and smoother operation. The safety laser stop function automatically stops laser ablation if the ETS cannot follow the patient's eye.



Without ETS



With 1 kHz ETS

*Sampling rates are 100 milliseconds.

■ Motorized Magnification Control

Advanced motorized magnification control, allows the surgeon to change the magnification easily, using a switch on the controller.

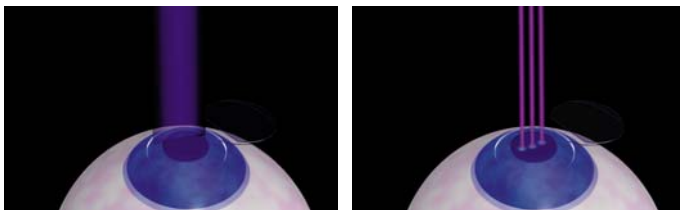




An innovative scanning technology to realize a uniform ablated surface and the optimized custom ablation with greater precision.

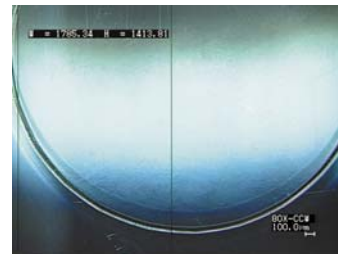
■ **MultiPoint™ Ablation**

Enhanced technology enables about three times faster MultiPoint™ ablation than before. MultiPoint™ ablation system can correct certain high-order aberrations. MultiPoint™ customized ablation module divides the rectangular-shaped laser beam into six equal gaussian spots of 1.0 mm in diameter, which can be individually or simultaneously projected onto the cornea for a highly precise ablation of small area irregularities.



■ **Super Flex Scan**

Advanced energy delivery systems - super flex scan - creates a unique slit scanning ablation profile that improves accuracy of the refractive correction. The scanning slit beam smoothly sweeps the cornea, quickly ablating tissue with cool, overlapping ultraviolet energy.



Slit scanning ablation surface

Excimer Laser System EC-5000CXIII

■ **Eye Tracking System**

Standard: 200 Hz, Optional: 1 kHz

■ **Torsion Error Correction or Detection (optional)**

Torsion Error Correction (TEC)
Online Torsion Error Detection (Online TED)
Torsion Error Detection (TED)

■ **Motorized Magnification Control**



■ **MultiPoint™ Ablation (optional)**

■ **Super Flex Scan**



The EC-5000CXIII in the photo includes optional Zeiss tilting microscope and LCD sub monitor in delivery arm.

Refractive Power / Corneal Analyzer OPD-Scan III

The OPD-Scan III provides information on wavefront aberrometry, corneal topography, refraction, keratometry, and pupillometry in one unit, offering highly accurate and reliable data for optic diagnostics.

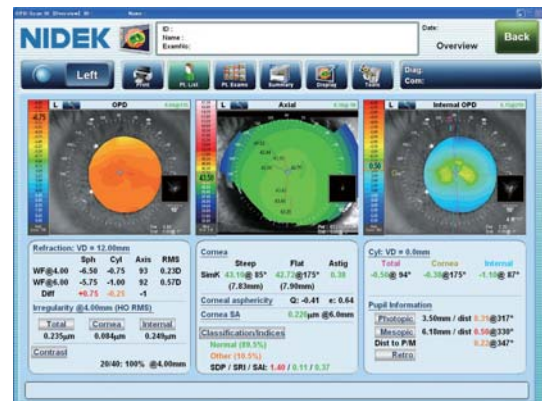


An intelligent diagnostic technology to offer optimum refractive treatments with greater precision.



■ A Map and Guide for Optimal Clinical Decisions

The overview summary provides refractive data and incorporates corneal disease analysis software and data for cataract and refractive surgery.



■ Wider Measurement Area

The OPD-Scan III's 9.5 mm diameter wavefront aberrometry ensures full coverage of almost any pupil.

Data from 2,520 data points, 175% of the industry leading OPD-Scan II, increases measurement accuracy and spatial resolution.

■ Greater Topography Resolution, Blue Placido Rings

33 blue placido mires provide a minimum of 11,880 data points which is more than 170% of the OPD-Scan II.

The blue wavelength allows greater precision in ring detection. The reduced illumination creates a comfortable patient experience.

■ Tiltable Color LCD Touch Screen

The 10.4-inch color LCD touch screen tilts, allowing viewing from different angles for easier measurements.

Custom Ablation Software Final Fit™

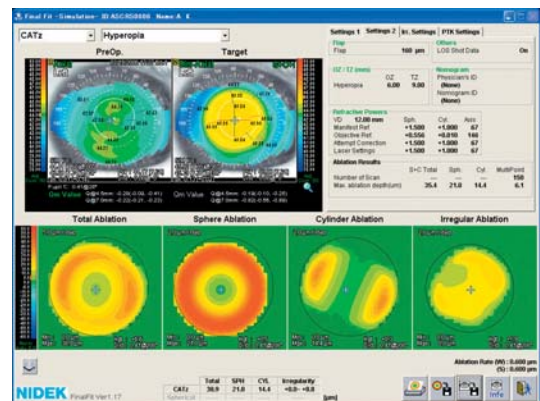
The Final Fit™ software receives the measured data from the OPD-Scan III, and performs a simulation of postoperative corneal shape, and generates excimer laser shot data using the data imported from the OPD-Scan III and target correction data that are entered.



An intelligent diagnostic technology to offer optimum refractive treatments with greater precision.

■ Shot Data Generation

The Final Fit™ software evaluates and converts the OPD-Scan III's refractive and topographic data to produce the precise customized ablation parameters for the excimer laser system. These unique algorithms control the MultiPoint™ ablation module to enable multiple, simultaneous localized ablations to correct higher order optical aberrations, corneal irregularities and decentered ablations.



■ Nomogram Functions

The Final Fit™ software offers NIDEK's standard nomograms, which are tables for correcting theoretical amounts of correction in diopters based on clinical results and using various environmental factors like temperature and humidity.

■ Comparison of Postoperative and Preoperative Data

The Final Fit™ software compares postoperative data measured by the OPD-Scan III with the pre-operative or target data.

■ Eye Tracking Offset Function*

The Final Fit™ software outputs the eye tracking offset information based on shot data calculation.

*available with Final Fit version 1.17 or later

Quest / EC-5000CXIII Specifications

| Model | Quest | EC-5000CXIII |
|--------------------------------|---|---|
| Therapeutic laser | | |
| Beam control | 1.0 mm spots & slit scanning | |
| Laser source | ArF Excimer laser | ← |
| Wavelength | 193 nm | |
| Repetition rate | 5, 10, 20, 30, 40, 50 Hz (PTK, Myopia) 34, 41, 46 Hz (Hyperopia) | |
| Cooling system | Ambient air cooling | ← |
| Ablation size | | |
| PTK | Treatment zone max. 10.0 mm | |
| Myopia | Optical zone 3.0 to 6.5 mm | ← |
| Hyperopia | Transition zone max. 10.0 mm | |
| | Optical zone 5.5 to 6.5 mm | |
| | Transition zone max. 10.0 mm | |
| Alignment | Diode laser (red) aiming beam and diagonal cross illumination 3-D joystick remote controller (XY auto alignment) | ← |
| Eye Tracking System (ETS) | | |
| Sampling rate | 1 kHz | 200 Hz (standard), 1 kHz (optional) |
| Detectable pupil size | ø1.5 to 7.8 mm | ø1.5 to 7.8 mm |
| Torsion Error Correction (TEC) | | |
| Control | Active | ←(optional) |
| Detectable pupil size | ø1.5 to 6.0 mm | |
| Detectable angle range | ±15° | |
| Correctable angle range | ±6° | |
| Power supply | AC 200 to 240 V, 50 / 60 Hz | ← |
| Power consumption | Max. 3.3 kVA | ← |
| Dimensions / Mass | 1,450 (W) x 1,400 (D) x 1,400 (H) mm / 650 kg 57.1 (W) x 55.1 (D) x 55.1 (H) " / 1,430 lbs. | ← |
| Standard accessories | MultiPoint™ ablation unit, Zeiss tilting microscope, Beam splitter for microscope video camera, LCD sub monitor in delivery arm, Motorized magnification control, Smoke evacuator, PC, LCD monitor, Key board, Foot switch, Duct hose, Dust cover, Laser goggles, Calibration unit, Lensmeter, Printer, Gas valve warning sheet, Gas valve open / close plate | Takagi tilting microscope, Motorized magnification control, Smoke evacuator, PC, LCD monitor, Key board, Foot switch, Duct hose, Dust cover, Laser goggles, Calibration unit, Lensmeter, Printer, Gas valve warning sheet, Gas valve open / close plate |
| Optional accessories | Takagi tilting microscope, Foot controller | MultiPoint™ ablation unit, Zeiss tilting microscope, 1 kHz ETS, TEC, Online TED, TED, Beam splitter for microscope video camera, LCD sub monitor in delivery arm, Foot controller |

OPD-Scan III Specifications

| | |
|-------------------------|--|
| Wavefront aberrometer | |
| Measurement principle | Automated objective refraction (dynamic skiascopy) |
| Spherical power range | -20.00 to +22.00 D |
| Cylindrical power range | 0 to ±12.00 D |
| Axis range | 0 to 180° |
| Measurement area | ø2.0 to 9.5 mm (7 zone measurement) |
| Data point | 2,520 points (7 x 360) |
| Map type | OPD, Internal OPD, Wavefront, Zernike graph, PSF, MTF graph, Visual acuity |
| Topographer | |
| Measurement rings | 33 vertical, 39 horizontal |
| Measurement area | ø0.5 to 11.0 mm (R = 7.9 mm) |
| Data point | 11,880 points and more |
| Map type | Axial, Instantaneous, "Refractive", Elevation, Gradient, Wavefront, Zernike graph, PSF, MTF graph, Visual acuity |
| Auto tracking | X-Y-Z directions |
| Display | 10.4-inch color LCD touch screen |
| Printer | Built-in thermal type line printer for data print External color printer (optional) for map print |
| Power supply | AC 100 to 240 V, 50 / 60 Hz |
| Power consumption | 110 VA |
| Dimensions / Mass | 284 (W) x 525 (D) x 533 (H) mm / 23 kg 11.2 (W) x 20.7 (D) x 21.0 (H) " / 51 lbs. |

The 1 kHz ETS and custom ablation (OPDCAT) are not approved by the FDA. Quest's product identification - Excimer Laser Corneal Surgery System EC-5000. Specifications may vary depending on circumstances in each country. Specifications and design are subject to change without notice.

Final Fit™ Specifications

| | |
|-----------------------|---|
| Ablation mode | OATz ablation (OATz version) CATz ablation (CATz version) OPDCAT ablation (OPDCAT version) |
| Data import / export | Interface connectors provided with the computer |
| Database | Patient information, Exam data |
| Computer requirements | |
| CPU | Pentium III 1 GHz or higher |
| Memory | 256 MB or more (512 MB or more is recommended.) |
| Free disk space | 500 MB or more |
| Graphic | 1,024 x 768 pixels or more, 32 bit true color or more |
| CD-ROM drive | |
| USB port | |
| Keyboard & mouse | |
| OS | Windows Vista Business SP2 32 bit English version Windows 7 Professional SP1 32 bit / 64 bit English version |

* Windows is a trademark of Microsoft Corporation U.S.A.



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