Delivering Ultimate Solutions Today

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

The NAVEX Quest is a unique combination - incorporating the new, advanced, fully-integrated Quest Excimer laser system including the OPD-Scan III refractive power / corneal wavefront analyzer, the OPD-Station software, the FinalFit™ software - that offers advanced technologies, superior engineering, excellent workmanship and outstanding clinical performance and clinical outcomes. With these advanced and innovative technologies, the NAVEX Quest provides all the tools needed for performing customized, topographic assisted refractive surgery procedures and assists surgeons achieve the optimum visual outcome.

**NAVScan**

The Nidek Excimer creates a uniform ablated surface and the optimized custom ablation with highest precision, using an innovative scanning technology including Flex Scan and MultiPoint™ Ablation systems of the Quest.

**NAVFocus**

To provide easy alignment with greater accuracy and precision, using the advanced technology of the Torsion Error Detection (TED), 200Hz Eye tracking system and Motorized Magnification Control of the Quest.
The Nidek Excimer creates a uniform ablated surface and the optimized custom ablation with highest precision, using an innovative scanning technology including Flex Scan and MultiPoint™ Ablation systems of the Quest.

To provide easy alignment with greater accuracy and precision, using the advanced technology of the Torsion Error Detection (TED), 200Hz Eye tracking system and Motorized Magnification Control of the Quest.

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

Begin & End Voyage with the NAVEX Quest
Delivering to You the Ability to Achieve
Your Quest with NAVEX Quest
Excimer Laser System

**Quest**

NIDEK offers the Quest Excimer Laser System - the ultimate refractive corneal surgery system built over years of experience to provide reliable performance with accuracy and stability.
An advanced technology to provide **easy alignment** with active tracking for greater accuracy and precision.

### Torsion Error Detection

The Torsion Error Detection (TED) allows for the transfer of the OPD Anterior Segment image, from the patient’s sitting position during the OPD exam, to the Quest to allow for accurate alignment. This reduces induced cylinder errors caused by cyclo-rotation when the patient is aligned immediately prior to surgical treatment.

### 200Hz Eye Tracking System

Built-In Advanced **200Hz 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 1mm 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.

*Sampling rates are 100 msec.*

### Motorized Magnification Controls

The Quest offers Advanced motorized magnification and fine focus controls, allowing the surgeon to easily change the magnification using the joystick panel controls.
An innovative scanning technology to realize a uniform ablated surface and the optimized custom ablation with NIDEK’s highest precision.

**Flex Scan**

Advanced Energy Delivery Systems - Flex Scan - creates an 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.

**MultiPoint™ Ablation**

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.
An innovative scanning technology to realize a uniform ablated surface and the optimized custom ablation with NIDEK's highest precision. NAVScan Slit Scanning Ablation Surface 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.

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.

Optimum Functionalities

- **User-friendly Remote Controller**
  All necessary operations before laser ablation, such as TED alignment, magnification change, focus, illumination, eye tracking are controllable at hand on the optimally congregated remote controller.

- **Special Function LCD Monitor on Laser Arm**
  The LCD Monitor displays information and laser parameters for easier operation - these include eye tracking image, TED image, laser operation time and split screen for OPD photo/laser axis matching prior to tracking activation.

- **Superior Protective & Safety Mechanisms**
  The system has an integrated automated mirror protection window to keep the optical mirrors clean. The special window opens when the "Laser Ready" button is pressed and closes when the operation is completed.
The OPD-Scan III provides information on wavefront aberrometry, corneal topography, refraction, keratometry, and pupillometry detection and imaging of photopic and mesopic pupil, in one unit, offering highly accurate and reliable data for clinical diagnostic and to plan topography assisted LASIK unique for each patient.

**Unified Diagnostics**

- **High Speed Printer with Easy loading and Auto Cutter**
  The OPD-Scan III incorporates a high speed user-friendly printer. Printer paper can be easily changed. Printed data sheets are automatically cut for convenience.

- **Tiltable Color LCD Touch Screen**
  The 10.4-inch color LCD touch screen tilts, allowing viewing from different angles for easier measurements.

- **Wider Measurement Area**
  The OPD-Scan III’s 9.5 mm diameter wavefront aberrometry ensures full coverage of almost any pupil. Using data from 2,520 data points to increase results in greater spatial resolution and accuracy.

- **Greater Topography Resolution, Blue Placido Rings**
  33 blue placido mires allow greater precision in ring detection. The reduced illumination results in a comfortable patient experience.
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.

Interpreting the Overview summary:

1. **Irregularity** helps determine the best strategy for vision correction. Separation into Total, Corneal and Internal components allows determination of the source of the optical pathology.

2. **PSF images** of OPD, Axial, and Internal OPD map simulate objective retinal visual quality from each component of the eye for easy clinical assessment and patient education.

3. **Corneal Spherical Aberration** aids in the selection of aspheric IOLs and contact lenses.

4. Color coded **Classification Indices** help identify post-LASIK corneas and Keratoconus.

5. The **Astigmatism index** aids the implantation of toric IOLs such as incision placement and lens alignment.

6. A **retroillumination** image of cataracts captured during the OPD exam allows better understanding of pupillary effects on vision and in patient education.

A number of summaries are available in the OPD-Scan III, customizable to the clinician’s preference.
The Final Fit™ software uses OPD-Scan III data, and performs a simulation of postoperative corneal shape, and generates Excimer laser shot data. This is a comprehensive surgical treatment planning tool that provides a variety of options to maximize treatment outcomes.

Unified Analysis

- **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 aberrations, corneal irregularities and decentered ablations.

- **Nomogram Functions**
  The Final Fit™ software offers NIDEK’s standard nomograms.

- **Comparison of Postoperative and Preoperative Data**
  The Final Fit™ software compares postoperative data measured by the OPD-Scan III with the preoperative or target data.

- **Final Fit™ and Topography-Assisted Treatment**
  The Final Fit™ software generates customized ablation for each eye based on the individual's astigmatism and the topography data transferred directly for each patient exam as captured by the OPD-Scan III. The Final Fit™ program allows the surgeon to customize the treatment and create a shot file for the Excimer. Spherical and Cylinder errors are programmed for correction and cornea irregularities are treated in accordance with FDA approved nomograms.
New Innovative Ablation Algorithms

New innovative ablation algorithms (CATz, OATz) provide exceptional treatment accuracy and visual outcomes.

OATz
- Optimized Aspheric Treatment Zone-
  Ablations with Transition Zone (TZ) optimized to prevent Longitudinal Spherical Aberration (Red Ring), which can cause the loss of night vision, halos, glares and star bursts

CATz
- Customized Aspheric Treatment Zone-
  OATz with topography-assisted multipoint ablation to reduce corneal irregularities, such as irregular astigmatism, de-center, central island, etc.

Clinical Cases of Custom Ablation
The OPD-Station software makes a variety of corneal, total eye and internal eye analyses possible using advanced, unique and intelligent functions.

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

- **Assessment of OPD Image**  
  Efficient selection of best treatment maps.

- **OPD Station Map**
**Quest Specifications**

<table>
<thead>
<tr>
<th>Therapeutic laser</th>
<th>1.0 mm spots &amp; slit scanning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam control</td>
<td></td>
</tr>
<tr>
<td>Laser source</td>
<td>ArF Excimer laser</td>
</tr>
<tr>
<td>Wavelength</td>
<td>193 nm</td>
</tr>
<tr>
<td>Repetition rate</td>
<td>5, 10, 20, 30, 40, 50 Hz (PTK, myopia) 34, 41, 46 Hz (hyperopia)</td>
</tr>
<tr>
<td>Cooling system</td>
<td>Ambient air cooling</td>
</tr>
<tr>
<td>Ablation size</td>
<td></td>
</tr>
<tr>
<td>PTK</td>
<td>Maximum treatment size</td>
</tr>
<tr>
<td>Myopia</td>
<td>Optical zone</td>
</tr>
<tr>
<td></td>
<td>Transition zone</td>
</tr>
<tr>
<td>Hyperopia</td>
<td>Optical zone</td>
</tr>
<tr>
<td></td>
<td>Transition zone</td>
</tr>
<tr>
<td>Alignment</td>
<td>LD (red) aiming beam and diagonal cross illumination 3D joystick remote controller (XY auto alignment)</td>
</tr>
<tr>
<td>Eye Tracking System (ETS)</td>
<td>200 Hz</td>
</tr>
<tr>
<td></td>
<td>Detectable pupil size</td>
</tr>
<tr>
<td>Torsion Error Detection (TED)</td>
<td>Active</td>
</tr>
<tr>
<td></td>
<td>Detectable pupil size</td>
</tr>
<tr>
<td></td>
<td>Detectable angle range</td>
</tr>
<tr>
<td>Data Import</td>
<td>USB</td>
</tr>
<tr>
<td>Power supply</td>
<td>200 to 240 Vac</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Max. 3.3 kVA</td>
</tr>
<tr>
<td>Dimensions / Weight</td>
<td>1450 (W) x 1400 (D) x 1400 (H) mm / 650 kg</td>
</tr>
<tr>
<td></td>
<td>57.1 (W) x 55.1 (D) x 55.1 (H) &quot; / 1,433 lbs.</td>
</tr>
<tr>
<td>Standard accessories</td>
<td>Multipoint™ ablation unit, Zeiss tilting microscope, LCD sub monitor in delivery arm, Motorized magnification control, Smoke evacuator, PC, LCD monitor, Key board, Foot switch, Beam splitter for microscope video camera, Duct hose, Dust cover, Laser goggles, Calibration unit, Lensmeter (LM-350), Printer, Gas value warning sheet, Gas value open / close plate</td>
</tr>
<tr>
<td>Optional accessories</td>
<td>Patient bed, Foot controller</td>
</tr>
</tbody>
</table>

**OPD-Scan III Specifications**

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

<table>
<thead>
<tr>
<th>Ablation mode</th>
<th>OATz ablation (OATz version)</th>
<th>CATz ablation (CATz version)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Import/export</td>
<td>USB</td>
<td>Patient information, Exam data</td>
</tr>
<tr>
<td>Database</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOS / V-compatible</td>
<td>Pentium III 1200 MHz or higher</td>
<td></td>
</tr>
<tr>
<td>CPU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Memory</td>
<td>256 MB or more (512 MB or more is recommended.)</td>
<td></td>
</tr>
<tr>
<td>Free disk space</td>
<td>500 MB or more</td>
<td></td>
</tr>
<tr>
<td>Graphic</td>
<td>1024 x 768 pixels or more, 65536 colors or more</td>
<td></td>
</tr>
<tr>
<td>CD-ROM drive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USB Port</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FD drive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keyboard &amp; mouse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OS</td>
<td>Windows XP*, English version</td>
<td></td>
</tr>
</tbody>
</table>

### OPD-Station Specifications

<table>
<thead>
<tr>
<th>Analysis and map display</th>
<th>Axial, Instantaneous, &quot;Refractive&quot;, Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wavefront</td>
<td>Wavefront, Zernike graph, PSF, MTF, MTF graph, Visual acuity</td>
</tr>
<tr>
<td>Others</td>
<td>Internal OPD, Target refractive, Differential, Eye image</td>
</tr>
<tr>
<td></td>
<td>Asphericity index (Q, e, S)</td>
</tr>
<tr>
<td>Pupillometry</td>
<td>Diameters, Distances, Contours (photopic/meopic condition)</td>
</tr>
<tr>
<td>Computer requirements</td>
<td>Pentium III 1200 MHz or higher</td>
</tr>
<tr>
<td>CPU</td>
<td></td>
</tr>
<tr>
<td>Free disk space</td>
<td>256 MB or more (above 512 MB recommended)</td>
</tr>
<tr>
<td>Memory</td>
<td>1024 x 768 pixels, 32 bit true color or more</td>
</tr>
<tr>
<td>Graphic</td>
<td></td>
</tr>
<tr>
<td>LAN port (RJ-45)</td>
<td></td>
</tr>
<tr>
<td>CD-ROM drive</td>
<td></td>
</tr>
<tr>
<td>USB port</td>
<td></td>
</tr>
<tr>
<td>OS</td>
<td>Windows XP or Vista*</td>
</tr>
</tbody>
</table>

* Windows is a trademark of Microsoft Corporation U.S.A.
### FinalFit™ Specifications

- **Ablation mode**
- **Data Import/export**
- **Database**
- **Computer requirements**
  - DOS / V-compatible
  - CPU
  - Memory
  - Free disk space
  - Graphic
  - CD-ROM drive
  - USB Port
  - FD drive
  - Keyboard & mouse
- **OS**
  - Windows XP*, English version

### Analysis and map display

- **Corneal topography**
- **Wavefront**
- **Others**
  - Pulpillometry

### Computer requirements

- CPU
- Memory
- Free disk space
- Graphic

### OS

- Windows XP or Vista*

### Quest Specifications

- **1.0 mm spots & slit scanning**
- **ArF Excimer laser**
  - 193 nm
  - 5, 10, 20, 30, 40, 50 Hz (PTK, myopia)
  - 34, 41, 46 Hz (hyperopia)
- **Ambient air cooling**
- **Maximum treatment size**
  - 10.0 mm
- **Optical zone**
  - 3.0 to 6.5 mm
  - 5.5 to 6.5 mm
- **Transition zone**
  - max. 10.0 mm
- **LD (red) aiming beam and diagonal cross illumination**
- **3D joystick remote controller (XY auto alignment)**
- **200 Hz**
- **ø 1.5 to ø 7.8 mm**
- **Active**
  - ø 1.5 to ø 6.0 mm
- **15 degrees**
- **USB**
- **200 to 240 Vac.**
- **Max. 3.3 kVA**
- **1450 (W) x 1400 (D) x 1400 (H) mm / 650 kg**
- **57.1  (W) x  55.1 (D) x  55.1 (H) ” / 1,433 lbs.**

### OPD-Scan III Specifications

- **Wavefront aberrometer**
- **Measurement principle**
- **Spherical power range**
- **Cylindrical power range**
- **Axis range**
- **Measurement area**
- **Data point**
- **Map type**

### Auto tracking

- **Display**
- **Printer**
- **Power supply**
- **Power consumption**

### Dimensions / Weight

- **Standard accessories**
- **Optional accessories**

### Therapeutic laser

- **Beam control**
- **Laser source**
- **Wavelength**
- **Repetition rate**
- **Cooling system**
- **Ablation size**
  - PTK
  - Myopia
  - Hyperopia

### Alignment

- **Eye Tracking System (ETS)**
- **Sampling rate**
- **Detectable pupil size**
- **Torsion Error Detection (TED)**
- **Control**
  - Detectable pupil size
  - Detectable angle range

### Data Import

- **Power supply**
- **Power consumption**

### Dimensions / Weight

- **Standard accessories**
- **Optional accessories**

### Multipoint™ ablation unit, Zeiss tilting microscope, LCD sub monitor in delivery arm, Motorized magnification control, Smoke evacuator, PC, LCD monitor, Keyboard, Foot switch, Beam splitter for microscope video camera, Duct hose, Dust cover, Laser goggles, Calibration unit, Lensmeter (LM-350), Printer, Gas value warning sheet, Gas value open / close plate

### Patient bed, Foot controller

### OPD-Station Specifications

- **Axial, Instantaneous, “Refractive”, Elevation**
- **Wavefront, Zernike graph, PSF, MTF, MTF graph, Visual acuity**
- **Internal OPD, Target refractive, Differential, Eye image**
- **Asphericity index (Q, e, S)**
- **Diameters, Distances, Contours (photopic/meopic condition)**

### Pupilometry

- **Computer requirements**
  - CPU
  - Memory
  - Free disk space
  - Graphic
  - LAN port  (RJ-45)
  - CD-ROM drive
  - USB port

### OS

- **Windows XP or Vista***

*Windows is a trademark of Microsoft Corporation U.S.A.
Product identification - Excimer Laser Corneal Surgery System EC-5000
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