Endoscopic ultrasound
state-of-the-art
EG-3670URK / EG-3270UK / EG-3870UTK
PENTAX Medical GI integrated offer
Along the clinical pathway

Orientation
- HD+
- i-scan SE
- i-scan TE
- Preset i-scan
- Twin mode

Detection
- NaviAid™ AB

Characterization
- EUS

Verification / Confirmation
- WavSTAT4
- EM

Therapy
- ESD

Clinical Background
- Positioning
- Product
- Clinical Application
- Technical Details
- Summary
- Services
Main Challenge
In endoscopy

"The biggest challenge is the visualisation of cancer, namely its penetration depth and spreading to adjacent organs and lymph nodes.

Endoscopic Ultrasound (EUS) is the gold standard for cancer staging."
EUS is utilized for the staging of **esophageal**, **gastric** and **pancreatic** cancer as well as for evaluating **biliary-pancreatic** diseases.
Main Opportunities
High diagnostic accuracy

Specificity up to 98%
Sensitivity up to 80%

EUS and EUS-guided Fine Needle Aspiration (FNA) combined have a **high diagnostic accuracy** and its outcome determines the patient disease management.
Our Promise
EUS

The outstanding image quality of PENTAX Medical ultrasound gastroscopes offers an optimal foundation for the detection and staging of lymph nodes and tumors in the gastrointestinal system.
Product overview

EUS

**EG-3670URK**
- 360 degrees radial ultrasound endoscope for diagnostic EUS.

**EG-3270UK**
- Linear ultrasound endoscope for day to day diagnostic EUS and EUS-FNA.

**EG-3870UTK**
- Linear ultrasound endoscope for therapeutic EUS.

Clinical Background

Positioning

Clinical Application

Technical Details

Summary

Services
**EUS Key Benefits**

**Features**

- **EG-3670URK**
- **EG-3270UK**
- **EG-3870UTK**

- **State-of-the-art image quality**
- **Superior imaging modalities**
- **Maximum comfort**
- **Broad field of applications**
## EUS Key Benefits

**EG-3670URK / EG-3270UK / EG-3870UTK**

<table>
<thead>
<tr>
<th></th>
<th>State-of-the-art image quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High-class ultrasound imaging and great visualization capabilities. Optimized detection, staging and therapy, due to combination of Hitachi’s and PENTAX Medical’s superb technologies.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Maximum comfort</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Flexibility and advanced maneuverability allow more comfort for both patient and examiner.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Broad field of applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Diagnostic and interventional procedures in the upper gastrointestinal tract as well as staging of lung cancer patients.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Superior imaging modalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Superior quality and innovative imaging modalities such as Real-Time Tissue Elastography and Dynamic Contrast Harmonic Imaging.</td>
</tr>
</tbody>
</table>
Product Compatibility
A unique combination

- EPK-i7000
- EPK-i5000
- EPK-1000
- EPK-100p

- Scanner HI VISION Ascendus
- Scanner HI VISION Preirus
- Scanner HI VISION Avius
- Scanner NOBLUS

Clinical Background  Positioning  Clinical Application  Technical Details  Summary  Services
## Clinical Application

### Differences between PENTAX Linear range

<table>
<thead>
<tr>
<th>EG-3270UK</th>
<th>EG-3870UTK</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Small transducer offering state-of-the-art ultrasound image quality</td>
<td>- Transducer offers state-of-the-art Ultrasound images</td>
</tr>
<tr>
<td>- 2.8mm instrument channel for EUS-FNA</td>
<td>- 3.8mm instrument channel for EUS-FNA and interventional EUS such as EUS-guided drainage, injection therapy and tissue ablation</td>
</tr>
<tr>
<td>- Slim insertion tube for comfortable patient intubation, pylorus passage and easy insertion into D2</td>
<td>- Alignment of transducer and distal end allow optimal positioning of the endoscope for EUS-guided interventions, both, from gastric as well as duodenal access</td>
</tr>
<tr>
<td>- Short rigid distal portion for increased patient and examiner comfort</td>
<td>- Elevator design for safe and efficient accessory guidance, control and positioning</td>
</tr>
<tr>
<td>- Angulations in combination with the slim insertion tube allow inversion of the endoscope to observe cardia area in stomach</td>
<td>- Overall maneuverability easily facilitates the advancement of the endoscope in the GI tract</td>
</tr>
<tr>
<td>- Elevator design allows safe and precise control and positioning of the EUS-FNA needle</td>
<td></td>
</tr>
<tr>
<td>- Balloon design and balloon application technique (without o-rings) for easy and user-friendly handling</td>
<td></td>
</tr>
</tbody>
</table>

**EUS-FNA**

**Therapy**
Clinical Application

Diagnostic imaging investigations in the UGI tract

EG-3670URK

- Submucosal tumors (esophagus, pancreas)
- Lung cancer (mediastinal lymph nodes and lesions)
- Pancreatic cancer, chronic pancreatitis and affiliated diseases
- Endoscopic biopsy of suspicious lesions

EG-3270UK

- Staging of submucosal tumors in the esophagus and stomach as well as of pancreatic cancer
- Diagnostic EUS imaging including tissue sampling for lymph node and tumor staging in the esophagus, stomach and for biliary-pancreatic diseases:
  - EUS-guided Fine Needle Aspiration (EUS-FNA)
  - EUS-guided Fine Needle Biopsy (EUS-FNB)

EG-3870UTK

- Diagnostic EUS imaging including tissue sampling for lymph node and tumor staging in the esophagus, stomach and for biliary-pancreatic diseases:
  - EUS-guided Fine Needle Aspiration (EUS-FNA)
  - EUS-guided Fine Needle Biopsy (EUS-FNB)
- Intervventional EUS, mainly biliary-pancreatic anatomies:
  - EUS-guided drainage (e.g. pancreatic pseudocysts, biliary drainage)
  - EUS-guided ablation therapy
  - EUS-guided dilation
  - EUS-guided injection therapy (e.g. Celiac Plexus Neurolysis, Botulinum toxin injection)
  - EUS-assisted resection
Clinical Application
B mode image quality

**EG-3670URK**
Common bile duct

**EG-3270UK**
Chronic pancreatitis

Superior B mode image quality for EUS-guided diagnosis and therapy. Due to the lack of other imaging modalities, EUS is especially helpful for pancreatic diseases.

**Dr. Marc Giovannini**
Institute Paoli-Calmette, Marseille, France

**Dr. Julio Iglesias-García**
Hospital Clínico Universitario Santiago de Compostela, Spain
Clinical Application
Real-time tissue elastography

**EG-3270UK**
Pancreatic Mass

**EG-3870UTK**
Pancreatic Mass

- Elastography emerges as a useful tool that is based on the knowledge that some diseases, like cancer, lead to a modification of tissue stiffness. It evaluates the elastic properties of tissues and compares images obtained before and after compression to target tissue; differentiating benign from malignant lesions, mainly in pancreatic diseases and lymph nodes.*

- Diagnostic accuracy of Elastography for Lymph nodes is 88% sensitivity and 85% specificity

- Diagnostic accuracy of Elastography for Pancreatic mass is 96% sensitivity and 76% specificity


Dr. Paolo Arcidiacono
Dr. Maria Chiara Petrone
Ospedale San Raffaele, Milano, Italy

Dr. Julio Iglesias-Garcia
Hospital Clínico Universitario Santiago de Compostela, Spain

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Clinical Background  Positioning  Product  Clinical Application  Technical Details  Summary  Services
**Clinical Application**

**Dynamic contrast harmonic imaging**

**EG-3870UTK**
**PNET**

- “Increasingly used for characterization of microvascularization, differential diagnosis of benign and malignant lesions and improving staging and guidance of therapeutic procedures”.*
- Diagnostic accuracy of CE-US for pancreatic mass is 94% of sensitivity and 89% of specificity.


Dr. Maria Chiara Petrone
Ospedale San Raffaele, Milano, Italy
Ultrasound image quality is amazing and the small ultrasound transducer produces very homogenous and stable images. This scope makes the upper GI exploration much easier: oral introduction, stomach retroflexion, pylorus passage, entering 2nd part of duodenum and getting a stable position.

Dr. Julio Iglesias-Garcia
University Hospital Santiago de Compostela, Spain

The different nine layers of esophagus are displayed in a fantastic near field resolution like with a miniprobe.

Dr. Christian Juergensen
University Berlin, Campus Charité Mitte, Germany

Pancreatic parenchyma is well visible using Harmonic Imaging which increases US image quality for the diagnosis of endocrine pancreatic tumours.

Dr. Marc Giovannini
Institute Paoli-Calmette, Marseille, France
## Specifications (1 / 2)

<table>
<thead>
<tr>
<th>Specs</th>
<th>EG-3270UK</th>
<th>EG-3870UTK</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Field of view (°)</strong></td>
<td>120 (50 forward oblique)</td>
<td>120 (45 forward oblique)</td>
</tr>
<tr>
<td><strong>Depth of Field (mm)</strong></td>
<td>5 – 100</td>
<td>5 – 100</td>
</tr>
<tr>
<td><strong>Tip angulations (°)</strong></td>
<td>130 / 130</td>
<td>130 / 130</td>
</tr>
<tr>
<td>Up / Down</td>
<td>120 / 120</td>
<td>120 / 120</td>
</tr>
<tr>
<td>Right / Left</td>
<td>12.5</td>
<td>14.35</td>
</tr>
<tr>
<td><strong>Probe</strong></td>
<td>11.5</td>
<td>12</td>
</tr>
<tr>
<td><strong>Optic</strong></td>
<td>12</td>
<td>14.35</td>
</tr>
<tr>
<td><strong>Ø Rigid distal width (mm)</strong></td>
<td>10.8</td>
<td>12.8</td>
</tr>
<tr>
<td><strong>Ø Distal end width (mm)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ø Insertion tube width (mm)</strong></td>
<td></td>
<td></td>
</tr>
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</table>
## EG-3270UK / EG-3870UTK

### Specifications (2 / 2)

<table>
<thead>
<tr>
<th>Specs</th>
<th>EG-3270UK</th>
<th>EC-3870UTK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø Max. insertion portion width (mm)</td>
<td>12.5</td>
<td>14.65</td>
</tr>
<tr>
<td>Ø Min. instrument channel width (mm)</td>
<td>2.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Insertion portion working length (mm)</td>
<td>1250</td>
<td>1250</td>
</tr>
<tr>
<td>Total length (mm)</td>
<td>1560</td>
<td>1560</td>
</tr>
<tr>
<td>Acoustic frequency (MHz)</td>
<td>5 – 10 switchable</td>
<td>5 – 10 switchable</td>
</tr>
<tr>
<td>Scan angle (°)</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Scan method</td>
<td>Electronical curved linear array</td>
<td>Electronical curved linear array</td>
</tr>
<tr>
<td>Balloon / water immersion / direct contact method</td>
<td>Yes / Yes / Yes</td>
<td>Yes / Yes Yes</td>
</tr>
</tbody>
</table>

**Technical Details**
### EG-3670URK Specifications (1 / 2)

<table>
<thead>
<tr>
<th>Specs</th>
<th>EG-3670URK</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direction of viewing field (°)</strong></td>
<td>Forward</td>
</tr>
<tr>
<td></td>
<td>140</td>
</tr>
<tr>
<td><strong>Angle of view (°)</strong></td>
<td>4 – 100</td>
</tr>
<tr>
<td><strong>Depth of field (mm)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Tip angulation (°)</strong></td>
<td>130 / 60</td>
</tr>
<tr>
<td><strong>Ø Rigid distal width (mm)</strong></td>
<td>60 / 60</td>
</tr>
<tr>
<td><strong>Up / Down</strong></td>
<td>12.6</td>
</tr>
<tr>
<td><strong>Right / Left</strong></td>
<td>12</td>
</tr>
<tr>
<td><strong>Ø Distal end width (mm)</strong></td>
<td>10.3</td>
</tr>
<tr>
<td><strong>Probe</strong></td>
<td>13.45</td>
</tr>
<tr>
<td><strong>Optic</strong></td>
<td></td>
</tr>
</tbody>
</table>
| **Ø Max. insertion portion width (mm)** | }
<table>
<thead>
<tr>
<th></th>
<th>EG-3670URK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø Insertion tube width (mm)</td>
<td>12.1</td>
</tr>
<tr>
<td>Ø Min. instrument channel width (mm)</td>
<td>2.4</td>
</tr>
<tr>
<td>Insertion portion working length (mm)</td>
<td>1,250</td>
</tr>
<tr>
<td>Total length (mm)</td>
<td>1,560</td>
</tr>
<tr>
<td>Scan angle (°)</td>
<td>360</td>
</tr>
<tr>
<td>Scan method</td>
<td>Electronic radial array</td>
</tr>
<tr>
<td>Acoustic frequency (MHz)</td>
<td>5 / 6.5 / 7.5 / 9 /10</td>
</tr>
<tr>
<td>Balloon / water immersion / direct contact method</td>
<td>Yes / Yes / Yes</td>
</tr>
</tbody>
</table>
## Hitachi Ultrasound Scanners

### Features

<table>
<thead>
<tr>
<th></th>
<th>NOBLUS</th>
<th>HI VISION Avius</th>
<th>HI VISION Preirus</th>
<th>HI VISION Ascendus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B mode image quality</strong></td>
<td>++ (85%)</td>
<td>++ (85%)</td>
<td>+++ (100%)*</td>
<td>+++ (115%)</td>
</tr>
<tr>
<td><strong>Real-time Tissue Elastography</strong> (<strong>HI-RTE</strong>)</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td><strong>Dynamic Contrast Harmonic Imaging (dCHI)</strong></td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td><strong>Monitor</strong></td>
<td>15&quot; LCD, Swivel and Tilt</td>
<td>17&quot; LCD, flex arm optional</td>
<td>19&quot; LCD</td>
<td>19&quot; LCD</td>
</tr>
<tr>
<td><strong>Screen</strong></td>
<td>Touch screen</td>
<td>No touch panel</td>
<td>Touch area at screen</td>
<td>Touch area at screen</td>
</tr>
<tr>
<td><strong>Cine loop</strong></td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td><strong>Digital video out</strong></td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

* PREIRUS image quality can be considered as standard and thus is set to 100%

**Elastography Software versions:**
- Step 1 – just color
- Step 2 – Strain ratio (%)
- Step 3 – Histogram
- Step 4 – Average (Elastometry)

NOTE: above mentioned features might not be standard features, but optional

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**Clinical Background**

**Positioning**

**Product**

**Clinical Application**

**Technical Details**

**Summary**

**Services**
Summary
EUS at a glance

EG-3670URK

With its **360 degree view** and **excellent image quality** it suits the **diagnosis** and **staging** in UGI tract.

EG-3270UK

Meets the day to day demand in endoscopic ultrasound by combining the **feasibility of fine needle aspiration** with **excellent ultrasound image quality** in a very **comfortable endoscope**.

EG-3870UTK

The combination of **excellent image quality** and a **large working channel** offers a variety of **therapeutic options**.
**Summary**

**EBUS at a glance**

EB-1970UK offers state-of-the-art ultrasound technology providing a high level of precision and visual accuracy for more reliable diagnosis and staging.

The minimal invasive technique of EBUS guided TBNA gives maximum reliability and efficiency.
Advice and guidance in support of customers’ performance, e.g.
- Process change
- Operational efficiency analysis
- Total cost of ownership
- Hygiene

Portfolio of maintenance solutions that offers customers both guaranteed reliability and budget security, e.g.
- i-Trust
- Pay-per-use
- Rental

Absolute quality guarantee and a fast repair turnaround time whilst keeping you up and running:
- Loaner program
- Original spare parts
- Small repairs on site
- Extensive repair network

Personalized training to support customers with our know-how and experience, e.g.
- Damage prevention
- Reprocessing and hygiene
- Scope handling and troubleshooting

Click here for more: https://network.pentaxmedical.eu