THUNDERBEAT OPEN FINE JAW
Sophisticated Design for Fine and Precise Open Surgery
THUNDERBEAT DESIGN RATIONALE

**Philosophy**
Contemporary surgical instruments must be multifunctional. When the THUNDERBEAT Tissue Management System for laparoscopic surgery was introduced, the clear goal was to develop a multipurpose instrument in order to reduce instrument exchanges, surgical time, and blood loss.

This was achieved by creating an instrument that not only allows tissue cutting that is the fastest in its class and secure 7 mm vessel sealing, but also functions as a true laparoscopic instrument – allowing the surgeon to grasp, manipulate, and bluntly dissect tissue.

**Three Design Criteria Make This Possible:**

1. **Integration of Two Forms of Energy**
   Only the THUNDERBEAT system delivers two well-established types of energy to the tissue simultaneously:
   - Ultrasonic energy, which is widely accepted for its fast tissue-cutting capability.
   - Bipolar energy, which provides fast and secure hemostasis to vessels up to and including 7 mm in diameter.

   The combination of both forms of energy is delivered through the unique SEAL & CUT mode that only the THUNDERBEAT system offers. Tissue bundles and vessels are safely sealed and rapidly cut, allowing the surgeon to reduce tissue-dissection time.

2. **Secondary Hemostasis and Spot Coagulation with Advanced Bipolar Energy**
   Advanced bipolar energy can be applied independently of ultrasonic energy with the THUNDERBEAT SEAL mode. This allows the surgeon to achieve secondary hemostasis and spot coagulation without the cutting effects of ultrasonic energy. This can help reduce instrument exchanges, which may streamline the surgical process further.

3. **Superior Dissection with Optimal Temperature Control**
   The THUNDERBEAT instrument tip is an essential feature of the instrument. Alongside the delivery of two different types of energy, it is designed to act as a fully functional grasping and dissecting instrument. This is achieved through atraumatic serrations of the edges of the upper jaw, the even compression-force distribution across tissue, and the high tip-opening forces that enable blunt tissue dissection.

   For safe and streamlined operations, Olympus developed the world’s first and only safety assist system for ultrasonic-driven technologies that automatically stops the energy output when the tissue transection is complete. This new technology, called Intelligent Tissue Monitoring (ITM), decreases the residual temperature of the instrument and consequently reduces the risk of accidental tissue damage.

**How Intelligent Tissue Monitoring Works**

1. Detection of sudden pressure change on probe
2. Transmission of the information to the generator
3. Immediate stop of energy supply with audible feedback
4. Start of cooling phase

The ability to combine the proven advantages of ultrasonic and bipolar energy and the ability to provide finest possible tissue dissection makes THUNDERBEAT one of the most versatile instruments on the market. This technology is now available for open surgery.

**The THUNDERBEAT Technology in Open Surgery**
Advanced energy devices in open surgery go beyond standard monopolar and bipolar applications. They allow for shorter procedure times and reduced use of hemostatic clips, sutures, or ligation ties, thus saving time and materials costs.

The THUNDERBEAT Open Fine Jaw® maintains the general philosophy behind the THUNDERBEAT technology, and the instrument has been specifically designed for open surgical procedures that require delicate and fine tissue dissection, such as in thyroidectomy or various Ear-Nose-Throat (ENT) and breast procedures. The result is a highly ergonomic instrument that cuts tissue fast, seals vessels safely and securely, and allows for extremely fine tissue dissection and spot coagulation.

* THUNDERBEAT Open Fine Jaw, reddot design award winner 2015
BENEFITS OF THUNDERBEAT OPEN FINE JAW

SEAL & CUT Mode
Fastest in class tissue cutting and secure vessel sealing through the unique combination of ultrasonic and bipolar energy.

SEAL Mode
Secondary hemostasis and spot coagulation through the application of advanced bipolar energy only.

Ultrasonic and Bipolar Probe

Bipolar Jaw
Atraumatic serrations for improved tissue grasping.

Tissue Stopper
Helps to control the amount of tissue to be transected and prevents tissue squeezing without activation.

Optimized Balance and Lightweight
Precise and direct tactile feeling with scissors-type grip, similar to state-of-the-art surgical instruments.

Intuitive, Easily Accessible Hand Switches

Ergonomic Grip
Designed to help prevent hand slippage.
The THUNDERBEAT Open Fine Jaw is like an extension of your hand. You can do things you can’t do with only a vessel sealing or an ultrasonic device. Especially delicate dissection or very close spot coagulation even around the nerve.

Sam Van Slycke, MD
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BENEFITS OF THUNDERBEAT OPEN FINE JAW

**Speed and Safety with Synergistic Energy**
Fastest in class tissue cutting and secure vessel sealing through the unique combination of ultrasonic and bipolar energy in SEAL & CUT mode.

**Secondary Hemostasis and Spot Coagulation with Advanced Bipolar Energy**
In the SEAL mode, advanced bipolar energy can be applied to immediately seal secondary bleeders without the cutting effects of ultrasonic energy.
BENEFITS OF THUNDERBEAT OPEN FINE JAW

Fine and Precise Tissue Dissection
Fine, and curved tip allows precise and fine tissue dissection even in hard-to-reach places.

Enhanced Tissue-Grasping Capability
The instrument securely grasps and holds tissue without traumatizing it due to the unique jaw design with atraumatic serrations and uniform tissue compression.
HIGHLIGHTS OF THUNDERBEAT OPEN FINE JAW DURING THYROIDECTOMY

Dissection of Lateral Border of the Thyroid
All thyroid arteries and veins can be divided by THUNDERBEAT.

Dissection of Lateral Border of the Thyroid

Dissection Superior of Pole
THUNDERBEAT is applied for dividing the vessels of the superior pole.

Dissection of Inferior Pole
Ligation of branches of the inferior thyroid artery and inferior thyroid veins by THUNDERBEAT.

Transection of Isthmus
The pretracheal adhesions are divided by THUNDERBEAT and a complete hemithyroidectomy is performed.
Olympus Energy Solutions Work Together to Provide:

- **Electrosurgery**
  **ESG-400 – A Fully Equipped, Latest-Generation HF Generator**
  Optimizing your state-of-the-art electrosurgery in all surgical disciplines for monopolar, bipolar, and advanced bipolar modes for open, laparoscopic, and endoscopic applications, as well as transurethral or transcervical resection (TURIs/TCRIs).

- **Ultrasonic Surgery**
  **USG-400 – Ultrasonic Energy for Advanced Tissue Management**
  The USG-400 Generator provides ultrasonic energy for the SONICBEAT Ultrasonic Dissector.

- **Combined Energy Surgery**
  **Surgical Tissue Management System (THUNDERBEAT Platform)**
  Both surgical energy generators combined provide a unique platform that delivers the most widely used energy requirements to the surgical suite, eliminating the need for multiple devices in the operating room.

- **Visibility**
  The Olympus Surgical Tissue Management System communicates intelligently with the Olympus insufflators (UHI-3 and UHI-4) in order to evacuate any smoke and mist whenever required during laparoscopic surgery. Coupled with the reduced mist production of the THUNDERBEAT laparoscopic instruments and Olympus imaging equipment, the surgeon enjoys the best possible visualization.

- **Utility**
  Olympus energy devices can be seamlessly integrated into the Olympus ENDOALPHA OR solutions. This enables clinical staff to easily select the desired function of THUNDERBEAT directly from the HomeScreen user interface of UCES-3. It also allows for intuitive navigation through the device using the touch screen or voice control. UCES-3 offers a centralized one-touch control for all sterile and/or nonsterile medical devices – for example, electrosurgical generators, surgical cameras, or surgical lights and tables, providing greater efficiency and improved ergonomics during procedures. Finally, the Scene Selection function, an intelligent combination of user- and procedure-specific actions operated using one-touch control,
    - Helps to standardize procedures,
    - Decreases turnaround time,
    - Enhances quality and overall workflow.
Specifications, design, and accessories are subject to change without any notice or obligation on the part of the manufacturer.

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