### Ordering Information

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Code</th>
<th>Units/Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtuosaph Endoscopic Vein Harvesting System, sterile, (includes dissector, harvester and trocar)</td>
<td>MCVS550</td>
<td>5</td>
</tr>
<tr>
<td>Trocar, sterile (for spare)</td>
<td>MCTC550S</td>
<td>10</td>
</tr>
<tr>
<td>Endoscope Product</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.5 mm Endoscope</td>
<td>MCENDO550</td>
<td>1</td>
</tr>
<tr>
<td>Generator Products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bipolar cord</td>
<td>MCBIC1</td>
<td>1</td>
</tr>
<tr>
<td>Generator*</td>
<td>MCVS40</td>
<td>1</td>
</tr>
</tbody>
</table>

*Manufactured by Olympus Corporation, Tokyo, Japan. Available in the United States only.

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**Virtuosaph™ Endoscopic Vein Harvesting System**

Get a Closer Look

Terumo’s Centers of Excellence bring together clinicians interested in evaluating Terumo’s endoscopic vein harvesting products and experienced clinicians already successfully using them. The Centers facilitate the learning of techniques and procedures that can improve patient outcomes.

Based in highly reputable medical institutions, Terumo’s Centers of Excellence in Endoscopic Vein Harvesting have been established to promote collaboration and the establishment of best practices. The centers provide opportunities for clinicians evaluating the Virtuosaph System to discuss the system and procedures with experienced surgical clinicians, observe cases, and practice the procedure on simulators.

Comprehensive training is available including advanced techniques and access to a clinical support team with more than 100 years of experience harvesting veins.

Continuing Support

Terumo supports its products and the clinicians who use them with a commitment to service before, during and after the evaluation.

For more information on tower components and generator compatibility please contact your local Terumo sales representative or call Customer Service at (888) 758-8000.

www.terumo-cvs.com/virtuosaph

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**References**


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**Unique Technology Worth a Closer Look**

The VirtuoSaph™ Endoscopic Vein Harvesting System is designed to elevate standards for patient safety, comfort, quality, and ergonomics. When developing the VirtuoSaph System, Terumo spent significant resources to understand the needs and wants of clinicians worldwide. The resulting design uses unique technology within an open system to ensure the effectiveness of the procedure and provide the optimal conduit.

**Better Patient Outcomes**

The VirtuoSaph EVH System provides an endoscopic approach to saphenous vein harvesting. One small leg incision minimizes scarring, morbidity and infection associated with traditional longitudinal incisions.

**What makes the technology unique?**

A harvester rod with V-keeper, V-lock and V-cutter

The V-keeper provides an optimal conduit through the "cutting-triad" – grounding, low wattage, and branch tautness.

- **Grounding**, low energy during cauterizing and cutting of branches
- **Quick access and control of branch tautness**

"Open" system distal insufflation with non-occlusive trocar

Several studies support the use of open systems and a non-occlusive trocar.1-5

- **May reduce the risk of clot production**
- **May reduce risk of enteral air**

A dissector rod with an atraumatic conical tip, centering rings, and CO₂ delivered at the tip

Centering rings assist the clinician to locate the position of the dissector cone tip relative to the vein during dissection.

- **Unique wiper to clean the endoscope lens**
- **One wiper activation immediately improves visibility**
- **Allows cleaning in the tunnel without the need for additional fluid**

End grassing

The field of view is in a plane of focus. The dissector is transvenous and provides a means of entering the target vein. The area of the incision site is an area of focus where the pressure due to cutting is minimal.

**Better Patient Outcomes**

- **May reduce the risk of clot production**
- **May reduce risk of enteral air**

**Endoscope**

- **Endoscopic System Technology**: The VirtuoSaph™ System is designed to elevate standards for patient safety, comfort, quality, and ergonomics.

**Dissector Rod**

- **Dissector Rod**: The dissector rod provides optimal tension during transection.

**Harvester Rod**

- **Harvester Rod**: The V-keeper and the V-cutter to provide optimal tension during transection.

- **V-keeper**: The V-keeper provides both functions in one easy step.

- **V-lock mechanism**: The V-lock mechanism secures the harvest rod with V-keeper, V-lock and V-cutter.

- **V-cutter**: The V-cutter provides an optimal conduit through the "cutting triad" – grounding, low energy during cauterizing and cutting of branches.

- **Grounding**, low energy during cauterizing and cutting of branches

- **Quick access and control of branch tautness**

**Insufflation Safety**

- **Insufflation Safety**: The dissector rod offers consistent branch lengths and help ensure that sealing and cutting take place near the conduit. The V-keeper and the V-cutter to provide optimal tension during transection.

- **Reduced energy**: The V-cutter provides an optimal conduit through the "cutting triad" – grounding, low energy during cauterizing and cutting of branches.

- **Quick access and control of branch tautness**

**Surgical System Hardware**

- **Endoscope VirtuoSaph System Hardware**

The clinician uses the buttons on the handle to control the input of CO₂. The clinician can activate the wiper switch on the handle to allow the operator to monitor the procedure on a nearby monitor. The clinician controls the input of CO₂ using the wiper switch on the handle.

**Endoscopic Tower**

- **Endoscopic Tower**: The Endoscopic Tower includes the Olympus VISERA™ Endoscopic System Generator, a VISERA light processor unit, and an image processor unit (CPU), VISERA light tower imaging components for the endoscope designed exclusively for use with the VirtuoSaph System, which provides the latest in electrosurgical technology. Combined with the VirtuoSaph System, the VISERA light tower imaging system provides the clinician with full-process control of the surgical procedure. The VISERA light tower is a standalone unit that conveniently fits into the OR room, providing ideal accessibility to the clinician.

**Generator**

- **Endoscopic Tower**: The Endoscopic Tower includes the Olympus VISERA™ Endoscopic System Generator, a VISERA light processor unit, and an image processor unit (CPU), VISERA light tower imaging components for the endoscope designed exclusively for use with the VirtuoSaph System, which provides the latest in electrosurgical technology. Combined with the VirtuoSaph System, the VISERA light tower imaging system provides the clinician with full-process control of the surgical procedure. The VISERA light tower is a standalone unit that conveniently fits into the OR room, providing ideal accessibility to the clinician.
The VirtuoSaph™ Endoscopic Vein Harvesting System is designed to elevate standards for patient safety, comfort, and recovery. When developing the VirtuoSaph System, Terumo spent significant resources to understand the needs and wants of clinicians worldwide. The resulting design uses unique technology within an open system to assure the effectiveness of the procedure and provide the optimal conduit.

**Endoscope**

- **VirtuoSaph Endoscope** The VirtuoSaph™ Endoscope utilizes technology for the Endoscope VirtuoSaph System Hardware. This vital component provides superior technology. Olympus is recognized worldwide for designing and producing high-quality endoscopes. When developing the VirtuoSaph System, Olympus was engaged in the design of the VirtuoSaph endoscope.

**Expander**

- **Universal Expander Rod** The VirtuoSaph™ Endoscopic Vein Harvesting System utilizes the VirtuoSaph™ Endoscope designed exclusively for the Endoscope VirtuoSaph System Hardware.

**Harvester Rod**

- **V-keeper** and **V-cutter** to provide optimal tension during transection. It ensures consistent sealing and cutting. The safety design of the harvester mechanism employs targeted low energy. The V-keeper and the V-cutter automatically respond to changes in tissue resistance as the branch is first coagulated and cut.

**Trocar**

- **Trocar** is made of a polymeric material. It is inserted through the incision and stays in place with the clip occluding trocar through the port. The dissector or harvester rod accesses the saphenous vein by entering the non-occluding trocar through the port.

**Brake**

- **Brake** for the dissector cone tip during dissection. The V-keeper and the V-cutter to provide optimal tension during transection. It ensures consistent sealing and cutting. The safety design of the harvester mechanism employs targeted low energy. The V-keeper and the V-cutter automatically respond to changes in tissue resistance as the branch is first coagulated and cut.

**Saphenous Vein Clip**

- **Saphenous Vein Clip** to secure the endoscope to the skin. It places little or no pressure on the vein, and the body of the trocar is inserted into the leg incision and stays in place with the clip occluding trocar through the port.

**BMI System**

- **BMI System** to provide early detection and help prevent the development of significant CO₂ embolisms.

**CO₂ Regulator**

- **CO₂ Regulator** delivers CO₂ at the tip of the dissector cone tip. The CO₂ regulator provides the latest in electrosurgical technology, combined with the VirtuoSaph System, provides the flexibility needed to accommodate any procedural needs.

**Generator**

- **Generator** for the BMI System. This ultracompact generator provides the power to energize the electrosurgical technology and performance. Its ultra-compact design makes it ideal for use in surgical suites where space is at a premium. The generator includes the hardware components necessary to perform endoscopic vein harvesting. The hardware components include the VISERA™ camera processor unit (CPU), VISERA light tower, and imaging components for the Endoscopic Tower.

**Endoscopic Tower**

- **Endoscopic Tower** incorporates the latest in electrosurgical technology. The tower includes the tester, generator, camera processor unit and CO₂ flow control unit.

**Surgical Technique**

- **Surgical Technique** is a key component of the BMI System. The BMI System is designed to provide a superior patient experience. The BMI System provides early detection and helps prevent the development of significant CO₂ embolisms.

**Patient Outcomes**

- **Patient Outcomes** are improved with the VirtuoSaph System. The VirtuoSaph™ Endoscopic Vein Harvesting System provides earlier detection and helps prevent the development of significant CO₂ embolisms.

**Distal Ring**

- **Distal Ring** provides space in the tunnel for optimal sealing and cutting. The ergonomic placement of the wiper switch provides optimal tension during transection.

**Endoscopic View of the Centering Mechanism**

- **Endoscopic View of the Centering Mechanism** provides space in the tunnel for increased visibility. The ergonomic placement of the wiper switch provides optimal tension during transection.

**Surgical Technique**

- **Surgical Technique** is a key component of the BMI System. The BMI System is designed to provide a superior patient experience. The BMI System provides early detection and helps prevent the development of significant CO₂ embolisms.

**Distal Ring**

- **Distal Ring** provides space in the tunnel for optimal sealing and cutting. The ergonomic placement of the wiper switch provides optimal tension during transection.

**Endoscopic View of the Centering Mechanism**

- **Endoscopic View of the Centering Mechanism** provides space in the tunnel for increased visibility. The ergonomic placement of the wiper switch provides optimal tension during transection.

**Surgical Technique**

- **Surgical Technique** is a key component of the BMI System. The BMI System is designed to provide a superior patient experience. The BMI System provides early detection and helps prevent the development of significant CO₂ embolisms.

**Distal Ring**

- **Distal Ring** provides space in the tunnel for optimal sealing and cutting. The ergonomic placement of the wiper switch provides optimal tension during transection.
The VirtuoSaph™ Endoscopic Vein Harvesting System is designed to elevate standards for patient safety, comfort and post-operative recovery. Several small stab wounds improve patient comfort and provide the optimal conduit. This smaller incision and two stab wounds improve patient comfort and provide the best conduit.

What makes the technology unique?

A harvest rod with V-keeper, V-lock and V-cutter

The V-keeper provides an optimal conduit through the “cutting tool”—greening, low-wattage, and branch-removal.

- Designed, low energy during cauterizing and cutting of branches
- Quick access and control of branch anatomy

“Open” system distal insufflation with non-occlusive trocar

Small incisions allow the use of open insufflation and non-occlusive trocar

- May lower the risk of CO2 embolism
- May lower risk of venous air

A dissector rod with an aerodynamic conical tip, centering rings, and CO2 delivered at the tip

This design allows the clinician to monitor the location of the dissector cone tip relative to the vein during dissection.

Unique wiper to clean the endoscope lens

- One wiper activation immediately improves visibility
- Allows cleaning in the tunnel without the need for additional fluid

Better Patient Outcomes

The VirtuoSaph™ EVH System provides an endoscopic approach to superficial vein harvesting. One small leg incision minimizes scarring, morbidity and infection associated with traditional harvesting.

Endoscope

Trocars

- Endoscopic view of the centering rings within dissector tip
- Dissector rod offers consistent tautness and uniform dissection.
- Endoscopic view of the centering rings relative to the vein during dissection.

Dissector rod

- The dissector rod offers consistent tautness and uniform dissection.
- Endoscopic view of the centering rings within dissector tip.
- Dissector rod offers consistent tautness and uniform dissection.
- Endoscopic view of the centering rings relative to the vein during dissection.

Harvester rod

- One wiper activation immediately improves visibility
- Allows cleaning in the tunnel without the need for additional fluid

Grounding

Low-Orange Booster Buttons

Best Patient Outcomes

The VirtuoSaph™ EVH System provides an endoscopic approach to superficial vein harvesting. One small leg incision minimizes scarring, morbidity and infection associated with traditional longitudinal incisions.
Get a Closer Look

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Based in highly reputable medical institutions, Terumo's Centers of Excellence in Endoscopic Vein Harvesting have been established to promote collaboration and the establishment of best practices. The centers provide opportunities for clinicians evaluating the VirtuoSaph System to discuss the system and procedures with experienced surgical clinicians, observe cases, and practice the procedure on simulators.

Comprehensive training is available including advanced techniques and access to a clinical support team with more than 150 years of experience in harvesting veins.

Continuing Support

Terumo supports its products and the clinicians who use them with a commitment to service before, during and after the evaluation.

For more information on tower components and generator compatibility please contact your local Terumo sales representative or call Customer Service at (888) 787-4468.

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Innovations:

1. In vitro studies comparing the VirtuoSaph System with other commonly used methods of vein harvesting (unpublished).
4. Research comparing the VirtuoSaph System with other commonly used methods of vein harvesting (unpublished).
5. Clinical studies comparing the VirtuoSaph System with other commonly used methods of vein harvesting (unpublished).

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<tr>
<td>MCTR550</td>
<td>Trocar, sterile (for spare)</td>
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<tr>
<td>MCENDO550</td>
<td>Endoscope, 5.5 mm</td>
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<tr>
<td>MCB10000</td>
<td>Bipolar cord Generator, * only</td>
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