CAPIOX® SX Family of Oxygenators

High-performance, Hollow Fiber Oxygenators

TERUMO
Performance Data

CAPIOX® SX10 Hollow Fiber Oxygenator

O₂ Transfer Rate (in vitro)

\[
\text{O₂ Transfer Rate (mL/min)} = \frac{100}{Q_{\text{blood}}} 
\]

Conditions:
- Blood: Blood
- Hb: 12 ± 1 g/dL
- Temp: 37 ± 1°C
- FiO₂: 100%

CO₂ Transfer Rate (in vitro)

\[
\text{CO₂ Transfer Rate (mL/min)} = \frac{100}{Q_{\text{blood}}} 
\]

Conditions:
- Blood: Blood
- Hb: 12 ± 1 g/dL
- Temp: 37 ± 1°C
- FiO₂: 100%

Heat Exchanger Performance Factor (in vitro)

\[
\text{Performance Factor} = \frac{\Delta T}{\Delta H} 
\]

Conditions:
- Blood: Blood
- Hb: 12 ± 1 g/dL
- Temp: 37 ± 1°C
- Water Flow Rate: 10 L/min

Blood Side Pressure Drop (in vitro)

\[
\text{Pressure Drop (mmHg)} = \frac{\Delta P}{Q_{\text{blood}}} 
\]

Conditions:
- Blood: Blood
- Hb: 12 ± 1 g/dL
- Temp: 37 ± 1°C
- Water Flow Rate: 10 L/min

CAPIOX® SX18 Hollow Fiber Oxygenator

O₂ Transfer Rate (in vitro)

\[
\text{O₂ Transfer Rate (mL/min)} = \frac{100}{Q_{\text{blood}}} 
\]

Conditions:
- Blood: Blood
- Hb: 12 ± 1 g/dL
- Temp: 37 ± 1°C
- FiO₂: 100%

CO₂ Transfer Rate (in vitro)

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\text{CO₂ Transfer Rate (mL/min)} = \frac{100}{Q_{\text{blood}}} 
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Conditions:
- Blood: Blood
- Hb: 12 ± 1 g/dL
- Temp: 37 ± 1°C
- Water Flow Rate: 10 L/min

Blood Side Pressure Drop (in vitro)

\[
\text{Pressure Drop (mmHg)} = \frac{\Delta P}{Q_{\text{blood}}} 
\]

Conditions:
- Blood: Blood
- Hb: 12 ± 1 g/dL
- Temp: 37 ± 1°C
- Water Flow Rate: 10 L/min

CAPIOX® SX25 Hollow Fiber Oxygenator

O₂ Transfer Rate (in vitro)

\[
\text{O₂ Transfer Rate (mL/min)} = \frac{100}{Q_{\text{blood}}} 
\]

Conditions:
- Blood: Blood
- Hb: 12 ± 1 g/dL
- Temp: 37 ± 1°C
- FiO₂: 100%

CO₂ Transfer Rate (in vitro)

\[
\text{CO₂ Transfer Rate (mL/min)} = \frac{100}{Q_{\text{blood}}} 
\]

Conditions:
- Blood: Blood
- Hb: 12 ± 1 g/dL
- Temp: 37 ± 1°C
- FiO₂: 100%

Heat Exchanger Performance Factor (in vitro)

\[
\text{Performance Factor} = \frac{\Delta T}{\Delta H} 
\]

Conditions:
- Blood: Blood
- Hb: 12 ± 1 g/dL
- Temp: 37 ± 1°C
- Water Flow Rate: 10 L/min

Blood Side Pressure Drop (in vitro)

\[
\text{Pressure Drop (mmHg)} = \frac{\Delta P}{Q_{\text{blood}}} 
\]

Conditions:
- Blood: Blood
- Hb: 12 ± 1 g/dL
- Temp: 37 ± 1°C
- Water Flow Rate: 10 L/min

Holder Systems

Catalog # XX*CXH18
Catalog # XX*CXH18R
Catalog # XX*XH032
Terumo’s line of high-performance CAPIOX® SX oxygenators are available in multiple sizes to accommodate every patient. Able to meet the requirements of small to large patients, this family of oxygenators offers low priming options and high gas exchange. Proven performance features, including Terumo’s exclusive biopassive surface coating, make these highly efficient oxygenators the right choice for the perfusionist and the patient.

**Oxygenator**

- Terumo’s exclusive hollow fiber technology is used in every CAPIOX® SX oxygenator.
- Unique fiber bundle design creates a uniform blood flow, resulting in consistently high gas exchange.
- Superior quality control assures consistent oxygenator performance.

**Xcoating™ Surface Coating**

- This amphiphilic surface coating has both hydrophobic and hydrophilic properties which reduce platelet adhesion and minimize platelet activation.
- Non-heparin based biopassive polymer does not react with blood components.
- Adheres to all surfaces and has no contraindications for patient size.

**Reservoir**

- Separate cardiotomy and venous filters improve handling of venous blood and minimize defoamer contact.
- Flat front enhances visibility and allows for easy mounting of level sensor pads.
- Tapered design aids low level volume assessment.
- Volume scales are easily visible on three sides, even at low volume levels.
- Short breakthrough time permits quick and easy priming.
- Integrated positive pressure relief for vacuum assisted venous drainage (SX18/SX25).*
- Detachable hardshell reservoir for additional setup options.

**Heat Exchanger**

- Efficient heat exchange produced by hundreds of stainless steel pipes facilitates the uniform circulation of water through the heat exchanger compartment.
- Designed specifically to reduce cooling and rewarming times.
- *Non-compliant heat exchanger design does not expand and contract, regardless of temperature and pressure changes.
**CAPIOX® SX10 Oxygenator**

Specially designed to meet the needs of smaller patients.

- Priming volume of 135 mL
- Blood flow rate of up to 4.0 L/min
- Reservoir capacity of 3,000 mL; 70 mL minimum operating level

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**CAPIOX® SX18 Oxygenator**

Compact oxygenator for a wide range of patient sizes.

- Priming volume of 270 mL
- Large blood flow rate of up to 7.0 L/min
- Large reservoir capacity of 4,000 mL; 200 mL minimum operating level
Terumo Cardiovascular Group is a global leader in clinical education and support. Through programs like Terumo Academy and Optimizing Cardiac Surgery®, Terumo helps to ensure that the highest standards of clinical care are delivered to patients worldwide.

For information on training and education in your region, contact your local Terumo representative.

**CAPIOX® SX25 Oxygenator**

Enhanced gas exchange performance for larger patients.

- Priming volume of 340 mL
- Large blood flow rate of up to 7.0 L/min
- Large reservoir capacity of 4,000 mL; 200 mL minimum operating level
**CAPIOX® SX Family of Oxygenators**

### Specifications

**Oxygeanter and Heat Exchanger**

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>Housing</th>
<th>Polycarbonate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxygenator fibers</td>
<td></td>
<td>Microporous polypropylene</td>
</tr>
<tr>
<td>Heat exchanger</td>
<td></td>
<td>Stainless steel</td>
</tr>
</tbody>
</table>

**OXYGENATOR**

<table>
<thead>
<tr>
<th></th>
<th>SX10</th>
<th>SX18</th>
<th>SX25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber bundle surface area</td>
<td>Approx. 1.0 m²</td>
<td>Approx. 1.8 m²</td>
<td>Approx. 2.5 m²</td>
</tr>
<tr>
<td>Heat exchanger surface area</td>
<td>Approx. 0.13 m²</td>
<td>Approx. 0.22 m²</td>
<td>Approx. 0.22 m²</td>
</tr>
<tr>
<td>Blood flow range</td>
<td>0.5 - 4.0 L/min</td>
<td>0.5 - 7.0 L/min</td>
<td>0.5 - 7.0 L/min</td>
</tr>
<tr>
<td>Priming volume (static)</td>
<td>135 mL</td>
<td>270 mL</td>
<td>340 mL</td>
</tr>
<tr>
<td>Blood inlet port (from pump)</td>
<td>3/8&quot; (9.5 mm)</td>
<td>3/8&quot; (9.5 mm)</td>
<td>3/8&quot; (9.5 mm)</td>
</tr>
<tr>
<td>Blood outlet port</td>
<td>3/8&quot; (9.5 mm)</td>
<td>3/8&quot; (9.5 mm)</td>
<td>3/8&quot; (9.5 mm)</td>
</tr>
<tr>
<td>Cardioplegia port</td>
<td>1/4&quot; (6.4 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas inlet port</td>
<td>1/4&quot; (6.4 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas outlet port</td>
<td>1/4&quot; (6.4 mm)</td>
<td>(base: 3/8&quot; with gas vent)</td>
<td></td>
</tr>
<tr>
<td>Water ports</td>
<td>1/2&quot; (12.7 mm) Hansen quick connect fitting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum pressure blood inlet</td>
<td>1,000 mmHg (133 kPa)</td>
<td></td>
<td></td>
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</tbody>
</table>

**Ordering Information**

**CATALOG #**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>UNITS/CASE</th>
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<tbody>
<tr>
<td><strong>CAPIOX SX10 Oxygenator</strong></td>
<td></td>
</tr>
<tr>
<td>CXXSXR10</td>
<td>4</td>
</tr>
<tr>
<td>CXXSXR10X</td>
<td>4</td>
</tr>
<tr>
<td><strong>CAPIOX SX18 Oxygenator</strong></td>
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<tr>
<td>CXXSXR18</td>
<td>4</td>
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<tr>
<td>CXXSXR18X</td>
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<tr>
<td><strong>CAPIOX SX25 Oxygenator</strong></td>
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<tr>
<td>CXXSXR25</td>
<td>4</td>
</tr>
<tr>
<td>CXXSXR25X</td>
<td>4</td>
</tr>
<tr>
<td><strong>Holders for CAPIOX SX Oxygenator</strong></td>
<td></td>
</tr>
<tr>
<td>CXXCHX18</td>
<td>1</td>
</tr>
<tr>
<td>CXXCHX18R</td>
<td>1</td>
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<tr>
<td>CXXCHX32</td>
<td>1</td>
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<tr>
<td><strong>Accessories for CAPIOX SX Oxygenators</strong></td>
<td></td>
</tr>
<tr>
<td>1CXBP021</td>
<td>10</td>
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<tr>
<td>1CXBP022</td>
<td>10</td>
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</table>

**Hardshell Reservoir**

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>Housing</th>
<th>Polycarbonate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venous filter</td>
<td>Polyester screen type, pore size 47 µm</td>
<td></td>
</tr>
<tr>
<td>Cardioplemy filter</td>
<td>Polyester depth type</td>
<td></td>
</tr>
<tr>
<td>Defoamer</td>
<td>Polyurethane foam</td>
<td></td>
</tr>
</tbody>
</table>

**OXYGENATOR**

<table>
<thead>
<tr>
<th></th>
<th>SX10</th>
<th>SX18</th>
<th>SX25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood flow range</td>
<td>0.5 - 4.0 L/min</td>
<td>0.5 - 7.0 L/min</td>
<td>0.5 - 7.0 L/min</td>
</tr>
<tr>
<td>Venous flow</td>
<td>Max. 4.0 L/min</td>
<td>Max. 5.0 L/min</td>
<td>Max. 5.0 L/min</td>
</tr>
<tr>
<td>Cardioplemy inlet</td>
<td>Max. 4.0 L/min</td>
<td>Max. 7.0 L/min</td>
<td>Max. 7.0 L/min</td>
</tr>
<tr>
<td>Blood storage capacity</td>
<td>3,000 mL</td>
<td>4,000 mL</td>
<td>4,000 mL</td>
</tr>
<tr>
<td>Minimum operating volume</td>
<td>70 mL</td>
<td>200 mL</td>
<td>200 mL</td>
</tr>
<tr>
<td>Venous blood inlet port</td>
<td>3/8&quot; (9.5 mm)</td>
<td>1/2&quot; (12.7 mm)</td>
<td>1/2&quot; (12.7 mm)</td>
</tr>
<tr>
<td>Blood outlet port (to pump)</td>
<td>3/8&quot; (9.5 mm)</td>
<td>Rotatable (1/4&quot; adapter)</td>
<td>Rotatable</td>
</tr>
<tr>
<td>Blood inlet port</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suction ports</td>
<td>Six 1/4&quot; (6.4 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical port to CR filter</td>
<td>3/8&quot; (9.5 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quick prime port</td>
<td>1/4&quot; (6.4 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vent port</td>
<td>1/4&quot; (6.4 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary port</td>
<td>1/4&quot; - 3/8&quot; (6.4 mm - 9.5 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luer ports</td>
<td>Four filtered luer ports to cardiotomy filter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum sustainable negative pressure</td>
<td>-150 mmHg (-20 kPa)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive pressure relief valve</td>
<td>N/A</td>
<td>0 - 8 mmHg (1.1 kPa)*</td>
<td>0 - 8 mmHg (1.1 kPa)*</td>
</tr>
</tbody>
</table>

The photographed products featured throughout this brochure were manufactured in Terumo Cardiovascular Group’s Elkton, Maryland, and Ashitaka, Japan, factories. Depending on the factory, CAPIOX® SX oxygenators will exhibit slight physical design differences, including cap and label colors and shapes, method of positive pressure relief valve integration, venous inlet sampling port location, and CR filter material.

† Not available in Europe and the U.S.

‡ Not available in Europe. Replaced with catalog number XX*CXH25F.

* Only for products manufactured in Elkton, Maryland.

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