CAPIOX® FX Advance
Oxygenator with Integrated Arterial Filter and Hardshell Reservoir

Enhanced flow dynamics.
Expanded patient range.
Advanced outcomes.
Advance to the next level.

Terumo has led the way in oxygenator innovation and quality for more than 30 years and was the first — and is the only — company to manufacture its own hollow fiber.

The new CAPIOX® FX Advance Oxygenator advances your oxygenator to the next level by enhancing flow dynamics, resulting in lower minimum operating levels and increased maximum blood flow rates. Now, you can expand your options and choose a smaller, lower prime oxygenator for even more patients.

Working together with your surgery team, Terumo Cardiovascular Group helps save lives every day. That’s why we never compromise quality. And it’s why we constantly strive to deliver new technologies that advance patient outcomes and deliver exceptional clinical value.

Choose the oxygenator that expands your options and advances patient outcomes. Choose the CAPIOX FX Advance Oxygenator.
Introducing the CAPIOX® FX Advance Oxygenator with improved flow dynamics.

Patients come in all shapes and sizes — so do CAPIOX FX Oxygenators. Now, you can expand the use of CAPIOX FX Oxygenators through the enhanced flow dynamics offered on the CAPIOX Advance Hardshell Reservoir.

Advancements include an increased blood flow rate on the 3,000 mL reservoir — available on the CAPIOX FX15 Advance Oxygenator — and a lower minimum operating level on the 4,000 mL reservoir — available on the CAPIOX FX15 and FX25 Advance Oxygenators.

3,000 mL Hardshell Reservoir

Advantage:
Increased maximum blood flow to 5 L/min on the CAPIOX FX15 Advance Oxygenator*

Benefit:
Flexibility to use on a wider range of patients and the lowest prime adult oxygenator available today

4,000 mL Hardshell Reservoir

Advantage:
Reduced minimum operating level of 150 mL on the CAPIOX FX15 and FX25 Advance Oxygenators

Benefit:
Further helps minimize hemodilution with the lowest-prime full-size oxygenator²

*Use of Vacuum Assisted Venous Drainage may be required to achieve flow rate of 5 L/min.
CAPIOX FX15
Advance Oxygenator
Advancing Outcomes

Built around Terumo CV Group’s integrated arterial filter with self-venting technology, the CAPIOX® FX Advance Oxygenator helps clinicians reduce prime volume and lower hemodilution. The unique design of the CAPIOX FX Advance Oxygenator contributes to fewer blood transfusions and reduced hospital costs.

Low prime volume oxygenators reduce hemodilution, blood transfusions and the risk of Acute Kidney Injury

It is well known, with a high level of evidence (Class 1 level a), that excessive hemodilution during cardiopulmonary bypass (CPB) can lead to an increased incidence of red blood cell transfusions and other patient risks, including post-operative Acute Kidney Injury (AKI).

A recent study demonstrates that reducing hemodilution with a low prime volume oxygenator, by as little as 150 mL, is associated with fewer blood transfusions and reduced risk of post-operative AKI.

CAPIOX FX Advance Oxygenators allow you to minimize hemodilution, resulting in fewer blood transfusions and may decrease the risk of AKI.
Hardshell Reservoir

Enhanced flow dynamics

- Improved flow dynamics reduces blood turbulence and enhances gaseous microemboli removal
- Rotating, curved venous inlet enhances ease-of-use
- Increased maximum blood flow to 5 L/min on the CAPIOX FX15 Advance Oxygenator, with 3,000 mL reservoir, for use on a wider range of patients*
- Decreased minimum operating level of 150 mL on the CAPIOX FX15 and FX25 Advance Oxygenators, with the 4,000 mL reservoir, reduces hemodilution
- Elongated shape provides stable, smooth blood flow path
- Volume indicators on three sides enhances visibility at all levels and angles
- Built-in positive pressure relief valve increases convenience and safety

*Use of Vacuum Assisted Venous Drainage may be required to achieve flow rate of 5 L/min.

CAPIOX FX Oxygenator

Proven performance and fully integrated arterial filter

- Features self-venting technology
- Low priming volume, high gas exchange and low pressure drop are optimally balanced for superb performance
- Terumo’s exclusive hollow fiber technology enables total process control from raw materials to finished product
- Woven fiber bundle design provides consistent and high-performance gas exchange
- Less foreign surface area contact minimizes systemic inflammatory response
- Multiple blood outlet port configurations allow easy access and circuit flexibility
CAPIOX® FX15 Advance Oxygenator

The CAPIOX FX15 Advance Oxygenator significantly lowers prime volume for patients at risk for a higher rate of blood transfusions. With the CAPIOX FX15 Advance Oxygenator, smaller patients can have surgery with an oxygenator that best fits their unique metabolic needs. And now, the increased blood flow rate available with the 3,000 mL hardshell reservoir expands the use of a smaller oxygenator to more patients.

- Maximum blood flow: 5.0 L/min
- Oxygenator priming volume: 144 mL
- Reservoir storage capacity:
  - 3,000 mL: 70 mL minimum operating level
  - 4,000 mL: 150 mL minimum operating level
CAPIOX FX25 Advance Oxygenator

The unique design of the CAPIOX FX25 Advance Oxygenator provides a full-size oxygenator with a low prime volume, and the hardshell reservoir offers a reduced minimum operating level.

- Maximum blood flow: 7.0 L/min
- Oxygenator priming volume: 260 mL
- Reservoir storage capacity: 4,000 mL
- Minimum operating level: 150 mL

CAPIOX FX05 Oxygenator

The CAPIOX FX05 Oxygenator offers exceptionally low prime volume and high performance. Your most delicate patients deserve the lowest prime volume possible.

- Maximum blood flow: 1.5 L/min
- Oxygenator priming volume: 43 mL
- Reservoir storage capacity: 1,000 mL
- Minimum operating level: 15 mL
**CAPIOX FX15 Advance Oxygenator Performance Data**

- **O₂ Transfer Rate (in vitro)**
  - Conditions: Blood = Bovine
  - Hb = 12 ± 1 g/dL
  - Temp = 37 ± 1°C
  - pH = 7.4
  - SvO₂ = 65 ± 5%
  - V/Q = 1.0

- **CO₂ Transfer Rate (in vitro)**
  - Conditions: Blood = Bovine
  - Hb = 12 ± 1 g/dL
  - Temp = 37 ± 1°C
  - pH = 7.4
  - PvCO₂ = 45 ± 5 mm Hg
  - B.E. = 0 ± 5 mEq/L

- **Heat Exchanger Performance Factor (in vitro)**
  - Conditions: Blood = Bovine
  - Hb = 12 ± 1 g/dL
  - Temp = 37 ± 1°C
  - Water Flow Rate = 15 L/min

- **Blood Side Pressure Drop (in vitro)**
  - Conditions: Blood = Bovine
  - Hb = 12 ± 1 g/dL
  - B.E. = 0 ± 5 mEq/L
  - Temp = 37 ± 1°C

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**CAPIOX FX25 Advance Oxygenator Performance Data**

- **O₂ Transfer Rate (in vitro)**
  - Conditions: Blood = Bovine
  - Hb = 12 ± 1 g/dL
  - Temp = 37 ± 1°C
  - pH = 7.4
  - SvO₂ = 65 ± 5%
  - V/Q = 1.0

- **CO₂ Transfer Rate (in vitro)**
  - Conditions: Blood = Bovine
  - Hb = 12 ± 1 g/dL
  - Temp = 37 ± 1°C
  - pH = 7.4
  - PvCO₂ = 45 ± 5 mm Hg
  - B.E. = 0 ± 5 mEq/L

- **Heat Exchanger Performance Factor (in vitro)**
  - Conditions: Blood = Bovine
  - Hb = 12 ± 1 g/dL
  - Temp = 37 ± 1°C
  - Water Flow Rate = 15 L/min

- **Blood Side Pressure Drop (in vitro)**
  - Conditions: Blood = Bovine
  - Hb = 12 ± 1 g/dL
  - B.E. = 0 ± 5 mEq/L
  - Temp = 37 ± 1°C

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**CAPIOX FX05 Oxygenator Performance Data**

- **O₂ Transfer Rate (in vitro)**
  - Conditions: Blood = Bovine
  - Hb = 12 ± 1 g/dL
  - Temp = 37 ± 1°C
  - pH = 7.4
  - SvO₂ = 65 ± 5%
  - V/Q = 1.0

- **CO₂ Transfer Rate (in vitro)**
  - Conditions: Blood = Bovine
  - Hb = 12 ± 1 g/dL
  - Temp = 37 ± 1°C
  - pH = 7.4
  - PvCO₂ = 45 ± 5 mm Hg
  - B.E. = 0 ± 5 mEq/L

- **Heat Exchanger Performance Factor (in vitro)**
  - Conditions: Blood = Bovine
  - Hb = 12 ± 1 g/dL
  - Temp = 37 ± 1°C
  - Water Flow Rate = 15 L/min

- **Blood Side Pressure Drop (in vitro)**
  - Conditions: Blood = Bovine
  - Hb = 12 ± 1 g/dL
  - B.E. = 0 ± 5 mEq/L
  - Temp = 37 ± 1°C

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**Holder Systems**

- XX*CXH18R/801804
- XX*XH032/801139
- XX*CXH15
- XX*CXH118
- XX*CXH05R
## Specifications

### Oxygenator and Heat Exchanger

<table>
<thead>
<tr>
<th>Material</th>
<th>FX15</th>
<th>FX25</th>
<th>FX05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>Polycarbonate</td>
<td>Polycarbonate</td>
<td>Polycarbonate</td>
</tr>
<tr>
<td>Oxygenator fibers</td>
<td>Microporous polypropylene</td>
<td>Microporous polypropylene</td>
<td>Microporous polypropylene</td>
</tr>
<tr>
<td>Heat Exchanger</td>
<td>Stainless steel</td>
<td>Stainless steel</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Fiber bundle surface area</td>
<td>Approx. 1.5 m²</td>
<td>Approx. 2.5 m²</td>
<td>Approx. 0.5 m²</td>
</tr>
<tr>
<td>Heat exchanger surface area</td>
<td>Approx. 0.14 m²</td>
<td>Approx. 0.2 m²</td>
<td>Approx. 0.035 m²</td>
</tr>
<tr>
<td>Blood flow range</td>
<td>0.5 - 5.0 L/min</td>
<td>0.5 - 7.0 L/min</td>
<td>0.1 - 1.5 L/min</td>
</tr>
<tr>
<td>Priming volume (static)</td>
<td>144 mL</td>
<td>260 mL</td>
<td>43 mL</td>
</tr>
<tr>
<td>Blood inlet port (from pump)</td>
<td>3/8” (9.5 mm)</td>
<td>1/4” (6.4 mm)</td>
<td></td>
</tr>
<tr>
<td>Blood outlet port</td>
<td>3/8” (9.5 mm)</td>
<td>1/4” (6.4 mm)</td>
<td></td>
</tr>
<tr>
<td>Cardioplegia port</td>
<td>1/4” (6.4 mm)</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Luer port (for recirc. or blood cardioplegia)</td>
<td>N/A</td>
<td>One luer lock on blood outlet port</td>
<td></td>
</tr>
<tr>
<td>Gas inlet port</td>
<td>1/4” (6.4 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas outlet port</td>
<td>1/4” (6.4 mm)</td>
<td>5/16” (7.9 mm)</td>
<td></td>
</tr>
<tr>
<td>Water ports</td>
<td>1/2” (12.7 mm) Hansen quick connect fitting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum pressure blood inlet</td>
<td>1,000 mm Hg (133 kPa) (1.36 kgf/cm²)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum pressure water inlet</td>
<td>1,470 mm Hg (196 kPa) (2 kgf/cm²)</td>
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<td></td>
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</table>

### Arterial Filter

<table>
<thead>
<tr>
<th>Filter material</th>
<th>Polyester screen type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pore size</td>
<td>32 µm</td>
</tr>
<tr>
<td>Surface area</td>
<td>360 cm²</td>
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</tbody>
</table>

### CAPIOX® Advance Hardshell Reservoir

<table>
<thead>
<tr>
<th>Material</th>
<th>FX15</th>
<th>FX25</th>
<th>FX05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>Polycarbonate</td>
<td>Polycarbonate</td>
<td>Polycarbonate</td>
</tr>
<tr>
<td>Venous filter</td>
<td>Polyester screen type, pore size 47 µm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiotomy filter</td>
<td>Polyester depth type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Defoamer</td>
<td>Polyurethane foam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hardshell Reservoir</td>
<td>R30C</td>
<td>R40C</td>
<td></td>
</tr>
<tr>
<td>Blood flow range</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Venous flow</td>
<td>0.5 - 5.0 L/min</td>
<td>0.5 - 5.0 L/min</td>
<td>0.1 - 1.5 L/min</td>
</tr>
<tr>
<td>• Cardiotomy inlet</td>
<td>Max. 4.0 L/min</td>
<td>Max. 5.0 L/min</td>
<td>Max. 1.5 L/min</td>
</tr>
<tr>
<td>• Combined flow</td>
<td>Max. 5.0 L/min</td>
<td>Max. 5.0 L/min</td>
<td>Max. 1.5 L/min</td>
</tr>
<tr>
<td>Blood storage capacity</td>
<td>3,000 mL</td>
<td>4,000 mL</td>
<td>1,000 mL</td>
</tr>
<tr>
<td>Minimum operating volume</td>
<td>70 mL</td>
<td>150 mL</td>
<td>15 mL</td>
</tr>
<tr>
<td>Venous blood inlet port</td>
<td>3/8&quot; (9.5 mm)  Rotatable</td>
<td>1/2“ (12.7 mm) Rotatable</td>
<td>1/4“ (6.4 mm) Rotatable</td>
</tr>
<tr>
<td>Blood outlet port (to pump)</td>
<td>3/8” (9.5 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suction ports</td>
<td>Six, 1/4” (6.4 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical port to CR filter</td>
<td>3/8” (9.5 mm)</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Quick prime port</td>
<td>1/4” (6.4 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vent port</td>
<td>1/4” (6.4 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary port</td>
<td>1/4” - 3/8” (6.4 mm - 9.5 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luer ports</td>
<td>Three filtered luer locks to cardioplemy filter. One non-filtered luer lock. Two luer locks on venous inlet.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum sustainable negative pressure in reservoir</td>
<td>-150 mm Hg (-20 kPa)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive pressure relief valve</td>
<td>0 - 8 mm Hg (1.1 kPa)</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

Xcoating™ Surface Coating. Terumo’s biocompatible amphiphilic polymer surface coating is a standard feature on all CAPIOX FX Advance Oxygenators.
# Ordering Information

## Catalog # | Description | Units/Case
--- | --- | ---
CAPIOX® FX15 Advance Oxygenator
1CX*FX15W* | With integrated arterial filter, "west" orientation | 4
1CX*FX15E* | With integrated arterial filter, "east" orientation | 4
3CX*FX15RW30C* | With integrated arterial filter, 3,000 mL hardshell reservoir, "west" orientation | 4
3CX*FX15RE30C* | With integrated arterial filter, 3,000 mL hardshell reservoir, "east" orientation | 4
9CX*FX15RW40C | With integrated arterial filter, 4,000 mL hardshell reservoir, "west" orientation | 4
9CX*FX15RE40C | With integrated arterial filter, 4,000 mL hardshell reservoir, "east" orientation | 4
CAPIOX FX25 Advance Oxygenator
1CX*FX25W | With integrated arterial filter, "west" orientation | 4
1CX*FX25E | With integrated arterial filter, "east" orientation | 4
3CX*FX25RWC | With integrated arterial filter, 4,000 mL hardshell reservoir, "west" orientation | 4
3CX*FX25REC | With integrated arterial filter, 4,000 mL hardshell reservoir, "east" orientation | 4
CAPIOX FX05 Oxygenator
1CX*FX05RW | With integrated arterial filter, 1,000 mL hardshell reservoir, "west" orientation | 4
1CX*FX05RE | With integrated arterial filter, 1,000 mL hardshell reservoir, "east" orientation | 4

### Holders for CAPIOX FX Oxygenators
- 801139 | FX15/25 Advance oxygenators with hardshell reservoir, short arm | 1
- 801804 | FX15/25 Advance oxygenators with hardshell reservoir, long arm | 1
- 1XX*CXH15 | FX15/25 Advance oxygenators | 1
- 1XX*CXH18 | FX15/25 Advance oxygenators when separated from reservoir | 1
- 1XX*CXH18R | FX15/25 Advance oxygenators with hardshell reservoir | 1
- 1XX*HX032 | FX15/25 Advance oxygenators with hardshell reservoir, short arm | 1
- 1XX*CXH05 | FX05 oxygenator | 1
- 1XX*HX05R | FX05 oxygenator with hardshell reservoir | 1
- 1XX*CXH05AD | Adapter for SX holder for FX05 | 1

### Accessories for CAPIOX FX Oxygenators
- 1CX*BP021 | Blue thermistor wire | 10
- 1CX*BP022 | Red thermistor wire | 10

+ Contains two 1/4" - 3/8" adapters         # Contains four 1/4" - 3/8" adapters         ^ Contains four 3/16" - 1/4" adapters, one 1/4" - 3/8" adapters, and a recirculation line

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### REFERENCES:

1. Internal testing, data on file.

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