

CAPIOX® SX Series Oxygenators

Hollow Fiber Oxygenator Systems with Detachable Hardshell Reservoir

*CAPIOX® SX oxygenator systems
designed to fit wide patient volume requirements.*

Rotatable venous blood port



Cardiotomy filter

Venous filter

Blood outlet port
(to pump)

Blood cardioplegia port

Blood outlet port

Thermistor probe for measurement of
arterial blood temperature

Water port

Gas Out
DO NOT REMOVE

Gas outlet port

Heat exchanger

Gas inlet port

Gas exchange module



Detachable Hardshell Reservoir

Stable blood level

The short breakthrough time and low dynamic priming volume assure stable blood level even at minimal volumes, in addition to permitting quick and easy priming.

Easy visualization of blood volume

A volume scale is easily visible on three sides of the hardshell reservoir for instant identification, even at low volume levels. The tapered design allows wider scale graduations at low levels for precise assessment of volume.



Large reservoir capacity

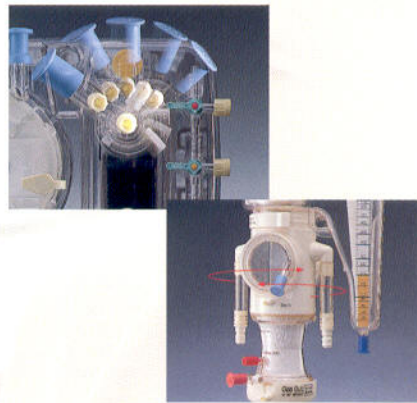
A large blood storage capacity allows for easy handling of high volume requirements.

Efficient filtration

The CAPIOX SX hardshell reservoir is equipped with separate venous and cardiotomy filters. The polyester cardiotomy filter facilitates removal of foreign particles greater than 20 μ m. The venous screen filter facilitates micro-bubble removal from the venous blood. The internal structure of both filters results in minimum exposure of the blood to antifoam agents.

Three rotatable points system

The CAPIOX SX oxygenators feature (1) a 360° rotatable venous inlet port, (2) a rotatable oxygenator module and (3) a rotatable system holder to give you maximum flexibility.



Hollow Fiber Oxygenator/Heat Exchanger

Low priming volume

Their small priming volume sets the CAPIOX SX oxygenator systems apart from the rest. Furthermore, the rotatable venous inlet port and swivel oxygenator module allow the use of shorter tubing lengths, thus reducing the total circuit priming volume even further.

Highly efficient and consistent gas exchange

The compact design of the CAPIOX SX oxygenator systems contributes to a low priming volume without affecting the transfer of oxygen to the blood or CO₂ removal, and the concave center of the fiber bundle creates a uniform flow.

Terumo's exclusive fiber

To ensure maximum patient safety, Terumo developed and manufactures its own hollow fiber using the Microphase Separation Method. This results in superior quality control from raw material to finished product, assuring consistent oxygenator performance.

The Terumo membrane features a unique structure comprising indirect continuous micropore channels. Furthermore, its thick wall serves to increase durability.

**Jpn. J. Artif. Organs
19(1), 472-475 (1990)*



Level alarm

Another Terumo safety and convenience feature is the low-level alarm. This device gives an audible warning should the blood volume in the reservoir fall below a level selected by the perfusionist. In addition, the desired level for the alarm can be easily changed to meet differing requirements during bypass.



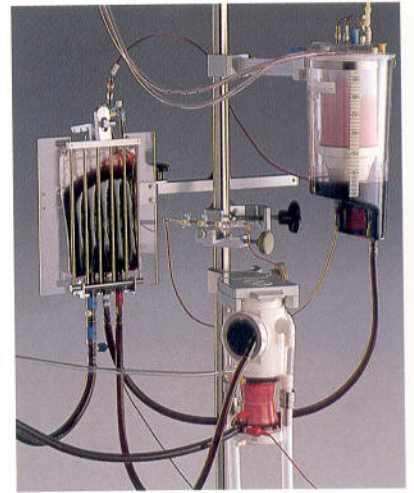
Detachable reservoir for increased versatility

The hardshell reservoir can be used attached to the oxygenator module, or detached and mounted separately as required.



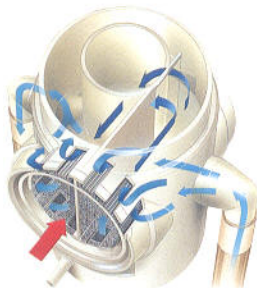
Choice between open and closed system

These oxygenator systems can also be used with a soft venous reservoir in a closed system configuration.



Non-compliant heat exchanger

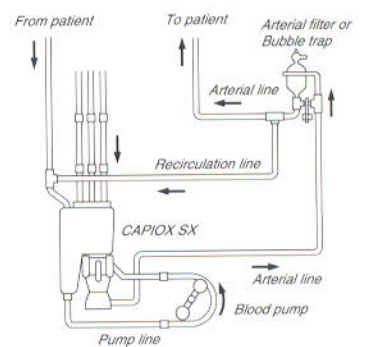
Offering reduced cooling and rewarming times, the highly efficient heat-exchanger module comprises a unique configuration of hundreds of non-compliant, separate stainless-steel pipes providing efficient water flow dynamics.



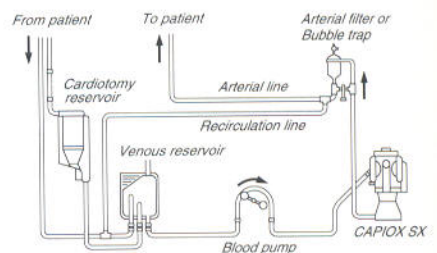
Reliable air handling

The venous filter and air purge port have been integrated to effectively facilitate the removal of air bubbles that may have entered with the blood. Furthermore, since the oxygenator design ensures that the blood flows from top to bottom, the risk of air entering the arterial line is reduced.

Open system



Closed system



CAPIOX[®] SX Series Oxygenators

Hollow Fiber Oxygenator Systems with
Detachable Hardshell Reservoir

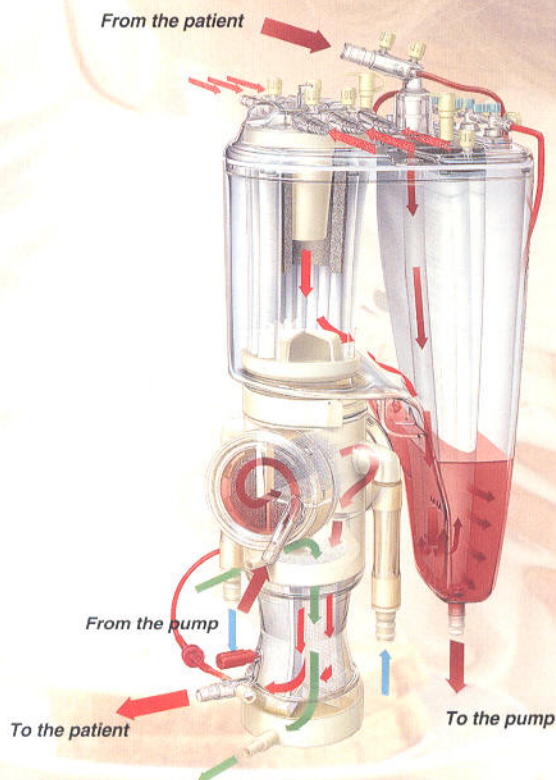
One family helping another — CAPIOX[®] SX oxygenator systems from Terumo.

Terumo's family of high-performance CAPIOX SX oxygenator systems is now available in multiple sizes to accommodate your every volume need.

From small-volume pediatric use to large patient requirements, these oxygenators offer low priming but high venous blood storage volumes.

The CAPIOX SX Series oxygenators feature a convenient detachable hardshell reservoir, allowing for more flexible set-up with other equipment.

Other performance features make these highly efficient oxygenators the best choice for the perfusionist and the patients.





One-piece holder for oxygenator with hardshell reservoir (Code No.: XX*CXH18R)
This easy-to-use holder features a rotatable supporting unit. The adjustable arm allows ideal positioning of the CAPIOX SX Series oxygenators.



Holder for oxygenator without hardshell reservoir (Code No.: XX*CXH18)
When attached to the holder, the oxygenator can be rotated 360°.



Reservoir holder (Code No.: XX*XH032)
For use with the hardshell reservoir detached from the oxygenator.



Cardiotomy reservoir with filter (CX*CR10/CX*CR40)
The unique construction enables blood storage without direct contact with the defoamer or filter materials.



Hardshell venous reservoir (CX*HR40)
A venous reservoir and cardiotomy reservoir are integrated in a single unit.



Venous reservoir (CX*VRA Series)
The unique and simple design of the venous inlet allows maximal air removal with minimal blood stagnation.



Arterial filter (Adult: CX*AF01) (Pediatric: CX*AF02)
High-tech, 32µm polyester mesh filter is specially designed for easy priming.



Centrifugal pump head; SP Pump (CX*SP45)
More efficient performance with unique straight path design.



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Designed to meet pediatric and small-volume requirements.

Priming volume of only 135ml

Small dynamic priming volume with a minimum venous reservoir
blood storage level of only 100 ml

Detachable hardshell reservoir enhances versatility of setup with other equipment

CAPIOX[®] SX10

**Hollow Fiber Oxygenator with Detachable Hardshell Reservoir
for Pediatric and Small-Volume Requirements**

TERUMO[®]
Cardiovascular Systems





CAPIOX[®] SX10

Hollow Fiber Oxygenator with Detachable Hardshell Reservoir for Pediatric and Small-Volume Requirements

Product description

Reorder Number	Description
CX*SX10R	Hollow Fiber Oxygenator with Hardshell Reservoir
CX*SX10	Hollow Fiber Oxygenator

Specifications

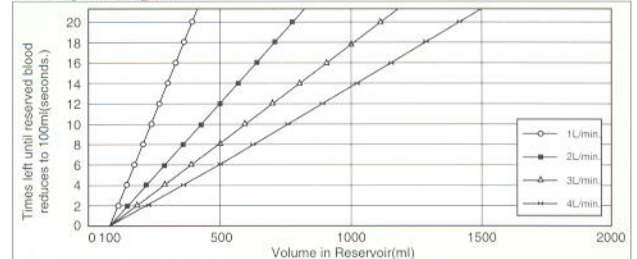
CAPIOX SX 10 Oxygenator Module

Component	Specifications
Housing	Material: Polycarbonate
Fibers	Material: Microporous polypropylene Surface area: Approx. 1.0m ²
Heat exchanger	Material: Stainless steel Surface area: Approx. 1,300cm ²
Max. blood flow	4.0 L/min.
Priming volume (static)	135ml
Blood inlet port (from pump)	3/8" (9.5mm) (1/4" adapter)
Blood outlet port	3/8" (9.5mm) (1/4" adapter)
Cardioplegia port	1/4" (6.4mm)
Gas inlet port	1/4" (6.4mm)
Gas outlet port	1/4" (6.4mm) (base: 3/8" with gas vent)
Water ports	1/2" (12.7mm) Hansen quick-connect fittings
Maximum pressure	Blood inlet: 1,000 mmHg (133kPa) Water inlet: 42 PSI (3ATM) (289kPa)

Hardshell Reservoir Section

Component	Specifications
Housing	Material: Polycarbonate
Blood flow range	Venous flow: Max. 4.0 L/min. Cardiotomy inlet: Max. 4.0 L/min. Combined flow: Max. 4.0 L/min.
Blood storage capacity	3,000ml
Minimum operating volume	100ml
Venous filter	Material: Polyester screen type, Pore size: 47 μm
Cardiotomy filter	Material: Polyester depth type, Efficiency: Removes not less than 90% of particles with ≥ 20 μm diameter
Defoaming part	Material: Polyurethane foam
Venous blood inlet port	3/8" (9.5mm) rotatable (1/4" adapter)
Blood outlet port (to pump)	3/8" (9.5mm) (1/4" adapter)
Suction ports	six 1/4" (6.4mm)
Vertical port to CR filter	3/8" (9.5mm)
Quick prime port	1/4" (6.4mm)
Vent port	1/4" (6.4mm)
Auxiliary port	3/8" (9.5mm)
Luer ports	- four filtered luer locks to cardiotomy filter - one non-filtered luer lock - two luer locks on venous inlet

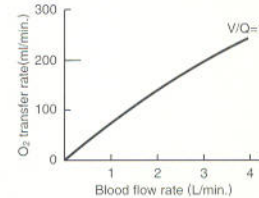
Safety margin



* Minimum operating blood level in Capiox SX10 Hardshell Reservoir. The above graph indicates the time in which the blood volume in the reservoir decreases to the minimum operating blood level of 100 ml at each flow rate. If the blood volume in the reservoir is below 100ml, bubbles may pass to the oxygenator module.

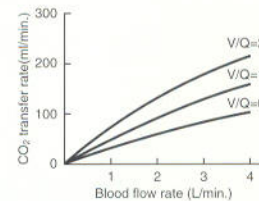
Performance data

O₂ transfer (in vitro)



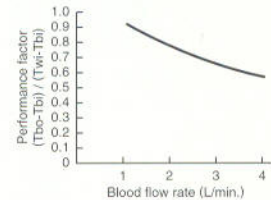
Conditions:
Blood: Bovine blood
Hb: 12 ± 1g/dL
SvO₂: 65 ± 5 %
PvCO₂: 45 ± 5 mmHg
B.E.: 0 ± 5 mEq/L
Temp: 37 ± 1 °C

CO₂ transfer (in vitro)



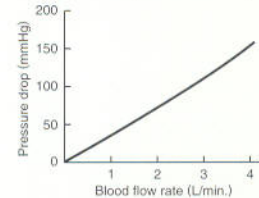
Conditions:
Blood: Bovine blood
Hb: 12 ± 1g/dL
SvO₂: 65 ± 5 %
PvCO₂: 45 ± 5 mmHg
B.E.: 0 ± 5 mEq/L
Temp: 37 ± 1 °C

Heat-exchanger performance factor



Conditions:
Blood: Bovine blood
Hb: 12 ± 1g/dL
T_{bi}: 30 °C
T_{wi}: 40 °C
Water flow rate: 15 L/min

Blood side pressure drop (in vitro)



Conditions:
Blood: Bovine blood
Hb: 12 ± 1g/dL
B.E.: 0 ± 5 mEq/L
Temp: 37 °C



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TERUMO®

Compact oxygenator for a wide range of patient sizes.

Priming volume of only 270ml

Large reservoir capacity of up to 4,000ml

Detachable hardshell reservoir enhances versatility of setup with other equipment

CAPIOX® SX18

Hollow Fiber Oxygenator with Detachable Hardshell Reservoir



**TERUMO®
Cardiovascular Systems**





CAPIOX[®] SX18

Hollow Fiber Oxygenator with Detachable Hardshell Reservoir

Product description

Reorder Number	Description
CX* SX18R	Hollow Fiber Oxygenator with Hardshell Reservoir
CX* SX18	Hollow Fiber Oxygenator

Specifications

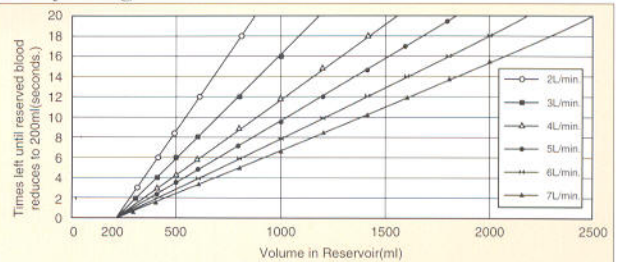
CAPIOX SX Oxygenator Module

Component	Specifications
Housing	Material: Polycarbonate
Fibers	Material: Microporous polypropylene Surface area: Approx. 1.8m ²
Heat exchanger	Material: Stainless steel Surface area: Approx. 2.200cm ²
Blood flow range	Min. 0.5 L/min. Max. 7.0 L/min.
Priming volume (static)	270ml
Blood inlet port (from pump)	3/8" (9.5mm)
Blood outlet port	3/8" (9.5mm)
Cardioplegia port	1/4" (6.4mm)
Gas inlet port	1/4" (6.4mm)
Gas outlet port	1/4" (6.4mm) (base: 3/8" with gas vent)
Water ports	1/2" (12.7mm) Hansen quick-connect fittings
Maximum pressure	Blood inlet 1,000 mmHg (133kPa) Water inlet 42 PSI (3ATM) (289kPa)

Hardshell Reservoir Section

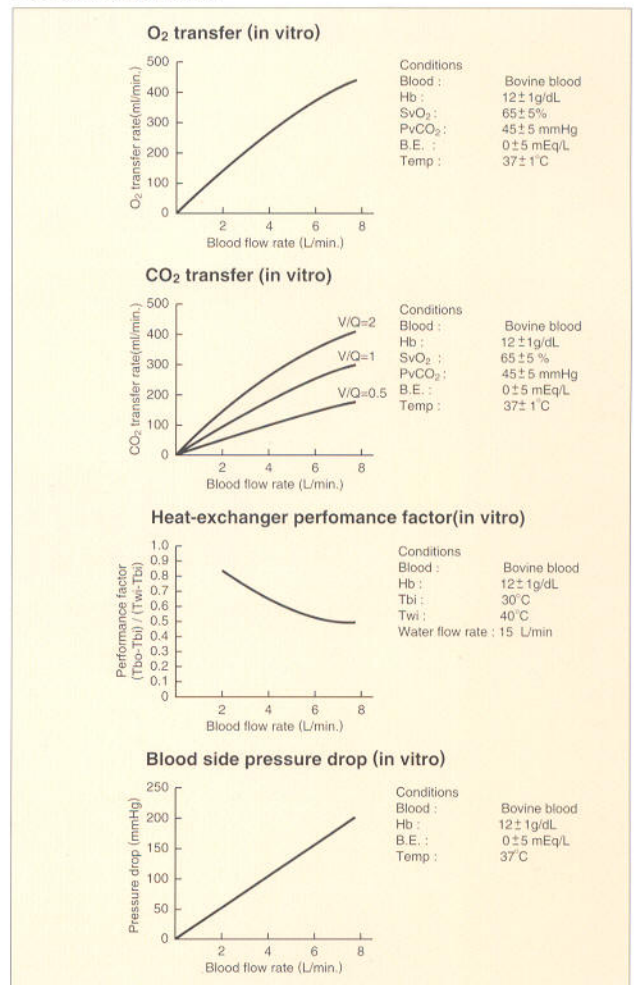
Component	Specifications
Housing	Material: Polycarbonate
Blood flow range	Venous flow: 0.5 L/min- 7.0 L/min. Cardiotomy inlet: Max. 5.0 L/min. Combined flow: Max. 7.0 L/min.
Blood storage capacity	4,000ml
Minimum operating volume	200ml
Venous filter	Material: Polyester screen type, pore size 47 μm
Cardiotomy filter	Material: Polyester depth type. Efficiency: Removes not less than 90% of particles with ≥ 20 μm diameter
Defoaming part	Material: Polyurethane foam
Venous blood inlet port	1/2" (12.7mm) rotatable
Blood outlet port (to pump)	3/8" (9.5mm)
Suction ports	six 1/4" (6.4mm)
Vertical port to CR filter	3/8" (9.5mm)
Quick prime port	1/4" (6.4mm)
Vent port	1/4" (6.4mm)
Auxiliary port	3/8" (9.5mm)
Luer ports	- four filtered luer locks to cardiotomy filter - one non-filtered luer lock - two luer locks on venous inlet

Safety margin



* Minimum operating blood level in Capiox SX18 Hardshell Reservoir. The above graph indicates the time in which the blood volume in the reservoir decreases to the minimum operating blood level of 200ml at each flow rate. If the blood volume in the reservoir is below 200ml, bubbles may pass to the oxygenator module.

Performance data



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Enhanced gas exchange performance for larger patients.

— Priming volume of 340ml

Large blood flow rate of up to 7.0 L/min.

Detachable hardshell reservoir enhances versatility of setup with other equipment

CAPIOX[®] SX 25

Hollow Fiber Oxygenator with Detachable Hardshell Reservoir

TERUMO[®]
Cardiovascular Systems





CAPIOX[®] SX25

Hollow Fiber Oxygenator with Detachable Hardshell Reservoir

Product description

Reorder Number	Description
CX*SX25R	Hollow Fiber Oxygenator with Hardshell Reservoir
CX*SX25	Hollow Fiber Oxygenator

Specifications

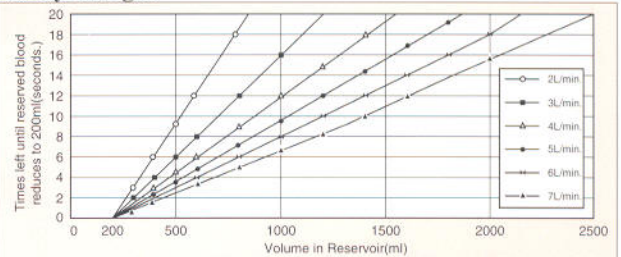
CAPIOX SX 25 Oxygenator Module

Component	Specifications	
Housing	Material	Polycarbonate
Fibers	Material	Microporous polypropylene
	Surface area	Approx. 2.5m ²
Heat exchanger	Material	Stainless steel
	Surface area	Approx. 2,200cm ²
Blood flow range	Min.	0.5 L/min.
	Max.	7.0 L/min.
Priming volume(static)	340ml	
Blood inlet port (from pump)	3/8"(9.5mm)	
Blood outlet port	3/8"(9.5mm)	
Cardioplegia port	1/4"(6.4mm)	
Gas inlet port	1/4"(6.4mm)	
Gas outlet port	1/4"(6.4mm) base: 3/8" with gas vent	
Water ports	1/2"(12.7mm) Hansen quick-connect fittings	
Maximum pressure	Blood inlet	1,000 mmHg (133kPa)
	Water inlet	42 PSI (3ATM) (289kPa)

Hardshell Reservoir Section

Component	Specifications	
Housing	Material	Polycarbonate
Blood flow range	Venous flow: 0.5 L/min - 7.0 L/min.	
	Cardiotomy inlet: Max. 5.0 L/min. Combined flow: Max. 7.0 L/min.	
Blood storage capacity	4,000ml	
Minimum operating volume	200ml	
Venous filter	Material	Polyester screen type, pore size 47 μm
Cardiotomy filter	Material	Polyester depth type.
	Efficiency	Removes not less than 90% of particles with ≥ 20 μm diameter
Defoaming part	Material	Polyurethane foam
Venous blood inlet port	1/2" (12.7mm) rotatable	
Blood outlet port (to pump)	3/8" (9.5mm)	
Suction ports	six 1/4" (6.4mm)	
Vertical port to CR filter	3/8" (9.5mm)	
Quick prime port	1/4" (6.4mm)	
Vent port	1/4" (6.4mm)	
Auxiliary port	3/8" (9.5mm)	
Luer ports	- four filtered luer locks to cardiotomy filter	
	- one non-filtered luer lock	
	- two luer locks on venous inlet	

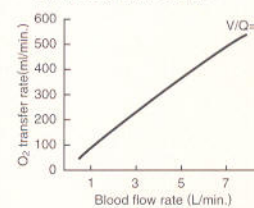
Safety margin



* Minimum operating blood level in Capiox SX25 Hardshell Reservoir. The above graph indicates the time in which the blood volume in the reservoir decreases to the minimum operating blood level of 200ml at each flow rate. If the blood volume in reservoir is below 200ml, bubbles may pass to the oxygenator module.

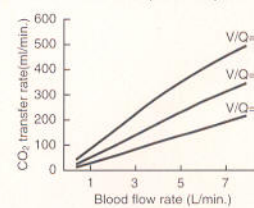
Performance data

O₂ transfer (in vitro)



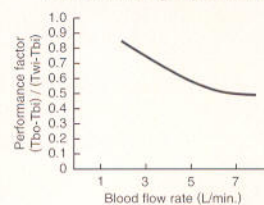
Conditions
 Blood: Bovine blood
 Hb: 12 ± 1g/dL
 SvO₂: 65 ± 5%
 PvCO₂: 45 ± 5 mmHg
 B.E.: 0 ± 5 mEq/L
 Temp: 37 ± 1°C

CO₂ transfer (in vitro)



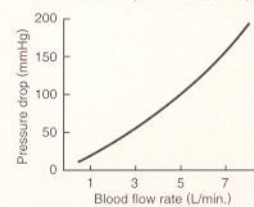
Conditions
 Blood: Bovine blood
 Hb: 12 ± 1g/dL
 SvO₂: 65 ± 5%
 PvCO₂: 45 ± 5 mmHg
 B.E.: 0 ± 5 mEq/L
 Temp: 37 ± 1°C

Heat-exchanger performance factor (in vitro)



Conditions
 Blood: Bovine blood
 Hb: 12 ± 1g/dL
 Tbi: 30°C
 Twi: 40°C
 Water flow rate: 15 L/min

Blood side pressure drop (in vitro)



Conditions
 Blood: Bovine blood
 Hb: 12 ± 1g/dL
 B.E.: 0 ± 5 mEq/L
 Temp: 37°C



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