

# *Streamline*<sup>®</sup>

AIRLESS. SIMPLE. THE NEW STANDARD IN BLOOD TUBING.



Available for  
**Fresenius<sup>®</sup> 2008<sup>®</sup>** and **B. Braun**  
hemodialysis machines



# Streamline®

AIRLESS. SIMPLE. THE NEW STANDARD IN BLOOD TUBING.

Streamline  
Bloodlines = Simple

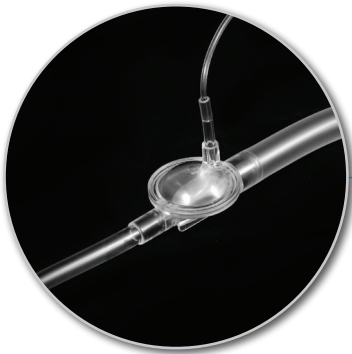


Conventional  
Bloodlines = Complex

Figure: From top to bottom Streamline® blood tubing and conventional (ReadySet®) on identical Fresenius 2008K machines

# Streamline: The New Standard

## Arterial



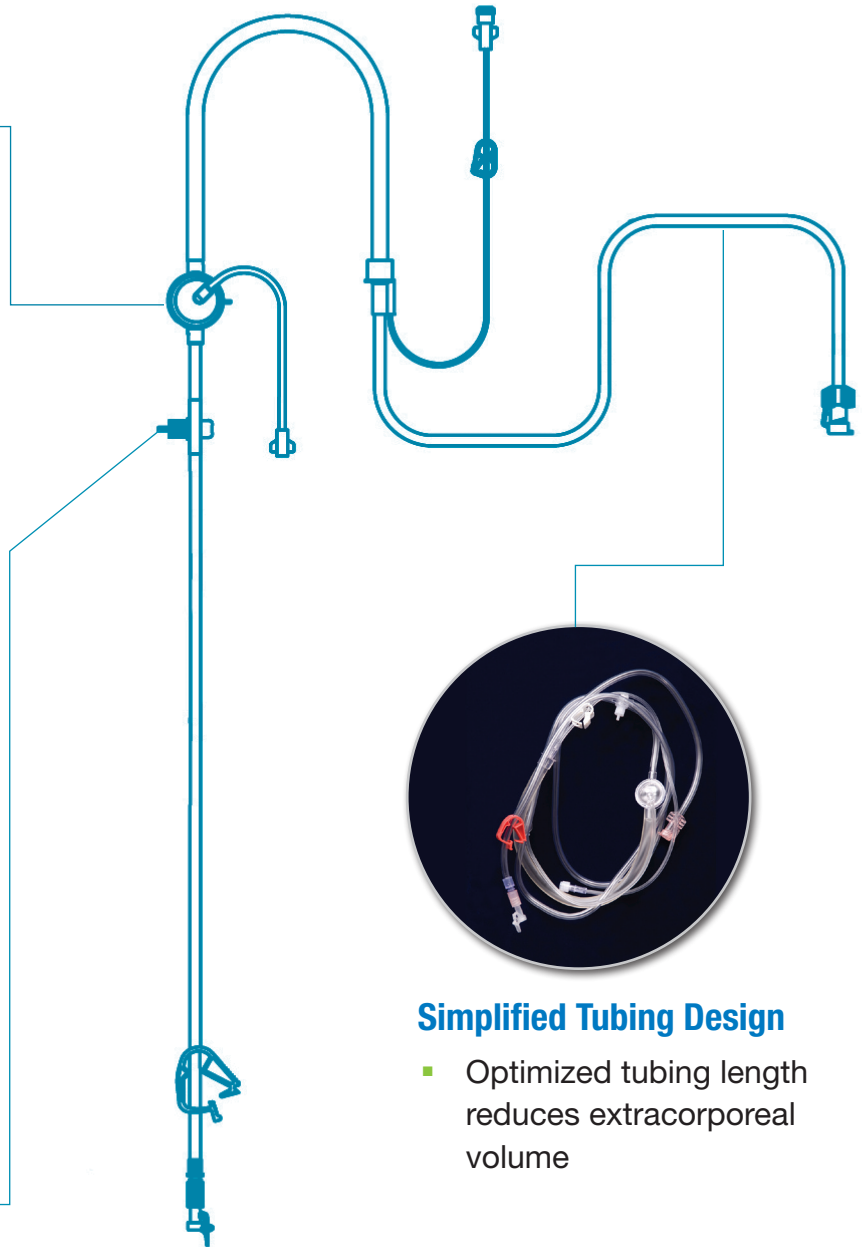
### Arterial pressure POD

- The airless pressure-transmitting assembly is designed to eliminate blood-air interface
- Elimination of blood-air interface may reduce the risk of clotting<sup>1,2</sup> which may:
  - » lower heparin needs as compared to conventional bloodlines
  - » decrease the number of blood-side machine alarms
- No need for external transducer protectors



### Locksite® needleless access

- Reduced risk of accidental needlesticks.



### Simplified Tubing Design

- Optimized tubing length reduces extracorporeal volume

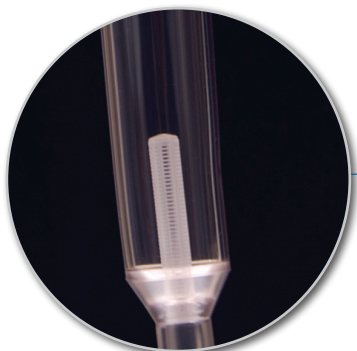
# in Blood Tubing

## Venous



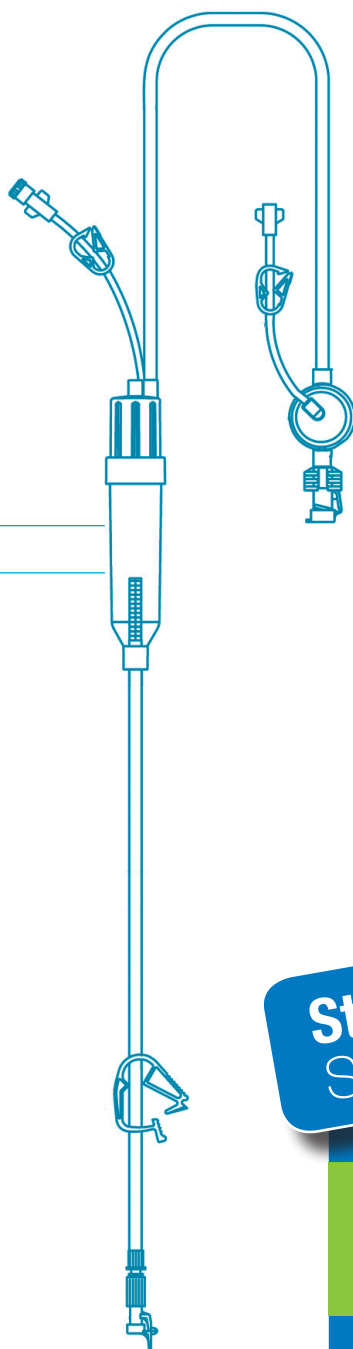
### Airless venous vortex chamber

- No air-gap, Streamline venous chamber runs completely filled with blood
- Horizontal “vortex” flow of blood designed to reduce stagnation, foaming, splashing, and microbubble formation



### Slim venous filter

- Designed to reduce clotting by reducing blood to surface contact.

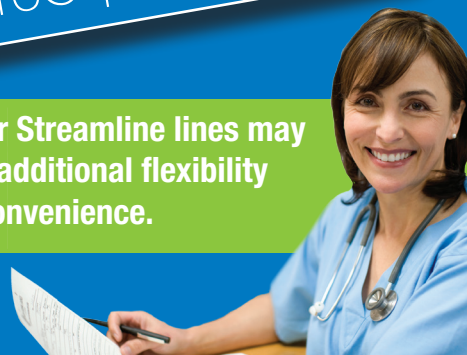


### Venous pressure POD

- The airless pressure-transmitting assembly is designed to eliminate blood-air interface
- Elimination of blood-air interface may reduce the risk of clotting<sup>1,2</sup>
- Studies have shown that providers using Streamline reported using less heparin versus conventional bloodlines for some patients<sup>3,4</sup>

**Streamline Long** with  
SecureClip® Available

Longer Streamline lines may allow additional flexibility and convenience.



Results of **four clinical studies** with the objective of evaluating the **clinical and/or operational benefits** of *Streamline*<sup>®</sup>.

<b>Study Endpoint</b>	<b>Study 1</b> Clinical and Operational Analysis <sup>3</sup>	<b>Study 2</b> Decreasing Dialyzer size and Heparin usage <sup>4</sup>	<b>Study 3</b> Lowering Qd <sup>5</sup>	<b>Study 4</b> Maximizing Kt/V <sup>6</sup>
Authors	James D. Cooke, RN CNN and John Moran MD	Sharon Haas RN, CDN Manohar Ahuja MD, MBBS, MRCP	Pat Smith R.N., CNN	Joan E. Arslanian Carl M. Lockman Yvette C. Parker Chaim Charytan
Study design	Cross-over	Cross-over	Cross-over	Cross-over
Study sample size (n)	117	67	117	202
<b>Results with Streamline</b>				
Increase in blood flow rate (%)	18%	5%	4%	19%
Change in arterial pressure (%)	Not assessed	-16%	-12%	-4%
% of patients meeting target Kt/V	98.3% @ target 1.4	76% @ target 1.4	100% @ target 1.2	73% @ target 2.0
Increase in % of patients meeting target Kt/V as compared to conventional bloodline	+27%	+10%	+4%	+34%
Change in heparin dose	-28.1%	-57%	Not assessed	Not assessed
Change in dialysate flow rate	-25%	Not assessed	-7%	Not assessed
% change in patients on large dialyzers (surface area ≥ 2.0 m <sup>2</sup> )	Not assessed	-69%	Not assessed	Not assessed

Results reported here were obtained with Streamline tubing sets designed for Fresenius 2008 series machines as compared to conventional bloodlines.



For more information  
on Streamline or other  
innovative Medisystems®  
products, call  
**1-800-369-MEDI**

With the Streamline  
bloodline,

our patients loved having

**less blood**

outside their bodies,

and getting better Kt/V . . .

**while we saved  
operational costs!**

- Cheryl Falconer  
Senior Member &  
Executive Director  
Dialysis Training Institute

Compared to conventional  
bloodlines, Streamline may  
enable providers to do one  
or more of the following while  
maintaining or improving Kt/V  
for some patients:\*

- Reduce heparin usage<sup>†</sup>
- Reduce dialysate flow\*
- Reduce dialyzer size\*

\*Streamline is designed to lower bloodline arterial pressures, which may enable higher blood flow rates in comparison to conventional bloodlines.

<sup>†</sup>Streamline is designed to eliminate blood-air contact, which may reduce the risk of clotting.

**References:**

1. Kitamoto Y, Fukui H, Matsushita K, Sato T, Soejima H, Noguchi Y, Kasama T. Suppression of thrombin formation during hemodialysis with triglyceride. *ASAIO J.* 1993;39(3):M581-M583. 2. Polaschegg HD. The extracorporeal circuit. *Semin Dial.* 1995;8(5):299-304. 3. Cooke JD, Moran J. StreamLine™ airless system set optimizes dialysis adequacy with reduced costs. Poster presented at American Society of Nephrology Conference, 2007. 4. Haas S, Ahuja M. Improving adequacy, heparin anticoagulation and dialyzer efficiency with new bloodline technology. Poster presented at American Society Nephrology Conference, 2010. 5. Smith P. Streamline bloodlines improve Kt/V while lowering dialysate usage. Poster presented at Nation Kidney Foundation Conference, 2010. 6. Arslanian JE, Lockman CM, Parker YC, Charytan C. Improved blood flow and adequacy with streamline bloodlines. Abstract presented at American Society of Nephrology Conference, 2010.



Lawrence, MA 01843 USA • [www.medisystems.com](http://www.medisystems.com) • 1.800.369.MEDI