Renaflo® II Hemofilters

From the Hemofiltration Specialists

MINNTECH®
THERAPEUTIC TECHNOLOGIES

Renaflo® II Hemofilters

The Renaflo II HF hemofilters are designed using glycerine-free polysulfone membranes. These membranes have exceptional biocompatibility for a broad range of medical device applications. Their superior blood compatibility is well documented with clinical evidence.[1,2]

Minntech's expertise and Knowledge, accumulated from over 35 years of development, manufacturing and clinical experience, is reflected in the quality and innovation of the Renaflo® II family.

Biocompatibility

- Polysulfone membrane offers excellent biocompatibility
- Meets the biocompatibility requirements of ISO 10993-4 selection of tests, for interactions with blood
- No anaphylactic responses reported with the Renaflo II hemofilters

Convenience

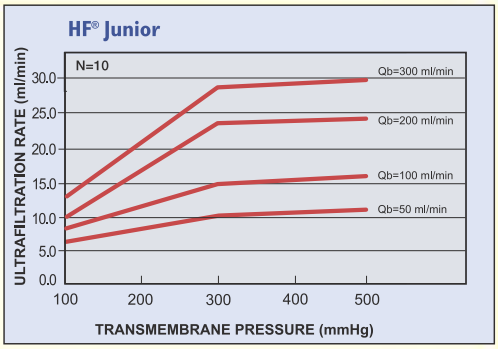
- No-rinse fiber offers convenient setup
- Complete model selection provides ultrafiltration rates for the full range of patients from the neonate to the largest adult

Reliability / Safety

- Proprietary fiber-manufacturing process ensures consistent performance
- Hollow fibers used in Renaflo II are proven to remove small and medium-sized solutes such as IL-6, TNFa, C3a, and C5a from the vascular space while conserving the cellular elements and proteins in the circulating blood
- Manufactured under U.S. Patent 5,762,798

The Renaflo® II Family

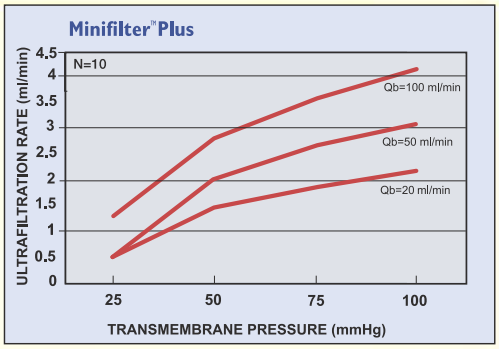
HF Junior



CVVHD Clearances – HF JUNIOR
Clearances verus inlet dialysate flow rate
(Continuous venovenous hemodialysis) Saline, T=37°C

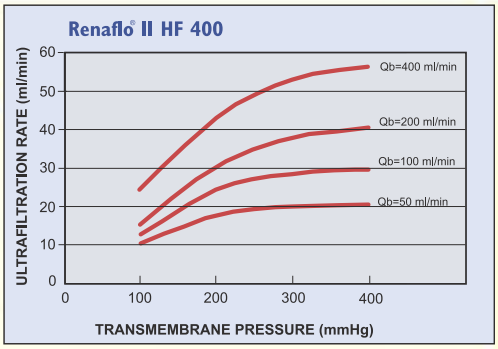
	QB 100 (ml/min)
QD (ml/min)	17 42 67 133
Urea (mg/dl) (±10%)	14 18 23 32
Vitamin B-12 (mg/dl) (±10%)	10 12 13 17
Cytochrome-C (mg/dl) (±10%)	8 9 8 13

HF Minifilter™ Plus



CVVHD Clearances – HF MINIFILTER PLUS
Data Not Available.

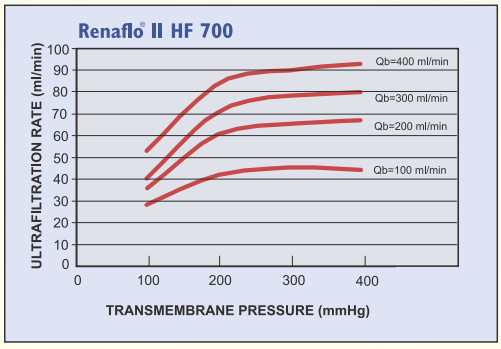
HF 400



CVVHD Clearances – HF 400
Clearances verus inlet dialysate flow rate
(Continuous venovenous hemodialysis) Saline, T=37°C

	QB 100 (ml/min)	**QB 200** (ml/min)
QD (ml/min)	17 42 67 133	17 42 67 133
Urea (mg/dl) (±10%)	9 16 27 35	13 24 30 67
Vitamin B-12 (mg/dl) (±10%)	6 10 21 20	7 14 18 38
Cytochrome-C (mg/dl) (±10%)	5 6 18 10	2 7 9 24

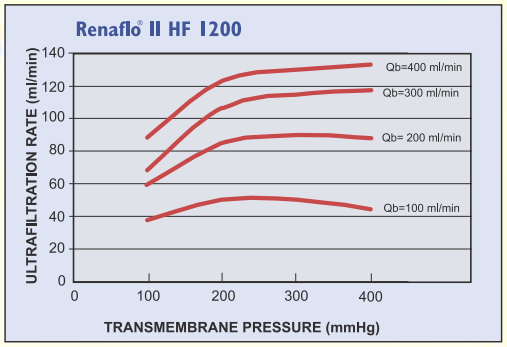
HF 700



CVVHD Clearances – HF 700
Clearances verus inlet dialysate flow rate
(Continuous venovenous hemodialysis) Saline, T=37°C

	QB 100 (ml/min)	**QB 200** (ml/min)
QD (ml/min)	17 42 67 133	17 42 67 133
Urea (mg/dl) (±10%)	19 35 51 70	20 38 63 86
Vitamin B-12 (mg/dl) (±10%)	16 28 36 45	18 30 40 52
Cytochrome-C (mg/dl) (±10%)	15 21 24 26	15 20 24 25

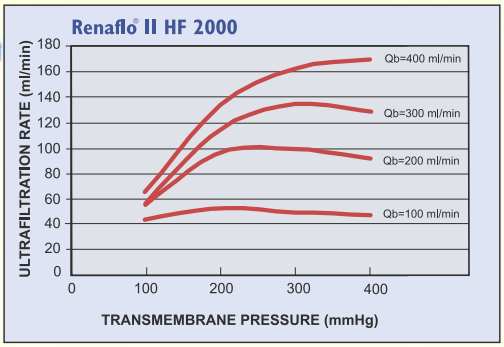
HF 1200



CVVHD Clearances – HF 1200
Clearances verus inlet dialysate flow rate
(Continuous venovenous hemodialysis) Saline, T=37°C

	QB 100 (ml/min)	**QB 200** (ml/min)
QD (ml/min)	17 42 67 133	17 42 67 133
Urea (mg/dl) (±10%)	17 39 55 76	16 43 63 102
Vitamin B-12 (mg/dl) (±10%)	16 33 44 53	18 38 51 71
Cytochrome-C (mg/dl) (±10%)	12 28 33 33	22 32 35 41

HF 2000



CVVHD Clearances – HF 2000
Clearances verus inlet dialysate flow rate
(Continuous venovenous hemodialysis) Saline, T=37°C

	QB 100 (ml/min)	**QB 200** (ml/min)
QD (ml/min)	17 42 67 133	17 42 67 133
Urea (mg/dl) (±10%)	17 39 54 70	19 42 61 95
Vitamin B-12 (mg/dl) (±10%)	18 33 44 54	21 36 50 70
Cytochrome-C (mg/dl) (±10%)	18 27 33 38	22 29 38 46

[1] Kramer, P., Wigger, W., Rieger, J., Matthaei, D., Scheler, F., Arteriovenous Hemofiltration: A new and simple method for treatment of overhydrated patients resistant to diuretics. Klin. Wachr. 55:1121-2, 1977.
[2] Kaplan, A.A., Longnecker, R. E., and Folkert, V.W., Continuous Arteriovenous Hemofiltration: A report of six month's experience. Ann. Intern. Med. 100:358-67, 1984

Renaflo® II Hemofilter Specifications

Product	HF® Junior	HF Minifilter™ Plus	HF 400	HF 700	HF 1200	HF 2000
Membrane Surface Area (M^2)	0.09	0.07	0.3	0.71	1.25	1.98
Prime Volume (ml)	8	14	28	53	83	132
Molecular Weight cut-off (Daltons)	65,000	65,000	65,000	65,000	65,000	65,000
Pressure Drop (mmHg)	55[3]	19[4]	33[5]	74[5]	73[5]	74[5]
Maximum Transmembrane Pressure (mmHg)	500	500	500	500	500	500
Overall Unit Length (cm)	15	15	13.8	25.3	25.3	25.3
Fiber Internal Diameter (microns)	200	620	200	200	200	200
Tubing Connections						
Blood	Male Luer	Male Luer	ISO	ISO	ISO	ISO
Filtrate	Female Luer	Female Luer	Luer	Luer	Luer	Luer

Sterilization: Ethylene Oxide Gas

Membrane Material: Polysulfone

HF Junior and HF Minifilter Plus packaged 4/case. All other sizes packaged 12/case.

Sieving Coefficients

HF Junior Hemofilter

In Vitro Test Results **(Aqueous Solution)**
Qb = 100, TMP = 40

	Molecular Weight (Daltons)	Sieving Coefficients
Urea	60	0.99
Creatinine	113	1.00
Vitamin B_{12}	1,355	0.98
Phosphate	120	0.98

In Vitro Test Results **(Bovine Blood)** Qb = 300, TMP = 100, Hct. = 32%, Temp. = 37°C, Total Protein = 6 gm/dL

	Molecular Weight (Daltons)	Sieving Coefficients
Myoglobin	17,000	0.50
Albumin	65,000	0.01
Inulin	5,000	0.89

HF Minifilter™ Plus

In Vitro Test Results **(Aqueous Solution)**
Qb = 200, TMP = 100

	Molecular Weight (Daltons)	Sieving Coefficients
Urea	60	.99
Creatinine	113	1.00
Vitamin B_{12}	1,355	.98

In Vitro Test Results **(Bovine Blood)** Qb = 200, TMP = 400, Hct. = 25%, Temp. = 37°C, Total Protein = 5gm/dL

	Molecular Weight (Daltons)	Sieving Coefficients
Myoglobin	17,000	0.489
Albumin	65,000	0.030
Vitamin B_{12}	1,355	.845

HF 400, HF 700, HF 1200, HF 2000

In Vitro Test Results **(Aqueous Solution)**
Qb = 200, TMP = 50

	Molecular Weight (Daltons)	Sieving Coefficients
Urea	60	1.00
Creatinine	113	1.00
Vitamin B_{12}	1,355	.984

In Vitro Test Results **(Bovine Blood)** Qb = 400, TMP = 400, Hct. = 25%, Temp. = 37°C, Total Protein = 6 gm/dL

	Molecular Weight (Daltons)	Sieving Coefficients
Myoglobin	17,000	0.170
Albumin	65,000	0.014

[3] In Vitro Test Results **(Bovine Blood)** end-to-end pressure drop, inlet conditions: Hct = 32%, Total Protein = 6.0 gm/dl, Temp= 37°c, Qb = 50 ml/mn, TMP = 100 mmHg

[4] In Vitro Test Results **(Bovine Blood)** Qb = 100, TMP = 100, Hct. = 25%, Temp. = 37°C, Total Protein = 6 gm/dL

[5] In Vitro Test Results **(Bovine Blood)** Qb = 100, TMP = 200, Hct. = 25%, Temp. = 37°C, Total Protein = 6 gm/dL

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