

1.4 SPECIFICATIONS - Fresenius 2008H Dialysate Delivery Machine

Dimensions

Floor space	approx. 50 cm x 50 cm
Height	133 cm
Total weight	approx. 70 kg

Power Supply- Main

Single phase AC 120 V $\pm 10\%$ 60 Hz ± 3 Hz must be connected to a circuit which is equipped with a hospital grade receptacle and is protected by circuit breaker and ground fault interrupter. Resistance from chassis to ground must be < 0.2 ohm.

Safety Group

UL 544. To be operated in medical rooms which comply with UL 544

Power Consumption

Fuses	Does not exceed 12.5 amps 2 ea. 6.3 amp med blow fuse 1 ea. 16 amp double pole rocker switch circuit breaker
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Heat Dissipation to Room

600 to 700 BTU/hr.

Water Supply

Water Pressure	min 20 psi; max 105 psi
Water Temperature	min 10 °C; max 25 °C
Quality	AAMI Standard, RD5, 1992

Drain

3 feet maximum height. Must comply with local codes and must maintain a free fall air gap between drain hose and building drain.

Concentrate Supply

Concentrate Pressure	max suction height 3 feet max supplied pressure 2 psi
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Dialysate Flow

Adjustment Range	Sequential (SEQ.) /300/400/500/600/700/800 ml/min., selectable in main dialysis screen; (ON/OFF touch pad)
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Proportional Mixing System

Acetate or Acid Normal Setting	selectable 1:34 / 1:44 / 1:35.83 - volumetric
Adjustment Range	130 to 155 meq/L Na

Bicarbonate

Normal Setting	selectable 1:27.6 / 1:19.1 / 1:31.1 – volumetric
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Adjustment Range	25 to 40 meq/L Bicarbonate
Monitoring Conductivity	Temperature compensated conductivity display with automatically set alarm windows ± 0.5 mS/cm around calculated conductivity.
Range of Display	10.0 to 17.00 mS/cm. at 25° C. Alarm limits will not go below 13.0 or above 16.0
Dialysate Heating	
Nominal Value of Temperature	34 to 39° C, (selectable in 0.1 ° C steps)
Temperature Display	Range 35 to 39° C with alarm limit window automatically adjusted to 2° C above and below set point. Alarm window will not go below 33° or above 41° C. Heater 1.3 KW, electronically controlled.
Heat Disinfection	
Temperature	83 \pm 8° C at NTC 3
Display Range	33 to 95° C
Flow Rate	approx. 400 ml/min. recirculating
Time	Between 10 and 60 minutes (internally selectable)
Chemical Disinfection	
Temperature	37° C (set point applicable)
Flow Rate	620 ml/min.
Time	Between 10 and 60 minutes (internally selectable)
Rinsing	
	Temperature 37° C. Flow rate 620 ml/min. Time between 10 and 60 minutes (internally selectable)
Blood Pump	
Display of flow rate	0 to 600 ml/min. (450 ml/min. max. with 6.5 mm ID pump segment)
Internal diameter of pump segment	5 to 10 mm (0.2" to 0.4")
Tube length	32 cm minimum (12-5/8")
Revolution Range	approx. 60 RPM max
Single Needle System	
Two Pump Procedure	With two blood pumps, pressure control system with alternating blood pumps. Alarm after 15 or 30 seconds without an alternation of the pumps.
Heparin Pump	
Type of Syringe	30 ml disposable syringe (Fresenius)
Administration Rate	0.5 to 10 ml/hr
Monitoring	Internal monitoring with time alarm

Monitoring Elements: Blood Circuit

Arterial Pressure Monitor

Pre-pump monitor range (-300 to 280 mmHg) or post-pump monitor range (-80 to 500 mmHg) are available. Both features automatically set time delayed alarm window limit values ± 60 mmHg of actual pressure. (Single Needle ± 80 mmHg).

Venous Pressure Monitor

-80 to +500 mmHg with automatically set window limit values of ± 60 mm Hg of actual pressure. (Single Needle ± 80 mmHg).

TMP Monitor

+60 to -520 mmHg with automatically set time delayed window limit values of ± 60 (conventional dialysis) and ± 40 mmHg (high flux dialysis). Compensation for upward drift.

Level Detector

Ultrasonic impulse sensor with low frequency impulse sequence. Detects fluid level in the venous drip chamber.

Optical Sensor

Optical transmission used to detect opaque or non-opaque presence in the extracorporeal circuit.

Blood Leak Detector

Two color light source transmitter / sensor with a resolution of:
minor - 0.35 ml/min. (hematocrit = 25%)
alarm - 0.45 ml/min. (hematocrit = 25%)

Ultrafiltration Control

Adjustment Range of UF Rate

Volumetric Control, 0-4000 ml/hr.
1000, 2000, 3000, and 4000 ml/hr. internally max rate. Adjusted in 10 ml increments.

UF Time

Digital Display (0 - 9 hrs. 59 min.) Selectable in increments of 1 min.

UF Goal

Digital display (0 to 9990 ml). Selectable in increments of 10 ml.

Remaining Time of Dialysis (RTD)

0-9:59 hours auto transfer from UF time, counting down in 1 minute increments. Can adjust manually.

UF Removed Display

Digital display max 9999 ml, counting in 1 ml increments.

Additional Monitoring

Alarm in case of power failure. Alarm in case of water shortage

External Connections

- A. Alarm output normally open and normally closed switch contacts reflecting alarm state. 24 V, 0.2 amp max.
- B. Alarm input
- C. External alarm light or traffic light(status).
- D. RS232, leakage current isolation between the machine and FDS08