

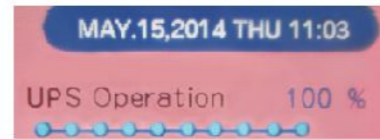
Safety and Reliability of treatment based on advanced technology

1. The UF control of the TQS-88 is supported by a "closed circuit system" to ensure the accurate removal of excessive fluid. Originally invented and developed by Toray, this system has been accepted worldwide as the most reliable technology for UF control.



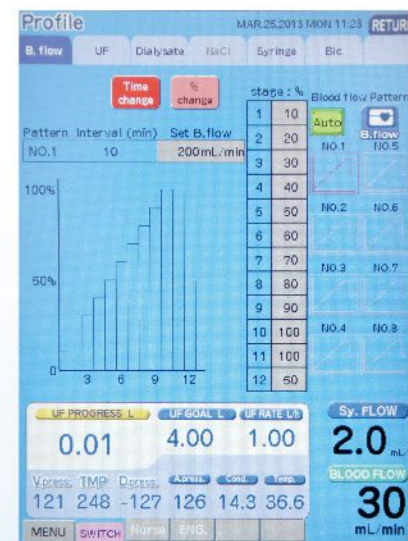
2. Multi disinfection mode is available, one-way auto disinfection, disinfectant shortage and conductivity are monitored during disinfecting, disinfectant automatic drain after disinfection and hot water disinfection can be selected.

3. UPS (uninterruptible power system), the backup Power supply allows automatically the operation of blood pump, syringe pump, LCD touch panel, clamp of blood tubing line, displaying alarm message, alarm sound and status lamp at the time of power failure.



4. Air bubble detector is integrated with venous clamp. In order to achieve the aim of high precision for air bubble detecting.

5. The cover is designed for quick coupler nozzle, to prevent contamination.



6. Various profile: Various profiles, such as UF, Dialysate, Bicarbonate, Blood Flow Rate and Syringe can be freely designed.

TORAY

Technical data

Monitor section

Dialysate temperature indicator:	0.0 to 99.9°C
Dialysate flow meter:	300 to 800mL/min
Venous pressure indicator:	-200 to +400mmHg
Arterial pressure indicator:	-400 to +500mmHg
Dialysate pressure indicator:	-400 to +400mmHg
UF rate setter:	0.00 to 5.00L/h
UF goal-setting device:	0.00 to 40.00L
Syringe pump flow-rate indicator:	0 to 9.9 mL/h

Safety design

- Status lamp (4 colors)
- Self-test of hydraulic line
- TMP monitor/TMP alarm
- Compliance with IEC60601-1, IEC60601-2-16 requirements

Options

- Automatic Blood Pressure Monitor
- Bicarbonate Cartridge Holder
- Double-Pump Single Needle
- On-Line HDF
- On-Line HDF and Substitution shortage sensor
- Data Communications
- Endotoxin Retentive Filter Leak Test Function
- Kt/V Indication
- Blood Volume Monitor

Accessories

- Priming funnel
- Holder for ETRF
- ETRF cover
- Handle
- Concentrate tray
- Disinfectant bottles
- Disinfectant bracket
- Concentrate centralized piping bracket
- Holder for BVM
- Nurse call cable
- Baskets for blood pressure monitor cuff

Specifications

Power supply:	220-230V, 50/60Hz
Max. power consumption:	1.5kVA
Dimensions (W×H×D):	322×1,378×375mm main body only
Weight:	max. 85Kg
Pressure of supplied water:	0.1 to 0.3 MPa
Flow rate of supplied water:	800mL/min or greater
Temperature of supplied water:	5 to 30°C
Quality of supplied water:	equivalent to or better than ISO23500 Guidance
Range of dialysate temperature regulation:	33 to 40°C
Range of dialysate flow rate regulation:	300 to 700mL/min
Range of UF rate regulation:	0.00 to 5.00L/h
Range of dialysate conductivity regulation:	13.0 to 16.0mS/cm in 1-9 steps (in increments of 0.3mS/cm)
Acetate dialysate and bicarbonate dialysate	
Substitution pump rate setting range:	0.0-18.0L/h (On-line HDF option)
Substitution goal amount setting range:	0.01-99.99L (On-line HDF option)
Range of blood flow rate regulation:	
Inner Diameter 8.0mm	0, 30 to 600mL/min
Inner Diameter 6.5mm	0, 20 to 400mL/min
Range of syringe flow regulation:	0.0 to 9.9mL/h (with rapid function)
Available syringe size:	10mL/20mL/30mL
Air bubble detector:	ultrasonic detection system
Sensitivity:	Greater than 0.020mL Greater than 0.3µL (Continuous air bubbles) (Under conditions of blood flow rate 200 mL/min)
Blood leak detector:	Photoelectric detection system
Sensitivity:	Greater than 300ppm (Ht. 32%±2%, 37°C condition)
Disinfection:	Hot water disinfection or chemicals

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MANUFACTURED BY:

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CE 0197

This Medical Device meets the Medical Device Directive 93/42/EEC.

EC REP

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TORAY

Single Patient Dialysis Machine



Type: TQS-88

Supported by the advanced technologies of Toray, Type:TQS-88 offers comfortable dialysis treatment to patients and easy operation to medical staff.



Type:TQS-88 standard

Type:TQS-88 with On-line HDF and Bicarbonate Cartridge Holder Options

Humanized design & Convenient operation



1. Large vertical display:
Easy viewable 10.4 inch LCD touch panel offers reliable and friendly operation for treatments.
Background color of display changes at each dialysis step. At a glance operator can see what dialysis step is going on.
Icons on the operation screen can be designed according to operators' necessity.



2. Drip chamber level adjustment
liquid level of arteriovenous drip chamber can be adjusted conveniently by screen operation.

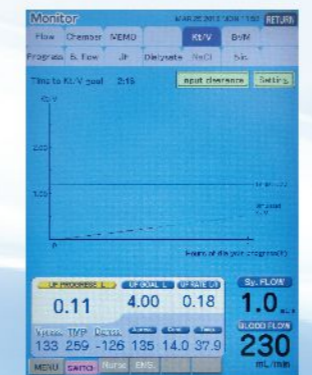
Optional functions for comfortable dialysis treatment



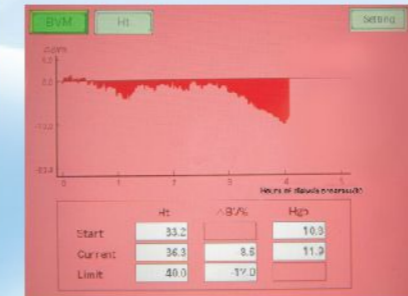
1. Bicarbonate Cartridge Holder:
Bicarbonate concentrated solution is supplied by using NaHCO₃ powder in a cartridge type container.



2. On-line HDF:
On-line HDF treatment is performed by putting an additional substitution pump, and making the purifier dialysate through 2pcs of ETRF (Endotoxin retentive filter)connected in series.

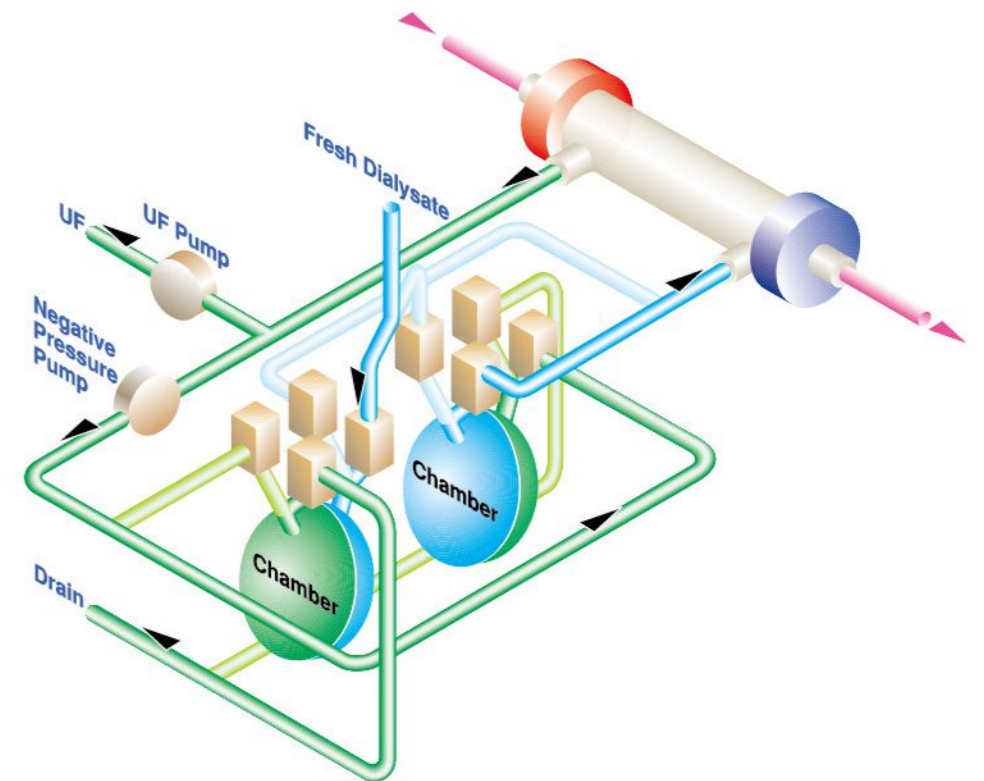


3. Kt/V Indication:
Kt/V is indicated on the display.



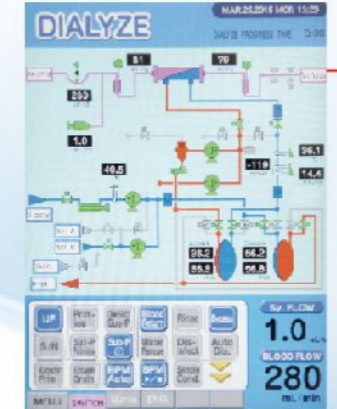
4. BVM(Blood Volume Monitor):
During hemodialysis, blood volume(ΔBV) is monitored by measuring the hematocrit sensor in order to monitor patient body fluid effectiveness, BVM shows the trend of cardiovascular abnormality such as hypotension.

Toray's Reliable Volumetric UF Control (Closed circuit system) & Improvement of maintenance mode



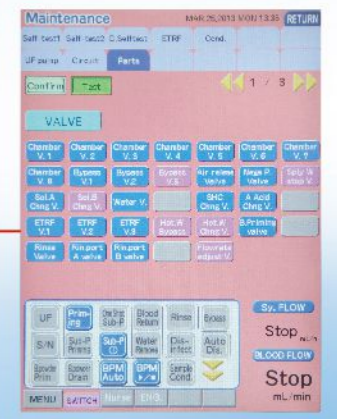
The primary characteristic of each chamber is having a silicone membrane to separate fresh and used dialysate. These two chambers alternately prepare fresh dialysate and discharge the used one, continuously keeping the dialysate circuit closed. Thanks to pre-determined quantity of UF which is drawn from such closed circuit, the targeted removal of excessive fluid is accomplished.

Effective maintenance assistant



① Hydraulic flow chart
Hydraulic flow status displays in real time.

② Parts operation test
Each part can be tested during stop mode, and the working status can be monitored.



- 3. Open structure
The cover around the machine can be easily opened for maintenance.
- 4. Separation of hydraulic part and electrical part
Advanced layout design: Hydraulic part is located downside, separated from electrical part.