

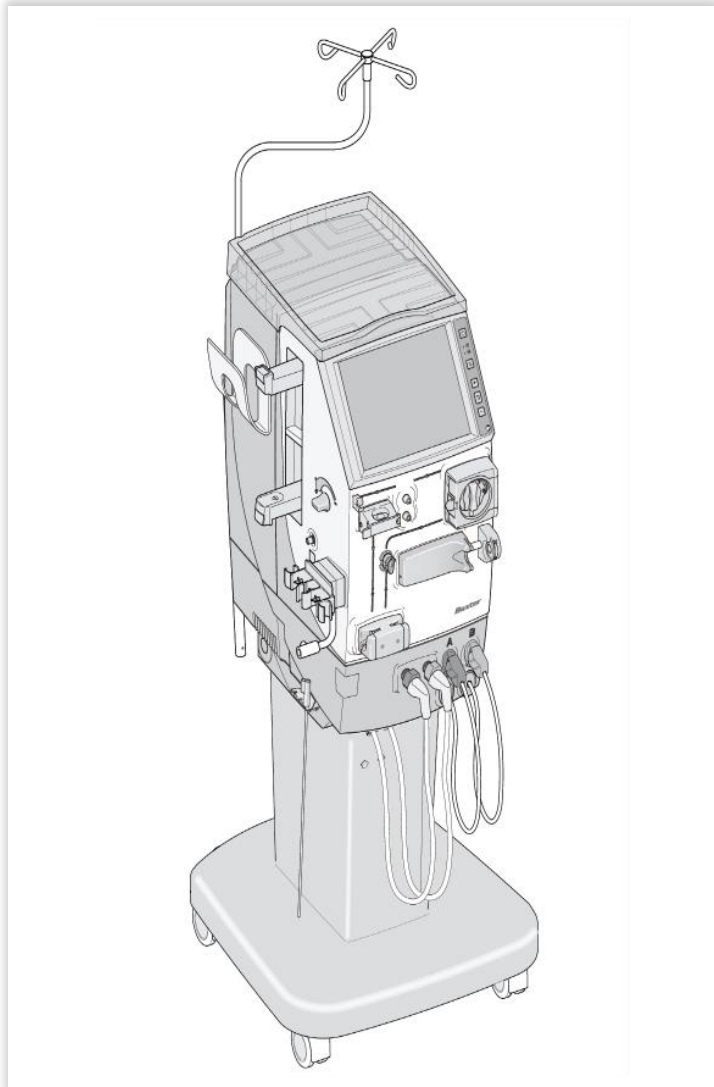
Baxter

AK 98 Dialysis Machine Bridge 2.xx to 3.xx

Reference: AK 98 Operator's Manual 3.xx
Chapters 2,3,4,10 & Alarm handbook



AK 98 DIALYSIS MACHINE



Important Notice:

The contents of this training does not replace the training by the local healthcare provider. It does not replace the users responsibility to read and understand the full text of the Operator's manual prior to operating the machine. If there are deviations between the actions described here, and the instructions contained in the Operator's Manual, then the information from the Operator's Manual takes precedence.

INTENDED USE | Refer to Operator's Manuals SW 3.xx

Special Considerations:

CAUTION!

If treating patients weighing below 25 kg it is recommended that UF supervision alarm limits are configured accordingly by an authorized service technician.

CAUTION!

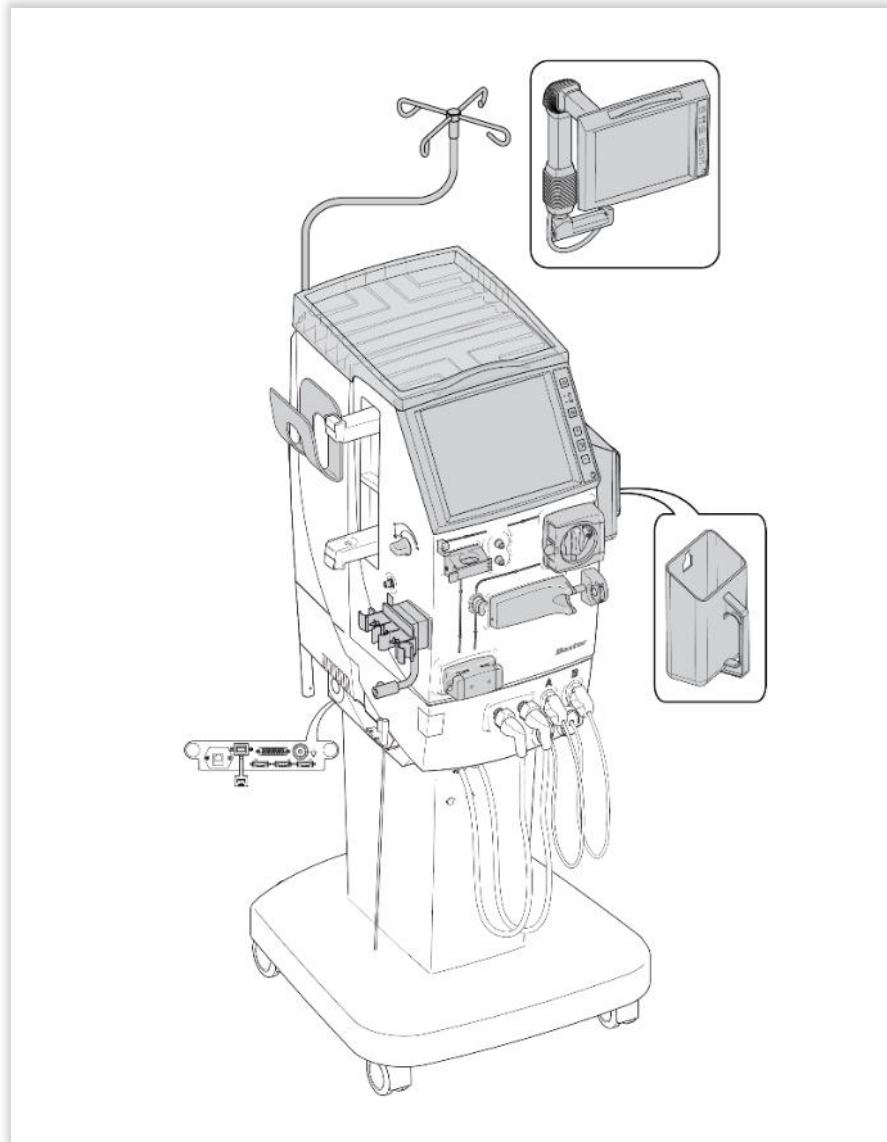
The treatment of patients with a weight below 25 kg shall be performed under the full supervision of the physician. In these cases, additional measures to supervise the patient weight loss as per standard of care for low body weight is recommended. Failure to do so could result in serious adverse consequences like hypovolemia and hypotension.

LEARNING OBJECTIVES

The aim of this module is to get an overview of the **AK 98 v 3.xx software** with special focus on:

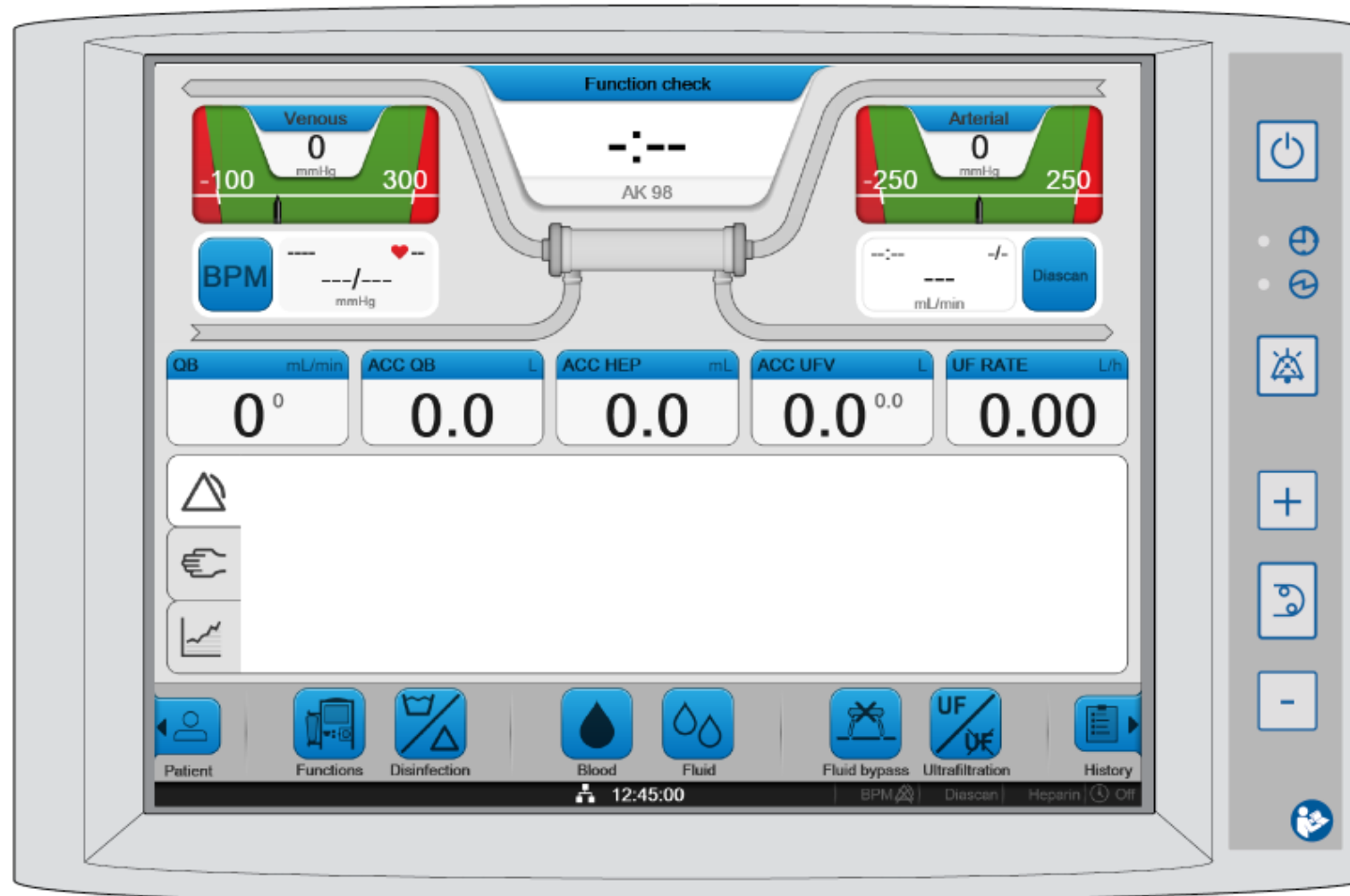
- The new Screen
- The new Arterial and venous pressure alarm limits handling
- The new Functions menu
- The new Blood menu
- The new Heparin pump adapter
- The new Pause treatment program
- The new Descaling program
- The updated UF supervision and Fluid leakage detector alarm handling
- The difference between Recovered from Power failure and Technical restart
- The updated Hygienic maintenance schedule

MACHINE EXTERNAL COMPONENTS | Blood Part



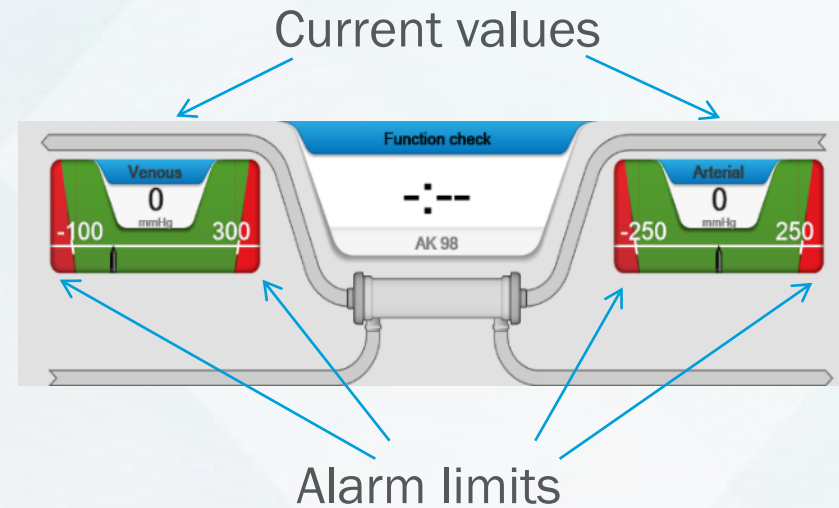
1. New angled blood line holder
2. Prime bucket (not available on all markets)

THE OPERATOR'S PANEL | Touch Screen Layout



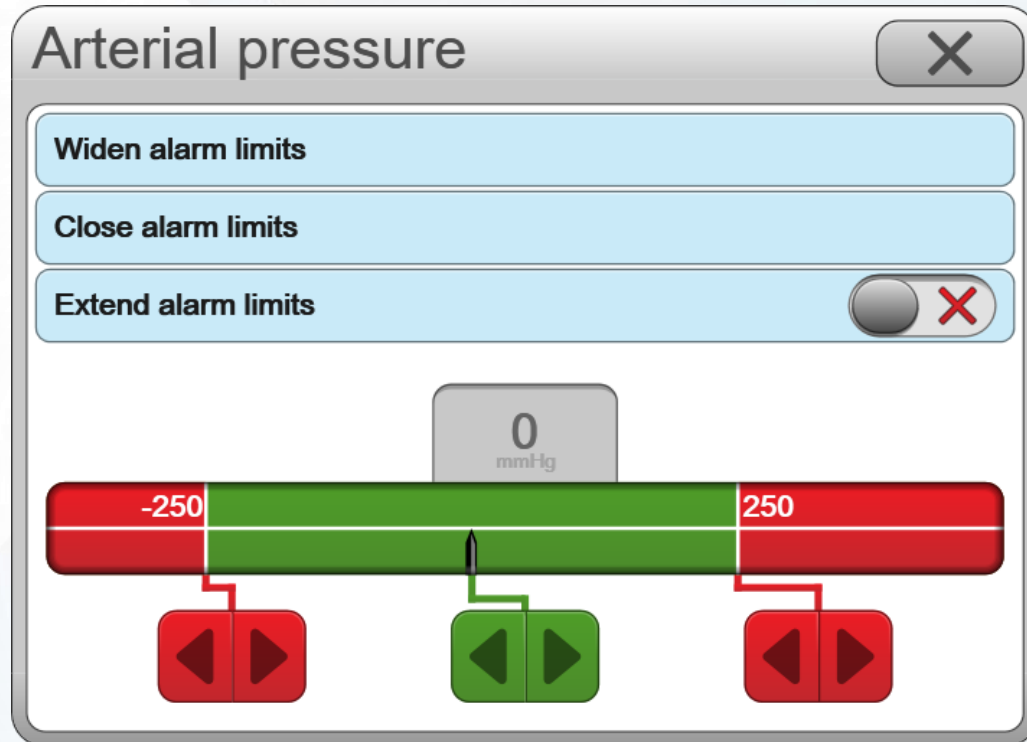
THE OPERATOR'S PANEL | Arterial and Venous Pressure Controls

The **arterial and venous pressure controls** show the current pressure as a numerical value and graphically as the grey pointer. The values in white text are the alarm limits, beyond these points, alarms will be generated.



Pressing the pressure controls, when they are not flashing, opens the pressure control window.

THE OPERATOR'S PANEL | Direct Actions to the Alarm Limits



Move the lower alarm limit up/down using the red left and right arrows

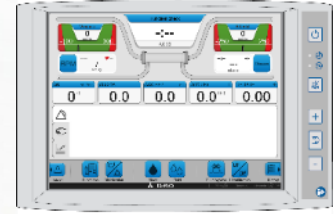
Move the entire alarm window up/down using the green left and right arrows

Move the upper alarm limit up/down using the red left and right arrows

- **Widen** both the arterial and venous alarm limits to their widest point.
- **Centralize** the arterial and venous pressures around the current value.
- **Extend the alarm windows** for the arterial and venous pressures.

This functionality will automatically be deactivated as soon as the treatment is finished.

THE OPERATOR'S PANEL | Touch Screen Buttons



- The **functions button** opens the functions page.

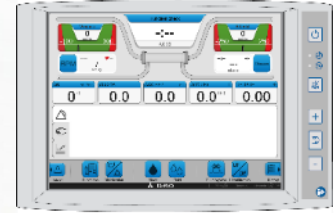
Functions

- Pause Treatment
- New blood circuit
- Rinse back
- Priming Manual priming
- Night light
- Clean screen >
- Service >

- Pause the ongoing treatment
- Change to a new blood circuit during an ongoing treatment
- Start the rinse back procedure
- Select manual or Assisted priming
- Turns off the Operator's panel*
- Allows the screen to be cleaned
- Opens the service menu

* If the Operator's panel is pressed or in case of any alarms/attentions, the Operator's panel is reactivated

THE OPERATOR'S PANEL | Touch Screen Buttons



Blood Menu

Heparin 0.0 mL Blood flow 0 mL/min Single needle 0 mL

Low alarm limit	100 mL/min
Blood pump segment diameter	8.00 mm
Actual QB	0 mL/min
Accumulated blood processed	0.0 L

The **blood button** opens the blood menu, which contains the tabs used for setting parameters relating to blood.



Fluid Menu

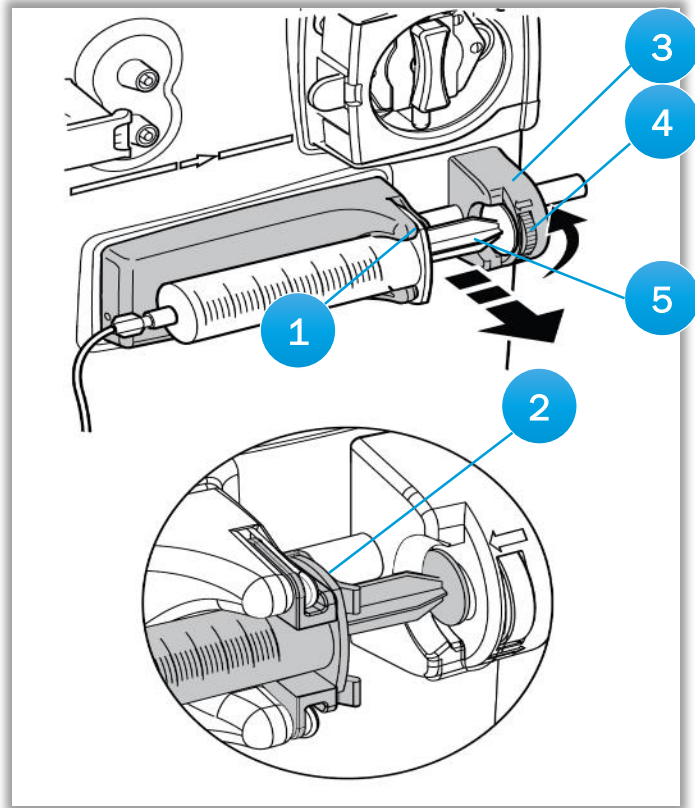
UF rate 0.00 L/h Conc C295 + BiCart Temp 36.5 °C Cond 14.3 mS/cm Fluid flow 0 mL/min TMP 5 mmHg

Dialysis fluid flow	500 mL/min
Concentrate standby mode	<input type="checkbox"/>
Actual dialysis fluid flow	0 mL/min

The **fluid button** opens the fluid menu, which contains the tabs used for setting parameters relating to fluid.

PREPARING THE MACHINE | Attach the Heparin Syringe

It is important to correctly install the heparin syringe, it should be installed as follows;



1. Insert the plastic collar of the syringe into the groove of the pump
2. **NOTE:** To be able to use a syringe with a 13 mm inner diameter, a heparin pump adapter must be installed in the heparin pump
3. Insert the plate on the end of the plunger into the groove on the piston
4. Turn the locking wheel upwards until resistance is felt
5. Check the syringe is firmly in place by lightly pulling on the plunger

HEMODIALYSIS TREATMENT | Start the Treatment

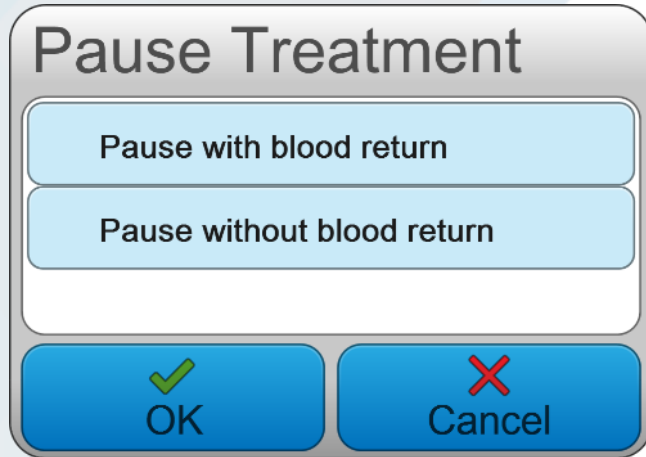
- When the machine **detects blood**, by default the blood pump will stop.
- Press the **flashing blood pump button** to restart the blood pump and then use the **blood pump up and down buttons** to adjust the blood flow.
- Observe that the blood flow path is lit red.



- When ready, **start the ultrafiltration**.
- The alarm arterial and venous pressure alarm limits will automatically be centralized around the actual pressures.



HEMODIALYSIS TREATMENT | Pause the Treatment



1. Press the **functions button** to open the functions menu
2. Press **pause treatment**
3. Select pause with or without blood return and press OK
4. Follow the instructions on the screen to proceed
5. To resume the treatment, press the blood pump button to stop the blood pump
6. Select connect patient, connect the blood lines to the patient and press confirm
7. Press the blood pump button and adjust the blood flow
8. Press the ultrafiltration button to resume UF removal

When the treatment is paused:

- The blood flow rate is decreased and the arterial and venous pressure alarm windows are widened
- The elapsed time in pause is displayed and a sound alarm is triggered every 15 minutes
- **Diascan** measurements, Isolated UF and profiling is disabled
- Continuous heparinization administration and automatic BPM is deactivated but heparin bolus dose and manual BPM is enabled

MACHINE FUNCTIONALITY | UF Supervision Alarm

There is **one alarm associated with the UF supervision.**

220 UF volume deviation

```
220 UF volume deviation
Actual UF may differ from set UF with {0} mL.
Check patient weight loss. Discontinue
treatment.
```

The alarm appears when the **UF volume measurements are not within the specification** of the machine, this can happen when:

- The UF control is not calibrated or incorrectly calibrated
- The UF control does not work correctly
- The protective system UF sensor does not work correctly

MACHINE FUNCTIONALITY | Fluid Leakage Alarm Alarm

There is **one alarm associated with fluid leakage**

225 Leakage inside the machine detected

```
225 Leakage inside the machine detected  
Check patient weight loss. Discontinue  
treatment  
and call service technician.
```

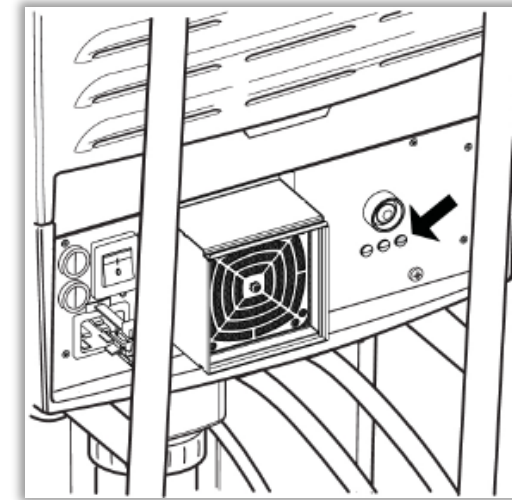
The alarm appears when the **machine has detected a fluid leakage** during treatment.

In case of an ultrafilter leakage, the detected volume could be an excessive UF volume

TROUBLESHOOTING | Power Failure

- If there is a power failure, the **machine has a battery back-up which lasts approximately 30 minutes** and keeps the screen and the blood pump operational. During this time the dialysis fluid is not heated and the dialysis fluid is in bypass.
- If all the battery back-up charge is used up or, for some reason it does not work, then the machine will shut down. All the settings and the actual values will be kept.
- When the power returns, **press the On/Off button** to start the machine. The machine will perform a recovery and the treatment will continue from where it stopped. **However**, all the treatment parameters must be checked when starting after a recovery.

Battery connect indicator is lit green if the battery back-up has been installed



Battery charge indicator is lit yellow when the mains cable is connected to the mains supply and the main switch is switched on

TROUBLESHOOTING | Power Failure Alarms

213 Power failure

```
213 Power failure  
Battery operated for {0} minutes.
```

Most common, all AK 98 are equipped with battery back-up

Appears:

Immediately at power failure when battery back-up is operating. The displayed minutes indicate how long the power failure has lasted.

Machine actions:

Only the blood unit will run during a power failure.

Appears:

When the machine has recovered from power failure.

Machine actions:

None.

122 Restarted after power failure

```
122 Restarted after power failure  
To continue press Confirm.
```

In case of battery backup failure.

TROUBLESHOOTING | Automatic Restart

123 Technical error

```
123 Technical error
The machine has been automatically restarted.
To continue press Confirm.
```

Appears:

When there is a **(specific type of) technical fault in the machine.**

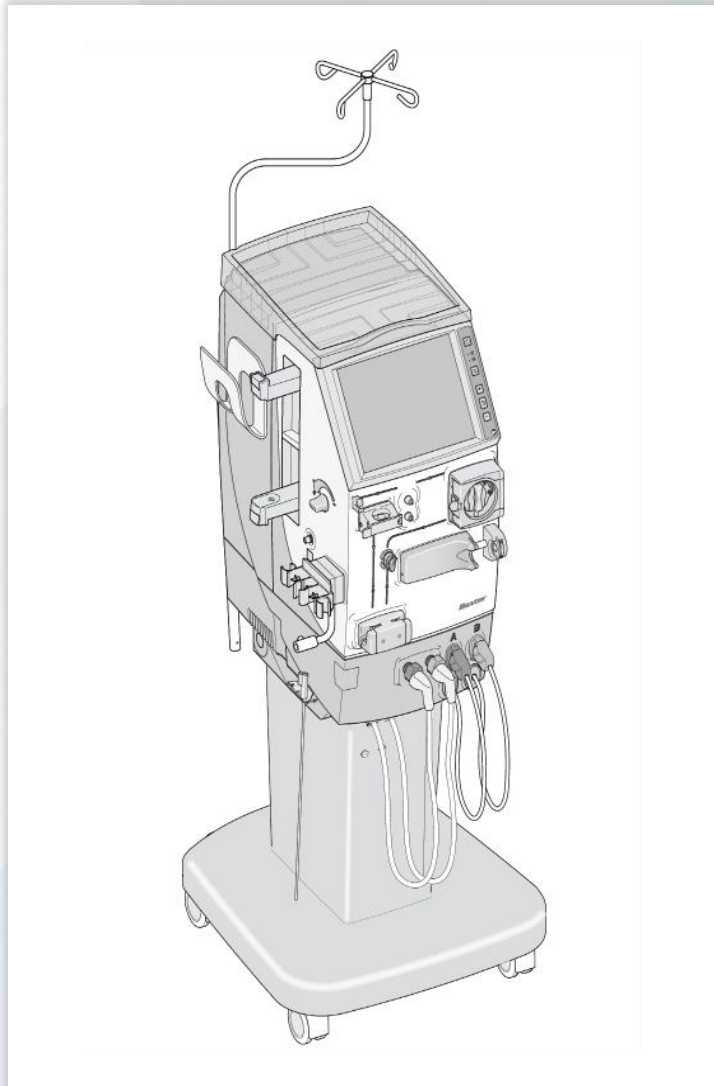
Machine actions:

A number of automatic restart attempts will be made. If this is unsuccessful an unconditional or conditional technical alarm will appear.

Why does an automatic restart occur?

- AK 98 is designed with a **safety philosophy** that involves a continuous supervision of the computers inside the machine.
- If the system identifies a problem, it will **generate an automatic restart** to restore a fully operational system.

HYGIENIC MAINTENANCE | External Components



- **After each dialysis treatment**, the machine exterior surfaces must be disinfected.
- Using a cloth moistened with either ethanol 70%, isopropanol 60% or 1% hypochlorite, **wipe all of the machines exterior surfaces and the top tray**.
- In case of cleaning with **hypochlorite**, wipe afterwards with water.
- The **pick-up tubes** need to be flushed inside and out with water between each treatment, and then returned to the holder to dry naturally. Once a week, repeat exactly the same procedure using ethanol 70% instead of water.

HYGIENIC MAINTENANCE | Operating Conditions

NOTE!

Higher concentrations of Calcium and Bicarbonate and/or lower concentrations of acetic/citric acid in the dialysis fluid as well as higher dialysis fluid flows, and/or longer dialysis times, may require more frequent decalcification than needed for the operating conditions shown in the table below

Table 10-2. Operating conditions

Dialysis time	4 h
Dialysis fluid flow	300-800 mL/min
Dialysis fluid Bicarbonate value (HCO ₃ ⁻)	34 mmol/L
Dialysis fluid Calcium value (Ca ²⁺)	1.5 mmol/L
Dialysis fluid Sodium value (Na ⁺)	140 mmol/L
Bicarbonate concentrate	BICART cartridge
Acetic acid or citric acid based A-concentrate	Acetate (3 mmol/L) or citrate (1 mmol/L)
Dialysis fluid temperature	37 °C

HYGIENIC MAINTENANCE | **Cleaning, decalcification and disinfection schedule***

Frequency	Activity	Result
After each treatment	<ol style="list-style-type: none"> 1. Wipe the outside of the dialysis machine with 70% ethanol or 60% isopropanol or 1% sodium hypochlorite. In case of cleaning with hypochlorite, wipe afterwards with water. 2. Rinse the outside and flush the inside of the pick-up tubes with water. Let them dry naturally. 3. If the prime bucket is used, wipe the inside and outside with maximum 10% sodium hypochlorite. 	Exterior cleaning
After each treatment, or at least once per day	Run a disinfection program	Disinfection
After each treatment, if no disinfection program is run	Run a descaling program	Descaling
At least after every 3rd treatment or at high usage of the equipment at least once per day	Run a heat disinfection program together with CleanCart C* cartridge or a heat disinfection program with liquid citric acid	Decalcification Disinfection
At least once every 7th treatment day	<p>Cleaning using CleanCart A*</p> <ol style="list-style-type: none"> 1. Run a heat CleanCart A* program 2. Run a heat CleanCart C* program or a heat disinfection program with liquid citric acid 3. Rinse the outside and flush the inside of the pick-up tubes with water. Let them dry naturally. <p>Cleaning using sodium hypochlorite</p> <ol style="list-style-type: none"> 1. Run a heat CleanCart C* or a heat disinfection program with liquid citric acid 2. Run a chemical disinfection with sodium hypochlorite 3. Wipe the outside and flush the inside of the pick-up tubes with 70 % ethanol. Let them dry naturally 	Cleaning Decalcification Disinfection

*Not available in all markets

HYGIENIC MAINTENANCE | **Cleaning, decalcification and disinfection schedule**

Frequency	Activity	Result
When more than 7 days passed since last disinfection	Run a disinfection program before treatment	Disinfection
Every 1-3 months	1. Change the ultrafilter 2. Run a disinfection program	Disinfection

- Do not perform more than 12 sodium hypochlorite based disinfections during the life cycle of the U9000 Ultrafilter.
- Do not perform more than 8 sodium carbonate, e.g. **CleanCart A*** cartridge based disinfections during the life cycle of the U9000 Ultrafilter.
- Disinfection using sodium carbonate e.g. **CleanCart A*** cartridge, should not be performed before periods when the machine is inactive, e.g. storage over weekend.
- The recommended process of heat disinfection using **CleanCart A*** cartridge should be followed by a heat disinfection using **CleanCart C*** cartridge the same (working) day and should preferably be performed in the middle of the working week.

*Not available in all markets

HYGIENIC MAINTENANCE | Descaling

It is possible to initiate a descaling between treatments in order to remove precipitated material:

1. Selecting **Descaling**
2. Confirm and follow the instructions on the screen



Disinfection/Rinse menu

Heat Rinse Chemical Tools History

Rinse	Start
Drain	Start
Descaling	Start



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