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## 1.0 PREFACE

Once trained and approved to do so by your Healthcare provider this detailed step by step guide will show you how to chemically clean and carry out routine heat disinfection cycles.

This guide is a supplement to the **Operating Manual**, if further information is required regarding the operation of the unit always refer back to the **Operating Manual**.



Whenever this symbol is used on the unit always refer back to the **Operating Manual**.

Please read the instructions carefully and make sure that you fully understand the information given before performing a chemical clean or carrying out a heat disinfection on the unit.

A detailed **Service & Maintenance Manual** is available and will be held by your Healthcare provider. The Service Manual provides all of the necessary information for a qualified technician to maintain and service the unit.

Details on how to install & commission the **Centurion 1500+** can be found in the supplementary **Installation & Commissioning Guide**. Installation of the unit would always be carried out by your Healthcare provider or an approved trained technician.



**WARNING:** Before operating the unit always check to see that the water and electrical connections are secure and not likely to cause a trip hazard. If you have concerns about the unit or are unsure of its operation contact your Healthcare provider for advice and assistance.

## 2.0 CONTACT US

If you require help or advice use the contact numbers below:

**AmeriWater:** Tel No. 800-535-5585

(Or your local authorized **AmeriWater** distributor/ dealer or Healthcare provider)

### Useful Telephone Nos.

#### Healthcare Provider:

Tel No.....Contact Name:.....

Tel No.....Contact Name:.....

### 3.0 HEALTH AND SAFETY

#### CAUTION: Explanation of expressions



#### **WARNING**

This symbol is used to alert the user not to take a certain action, which if taken could cause a potential hazard and result in a serious adverse reaction, injury or even death. The warning symbol may also be used to alert the user to take a certain action avoid a potential hazard. In all cases within this document, where this symbol is used it is important that you familiarise yourself with the nature of the potential HAZARD and any action that needs to be taken. If in doubt ask your Healthcare provider.

#### **Note:**

A reminder or useful information that can be used to explain an action or give guidance.

#### **Note:**

You will not be able start a chemical clean or heat disinfection unless you have been provided with a key, the key allows you to switch the unit from normal "Processing" mode to the "CLEAN" position. Once you have been trained and approved to carry out cleans by your Healthcare provider you will be given a key. Always keep the key in a safe place when the unit is normal operation and DO NOT leave it in the key switch.



#### **Warning:**

Chemical cleaning of the unit **MUST** only be carried by an approved or person trained by **AmeriWater** or your Healthcare provider. **DO NOT** attempt to clean the unit if you have not been trained.

**DO NOT** use any other household cleaner to clean the unit, only use those cleaners supplied by **AmeriWater**, or your Healthcare provider or you may risk causing severe damage to the unit and its components and pose a serious risk to yourself or the person on dialysis.

If You wish to clean the unit and carry heat disinfections yourself please contact **AmeriWater** or your Healthcare provider who will provide all the necessary instructional training, approved cleaning chemicals, instruction leaflet and security key to enable the cleans to take place.

Your Healthcare provider will provide a cleaning program based on your specific requirements and frequency of dialysis.

Always refer to the material safety datasheets provided by your Healthcare provider before handling chemicals.

## 4.0 CHEMICAL CLEANING AND HEAT DISINFECTION

### 4.1 Explanation – why does the unit require regular cleaning/heat disinfection.

The process by which the unit purifies water is reverse osmosis (RO). This process uses a very fine filter, generally referred to as a membrane which removes dissolved minerals and bacteria from the water supply. Over time these impurities can build up on the surfaces of the membrane. To maximize the life of the RO membrane and to ensure the permeate quality meets the requirements for haemodialysis, regular chemical cleaning and heat disinfection of the unit is recommended to remove minerals and bacteria that may have built up on the membrane.

Both of the processes have been designed to be as simple and automatic as possible.

The display screen will guide you through the process with a series of instructions at every stage.

To avoid handling the chemicals and the risk of spillages the unit incorporates a system which automatically draws the chemical cleaning agent directly from the chemical cleaner bottle into the unit.

#### 4.1.1 Frequency

The need for cleaning and disinfection will vary from patient to patient and location and will depend on the quality of the incoming water supply. For example where a high degree of bacterial control is required regular heat disinfection is recommended. In areas where an un-softened water supply is used (i.e. has high levels of dissolved calcium and magnesium salts) it is recommended that a high and low pH chemical cleaning is carried out quarterly. A cleaning schedule when using a softened water supply may be based on a loss of flow and/or water quality. Environmental conditions may warrant more frequent cleanings of the membrane.

<p><b>Note:</b> Your Healthcare Provider will carryout an assessment of your water supply and provide you with a schedule for cleaning and heat disinfection. <b>DO NOT</b> carry out any additional cycles, unless you have approval by your healthcare provider that it is acceptable to do so.</p>
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#### 4.1.2 Cleaning/disinfection chemicals

Your Healthcare provider will supply you with the necessary chemical cleaning agents suitable for your unit.



**Warning:**

**DO NOT** use any other household cleaner to clean the unit, only use those cleaners supplied by AmeriWater, or your Healthcare provider or you may risk causing severe damage to the unit and its components and pose a serious risk to yourself or the person on dialysis.

#### 4.1.3 Chemical selection guideline

**AmeriClean A** is a liquid based acid cleaner for descaling and iron removal.

**AmeriClean B** is a multi-purpose alkaline cleaner, containing sequestrants, detergents and emulsifiers for the removal of dissolved/colloidal organic compounds.



**Warning:**

**Do not use AmeriClean B while the ultra-filter is installed.**

**Peracidin** contains a mixture of peracetic acid and hydrogen peroxide and is used as an effective disinfecting agent.

**Note:** Your Healthcare provider will provide a cleaning program based on your specific requirements and frequency of dialysis.

Units fitted with an ultra-filter can be sanitized with **AmeriClean A** or **Peracidin** 'in situ' during the normal chemical cleaning cycle. **AmeriClean B MUST NOT** be used with the ultra-filter installed.

#### 4.1.4 Mixing Instructions for Americlean A and Americlean B

The **Americlean A** and **B** chemical cleaners are supplied in a kit (P/N 37-0006 AmeriClean A or 37-0007 AmeriClean B) containing enough cleaner for 12 cleanings and 2 bottles. The following instructions detail the method required for mixing the chemical solution for use in the cleaning. The cleaning solution will be mixed each time a cleaning of the RO membrane is required.

1. Locate a bottle of the desired cleaner containing the cleaning powder out of the kit. The bottle will be marked Americlean B for the high pH cleaner or Americlean A for the low pH cleaner.
2. Add **1.5 tablespoons** of **AmeriClean A** powder or **2 tablespoons** of **AmeriClean B**. The label on the bottle provides information for mix volumes.

**CAUTION:** Never Mix AmeriClean A and B. Always use different measuring devices and bottle for each cleaner solution if both a high and low pH are being conducted.

3. Fill the 237 ml bottle using clean water (RO or DI water is preferred when possible). Use water at 86 °F for best results. Water should not exceed 110 °F. Reinstall the lid on the bottle.
4. Shake the solution very well until the powder is completely dissolved.
5. Once the powder is dissolved in the solution completely, verify the pH of the solution. Americlean A should have a pH of 2-3 and Americlean B should have a pH of 10-11. When the pH is verified, the cleaner is ready for use.
6. Cleaning should be performed using the **High pH cleaner first** to remove inorganic scale and metals followed by the **Low pH cleaner second** to remove insoluble foulants following the steps described in section 4.2.
7. Once the cleaning is completed following the steps described in section 4.2, rinse out the bottle provided in the kit and store until next use.

## 4.2 How to carryout a chemical clean

To start the chemical cleaning routine just follow the simple on screen prompts which will guide you through every step of the sequence.

**NB: The approximate duration of the cleaning cycle is 90 minutes.**

### 4.2.1 Chemical clean sequence

#### Displayed Screen

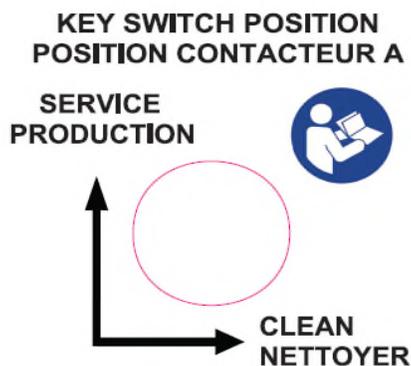
#### Operator Action/s

##### Step-1



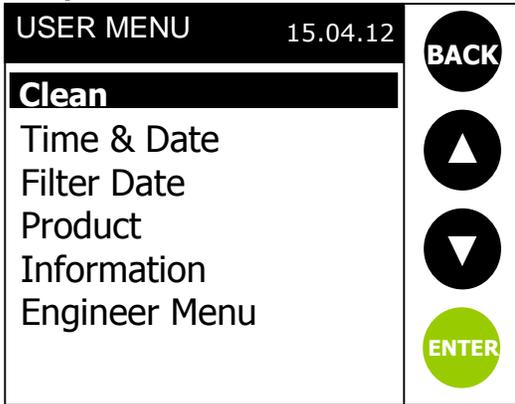
From the “**POWER-ON**” screen select “**MENU**”. The “**USER MENU**” will be then displayed.

##### Step-2



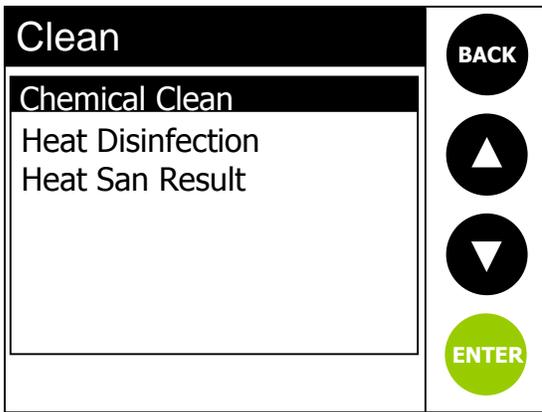
Turn the key switch on the rear of the unit to the “**CLEAN**” position. If this is not selected the unit will revert back to the “**POWER-ON**” screen if a chemical clean is attempted

**Step-3**



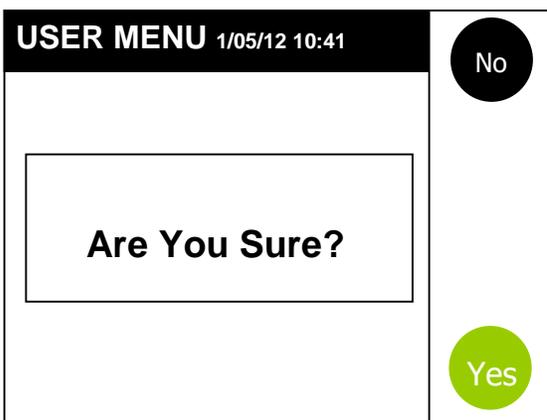
From the drop down USER MENU list select **“CLEAN”**, press **“ENTER”** to proceed to the next step.

**Step-4**



Select **“Chemical Clean”** from the menu listing then press the **“ENTER”** button.

**Step-5**

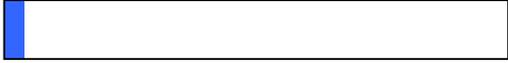


When the message **“Are You Sure?”** is displayed; press **“YES”**. You will then be prompted to turn the key at the rear of the unit to the **“CLEAN”** position. The chemical clean routine will then start. If you select **“NO”** you will return to the **“POWER-ON”** screen.

## Step-6

**Cleaning**

Cleaning  
Tank Filling



2%

 **CHEMICALS**

The unit will automatically adjust the level of water in its internal tank before the chemical cleaning agent is added. This will only take a few seconds and automatically proceed to the next stage.

## Step-7

**Cleaning**

Cleaning

Disconnect From Dialysis Machine

Press CLEAN to continue



Now disconnect the external water loop from the inlet of the dialysis machine to ensure that no chemicals can be fed into the dialysis machine, Press, **“CLEAN”** to continue to the next step.

## Step-8

**Cleaning**

Cleaning

Insert Draw Tube Into Bottle

Press CLEAN to continue

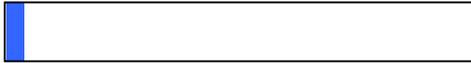


Unscrew the lid on the top of the chemical. The cleaning solution mix instructions can be found in section 4.1.4. Once the solution is made, place the 4 mm tubing connected to the **“ACID”** port at the rear of the unit into the bottle. Make sure the tube goes all the way down to the bottom. Press **“CLEAN”** to continue to the next step.

### Step-9

**Cleaning**

Cleaning chemical draw



2%

 **CHEMICALS RECIRCULATING**

The chemical in the bottle will now be sucked into the unit. This should only take about 30-60 seconds. At the end check to make sure the bottle is empty. (It is normal for a very small amount to remain in the bottle). The unit will automatically continue to the next step.

### Step-10

**Cleaning**

Cleaning

Fill Bottle with Water  
To Rinse Pipe

Press CLEAN to continue



To rinse the blue tubing fill the bottle with tap water and replace the tubing back into the bottle, then press **"CLEAN"**.

### Step-11

**Cleaning**

Cleaning  
Draw Pipe Rinse

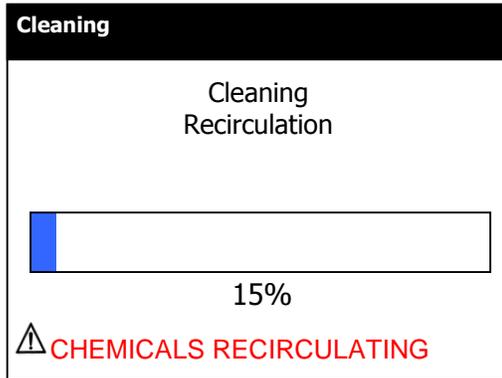


10%

 **CHEMICALS**

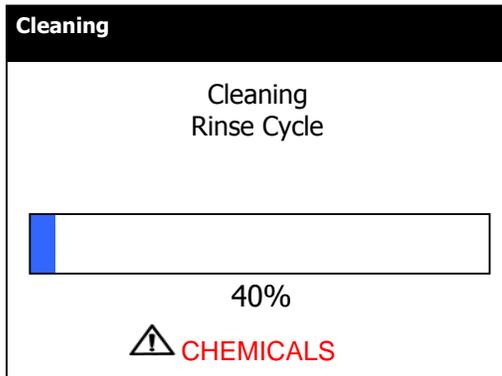
The water in the bottle will then be drawn up through the tubing to rinse it free of chemical

## Step-12



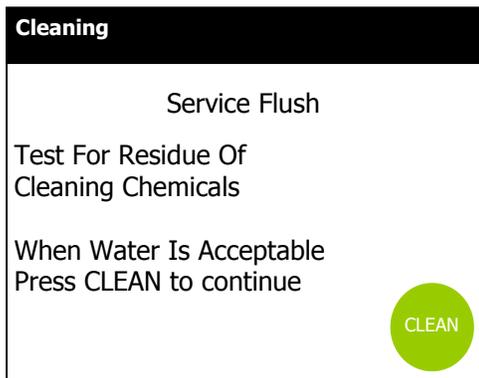
The unit will automatically recirculate the cleaning chemical for approximately 30 minutes and then carry out both high pressure and low pressure flushing cycles so don't be alarmed if the unit sounds different to normal operation.

## Step-13



At the end of the recirculation cycle the unit will go immediately into a rinse cycle flushing the cleaning chemicals out of the unit for approximately 45 minutes

## Step-14



Once the unit has finished its first rinse it will then enter into the final Flush routine. During this part of the cycle the purified water should be tested using the chemical test strips supplied by your Healthcare provider. The "**Service Flush**" cycle lasts for 10 minutes. If the Clean button is not pressed within 10 minutes it will repeat the "Service Flush" again until the water is acceptable. If the water shows clear of chemical press the "**CLEAN**" button to enter the final stage of the process. If the tests still show positive leave in Flush mode until acceptable.



**Warning:**

It is essential that the water quality is checked and free from chemicals before use and that you are satisfied it is safe to dialyse. If you are unsure about the quality of the water always seek advice from your Healthcare Provider.

If after two 10 minute flush cycles have taken place and the test for residual cleaning chemical is still unacceptable, contact your Healthcare provider or **AmeriWater** for advice. **DO NOT** use the unit until it is safe to do so and instructed by your Healthcare provider.

**Step-15**

Cleaning

Cleaning

Alarm During Cleaning

*High pressure*

*Low Pressure*

*Water Leak*

Press CLEAN To Continue

CLEAN

If the unit detects a fault during the chemical clean process, this alarm screen will be displayed along with a message relating to the possible fault. Pressing '**CLEAN**' will resume the process if safe to do so. If pressing "**CLEAN**" does not resume the disinfection sequence, or the alarm screen keeps appearing, refer to Section 5

**Step-16**

Cleaning

Cleaning

Reconnect To Dialysis Machine

Key Switch To SERVICE

Press CLEAN to continue

CLEAN

Once the water has tested clear of chemical the next step will be to reconnect the external water loop back up to the dialysis machine. Turn the key located at the rear of the unit to the "**SERVICE**" position. Press "**CLEAN**" and this should take you back to the "**POWER-ON**" screen ready for your next dialysis session.

### 4.3 How to carryout a heat disinfection

To start a heat disinfection routine just follow the simple on screen prompts which will guide you through every step of the sequence.

#### 4.3.1 Heat disinfection sequence

##### Step-1

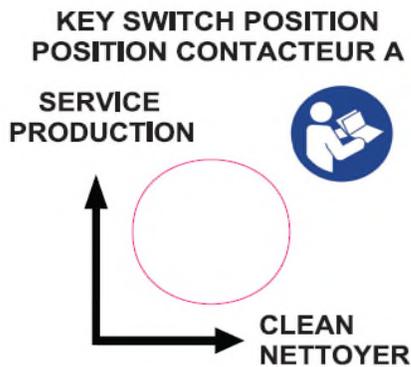
###### Displayed screen



###### Operators actions/notes

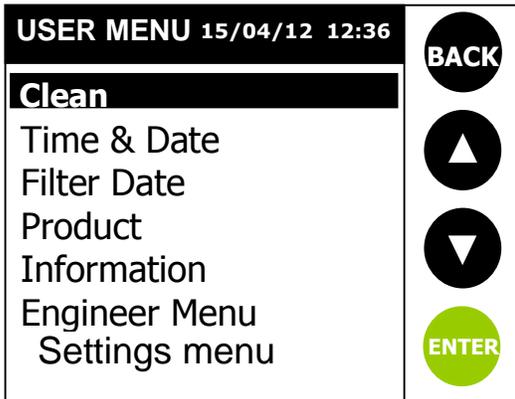
From the “**POWER-ON**” screen select “**MENU**”

##### Step-2



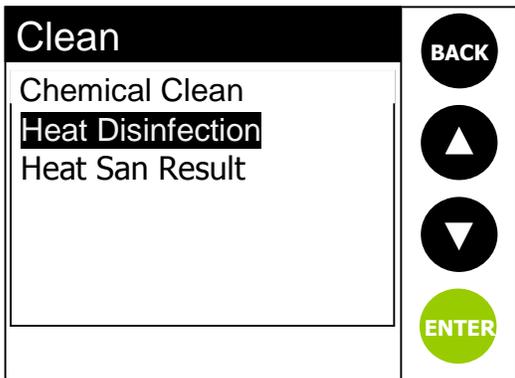
Turn the key switch on the rear of the unit to the “**CLEAN**” position.  
If this is not selected the unit will revert to the “**POWER-ON**” screen if a heat disinfection is attempted.

### Step-3



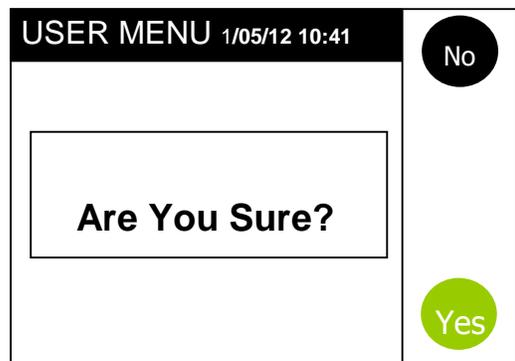
Select "**CLEAN**" from the USER MENU list.

### Step-4



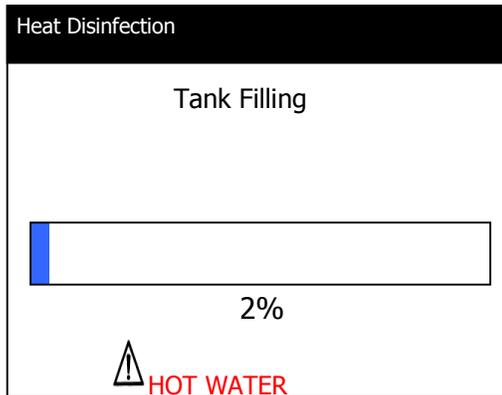
Select "**Heat Disinfection**" from the menu listing then press the "**ENTER**" button.

### Step-5



When the "**Are You Sure?**" message is displayed; press "**YES**" and the heat disinfection routine will start. If you select "**NO**" you will return to the "**POWER-ON**" screen

## Step-6

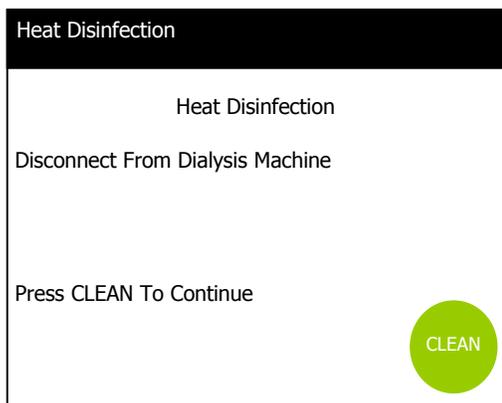


At the start of the cycle the unit's internal tank will fill with water.

The progress bar at the bottom of each screen tells you how much of the disinfection cycle has completed.

Alarm/warning messages will also be displayed.

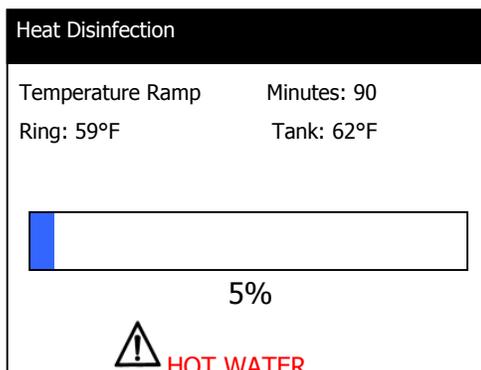
## Step-7



Once the unit's internal tank has filled with the correct amount of water the following message will ask you to disconnect the distribution manifold connection from the Dialysis machine. This will stop any chance of hot water from entering the dialysis machine and possibly causing any damage.

Select "**CLEAN**" to continue to the next step.

## Step-8



The unit now carries out some internal safety checks. If all checks are complete, the unit will then start to heat the water up. If the unit does not reach temperature within 90 minutes the unit will revert to a rinse cycle and the alarm message "**Heatsan failure**" will be displayed.

If this should happen refer to **Trouble shooting** Section 5 of the Operating Manual

### Step-9

Heat Disinfection

Recirculation	Minutes: 30
Ring: 185°F	Tank: 190°F



48%

 **HOT WATER RECIRCULATING**

When the unit reaches disinfection temperature it will then continue to recirculate (the standard period is 30 minutes).

The temperature of the water in the unit's tank and the temperature of the water recirculating around the distribution loop is also displayed.

### Step-10

Heat Disinfection

Rinse Cycle

Ring: 73°F	Tank: 77°F
------------	------------



92%

 **HOT WATER**

After the unit has performed its disinfection recirculation period it carries out a rinse cycle until the water temperature reaches 95°F. The unit must be 95°F or below for 10 minutes. If the temperature increases above 95°F during the rinse, the 10 minute counter will restart.

### Step-11

Heat Disinfection

Heat Disinfection

Reconnect to Dialysis machine

Key Switch to SERVICE

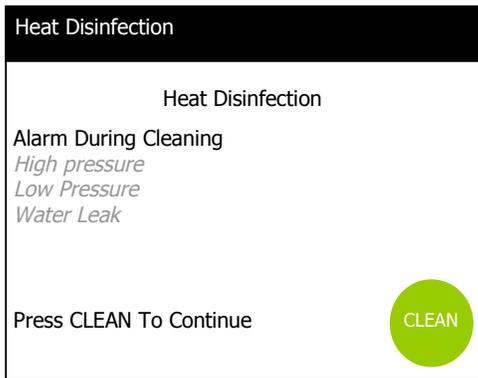
Press CLEAN to continue



Next reconnect the distribution manifold to the inlet of the dialysis machine.

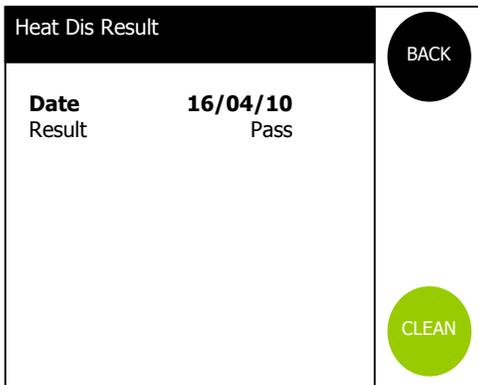
Turn the key switch at the rear of the unit to the "SERVICE" position. Select **CLEAN** to continue to the next step. After this the "**POWER-ON**" state will be displayed and the message "**Heat Dis Completed**" displayed.

## Step-12



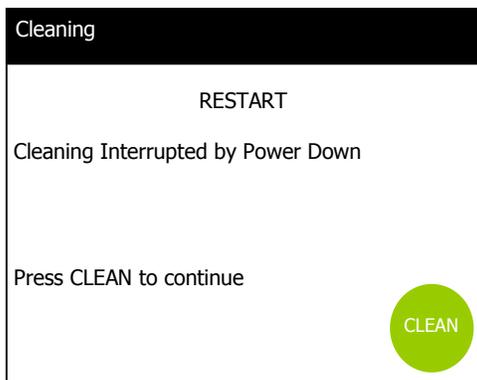
If the unit detects a fault during the heat disinfection process, this alarm screen will be displayed along with a message relating to the possible fault. Pressing 'CLEAN' will resume the process if safe to do so. If pressing "CLEAN" does not resume the disinfection sequence, or the alarm screen keeps appearing, refer to Section 5

## Step-13



Interrogation of the **Heat Dis Result** screen (from the **Clean** menu) will show the result of the last heat disinfection together with any failure message if relevant. Refer to Section 5 "**Troubleshooting**" and contact your Healthcare provider if necessary

## 4.4 Interruption to electrical supply during the chemical clean cycle



If there is an interruption in the electrical supply the chemical cleaning process will stop. Once the electrical supply is restored a text screen message "**Cleaning Interrupted by Power Down**" will be displayed. Press "CLEAN" to continue. This is to ensure that the unit is fully rinsed free of chemical before further dialysis can take place.



### Warning:

Once started the chemical cleaning process has to be completed. If there is an interruption the program resumes from the point where the interruption took place. This is to ensure the unit is rinsed free of any chemical residues.

## 5.0 TROUBLESHOOTING

### 5.1 Alarm messages during Chemical clean & Heat Disinfection

Displayed Message or notification	Reason	Checks	Proposed Actions
 <b>“Under Temperature”</b>	During the disinfection recirculation period the minimum programmed temperature required for disinfection was not achieved.	<ol style="list-style-type: none"> <li>1. The fault may lie with the internal heater, circulating pump or temperature sensor/s, checks on these components can only be carried out by your Healthcare Provider.</li> <li>2. As a precaution ensure the ambient room temperature or feedwater temperature has not altered since the last heat disinfection.</li> </ol>	1. Inform your Healthcare provider of the fault. The unit can still be used but the fault must be investigated prior to the next planned heat disinfection.
 <b>“High Pressure”</b>	The unit has detected an unsafe operating pressure.	<ol style="list-style-type: none"> <li>1. There are no checks to make, simply switch the unit off using the switch at the rear and turn off the water supply.</li> </ol>	<ol style="list-style-type: none"> <li>1. <b>DO NOT</b> try to run the unit in this condition, contact your Healthcare provider for assistance.</li> </ol>
			
 <b>“Low Pressure”</b>	The unit has detected insufficient pressure to operate.	<ol style="list-style-type: none"> <li>1. Check that the feedwater is still flowing.</li> <li>2. Check that there are no leaks.</li> <li>3. Check for any other messages on the display.</li> </ol>	<ol style="list-style-type: none"> <li>1. If the checks do not show any problems, press the “Start” button after a few minutes, if the pressure in unit has returned to normal the unit will run. If the message returns then switch the unit off, turn off the water supply and contact your Healthcare provider for advice.</li> </ol>
			

 <p><b>“Water Leak”</b></p>	<p>The leak detector in the bottom of the unit has detected water. The unit will stop running and the buzzer will sound.</p>	<p><b>1.</b> The unit has developed an internal leak, check that the unit is upright and level and has not been recently toppled or knocked.</p> <p><b>2.</b> Check to see if water is leaking from the unit at a constant rate.</p>	<p><b>1.</b> If the unit has been toppled some water may have overflowed from the internal water break tank. Drain the water off from the unit. At the front underside of the unit is a black drain plug, unscrew the plug and let any water drain from the unit Then press <b>“START”</b>.</p> <p><b>2.</b> If draining the unit does not clear the message call your Healthcare provider.</p> <p><b>3.</b> If the unit is losing a lot of water turn of the water supply and call you Healthcare provider immediately.</p>
 <p><b>“Over Temperature”</b></p>	<p>During heat disinfection the unit has detected a temperature of the circulating water that is above the maximum limit and has aborted the cycle for safety.</p>	<p><b>1.</b> The fault may lie with the heater, circulating pump or one of the temperature sensors. Only your Healthcare provider can check these items.</p> <p><b>2.</b> To help check to make sure that the unit’s ventilation fan is not obstructed or the unit covered by anything and placed in a well ventilated area at ambient temperature away from any heat sources.</p>	<p><b>1.</b> Advise your Healthcare Provider immediately, do not try to carry out another heat disinfection cycle.</p>

 <b>“Cleaning interrupted by power down”</b>	<p>This is an advisory message to indicate the loss of power. Once the electrical supply is restored the “CLEAN” button will need to be pressed to continue the chemical clean. Refer to Section 4.4</p>	<ol style="list-style-type: none"> <li>1. Check that the mains power lead is securely attached and not prone to being a trip hazard.</li> <li>2. Enquire if your electricity supplier has had a power down.</li> <li>3. Check your household isolation device.</li> </ol>	<ol style="list-style-type: none"> <li>1. If the unit has successfully completed its clean and the the power supply appears normal then monitor the situation but report to your Healthcare provider should it happen again.</li> </ol>
 <b>“Water Loss”</b>	<p>This message will be displayed if the unit has detected a water loss (due to a possible leak) during recirculation.</p>	<ol style="list-style-type: none"> <li>1. Check that water has not been taken from the external loop.</li> <li>2. Refer to checks under “Water Leak”</li> </ol>	<ol style="list-style-type: none"> <li>1. Refer to actions under “Water Leak”</li> </ol>

## 5.2 Sample Port/ Quick Disconnection Disinfection Procedure

Environmental conditions may warrant a monthly spot disinfection of the stainless steel sampling port and quick disconnect fitting on the product discharge manifold for the Centurion 1500+. The following steps may be followed if a disinfection is needed.

**STEP 1.** Disconnect the Centurion from any dialysis machines.

**STEP 2.** Wipe down the outside of the sample port and quick disconnect fitting with an alcohol swap.

**STEP 3.** Using a syringe, fill the inside of the sample port with a small amount of isopropyl alcohol. Allow the solution to dwell for about 1 minute. Residual heat in the sample port during the heat disinfection cycle helps kill bacteria that may form inside the sample port

**STEP 4.** While the Centurion is running, let water run out of the port for a short period of time before taking samples to ensure there is no alcohol contamination in the sample taken.

**STEP 5.** Attach the system back to the dialysis machine and return to operation.

## 6.0 Material Safety Data Sheets

### 6.1 AmeriClean A

Section 2 - Hazard(s) Identification				
Other Limits				
Hazardous Components (Specific Chemical Identity: Common Name(s)) OSHA PEL ACGIH TLV Recommended % (optional)				
This product is a proprietary formulation of generally available chemical ingredients.				
Complying with 29 CFR 1910.1200 (d), each ingredient in this formulation has been reviewed with the "Guide to Occupational Exposure Values - 2012" published by ACGIH. Only the following ingredients have listed occupational exposure values, and can be considered potentially hazardous:				
NONE OF THE INGREDIENTS ARE LISTED AS HAZARDOUS				
Label elements	Signal Word	Hazard(s) not otherwise classified (HMOC)	Supplemental Information	Hazardous Statement
	Warning	None Known.	None.	Causes skin irritation. Causes serious eye damage.
Section 3 - Composition/Information on ingredients				
Hazardous Components (Specific Chemical Identity: Common Name(s)) OSHA PEL ACGIH TLV Recommended % (optional)				
This product is a proprietary formulation of generally available chemical ingredients.				
Complying with 29 CFR 1910.1200 (d), each ingredient in this formulation has been reviewed with the "Guide to Occupational Exposure Values - 2012" published by ACGIH. Only the following ingredients have listed occupational exposure values, and can be considered potentially hazardous:				
NONE OF THE INGREDIENTS ARE LISTED AS HAZARDOUS				
Section 4 - First-aid measures				
Route(s) of Entry:	Inhalation?	Skin?	Ingestion?	
Health Hazards (Acute and Chronic)	Eye Contact: May cause burns. Skin contact: Prolonged contact may cause mild irritation. Ingestion: May cause gastrointestinal irritation. Inhalation: May cause irritation of airways.			
Cardiogenicity:	NTP?	IARC Monographs?	OSHA Regulated?	
	NO	NO	NO	
Signs and Symptoms of Exposure				
Irritation and burning of eyes, skin, digestive or respiratory tract.				
Medical Conditions				
Generally Aggravated by Exposure				
Asthma, exposed wounds.				

**Emergency and First Aid Procedures**

Eyes and skin - flush eyes with excess water for 15 min. Wash from skin with soap and water. Inhaled - Remove subject to fresh air. Ingestion - rinse mouth and throat. Drink water or milk. In all cases, call or see a physician.

**Section 5 - Fire-fighting measures**

Flash Point (Method Used)	(Flammable Limits)	LEL	LEL
Not Flammable	Not Flammable	NA	NA

**Extinguishing Media**

No Restrictions

**Special Fire Fighting Procedures**

Persons exposed to products of combustion should wear self-contained breathing apparatus and full protective equipment.

**Unusual Fire and Explosion Hazards**

None known.

**Section 6 - Accidental release measures****Steps to Be Taken in Case Material is Released or Spilled**

Sweep up spilled materials. Flush ground or surfaces with water.

**Waste Disposal Method**

Follow normal chemical waste disposal procedure either as a powder or dissolved in water and disposed as a liquid.

**Section 7 - Handling and Storage****Precautions to Be Taken in Handling and Storing**

Store in cool location away from sunlight.

**Other Precautions**

Avoid dust and contact. Wear protective equipment if possible.

**Respiratory Protection (Specific Type)**

Use NIOSH approved respirator if conditions warrant.

Ventilation	Local Exhaust	Special
	Use in well-ventilated areas.	Additional ventilation for handling large volumes.
	Mechanical (General)	Other
	NA	NA

**Section 8 - Exposure controls/personal protection****Protective Gloves**

Water impenetrable gloves that can be washed.

**Eye Protection**

Chemical safety goggles recommendable.

**Other Protective Clothing or Equipment**

Work overalls would prevent contamination of street clothes.

**Work/Hygienic Practices**

Wash gloves and hands before touching anything else.

**Section 9 - Physical and chemical properties**

Boiling Point	NA	Specific Gravity (H <sub>2</sub> O=1)	NA
Vapor Pressure (mm Hg.)	NA	Melting Point	>200°C
Vapor Density (AIR= 1)	NA	Evaporation Rate (Butyl Acetate= 1)	NA

**Solubility in Water**

Completely Soluble.

**Appearance and Odor**

Colorless to slightly tan powder with slight odor.

**Section 10 - Stability and reactivity**

Stability	Unstable		Conditions to Avoid
	Stable	X	Avoid heat and direct sun.

**Incompatibility (Materials to Avoid)**

Acidic mixture, incompatible with alkaline materials.

**Hazardous Decomposition or Byproducts**

No known hazardous byproducts.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	NA

**Section 11 - Toxicological information**

Oral LD<sub>50</sub> (Rats): >10,500 mg/kg

**Section 12 - Ecological Information**

This powder cleaner is water soluble to give a mildly acidic solution. In natural waters and soil, it will be neutralized by natural pH buffer. It contains no toxic ingredients.

**Section 13 - Disposal considerations**

Poses no acute toxicological properties that would require special handling, other than good hygienic practices.

**Section 14 - Transportation information****DOT Hazardous Classification**

Not considered hazardous by the U.S. Department of Transportation (DOT)

**TDG Canadian Transportation-**

Not considered hazardous by the U.S. Department of Transportation (DOT)

**International Transportation**

Product has no UN number, and is not regulated under international rail, road, water or air transportation.

**Section 15 - Regulatory Information**

HMIS: Health=2 Fire=0 Reactivity=0 P=None

**Section 16 - Other Information**

This SDS is provided as an information resource only. The buyer assumes all responsibility for using and handling the product. In accordance with applicable federal, state and local regulations.



**Emergency and First Aid Procedures**

Eyes and skin - flush eyes with excess water for 15 minutes. Wash from skin with soap and water. Inhaled - Remove subject to fresh air. Ingestion - rinse mouth and throat. Drink water or milk. In all cases, call or see a physician.

**Section 5 - Fire-fighting measures**

Flash Point (Method Used)	Flammable Limits	LEL	LEL
Not Flammable	Not Flammable	NA	NA

**Extinguishing Media**

No Restrictions

**Special Fire Fighting Procedures**

Persons exposed to products of combustion should wear self-contained breathing apparatus and full protective equipment.

**Unusual Fire and Explosion Hazards**

None known.

**Section 6 - Accidental release measures****Steps to Be Taken in Case Material is Released or Spilled**

Sweep up spilled material. Flush ground or surfaces with water.

**Waste Disposal Method**

Follow normal chemical waste disposal procedure either as a powder or dissolved in water and dispose as liquid.

**Section 7 - Handling and Storage****Precautions to Be Taken in Handling and Storing**

Store in cool location away from sunlight.

**Other Precautions**

Avoid dust and contact. Wear protective equipment if possible.

**Respiratory Protection (Specific Type)**

Use NIOSH approved respirator if conditions warrant.

Ventilation	Local Exhaust	Special
	Use in well-ventilated areas.	
	Mechanical (General)	Other
	NA	NA

**Section 8 - Exposure controls/personal protection****Protective Gloves**

Water impenetrable gloves that can be washed.

**Eye Protection**

Chemical safety goggles recommendable.

**Other Protective Clothing or Equipment**

Work overalls would prevent contamination of street clothes.

**Work/Hygienic Practices**

Wash gloves and hands before touching anything else.

**Section 9 - Physical and chemical properties**

Boiling Point	NA	Specific Gravity (H <sub>2</sub> O=1)	NA
Vapor Pressure (mm Hg.)	NA	Melting Point	>100°C
Vapor Density (AIR= 1)	NA	Evaporation Rate (Butyl Acetate= 1)	NA

**Solubility in Water**

Completely Soluble.

**Appearance and Odor**

Colorless to slightly tan powder with slight odor.

Section 10 - Stability and reactivity			
Stability	Unstable		Conditions to Avoid
			Avoid moisture, heat and direct sun.
	Stable	X	

Incompatibility (Materials to Avoid)  
 Acids (produces carbon dioxide gas).  
 Hazardous Decomposition or Byproducts  
 No known hazardous products.

Hazardous	May Occur		Conditions to Avoid
Polymerization			NA
	Will Not Occur	X	

Section 11 - Toxicological information  
 Oral LD<sub>50</sub> (Rats): >26,900 mg/kg

Section 12 - Ecological information  
 This powder cleaner is water soluble to give a mildly alkaline solution. In natural waters and soil, it will be neutralized by natural pH buffer. It contains no toxic ingredients.

Section 13 - Disposal considerations  
 Poses no acute toxicological properties that would require special handling, other than good hygienic practices.

Section 14 - Transportation information  
 DOT Hazardous Classification  
 Not considered hazardous by the U.S. Department of Transportation (DOT)

TDS Canadian Transportation-  
 Not considered hazardous by the U.S. Department of Transportation (DOT)

International Transportation  
 Product has no UN number, and is not regulated under international rail, road, water or air transportation.

Section 15 - Regulatory information  
 HMIS: Health=2 Fire=0 Reactivity=0 P=None

Section 16 - Other information  
 This SDS is provided as an information resource only. The buyer assumes all responsibility for using and handling the product. In accordance with applicable federal, state and local regulations.

## 6.3 Peracidin

1. Product Name: Peracidin™ Trade name: Peracidin UN3149

2. Manufacturer Information  
 HDC Medical, Inc.  
 129A Citizens Boulevard  
 Simpsonville, KY 40067  
 Ph: (800) 523-4123  
 fax: (502) 722-0424

3. Hazardous Components SARA 313 Toxic Chemicals, if present, are preceded by #

<u>Chemical Name</u>	<u>CAS Number</u>	<u>%</u>	<u>PEL</u>	<u>Other</u> mg/m <sup>3</sup>
Acetic Acid	64-19-7	6.7	25	.
Hydrogen Peroxide	7722-84-1	27.0	1.4	1.4
# Peroxyacetic Acid	79-21-0	4.5	none	.

\* (PEL for acetic acid = 36 mg/m<sup>3</sup> ACGIH STEL= 37mg/m<sup>3</sup>)  
 PEL= OSHA 8 hour average  
 UNK= Unknown  
 STEL= 15 minute average  
 C= Ceiling limit: do not exceed

### 4. Physical Characteristics

*Appearance* Colorless - sharp,  
 pungent odor

*Solubility in water* Complete

*pH* 2.5 (1%)

*Initial Boiling Point* 200°F

*Specific Gravity* 1.12

### 5. Fire and Explosion Hazard

*Special fire hazards* Product decomposes and will release oxygen, thereby adding to the hazards of a fire. Product should be kept cool and in a vented container to avoid any explosion hazards

*Fire Fighting* Use a water spray

*Methods*

### 6. Reactivity Data

*Stability* Stable under normal conditions of handling

*Conditions to Avoid* Do not mix with anything but water. Keep away from any organic material (alcohols, acetone, etc.) and avoid most metals as rapid decomposition may occur. Avoid hot storage.

### Spill Or Leak Procedures

**USE PROPER PROTECTIVE EQUIPMENT**

*Clean Up* Rinse small amounts to drain where possible. Dike or dam large spills; pump to containers or soak up on an inert absorbant. Flush residue to sanitary sewer; rinse area thoroughly.

*Waste Disposal* Consult State and Local authorities for restrictions on disposal of chemical waste. Unused product as a waste is corrosive (D002) by RCRA criteria.

8. Health Hazard Data **DANGER**

**EFFECTS OF OVEREXPOSURE TO CONCENTRATE**

*Skin and Eyes:* Causes severe eye damage and chemical burns

*If Swallowed* HARMFUL OR FATAL. Causes chemical burns of the mouth, throat and stomach.

*If Inhaled* Vapors or mists cause irritation, including a burning taste, sneezing, coughing and difficulty in breathing. People with asthma or other lung problems may be more affected

9. First Aid

*Eyes* Immediately flush with plenty of cool running water. Remove contact lenses. Continue flushing for at least 15 minutes, holding the eyelids apart to ensure rinsing of the entire eye.

*Skin* Immediately flush skin with plenty of cool running water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

*If Swallowed* Rinse mouth at once; then drink 1 or 2 glasses of water or milk. DO NOT induce vomiting. NEVER give anything by mouth to an unconscious person.

*If Inhaled* Immediately move to fresh air.

**IMMEDIATELY CALL A POISON CONTROL CENTER OR A PHYSICIAN**

10. Protective Measures

**CONCENTRATE**

*Respiratory:* Avoid breathing mists or vapors of this product.

*Skin:* Wear rubber gloves-protective cuffs or gauntlet type preferred.

*Eyes:* Use chemical splash goggles. for continued or severe exposure, wear a face shield over the goggles.

**SOLUTIONS**

Prepared accordingly to label instructions, use solutions are not considered hazardous according to criteria of 29 CFR 1910-1200

11. Additional Information/ Precautions

**KEEP OUT OF REACH OF CHILDREN**