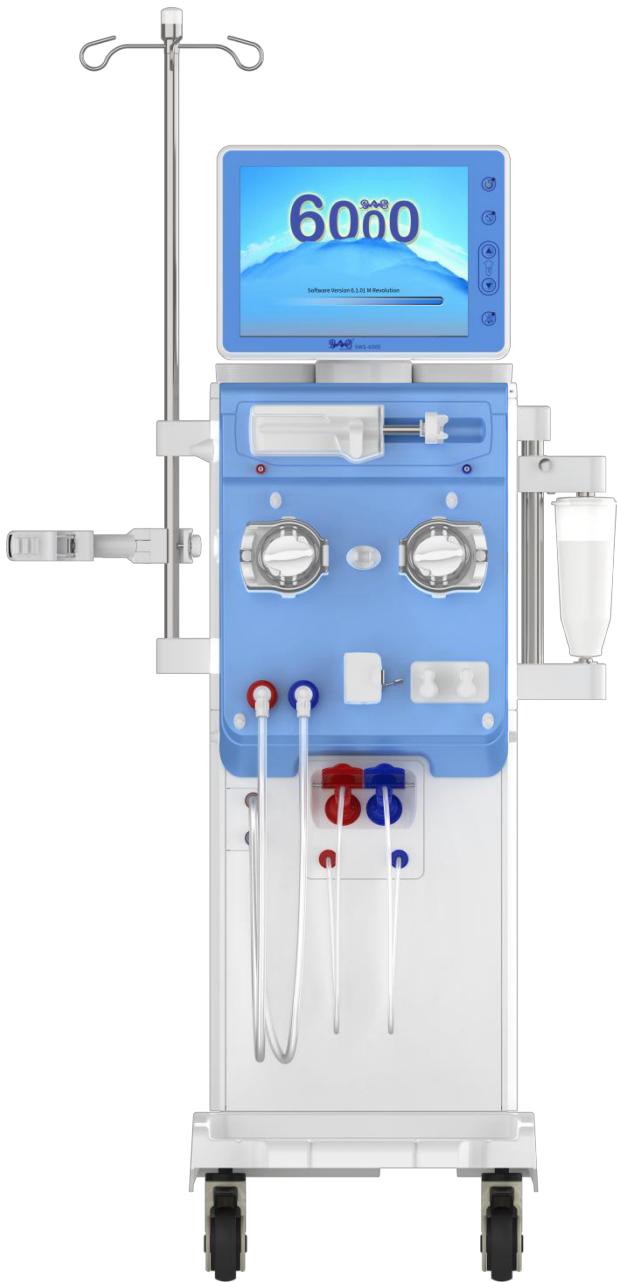

SWS-6000 Series Hemodialysis Equipment



SWS-6000
SWS-6000A

Service Manual

Software Version: V6.2.XXX

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IMPORTANT

Please be sure to read this manual carefully and fully understand the operation methods and precautions based on professional training and authorization to properly and safely perform maintenance on this device.

SWS HEMODIALYSIS CARE CO., LTD.

7 Routine Maintenance

7.1 Introduction

In order to maintain the dialysis machine good functional efficiency and reduce the likelihood of faults, the system must be subjected to routine maintenance periodically.

Routine maintenance is used to ensure the correct functioning of the system, and all the maintenance activities require specific technical skills and a precise knowledge of the system and must be carried out by certified personnel as suitable for the installation and maintenance of the machine.

Routine maintenance is composed by activity that must be performed every 12 and 24 months; each of them must be recorded and reported.

Maintenance activity scheduling, description and reporting has illustrated into the next chapters.

7.2 Routine Maintenance Schedule

Activity	Scheduling Period	
	12 Month	24 Month
Dialyzer couplings	X	X
Concentration aspirator	X	X
Bi-cart holder	X	X
Substitution component	X	X
Endotoxin filter couplings	X	X
Filters	X	X
Water inlet degassing tank JQ	X	X
Negative degassing tank QG2	X	X
Positive degassing tank QG1/QG3	X	X
Mixing tank HG1/HG2	X	X
Resin degassing tank QG5	X	X
Internal check	X	X
External check	X	X
Cooling fan	X	X
Time check	X	X
Hydraulic sensor	X	X
VP/AP monitoring	X	X
Conductivity sensor	X	X
Temperature sensor	X	X
Pressure relief valve XV1/XV2	\	X
Ceramic pump	X	X
Heparin pump	\	X
Air detector	\	X
Blood pump assembly	X	X
Substitution pump assembly	X	X

Activity	Scheduling Period	
	12 Month	24 Month
Venous clamp	\	X
Display	\	X
Button	X	X
IV pole	\	X
Speaker	\	X
Heater assembly	\	X
Battery	\	X
Connector inspection	\	X
Balance chamber	\	X
Water inlet connector	X	X
Pressure reducing valve	\	X
XV3	X	X
XV4	X	X
Negative degassing pressure YG1	\	X
Air filter	X	X
Button battery	\	X
Circuit board dust removal	X	X
Silicone tube	\	X

X: YES

\: No

7.3 Routine Maintenance Instructions

No.	Component name	Maintenance cycle	Implementation method
1	Dialyzer connector	12 Months	Replace the O-ring 12*2.65.
2	A/B concentrate suction tube assembly	12 Months	Replace the O-ring 10*1.8 Replace the suction tube filter.
3	Bi-cart holder	12 Months	Replace the O-ring.
4	Substitution fluid assembly	12 Months	1. Replace the O-ring, 10*1.8. 2. The substitution fluid assembly connector should be flexible in connection, otherwise clean or repair; 3. Observe whether the substitution fluid assembly is leaking or broken at various locations, otherwise repair or replace.
5	Endotoxin filter connector	12 Months	Replace the O-ring 12*2.65.
6	Filter	12 Months	1. Disassemble the filter and clean the Filter diaphragm with reverse osmosis water. If there are still more impurities on the Filter diaphragm that cannot be flushed clean, the Filter diaphragm should be replaced. 2. Replace the disinfectant suction tube filter.
7	Water inlet tank	12 Months	1. Check whether the tank has signs of rupture, if so, replace the tank. 2. Check for signs of leakage caused by aging of the seal, and if so, replace the O-ring 56*2. 3. Observe the float movement and replace it if there are signs of stagnation.

No.	Component name	Maintenance cycle	Implementation method
8	Negative pressure tank	12 Months	<ol style="list-style-type: none"> 1. Check whether the tank has signs of rupture, if so, replace the tank. 2. Check for signs of leakage caused by aging of the seal, and if so, replace the O-ring 56*2. 3. Observe the float movement and replace it if there are signs of stagnation.
9	Positive pressure tank	12 Months	<ol style="list-style-type: none"> 1. Check whether the tank has signs of rupture, if so, replace the tank. 2. Check for signs of leakage caused by aging of the seal, and if so, replace the O-ring 56*2.
10	Mixing tank	12 Months	<ol style="list-style-type: none"> 1. Check whether the tank has signs of rupture, if so, replace the tank. 2. Check for signs of leakage caused by aging of the seal, if so, replace the O-ring 40*2 3. The interior of the tank should be free of foreign matter, crystals, if any, remove and clean.
11	Degassing tank	12 Months	<ol style="list-style-type: none"> 1. Check whether the tank has signs of rupture, if so, replace the tank. 2. Check for signs of leakage caused by aging of the seal, and if so, replace the O-ring 40*2.
12	Internal check	12 Months	<ol style="list-style-type: none"> 1. Check the solenoid valve, ceramic pump, gear pump, heater, blood leakage, balance chamber and other parts one by one for signs of leakage, if so, repair or replace the relevant parts. 2. Clean up the crystal substance inside the machine. 3. Clear the rust on the metal parts inside the machine.
13	External check	12 Months	<ol style="list-style-type: none"> 1. Replace the defaced markings on the outside of the machine. 2. Check whether the external parts are broken, and if so, repair or replace

No.	Component name	Maintenance cycle	Implementation method
			the relevant parts. 3. Check whether the cable is broken, if so, replace the cable.
14	Cooling fan	12 Months	1. Clean the dust from the dust net on the back cover of the case. 2. Observe the fan to see if it is running normally. If it is running abnormally or the noise is high, repair or replace the part.
15	Time check	12 Months	Check if the set time and the local time match, if the error is more than 5 minutes, reset the time.
16	Hydraulic sensor	12 Months	Refer to Section 9.2.1 for calibration of the hydraulic sensor.
17	VP/AP monitoring	12 Months	1. Replace the broken AP, VP connector sleeves. 2. Refer to Section 9.2.2 for calibration of AP/VP. 3. Add AP/VP to 500mmHg and hold pressure for 30 seconds, if the pressure change is more than 10mmHg, replace the sensor guard assembly.
18	Conductivity sensor	12 Months	1. Check the conductivity sensor assembly for signs of leakage, and if so, replace the conductivity assembly. 2. Refer to Section 9.3 to calibrate the conductivity sensor.
19	Temperature sensor	12 Months	Refer to Section 9.4 to calibrate the temperature sensor
20	Pressure relief valve I/II	24 Months	Refer to Section 9.8.1 for calibration of XV1 and XV2.
21	Ceramic piston pump	12 Months	1. Refer to Section 6.3 to clean the ceramic pump body. 2. Refer to Section 9.5 to correct the

No.	Component name	Maintenance cycle	Implementation method
			ceramic pump coefficient.
22	Heparin pump	24 Months	<ol style="list-style-type: none"> 1. Refer to Section 9.6 to calibrate the heparin pump. 2. Check whether the heparin pump is flexible in pushing, and if it is stuck, the heparin pump assembly needs to be repaired or replaced. 3. On the calibration interface, push 10ml to test the heparin pump pushing accuracy and see if it meets the requirements, if not meet the requirements, you need to correct the syringe or replace the heparin pump assembly.
23	Air detector	24 Months	Refer to Section 10.4 to test the air detector.
24	Blood pump assembly	12 Months	Refer to Section 10.8 to test the blood pump assembly.
25	Substitution pump assembly	12 Months	Refer to Section 10.10 to test the subs. pump assembly.
26	Venous clamp	24 Months	Refer to Section 10.11 to test the Venous clamp
27	Display	24 Months	Refer to Section 10.17 to test the display
28	Button	24 Months	Refer to Section 10.18 to test the on-screen keys
29	IV pole	24 Months	Refer to Section 10.15 to test the IV pole assembly
30	Speaker	24 Months	Refer to Section 10.16 to test the speaker.
31	Heater assembly	24 Months	<ol style="list-style-type: none"> 1. In the case of unplugging the power cord, use a multi-meter at 20MΩ level to measure the resistance of the heating tube to the housing, the resistance value should be greater than 20MΩ.

No.	Component name	Maintenance cycle	Implementation method
			2. In the case of unplugging the power cord, use a multi-meter at 200Ω level to measure the heating tube resistance, which is 27Ω for 220V heater, and 10Ω for 110V heater.
32	Battery	12 Months	In the case of unplugging the power cord, use a multi-meter to measure the voltage at both ends of each battery, the voltage value is not less than 11V.
33	Connector inspection	24 Months	Re-plug each component harness.
34	Balance chamber	24 Months	<ol style="list-style-type: none"> 1. Replace the balance chamber solenoid valve seal ring 5*1.8 2. In standby, test DP / YP Time which are 11.3 and 11.1, respectively, the error can not exceed 0.3 seconds, otherwise it is necessary to replace the balance of the chamber diaphragm. 3. If there are signs of water leakage in the balance chamber, tighten the bolts of the balance chamber.
35	Water inlet connector	12 Months	Rinse the inlet filter with reverse osmosis water, and replace the inlet filter if it cannot be thoroughly cleaned.
36	Pressure reducing valve	24 Months	Correct the pressure reducing valve outlet pressure in accordance with Section 9.8, which should meet 0.10~0.11 MPa.
37	XV3	12 Months	Refer to Section 9.8.2 for calibration of XV3.
38	XV4	12 Months	Refer to Section 9.8.3 for calibration of XV4.
39	Degassing negative pressure	24 Months	Check the YG1 data in the standby interface, it should be in the following range: -80~-90Kpa, if it does not

No.	Component name	Maintenance cycle	Implementation method
			meet, increase the QP pump speed.
40	Air filter	24 Months	Replace the air filter.
41	Button battery	24 Months	Replace the coin cell battery on the main control board.
42	Circuit board dust removal	12 Months	Remove each circuit board and use an anti-static brush to remove dust.
43	Silicone tube	24 Months	Replace the white and broken silicone tube inside the machine

7.4 Equipment inspection and maintenance record form

After the maintenance is completed, fill out the inspection and maintenance record forms 1 and 2 respectively.

SWS6000 Series Ordinary Maintenance Activity Report_12M

Center		SN		Model	
Items		Content		OK	Remark
Dialyzer Coupling		Replace O-ring		<input type="checkbox"/>	
Concentration Aspirator		Replace O ring & Suction filter		<input type="checkbox"/>	
Bi-cart holder		Replace O ring		<input type="checkbox"/>	
Substitution component		Replace O-ring		<input type="checkbox"/>	
Endotoxin filter couplings		Replace O-ring		<input type="checkbox"/>	
Filters		Clean the membrane		<input type="checkbox"/>	
Water inlet degassing tank JQ		Replace shell accordingly		<input type="checkbox"/>	
		Replace O ring accordingly			
		Replace floater accordingly			
Negative degassing tank QG2		Replace shell accordingly		<input type="checkbox"/>	△
		Replace O ring accordingly			
		Replace floater accordingly			
Positive degassing tank QG3		Check any leakage and replace O ring accordingly		<input type="checkbox"/>	
Mixing tank HG1/HG2		Check any leakage and replace O ring accordingly		<input type="checkbox"/>	△
Resin degassing tank QG5		Check any leakage and replace O ring accordingly		<input type="checkbox"/>	△
Internal inspection		Clean crystal		<input type="checkbox"/>	
External inspection		Replace cracked external part		<input type="checkbox"/>	
Air fan membrane		Cleaning the air fan membrane		<input type="checkbox"/>	
Time checking		Check and reset time		<input type="checkbox"/>	
Pressure sensor YG1/2/3/4		Calibrate pressure sensors		<input type="checkbox"/>	

AP/VP monitoring	Calibrate AP/VP monitoring	□	
	Replace cracked AP/VP port		
	Replace leaking pressure sensor protector		
Ceramic pumps A/B/UF JP1/2/3	Maintenance & cleaning	□	
Blood pump	Maintenance & Cleaning	□	
Subs. pump	Maintenance & Cleaning	□	
Button key	Button key react properly		
Water inlet port	Clean the filter		
Release valve XV3	Maintenance and validate the inlet pressure	□	
Release valve XV4	Calibrate XV4	□	
Air filter	Replace air filter	□	
Circuit board dust removal	Remove the circuit board and use an anti-static brush to remove dust	□	

SWS6000 Series Ordinary Maintenance Activity Report_24M

Center	SN	Model		
Items	Content	OK	Remark	
Pressure sensor YG1/2/3/4	Calibrate pressure sensors	<input type="checkbox"/>		
AP/VP monitoring	Calibrate AP/VP monitoring	<input type="checkbox"/>		
	Replace cracked AP/VP port			
	Replace leaking pressure sensor protector			
Conductivity sensor DG1,DG2,DG3	Check & Validate, error range $\pm 0.3\text{mS/cm}$	<input type="checkbox"/>		
Temperature sensor	Calibrate temp. Sensor	<input type="checkbox"/>		
Release valve XV1/XV2	Maintenance & validate the calibrated pressure	<input type="checkbox"/>		
Ceramic pumps A/B/UF JP1/2/3	Maintenance & cleaning	<input type="checkbox"/>		
Heparin pump	Cleaning and validate the function	<input type="checkbox"/>		
Air detector	Validate air detection & blood recognition feature	<input type="checkbox"/>		
Blood pump	Maintenance & Cleaning	<input type="checkbox"/>		
Subs. pump	Maintenance & Cleaning	<input type="checkbox"/>		
Block clamp	Cleaning and validate the function	<input type="checkbox"/>		
Touch screen	LCD & Touch screen react properly	<input type="checkbox"/>		
Button key	Button key react properly			
IV pole	Ensure the audible & visual alarm signal			
Audible alarm	Test audible alarm			
Heater	Test the resistance of heater			
Back-up battery	Auto switch back-up power & BP for 30mins			

Cable rearranging & plug-in check	Ensure cable sequence and tighten connectors		
Balance chamber	Maintenance & Cleaning, Tightening		
Water inlet port	Clean the filter		
Reducing valve JV	Maintenance and validate the outlet max. pressure	<input type="checkbox"/>	
Release valve XV3	Maintenance and validate the inlet pressure	<input type="checkbox"/>	
Release valve XV4	Calibrate XV4	<input type="checkbox"/>	
YG1 value	YG1 is between -80 and -90kpa	<input type="checkbox"/>	
Air filter	Replace air filter	<input type="checkbox"/>	
Coin cell battery	Replace coin cell battery	<input type="checkbox"/>	
Circuit board dust removal	Remove the circuit board and use an anti-static brush to remove dust	<input type="checkbox"/>	
Silicone tube	Replace the aging whitish silicone tube of the machine	<input type="checkbox"/>	

Manufacturer Information



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