

## Chapter 5 Inspection and maintenance

This chapter describes how to perform regular inspection and maintenance to ensure the long operating life of the chamber.

### 5.1 List of regular replacement parts

The following parts must be replaced regularly. Replace the parts as soon as the replacement period is reached.

You can also use the ESPEC maintenance and inspection service.

To request a part, contact your distributor or ESPEC.

Table 5.1 List of regular replacement parts

Component name	Replacement period	Replacement method
Water filter	1 year	☞ See "6.6 Replacing the water filter".
Humidity sensor	When the difference with the calibration measuring instrument is 5%RH or greater.	Contact your distributor or ESPEC.
Humidifying heater	When the "Humidifier fault" alarm is displayed or when the breaker is off and the error occurs again even after taking action in "6.1 Alarms and actions"*	Contact your distributor or ESPEC.

\* The operating life of the humidifying heater depends on the temperature and humidity control operation time, and the water quality.

Using water with high conductivity can reduce operating life.

To extend the operating life of the heater, replace the water in the humidifying tray before a temperature and humidity control operation, and regularly clean the inside of the test area. (☞ See "5.4 Maintenance".)

\* Lithium battery

Chamber instrumentation is equipped with a lithium battery that, under normal use, will not become depleted and does not require replacement by you. (The designed operating life is at least 10 years.)

#### ■ Notification function

The inspection and maintenance periods can be set from the instrumentation.

For details, see the Controller guide.

## 5.2 Inspection and maintenance items

### ■ Inspection items

For a description of each item, see "5.3 Inspection."

If the inspection items listed below do not operate properly, contact your distributor or ESPEC.

Table 5.2 Inspection items

Operation inspection item	Inspection period
Testing breaker operation	Once a month
Testing overheat protector operation	<ul style="list-style-type: none"> <li>▪ Before long-time continuous operation</li> <li>▪ Before unattended operation</li> </ul>

### ■ Maintenance items


For a description of each item, see "5.4 Maintenance."


Table 5.3 Maintenance items

Maintenance item	Maintenance period
Cleaning condenser	Once a month
Cleaning water tank	Once every 6 months
Disinfecting water supply circuit	When there is bacteria in the water circuit
Cleaning the inside of the chamber	Before starting operation
Cleaning humidifying tray	Once every 6 months
Cleaning inner door glass	After operation is complete
Cleaning electrical compartment and water circuit chamber	Once a year
Preparations before an extended period of non-use	When not used for an extended period
Temperature sensor, humidity sensor, temperature/humidity controller, recorder (option) calibration	Once a year

### 5.3 Inspection

#### Testing breaker operation

 **WARNING**

 **Perform an operation test on the leakage breaker and check that it is operating normally before starting chamber operation.**

Failing to do so can result in electric shock.

Test the breaker operation once a month or before starting long-term continuous operation.

Gently press the test button with the breaker on. When the test button is pressed, the breaker lever should lower.

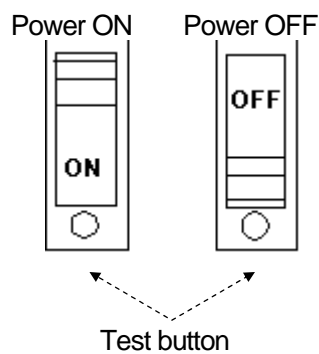




Fig 5.1 Test button

#### Testing overheat protector operation

 **WARNING**

 **Before starting chamber operation, check that the overheat protector is operating normally.**

Failing to do so can result in fire.

Before starting chamber operation, test the operation of the overheat protector.

##### <Procedure>

- 1) Check to make sure that the breaker is turned on.
- 2) On the [Setting] tab, press [Operation mode] to start constant operation.
- 3) The chamber starts operating.

- 4) Set the overheat protector to a temperature that is approximately 5°C lower than the test area temperature.

If the overheat protector is operating normally, a buzzer will sound and an alarm will appear on the screen of instrumentation. All digits on the display will flash.

If the buzzer does not sound, there is an error. Contact your distributor or ESPEC.

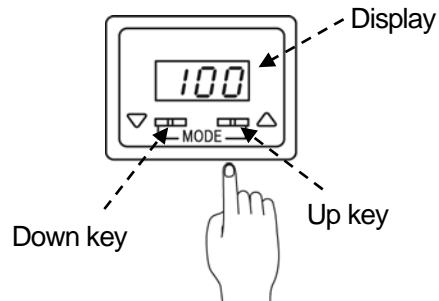


Fig 5.2 Overheat protector



- 5) To stop the buzzer, press the  key or  key.  
The setting of the overheat protector returns to the original setting.

## 5.4 Maintenance

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### Cleaning the condenser

Before cleaning the condenser, be sure to open the chamber door, clean off any water from the inside of the door, and then close the door again.

 CAUTION	
	<p><b>For your safety, be sure to wear gloves.</b></p> <p>The condenser fins have sharp edges that create the risk of cuts and other personal injury.</p>

#### <Procedure>

- 1) Turn the circuit breaker OFF.
- 2) Open the maintenance door.
- 3) Use a brush or vacuum cleaner to remove any dirt and dust adhering to the condenser fin.
- 4) Close the maintenance door.

## Cleaning the water tank

### <Procedure>

- 1) Remove the two Phillips screws from the water circuit chamber cover on the right side of the machinery compartment and then remove the cover.
- 2) Loosen the water tank screw and remove the fixing plate.



Fig. 5.3 Water tank screw position

- 3) Pull out the water tank and then remove the water tank cap and water tubes at the same time.

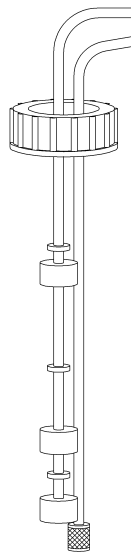


Fig. 5.4 Cap and water tubes

- 4) Use a brush or other instrument to clean the inside of the water tank.

## Disinfecting the water supply circuit

Bacteria can propagate in the water circuit over time. If this happens use a hydrogen peroxide solution or oxydol to disinfect the circuit.

### ■ Preparing the cleaning agent


- Using a hydrogen peroxide solution  
Use a 30% hydrogen peroxide solution (two 500 mL bottles) diluted with distilled water (9 L).
- Using oxydol  
Use oxydol (twenty 500 mL bottles).




### <Procedure>

- 1) Drain and dispose of all the water in the water circuit and water tank.  
See "4.3 Manual draining" and "5.4 Maintenance, Cleaning the water tank".
- 2) Fill the water tank with the cleaning solution you prepared.
- 3) First water circuit washing      Start a temperature/humidity operation. Supplying water to the humidifying tray starts.  
Supply water until the humidifying tray becomes full and then leave the water for about 15 minutes.  
Stop the temperature/humidity operation after the tray is full of water.
- 4) First humidifying tray draining      Referring to "4.3 Manual draining", drain the humidifying tray.  
After draining, disconnect the hose.
- 5) Second water circuit washing      Repeat step 3.  
(There is no need to replace or add to the water in the water tank.)
- 6) Second humidifying tray draining      Repeat step 4.
- 7) Dispose of any cleaning solution remaining in the water tank.
- 8) Fill the water tank with pure water.

## Cleaning the inside of the chamber

The adhering of dust and impurities to the inside of the chamber can prevent accurate test results. Clean the test area before starting operation.

 **CAUTION**

-  **Allow the test area to sufficiently cool down before cleaning the humidifying tray.**  
Immediately after operation, the test area may be hot and humid.
-  **An evaporator is installed on the left side of the humidifying tray. The evaporator has a guard, inserting your hand creates the risk of cuts. Do not insert your hand into the guard.**
-  **For your safety, be sure to wear gloves.**  
The test area has protruding parts and sharp parts, so be careful of cuts.

### <Procedure>

- 1) Open the outer door and inner door.
- 2) Use a soft cloth to wipe the test area.
- 3) Close the outer door and inner door.

## Cleaning the humidifying tray

### <Procedure>

- 1) Prepare a Phillips screwdriver and a brush or other instrument for cleaning.
- 2) Loosen the four screws securing the test area floor plate and then remove the test area floor plate.
- 3) Loosen the two screws securing the air conditioning area suction plate and then remove the plate.
- 4) Use the brush or other instrument to clean the humidifying tray. After cleaning, drain water from the humidifying tray.  
For the draining method, see "4.3 Manual draining".

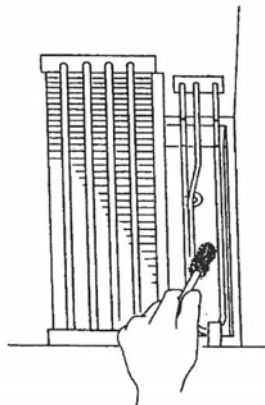


Fig. 5.5 Cleaning the humidifying tray



### Cleaning the inner door glass

When the inner door glass is in contact with moisture over time, the alkaline component leaches out and accumulates on the glass surface.



An alternating succession of drying and dew condensation in this condition changes the glass surface states, and the glass may lose its luster and become opaque. This phenomenon is called glass weathering.

At present, the only way to prevent weathering is to clean the glass frequently.

When the glass is wet, wipe it dry with a cloth. When the glass is dry, first wipe it clean with a wet cloth, and then wipe it with a dry cloth.

### Cleaning the electrical compartment and water circuit chamber

Dust accumulated in the electrical compartment and water circuit chamber can lead to malfunction. Clean the electrical compartment and water circuit chamber once a year.

 <b>WARNING</b>	
	<p><b>Be sure to turn off the breaker before cleaning.</b></p> <p>A safety device protects against electric shock by turning off the breaker with a door switch; however, be sure to turn off the breaker without relying on the safety device. Failing to do so can result in electric shock.</p>

#### <Procedure>

- 1) Check to make sure that the breaker is turned off.
- 2) Remove the two Phillips screws from the electrical compartment and water circuit chamber, and then remove the cover. The electrical compartment cover is wired to the door switch, so take care not to break the connection.
- 3) Use a vacuum cleaner or other means to clean out any dust that has accumulated in the electrical compartment and water circuit chamber.
- 4) Close the electrical compartment door and water circuit chamber door.

### Preparations before an extended period of non-use

If the chamber will not be used for an extended period of time, perform the steps below. Failure to do so may result in inaccurate testing and reduce the operating life of the chamber.

- Drain the water from the humidifying tray and water tank.  
For the draining method, see "4.3 Manual draining" and " 5.4 Maintenance, Cleaning the water tank".
- Perform a dry operation. See the dry operation information on "1.8 Other precautions".
- Turn off the breaker.

