

Chapter 7

Checks and Maintenance

This chapter explains equipment checks and maintenance. To keep the chamber in good working condition, perform checks and maintenance periodically.

7.1 Check and Maintenance Lists

■ Check list

For an explanation on each check item, see "7.2 Checks".

If any of the following checks result bad, contact the place of purchase or ESPEC CORP.

Table 7.1 Check list

Check item	When to check
Main power switch (leakage breaker) trip test	Once monthly
Overheat protector trip test	Before every test
Overcool protector trip test	Before every test
Water level check for humidifying tray and humidifying tray water level regulator (SH chambers only)	<ul style="list-style-type: none"> • Once every three months • When chamber is relocated. See "4.4 Water Level Check".
Air circulator function test	<ul style="list-style-type: none"> • Once monthly • Before long test runs

■ Maintenance list

For an explanation on each maintenance item, see "7.3 Maintenance".

Table 7.2 Maintenance list

Maintenance item	When to perform
Water tank cleaning (SH chambers only)	Once monthly
Humidifying tray cleaning (SH chambers only)	Once monthly
Test area cleaning	Before every test
Water pump filter check (SH chambers only)	Every 6 months
Auxiliary water tank circuit filter cleaning (only for chamber equipped with optional auxiliary water tank circuit)	Once monthly
Take-down	Before long periods of disuse

7.2 Checks

Main Power Switch (Leakage Breaker) Trip Test

Once a month and before long test runs, test-trip the main power switch (leakage breaker). The switch is found on the rear side of the chamber. With the main power switch in the ON position, press the red test button. If the switch's lever falls to the middle position, the breaker is working properly.

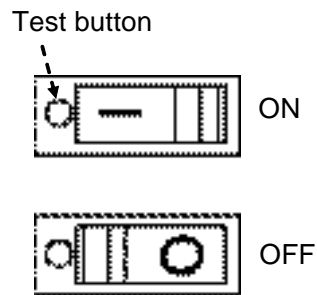


Fig. 7.1 Main power switch test button

Overheat Protector Trip Test

Before every test, test-trip the overheat protector.

- Procedure**
1. Check the main power switch is in the ON position.
 2. Press the POWER key to activate control power.
The current temperature (humidity) will appear on the display.
(Humidity appears only on SH chambers.)
 3. Press the CONST.OPER./STOP key.
The chamber will start up.

4. Set the overheat protector about 5°C lower than chamber temperature. If the overheat protector is working properly, a buzzer will sound and the Alarm screen will be appear on the display when temperature inside the chamber reaches the overheat protector setting. All digits in the display of the overheat protector will flash. If a buzzer is not sounded, something is wrong with the equipment. Contact the place of purchase or ESPEC CORP.

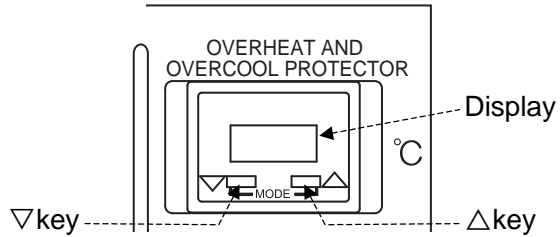




Fig. 7.2 Overheat protector

5. To silence the buzzer, press either the  or  keys. Return the overheat protector to its usual setting.

Overcool Protector Trip Test

Before every test, test-trip the overcool protector.

Procedure

1. Check the main power switch is in the ON position.
2. Press the **POWER** key to activate control power.
The current temperature (humidity) will appear on the display. (Humidity appears only on SH chambers.)
3. Press the **CONST.OPER./STOP** key.
The chamber will start up.
4. Set the overcool protector about 5°C higher than chamber temperature.
If the overcool protector is working properly, a buzzer will sound and the Alarm screen will be appear on the display when temperature inside the chamber reaches the overcool protector setting. All digits in the display of the overcool protector will flash. If a buzzer is not sounded, something is wrong with the equipment. Contact the place of purchase or ESPEC CORP.

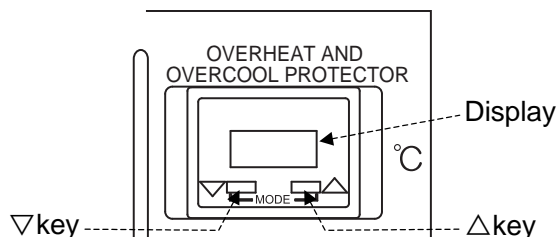




Fig. 7.3 Overcool protector



5. To silence the buzzer, press either the  or  keys.
Return the overcool protector to its usual setting.

Air Circulator Function Test

Once a month and before long continuous operations, check the air circulator is functioning properly.

- Procedure**
1. Check the main power switch is in the ON position.
 2. Press the POWER key to activate control power.
The current temperature and humidity inside the test area will appear on the display.
 3. Check the door alarm delay time is set to 180 seconds.
For an explanation on alarm setting, see "6.2 Test Environment Setup" in the Reference manual.
 4. Set the target temperature to 20°C and turn refrigerator control OFF.
For an explanation on setting temperature, see "5.4 Target Temperature/Humidity Setup". For one on setting refrigerator capacity, see "6.1 Refrigerator Capacity Control Setup."
 5. Press the CONST.OPER./STOP key.
Operation will start in the constant mode.
 6. Open the test area door and check if the air circulator is spinning abnormally.
 7. Close the door and listen for strange noises from the air circulator.

If shaking or strange noises are detected, there may be something wrong with the air circulator or fan. Contact the place of purchase or ESPEC CORP.

- Reference**
- During the function test, if the test area door is left open for 180 seconds, "AL 13" will appear on the display and the air circulator will stop. There is nothing wrong with the air circulator. Silence the buzzer from the  or  key, and close the door to clear the alarm. Then, open the door again and continue with the air circulator function check.

7.3 Maintenance

Water Tank Cleaning (SH chambers only)

- Procedure**
1. Remove the water tank from the water circuit compartment.
 2. Detach the cap from the water tank, add about 500 cc of deionized water and reattach the cap.
 3. Shake the tank in all directions to wash the inside.

 CAUTION
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| <ul style="list-style-type: none">• Do not subject the water tank connection plug to strong impacts. |
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<p>A damaged plug can impede water supply and cause leaks.</p>
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4. Detach the cap and empty the tank.
5. Repeat steps 2 to 4, two to three times.
6. Reinstall the water tank in the water circuit compartment as before.

Humidifying Tray Cleaning (SH chambers only)

 CAUTION
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| <ul style="list-style-type: none">• SHARP EDGES! Be careful of projections or sharp edges inside the chamber. |
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<p>For your safety, always wear gloves when working inside the chamber.</p>

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| <ul style="list-style-type: none">• Bring the test area to room temperature before cleaning the humidifying tray. |
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<p>Contact with hot or cold parts can cause hot or cold burns.</p>
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| <ul style="list-style-type: none">• Shut power OFF at the main power switch before performing work. |
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<p>Working with the power ON runs the risk of electric shock.</p>

During operation, dirt and foreign matter stick to the humidifying tray and humidifying heater. To ensure long lasting use, clean the tray and heater of dirt once a month. A good way to inhibit dirt from accumulating is to drain the humidifying tray after every test.

- Procedure**
1. Open the chamber door.
 2. Remove the two screws that lock down the protective grille and detach the grille.

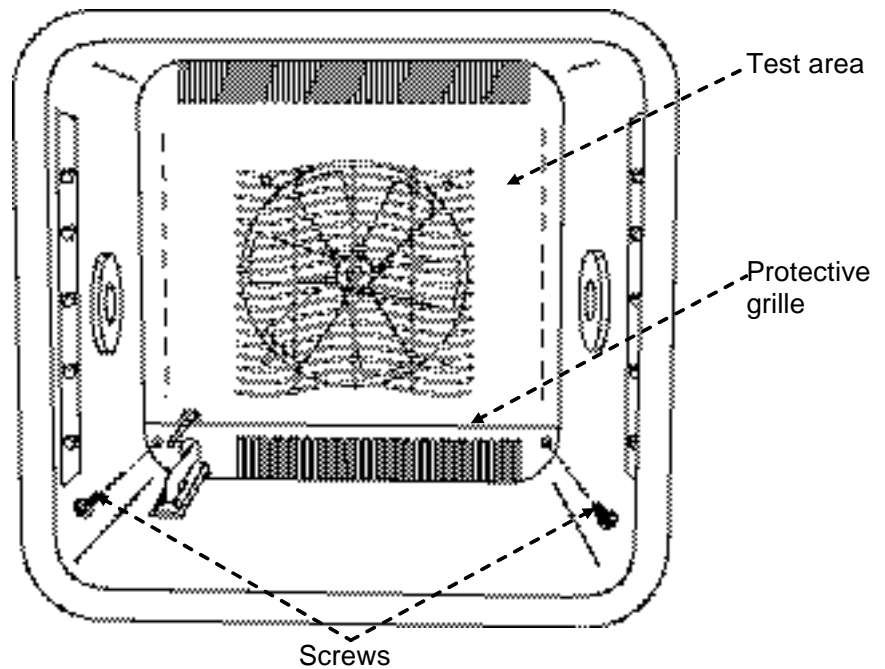


Fig. 7.4 Detaching the protective grille

3. Clean the surfaces of the humidifying tray and humidifying heater with a brush or by other means.
4. Reattach the grille in the opposite way it was detached in step 2, and close the test area door.

Test Area Cleaning

Dirt and foreign matter inside the test area can throw test results off. Clean the test area before every test.

- Procedure**
1. Open the chamber door.
 2. Wipe walls and parts clean with a soft cloth.
 3. Close the door.

Water Pump Filter Check (SH chambers only)

CAUTION

- **Stop the chamber before checking or cleaning the pump filter.**
- **Drain the humidifying tray and water tank level sensor tank before checking or cleaning the pump filter.**

Water will leak when cleaning the pump filter unless drained first. For an explanation on drainage, see “4.2 Drainage Work.”
- **Detach the water tank from the water circuit compartment before checking or cleaning the pump filter.**

Water will leak when cleaning the pump filter if the tank is left in the water circuit compartment.
- **After cleaning the water pump filter, fill and drain the humidifying tray and humidifying tray water level regulator 2 to 3 times to flush out any dirt or foreign matter in the line.**

During use, the water pump filter in the water tank level sensor tank can clog with dirt and impede water supply. Check it once every 6 months.

Procedure

1. Check the main power switch is in the OFF position.
2. Remove the water tank from the water circuit compartment.
3. Remove the four screws that lock the water circuit compartment rear panel to the chamber rear panel, and detach the panel. This will require a Philips screwdriver.

* The panel is easily detached by pulling it outward from the top and sliding upward.

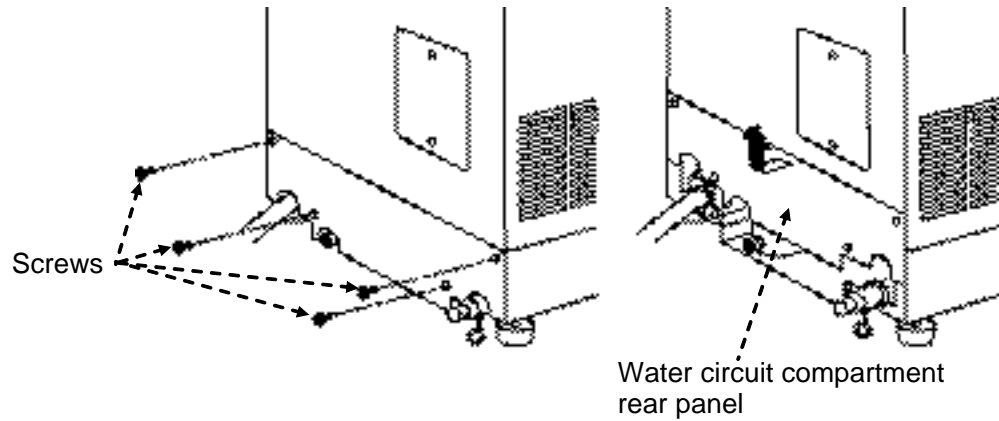


Fig. 7.5 Detaching the water circuit compartment rear panel

4. Connect the included humidifying tray drain hose to the humidifying tray drain nipple on the chamber rear and drain the tray.
5. Connect the water tank level sensor tank drain hose to the water tank level sensor tank drain nipple and drain the sensor tank.
6. Check the water pump filter inside the sensor tank for dirt and clogging. If clogged, call for service or clean as follows.

Water Pump Filter Cleaning (SH chambers only)

- Procedure**
1. Remove the two screws that lock the water tank level sensor tank in place. This will require a Philips screwdriver.

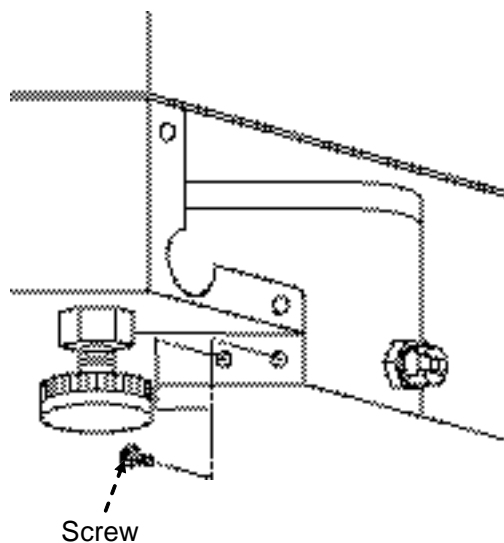


Fig. 7.6 Detaching screws from water tank level sensor tank

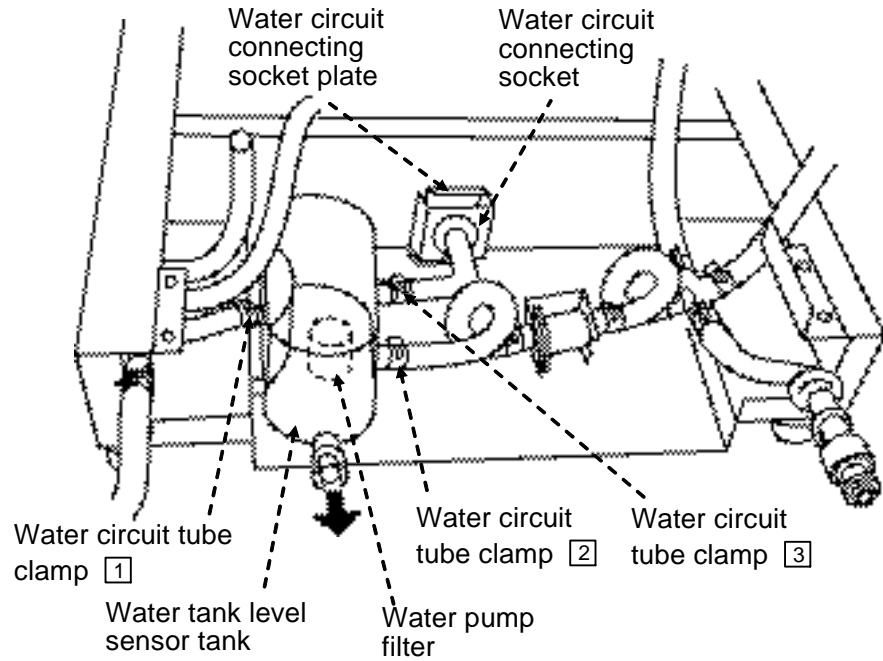


Fig. 7.7 Parts used in water pump filter cleaning

2. Loosen tube clamps 1 2 and 3 (requires needle nose pliers), and disconnect the tube from the fitting.

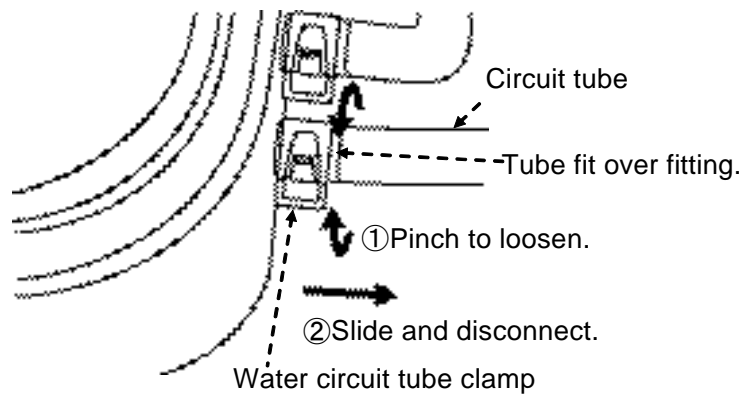


Fig. 7.8 Loosening water circuit tube clamps

3. Pull the water tank level sensor tank outward enough to detach the lid and spacer, and detach them.
4. Remove the water pump filter from inside.

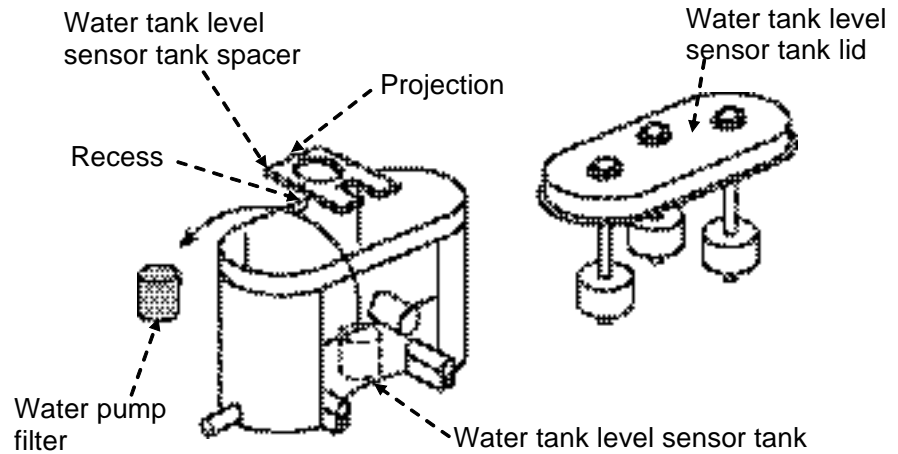


Fig. 7.9 Water tank level sensor tank

5. Rinse the filter clean under running water until clean of adhering dirt.
6. Reassemble parts as before in the opposite order in which they were detached.
Orient the projection on the water tank level sensor tank spacer so that it fits into the recess on the water tank level sensor tank and is not tilted when attached.

Auxiliary Water Tank Circuit Filter Cleaning (Only for chambers equipped with optional auxiliary water tank circuit)

The auxiliary water tank circuit is equipped with a filter to prevent solid matter from infiltrating the solenoid valve. Clean the filter once a month.

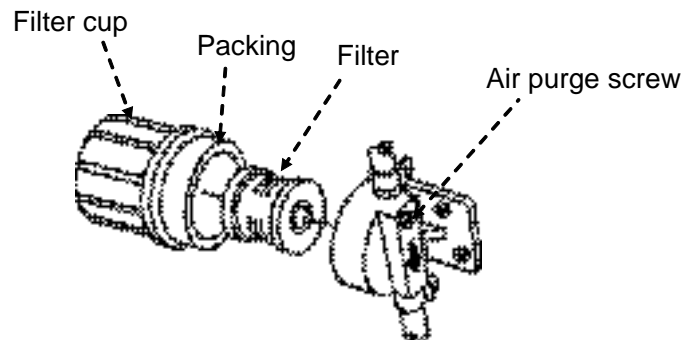


Fig. 7.10 Auxiliary water tank circuit filter

CAUTION

- **Stop the chamber before cleaning the auxiliary water tank circuit filter. Also, after cleaning, supply water to the humidifying tray water level sensor tank so as to purge the line of air.**
This air purge helps keep water in the tray to the proper level.



CAUTION

- **Disconnect the auxiliary water tank from the filter or completely shut off the circuit water supply before cleaning the filter.**

Water will spill from the filter when the cap is detached if water supply is on.

- **When cleaning the filter, lay rags underneath the cap to catch any spilling water.**

Water inside the filter can spill when the cap is detached.

- Procedure**
1. Check the main power switch is in the OFF position.
 2. Disconnect the auxiliary water tank from the filter.
 3. Turn the filter cup until detaching. (Lay rags below the cup to blot up spilling water.)
 4. Pull the filter out from the bottom of the filter casing.
 5. Rinse the filter clean of dirt with plain water.
 6. Reassemble parts as before.
 7. Supply water to the humidifying tray. (Run a temperature-humidity test.)
 8. Remove the air purge screw. Retighten the screw when water trickles from the hole.

Take-Down Before Long Periods of Disuse

Before disuse of 3 days or more, do the following to prevent mildew or scale formation. Failure to do so can affect testing and shorten equipment service-life.

- Drain the wick pan, humidifying tray, water tank and water tank level sensor tank. (SH chambers only)
- Dry the test area (run the chamber).
- Set the main power switch in the OFF position and shut OFF primary power supply.

■Drying the test area

The chamber is run to dry the test area.

Connect a drain hose to the humidifying tray drain nipple on the chamber rear (SH chambers only) and run the chamber for about 60 minutes at a constant 70°C with humidity control OFF and refrigerator capacity set to either “*RUŁ̄*” or “*̄FF*”. After that, stop the chamber, open the door and let sit for about 30 minutes or so.

Procedure

1. Check the main power switch is in the ON position.
2. Connect the humidifying tray drain hose to the humidifying tray drain nipple on the chamber rear (SH chambers only). For an explanation on the connection, see "4.2 Drainage Work".
3. Set temperature to 70°C, turn OFF humidity control (SH chambers only) and set refrigerator capacity to the “*RUŁ̄*” mode or “*̄FF*”.
4. Press the CONST. OPER./STOP key to start operation.
Run the chamber with the test area door closed for about 60 minutes. After that, stop the chamber, open the door and let sit for about 30 minutes or so.
5. Check the test area is free of moisture, close the door and disconnect the drain hose from the humidifying tray drain nipple.

■Power OFF

Set the main power switch in the OFF position, then shut OFF the primary power supply.

