Chapter 5 Checks and Maintenance

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

5.1 Check and Maintenance Lists

■Check list

For an explanation on each check item, see "5.2 Checks".

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

Table 5.1 Check list

Check item	When to check
Main power switch (leakage breaker) trip test	Once monthly
Overheat protector trip test	・Before long test runs ・Before unmanned tests
Humidifying tray and regulator water level check (Not necessary for LU chambers)	・Once every three months ・When chamber is relocated. See “Installation guide”.

■Maintenance list

For an explanation on each maintenance item, see "5.3 Maintenance".

Table 5.2 Maintenance list

Maintenance item	When to perform
Condenser cleaning (Not necessary for LH chambers)	Once monthly
Water tank cleaning (Not necessary for LU chambers)	Once monthly
Electromagnetic pump (water tank) protective strainer cleaning (Not necessary for LU chambers)	Once monthly
Humidifying tray cleaning (Not necessary for LU chambers)	Once monthly
Test area cleaning	Before every test
Water circuit (heat exhaust) compartment cleaning	Once yearly
Take-down	Before long periods of disuse
Water circuit disinfecting	Wick dries up within 3 days and bacteria has been breeding in the water circuit.

5.2 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 test button. If the switch's lever falls to the middle position, the breaker is working properly.

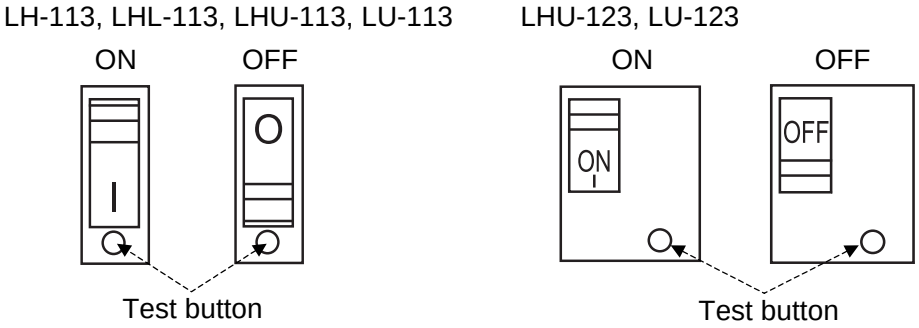


Fig. 5.1 Main power switch test button

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.
3. Press either the [CONST.OPER./STOP] key or the [PRGM 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 the buzzer doesn't sound, something is wrong with the equipment.
   Contact the place of purchase or ESPEC CORP.

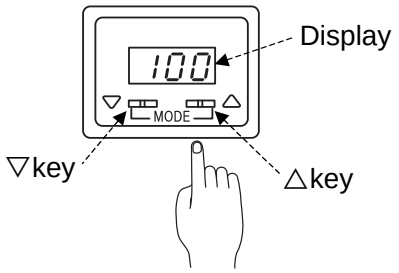


Fig. 5.2 Overheat protector

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

5.3 Maintenance

Condenser Cleaning **(Not necessary for LH chambers)**

Before cleaning the condenser, open and close the door to rid the inner door of any clinging moisture.

Procedure

1. Unplug the chamber from its electrical outlet.

2. Remove the screw from the top of the lower front panel. This will require a Phillips screwdriver.

3. Lean the panel downward from its top edge and lift up and out at an angle.

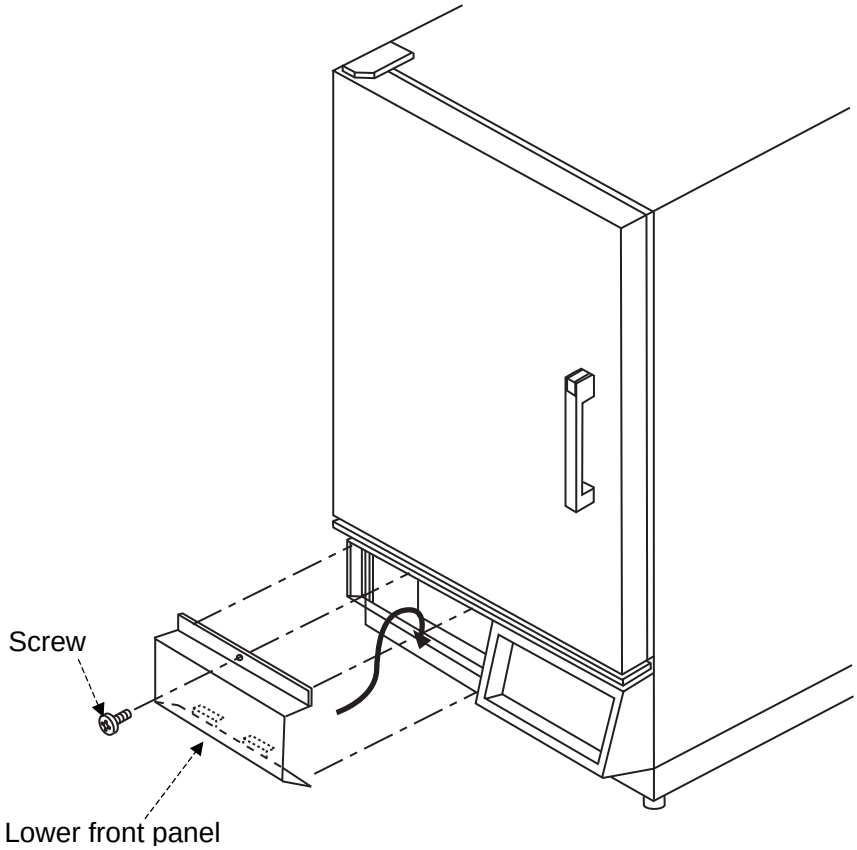


Fig. 5.3 Detaching the lower front panel

4. Clean the condenser and nearby areas of dust with a vacuum cleaner or by other means.

5. Reinstall the lower front panel as before.

Water Tank Cleaning (Not necessary for LU chambers)

Procedure

1. Connect the included water supply/drain hose to the water tank nipple and drain the water tank empty. (It takes about 8 minutes to drain a full tank.)

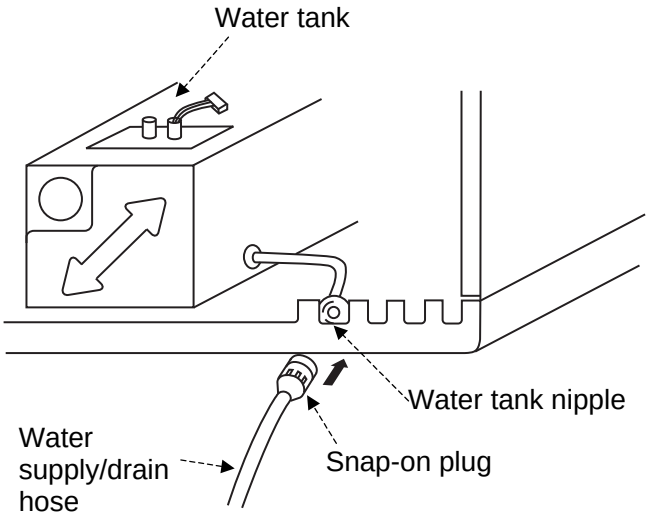


Fig. 5.4 Tank drainage connection

2. Detach the water circuit (heat exhaust) compartment panel from the chamber.
3. Using the same water supply/drain hose, add water to the tank.
4. When the tank is about 2/3 full, drain it empty again.
5. Repeat steps 3 and 4 two to three times.

Electromagnetic Pump (Water Tank) Protective Strainer Cleaning

(Not necessary for LU chambers)

Procedure

1. Unplug the chamber from its electrical outlet.
2. Detach the water circuit (heat exhaust) compartment panel.
3. Loosen the screws to the tank's top plate on which are installed the float switch and strainer. This will require a Phillips screwdriver. Then, lift the plate upward and remove.

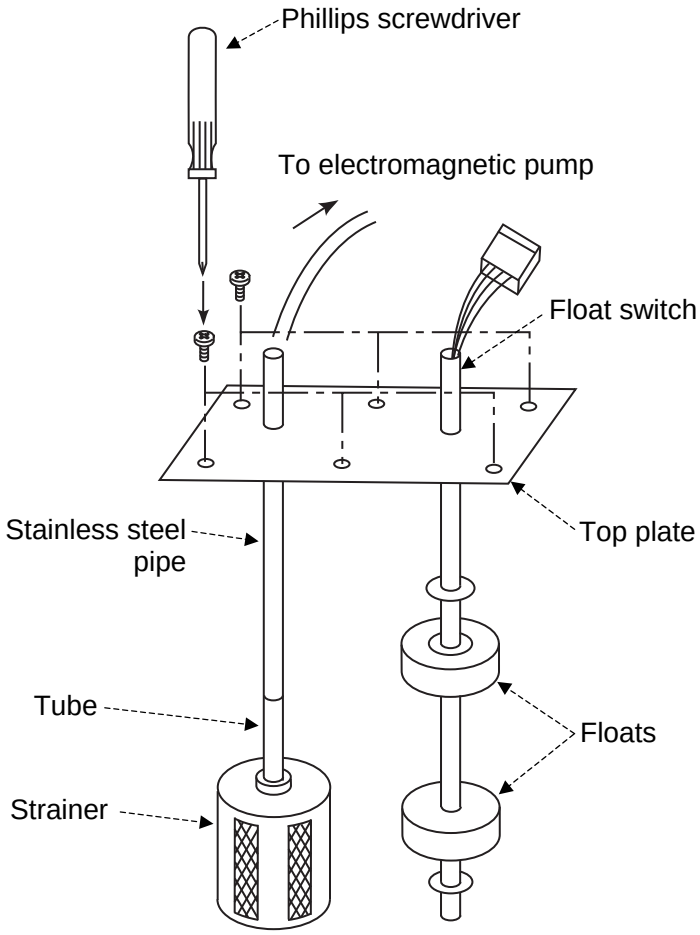


Fig. 5.5 Electromagnetic pump protective strainer

4. Pull the tube to which the strainer is attached out from the top plate and wash off dirt and grime with clean water.

5. Reassemble parts as before.

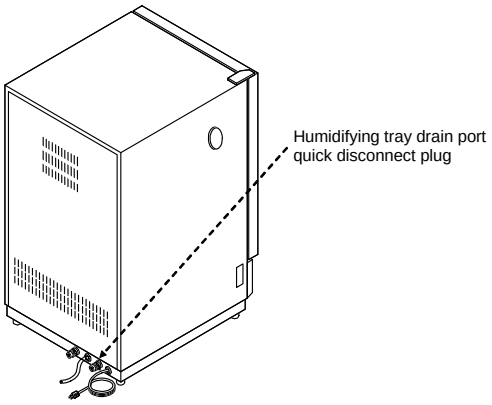
Humidifying Tray Cleaning **(Not necessary for LU chambers)**

⚠ CAUTION

- **SHARP EDGES! Be careful of protrusions or sharp edges inside the chamber.**
  For your safety, always wear gloves when working inside the chamber.
- **HOT ON THE INSIDE! Cool down the test area before cleaning the humidifying tray.**
  During and shortly after operation, the chamber is HOT and humid on the inside.

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.

How to drain from humidifying tray: Connect a quick disconnect socket of water supply/drain hose to humidifying tray water drain port quick disconnect plug to drain water from the humidifying tray.
Remove the hose after drain.



Procedure

1. Open the chamber door.

2. Lift the protective grille outwards from the bottom and then upwards to detach.

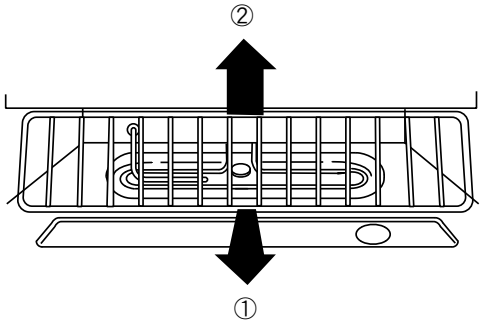


Fig. 5.6 How to detach the protective grille

3. Clean the surfaces of the humidifying tray and humidifying heater with a brush or by other means.

4. Reattach the grille and close the chamber 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 Circuit Disinfecting

During long-term use, bacteria may grow in the water circuit. When this is suspected, disinfect the water circuit using oxydol or another hydrogen peroxide solution.

■Preparing the cleaning solution

- If you are using a hydrogen peroxide solution other than oxydol:
  Dilute two 500 mL bottles of 30% hydrogen peroxide by adding 9 liters of distilled water.
- If you are using oxydol: Prepare twenty 500 mL bottles of oxydol.

Procedure

1. Drain the water circuit and water tank completely. Dispose of the drain water.
   See “5.3 Water Tank Cleaning (Not necessary for LU chambers)” and “5.3 Humidifying Tray Cleaning (Not necessary for LU chambers)”.

2. Fill the water tank with the prepared cleaning solution.

3. First water circuit cleaning

   Start the temperature-humidity operation (20°C, 0%rh).

   * If the temperature is set too high, the humidifying heater may boil off the solution.

   Water supply to the humidifying tray will begin.
   Let the humidifying tray fill completely with water and leave it for about 15 minutes.
   Stop the temperature-humidity operation with the humidifying tray full.

4. First humidifying tray draining
   Drain the humidifying tray by referring to “5.3 Humidifying Tray Cleaning (Not necessary for LU chambers)”.
   After draining is complete, remove the hose.

5. Second water circuit cleaning Perform step 3 again.
   (It is not necessary to replace or add water to the water tank.)

6. Second humidifying tray draining Perform step 4 again.

7. Dispose of the cleaning solution inside the water tank.

8. Fill the water tank with pure water.

Water Circuit (Heat Exhaust) Compartment Cleaning

Dust buildup inside the water circuit (heat exhaust) compartment can lead to trouble. Clean inside the compartment once a month.

Procedure

1. Check the main power switch is in the OFF position.
   The water circuit (heat exhaust) compartment has a ventilation fan on the inside. Contact would be dangerous. Always shut OFF power at the main power switch before opening the water circuit (heat exhaust) compartment.
2. Detach the water circuit (heat exhaust) compartment panel.
3. Clean dirt from inside with a vacuum cleaner or by other means.
4. Reattach the compartment panel.

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 water tank, humidifying tray and wick pan. (Not necessary with LU chambers)

  As for water tank and humidifying tray, refer to “5.3 Water Tank Cleaning (Not necessary for LU chambers)” and “5.3 Humidifying Tray Cleaning (Not necessary for LU chambers)”. As for wick pan, connect a quick disconnect socket of water supply/drain hose to humidifying tray water drain port quick disconnect plug to drain water from the wick pan during temperature and humidity operation. After finishing drain from the wick pan, stop temperature and humidity operation and remove the hose.
- 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.
Turn humidity control OFF, and run the chamber at a minimum 70°C for about 60 minutes. After that, crack the chamber door slightly and run the chamber under the same conditions for about 15 minutes.

Procedure

1. Check the main power switch is in the ON position.
2. Set target temperature to 70°C and turn humidity control OFF (not necessary for LU chambers).
3. Press one of the [OPER./STOP] keys.

Run the chamber for about 60 minutes with the door closed, then for 15 minutes with the door slightly cracked.

■Power OFF

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

■Set the lock cover of leakage breaker for 115V/220V/230V AC (option)

As necessary, set the lock cover of leakage breaker (accessory) not to turn "ON" the main switch.