6 Daily maintenance and inspection

This chapter explains daily maintenance and inspection. Pay careful attention to the information herein, so as to keep the equipment in prime working conditon.

6.1 Leakage breaker trip test

This chamber uses a leakage breaker as the main power switch. This test confirms whether the breaker is functioning correctly or not.
Perform this test monthly and before starting endurance tests or other long run operation.

- With both the primary power and main power switch ON, gently press the test button. The lever of the main power switch will trip if the working properly. If it fails to trip, there is something wrong with the switch. Contact the place of purchase or ESPEC CORP.

- When the switch trips, the lever stops at a point between the ON and OFF positions. To reactivate power, turn the switch completely OFF then ON again.

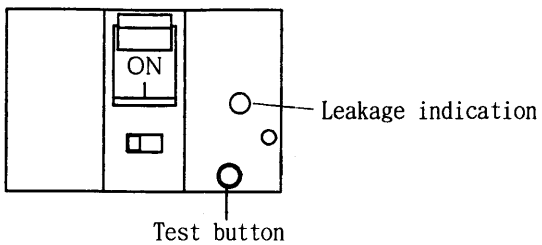


Fig. 6.1 Leakage breaker trip test

6.2 Overheat protector trip test

Before starting operation, test the overheat protector for proper tripping.

① Set the overheat protector temperature below the actual chamber temperature.

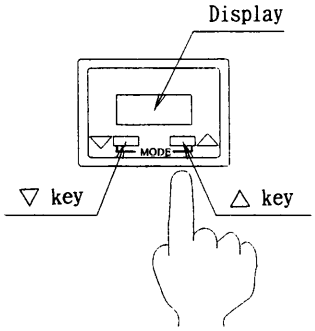


Fig. 6.2 Overheat protector trip test

② If the overheat protector is functioning properly, an alarm will be generated: a fault indication lamp will light up and the buzzer will sound. If an alarm is not generated, there is something wrong with the overheat protector. Contact the place of purchase or ESPEC CORP.

- If the overheat protector trips, all of the digits of the setting device display flash.

③ To clear the alarm, press the (POWER) key to shut OFF power to the chamber, and then reset the overheat protector.

6.3 Cleaning inside the chamber

After operation has ended, wipe away dirt from inside the chamber with a soft lint-free cloth.

⚠ CAUTION

- **Shortly after operation, the oven is HOT on the inside (specimens, shelves, door gasket, inner chamber).**

  Cool the oven down sufficiently before cleaning it.

6.4 Cleaning inside the electrical compartment

Because the electrical compartment is ventilated, dust easily accumulates inside. Dust accumulation may cause leakage and faulty contacts. Clean inside the electrical compartment once every 2 or 3 months with a vacuum cleaner.

6.5 Cleaning inside the exhaust duct

⚠ CAUTION

- Be sure to clean inside the exhaust duct, whether of our manufacture or installed by you, once every 2 or 3 months.

The vapor from specimens or airborne substances may settle inside the exhaust duct as sludge. Accumulated sludge may be ignited by the hot air of the exhaust.

6.6 Changing the HEPA filter

As dust accumulates in the HEPA filter, air passes through it less freely. This results in a drop in flow rate and air pressure. When the differential pressure gauge reads about 0.6 kPa (60 mm Aq), it is time to change the filter. Change the filter as necessary.
The HEPA filter has a service life of 3 to 5 years.

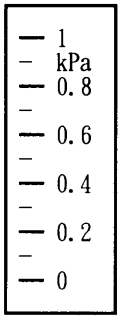


Fig. 6.3 Differential pressure gauge

Changing the HEPA filter produces dust. The filter is also baked in the process. Therefore, change the filter in a well-ventilated place outside of the clean room.

① Remove the filter protective plate.

The protective plate is hooked on, therefore it can be easily unhooked by lifting it slightly.

(With the PVHC-211 and PVHC-211, the temperature sensor will be in the way. Therefore, detach the temperature sensor cover from the left side of the oven and pull the sensor back to the oven wall.)

(With High performance clean ovens, detach the temperature sensor cover from the left side of the oven, loosen the nut fixing the sensor in place and pull the sensor out of oven from the left side. When locking the sensor in place, tighten the nut by hand.)

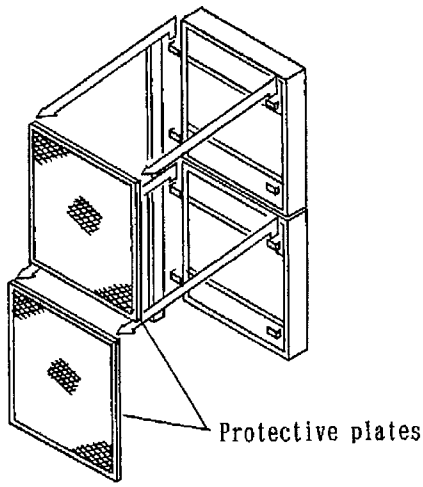


Fig. 6.4

② Undo the latches (× 4 each on left/right) that lock the filter in place.

The filter is easily removed when the latches are open. (PV(H)C-211, 231, 331)

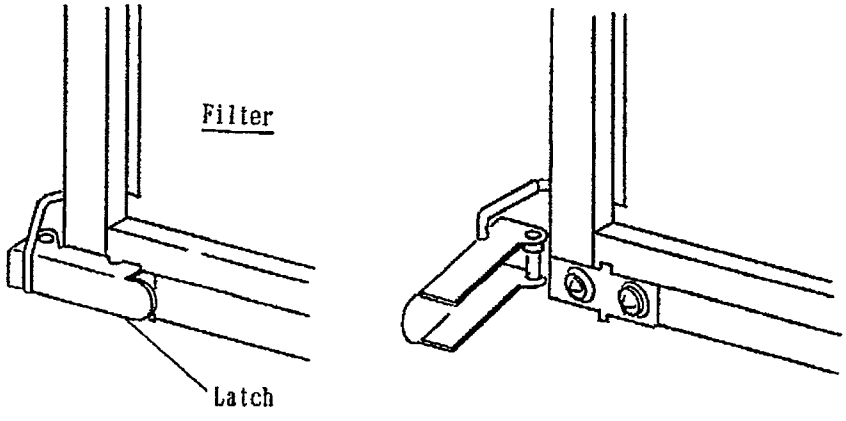


Fig. 6.5

③ Remove the hexagon nuts (× 14) locking the filter retainers in place.

The filter can be removed by detaching the retainers which hold the filter in place. (High-performance clean ovens)

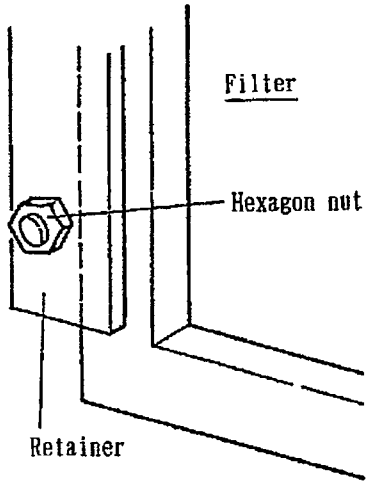


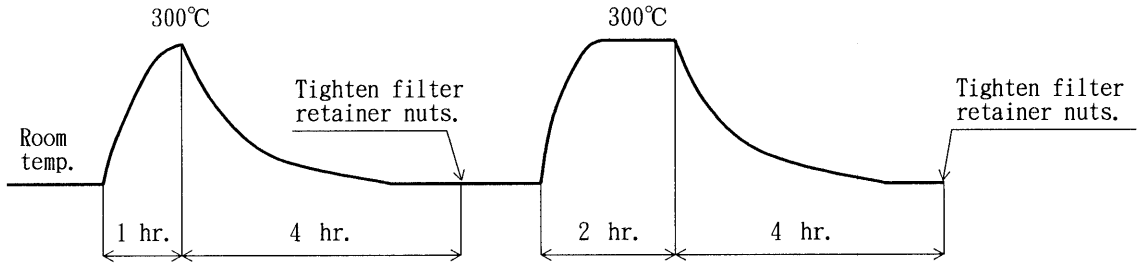
Fig. 6.6

④ Bake the HEPA filter. (High-performance clean ovens)

Run the below operation pattern to eliminate any oil in the HEPA filter or adhering to oven walls.

The HEPA filter packing will contract in the baking process, therefore tighten the filter retainer nuts 2 turns. Fully open the damper to bring down oven temperature.

Remove any finger prints from oven walls and parts inside the oven before raising the temperature. Use alcohol or similar cleaner. Finger prints are baked onto parts when the oven is heated and cannot be removed thereafter.



NOTE

After replacing the HEPA filter, the first time the oven is heated up, a faint odor and white smoke are generated inside. There is nothing wrong with the equipment. Ventilate the oven well.
The odor and smoke will dissipate over time.

HEPA filter replacement is directly related to clean factor. When time to change the filter, contact the place of purchase or ESPEC CORP.

6. 7 Lock catch replacement

The roller in the lock catch is made of heat-resistant resin, thus is a consumable part.

It becomes worn down as the door is opened and closed frequently.

Replace it when worn excessively. Contact the place of purchase or ESPEC CORP.

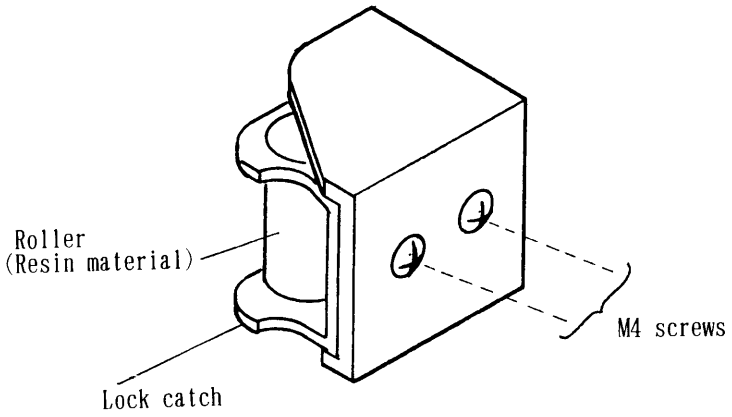


Fig. 6.8 Lock catch

Remove the M4 screws locking the lock catch in place and attach a new catch (Phillips screwdriver required).

Coat screws with locking paint before tightening.

6. 8 Door hing washer replacement

Door hinge washers are made of resin, thus are consumable parts. They become worn down as the door is opened and closed frequently. Replace them when worn excessively. Contact the place of purchase or ESPEC CORP.

① Detach the hinge covers of the chamber side and the door side with a screwdriver.

② Remove the bolts locking the door to the hinges with a M5 nutdriver. Have someone hold the door while you loosen the bolts, to keep it from slipping out of place.

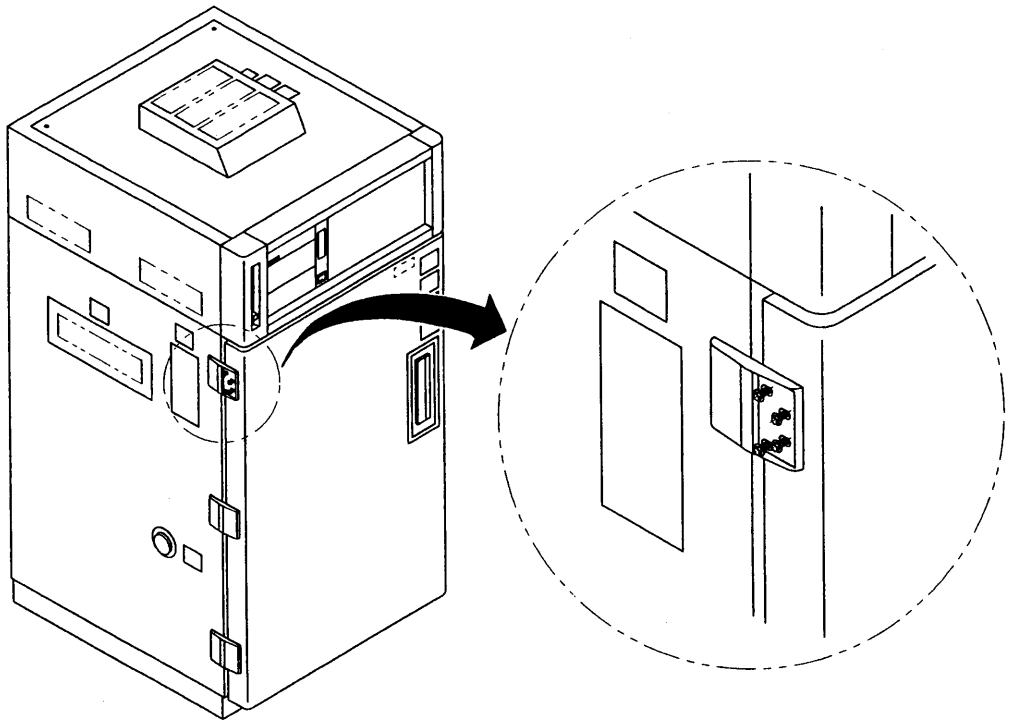


Fig. 6.9 Detaching hinges

③ Remove the hexagon socket heat screws locking the hinge pin.

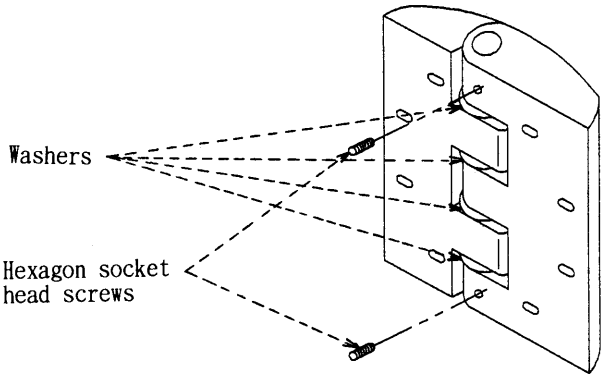


Fig. 6.10 Removing hexagon socket head screws

④ Pull out the pin.

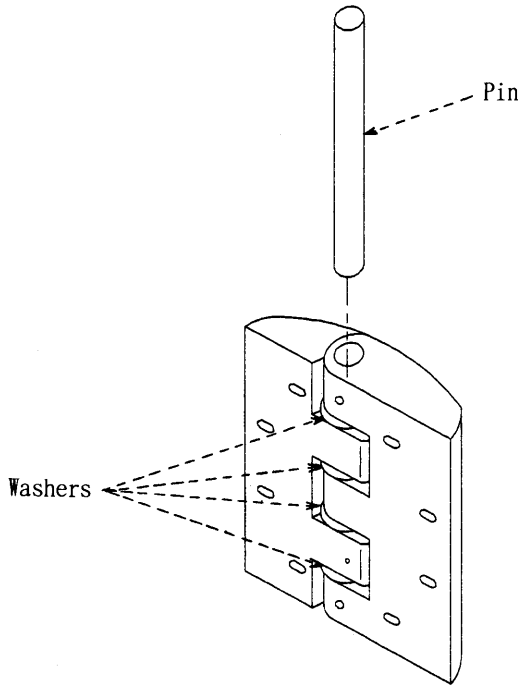


Fig. 6.11 Pulling out pin

⑤ The hinges come to pieces and replace the washers.

⑥ Reattach them in the opposite procedure in which they were attached.