

**Product Introduction**

Laboratory ovens and incubators are used for forced-air thermal convection applications. Ovens generally provide uniform temperatures throughout while incubators provide a temperature-controlled environment to support the growth of microbiological cultures. Esco **lab ovens** can reach up to 300°C while incubators can reach up to 80°C (**natural convection**) and 100°C (**forced convection**). Both ovens and incubators are available in various sizes ranging from 32 liters to 240 liters. On the other hand, a **refrigerated incubator** is another type of incubator for applications that maintain temperature below ambient to as low as 10°C such as Biochemical Oxygen Demand (BOD) testing.

**Application**

Laboratory oven applications include drying, material testing, curing, heated storage, etc.

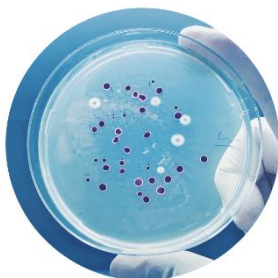


Drying



Heated Storage

Forced and natural convection lab incubators are used for microbiological culture, coliform detection, food and beverage testing, pharmaceutical stability testing, paraffin embedding, etc. while refrigerated incubators are used for BOD determination of wastewater and sewage, plant cell growth, fermentation studies, etc.



Microbiological Culture



Food & Beverage Testing



BOD Testing

**Maintenance**

To ensure reliable performance of laboratory oven and incubator, proper maintenance should be done. Esco ensures that its service is on top of the line providing standard services such as

calibration and preventive maintenance to meet your individual needs and to maintain its excellent working condition.

Table 1. *Scheduled Maintenance*

No.	Description of Task to Perform	Maintenance to be carried out			
		Before using	After using	Yearly	As needed
1	Decontaminate the work zone	✓			
2	Clean the exterior and interior surfaces, screen frame and temperature probe		✓		
3	Inspect the equipment for any physical abnormalities or malfunction			✓	
4	Clean up stainless steel surfaces with MEK				✓
5	Lubricate door's moving parts				✓
6	Check tightness of hinge screws on door's moving parts				✓
7	Readjustment of door				✓
8	Calibration of temperature sensor				✓
9	Cleaning of filter*				✓

*Note: \*Applicable to refrigerated incubator only*

### Cleaning Procedures

Before cleaning, make sure to cut off the power supply. Clean and wipe the exterior and interior surfaces using a wet and soft cloth. Neutral detergent is recommended in cleaning the control panel. Use MEK (Methyl-Ethyl-Ketone) for removing stubborn stains or spots on the stainless steel surface. In such cases, make sure that you wash the steel surface immediately with clean water and some liquid detergent. Use a polyurethane cloth or sponge for washing. Regularly cleaning the stainless steel surface can help you retain the attractive factory finish.

Check the equipment to ensure that it is functioning properly and replace parts if necessary. Lubricate the door's moving parts annually to ensure that the parts are moving smoothly. Check the tightness of door's screws on moving parts annually. Ensure that the hinge screws are tight.



The temperature of the unit can be calibrated to reference instruments. It is recommended to calibrate at least once a year.



### Working Safely with Lab Oven & Incubator

The initial step in securing safety is understanding the hazards, risks, and utilizing a combination of the appropriate safety equipment and precautions. Lab personnel should learn and strictly follow preventive measures. Here are a few important guidelines and reminders for operating thermostatic equipment.

1. If the equipment is not operating within normal operating parameters, it must be taken out of service and not used until calibrations or repairs are made.
2. Use the correct model equipment for the work intended.
3. Ensure that the equipment is set to the proper temperature required for the experiment.
4. The equipment should remain clean and free of residues.
5. Do not store combustible materials such as plastics, paper and cardboard on top, under, behind, or next to ovens.
6. All personnel who will use the equipment must be familiar with their procedure.
7. Always use PPE (Personal Protective Equipment).
8. Secure proper location, environmental, and power requirements.
9. Ensure proper cleaning and maintenance procedures.
10. Determine the right temperature and length of time for a certain application and appropriate hazard signs.

