

**General Purpose Ovens**  
**OV005, OV010, OV015**  
**OV020, OV025, OV030**  
**OV035**

**Impact Test Equipment Ltd**  
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**User Guide**  
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## **OPERATING INSTRUCTIONS FOR General Purpose Ovens OV005 to OV035**

### **1. UNPACKING**

- 1.1 Remove all packing material from between the shelves and inner walls of the oven.

### **2. MAINS SUPPLY**

- 2.1 **240-volt units.** Each unit comes supplied with a mains connection lead already fitted with a correctly rated fuse. The fuse rating and other details for each unit is shown on the voltage plate riveted to the back of the unit. It is important that, if the fuse needs to be replaced, it must only be replaced with one of the correct rating.

- 2.2 **110-volt units** are supplied with a cable but without a plug or fuse. These units should be wired in by a suitably qualified electrician to the following:-

BROWN	'L' Live pin	Refer to voltage plate for fuse requirement
BLUE	'N' Neutral pin	
GREEN/YELLOW	'E' Earth pin	

### **WARNING**

**DO NOT CONNECT THE OVEN TO A D.C. MAINS SUPPLY OR  
SERIOUS DAMAGE WILL OCCUR**

### **3. OPERATION - THERMOSTATIC CONTROL**

- 3.1 Position the shelves within the work chamber.
- 3.2 Place a suitable thermometer into the top tubular, so that the thermometer bulb is about two inches into the chamber.
- 3.3 Switch 'ON' the mains switch, indicated by the green lamp.
- 3.4 Turn the overheat thermostat dial (red cap) to approximately 10°C above the desired working temperature (5°C above the desired working temperature for incubators).
- 3.5 Set the control thermostat dial (white cap) to the desired working temperature and allow the unit to heat up and maintain a steady state before making any adjustments.
- 3.6 On units fitted with a HI-LO switch, set this to HI for oven temperatures above 100°C and incubation temperatures above 50°C.
- 3.7 If a closer overheat thermostat setting is required, at the working temperature turn the overheat downscale until its indicator lamp is ON. Advance the knob very slowly upscale to the point at which the indicator lamp is just extinguished.

**NOTE:** The dials may be locked using the Allen key provided. Do not remove the dial lock as this forms part of the scale end stop. For any units fitted with digital control, refer to page 2.

## OPERATION - DIGITAL CONTROL CAL 3200 AND 3300

- 3.8 Position the shelves within the work chamber.
- 3.9 Switch 'ON' the mains switch, indicated by the green lamp.
- 3.10 Turn the overheat thermostat to approximately 10°C above the desired working temperature (5°C above the desired working temperature for incubators).
- 3.11 The operational parameters of the controller have been factory set to cover a wide range of temperature and load conditions. To change the temperature set point:-  
 Press \* to display the set point  
 Press and hold \* then use the up or down buttons to alter the set point.

For other programme controllers (e.g. CAL 95 or EUROTHERM 2416) refer to the manufacturers instruction booklet supplied.

## TIMERS

- 3.12 Units fitted with **24-hour time switch**.

Set the clock by turning the dial to the right until the correct time is above the red arrow. Insert the pins into the holes in the dial for the on/off times required. The inner ring is the ON time, the outer ring the OFF. When the off time is reached, the units' heaters will be turned off.

If a digital timer has been fitted, refer to the manufacturers instruction booklet for setting procedure.

- 3.13 Units fitted with **run-back timer (2 hour or 5 hour)**.

For a timed ON period:

Set the timer to the desired period

Set the MAN / TIM switch to the TIM position

Timing will start immediately. At zero time, the heaters will be switched off.

When a 5-hour timer is fitted to a unit with a digital controller, the time period starts 1 or 2°C below the setpoint. At zero time, the heaters will be switched off.

To over-ride the timer, set the MAN / TIM switch to the MAN position.

Units fitted with **process timer (6 hour or 30 hour)**.

When a 6 or 30 hour process timer is fitted to a unit with digital control, set the timer to the required period, set the MAN / TIM switch to the TIM position and press the green start button. The time period starts one or two degrees below the set point.

To reset the system for another cycle at the same temperature and time period - simply press the green start button. The timer resets automatically

\* Note - both the 6 hour and 30 hour timers are multi-range, i.e. can be set for 6 seconds / minutes / 60 minute etc., by inserting a small screwdriver into the range adjusting screw in the front of the timer. As supplied, timers will be set to maximum time (hours).

#### **4. MAINTENANCE**

##### **ROUTINE CHECKS ON EACH OCCASION OF USE**

- 4.1 Check the condition of supply lead and plug top. These should be sound and undamaged.
- 4.2 Connect to mains supply and check:-  
Supply switch operation.  
Supply indicators are working.  
At working temperature, the heat indicator functions correctly (shown by the amber lamp cycling on and off without the overheat coming into operation).

#### **5. PREVENTATIVE MAINTENANCE**

Ensure that the unit is maintained in a clean, dry condition and when not in use, stored in a normal warm atmosphere.

##### **Minimum recommendation every six months:-**

- 5.1 Check the plug top connections are tight and the fuse rating is correct.
- 5.2 Check the operation of the overheat protection system by raising the desired temperature above the overheat temperature.
- 5.3 Carry out an electrical safety check (Portable Appliances) using an appropriate appliance tester operated by a competent person.
- 5.4 Check that the control temperature is maintained within limits.

The manufacturer can offer the above service on request.

#### **6. SAFETY**

When the unit is to be used for the incubation of microbiological specimens, please consider carefully the siting and use of the unit to ensure safe operating conditions for all users. Appropriate safety precautions are essential for any microbiological work and any guidelines issued (for example, The Department of Education and Science guidelines) on this subject must be followed exactly. They are necessary to protect both people and animals from infection and to protect cultures of micro-organisms from infection by unwanted contaminants.

If liquids contained in partially sealed vessels are to be heated in the unit, then at all times the temperature setting must be such that no appreciable pressure build-up is allowed to occur within the vessel. The risk of explosion becomes high if the temperature setting is higher than that of the boiling point of the liquid. Therefore, any vessels that require heating SHOULD NOT be completely sealed. These units are not suitable for use where inflammable solvents are being used where the solvent concentration can reach inflammable or explosive levels.

When the unit is in use, the thermostat / heating control should be locked where a dial lock is fitted and / or a notice warning against unauthorised tampering with either the temperature setting or the work in progress should be prominently displayed.

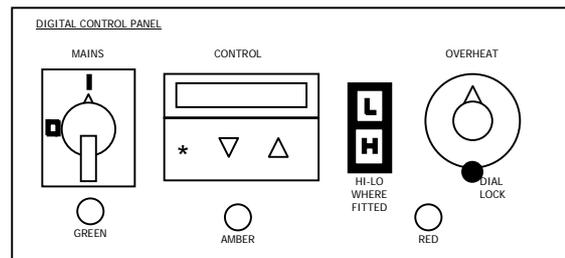
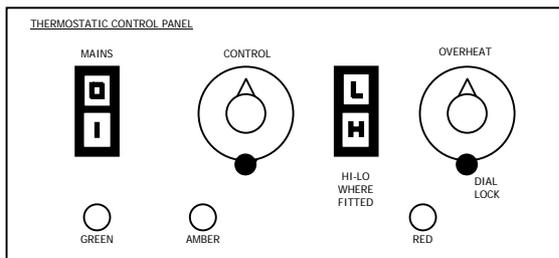
**7. GENERAL**

- Mop up any spilled liquid from the floor of the unit.
- Do not place samples on the chamber floor.
- Take the normal precautions not to allow water to come into contact with the electrical components.
- The outer surfaces can be cleaned with a warm, damp, soapy cloth or any proprietary cleaner suitable for a painted surface (do not use solvents or harsh abrasives).
- The work chamber may also be cleaned as above.

**PLEASE NOTE**

Quote the model and serial number (shown on the voltage plate on the back of the unit) for replacement parts. Fitting instructions are supplied with any replacement parts ordered.

Refer to the additional instruction booklet for units fitted with programmed systems.



## SERVICE/MAINTENANCE INSTRUCTIONS FOR

### GENERAL PURPOSE OVENS

#### 1. REPLACING THE CONTROL THERMOSTAT

- 1.1 Disconnect from the mains supply.
- 1.2 Lock up the dial, prise out the centre cap and slacken the lock nut. Remove the dial lock and carefully pull off the knob.
- 1.3 Remove all shelves. Locate the thermostat bulb (either attached to an aluminium tube on rear wall or under the bottom shelf runner on left-hand wall). Remove the retaining clips.
- 1.4 Turn the unit over onto a piece of suitable protective material and remove the baseplate.
- 1.5 Detach the capillary heater wires and the tube heater wires (if fitted) from their respective terminations. Withdraw the aluminium tube heater (if fitted) and thermostat bulb from the chamber.
- 1.6 Take note of the connections to the head of the thermostat.
- 1.7 Carefully detach all the connections from the thermostat and remove the two screws on the panel front to release the thermostat. Retain any spacing washers from between the head to the front panel.
- 1.8 Fit the new thermostat, ensuring any spacing washers are in position.
- 1.9 Insert the thermostat bulb into the chamber, fit the tube heater (if applicable) and replace the clips to retain the bulb inside the chamber.
- 1.10 Reconnect all wires to the thermostat head and those from the capillary.
- 1.11 Check all wiring before refitting the baseplate.
- 1.12 When refitting the knob, position the dial to 25°C and lock it up by tightening the centre nut.  
Refer to the recalibration instructions.

#### 2. REPLACING THE OVERHEAT THERMOSTAT

- 1.5 Follow the same instructions as for the control thermostat. Note that there are NO connections to the capillary. When recalibrating, refer to 4.1.

#### 3. RECALIBRATION - Control Thermostat

- 3.1 Insert a suitable thermometer into the top tubular vent. Turn the overheat dial to maximum. Set the control dial to the calibration point settings All MINI INCUBATORS - 40°C. All MINO OVENS - 100°C
- 3.2 Adjust the dial to achieve the correct air temperature.
- 3.3 Tighten the dial lock then slacken the centre lock nut. Release the dial lock (the knob should turn freely on the thermostat spindle but may require a gentle tap to loosen it).  
Set the dial to coincide with the air temperature.  
Lock up the dial and tighten the centre nut and replace the centre cap.

#### 4 RECALIBRATION – Overheat Thermostat

- 4.1 Allow the temperature to stabilise. Turn the overheat dial down until the red light comes on. Turn up slowly until it just goes off then follow 3.3.

## 5 DIGITAL CONTROLLER

- 5.1 Follow steps 1.1 and 1.4. Unplug the controller, remove the retaining clip and extract the controller through the front panel. Fit new controller in reverse order.
- 5.2 Disconnect the (6) wires from the controller, taking note of where they fit. Remove the retaining clip and extract the controller through the front panel. Fit the new controller in reverse order - ensuring the electrical connections are correct.
- 5.3 The control parameters have been preset at the factory to cover a wide range of uses. Refer to controller handbook for tuning procedures if required.

## 6 REPLACING THE ELEMENTS

- 6.1 Proceed as in 1.1, 1.3, 1.4, and 1.5.
- 6.2 Detach all wires from the block and move them clear of the lagging plate.
- 6.3 Remove the lagging plate and the base insulation.
- 6.4 Remove the screws and clips holding the element.
- 6.5 Fit the new element and reassemble in the reverse order. Refer to 1.9 when replacing the thermostat.

## 7. REPLACING THE FAN MOTOR

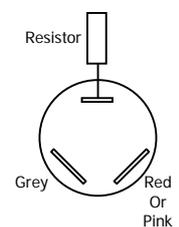
- 7.1 Remove the inner fan guard.
- 7.2 Remove the fan impeller using a 2mm A/F Allen key. Remove the outer fan guard.
- 7.3 Disconnect the motor wires and the earth lead.
- 7.4 Remove the 4 screws that hold the motor mounting plate to the body and withdraw the complete assembly.
- 7.5 Fit the replacement motor and reassemble in reverse order. Ensure that the wires are well clear of the edges of the guard.

## 8 REPLACING THE 25 AMP TRIAC

- 8.1 Disconnect from the mains supply.
- 8.2 Remove the external base.
- 8.3 Locate the triac on the inside of the rear panel. It is mounted by means of two screws on to an aluminium heat sink.
- 8.4 Carefully pull off the three wires, taking care not to strain the solid wires to the suppresser when fitted.
- 8.5 Replace the wires onto the new triac as follows:

The RED wire to the tag shown RED. The GREY wire to the GREY tag.

The ORANGE wire with resistor to the small tag.



**9 REPLACING CONTROL SENSOR /DIGITAL INDICATOR SENSOR**

9.1 Follow steps 1.1 and remove fan guard. Unclip the sensor (top left hand viewed from front), disconnect from the rear and remove. Fit new sensor and reverse procedure.

**10 FAULT FINDING**

10.1 NO HEAT:

All indicator lamps off	Check fuse Check mains switch
Green lamp ON, amber & red OFF	Check element continuity
Green lamp ON, red ON amber OFF	Check setting/operation of overheat thermostat.

10.2 HEAT ON CONTINUOUSLY:

Amber lamp ON or cycling	Check triac by measuring between red/grey between amber and red terminals with resistance meter. If shorted, replace the triac.
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10.3 OVEN WILL NOT MAINTAIN TEMPERATURE:

Temperature varies	Overheat thermostat incorrectly set. Refer to service instructions.
	Frequent alteration to dial to maintain temperature. Replace thermostat.

**To avoid the danger of an electrical shock**, after completion of any maintenance work and before switching the unit back on, check carefully that any wiring which may have been disturbed either accidentally or deliberately is correctly connected.

**11. PREVENTATIVE MAINTENANCE**

Ensure that the unit is maintained in a clean, dry condition and when not in use, stored in a normal warm atmosphere.

*Minimum recommendation every six months; -*

11.1 Check operation of the overheat protection by:

Allow the temperature to stabilise.

Once the desired temperature has been reached and stabilised with the CONTROL thermostat, adjust the OVERHEAT dial (red centre cap).

Turn ANTICLOCKWISE until the RED lamp just comes ON.

Now slowly turn the spindle CLOCKWISE until red lamp just extinguishes. Turn control dial to a temperature higher than the overheat setting. Within a few minutes, the red overheat lamp will come on indicating that the system is working correctly.

11.2 Carry out electrical safety check (Portable Appliances) using an appropriate tester operated by a competent person.

11.3.1 Check that the control temperature is maintained within limits.

*The manufacture can offer the above service on request.*

**12 GENERAL**

Take normal precautions not to allow water to come into contact with electrical components. The outer surfaces can be cleaned with a warm, damp, soapy cloth or any proprietary cleaner suitable for a painted surface (do not use solvents or harsh abrasives). The work chamber may also be cleaned as above.

**REPLACEMENT PARTS LIST  
GENERAL PURPOSE MIN STYLE OVENS AND INCUBATORS**

WHEN ORDERING REPLACEMENT PARTS, PLEASE QUOTE MODEL AND SERIAL NUMBER OF UNIT. REFER TO SERIAL PLATE NEXT TO MAINS LEAD.

<b>CODE</b>	<b>DESCRIPTION</b>
M3502A	Fan Motor (if fitted)
0102	Fan Motor complete with impellers (if fitted)
M3504	Paddle fan blade (if fitted)
54304	Spring-type Door Catch
W2308	Oven control thermostat and cycle
W2308/OH	Oven overheat thermostat
W2309	Incubator control thermostat and cycle
W2309/OH	Incubator overheat thermostat
C3704	Digital Controller type CAL3200 (if fitted)
C3705	Digital Controller type CAL3300 (if fitted)
A3901	6" Stainless Steel Impeller (if fitted)
D1009	Triac, 25 amp
D1016	Filter
D1012	Amber Lamp
D1011	Green Lamp
D1013	Red Lamp
R10127	0-1 Mains Switch
O163	Bulb cycle
O164	Wiring Harness
A3501	Top Hinge
A3503	Bottom Hinge
E2401	Blue Handle
M0702	6 way Terminal Block