CONTHERM *Scientific Limited*

TECHNICAL MEMORANDUM **PRODUCT :ZP17 TO ZP17B** **No : 0082**

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FROM : Contherm Scientific Ltd **DATE :** 15/05/2002

TO : ALL AGENTS

SUBJECT: ZP17 TO ZP17B INC/OVEN UPGRADE KIT FOR STANDARD OVENS & INCUBATORS

The original ZP17 PCB is no longer manufactured. If a ZP17 PCB requires replacement in a CAT 100,105,110,120,130,140,145,150,160 incubator or a CAT 200, 205, 210, 220, 230, 245, 250,260 oven, a ZP17B PCB can directly replace it.

NOTE: Although the ZP17B will work with all the above ovens, an additional solid state relay is recommended for ovens with larger elements than 1250W I.E. CAT 250, 260.

The basic layout of the ZP17B is very similar to the ZP17, the terminal header has a red jumper wire to supply power to the fan motor. The mounting holes are the same and the position of the LED indicators is retained. It is recommended that the earth wire from the fan motor is connected directly to the metal chassis of the cabinet rather than to the motor earth position on the PCB.

The main differences are:

- Larger and more efficient heat sink resulting in lower triac temperature.

When replacing the PCB ensure ALL POWER to the unit is OFF, the replacement must ONLY be carried out by a qualified electrical service engineer.

After removing the ZP17 PCB, stick the small lexan overlay to the escutcheon directly beneath where the mains power terminals of the ZP17B PCB would sit, this provides additional electrical isolation.
Fit spacer 12 between the ZP17B PCB and the escutcheon by locating it over the mounting screw closest to where the thermocouple sensor is connected to the PCB (At the heatsink end of the board). The special rectangular aluminium spacer screwed to the ZP17B next to the mains phase connection sits directly onto the escutcheon when the PCB is fitted to ensure any excess heat is conducted away from the triac heater driver. The opposite end of the PCB must have INSULATING spacers to ensure that it does NOT contact the aluminium escutcheon therefore fit 2x nylon spacers over each mounting screw between the ZP17B PCB and the escutcheon.

Firmly secure the ZP17B PCB in place with one washer 04 and nut on black heatsink and 1x nylon spacer and nut on the opposite end of the board.

Ensure the new socket is correctly wired, it is best to carry out the wiring with the header & socket mated so that the connections can be read from the PCB markings. Connect the MOTOR earth DIRECT to the cabinet metal chassis rather than to the PCB earth. Ensure that the **H**igh/**L**ow temperature range setting on the PCB is set to **L**ow for incubators and **H**igh for ovens. Check the polarity of the thermocouple probe is correct when connecting to the PCB (red sleeve is +ve).

NOTE: For Cat: 250 and 260 ovens with elements larger that 1250 Watts it is recommended that an additional solid state relay is fitted to the ZP17B Element Connections. (The OPTO '22' – 240A10 relay and terminal strip comes at extra cost).
Mount the solid state relay and terminal strip (already pre-wired to the relay) securely to the top of the oven inside the top cover using the screws provided. ENSURE that the WHOLE surface of the relay is in good contact with the metal chassis of the cabinet as this provides the only means to remove heat from the relay. (Use the provided heatsink paste compound to ensure a good thermal contact between the underside of the relay and the metal chassis) . Connect the two wires coming from the cabinet element to the terminals marked 'EL' on the extended terminal strip.

BEFORE applying any power to the unit check the **EARTHING** of the cabinet and controller housing and check the **INSULATION** with a **500**V tester.

PARTS REQUIRED:

- ZP17B PCB (This board has a **H**igh/**L**ow jumper – comes set to **L**ow as default).
- ZP17B plug in terminal socket. (normally comes with the new PCB).
- Spacers:
  1xSpacer 12 (Metal – fitted to heatsink end of PCB on thermocouple side of board), 2x Washer 04 (4mm), 6x Nylon spacers. NB: The PCB should come with a special spacer already attached to the heatsink end nearest the mains input terminals)
- 4x Nut 06 (4mm)
- Lexan overlay insulator. (Stick to aluminum escutcheon below mains terminals).

Additional Parts Required when fitting Solid State Relay

- 1 x Solid State Relay
- 1 x Plastic Cover (to cover relay terminals)
- 1 x 3 way Terminal Strip
- 2 x PK 13 (6 x 3/8 Stainless Steel PK Pozi) for screwing terminal strip to cabinet
- 2 x PK 03 (8 x 3/8 Stainless Steel PK Pozi) for screwing solid state relay to cabinet
- 0.2m length Red 1mm^2 ∅ Silicone Insulated Wire
- 0.18m length Red 1mm^2 ∅ Silicone Insulated Wire
- 1.0m length Red 1mm^2 ∅ Silicone Insulated Wire
- 2.0m length Black 1mm^2 ∅ Silicone Insulated Wire
- 6 x Cabltie YJ
- WIRING diagram for relay & terminal strip connections.
- Heat conducting paste.

Test and Calibrate the new controller to customers requirements.