

CONTHERM *Scientific Limited*

TECHNICAL MEMORANDUM
0073

PRODUCT : ZP13A TO ZP17B

No :

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FROM : Contherm Scientific Ltd

DATE : 06/12/2000

TO : ALL AGENTS

SUBJECT : ZP13A TO ZP17B UPGRADE KIT FOR WATERBATH SIZES: 360,370,380

The original ZP13A PCB was introduced in 1982 and is no longer manufactured. If a ZP13A PCB requires replacement in a CAT 360, 370 or 380 waterbath a ZP17B PCB can replace it.

The basic layout of the ZP17B is very similar to the ZP13A, the terminal header has been replaced with a plug-in type and a mains transformer is fitted. The mounting holes are the same and the position of the LED indicators is retained.

The main differences are:

- Thermocouple sensing probe instead of a transistor probe.
- Temperature range is 0°C to 100°C instead of 10°C to 80°C.
- Transformer prevents this board going into the smaller controller sizes.

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 ZP13A 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 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. If possible connect the MOTOR earth DIRECT to the waterbath controller aluminium housing rather than to the PCB earth. Ensure that the High/Low temperature range setting on the PCB is set to Low.

The new thermocouple probe **MUST** be used in place of the original probe, ensure that the polarity is correct to the PCB (red sleeve is +ve).

Before closing the two halves of the control panel together loosen the mechanical high limit mounting bracket and shift it about 5mm towards the end of the housing (away from the element) and then secure in place. This will prevent the high limit cutout from touching the transformer mounted on the PCB.

If a new overlay is not available it is best to set the unit for the temperature desired and either **MARK** the old overlay to indicate the operating temperature **OR** calibrate the ZP17B to one of the original temperature markings, (the small trimmer potentiometer on the PCB will adjust the calibration). Note that the scale **LINEARITY** will be incorrect if using the original overlay.

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

PARTS REQUIRED:

- ZP17B PCB (This board has a **High/Low** jumper - set to **Low**).
- ZP17 Thermocouple (Type 'K') sensor probe (red sleeve is +ve).
Part No: WB328.
- 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, 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
- Lexan overlay insulator. (Stick to aluminum escutcheon below mains terminals).
- New waterbath overlay (not strictly necessary but suits new range).

Test and Calibrate the new controller to customers requirements.