

4s2

Variable Temperature Thermal Sealer Service Manual



4s2 VARIABLE TEMPERATURE THERMAL SEALER SERVICE MANUAL

This manual is intended to be used as a guide to maintaining the HT121TS thermal sealer. It is valid for the units with S/N higher than 42256.

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1 TROUBLE SHOOTING GUIDE

1.1 Trouble Shooting Guide

Below are the possible faults encountered, and their most probable solutions. Some of these are hypothetical faults, as they have not been encountered.

Fault	Cause	Solution	Difficulty	Comments
No power	Blown fuse	Replace fuse	*	See User Manual
Unit switched on but motors do not move	Incorrect voltage set	Change voltage from 220V to 110V	*	See User Manual
Unit continues to heat and gives temperature error, "ER6"	Old firmware version installed	Update firmware to latest version	***	See IG-007: Instructions for upgrading software
Unit switched on but gives temperature error, "ER6"	Unit is too cold	Allow unit to reach ambient temperature and retry	*	
Motor can't reach "home" position. "ER1" or "ER4" appear or countdown starts without compressing the plate	High handler sensor remains active in "home" position	Readjust the High Handler Sensor bar	*****	See 3.1
Unit gives overcurrent error after compression "ER5"	High handler sensor isn't active when the unit is compressing	Readjust the High Handler Sensor bar	*****	See 3.1
Unit gives low handler sensor error, "ER8"	Low handler sensor isn't active when the motor starts running	Readjust the Low Handler Sensor bar	****	See 3.2

1.2 Terminology and Abbreviation

Difficulty Rating:

- * Easy (can be performed by end-user)
- ** Moderate (experienced user)
- *** Average (trained technician required)
- **** Difficult
- ***** Very difficult (operate unit under voltage)

2 INTRODUCTION

2.1 Warnings

- This manual is intended for trained technicians only



- All the procedures, if not differently specified, must be performed with the unit disconnected from the mains voltage (main power).
- If the procedures request to operate with the power on, do NOT touch the PCB or any internal parts that might have a voltage.
- Handle the unit with care.
- If it is necessary to use tools not provided with the 4s2 or to work on faults or parts of the unit not included within this Service Manual, please contact your supplier.

2.2 General Trouble Shooting Tips

If a fault occurs and you are unsure about the problem please contact your supplier giving the serial number of the unit and as much information about the fault as possible.

3 OPERATION

3.1 High Handler Sensor Adjustment

1. Remove the cover
2. Check the high handler bar sensor can move freely. If not, unscrew the M4 screw that fixes the bar slightly (see "1", Figure 1).
3. Check the bar is aligned to the sensor OPT3, on the top of the electronic board. If not, gently bend the bar to realign it.
4. Switch on the unit, push down the bar and check the LED LD3, on the top of the electronic board remains off. If not, gently bend the bar upwards slightly (see "2", Figure 1).
5. During a compression cycle (at ambient temperature) check with a calliper the distance from the heater carter and the top plate that supports the heater and bar is 15 +/- 0.5 mm (see Figure 2). If not, alter the distance using the M3 screw and lock it with the M3 nut (see "3", Figure 1)

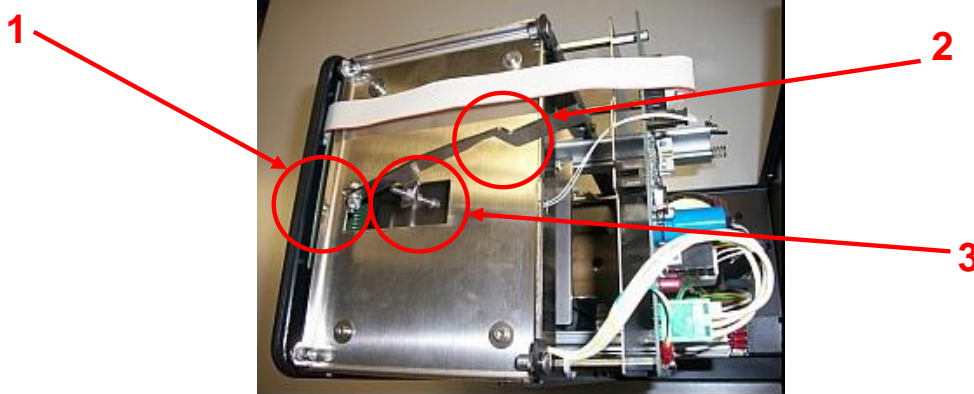


Figure 1 - Sensor Bar Adjustment



Figure 2 - Compression Check

3.2 Low Handler Sensor Adjustment

1. Remove the cover.
2. Check the high handler bar sensor can move freely. If not, unscrew the M4 screw that fixes the bar slightly (see "1", Figure 3).
3. Check the bar is aligned to the sensor OPT1, on the bottom of the electronic board. If not, gently bend the bar to realign it.
4. Check the bar hook doesn't touch the drawer, and that the distance from the hook and the bottom bar of the drawer is less than 1mm (see "2", Figure 3). If not, alter the distance using the M3 screw and lock it with the M3 nut (see "3", Figure 3).

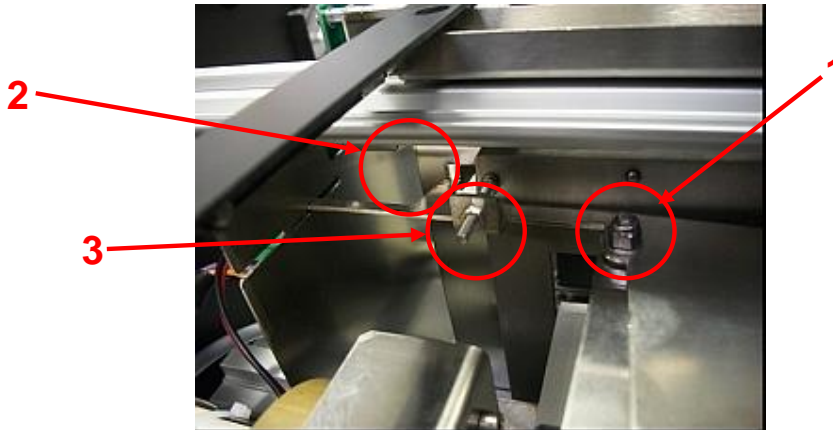


Figure 3 - Lower Handler Adjustment

5. Disconnect the motor cable from the electronic board (2 poles connector J3)
6. Close the sealer completely and manually lift up the platen (rotate the motor manually) until the platen completely blocks the drawer. Check the drawer can move by approximately 1 mm by pushing it (see Figure 4). If not, unscrew the two screws that fix the L-bar to the drawer, and re-position it. Re-tighten the two screws (see Figure 5). If necessary, gently bend the L-bar.



Figure 4 - Drawer Locked

7. Reconnect the motor cable.

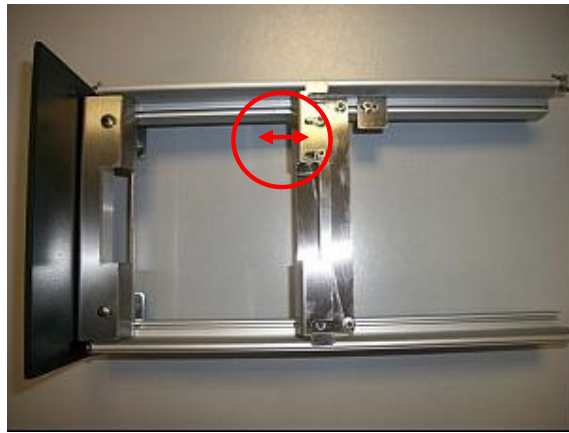


Figure 5 – L-Bar Positioning

3.3 Drawer Sensor Adjustment

1. Remove the cover.
2. Disconnect the motor cable from the electronic board (2 poles connector J3).
3. Close the drawer completely and manually lift up the platen (rotate the motor manually) until the hook blocks completely the drawer.
4. Switch on the unit, pull the drawer and verify that the LED LD2 (on the bottom of the electronic board) remains off (regardless of unit errors). If not, switch off the unit, unscrew the screw on the drawer sensor bar and re-position it (see Figure 6). Re-tighten the screw.



Figure 6 - Drawer Sensor Adjustment

5. Switch off the unit.
6. Reconnect the motor cable.

3.4 Front-to-Back Adjustment

3.4.1 Units up to Serial Number 42330

1. Remove the cover.
2. Locate the M4 screw underneath platen that receives the PCR / microplate (see Figure 7). If the front of the PCR / microplate is under-sealed, tighten the screw. If the back of the PCR / microplate is under-sealed, loosen the screw.



Figure 7 - Front-to-Back Screw Adjustment

3. It may also be necessary to adjust the drawer:
 - 3.1. Disconnect the motor cable.
 - 3.2. Close the drawer completely and manually lift up the platen (rotate the motor manually).
 - 3.3. Check the pins on the lift are aligned to the adaptor plate hole (see Figure 8). If not, adjust the drawer front panel by unscrewing the four M3 screws (see Figure 9), then execute "Drawer Sensor Adjustment" (see page 8).



Figure 8 - Adapter Aligned

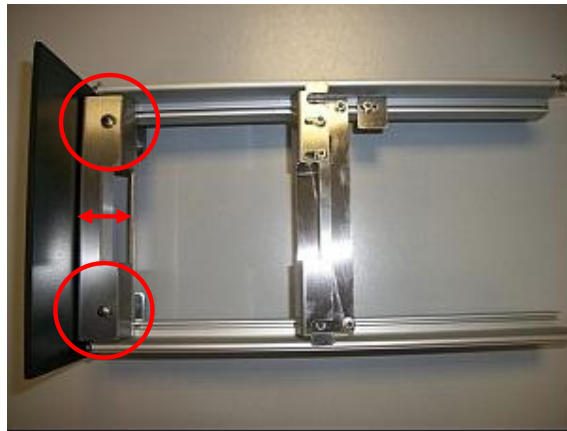


Figure 9 - Front Panel Adjustment

3.4. Reconnect the motor cable.

3.4.2 Units from Serial number 42343

1. Remove the cover
2. Unscrew the 4 screws that fix the lift (Figure 10).



Figure 10 - Lift Screws

3. Move the lift towards front or back to centralize to the heating block (Figure 11)



Figure 11 - Adjusting the lift's position

4. Screw the 4 screw that fix the lift.
5. Execute the operations described in point 3 of the previous paragraph (3.4.1).

3.5 Left-to-Right Adjustment

1. Remove the cover.
2. Locate the lower M4 screw underneath the platen that receives the PCR / microplate (see Figure 10). If the unit is under-sealing on the right, loosen the screw and tilt the lift to the left. If the unit is under-sealing on the left, loosen the screw and tilt the lift to the right.
3. Re-tighten the screw.



Figure 12 - Left-to-Right Adjustment

4. Spare Parts & Accessories

Description	Code
Warranty Extension 2 nd year (12 months) <i>(must be bought within 3 months of purchase)</i>	4ti-0626
Warranty Extension 2 nd &3 rd year (24 months) <i>(must be bought within 3 months of purchase)</i>	4ti-0627
Adapter for Deep Well Plates	4ti-0615
Adapter for 96 Well PCR Plates <i>(Includes 4ti-0612 sealing frame FOC)</i>	4ti-0625
Weighted Platen <i>(anti roll-up tool)</i>	4ti-0602
Sealing Frame <i>(Only compatible with 4ti-0625)</i>	4ti-0612
Replacement cardboard packaging & foam inserts	SP-0650/PAC
Rubber Feet, pack of 4	SP-0650/RUF
Front Panel, light grey <i>(includes keypad and circuit board for key pad)</i>	SP-0650/FPG
Outer metal casing, light grey	SP-0650/OCG
Screw Kit for outer metal casing	SP-0650/SCK
Power socket assembly with fuse housing	SP-0650/POW
Fuse Kit 110V, pack of 10 fuses	SP-0650/FK1
Fuse Kit 230V, pack of 10 fuses	SP-0650/FK2
Main circuit board	SP-0650/MCB
Circuit Board for key pad	SP-0650/CBK
Transformer assembly	SP-0650/TRA
Heating element assembly	SP-0650/HEA
Firmware upgrade cable	SP-0650/FUK