

Date	19 Jun 2013	Service Note #	2500x-1078	Updated	NA
Product	TCS-0500	Created By	J. Yangco		
Description	TCS Main Board Triac Replacement and Installation				

Release	<input checked="" type="checkbox"/>	Internal	<input checked="" type="checkbox"/>	Distributors	<input type="checkbox"/>	Customers
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Parts Required	Serial Numbers Affected
TCS Main Board (2400-5172) Thermal Compound	All



To help prevent a premature failure of the TCS the triac on the main board needs to be installed flush with the chassis bracket so it can dissipate heat more effectively.



Before proceeding, discharge any static electricity from your body by touching a bare screw from the instrument. Turn off the instrument and disconnect the AC power cord.

Solution / Action

Step 1

Disconnect the AC line, tubing and temperature probe and remove the circulator from the main instrument.



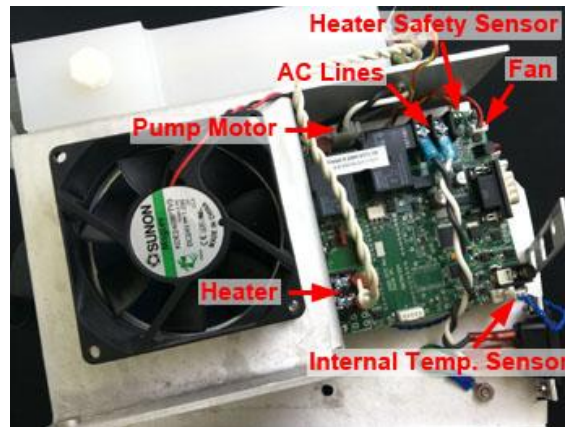
The bath does not need to be emptied to perform this service. Keeping the bath inlet tubing pointing up prevents bath water from draining. Be careful as there will be some water in the circulator itself.

Step 3 Remove the TCS cover by removing the four screws as shown.



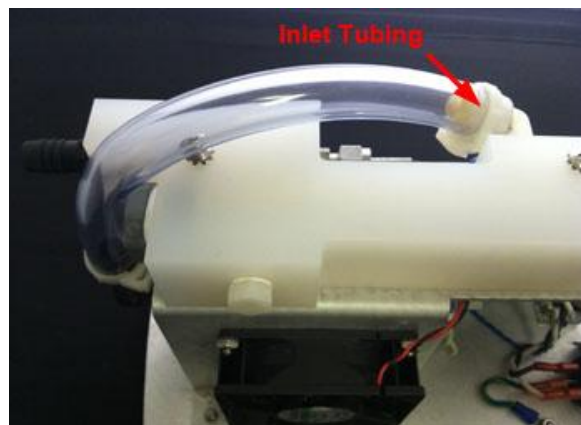
Step 3

Step 4 Disconnect all the connected wirings on the main board as shown.



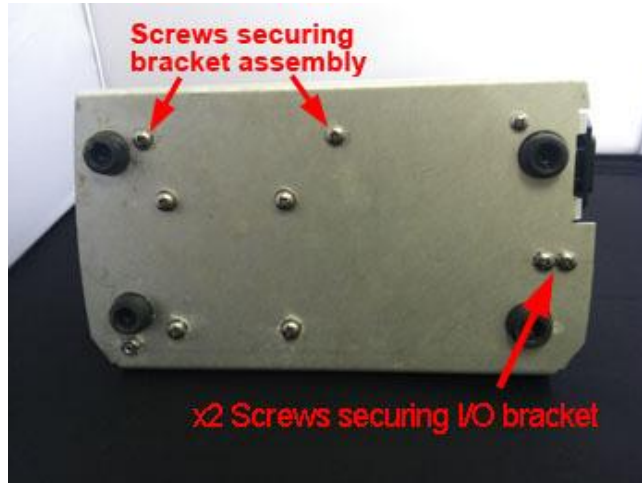
Step 4

Step 5 Remove the inlet tubing of the heater assembly as shown.



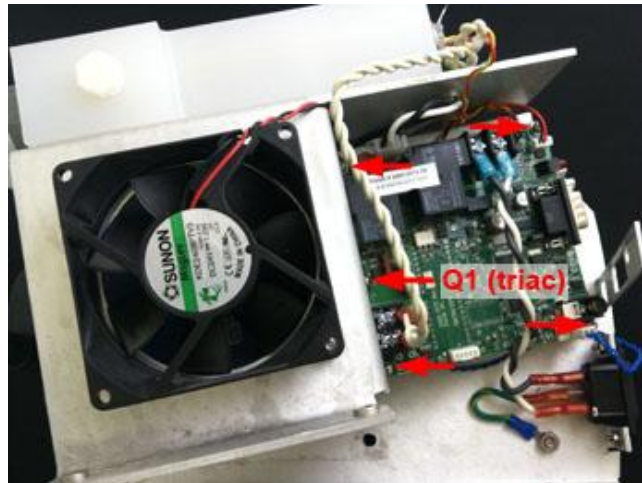
Step 5

Step 6 Remove the main bracket and I/O bracket from the base as shown.



Step 6

Step 8 Remove the screw that is used to fasten the triac then remove the remaining screws that fastened the main board on the bracket as shown.



Step 8

Step 9 To reinstall the main board, first apply a small amount of thermal compound on the triac rear metal tab and position the thermal pad between the triac metal tab and the bracket. Fasten the triac first on the bracket then secure the main board with the existing hardware.



Be sure that the metal tab of the triac is flush with the bracket to maximize the heat transfer during normal operation. If this is not followed, pre-mature failure of the triac can occur due to overheating.

Step 10 Reverse the above steps to complete the installation of the TCS main board.



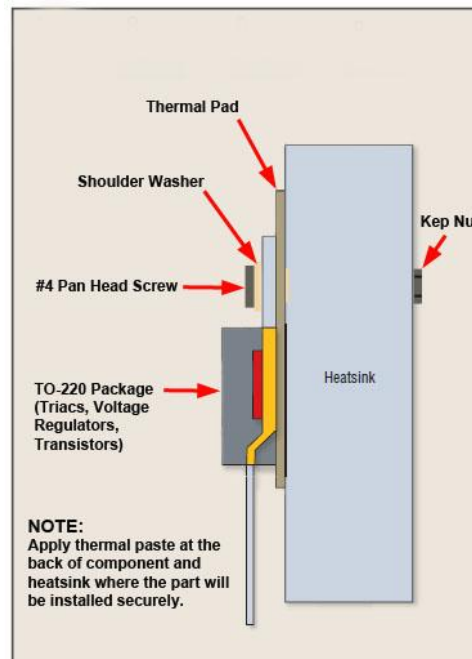
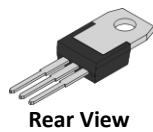
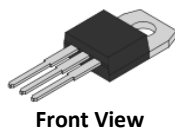
After installing the TCS with the dissolution bath, verify the temperature reading is accurate. Perform a temperature calibration if necessary.

Triac Component (TO-220 Package) Overview

The **TO-220** is a style of electronic component package, commonly used for triacs, transistors, silicon-controlled rectifiers, and integrated circuits. The "TO" designation stands for "transistor outline". TO-220 packages have three leads. A notable characteristic is a metal tab with a hole, used in mounting the case to a heatsink.

Thermal compound is often applied to further improve heat transfer from the package to the heatsink. Thermal pad and a shoulder screw are also used to isolate the metal tab from the heatsink.

In applications that require a heatsink, damage or destruction of the TO-220 device due to overheating may occur if the heatsink is dislodged or not flushed with the heatsink during operation.



Proper Heatsink Installation