

# 007 GDS Helpsheet

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Hardware

Advanced Controller

Printed Circuit Board Removal and Replacement

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## 1. Introduction

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All the mechanical, electronic and computing functions of the GDS digital controller are generated from a single printed circuit board (PCB) populated with integrated circuits (IC's or "chips") and discrete components such as resistors and capacitors. In the event of a malfunction of the controller, GDS may ask you to carry out some diagnosis by swapping out the board for one from another controller to see if the problem moves with the board or stays with the case. The procedures for doing this are given below.

## 2. Removal

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1. Ensure controller is powered off and the ac power lead is removed.
2. Remove the eight cap-headed Allen screws retaining the top plate.
3. With the assistance of a colleague raise the front edge of the top-plate by approximately 150mm, ensuring that no cables are stretched.
4. With the top-plate front edge raised note the orientation of cables and connectors before removing the connectors to the PCB in the following order (refer to Fig.1 below for locations):-
 

CON1	Pull vertically
CON5	Pull horizontally or vertically depending on connector orientation
CON6	Pull horizontally or vertically depending on connector orientation
CON7	Pull horizontally
CON8	Pull horizontally
CON2	Push open locking levers, then pull vertically
CON3	Push open locking levers, then pull vertically
5. The top-plate may now be placed on the bench behind the controller base.
6. Release the PCB support post retaining clips. The PCB may then be lifted off the support posts.

## 3. Replacement

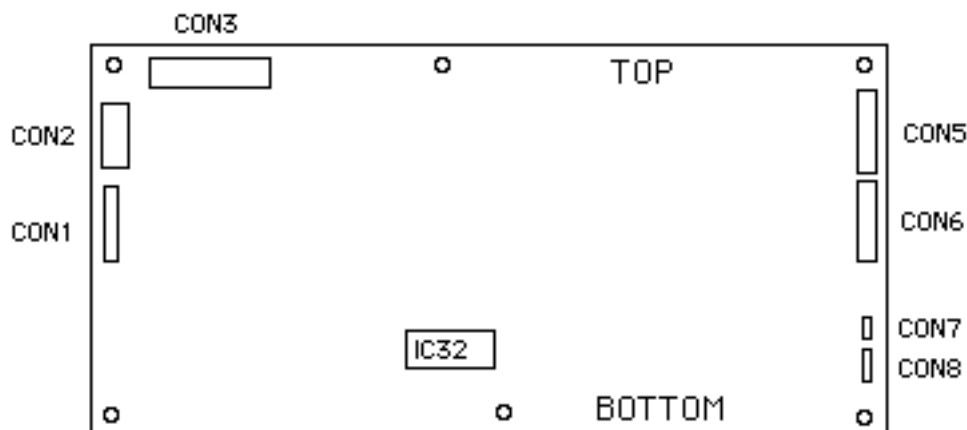
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1. Replace the PCB over the support posts and push home firmly over each post so that each retaining clip clicks into position.
2. With the assistance of a colleague replace the top plate back in position with the front edge

raised by approximately 150mm.

3. Replace connectors on the PCB in the following sequence:-
4. CON3 - The ribbon cable from the IEEE connector. There are polarising guides in the plug housing on the PCB and on the terminating socket on the cable. Lay the ribbon cable in its natural arc from the IEEE connector, without any twists in the cable, and push the socket firmly on to the plug. Then push home the locking levers.
5. CON2 - The ribbon cable from the display. There are polarising guides in the plug housing on the PCB and on the terminating socket on the cable. Lay the ribbon cable in its natural arc from the display, without any twists in the cable (this will normally loop over and through the loop formed by the IEEE ribbon cable), and push the socket firmly on to the plug. Then push home the locking levers.
6. CON8 - The five-way connector from the transducer. Align the socket with the two plugs on the corners of the socket pointing up and the black wire towards the bottom of the PCB and push the socket firmly on to the plug.
7. CON7 - The three-way connector on the small ribbon cable coming from the top plate or it could be three twisted wires. Align the socket with the two lugs on the corners of the socket pointing up and push the socket firmly on to the plug.
8. CON6 - The eight way connector on the cable coming from the stepping motor through the top-plate. Align the socket with the red and white striped wire towards the bottom of the PCB and push the socket firmly on to the plug. (Note that the colour of the wires towards the top of the PCB vary according to the controller type, 200cc or 1000cc)
9. CON5 - The eight-way connector on the wiring harness coming from the power supply. Align the socket with the white wire towards the top of the PCB and push the socket firmly on to the plug.
10. CON1 - The eight-way blue connector on the transparent ribbon cable from the keyboard. Lay the cable so that it comes directly from the keyboard down on to the PCB plug without any twists in it and push the socket on to the ten-way plug so that one tine is visible on either side of the socket when it is in position.
11. Replace the top-plate and the eight cap-headed Allen screws retaining it in position.
12. Carry out the diagnostics as described in section 2.4 of the Users Handbook.

## MKIII CONNECTOR LAYOUT



*If you have any problem or any further questions please do not hesitate to contact the GDS support team by visiting the support section on our website: <http://gdsinstruments.helpserve.com/>*