

17 August, 1998

BULLETIN #149

VORTEX DX13 ALL MODELS

PCB TROUBLESHOOTING GUIDE

The following pages of information has been compiled to provide a general guide into troubleshooting common problems associated with the Vortex DX13 machines.

It should be noted that repairs to PCBs involving surface mounted components require specialised skills and toolings. Hence, it is highly recommended that only qualified persons familiar with and following standard safety practices perform troubleshooting procedures on these boards.

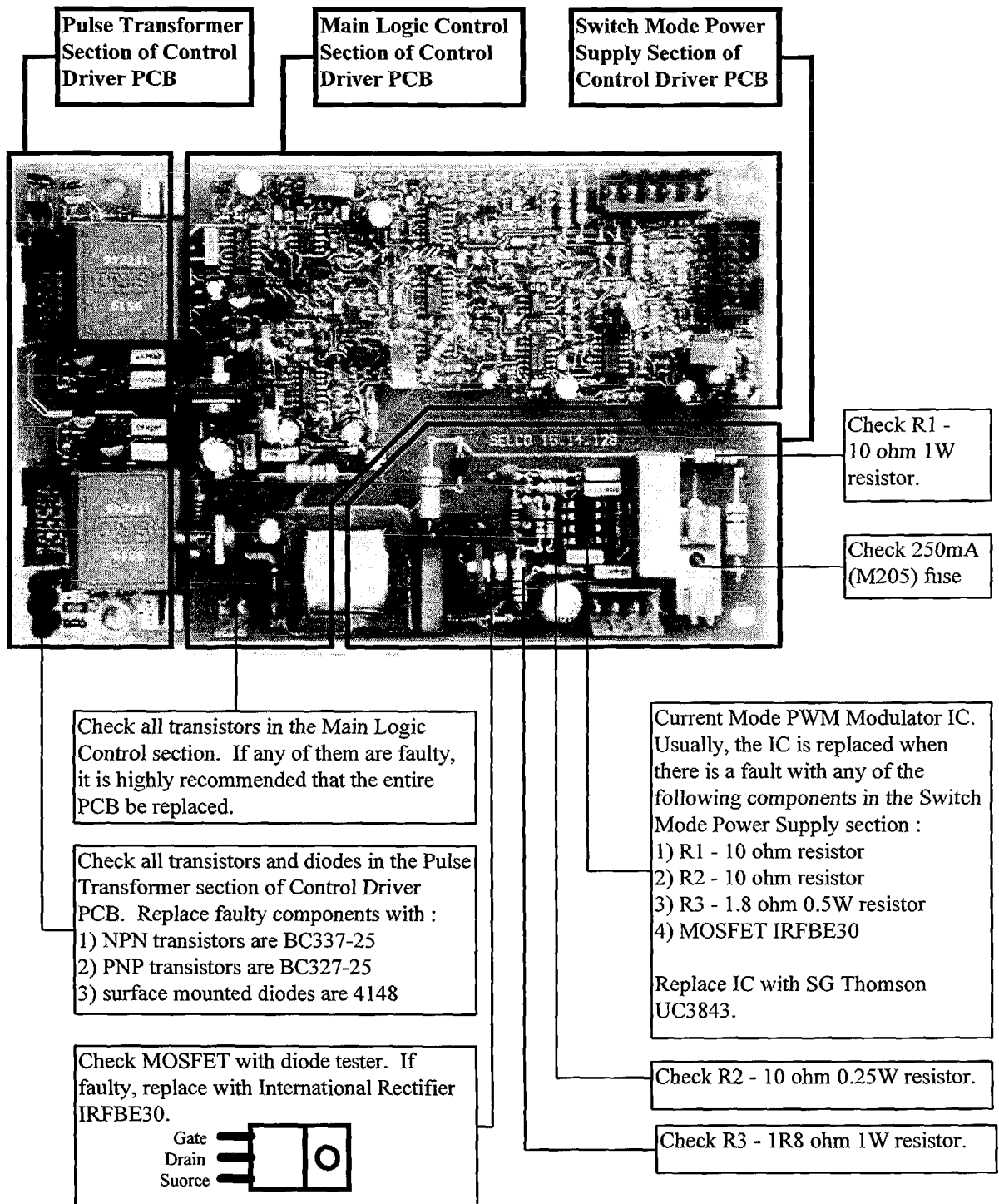
For machines still under warranty, do not attempt to repair and return them to your nearest WIA branch.

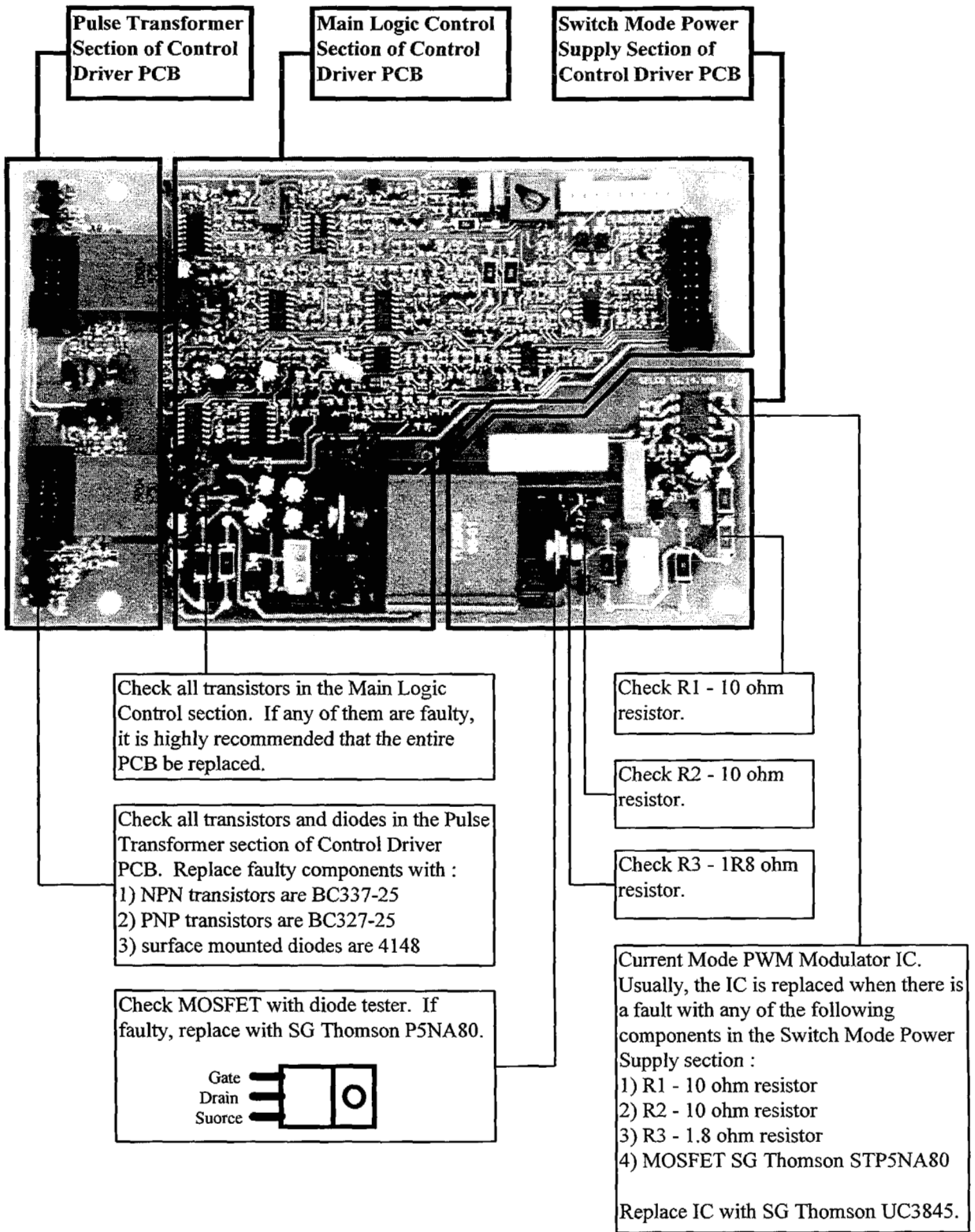
James Chin

Technical Service Co-ordinator - Marketing


QUALITY WELDING PRODUCTS, SYSTEMS AND SERVICES

The information provided in this sheet is accurate and reliable , however no warranty of accuracy or reliability is given and no responsibility arising in any other ways by errors or omissions is accepted



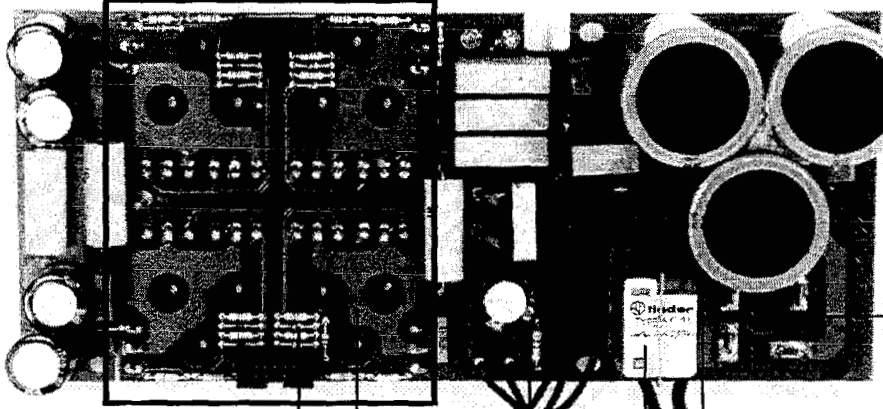


Failure of MOSFET H - bridge and its gate drivers.



Check Gate, Drain and Source of each bank of MOSFETs with diode tester. If faulty, the corresponding gate driver circuit (56 ohm & 22K ohm resistors and IN4148 diodes) will have to be checked and replaced.

In majority of the times, Control Driver PCB is also replaced when there is a faulty MOSFET.



If one electrolytic capacitor is faulty, replace all three capacitors in the same bank.

Check bridge rectifier with diode tester.

310VDC supply to control board.

Gate drivers for the adjacent bank of MOSFETs.


Bank of 3 MOSFETs in parallel.

Check for short circuit between casing of electrolytic capacitor and AC input track. Repair track where necessary and place an insulation spacer between capacitor and track.

Check relay for 'pitted' contacts.

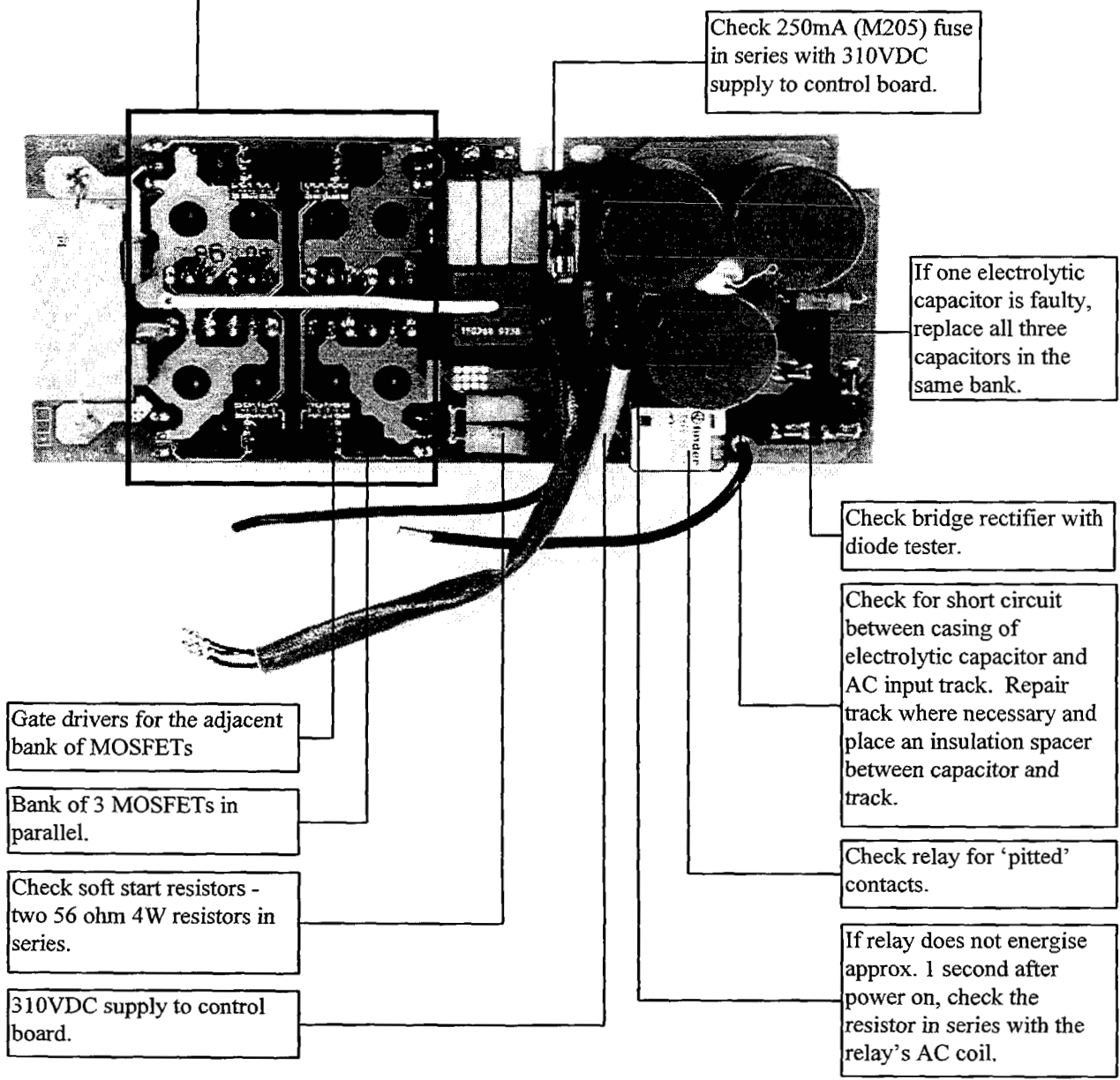
If relay does not energise approx. 1 second after power on, check 4K7 ohm resistor in series with the relay's AC coil.

Failure of MOSFET H - bridge and its gate drivers.



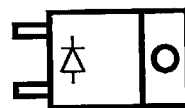
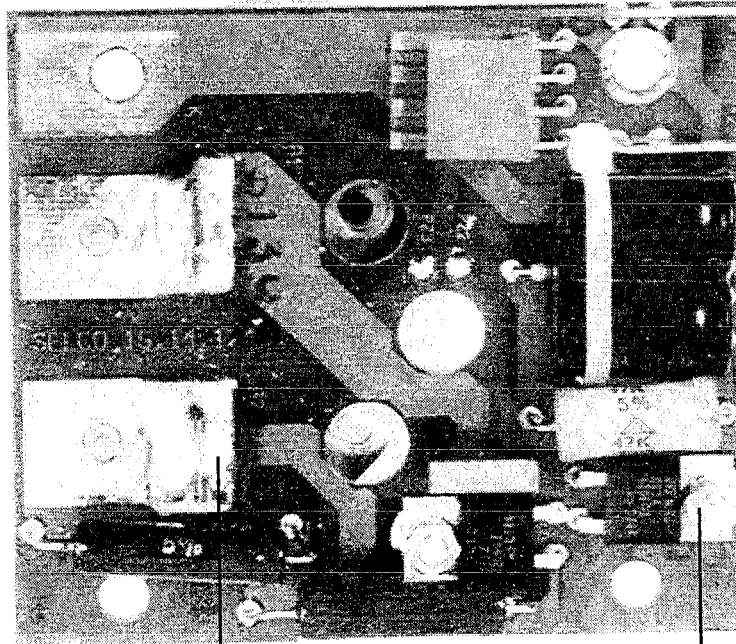
Check Gate, Drain and Source of each bank of MOSFETs with diode tester. If faulty, the corresponding gate driver circuit (surface mounted 56 ohm & 22K ohm resistors and 4148 diodes) will have to be checked and replaced.

In majority of the times, Control Driver PCB is also replaced when there is a faulty MOSFET.

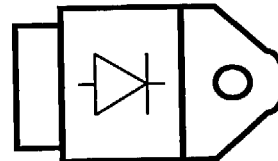


VR15.14.124
VR15.18.002

Output Rectifier PCB for DX13-0
Output Rectifier PCB for DX13-1



Check snubber diodes with diode tester. Should expect approx. 0.4V

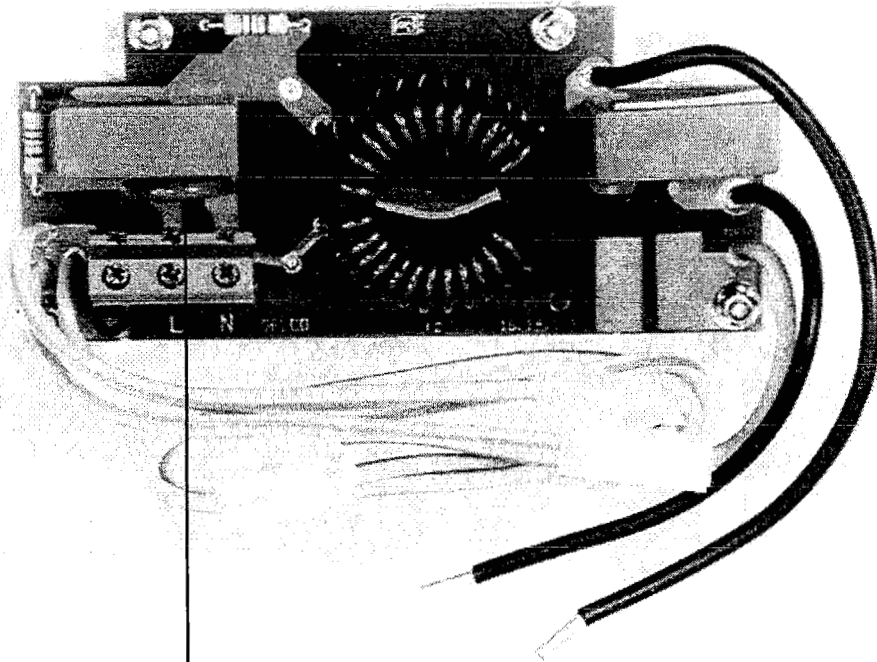


Check power diodes with diode tester. Should expect approx. 0.5V

Note : The VR15.14.124 and VR15.18.002 Output Rectifier PCBs are not interchangeable. The difference between them is the distance from PCB to back surface of the power diodes. This distance is longer for the DX13-0.

VR15.14.194
VR14.70.016

Filter PCB for DX13-1
Filter PCB for DX13-1



Metal Oxide Varistor (MOV).
Normally, the effects of a blown
MOV are so severe that the
whole Filter PCB is replaced.
If damage is minimal, check the
rest of the components on the
PCB, remove all signs of carbon
tracking and replace MOV with
Siemens S20K275