

Troubleshooting TDS300 Power Supply

Example of equipment needed:

- 1: 576 Curve tracer used as AC power source.
- 2: Differential scope with good CMRR, e.g. 11301/11A33 or 7603/7A13
- 3: 5 V DC power supply
- 4: Special homemade test fixture, see page 7

Before doing anything, check for obvious faults like burned components and/or open circuit board runs. A common fault was a burned/open R17 often in conjunction with damage to the circuit board. This was due to too high voltage across R17 in standby mode. See page 6.

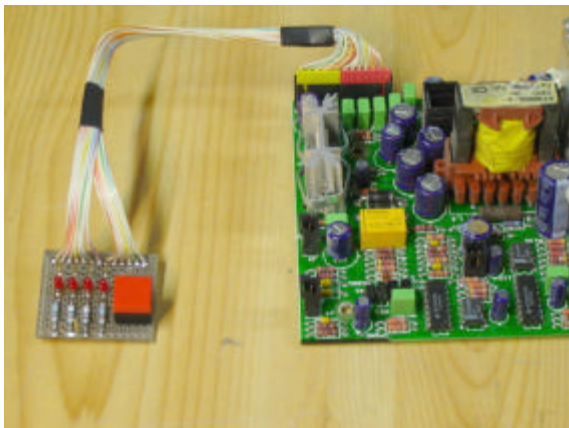
576 settings:

Max Peak Voltage: 350 V
Max Peak Power: 220W
Vertical: 50 mA/div
Horizontal: 50 V/div
Variable Collector Supply: 500 VAC pp
Left/Right: Off

Connect the 576 to L11, E1 and E2.

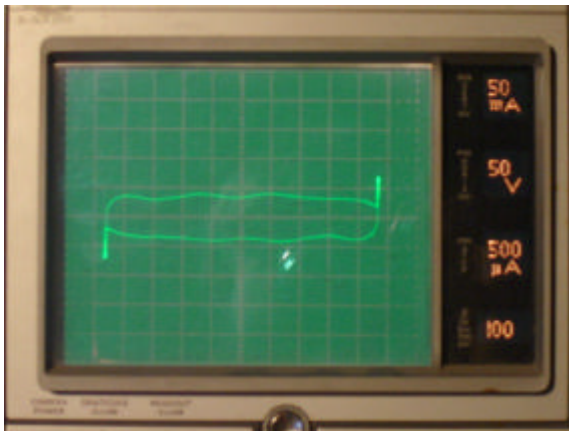


Connect the test fixture to J1.



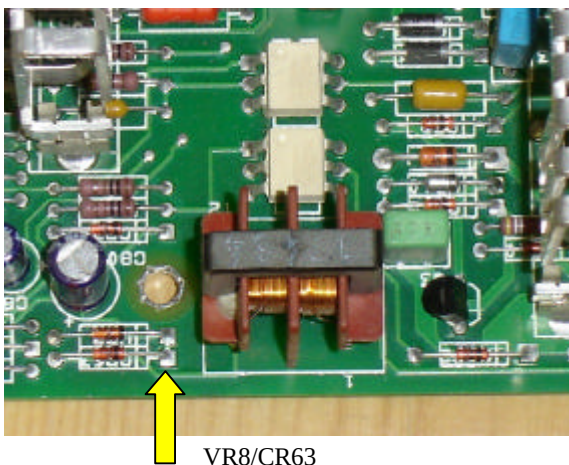
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Set the 576 Left/Right switch to output the voltage to the P/S board. Current draw from the 576 should be approximately 75 mA.



Press the test fixture button. A distinct click should be heard and all LED's should turn on. Current draw should increase just a little to approximately 85 mA. The voltages are ± 5 V and ± 8.6 V.

Should there be no click, turn off the 576 output. Insert +5 V DC to the junction of VR8 and CR63. Normally this point has about 5,6 V DC also in standby mode. Use the test fixture ground point for minus.

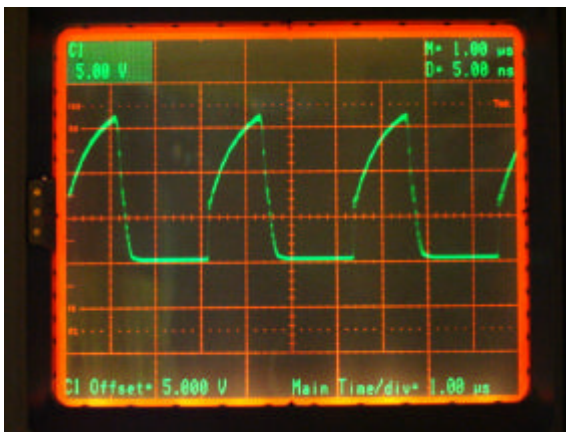
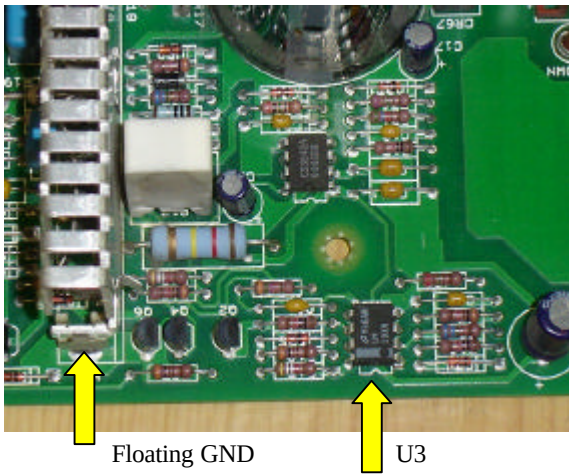


If pressing the test fixture button now results in clicks from the bistable relay the start-up circuit is probably OK and there is a problem in the standby 5 V supply.

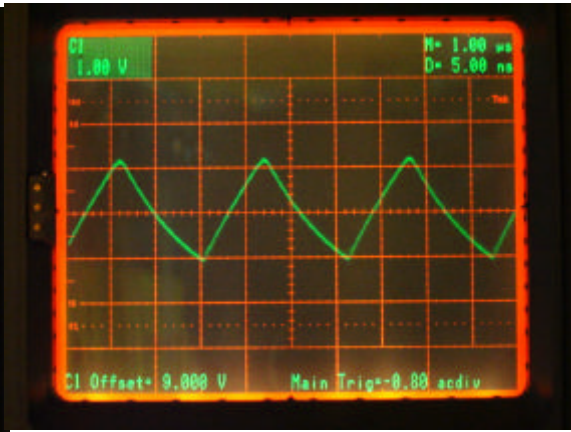
With the +5 V still connected, turn on the 576 output and press the test fixture button. If all LED's now come on the standby 5V supply is probably the only problem.

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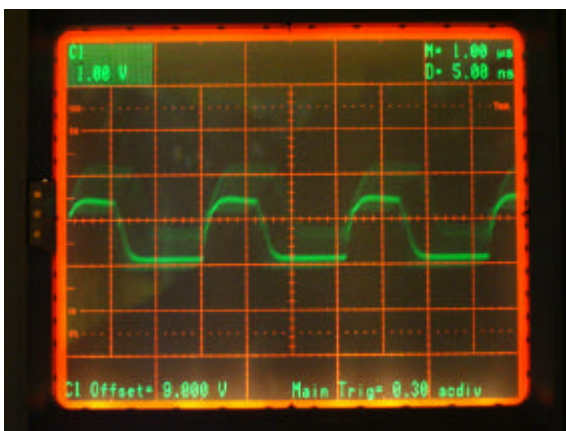
Connect the minus diff probe to floating ground i.e. the large heatsink of Q1 and Q5.
Check the waveforms at all pins of U3:



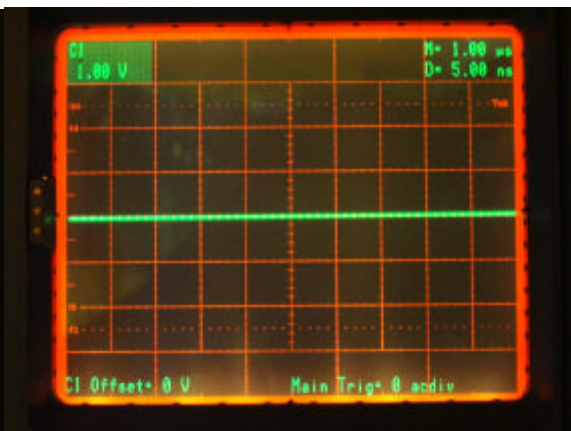
U3, Pin 1



U3, Pin 2

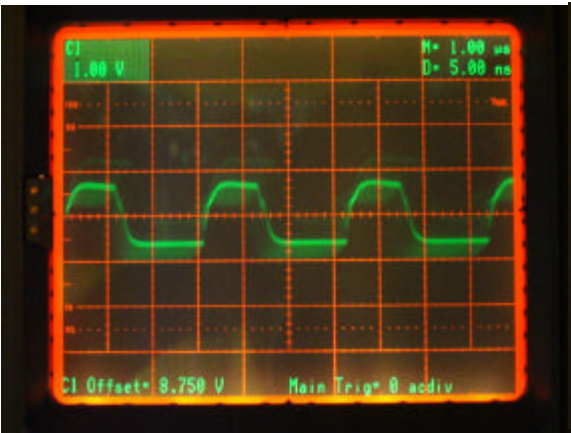


U3, Pin 3

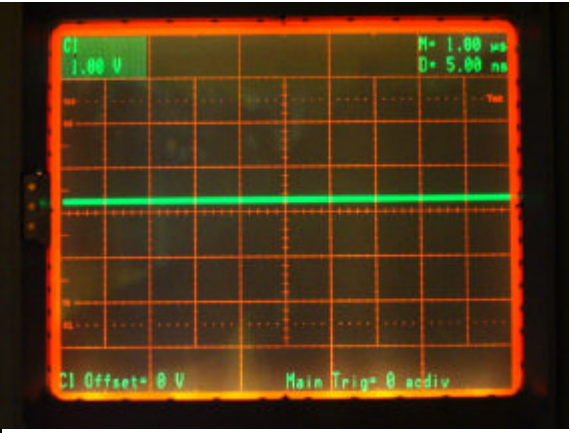


U3, Pin 4

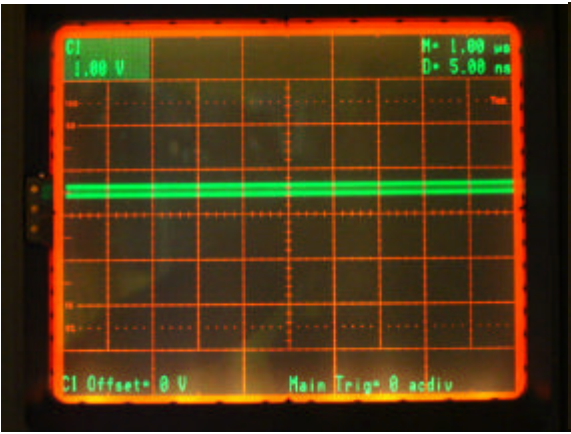
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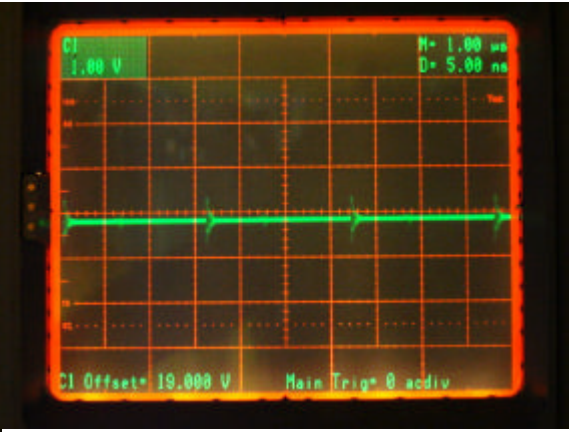
U3, Pin 5



U3, Pin 6



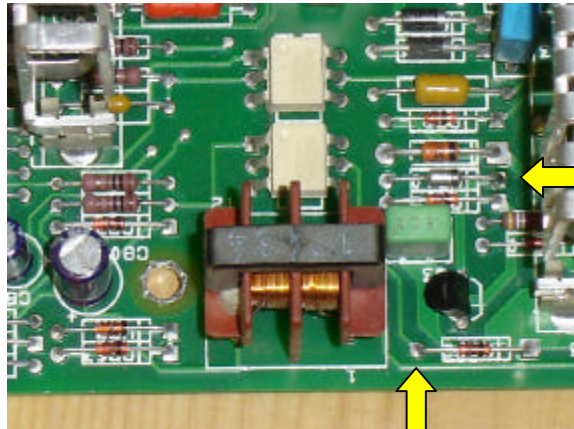
U3, Pin 7



U3, Pin 8

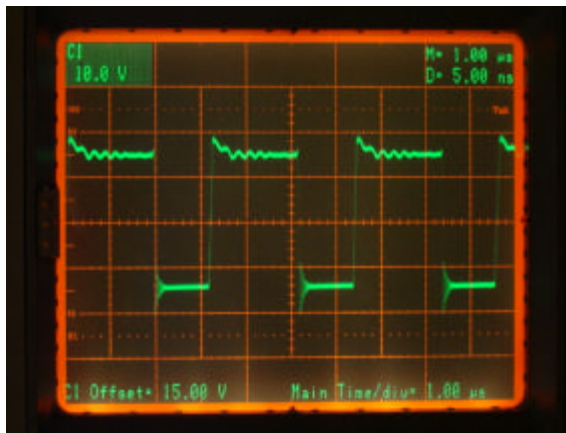
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With the minus diff probe still connected to floating ground, check the waveforms at VR10 cathode and CR72 anode.

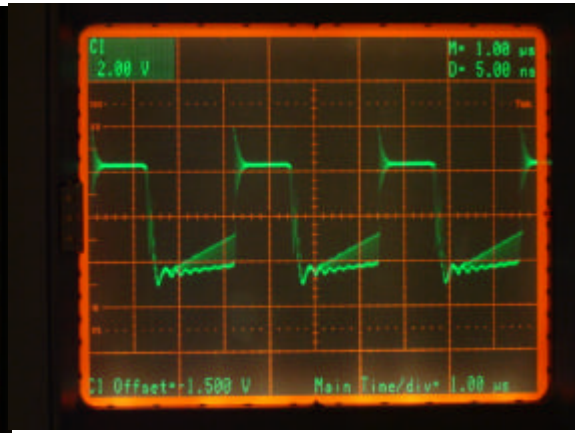


Cathode, VR10

Anode, CR72



Cathode, VR10

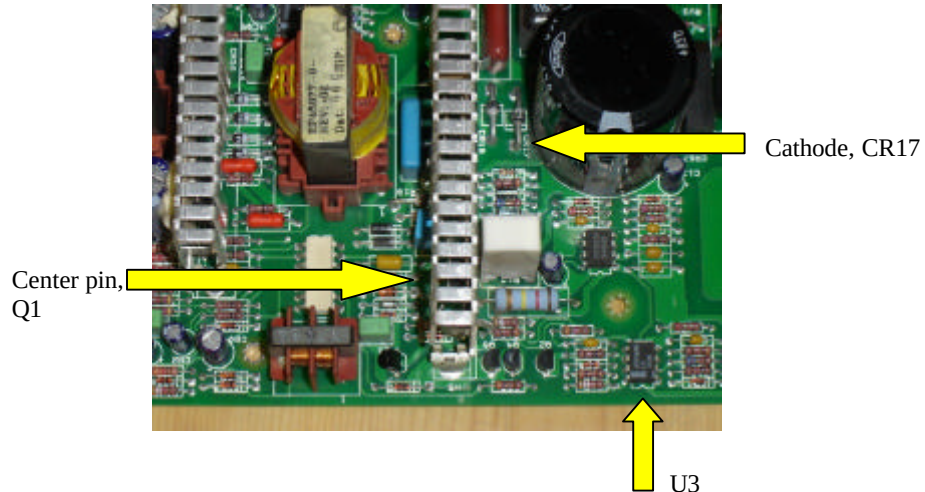


Anode, CR72

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Important

When the supply is working, check for no more than 70 V DC across R17 (the large ceramic 3.9 k resistor) when it is in standby mode. Connect the DMM between the center pin of Q1 and the cathode of CR17.



If the voltage is too high, selecting U3 will bring it down.
Preferred is a National Semiconductor LM393N, Tek P/N 156-1225-03

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Test fixture to start and stop the power supply with testpoints for DC voltages:

