

Neo-Tec Model NT-1431 VGA 14" Monitor Repair Guide

GENERAL INFORMATION:

The NT-1431 monitor is primarily found in the Medalist Marketing "Spectrum" (a.k.a. Spectrum Genesis) coin operated dart machines. The monitor is installed in a special frame in order for it to fit in the odd shaped Spectrum dart game cabinet. The monitor has a built-in switching regulator power supply and does not need an isolation transformer. Transistor Q101 is the power supply switching transistor (N-channel Enhancement mode MOSFET type) and is a type 2SK1507 (crosses to an NTE 2989 replacement). Integrated circuit IC101 is the power supply controller and is type TDA4605-15 which crosses to an NTE 7154 replacement. Integrated circuit IC301 is the vertical output and is type LA7835 (crosses to an NTE 1855 replacement). Integrated circuit IC401 is the horizontal/vertical processor and is a type LA7851 which crosses to an NTE 7062 replacement. Integrated circuit IC901 located on the neck board is the RGB color processor and is a type LM1203N which crosses to an NTE 7081 replacement. I have been unable to locate a manual or schematic for this model, but you can use the model NT-27E manual and schematic which is very close to this model. The main board is marked with "PCB-002B" on the foil side. The neck board is marked "Li-Chin" and "NT-001A" on the parts side below the tube socket.



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CRT INFORMATION:

The picture tube supplied with this monitor is a Chunghwa # CPJ370BVAP1U-TC (listed in rejuvenator manuals as 370BVAP1U-TC). This tube is also known as # E2971B22-TC 47E (Y) which is listed in the rejuvenator manuals simply as E2971. The tube can be tested with B & K rejuvenator adapter # CR-23 (6.3 volt heater). I understand a substitute for this tube is # M34AFA13X01 (U).

YOKE INFORMATION:

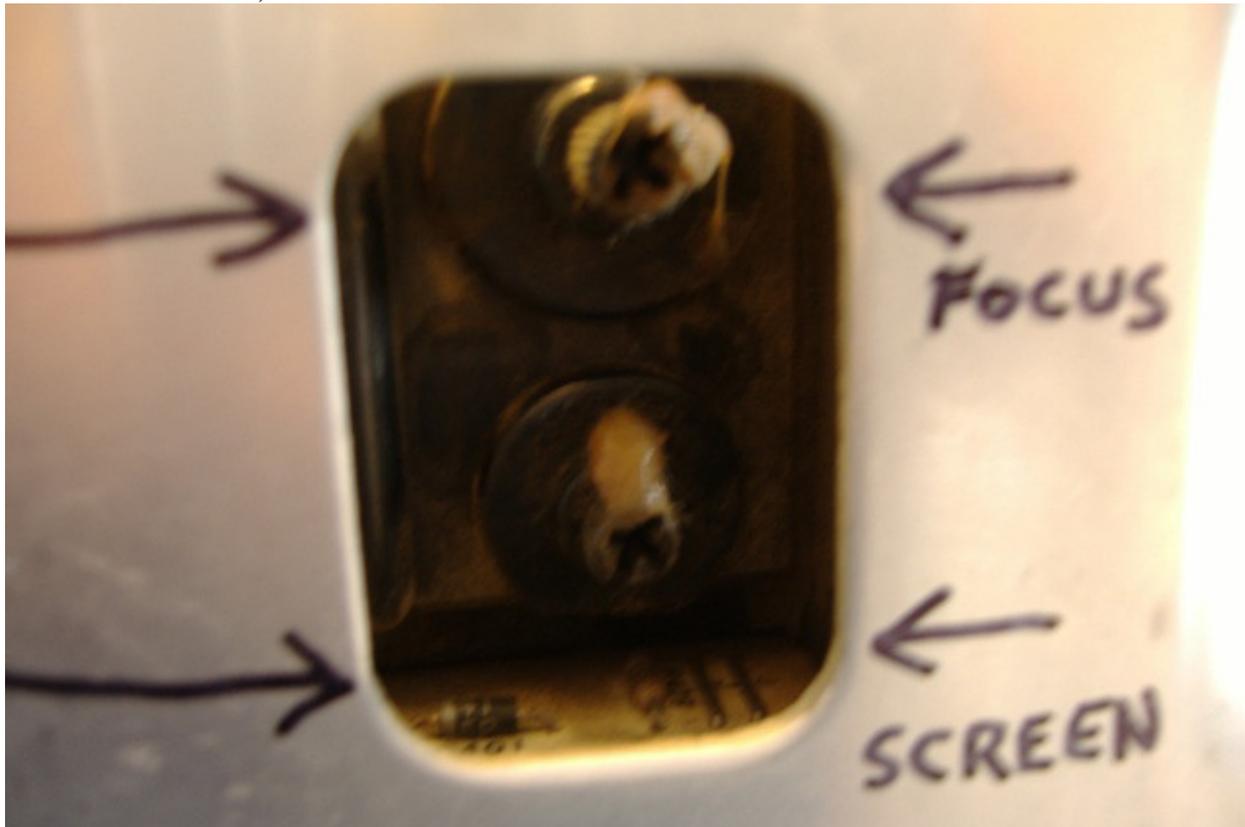
The yoke is marked with the number TDY4101E2. The horizontal winding is the Red and Blue wires and resistance is 1.1 ohms. The vertical winding is the Yellow and Brown wires and resistance is 3.1 ohms.

FLYBACK INFORMATION:

The T402 flyback is made by Chun Peng and part # is MRCFT-213 (which is also used in Tatung

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VS-14428 monitors) and Neotec # 47F10-FT-213.



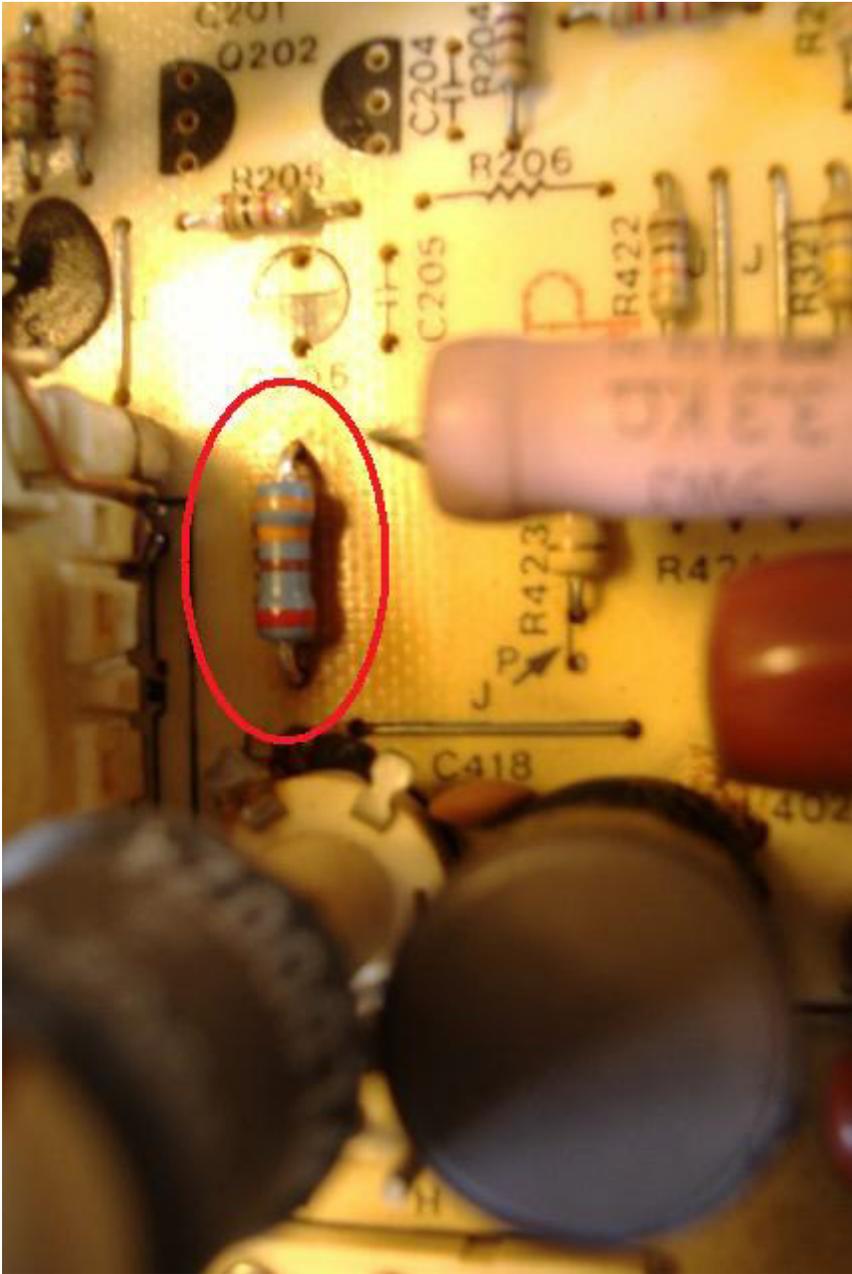
HORIZONTAL OUTPUT INFORMATION:

Transistor Q402 is the horizontal output transistor and is type 2SC4769 which crosses to an NTE 2353 replacement transistor.

PROBLEMS ENCOUNTERED AND SOLUTIONS:

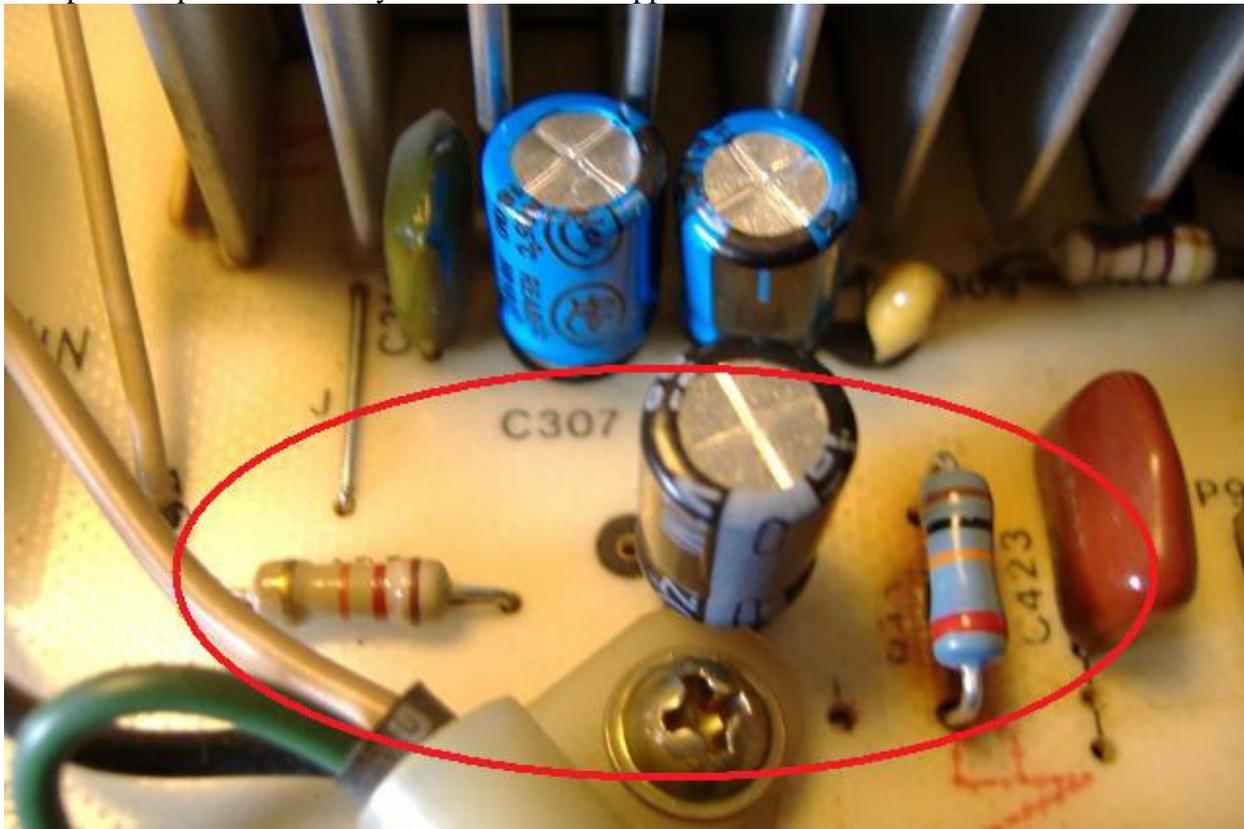
Resistor R428 (330 ohms, ½ watt) will often be found burnt, but not badly burnt. It is run close to the upper limits of it's specifications and can simply be replaced with a brand new one.

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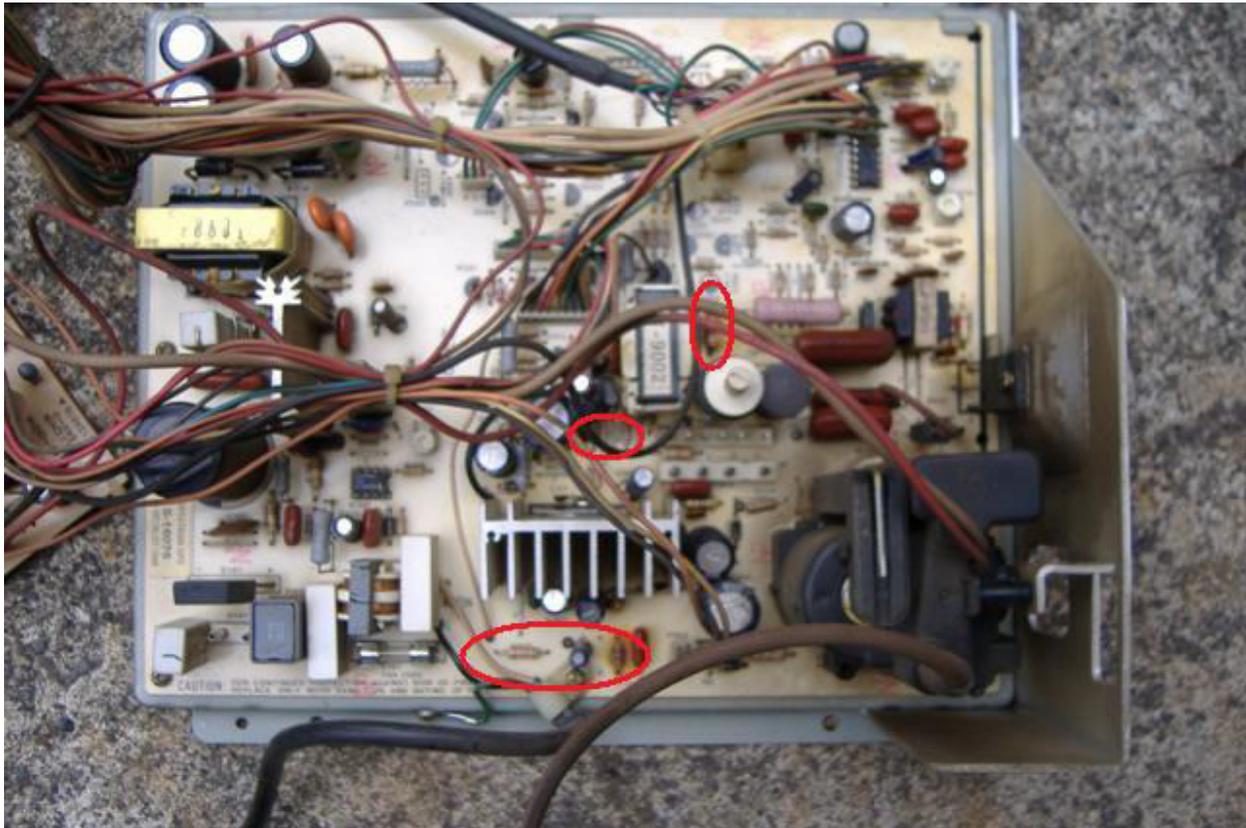
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Resistor R431 (10k, ¼ watt) will be found badly burnt. The reason it burns is because electrolytic capacitor C424 (located directly to the left of R431) has gone bad. Sometimes resistor R432 (12k, ½ watt) located to the left of C424 changes value so be sure to measure it's value. If it's resistance is ok then leave it alone. Otherwise, replace R431 and C424. Please note that C424 is originally a 10 uf @ 50 volt electrolytic capacitor, but I would strongly suggest getting a replacement with a higher voltage rating such as 100 volts or 160 volts to prevent this happening again. Also C424's location markings on both sides of the main board are obscured by a cable clamp on the parts side and by the metal board support frame on the foil side.



If you encounter a “no vertical deflection” symptom and the vertical IC301 is ok, resistor R307 (located next to capacitor C312) has gone open circuit. It is a 33k, ¼ watt resistor. Replacing it should restore vertical deflection again.

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ELECTROLYTIC CAPACITOR LISTING FOR A CAPKIT:

MAIN BOARD

C104 220 uf @ 400 volts snap mount (main filter)
C106 100 uf @ 25 volts (power supply startup)
C110 1 uf @ 50 volts (power supply)
C115 100 uf @ 160 volts
C116 100 uf @ 160 volts
C118 1000 uf @ 35 volts
C119 1000 uf @ 35 volts
C301 10 uf @ 50 volts
C304 470 uf @ 16 volts

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C305 100 uf @ 25 volts
C306 470 uf @ 35 volts
C307 100 uf @ 35 volts
C308 100 uf @ 35 volts
C309 1 uf @ 35 volts dipped tantalum (does not usually go bad)
C312 2200 uf @ 35 volts
C313 1 uf @ 35 volts dipped tantalum (does not usually go bad)
C314 47 uf @ 25 volts
*C315 2.2 uf @ 50 volts (high failure, suggest using high temperature 105 degree replacement)
* C316 22 uf @ 25 volts Bi-Polar (high failure)
C402 470 uf @ 16 volts
C403 3.3 uf @ 50 volts
C405 4.7 uf @ 50 volts
C407 1 uf @ 50 volts
C410 1 uf @ 50 volts
C422 10 uf @ 50 volts (hidden in corner by fly back cage, suggest high temperature replacement)
C424 10 uf @ 50 volts (suggest upgrade to 100 or 160 volts) Polarity not marked on foil side
*C425 100 uf @ 160 volts (high failure, suggest high temperature 105 degree replacement)
C501 470 uf @ 16 volts
*C504 1000 uf @ 25 volts (high failure, suggest high temperature 105 degree replacement)

NECK BOARD (capacitor polarity is only marked on component side of board)

C901 4.7 uf @ 50 volts
C903 4.7 uf @ 50 volts
C904 4.7 uf @ 50 volts
C905 4.7 uf @ 50 volts
C906 100 uf @ 25 volts
C915 100 uf @ 25 volts
C917 100 uf @ 25 volts
*C920 10 uf @ 250 volts (high failure, suggest high temperature 105 degree replacement)
*C921 4.7 uf @ 250 volts (high failure, suggest high temperature 105 degree replacement)
C924 10 uf @ 250 volts (check for poor soldering from the factory)

MAIN BOARD ADJUSTMENTS:

All pots are horizontal mount style with 6mm knob.

R112 B+ Adjustment (5k)
R314 Vertical Linearity (10k)
R403 Horiz Freq sub-control (3k) in series with Horiz Hold pot on remote adjust board

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R418 X-Ray protection shutdown (5k)

R499 Horiz Position sub-control (10k) in series with Horiz Position pot on remote adjust board

NECK BOARD ADJUSTMENTS:

All pots are vertical mount style with center terminal facing rear and with a 6mm knob on front.

R936 Blue Cutoff (500 ohm)

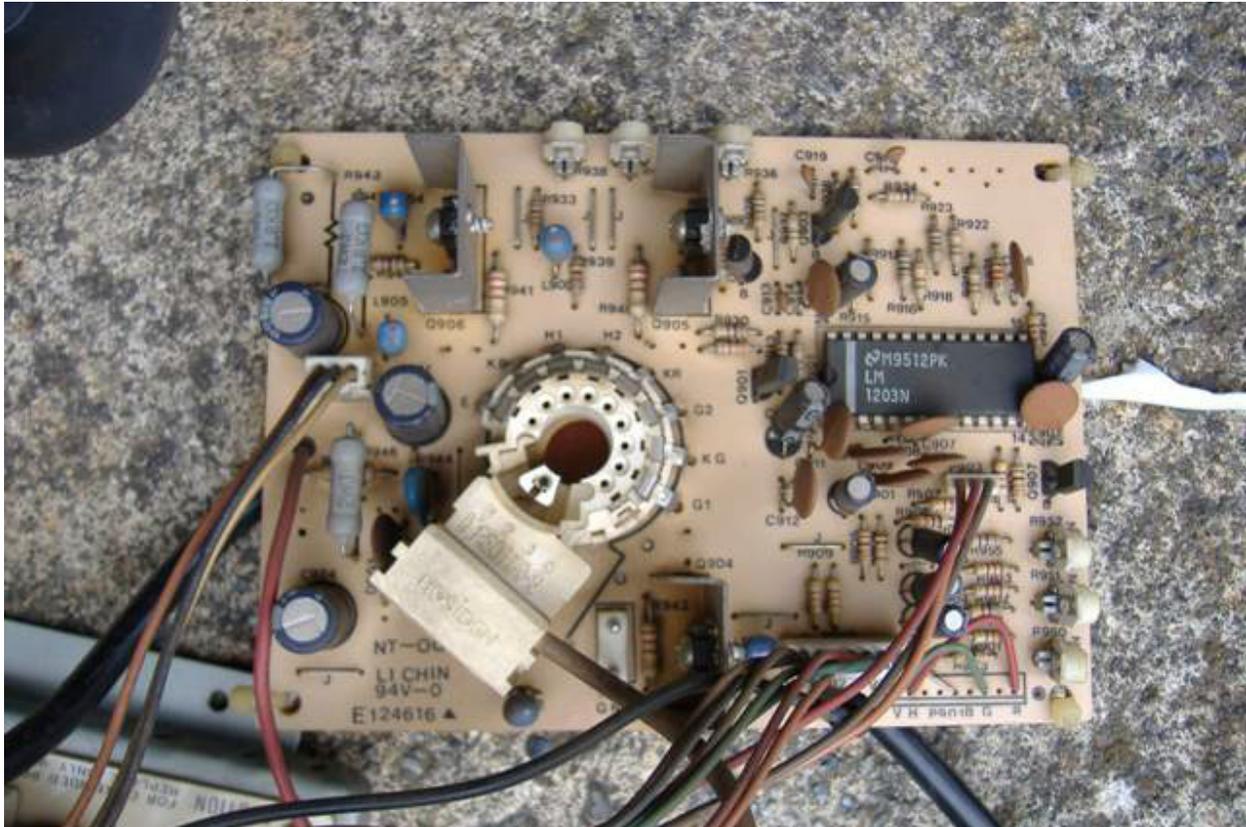
R937 Green Cutoff (500 ohm)

R938 Red Cutoff (500 ohm)

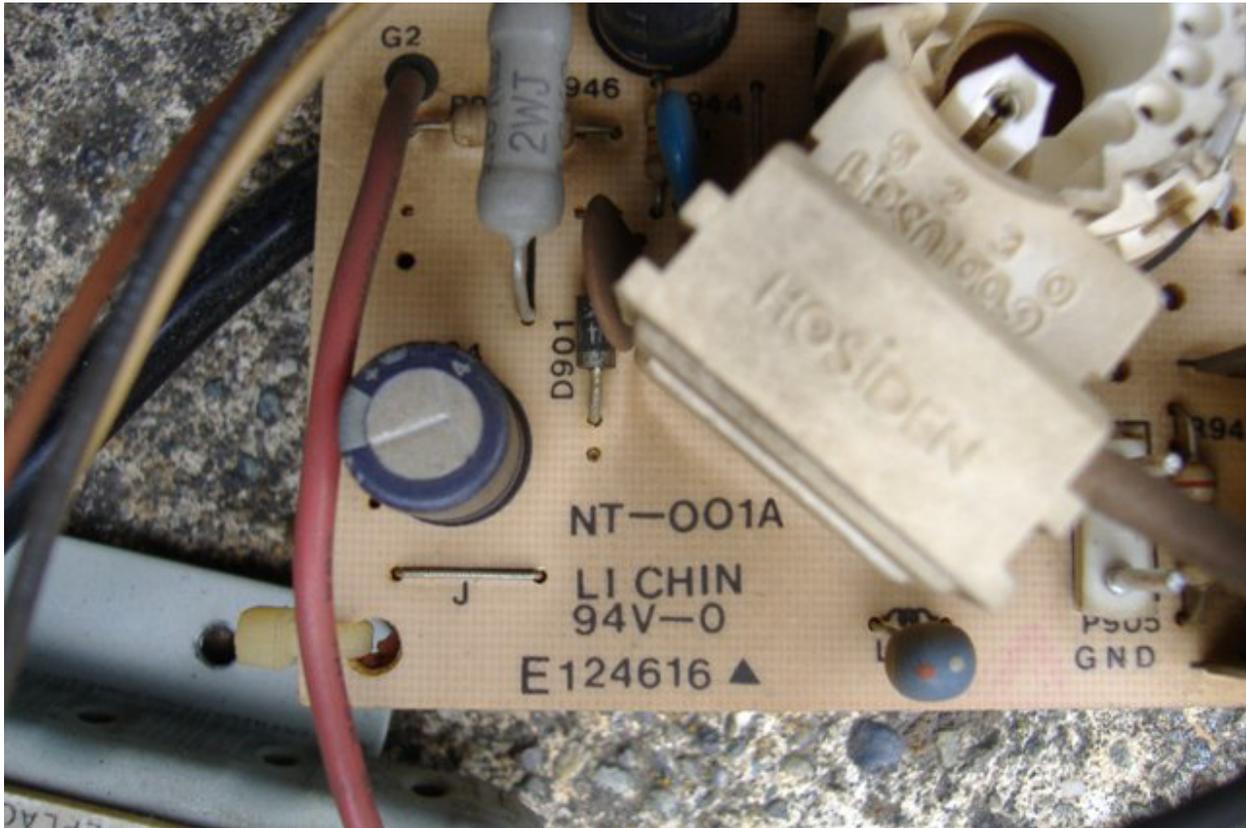
R950 Red Drive (2k)

R951 Green Drive (2k)

R952 Blue Drive (2k)



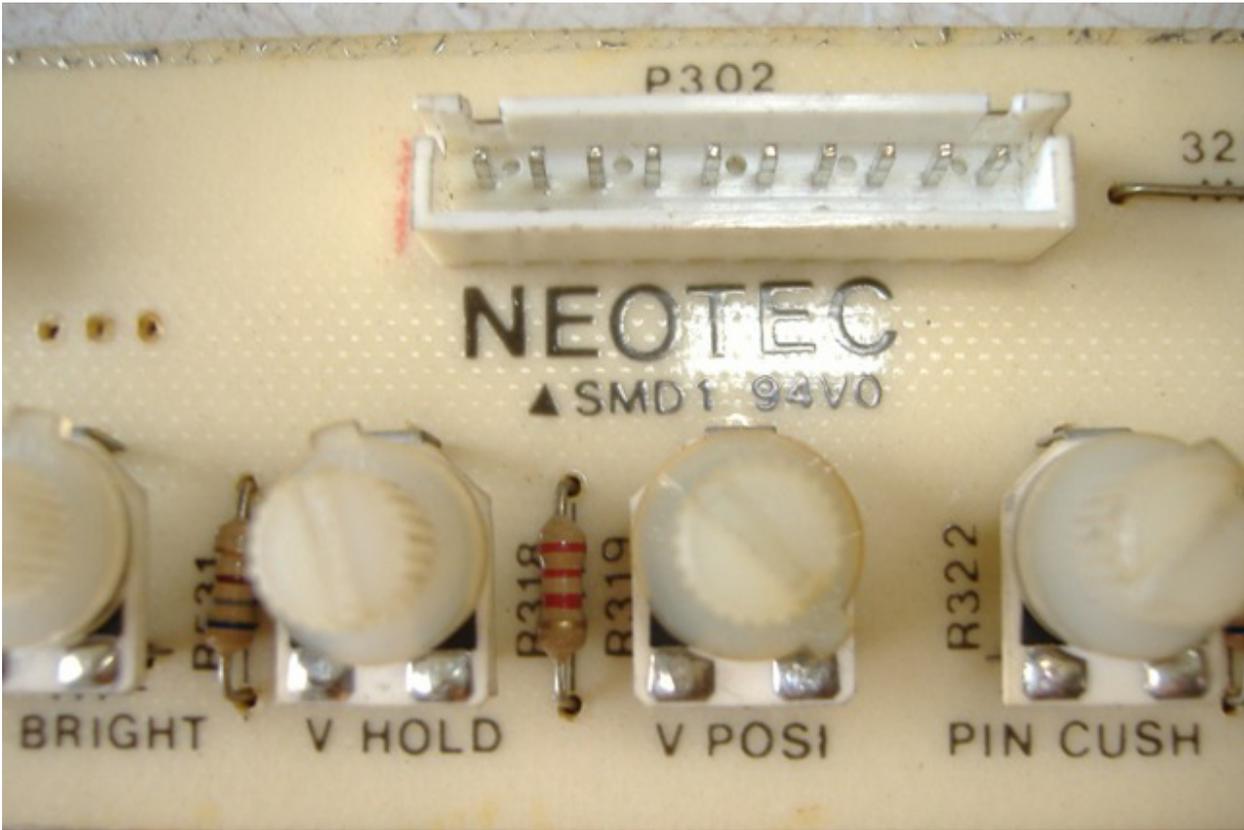
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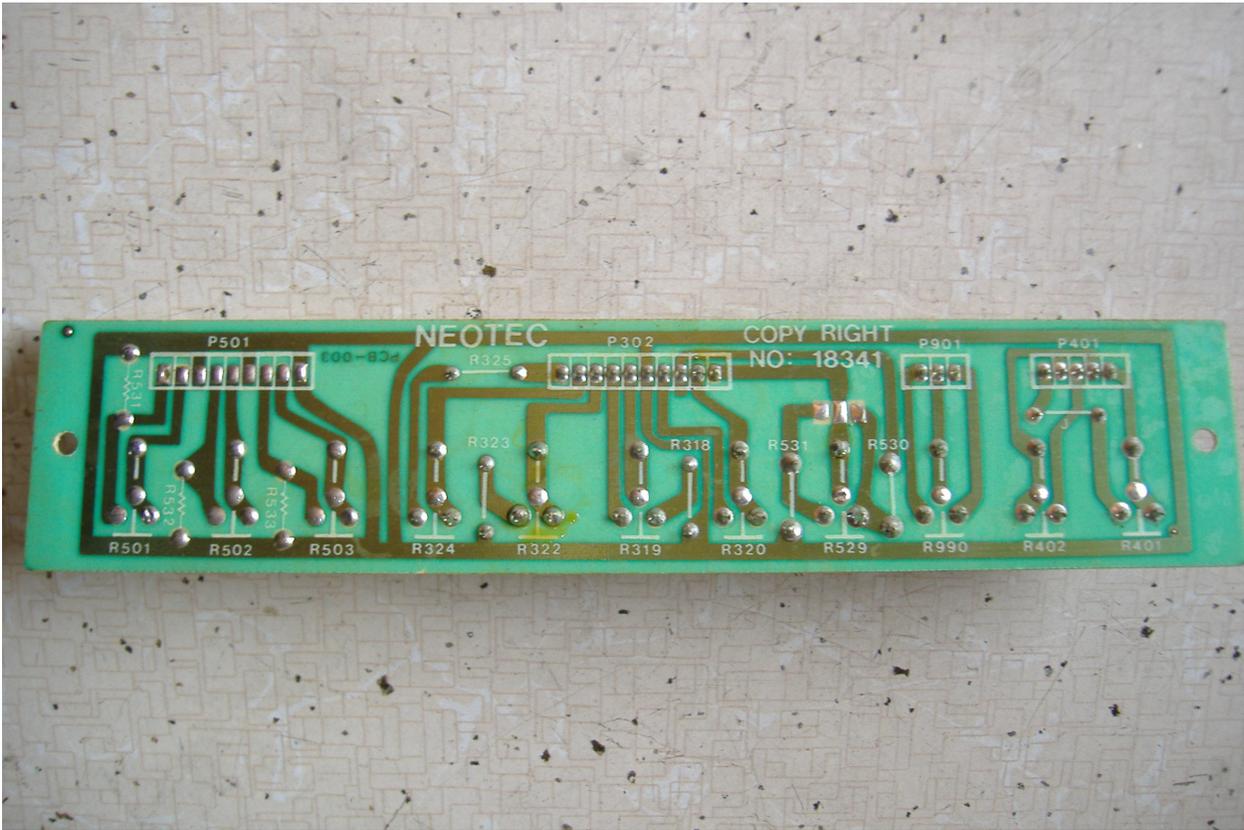
REMOTE BOARD INFORMATION AND ADJUSTMENTS:

Board is long and skinny in shape and is marked "SMD1 94V0" on front below connector P302. On the foil side it is marked "PCB-003" next to connector P501.

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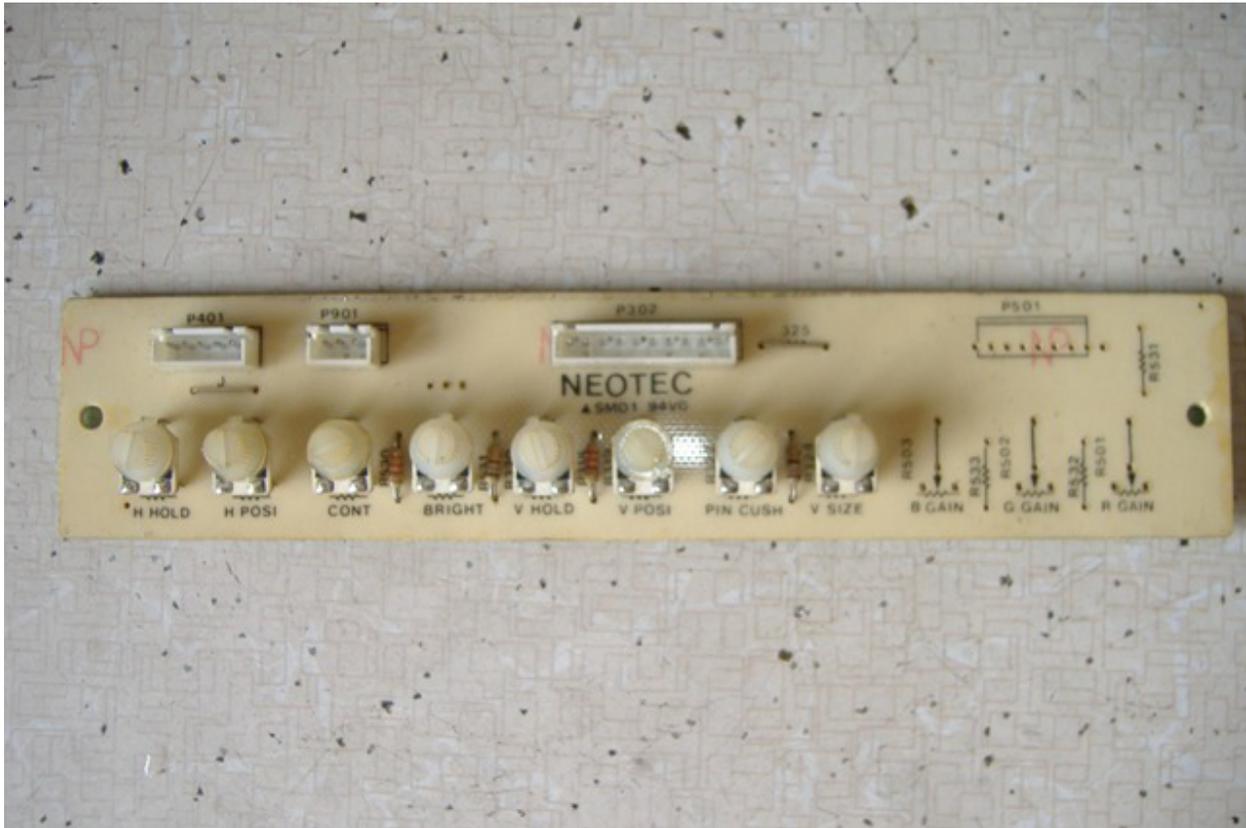


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These parts are NOT installed on the board: P501, R531, R532, R533, R503 (Blue Gain), R502 (Green Gain), and R501 (Red Gain).

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Installed parts:

R325 Jumper Wire

J Jumper Wire

R318 2.2k, ¼ watt

R323 68 ohm, ¼ watt

R530 3.3k, ¼ watt

R531 680 ohm, ¼ watt

P302 JST Male header, 10 position, # BPB-XH1 2.5M/10P

P401 JST Male header, 5 position, # PBP-XH0 2.5M/5P

P901 JST Male header, 3 position, # PBP-XH0 2.5M/3p

ADJUSTMENT POTS:

All are horizontal mount style with 9mm knobs.

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- R324 Vertical Size (50k)
- R322 Pincushion (500 ohm)
- R319 Vertical Position (10k)
- R320 Vertical Hold (200k)
- R529 Brightness (5k)
- R990 Contrast (10k)
- R402 Horizontal Position (1k)
- R401 Horizontal Hold (5k)

MONITOR PICTURE WHEN WORKING:



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Manufacturer contact info:

URL: www.neotecgraphic.com

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