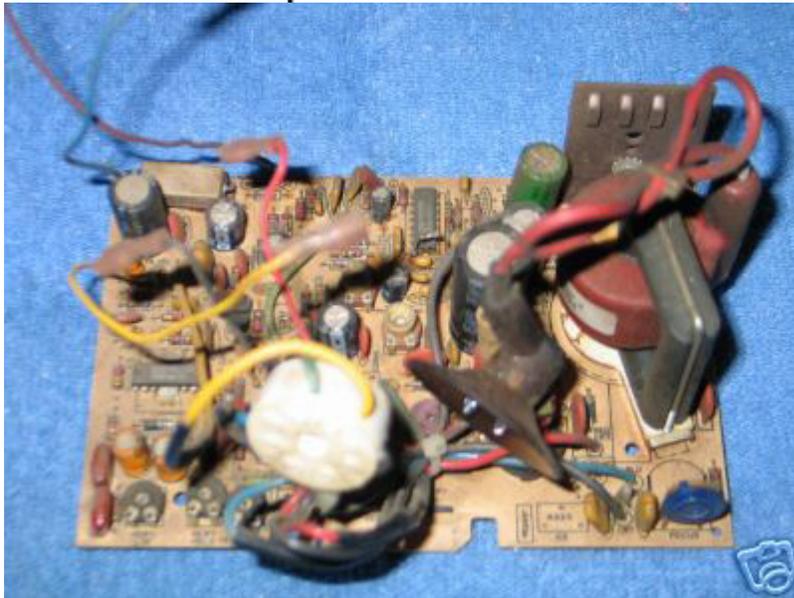


## Repair guide for 9" English Mark Dart monitors by KEN LAYTON

KRISTEL brand monitors (identified by the tan colored circuit board) Model # 9596-ND2 (operates on 12 volts DC)



### Capkit:

C103 100 mfd @ 25 volts

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C104 100 mfd @ 25 volts  
C108 2200 mfd @ 25 volts  
C109 10 mfd @ 25 volts  
C208 1 mfd @ 50 volts  
C212 4.7 mfd @ 35 volts  
C213 1500 mfd @ 16 volts  
C216 220 mfd @ 35 volts  
C221 6.8 mfd @ 25 volts Bi-polar, high frequency (special)  
C228 22 mfd @ 35 volts  
C304 33 mfd @ 63 volts (upgrade to 47 mfd @ 100 volts)  
C305 220 mfd @ 16 volts  
C401 470 mfd @ 16 volts

Note: some monitors had a 10 mfd or 8.2 mfd cap at C221 instead of 6.8 mfd. Either one will work. Some chassis have a 7 mfd @ 50 volt Bi-Polar cap at location C212.

Check these parts for bad solder joints and/or shorted condition:

Q202 BU806 (horizontal output) NTE 2315  
D203 FR304 (might be shorted or leaky)  
D204 1N4936 (might be shorted)NTE 552  
SG201, SG202, SG301 Spark Gap (check for burning)  
D209 10.2 volt zener diode (actually it's two 5.1 volt zeners in series, look for bad solder where they are spliced)

Erratic brightness problems? The brightness trimpot R234 has been known to go bad. You can use Mouser # 652-3309P-1-504 or 531-PT10V-500K or Digi-Key # 3309P-504-ND as a replacement. Capacitors failing the most on this chassis are C212, C305, C104, C228, C109, and C208. Be advised that the polarity of C228 is not marked on the board. Install it with the minus (negative) side facing trimpot R217. Also capacitor C109 is another cap where the polarity has not been marked on the board. Install it with the positive side facing the yellow wire. The width coil has been known to damage easily so treat it carefully. If you break it or it is found to be broken they are available from the factory. The part number stamped on it is 3577.

The values of the resistors in series with the CRT socket are not shown on the schematic. These resistors are covered by black heatshrink tubing. CRT socket pin 1 (green wire) resistor for G1 is a 1k 1/2 watt. Pin 2 (yellow wire) resistor for cathode is 220 ohm 1/2 watt. Pin 6 (red wire) resistor for G2 is 47k 1/2 watt. Pin 7 (blue wire) resistor for G3 is 47k 1/2 watt.

Just for fun, if you'd like to use this monitor with standard video security cameras or other NTSC video sources, then just add capacitors C307 (470 mfd @ 25 volt, radial) and C308 (.01 mfd @ 50 volts, ceramic disk). These locations are already present on the circuit board but the capacitors were never inserted. There is a jumper wire installed at C307's location that must be removed & discarded before installing the capacitors.

Flyback transformer markings:

Type BWF-2, E36324, 39006-0, EIA-528-8710, Made in Taiwan

Yoke markings:

Type SNY-2, E36324, 38006-0, EIA-528-8703, Made in Taiwan

Please note that there is a 330  $\Omega$  ½ watt resistor soldered from the blue wire terminal to the yellow wire terminal (vertical) on the yoke itself.

Yoke wiring colors (viewed from the rear):

Top left - Yellow (vertical winding)

Lower left - Blue (vertical winding)

Top right - Black (horizontal winding)

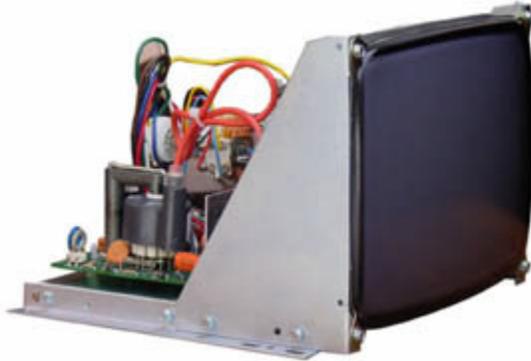
Lower right - Red (horizontal winding)

Printed circuit board standoffs: Mouser # 561-LLP187 (3/16" tall) or # 561-LLP250 (1/4" tall) will work.

CRT is Clinton Electronics # CE663M9C194GEZ and you can use B&K Adapter # CR-7 to test it on B&K restorer/analyzers. Set filament voltage to 12 volts. Listed in the B&K setup guide as type CE663.

Made by Kristel Corp., 555 South Kirk Road, St. Charles, ILL.  
60174-3433, phone: (630) 443-1290, fax: (630) 443-1390, Website:  
[www.kristel.com](http://www.kristel.com), email: [engineering@kristel.com](mailto:engineering@kristel.com) Service manuals are available.

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OMNIVISION brand monitors (identified by the green colored circuit board). Model LP-0915Gxxx series (12 volt DC version)

**CAPKIT:**

C10 22 mfd @ 35 volts  
 C14 4.7 mfd @ 50 volts  
 C18 330 or 470 mfd @ 16 volts  
 C19 10 mfd @ 25 volts Bi-polar, high frequency (special)  
 C29 2200 mfd @ 10 volts  
 C31 100 mfd @ 25 volts  
 C33 100 mfd @ 25 volts  
 C38 33 mfd @ 63 volts  
 C40 470 mfd @ 16 volts  
 C48 100 mfd @ 25 volts (Note: polarity is marked wrong on top of pc board)

Check these for bad solder joints and/or shorted condition:

D2 1N4936 diode (can sub an NTE 569)  
 D5 GI 1-1200 diode (can sub an NTE 506)  
 D14 MP818 diode (can sub an NTE 506)  
 Q2 BU806 (horizontal output) NTE 2315 or SK 4909  
 R21 120 ohm 1/2 watt (burns up when C18 goes bad)

Width coil can be damaged easily. If damaged replacement is # 4109A (6619026) from factory. Note that transistor Q6 has it's silkscreened orientation outline markings backwards.

Printed circuit board standoffs: Mouser # 561-LLP187 (3/16" tall) or # 561-LLP250 (1/4" tall) will work.

Yoke wiring colors for regular round yoke:

Top left - Blue (vertical winding)  
Lower left - Yellow (vertical winding)  
Top right - Black (horizontal winding)  
Lower right - Red (horizontal winding)

Yoke wiring colors for inline terminals (viewed from rear and moving left to right):

Blue - Black - Red - Yellow

Monitors with the inline yoke wiring usually have "Arachnid" silkscreened on the monitor pc board near the edge connector. These are the later production run.

No picture? Check the resistors R76, R77, and R78 for opens. They are each 1 ohm 1/2 watt. Any one of those resistors going open circuit will cause a no picture condition. They are next to the flyback transformer.

CRT is either Philips # M24-308LA/PD or Clinton Electronics # CE663M9C194GEZ. You use B&K adapter CR-7 to test it on B&K restorer/analyzers.

Made by Omni Vision, Inc., 168 North Brandon Drive, Glendale Heights, ILL. 60139, phone: (630) 893-1720, fax: (630) 893-9991, website: [www.omnivisionusa.com](http://www.omnivisionusa.com), email: [info@omnivisionusa.com](mailto:info@omnivisionusa.com)  
Street address is also listed as 2000 Bloomingdale Road, Unit 245-250. Service manuals are available.

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GENERAL INFORMATION PERTAINING TO BOTH MONITOR TYPES:

TDA1180P = NTE 1784 Tv horizontal processor i.c.

TDA1170S = NTE 1289 or SK 9182 Tv vertical deflection i.c.

Card edge connector: Mouser # 587-307-020 (Edac brand)

Always check the linear game power supply circuit board in the dart game cabinet for a bad capacitor C9. It was a 1 mfd @ 25 volt electrolytic but due to problems with it failing frequently, Arachnid issued a bulletin requesting it be **upgraded** to 2.2 mfd @ 50 volts (radial leads). When this cap goes bad it may either put noise on the 12 volt line to the monitor (causing a bad looking picture) or cause the 12 volts to not start up the monitor at all or have the monitor take 15 to 30 minutes to come on. **Check this**

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**capacitor first before troubleshooting the monitor.** It may save you alot of time and grief. Capacitor C9 is located right next to the DC output connector on the power supply board. Polarity was not marked on the board so please note polarity before removing the old one. Monitor schematics as well as game schematics and service bulletins are available from Arachnid, Inc. (www.bullshooter.com or www.arachnidinc.com).

The special high frequency caps can be obtained from Mouser Electronics (www.mouser.com or phone 1-800-346-6873) under part numbers 140-BPHR50V6.8-RC (6.8 mfd @ 50 volts, \$1.13), 140-BPHR50V8.2-RC (8.2 mfd @ 50 volts, \$1.20), and 140-BPHR50V10-RC (10 mfd @ 50 volts, \$1.29).

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**CRT manufacturer:**

Clinton Electronics Corp.  
6701 Clinton Road  
Loves Park, ILL. 61111  
Phone: 1-800-447-3306 or (815) 633-1444  
Fax: (815) 633-8712  
URL: [www.clintonelectronics.com](http://www.clintonelectronics.com)  
Email: [sales@clintonelectronics.com](mailto:sales@clintonelectronics.com)

