OMNI VISION
DISPLAY MONITOR - ENGLISH MARK DARTS MODEL 6000

The display consists of a 9" amber monitor. Input is 75 Ohm composite video into pin 8 of the edge connector at the back of the monitor. Power (+12v, 1.2 Amp.) is supplied to pin 7 with pins 1 and 10 being system ground. Connections and adjustments are shown in Figure 1.

GENERAL DISPLAY SPECIFICATIONS AND CHARACTERISTICS

HORIZONTAL FREQUENCY	15.75 kHz
VERTICAL FREQUENCY	60 Hz
SIGNAL POLARITY	POSITIVE - THE WHITES ARE HIGH
VIDEO	COMPOSITE - AMPLITUDE 2.5 TO 5 VPP
TERMINATION IMPEDANCE	75 Ohms
RESOLUTION	900 TV LINES, CENTER
BANDWIDTH	DC TO 18 mHz AT -3dB
LINEARITY	CHARACTERS ARE TO BE WITHIN ± 10% OF ADJACENT CHARACTERS AND WITHIN ± 10% OF CHARACTER HEIGHT
GEOMETRY	GEOMETRIC DISTORTION TO BE WITHIN 1-1/2% OF EIA

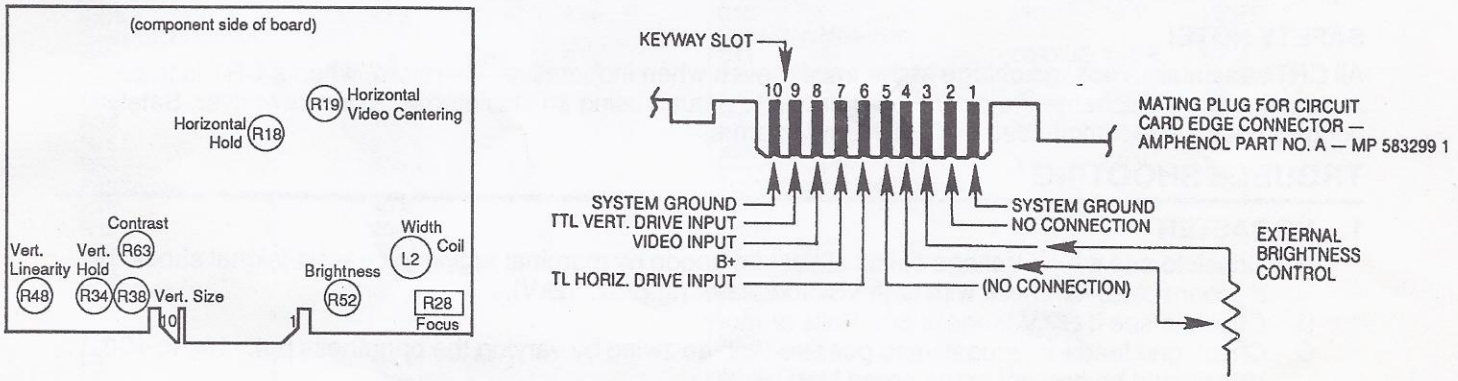


Fig. 1 Monitor circuit card edge connector--component side view and adjustments.

Although the monitor alignment adjustments are preset at the factory, alignment procedure is given below in case adjustments would be necessary.

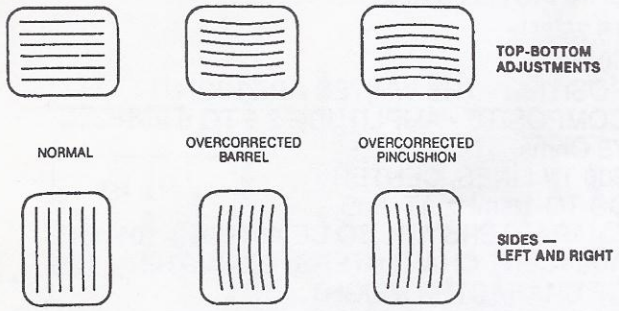
1. Check size--horizontal and vertical.
   A. If the horizontal size requires readjustment, use width coil (L2) to set size to +1/4 inch of spec.
   B. If vertical size requires readjustment, use height control (R38) to set size to +1/4 inch of spec. Readjustment of linearity control (R48) may be necessary.
2. Check brightness adjustment - increase remote brightness control to maximum. Raster lines should be just barely visible.
   A. Increase master brightness control (R52) until raster lines are visible.
   B. Reset remote brightness to normal viewing level.
3. Check horizontal centering - increase remote brightness control until raster lines are just visible. No more than one (1) character width difference should be measured when comparing the right side spacing, between the raster edge and the video, to the left side spacing.
   A. If necessary, adjust the horizontal delay control (R19) only for minor correction.
   B. If considerable adjustment is required, the following steps should be taken.
      1) Disable horizontal sync. input.
      2) Adjust horizontal hold control (R18) to achieve a single vertical band of the horizontal blanking interval floating through the video presented.
      3) Enable the horizontal sync. input.
      4) Adjust horizontal delay control (R19) to center the video in raster.
   C. Reset the remote brightness control for normal level.
4. Check focus.
   A. If necessary, adjust the focus control (R28) to obtain the best overall focus. Center focus will be compromised in order to gain better corner focus.
5. Check geometry - rectangular presentation of video display.
   A. If correction is required, adjust the magnets on the yoke ring as required.

GEOMETRY

The display monitors are supplied with yokes on which a special retainer has been designed to accomodate adjustable magnets. The tabs on this retainer hold the magnets in place and keep them from vibrating loose in transit. These magnets can be rotated in either direction until satisfactory geometry has been achieved.

NOTE!

The geometry has been adjusted at the factory prior to shipment. If, however, adjustments are to be made on the yoke, the directions on this page should prove helpful.



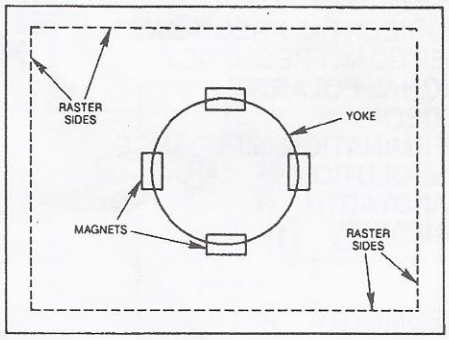


Fig. 2 Geometry adjustments.

SAFETY NOTE!

All CRT's maintain a voltage charge at the anode, even when inoperative. Therefore, when a CRT is to be replaced, always discharge the picture tube anode to ground using an insulated wire or screwdriver. Safety goggles usage is recommended by CRT manufacturers.

TROUBLE SHOOTING

1. **NO RASTER**
   - A. Check to see if high Voltage exists at second anode by marginal arcing to chassis (signal should be disconnected) or check with high Voltage meter (approx. 12kV).
   - B. Check to see if G2 Voltage is 600 Volts or more.
   - C. Check grid lead for a negative to positive Voltage swing by varying the brightness pot. -100 to +30 Vdc should be present at the green lead (Grid 1).
   - D. Check positive and negative Voltages derived from flyback.
2. **NO VIDEO**
   - A. Make sure that the raster is visible and that the video lead is not broken.
   - B. Check the Voltage on the collector of Q4. It should be approximately 50 Vdc.
   - C. Check the bias Voltage at Q4. It should be approximately 6 Vdc. If Q4 defective, check D12.
3. **NO VERTICAL SWEEP**
   - A. Check for B+ (12V) to pins #2 & 5 of ICU1.
   - B. Make sure that the yoke and leads are hooked up properly.
   - C. Check the Voltage on pin #4 of ICU1. It should be 6 to 7 Volts. If the Voltage is 10, check C56.
   - D. Shunt C29 with new capacitors.
4. **HIGH CURRENT FROM POWER SUPPLY**
   - A. Unsolder one end of C14. If high current still exists, the horizontal output stage (Q2) is at fault. The normal current is from .7 to 1.1 Amps.
   - B. Check for shorted Q2, D3, D4 and D5. Defective flyback is the least probability. If disconnecting C14 does not correct high current, ICU2 may be shorted.
5. **POOR LINEARITY**
   - A. Vertical - check C56.
6. **EXCESSIVE BRIGHT**
   - A. Check negative Voltage on D3. Possible open C21.
   - B. Check B+ Voltage at the collector of video (Q4). Output should be approximately 40 Vdc.
7. **NO SYNC**
   - A. Check pin #8 of ICU2 for sync pulses. Also, check for feed-back pulses to pin #6 of ICU2 from the horizontal out section. If both pulses are present, replace the chip. If composite signal is used and present to pins #8 & 9 of ICU2, pin #10 should have vertical sync as output.
8. **NO HORIZONTAL DEFLECTION (line up and down)**
   - A. Check the leads on the yoke (C19).

9. NO VERTICAL DEFLECTION (line right and left)

A. Check for open yoke.
B. Check the leads on the yoke (blue and yellow).
C. Check for open D7 or C29.

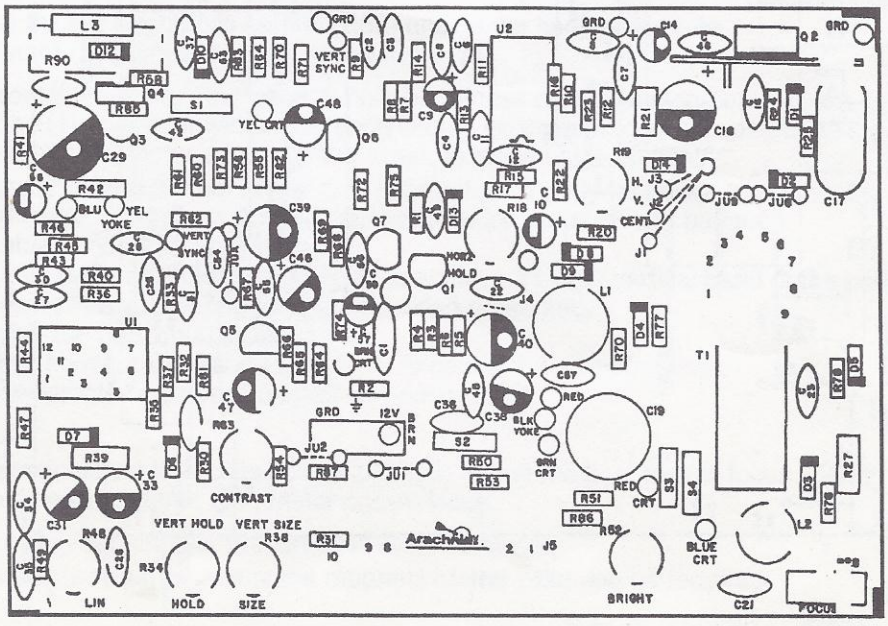
10. NO HORIZONTAL DEFLECTION, NO HIGH VOLTAGE

A. Check pin #2 of ICU2. If Voltage is 4.5 Vdc, the chip is OK. If it is 11 Vdc, replace the chip.
B. Check pin #1 of ICU2. If Voltage is not 10 Vdc, look for open R21, 15 Ohms.
C. Check for pulses on pin #2 of ICU2, If pulses are present, the chip is OK.
D. The base of Q2 should have a square waveform if not open C14, or shorted Q2. If pulses are not present on pin #2 of ICU2, C11 may be open.

REPLACEMENT PARTS LIST

REF. #	QTY.	DESCRIPTION		
R16	1	2.2 meg.	1/4 W	5 %
R42 (Yoke)	1	180 Ohm	1/2 W	5 %
R27	1	2 meg.	1/2 W	5 %
Resistor, MF				
R15	1	9.09 k	1/4 W	1 %
R22	1	33 k	1/4 W	1 %
R17	1	47.3 k	1/4 W	1 %
R12	1	220 k	1/4 W	1 %
Resistor, CC				
S1	1	220 Ohm	1/2 W	10 %
S2	1	1 k	1/2 W	5 %
S3, S4	2	47 k	1/2 W	5 %
Resistor, Power MO				
R90	1	1 k	3 W	5 %
Pot/Carbon				
R63	1	500 Ohm		
R34	1	100 k		
R48	1	200 k		
R38	1	500 k		
Pot/Cermet				
R18	1	30 k		
R19	1	200 k		
R52	1	250 k		
R28	1	2 meg.		
Yoke (2651D)	1			
Coil				
L3	1	4.7 uF Peaking		
L1	1	Linearity		
L2	1	Width		
Capacitor, Ceramic Disc				
C23	1	.01 F	1 kV	Z5U
C22, C37	2	.01 F	100 V	Z5U
C42	1	120 pF	100 V	NPO
C16	1	33 pF	100 V	NPO
C49, C57, C52	3	.001 F	1 kV	Z5U
C21, C36	2	.01 uF	500 V	
C28	1	68 pF	100 V	5
Capacitor, Mylar				
C1, C34, C35, C26	4	.1 uF	100 V	5
C17	1	.033 uF	400 V	

REF. #	QTY.	DESCRIPTION		
Capacitor, Electrolytic				
C9	1	1 uF	50 V	
C14	1	4.7 uF	35 V	
C10, C56	2	22 uF	35 V	
C38	1	33 uF	63 V	
C31, C33, C46				
C47, C48	5	100 uF	25 V	
C39	1	220 uF	16 V	
C40	1	470 uF	16 V	
C29	1	2200 uF	10 V	
C19	1	12 uF	25 V	Bipolar
C18	1	330 uF	16 V	LESR
Capacitor, Monolytic				
C11	1	.0047 uF	100 V	NPO
C8, C30, C51	3	.022 uF	50 V	10 X7R
C4	1	.47 uF	50 V	10
C3, C7	2	.22 uF	50 V	10
C5, C6, C12, C27, C41, C45	6	.1 uF	50 V	10
Transformer, High Voltage				
T1	1	Flyback		
Diode				
D1, D6, D12	3	1N4148		
Diode, Power				
D5	1	GI 1-1200		
D14	1	MR818		
D7	1	1N4004		
D2, D3, D4	3	1N4936		
Diode, Zener				
D8, D9	2	1N4733A		
D10, D16 (bottom)				
R18 to R1)	2	1N5234 B		
Transistor, SS				
Q3, Q5	2	2N3904		
Q1, Q6, Q7	3	2N3906		
Transistor, Power				
Q2	1	BU806		
Q4	1	MPSUO7		
Integrated Circuit				
U1	1	TDA1170S		
U2	1	TDA1180		
Cathode Ray Tube	1	CE663W9H194GR		



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