

General Information

1993
CRT: A51JAR90X13
Remote Control: 241687
Door Flap: 241699
Main Power Button:
241702
Door Catch: 241586

Matrix	
Item	See Model
Safety Notes	Amstad CTV 1400

Specifications	
System:	PAL - B/G
Channel:	W. Germany: E2 - E4, SS1 - SS3, VHF1 S1 - S2, VHF1 E5 - E12, S3 - S20, VHF2 21 - 69 UHF, Italy: A - C VHF1 D - H VHF2 21 - 69 UHF
Frequency Range:	48.25 - 112.25 MHz VHF1 119.25 - 294.25 MHz VHF2 471.25 - 855.25 MHz UHF
Scanning:	625 lines: Horizontal: 15625 Hz Vertical: 50 Hz
IF Frequency:	Video: 38.9 MHz Sound: 33.4 MHz Chroma: 34.47 MHz
Vision/Sound Separation:	5.5 MHz
Sensitivity:	32 dB μ V
Output Power:	2.8W max. 10% THD 2W
CRT:	21" (51cm) diagonal, FST90 $^{\circ}$
Speaker:	2.5" x 4" 8 Ω x 2
Antenna Impedance:	75 Ω
Power Consumption:	90W
Video Input:	1Vp-p (positive video) 75 Ω impedance
Audio Input:	0.5V $_r$ ms (1KHz) 47k Ω impedance

Recommended Safety Parts		
Item	Part No.	Description
	241749	AC Cord with Plug
	241692	CRT 21" A51KQK63X05
BR401	241760	Diode LFARB156 Bridge Rectifier
C401, C403	253611	Metal Poly 0.047 μ F 250VAC
C404, C405, C450		Capacitor Ceramic 0.0047 μ F 500V
C422	ECW-H12H222JR	Orion CRT. Metalised Polypropylene Capacitor 0.0022MFD 1600V DC 5% Matsushita C422
C442	ECW-H12H332JR	Samsung CRT. Metalised Polypropylene Capacitor 0.0033MFD 1600V DC 5% Matsushita C442
C442, C443	152576	Metal Poly 0.0022 μ F 1.6KV
F401	270593	Fuse T2A 250V 20MM
F901		Fuse T3.15A 250V
L405		Coil 57 μ H ELH-5L155H
L405	ELH-5L155H	Samsung CRT. Fixed Inductor Coil UH

Service Adjustments

Alignment Instructions

Test Equipment

1: VIF sweep generator.
2: SIF sweep generator.
3: Colour bar Dot Crosshatch generator.
4: DC power supply (14V).
5: Oscilloscope.
6: Vacuum tube voltmeter.
7: Volt ohmmeter.
8: High voltage meter.
9: Ampere meter (0.5 class, DC 3mA max.).
10: Demagnetising coil.
11: Phillips pattern generator.
12: Frequency counter.
13: Continuous waveform generator.

Tank Coil Adjustment

Signal In:
VIF signal generator. Tuner test point TP and tuner case (earth).

Signal Out:
Oscilloscope TP104 and earth.

Method:
1: Increase the output level of VIF signal generator for maximum amplitude waveform without saturation.
2: Adjust T104 to obtain maximum amplitude at PC (38.9 MHz).

Remarks:
1: Refer to fig. 1 and fig. 2.
2: Supply DC 14V to "+" lead of D411 (steps 1 - 4 only).
3: Supply RF AGC bias voltage to TP105, refer to fig. 2 (step 1- 3 only).
4: Check if AGC voltage is 5.5V $\pm$ 0.25V.

Note: Unsolder the solder link (A) on the foil side of main board before alignment steps (see bottom view of component diagram on main board.).

VIF Adjustment

Signal In:
VIF signal generator. Tuner test point TP and tuner case (earth).

Fig 1.

Fig 1a.

Fig 2.

Fig 3.

Fig 4.

Fig 5.

Fig 6.

Recommended Safety Parts Cont'd.		
Item	Part No.	Description
L405	156-ELH-5L60	Orion CRT. Fixed Inductor Coil 65UH 5% LI SHIN L405
Q408	175665	Transistor 2SD1555
R303		Flame Proof Carbon Film 47 Ω 1/2W
R401	241722	Cement 5.6 Ω 5W
R413	241720	Metal Oxide 330K Ω 1W
R414	241741	Flame Proof Fuse 0.33 Ω 2W
R416		Metal Oxide 8.2M Ω 1W
R418, R419	241805	Flame Proof Fuse 0.68 Ω 1W
R422	241715	Flame Proof Carbon Film 120K Ω 1/2W
R426	241520	Flame Proof Carbon Film 470 Ω 1/2W
R431	241804	Flame Proof Fuse 2.2 Ω 1W
R434	241721	Flame Proof Carbon Film 560 Ω 1/2W
R438, R514, R515, R516	241522	Flame Proof Carbon Film 2.7K Ω 1/2W
R439		Metal Oxide 2K Ω 5W
R443	241717	Flame Proof Fuse 1.5 Ω 2W
R511, R512, R513	241716	Metal Oxide 15K Ω 2W
R616	241713	Flame Proof Carbon Film 100 Ω 1/2W
R634	241714	Flame Proof Carbon Film 100K Ω 1/2W
R640	241806	Flame Proof Fuse 6.8 Ω 2W
R654	241715	Flame Proof Carbon Film 270K Ω 1/4W
S401	241608	SW Power 99957S
T401	241672	TX. Switching HL-4025B
T403	241691	TX Flyback 20" CF0341

3: Adjust VR302 (H. Freq.) to the reading of 15330 $\pm$ 30 Hz and back to TV mode.

4: Receive monoscope pattern.

5: Adjust VR301 (H. CEN.) control to obtain normal picture.

Vertical Circuit Adjustment

Signal In:
Signal generator.

Signal Out:
Frequency counter V-Deflection Yoke and earth.

Method:
1: Set the TV to AV mode.
2: Connect the frequency counter between V-Deflection Yoke and earth.
3: Adjust VR303 (V-Hold) to the reading 44 Hz $\pm$ Hz and back to the TV mode.
4: Receive monoscope pattern.
5: Adjust VR401 (V-High) control to obtain normal picture.

White Balance Adjustment

Signal In:
Receive a black and white picture signal.

Signal Out:
Screen.

Method:
1: Set screen control to minimum.
2: Turn R. G. B. VR501, VR502, VR503 to mid position.
3: Turn the sub brightness (VR305) control to mid position then set the contrast and brightness controls to minimum position.
4: Set S301 to service position.
5: Turn screen control clockwise until dim line appears.
6: Adjust VR501 to get a red H. line then adjust VR502 to get a yellow line and VR503 to get a white line.
7: Re-set S301 to normal.
8: After white balance adjustment set the contrast and brightness controls to normal position.

Focus

Signal In:
Signal generator.

Signal Out:
Screen.

Method:
1: Set contrast control to maximum.
2: Set the brightness control to mid position.
3: Adjust focus control to get the sharpest picture.

RF AGC

Signal In:
Receive the signal of BAND-III (VHF-HIGH) channel 9.

Signal Out:
Screen. Voltmeter TP106 and earth.

Method:
1: Set input signal level to 60dB $\pm$ 1dB.
2: Connect voltmeter to TP106 and earth.
3: Adjust VR101 (RF AGC control) to obtain 5V $\pm$ 0.25V.

Colour DE Mod Adjustment

Signal In:
Signal generator.

Remarks:
1: Refer to fig. 3.
2: Disconnect 100 Ω resistor after satisfactory results.

Remarks:
1: Refer to figs. 5 and 6.
2: Disconnect the TP105 (AGC) to earth after satisfactory results.

Remarks:
1: Refer to fig. 4.

Remarks:
1: Refer to fig. 5.

Remarks:
1: Refer to fig. 4.

Note: Solder the solder link (A) on the foil side of the main board after alignment steps. (see bottom view of component diagram on main board).

B+ Adjustment

Signal In:
Power on.

Signal Out:
AVO meter.

Method:
1: Connect voltmeter to TP401 and earth.
2: Adjust VR901 to read DC 110V $\pm$ 0.5V.

Horizontal Circuit Adjustment

Signal In:
Signal generator.

Signal Out:
Frequency counter IC302 pin 41 and earth

Method:
1: Set the TV to AV mode.
2: Connect the frequency counter between IC302 pin 41 and earth.

Service Adjustments Cont'd.

Signal Out:
Screen.

Method:
1: Set colour control to maximum.
2: Set contrast control to minimum.
3: Connect oscilloscope to TP301.
4: Adjust VR304 and T301 to obtain as fig.

Remarks:
Refer to fig. 6.

Sub Brightness Adjustment

Signal In:
Signal generator.

Signal Out:
Screen.

Method:
1: Select grey scale.
2: Set brightness, contrast and colour to mid position.
3: Adjust VR304 control until 10th step of grey scale just appears on the screen.

Teletext Picture Adjustment

Signal In:
Receive a pattern with a Teletext signal.

Signal Out:
TP002 and earth.

Method:
1: Select a Teletext page.
2: Connect DC volt meter to TP002 and earth.
3: Adjust T001 to obtain $1.7V \pm 0.2V$.

On Screen Adjustment

Signal In:
Signal Generator.

Signal Out:
Screen.

Method:
1: Press the volume Up/Down key.
2: Adjust VR601 (OSD CEN.) for adjust the lettering to centre of CRT.

Colour Demodulator Alignment, Delay Line Alignment

Method:
1: Receive Philips pattern.
2: Set contrast control to minimum position.
3: Set colour control to maximum position.
4: Connect oscilloscope to TP301 (B-out).
5: Adjust CT301 to obtain the waveform as in fig. 7.
6: Adjust VR304 to obtain the waveform as in fig. 7.
7: Adjust T301 to obtain the waveform as in fig. 7.

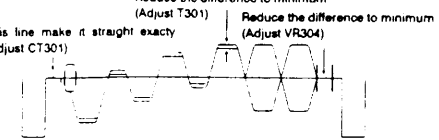


Fig. 7

Sub-Brightness Alignment

1: Receive the monoscope pattern.
2: Set the controls as follows:
Brightness: Normal

Contrast: Normal
Colour: Normal
3: Adjust Sub-Brightness (VR305) until 10th step of the grey scale just appears on the screen.

Colour Purity Adjustment

Note: Before adjustments described below are attempted, V-Hold, V-High, B+ Voltage and Focusing adjustments should be completed.

Method:
1: Place the TV receiver facing North or South.
2: Plug in the TV and switch it on.
3: Operate the receiver for over 30 mins.
4: Fully degauss the receiver by using an external degaussing coil.
5: Receive a crosshatch pattern and roughly adjust the static convergence control.
6: Loosen the clamp screw of the deflection yoke and pull the deflection yoke towards you.
7: Fully turn the red and blue drive (VR504 and VR505) controls counter-clockwise.
8: Adjust the purity magnets so that green field is obtained at the centre of the screen.
9: Slowly push the deflection yoke towards bell of CRT and set it where a uniform green field is obtained.
10: Tighten the clamp screw of the deflection yoke.

On Screen Adjustment

Method:
1: Receive the monoscope pattern.
2: Press the volume Up or Down key.
3: Adjust On Screen (VR601) for adjust the lettering to centre of CRT.

Convergence Adjustment

Method:
1: Receive a dotted pattern.
2: Un-fix the convergence magnet clasper and align red with blue dots at the centre of the screen by rotating (R, B) static convergence magnets.
3: Align blue/red with green dots at the centre of the screen by rotating (RB-G) static convergence magnet.
4: Fix the convergence magnets by turning the clasper.
5: Remove the DY wedges and slightly tilt the deflection yoke horizontally and vertically to obtain the good overall convergence.
6: Fix the deflection yoke by wedges.
7: If purity error is found, follow Purity Adjustment instructions.

Teletext Picture Alignment

Method:
1: Receive a pattern with a Teletext signal.
2: Select a Teletext page.
3: Connect DC voltmeter to IC001 pin 28 and ground.
4: Adjust T001 to obtain $1.5V \pm 0.1V$.

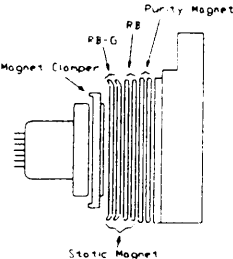
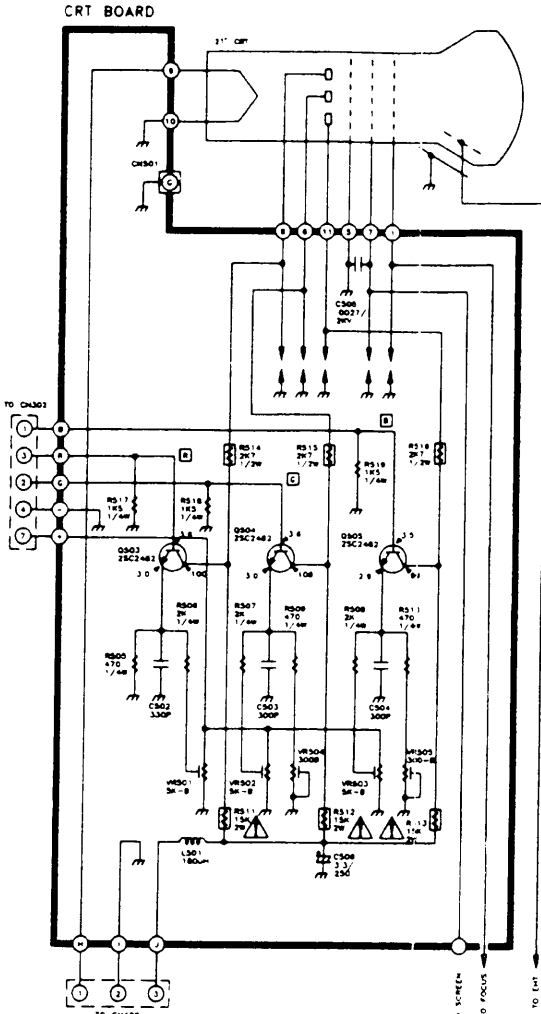
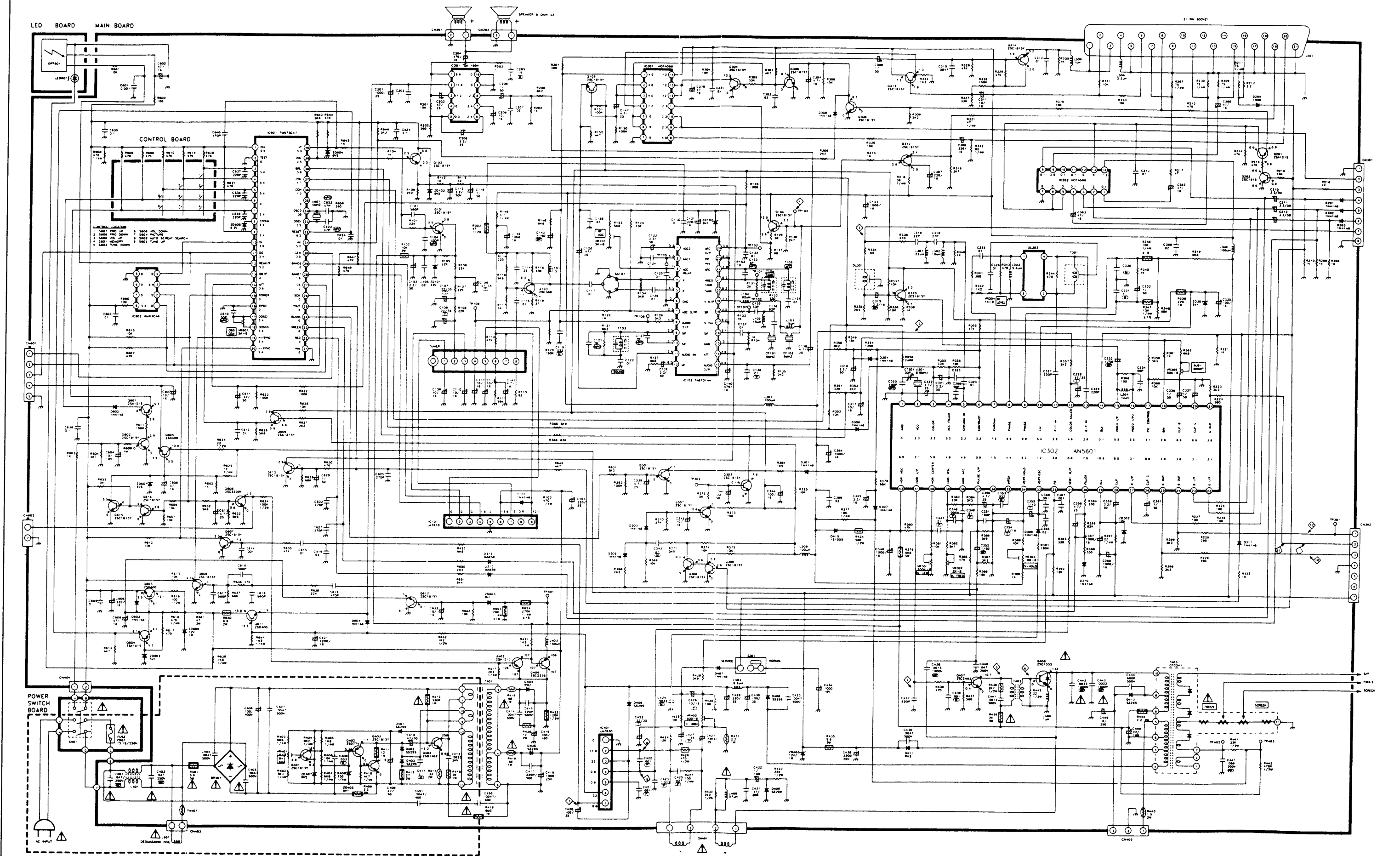


Fig. 8

CRT Diagram



Main Diagram (Early Models)



Main Diagram
(Late Models)

