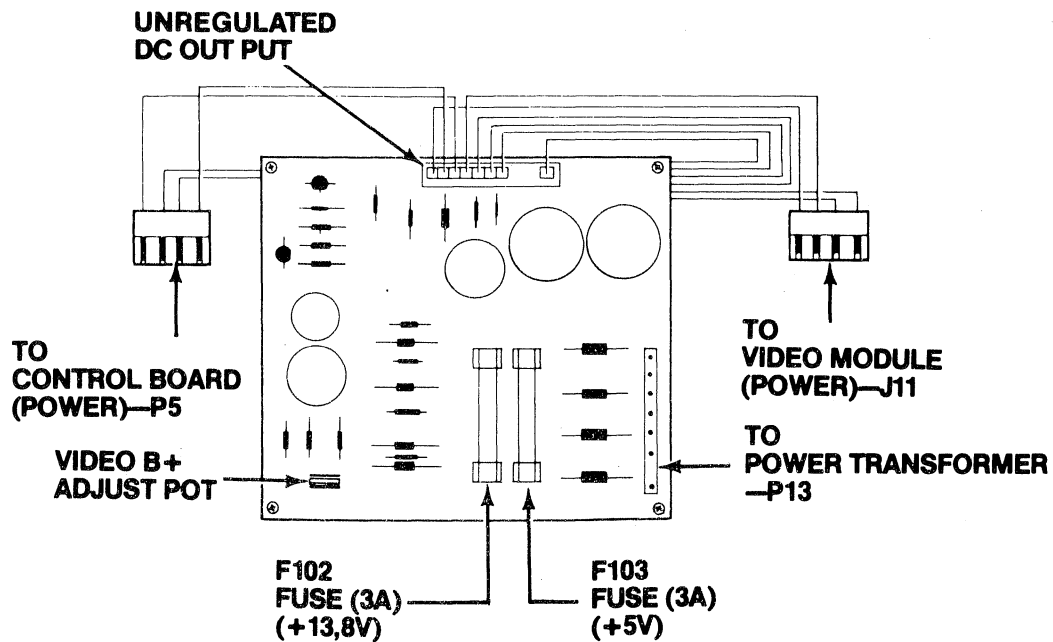
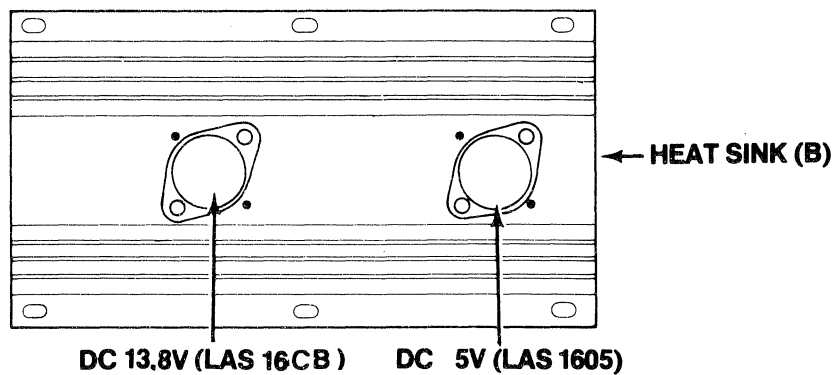
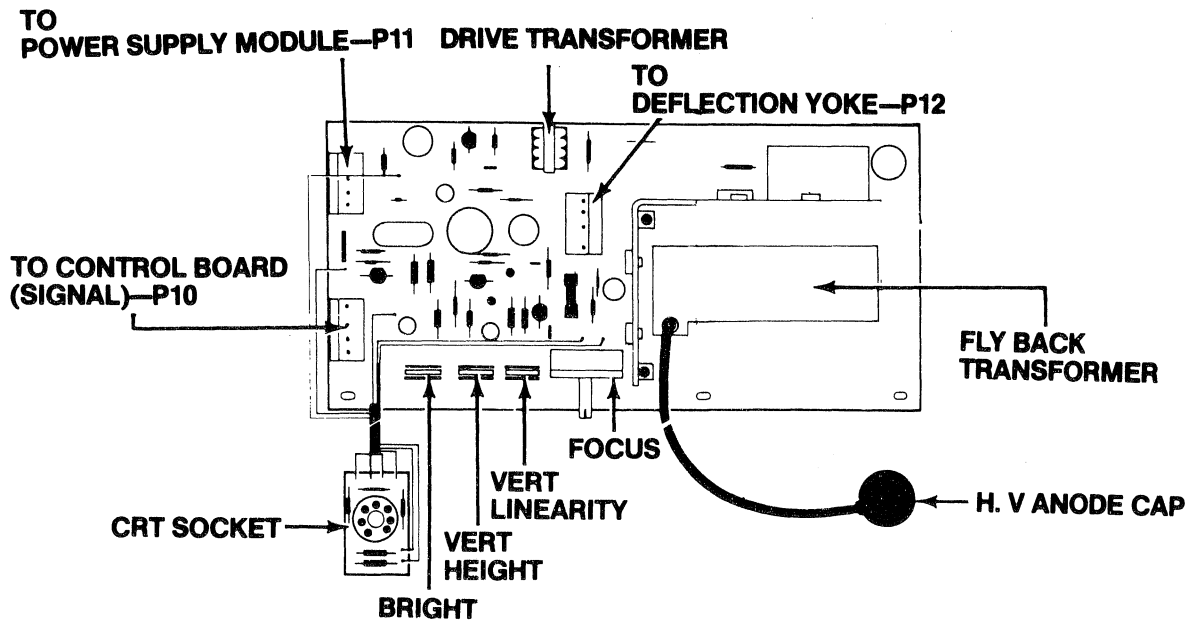

VIDEO MONITOR/POWER SUPPLY SCHEMATICS AND PARTS LIST


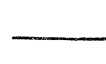
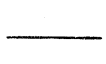

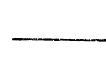
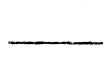






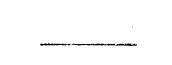


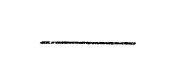
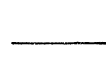
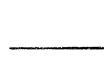

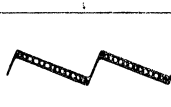
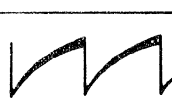














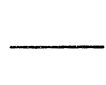
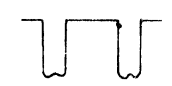


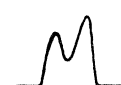
TeleVideo Systems, Inc.
1170 Morse Ave., Sunnyvale, CA 94086
(408) 745-7760 TWX 910-338-7633 "TVI VIDEO"





TR WAVEFORM and VOLTAGE

Attachement 1

Transistor			Base(In)			Collector(Out)			Emitter(GND)		
Location	Parts	Function	Vtg		Wave Form	Vtg		Wave Form	Vtg		Wave Form
			DC V	AC V _{p-p}		DC V	AC V _{p-p}		DC V	AC V _{p-p}	
(IC 1)	LAS1512	Regulation	12	2.5		12	0.0		0.0	0.0	
(IC 2)	LAS1605	∞		1.6		5	0.0		0.0	0.0	
(IC 3)	LAS1812	∞		0.1		-12	0.0		0.0	0.0	
(IC 4)	LAS15CB	∞		1.4		13.8	0.0		0.0	0.0	
Q102	2SC509	∞	78.7	0.0		86.4	1.5		98.0	0.0	
Q103	2SC983	∞	12.0	0.0		75.7	0.0		11.9	0.0	
Q 201	2SA495	Vert Pre Drive	2.0	3.0		0.6	0.57		1.0	1.7	
Q 202	2SC372	Vert Drive	0.68	0.5		8.0	6.5		0.0	0.0	
Q 203	2SC1173	Vert Out	9.36	6.5		12	0.0		8.76	6.5	
Q 204	2SA473	Vert Out	8.0	6.5		0.0	0.0		8.6	6.5	
Q 301	2SC735	Horiz Drive	-0.25	0.64		12	20		0.0	0.0	
Q 302	2SC2233	Horiz Out	-0.08	6		12.8	124		0.0	0.0	
Q 501	2SC983	Video Amp	0.4	3		76.8	25		-0.8	2.8	
D 302	DS-113A	Damping	12.8	132							

DC Voltage reading taken with VTVM from point indicated to chassis ground.

AC Voltage reading taken with Oscilloscope from point indicated to chassis ground



ITEM/ FIND NO.	QTY PER ASSM/REV LEVEL									REFERENCE/ DESIGNATOR	NOMENCLATURE/DESCRIPTION	PART NUMBER/REMARKS
1										R101	2.2M Ohm 1/2W CFR	2186500
2										R102	390 Ohm 1/2W CFR	2186100
3										R105,106,208	4.7K Ohm 1/4W CFR	2053100
4										R107	3.9K Ohm 1/4W CFR	2177400
5										R108	27K Ohm 1/4W CFR	2037300
6										R109,201,205	2.7K Ohm 1/4W CFR	2038300
7										R110	30K Ohm 1/4W CFR	2039300
8										R202	100K Ohm 1/4W CFR	2032100
9										R203	2.2K Ohm 1/4W CFR	2038700
10										R204,212,213	0.6 Ohm 2W Wire Wound Res	2177100
11										R206,503	820 Ohm 1/2W CFR	2186200
12										R207	6.8K Ohm 1/4W CFR	2039100
13										R209,505	47K Ohm 1/4W CFR	2033700
14										R210	330 Ohm 1/4W CFR	2051500
15										R211	150 Ohm 1/4W CFR	2033900
16										R214	270 Ohm 1/4W CFR	2051300
17										R301	470 Ohm 1/4W CFR	2051700
18										R501	47 Ohm 1/4W CFR	2037700
19										R502	90 Ohm 1/4W CFR	2177600
20										R504	56K Ohm 1/4W CFR	2039500
21										R506	220 Ohm 1/2W CFR	2186000

NOTES: /

PAGE 1 OF 5

TITLE VIDEO MONITOR AND POWER SUPPLY PARTS LIST

DATE 1-13-83

 **TeleVideo Systems, Inc.**

ITEM/ FIND NO.	QTY PER ASSM/REV LEVEL									REFERENCE/ DESIGNATOR	NOMENCLATURE/DESCRIPTION	PART NUMBER/REMARKS
22										R507,509	1.5K Ohm 1/2W CFR	2186300
23										R508	10K Ohm 1/2W CFR	2186400
24										SFR1, SFR4	100K Ohm Pot	2177700
25										SFR2	2K Ohm Pot	2177800
26										SFR3	5K Ohm Pot	2177900
27										VR1	500 Ohm Pot	2180200
28										VR2	2M Ohm Pot	2180100
29										TH201	1.1K Ohm Thermistor	2180300
30										C101-109	0.01uF 16V Ceramic 20%	2028700
31										C113	3,300uF 35V Electrolytic	2196500
32										C114,115	0.33uF 35V Tantal	2198100
33										C116	470uF 35V Electrolytic	2198200
34										C117	4700uF 16V Electrolytic	2196600
35										C119	110uF 160V Electrolytic	2196300
36										C120	22uF 160V Electrolytic	2196400
37										C201	10uF 16V Electrolytic	2027300
38										C202,204	4.7uF 16V Tantal	2027500
39										C203	22uF 15V Electrolytic	2025700
40										C205	100uF 10V Electrolytic	2196000
41										C206	22uF 10V Electrolytic	2196100
42										C207	2200uF 10V Electrolytic	2196200

NOTES:

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TITLE VIDEO MONITOR AND POWER SUPPLY PARTS LIST

DATE 1-13-83

 **TeleVideo Systems, Inc.**

ITEM/ FIND NO.	QTY PER ASSM/REV LEVEL									REFERENCE/ DESIGNATOR	NOMENCLATURE/DESCRIPTION	PART NUMBER/REMARKS
43										C208	0.047uF/50V Mylar	2197100
44										C209	0.001uF/50V Mylar	2196900
45										C301	4.7uF/16V Electrolytic	2196700
46										C302	0.01uF/50V Mylar	2197000
47										C303	0.0068uF/200V Mylar	2196800
48										C304	0.047uF/400V Mylar	2197500
49										C305	220uF/16V Electrolytic	2199300
50										C306	16uF/25V NP	2280000
51										C307	0.039uF/50V Mylar	2030500
52										C501	220PF 50V Ceramic	2195900
53										C502	0.01uF/50V	2197000
54										C503	0.01uF 50V Ceramic	2028900
55										C504	0.1uF 600V Mylar	2197300
56										C505	22uF 100V Electrolytic	2196100
57										C506	0.47uF 50V Mylar	2197200
58										SG501	1KV Spark Gap	2030900
59										SW101	SPST 115V 10A/230V 5A Pwr SW	2097300
60										SW102	DPDT 115/230V Power Line	2097400
											Slide Switch	
61										F101	1A/250V	2097000
62										F102,103	3A/125V	2193100

NOTES:

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TITLE
VIDEO MONITOR AND POWER SUPPLY PARTS LIST

DATE
1-13-83

 **TeleVideo Systems, Inc.**

ITEM/ FIND NO.	QTY PER ASSM/REV LEVEL									REFERENCE/ DESIGNATOR	NOMENCLATURE/DESCRIPTION	PART NUMBER/REMARKS
63										M003	Fuse Clip	2180400
64										Q102	KTC 1627A or MPS-A06	2046700
65										Q103,501	2SC983 or 2N5551	2193200
66										Q201	KTA 1015 or 2N3906	2042200
67										Q202	KTC11815 or 2N3904	2046500
68										Q203	2SC1173 or 2N6121	2199700
69										Q204	2SA473 or 2N6124	2202100
70										Q301	KTC 200(2SC1166) or 2N4401	2045500
71										Q302	2SC2233 or MJE13006	2047300
72										IC1	LAS 16CB 13.8V Regulator	2126900
73										IC2	LAS 1605 5V Regulator	2126800
74										V501	B & W Pr 12"	2049100
75										V501	CRT Green P31 12"	2049300
76										D101-108	DS 135D or 1N5391 Rectifier	2200600
77										D109	DS 135C Rectifier	2201400
78										D111,112	EQA01-12 or 1N759A Zener	2201600
											Diode	
79										D302	DS-113A or MRI-1000 Damper	2201700
											Diode	
80										D501	1N914 or KDS1553 Switching	2047500
											Diode	

NOTES:

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TITLE VIDEO MONITOR AND POWER SUPPLY PARTS LIST

DATE 1-13-83

 **TeleVideo Systems, Inc.**

ITEM/ FIND NO.	QTY PER ASSM/REV LEVEL										REFERENCE/ DESIGNATOR	NOMENCLATURE/DESCRIPTION	PART NUMBER/REMARKS
81											D502	DS-130TB or 1N4004 600V	2202200
												Rectifier	
82											D201,202,301	KDS-8513A or 1N920 Silicon	2201800
												Diode	
83											D113,114	DS 135D Rectifier	2200600
84											L202	KYS-00060 D.Y Coil	2200800
85											L201	5.4uH Linearity Coil	2200900
86											L201	Adjustable Linearity Coil	2213600
87											L302	27uH Inductor Coil	2201000
88											T101	Power Transformer	2201100
89											T301	Drive Transformer	2201200
90											T302	Flyback Transformer	2201300

NOTES:

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VIDEO MONITOR/POWER SUPPLY SCHEMATICS AND PARTS LIST

TeleVideo Systems, Inc.
1170 Morse Ave., Sunnyvale, CA 94086
(408) 745-7760 TWX 910-338-7633 "TVI VIDEO"



VIDEO MONITOR

The Video Monitor is made up of two sections; the vertical amplifier and the horizontal amplifier. These amplifiers provide the voltages necessary to drive the CRT yoke, which deflects the electron beam across the CRT.

The electron beam which is generated by the CRT electron gun is swept across and down the screen to create what are called scan lines, which we discussed in character generation. The movement of the beam is driven by vertical and horizontal sweep rates which are both determined by the display circuitry on the logic board. The horizontal sweep is approximately 16KHz and the vertical sweep is usually 60Hz for domestic and 50Hz for European applications.

The Horizontal sync pulses coming into the Video Monitor are inverted by transistor Q305 and then trigger IC301. In the precision timing mode of operation, the pulse width of IC301 is precisely controlled by R304, R306 and C312. The output of IC301 is then coupled by Q303 and Q301 to drive transformer T301. The output of T301 is then amplified by Drive transistor Q302. This transistor drives both horizontal yoke windings, as well as the step-up transformer that produces the anode high voltage and the grid voltage for the CRT grid in the neck of the CRT. A new width coil is used for better Raster width control.

The Vertical sync. pulse's coming into the Video Monitor are converted to a sawtooth wave-form. When this is first done the sawtooth pulse is going from a negative leading edge to a positive falling edge, the pulse goes through transistor Q202 and is inverted to it's usable form. Now the pulse is going from a positive 2 volt leading edge to a negative - 2.5 volt falling edge. The timing here is critical because with in one sawtooth pulse there are 250 horizontal pulse's that will occur. This is the total number of horizontal scan lines on the CRT. The sawtooth pulse has to be proportional to all the previous pulse's or the timing will be wrong for the vertical sweep as well as the horizontal sweep. When the vertical sweep is negative Q201 is conducting and C202 will be discharging. During the positive portion Q201 will cut off and allow C202 to charge. During the time that C202 is charging the electron beam will be scanning. The vertical sweep scans from top to the bottom, once the scan reaches the bottom of the page a (blank) occurs the video beam is turned off and it is retraced back to the top of the screen, this is the time when C202 is discharging. After the retrace the beam is once again turned on and begins it's scan routine. Adjusting SFR1 (vert. height) and SFR2 (vert. linearity) will change the rate of charge of C202 thus changing the slope of the sawtooth pulse.

POWER SUPPLY

Voltages are created and regulated as follows. A 24VAC voltage is rectified by Diode D105, 106, 107 and 108 resulting in a 31VDC output. This 31V is then filtered through C106 (3300MF/50V) and applied to five Volt switching regulator IC103. The output voltage of IC103 is filtered by L101 (200uH 5%) and C110 (2200MF/10V).

The raw 24VDC voltages for the positive and negative 12VDC are rectified by Diodes D101, 102, 103 and 104. The +24V is regulated by IC101 and Q101 for output voltage +12V. This is then filtered through C116. Negative 12V is stabilized by IC102 and filtered by C105.

A 79 volt AC waveform is applied to the halfwave rectifier D109 which is filtered by C115. the resulting 92VDC level is then regulated by a series voltage regulator. The stabilization network comprised of sensing and control elements, Q103 and Q102.

The 75VDC level goes to the Cathode of the CRT tube and spot killed quickly by D501 and C506 to protect burn out on the screen surface of when user turned off.

The high voltage needed to drive the CRT tube V501 are derived from the flyback transformer T302 on the Video Monitor.

TUBE SPECIFICATION

14 INCH 90 DEGREE, HIGH RESOLUTION

DISPLAY TUBE

340CXB 4N

The 340CXB4N is a 14 inch 90 degree high resolution, rectangular display tube primarily intended for use as a alpha-numerical and graphic display tube for computer peripheral devices. The tube is provided with banded type integral implosion protection (with mounting lugs). The tube features a low reflectance, high contrast screen.

ELECTRICAL DATA

Heating

Indirect by AC or DC:

Heater voltage. 12.0 volts

Heater current. 75 mA

Focusing Method. Electrostatic

Deflection Method. Magnetic

Deflection Angles (Approx.)

Diagonal. 90 degrees

Horizontal. 80 degrees

Vertical. 65 degrees

Anode voltage 16,000 max. volts
9,000 min. volts

Using high voltage with this tube internal flash-overs may occur, which may cause damage to the cathode of the tube and to various circuit components on the video monitor board. Therefore it is necessary to provide protective circuits using spark-gaps etc. These should be connected as illustrated in figure #1 below.

Figure 1.

No other connections between external conductive coating and chassis are permissible.

OPTICAL DATA

Faceplate.	Filterglass
Anti-reflection treatment	Treated
Screen	Aluminized
Appearance.	Low Reflective*

*

The dark-colored screen, in combination with the filterglass, produces the low reflectivity (equivalent to a 20% light transmission filterglass) for easy-to-see display.

MECHANICAL DATA

Tube Dimensions:

Overall length.	297.0 max. mm
Greatest dimensions of tube (excluding lugs)	
Diagonal.	348.3 +/- 2.7 mm
Width	295.3 +/- 2.7 mm
Height.	237.0 +/- 2.7 mm
Useful screen dimensions (projected)	
Diagonal.	322.3 min. mm
Width	270.2 min. mm
Height.	210.7 min. mm

Pin Position Alignment	Pin No 7 aligns approx. with anode contact.
Operating Position	Any
Weight (approx.)	3.5 kg
Implosion Protection	Tension band (with mounting lugs)

GENERAL CONSIDERATIONS:

1. Tube handling. Care should be taken not to scratch the tube.
2. Impact. The tubes should never be exposed to impacts of more than 30G during handling or transportation.
3. Grounding. The external conductive coating of the tube should be grounded with multiple contacts (e.g. a contact plate having many fingers.) Poor contact might cause local heating resulting in tube leakage.

WARNING

SHOCK HAZARD:

The high voltage at which the tube is operated may be very dangerous. Design of the equipment should include safeguards to prevent the user from coming in contact with the high voltage. Extreme care should be taken in the servicing or adjustment of any high voltage circuit.

Caution must be exercised during the replacement or servicing of the tube since a residual electrical charge is stored within the tube. Before handling the tube remove any undersible residual high voltage charge from the tube, by shorting the anode contact button to the frame of the terminal as illustrated in figure #2. Discharging the high voltage to isolated metal parts such as cabinets and control brackets may produce a shock hazard.

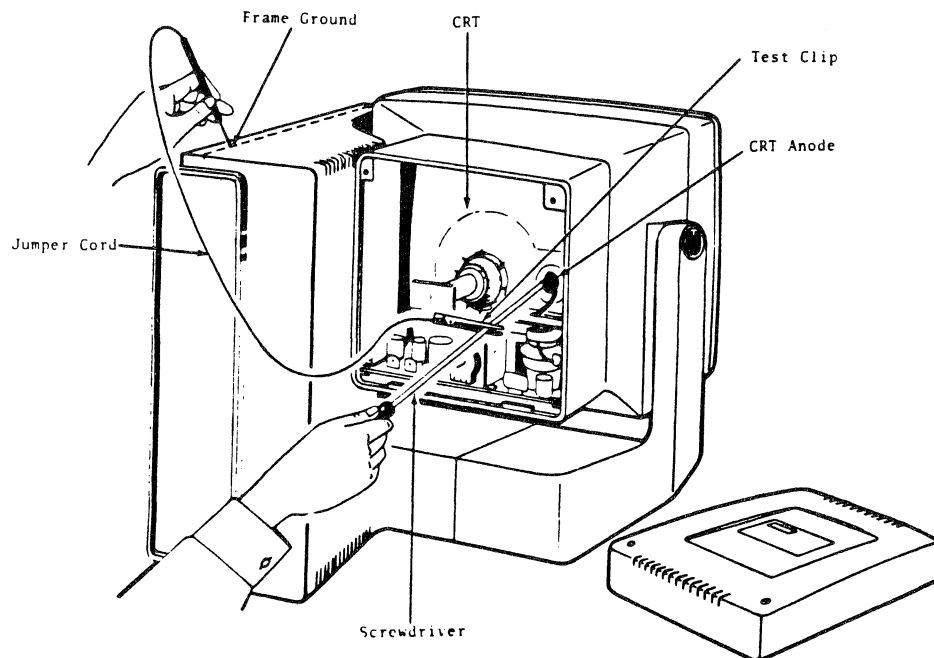


















































Figure 2.

TABLE 6-1
SIGNAL WAVEFORMS

LOCATION	FUNCTION	DC	AC	BASE(IN)	DC	AC	COL.(OUT)	DC	AC	EMIT(GND)
IC101	REGULA- TION	22	1.0		12	0.0		0.0	0.0	
IC102	"	-22	0.0		-12	0.0		0.0	0.0	
IC013	"	28	1.0		5	0.0		0.0	0.0	
Q101	"	22	1.0		12	0.0		0.0	0.0	
Q102	"	65	0.0		100	1.0		65	0.0	
Q103	"	125	0.0		50	0.0		12	0.0	
Q201	VERT AMP	-0.8	3.0		-0.3	0.6		0.0	1.5	
Q202	"	0.2	0.5		3.5	8.0		0.0	0.0	
Q203	"	5.0	8.0		12	0.0		5.0	8.0	
Q204	"	4.0	8.0		0.0	0.0		4.0	8.0	
Q301	HORIZ AMP	-0.7	1.5		0.0	15		0.0	0.0	
Q302	"	-3.0	4.0		0.0	160		0.0	0.0	
Q303	"	2.2	1.5		3.0	1.5		0.8	3.5	
Q304	"	0.6	0.0		0.0	3.0		0.0	0.0	
Q305	"	-1.2	2.2		0.0	8.0		0.0	0.0	
Q501	VIDEO AMP	0.4	0.0		37	27		0.0	0.0	

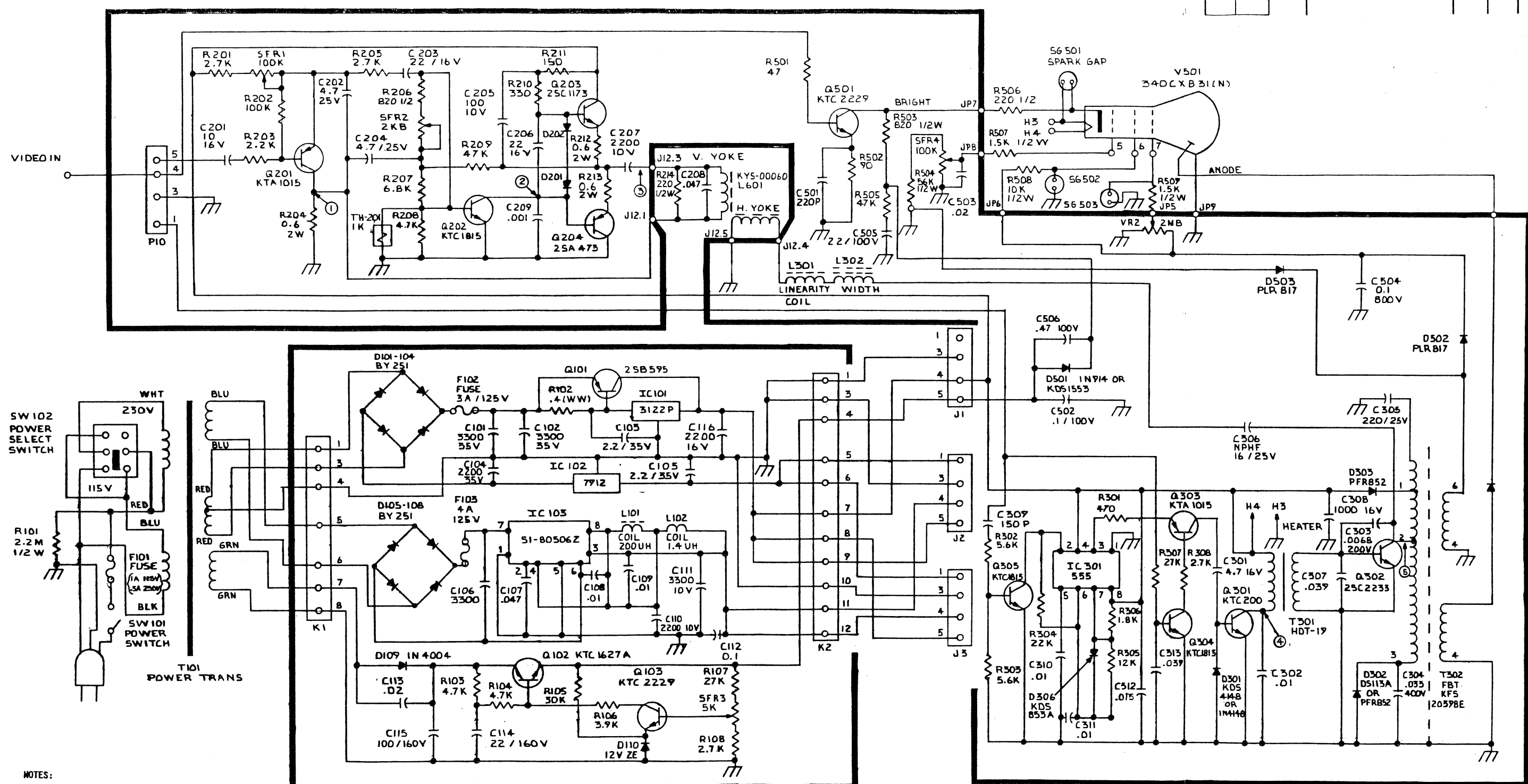
ALL VOLTAGE MEASURES MADE WITH OSCILLOSCOPE

DC READING TAKEN OF SIGNAL BASELINE

AC READING TAKEN OF PEAK TO PEAK AMPLITUDE

NOTE: ANY RIPPLE MEASUREMENT LESS THAN ONE VOLT IS NOT ILLUSTRATED.

APPLICATION	REVISION	DESCRIPTION	ECO NO.	DATE	APPROVED
NEXT ASSY	FIRST USED ON	A	PROD RELEASE	2064	4/10/63



- NOTES:
- 1 ALL RESISTOR VALUES IN OHMS.
 - 2 ALL CAPACITOR VALUES IN FARADS.
 - 3 UNLESS OTHERWISE STATED, WORKING VOLTAGES OF CAPACITORS ARE 50 VOLTS.
 - 4 THIS SCHEMATIC DIAGRAM COVERS BASIC OR REPRESENTATIVE CHASSIS ONLY. THERE MAY BE SOME COMPONENTS OF PARTIAL SCHEMATIC BETWEEN ACTUAL CHASSIS AND THE SCHEMATIC DIAGRAM.

1	Vpp 0.6	2	Vpp 8.0	3	Vpp 8.0	4	Vpp 15	5	Vpp 160

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MATERIAL		TOLERANCES UNLESS NOTED		CONTRACT NUMBER		DESIGN DATE 5/2/63	
FINISH		DIMENSION		DR		DATE	
REMOVE ALL BURRS AND SHARP EDGES		X = .001		CHK		DATE	
		X = .002		ENGR		DATE	
		X = .005		DESIGN		DATE	
		X = .010		CUSTOMER APPROVAL			
		X = .020					
		X = .030					
		X = .040					
		X = .050					
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TeleVideo Systems, Inc. 587
PCB SCHEMATIC DIAGRAM
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