

## SPECIFICATIONS

## TOEI 19" COLOR DISPLAY MONITOR

TYPE CM-A20HC (TOEI CO., LTD.)

## RATINGS:

1. Video Input Impedance: 220 Ohms for each Channel.
2. Input Signal Level: Video Signal: R, G, B, 2-5 Volts, P-P (Positive Pol.)  
Composite Sync Signal (Negative Horizontal Pol.)
3. Scanning Horizontal: 15.75 KHz +200 HZ.
4. Power Supply Voltage & Frequency: 90-110 Volts, 50/60 HZ. Transformer Secondary Output, 100 V. AC 1.3A.
5. Functional Temperature: 0-45° C.
6. Humidity 20% - 90% (nonfrost).
7. Installation Temperature: -10° - 70° C.
8. Resolution: Center 320 Lines.
9. Grid Pattern Distance Distortion: Horizontal: Less than 7%, upon EIA Grid Pattern Signal.  
Vertical: Less than 5%, upon EIA Grid Pattern Signal.
10. Picture Tube: 19 inch, 90° Color Brown Tube.
11. Power Consumption: Approximately 100VA.
12. High Voltage Protection: AC 1KV one minute.
13. Isolation Resistance: DC 50 V. more than 100M Ohm.
14. Body Structure: Dec. Outside Drawing C-351.
15. Weight: Body 19kg, 41.8 lbs.

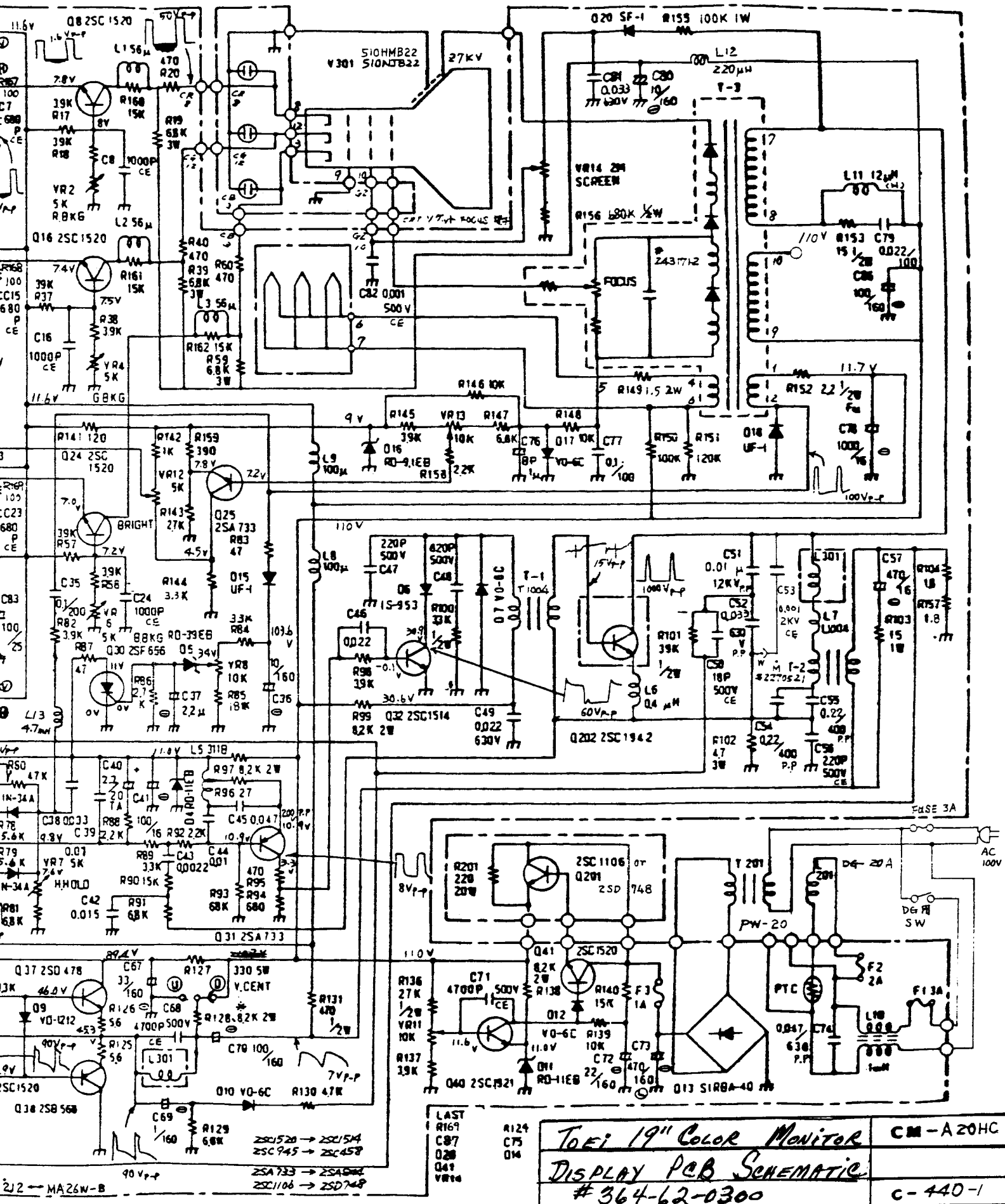
PARTS LISTMODEL No. CM-A20HC

<u>NO.</u>	<u>SYMBOL:</u>	<u>DESCRIPTION:</u>	<u>USAGE:</u>
1	V301	CRT 510NJB22(510UXB22-NEC) (510TDB22-Matsushita)	1
2	Q1, 2, 6, 9, 10 14, 17, 18, 22, 26, 28, 29, 33, 34, 39.	TRANSISTOR 2SC458 (C)(D) (2SC2309 - Hitachi) (2SC2320 - Mitsubishi)	15
3	Q3, 4, 5, 7, 11, 12, 13, 15, 19, 20, 21, 23, 25, 31, 35	TRANSISTOR, 2SA844 (C)(D) (2SA1029-Hitachi) (2SA999 - Mitsubishi)	15
4	Q8, 16, 24, 32 36, 41	TRANSISTOR, 2SC1520 or 2SC1514 (2SC1506 - NEC)	6
5	Q27	TRANSISTOR, 2SA564 (A733)	1
6	Q37	TRANSISTOR, SD1138 or 2SD478(C)(B)	1
7	Q38	TRANSISTOR, 2SB861 or 2SB568(C)(B)	1
8	Q40	TRANSISTOR, 2SC1921	1
9	Q202	TRANSISTOR, 2SD898 or 2SC1942	1
10	Q201	TRANSISTOR, 2SD748 (C)(B) (2SD748A Hitachi)	1
11	Q30	THYRISTOR, CW-01B	1
12	D1, 6	Diode, IS2076	2
13	D2, 3	Diode, IN34A	2
14	D4, 11	Diode, HZ-11B-2	2
15	D5	Diode, HZ-36-3	1
16	D7, 10, 12, 17	Diode, V06C	4
17	D8, 9	Diode, MA26W-B	2
18	D13	Diode, SIRBA-40	1
19	D15, 18	Diode, SM-1-04 or UF-1	2
20	D20	Diode, SM-05-20FRZ or SF-1	1
21	D16	Diode, HZ-9B-2	1
22	PTC	THYRISTOR, ERP-F5BOMO80F	1
23	L12	INDUCTOR, 220UH	1
24	L1, 2, 3	INDUCTOR, 56UH	3
25	L8, 9	INDUCTOR, 100UH	2
26	L4, 13	INDUCTOR, 4.7mH	2
27	L11	HORIZONTAL INDUCTOR, H-12UH	1
28	L6	CHOKING COIL, 0.4UH	1
29	L5	H. OSC. COIL, M-2311B	1
30	L10	LINE FILTER, 1mH	1
31	T3	FLYBACK TRANSFORMER, P2431712	1
32	T2	PIN CUSHION TRANSFORMER, P2270521	1
33	T1	H. DRIVE TRANSFORMER, T-1004	1
34	L201	ERASER COIL, DG-20A	1
35	L7	H. LINEARITY COIL, L-1004	1
36	T201	POWER TRANSFORMER, PW-14 or PW-20	1

<u>NO.</u>	<u>SYMBOL:</u>	<u>DESCRIPTION:</u>	<u>USAGE:</u>
37	VR1, 3, 5	SEMIFIXED VOLUME EVLSOAAOOb13(1K)	3
38	VR2, 4, 6	SEMIFIXED VOLUME EVLSOAAOOb53(5K)	3
39	VR 7, 12	SEMIFIXED VOLUME, V18K-3-2(8US)B5K	2
40	VR10	SEMIFIXED VOLUME, V18K-3-2(8US)B20K	1
41	VR 9	SEMIFIXED VOLUME, V18K-3-2(8US)B50K	1
42	VR14	SEMIFIXED VOLUME, V18K-3-2(8US)B2M	1
43	VR 8, 11, 13	SEMIFIXED VOLUME, SR-19B10K	3
44	R104, 157	FIXED RESISTOR, 1/4W., 1.8 Ohm	2
45	R125, 126	FIXED RESISTOR, 1/4 W., 5.6 Ohm	2
46	R117	FIXED RESISTOR, 1/4W., 22 Ohm	1
47	R96, 123	FIXED RESISTOR, 1/4W., 27 Ohm	2
48	R83, 87	FIXED RESISTOR, 1/4W., 47 Ohm	2
49	R167, 168, 169, R15, 35, 55, 135	FIXED RESISTOR, 1/4W., 100 Ohm	7
50	R141	FIXED RESISTOR, 1/4W., 120 Ohm	1
51	R164, 165, 166, R16, 36, 56, 66	FIXED RESISTOR, 1/4W., 220 Ohm	7
52	R120	FIXED RESISTOR, 1/4W., 270 Ohm	1
53	R1, 8, 21, 28, 41, 48, 61	FIXED RESISTOR, 1/4W., 330 Ohm	7
54	R76, 77, 159	FIXED RESISTOR, 1/4W., 390 Ohm	3
55	R20, 40, 60, R95, 116	FIXED RESISTOR, 1/4W., 470 Ohm	5
56	R11, 31, 51	FIXED RESISTOR, 1/4W., 560 Ohm	3
57	R94, 163	FIXED RESISTOR, 1/4W., 680 Ohm	2
58	R4, 7, 12, 14, 24, 27, 32, 34, 44, 47, 52, 54, 64, 65, 73, 113, 133, 142.	FIXED RESISTOR, 1/4W., 1K Ohm	18
59	R132	FIXED RESISTOR, 1/4W., 1.2K Ohm	1
60	R72, 75	FIXED RESISTOR, 1/4W., 1.5K Ohm	2
61	R88, 92, 110, 112 119, 158	FIXED RESISTOR, 1/4W., 2.2K Ohm	6
62	R70, 86, 143	FIXED RESISTOR, 1/4W., 2.7K Ohm	3
63	R89, 121, 122, 144	FIXED RESISTOR, 1/4W., 3.3K Ohm	4
64	R17, 18, 37, 38, 57, 58, 82, 98, 145, 137	FIXED RESISTOR, 1/4W., 3.9K Ohm	10
65	R10, 30, 50, 80, 107, 130, 134	FIXED RESISTOR, 1/4W., 4.7K Ohm	7
66	R78, 79	FIXED RESISTOR, 1/4W., 5.6K Ohm	2
67	R71, 81, 91, 109 129, 147	FIXED RESISTOR, 1/4W., 6.8K Ohm	6
68	R5, 25, 45, 105	FIXED RESISTOR, 1/4W., 8.2K Ohm	4
69	R139, 146, 148	FIXED RESISTOR, 1/4W., 10K Ohm	3
70	R13, 33, 53	FIXED RESISTOR, 1/4W., 12K Ohm	3
71	R74, 90, 140, 160, 161, 162	FIXED RESISTOR, 1/4W., 15K Ohm	6
72	R106	FIXED RESISTOR, 1/4W., 15K Ohm	1
73	R85	FIXED RESISTOR, 1/4W., 18K Ohm	1
74	R2, 22, 42, 62, 67, 68, 108, 115, 118	FIXED RESISTOR, 1/4W., 22K Ohm	9
75	R3, 23, 43, 63	FIXED RESISTOR, 1/4W., 27K Ohm	4
76	R84, 114	FIXED RESISTOR, 1/4W., 33K Ohm	2
77	R6, 26, 46	FIXED RESISTOR, 1/4W., 39K Ohm	3
78	R69	FIXED RESISTOR, 1/4W., 47K Ohm	1

<u>NO.</u>	<u>SYMBOL:</u>	<u>DESCRIPTION:</u>	<u>USAGE:</u>
79	R93	FIXED RESISTOR, 1/2W., 68K Ohm	1
80	R151	FIXED RESISTOR, 1/2W., 120K Ohm	1
81	R111	FIXED RESISTOR, 1/2W., 180K Ohm	1
82	R9, 29, 49	FIXED RESISTOR, 1/2W., 330K Ohm	3
83	R153	FIXED RESISTOR, 1/2 W., 150 Ohm	1
84	R131	FIXED RESISTOR, 1/2 W., 470 Ohm	1
85	R100	FIXED RESISTOR, 1/2 W., 3.3K Ohm	1
86	R136	FIXED RESISTOR, 1/2 W., 27K Ohm	1
87	R101	FIXED RESISTOR, 1/2 W., 39K Ohm	1
88	R156	FIXED RESISTOR, 1/2 W., 680K Ohm	1
89	R152	FUSE RESISTOR, 1/2 W., 2.2 Ohm	1
90	R103	FIXED RESISTOR, 1 W., 15 Ohm	1
91	R155	FIXED RESISTOR, 1 W., 1.8K Ohm	1
92	R149	FIXED RESISTOR, 2 W., 1.5 Ohm	1
93	R97, 99, 128, 138	FIXED RESISTOR, 2W., 8.2K Ohm	4
94	R102	FIXED RESISTOR, 3W., 4.7 Ohm	1
95	R19, 39, 59	FIXED RESISTOR, 3W., 6.8K Ohm	3
96	R127	CEMENT RESISTOR, 5W., 330 Ohm	1
97	R201	CEMENT RESISTOR, 20 W., 220 Ohm	1
98	C27	Electrolytic Cap., CE04W, 1mf, 50V.	1
99	C58, 69	Electrolytic Cap., CE04W, 1mf, 160V.	2
100	C37	Electrolytic Cap., CE04W, 2.2mf, 50V.	1
101	C36, 66, 80	Electrolytic Cap., CE04W, 10mf, 160V.	3
102	C3, 11, 19	Electrolytic Cap., CE04W, 22mf, 16V.	3
103	C72	Electrolytic Cap., CE04W, 22mf, 160V.	1
104	C67	Electrolytic Cap., CE04W, 33mf, 160V.	1
105	C1, 9, 17, 25	Electrolytic Cap., CE04W, 47mf, 10V.	4
106	C64, 87	Electrolytic Cap., CE04W, 47mf, 16V.	2
107	C41	Electrolytic Cap., CE04W, 100mf, 16V.	1
108	C80, 84	Electrolytic Cap., CE04W, 100mf, 25V.	2
109	C70, 86	Electrolytic Cap., CE04W, 100mf, 160V.	2
110	C2, 10, 18, 62	Electrolytic Cap., CE04W, 220mf, 16V.	4
111	C57	Electrolytic Cap., CE04W, 470mf, 16V.	1
112	C73	Electrolytic Cap., CE04W, 470mf, 160V.	1
113	C78	Electrolytic Cap., CE04W, 1000mf, 16V.	1
114	C4, 12, 20, 76	Non-pole Lytic Cap., 1mf, 50V., CE04W	4
115	C29	Tantalum Lytic Cap., 0.33mmf, 35V.	1
116	C40	Tantalum Lytic Cap., 2.2mmf, 20V.	1
117	C61	Tantalum Lytic Cap., 10mmf, 16V.	1
118	C63	Tantalum Lytic Cap., 68mmf, 16V.	1
119	C51	P.P. Cap., ECW-H12H, 0.012mf	1
120	C49	P.P. Cap., ECQ-F, 0.022mmf	
121	C52, 31	P.P. Cap., ECQ-F, 0.033mmf, 630V.	2
122	C45	P.P. Cap., ECQ-F, 0.047mmf, 200V.	1
123	C74	P.P. Cap., ECQ-F, 0.047mmf, 630V.	1
124	C54, 55	P.P. Cap., ECQ-F, 0.22mmf, 400V.	2
125	C53	P.P. Cap., ECK-D3D102, .001mf, 2KV	1
126	C6, 14, 22	Mylar Cap., .001mmf, 50V.	3
127	C43	Mylar Cap., .0022mmf, 50V.	1
128	C26, 32, 39, 44, 85	Mylar Cap., .01mmf, 50V.	5

<u>NO.</u>	<u>SYMBOL:</u>	<u>DESCRIPTION:</u>	<u>USAGE:</u>
129	C42	Mylar Cap., .015mmf, 50V.	1
130	C33, 34, 46	Mylar Cap., 0.022 mmf, 50V.	3
131	C79	Mylar Cap., 0.022mmf, 100V.	1
132	C38	Mylar Cap., 0.033mmf, 50V.-	1
133	C59, 60, 77	Mylar Cap., 0.1mmf, 100V.	3
134	C50	Ceramic Cap., 18ppf, 500V.	1
135	C5, 13, 21	Ceramic Cap., 47ppf, 500V.	3
136	C47, 56, 65	Ceramic Cap., 220ppf, 500V.	3
137	C28, 30, 31	Ceramic Cap., 330ppf, 500V.	3
138	C7, 15, 23	Ceramic Cap., 680ppf, 500V.	3
139	C48	Ceramic Cap., 820ppf, 500V.	1
140	C8, 16, 24, 82	Ceramic Cap., 1000ppf, 500V.	4
141	C68, 71	Ceramic Cap., 4700ppf, 500V.	2
142	C35	MF Cap., 0.1mmf, 200V.	1
143		P.C. Base Board, M-7243 (A14)	1
144		CRT Socket Board, M-7234	1
145		CRT Socket Cover, A-609	2
146		CRT Socket, HPS-0079-01-011	1
147	F3	Fuse, 1A	1
148	F2	Fuse, 2A	1
149	F1	Fuse, 3A	1
150		Fuse Holder	6
151	L301	Deflecting Yoke, Z260017	1
152		Purity Magnet (6 pcs.) #89-1712-00	1



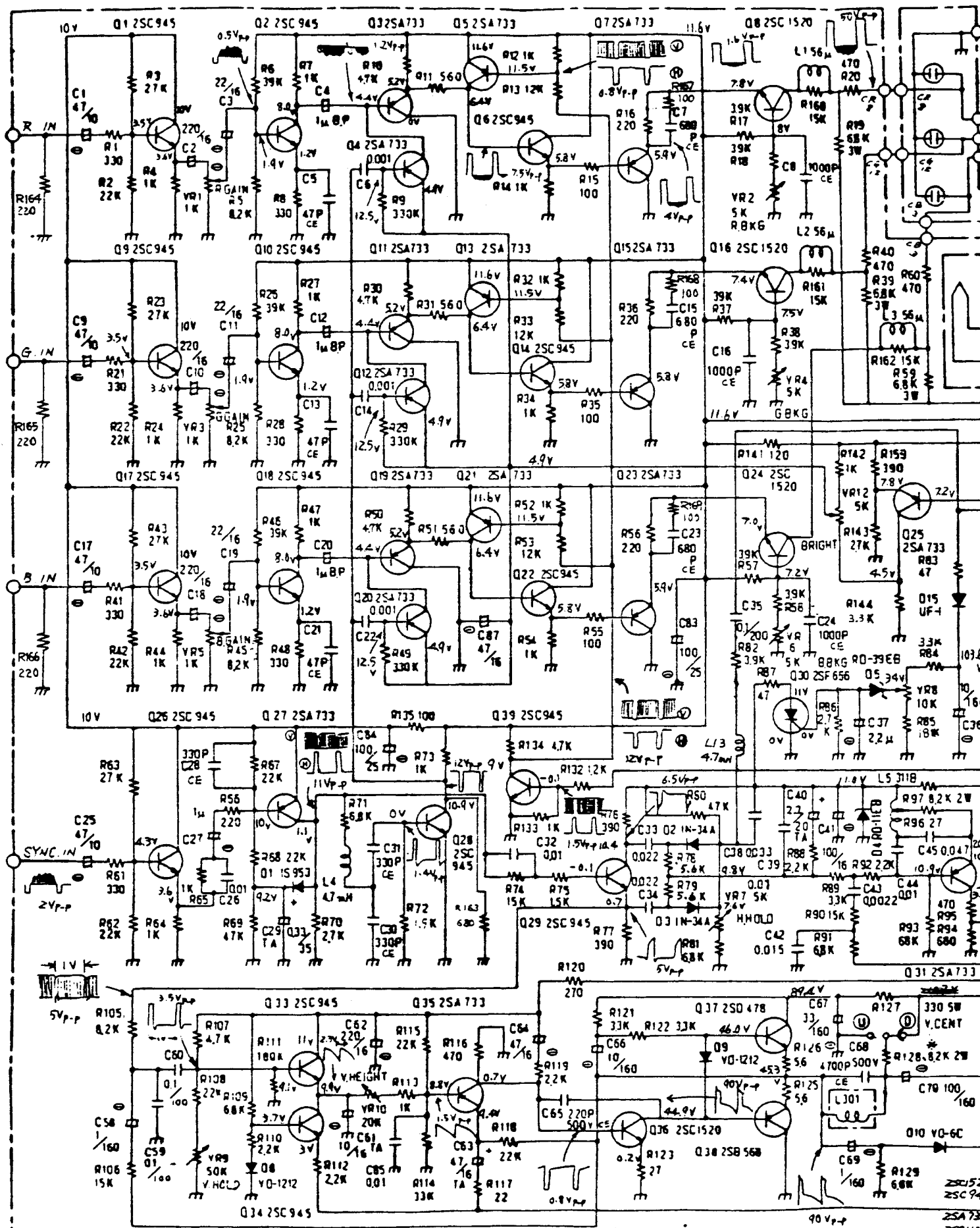
- LAST  
 R169  
 C87  
 Q28  
 Q41  
 VR16
- R124  
 C75  
 D16

Toei 19" Color Monitor  
 DISPLAY PCB SCHEMATIC  
 #364-62-0300

CM-A20HC  
 C-440-1

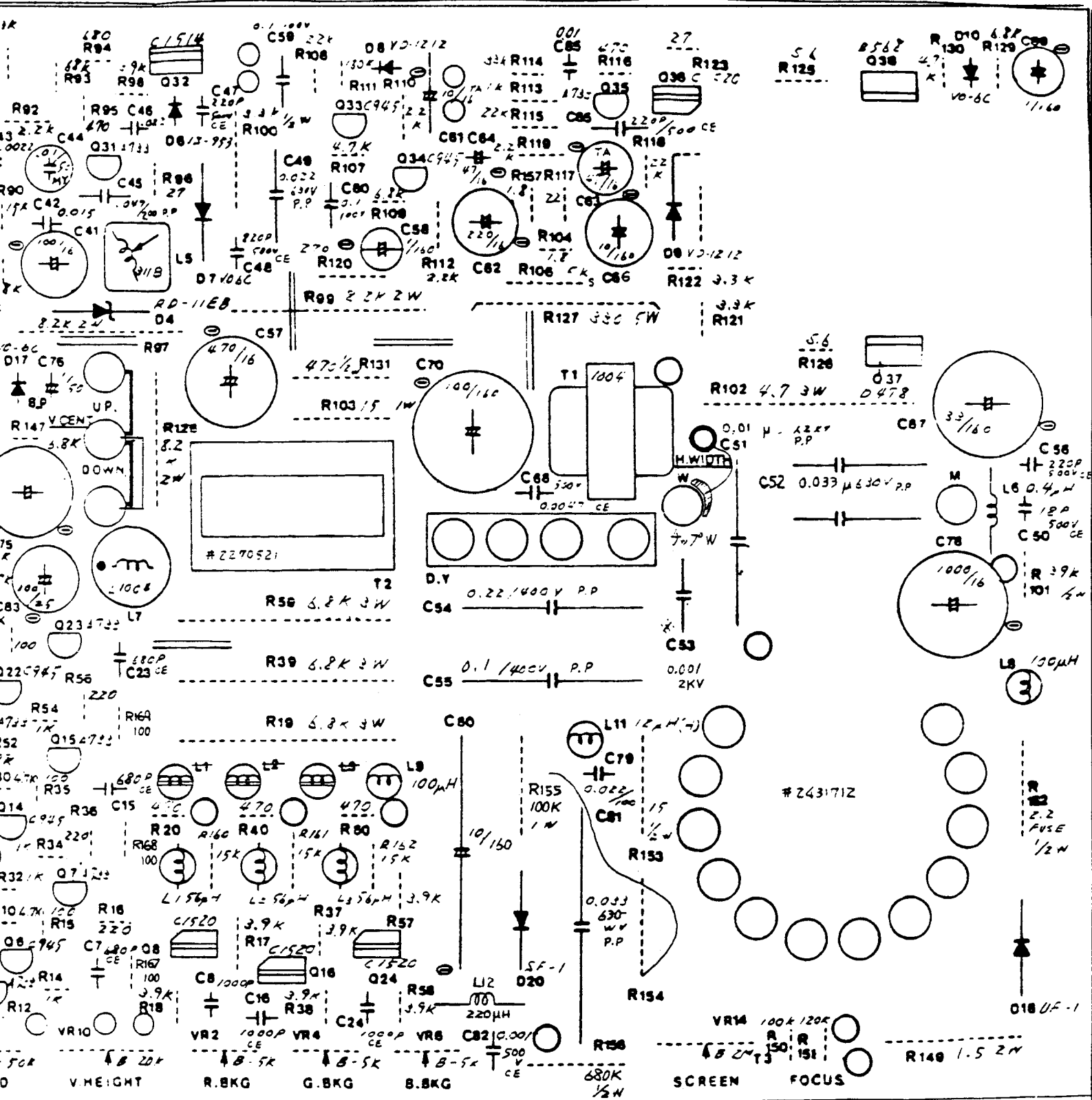
2J2 → MA26W-B

28C1520 → 28C154  
 28C945 → 28C458  
 28A733 → 28A04  
 28C1106 → 28D748



1S953 → 1S2076 RD 9.1EB → HZ9B-2 RD11EB → HZ11B-2 RD31EB → HZ36-3 VD12J2 → MA26W-B

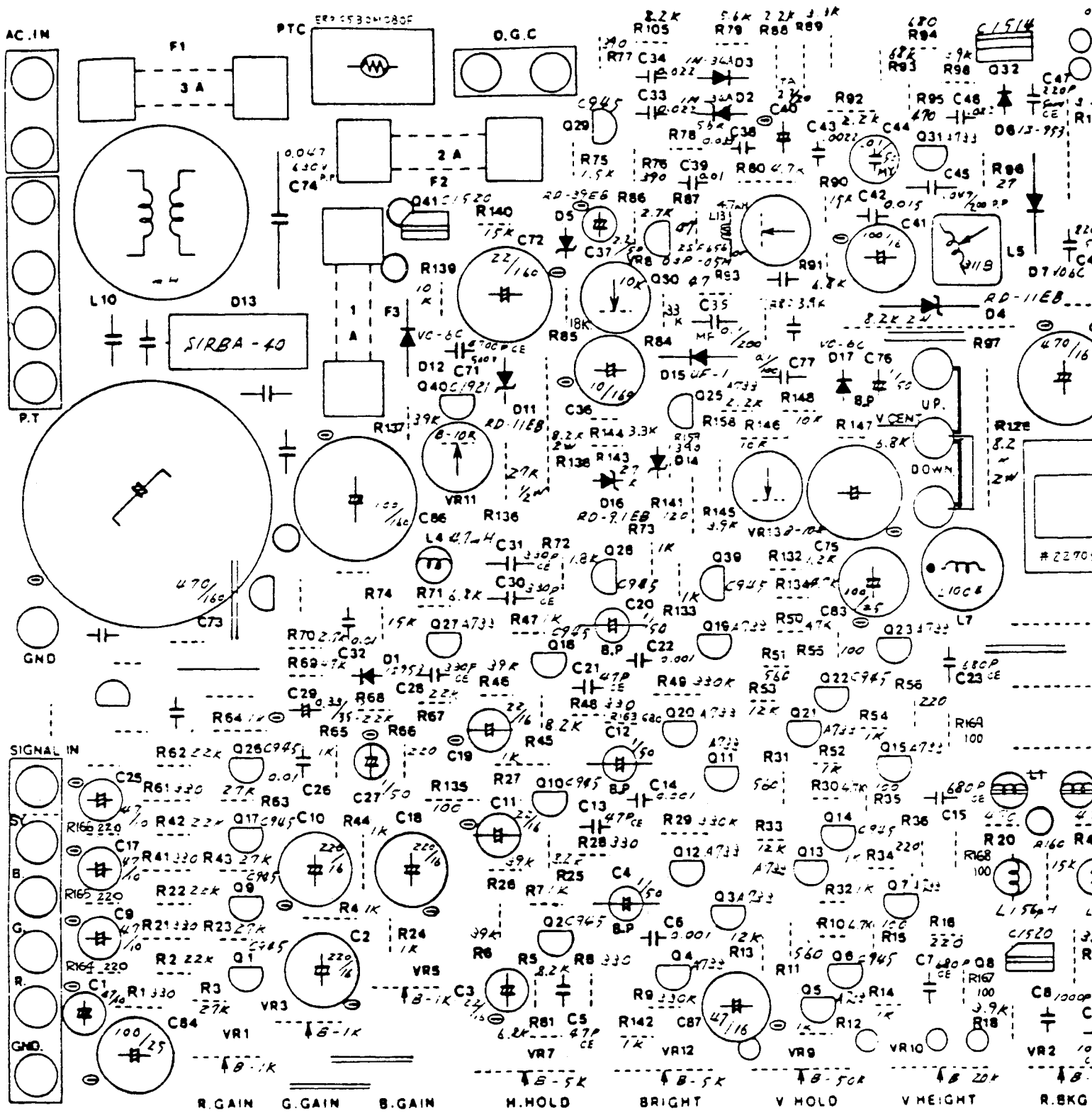
2SC1520  
2SC945  
2SA733  
2SC1104



2  
-2  
-3  
6W-B

TOEI 19" COLOR MONITOR	CM-A20HC
DISPLAY PCB ASSEMBLY	
#364-62-0200	





54 5 26

R144 39K → 3.3K

2SC1520 ↔ 2SC1514

2SC945 ↔ 2SC458

2SA733 ↔ 2SA344

2SC1106 ↔ 2SD748

1S953 ↔ 1S2076

RD91EB ↔ HZ9B-2

RD11EB ↔ HZ11B-2

RD39EB ↔ HZ36-3

VD1212 ↔ MA26W-B

A844 829