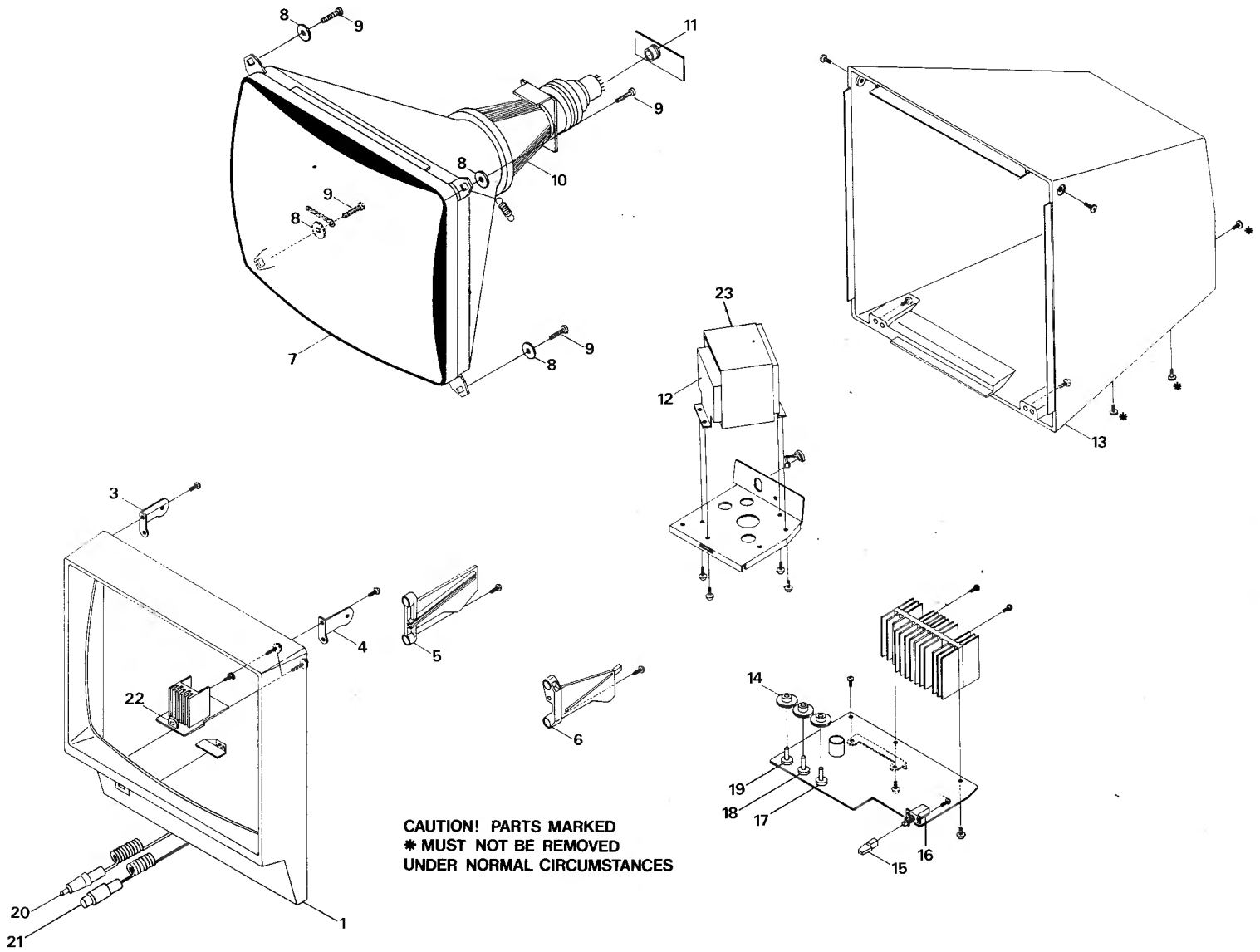


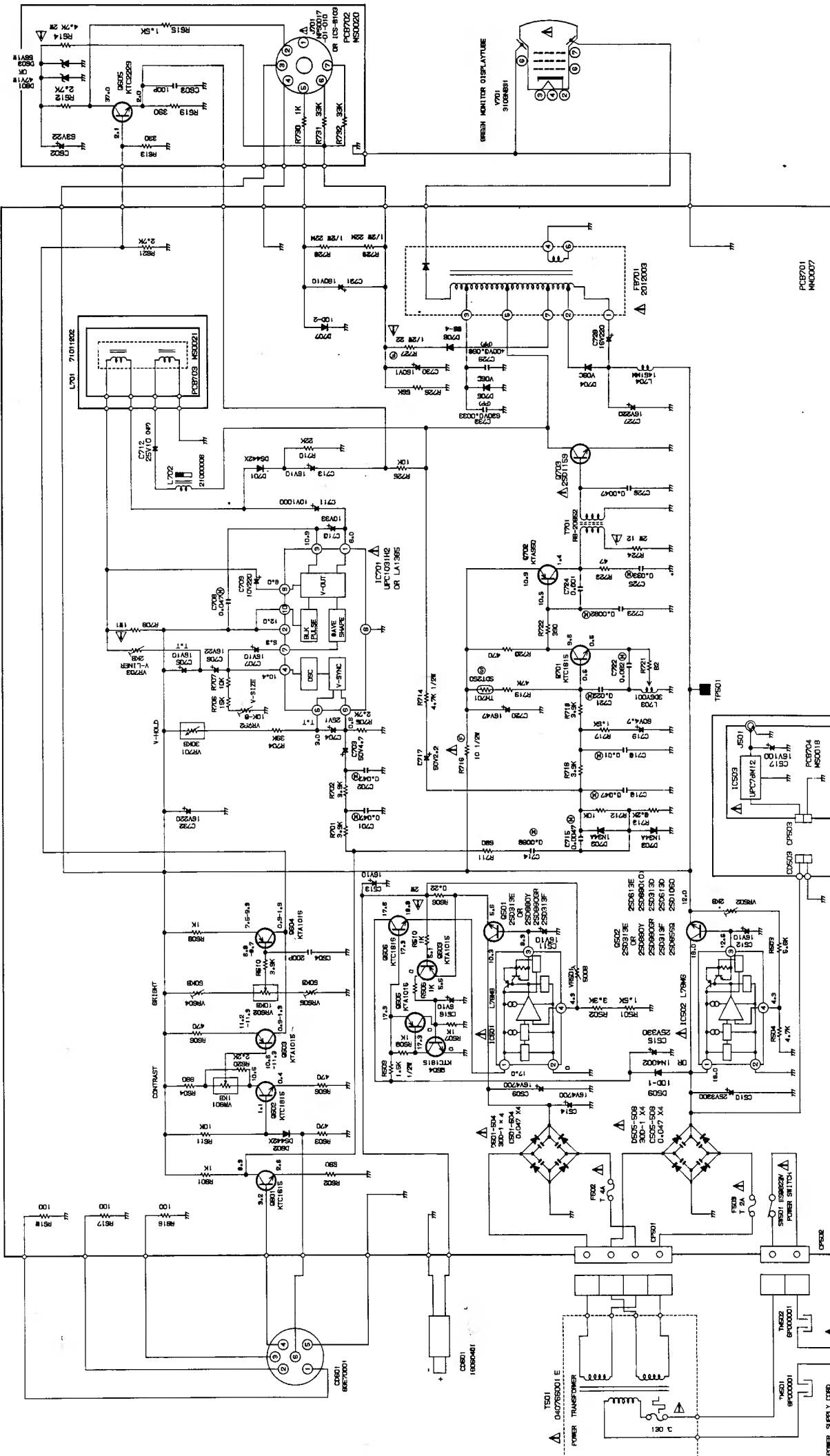
GT65 CABINET EXPLODED VIEW



**CAUTION! PARTS MARKED
* MUST NOT BE REMOVED
UNDER NORMAL CIRCUMSTANCES**

GT65 CABINET PARTS LIST

Sym	Description	Part No.
1	Front Cabinet	170831
2	Cable Clamp	170502
3	Bracket Cabinet (L)	170504
4	Bracket Cabinet (R)	170503
5	Bracket P.C.B. (L)	170505
6	Bracket P.C.B. (R)	170506
7	C.R.T. Green	170507
8	Metal Washer C.R.T.	170508
9	Fixing Screw C.R.T.	170509
10	Deflection Yoke	170510
11	C.R.T. Socket	170511
12	Power Tx.	S/170832
13	Rear Cabinet	170513
14	Control Knobs	170514
15	Button Power	170515
16	On/Off Switch	170516
17	V. Hold Pot.	170833
18	Contrast Pot.	170518
19	Brightness Pot.	170519
20	D.C. Cord	170316
21	DIN Cord	170317
22	D.C. Jack	170834
23	u Metal Shield	170512/SH



CHASSIS SCHEMATIC DIAGRAM

- IC701 - UPC1031H2**
 1 - 5.99V DC
 2 - 11.98V DC
 3 - 10.86V DC
 4 - 10.45V DC
 5 - 0.61V DC
 6 - 2.93V DC
 7 - 5.26V DC
 8 - 0V DC
 9 - 6.0V DC
 10 - 11.99V DC

- IC501 - L78M05**
 1 - 20.1V DC
 2 - 0V DC
 3 - 5.5V DC
 4 - 5.0V DC

- IC502 - L78M06**
 1 - 20.7V DC
 2 - 0V DC
 3 - 12.5V DC
 4 - 4.9V DC

	E	B	C
Q501	5.1V DC	5.5V DC	13.6V DC
Q502	12.0V DC	12.6V DC	20.6V DC
Q605	2.0V DC	2.2V DC	39.5V DC

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

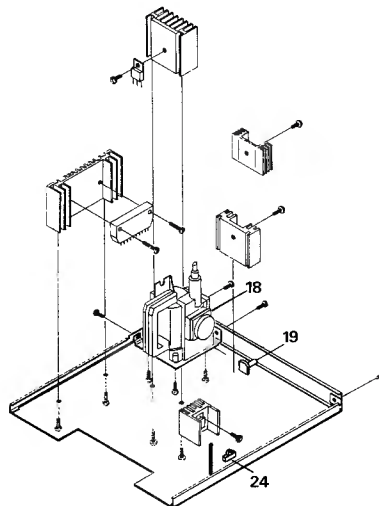
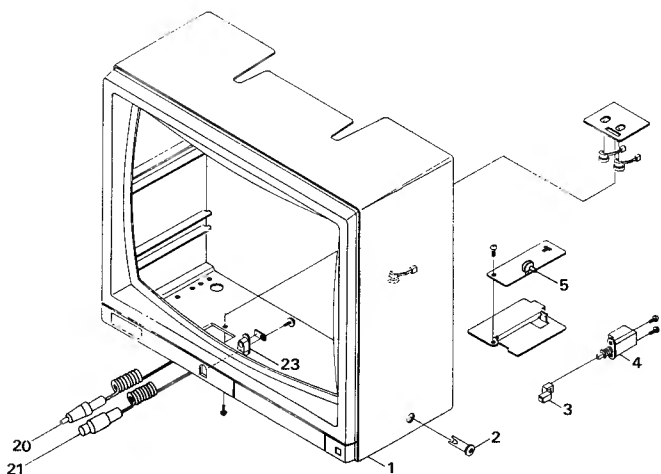
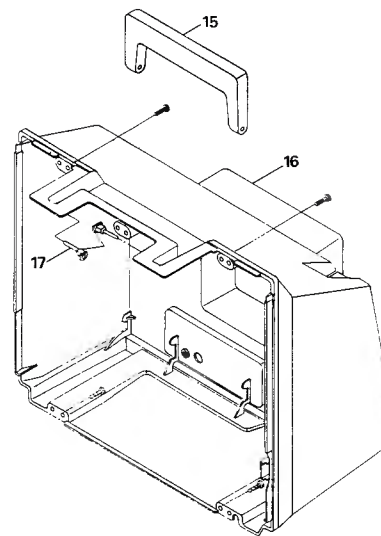
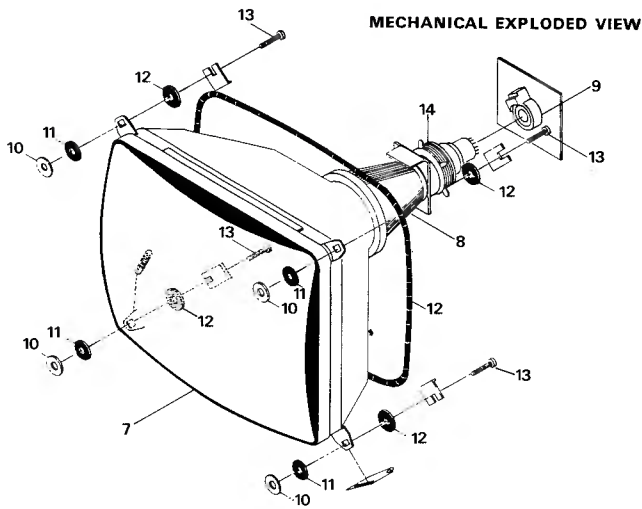
CAUTION: SINCE THESE PARTS MARKED BY A TRIANGLE ARE DANGEROUS AT ANY POINT OF VIEW, PLEASE USE CARE AND ATTENTION TO THE SAFETY INSTRUCTIONS DESCRIBED ON PARTS LIST ONLY.
 ATTENTION: LES PIÈCES MARQUÉES PAR UN TRIANGLE SONT DANGEREUSES À UN POINT DE VUE SÉCURITAIRE. N'UTILISEZ QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

GT65 ELECTRICAL PARTS LIST

Value	Circuit Reference	Part No.
Carbon Film Resistors (1/4W)		
47ohm	R723	10021
82ohm	R721	10030
100ohm	R616-618	10032
330ohm	R613	10044
390ohm	R619, 722	10046
470ohm	R603-605, 606, 720	10048
680ohm	R602, 604, 711	10052
1kohm	R506-508, 510, 601, 609, 730	10061
1k5ohm	R501, 717	10065
2k2ohm	R620	10069
2k7ohm	R612, 621, 705	10068
3k3ohm	R502	10073
3k9ohm	R610, 701, 702, 716, 718	10075
4k7ohm	R504, 714	10077
5k6ohm	R503	10079
8k2ohm	R713	10083
10kohm	R611, 707, 712, 725	10085
15kohm	R706	10089
22kohm	R710	10093
33kohm	R731, 732	10097
39kohm	R704	10099
47kohm	R719	10101
56kohm	R726	10103
Carbon Film Resistors (1/2W)		
22ohm	R727	170601
1k5ohm	R509, 615	1422126
22Mohm	R728, 729	170602
Metal Film Resistors		
1ohm/1W	R708	170603
0.22ohm/2W	R505	170604
4ohm7/2W	R614	170605
12ohm/2W	R724	170606
Fuse Type Resistor		
10ohm/1/2W	R715	809256
Ceramic Capacitors		
100pF	C603	1422144
200pF	C604	400107
0.001uF	C724	1400125
0.0047uF	C726	170600
0.047uF	C501-508	24015
Electrolytic Capacitors		
1uF/160V	C730	1422151
2.2uF/50V	C717	809246
4.7uF/50V	C703, 719	1400240
10uF/16V	C511-513, 516, 705, 707, 713	20024
10uF/25V	C712	20037
10uF/160V	C731	170608
22uF/16V	C706	20025
22uF/63V	C602	170609
33uF/10V	C710	170610
47uF/16V	C720	1400244
100uF/25V	C517	800370
220uF/10V	C709	170611
220uF/16V	C727, 728, 732	20029
330uF/25V	C515	170836
1000uF/10V	C711	800372
3300uF/25V	C510	170612
4700uF/16V	C509, 514	170613
Polystyrene Capacitors (All 50V. D.C. W.)		
0.0047uF	C715	170437
0.0068uF	C714	170614
0.0082uF	C723	170615
0.01uF	C718	170439
0.022uF	C721	170616
0.033uF	C725	170617
0.047uF	C701, 702, 708, 716	170422
0.082uF	C722	170618

Value	Circuit Reference	Part No.
Polypropylene Capacitors		
0.0033uF/630V	C733	170619
0.068uF/400V	C729	170620
Tantalum Capacitors		
1uF/25V	C704	170621
Circuit Ref.	Description	Part No.
I.C.s		
IC501	L78MG - OEC	170446
IC502	L78MG	170446
IC701	UPC1031H2	170622
IC503	UPC78M12	1422278
Transistors		
Q501, 502	2SD313	50005
Q503, 505, 603, 604	KTA1015Y	170453
Q504, 506, 601, 602, 701	KTC1815	170447
Q605	KTC2229Y	170624
Q702	KTA950Y	170448
Q703	2SD1159	170623
Diodes		
D501-508	Rect. 30D - IFC	170625
D509	Rect. 10D - 1	1400125
D601	Zen. RD47FB	170626
D602, 701	Sili. DS442X - BT	1422117
D603	Zen. RD56FB	170627
D702, 703	Ger. IN34A	170628
D704	Rect. V09C	170629
D705	Rect. V06C	170630
D706	Rect. B B-4	1422116
D707	Rect. 10D-2	1400123
Coils & Transformers		
L701	D.Y. 71011202	170510
L702	Linearity CL. 21000006	170631
L703	Horizontal C.L. 305Y001	170632
L704	C.L. 100uH	1400148
T501	Power Tx. 0766001E	S/170832
T701	H.Drive Tx. RB20852	170633
T704	F.B./Lopt 2012003	170835
Variable Resistors		
VR501	S.F. 500ohm	1422189
VR502, 703	S.F. 2k	1400230
VR601	ROT. 1k	170518
VR602	ROT 10k	170519
VR604, 605	S.F. 50k	920142
VR701	ROT 30k	170833
VR702	S.F. 10k	1422191
Miscellaneous		
CD501	D.C. Cord IG060401	170316
CD601	D.I.N. Cord 8GE 70001	170317
F502	4A (T) Fuse	1400254
F503	2A (T) Fuse	1400253
TH701	Thermistor SDT-250S	170635
V701	C.R.T. 310GNB31	170507

CTM644 CABINET DRAWING



CTM644 ELECTRICAL PARTS LIST

Sym	Description	Part No.
1	Front Cabinet	170841
2	Control Knob Brightness	170304
4	Button On/Off	170305
4	Power On/Off Switch	170306
5	Brightness Control	170315
6	Degauss Coil	170842
7	C.R.T.	170307
8	Deflection Yoke	170308
9	C.R.T. Socket	170843
10	Metal Washer Bottom	1400011
11	Rubber Washer	1400012
12	Metal Washer Top	1400011
13	Fixing Screw	1400013
14	Static Rings	170311
15	Handle	170312
16	Rear Cabinet	170313
17	Handle Retainer	170314
18	F.B.T.x.	170467
19	V. Hold Control	1400035
20	D.C. Cord	170316/A
21	DIN Cord	170317/A
23	D.C. Jack	170844
24	Service Normal Switch	900101

CTM644 ELECTRICAL PARTS LIST

Value	Circuit Reference	Part No.
Carbon Film Resistors (all 1/4W unless otherwise shown)		
100ohm	R810, 901-903	10032
220ohm	R407, 416	10040
270ohm	R807, 811, 814	10042
330ohm	R401, 404, 422	10044
390ohm	R414	10046
470ohm	R505, 510	10048
1kohm	R411, 423, 432, 519, 815, 816	10061
1k5ohm	R420, 421, 441	10065
1k8ohm	R402, 403, 442	10067
2k2ohm	R410	10069
2k7ohm	R904-906	10068
4k7ohm	R426, 518	10077
6k8ohm	R415	10081
8k2ohm	R406, 418, 419	10083
10kohm	R424, 428, 429	10085
12kohm	R409	10087
15kohm	R431, 450	10089
27kohm	R425	10095
47kohm	R412, 440	10101
56kohm	R417	10103
82kohm	R430, 439	10107
180kohm	R408	10115
220kohm	R413	10117
270kohm	R504	10119
680kohm	R451	10129
1ohm2/1/2W	R443	170401
470ohm/1/2W	R445	1422125
680ohm/1/2W	R447	809223
1kohm/1/2W	R514-517	1400165
1k5ohm/1/2W	R448	1422126
2k2ohm/1/2W	R446	170402
2k7ohm/1/2W	R802-804	1400166
180kohm/1/2W	R506, 507	170403
1Mohm	R801	1400171
Fuse Type Resistors		
1ohm/1/4W	R521	809252
8.2ohm/1/4W	R444	170404
10ohm/1/4W	R511	809256
0.82ohm/1W	R438 437,	1422141
2.2ohm/1W	R435,	1400184
Cement Resistors		
5.6ohm/5W	R501	1422138
15ohm/7W	R436	170417

Value	Circuit Reference	Part No.
Metal Oxide Resistors		
120ohm/1W	R449	170405
1kohm/1W	R503	170406
3k9ohm/1W	R505	170407
15kohm/1W	R805, 812	170408
0.22ohm/2W	R513	170409
15ohm/2W	R512	170410
33ohm/2W	R509	170411
82ohm/2W	R520	170412
100ohm/2W	R433	170413
3k3ohm/2W	R427	170414
6k8ohm/2W	R405	170415
1ohm/3W	R502	170416
Electrolytic Capacitors		
1uF/50V	C414	20062
1uF/160V	C419	1422151
1uF/250V	C506	1422152
4.7uF/50V	C407, 420	1400240
10uF/16V	C520	20024
22uF/10V	C437	170418
22uF/250V	C430	170419
47uF/10V	C436	170420
47uF/16V	C405, 418	1400244
47uF/50V	C512	170421
47uF/160V	C401	170422
100uF/16V	C412, 443, 523	20028
100uF/35V	C425	1422157
100uF/160V	C515	1400246
100uF/400V	C505	170423
220uF/35V	C507	20055
220uF/160V	C515	170851
470uF/10V	C518	170424
470uF/25V	C435, 519	20044
470uF/35V	C402, 522	1422262
2200uF/25V	C424	170425
Ceramic Capacitors		
22pF/500V	C416	1400217
100pF/500V	C423, 441	1400218
130pF	C806	170426
180pF/500V	C403	170427
240pF	C804	170428
270pF/2kV	C432	170429
330pF	C803, 807	1422255
560pF/500V	C417	1400220
680pF	C802	1400213
2200pF/4kV	C513	170430
0.001uF/500V	C516, 521	170431
0.001uF/2kV	C511, 801	1422147
0.0015uF/2kV	C510, 514	170432
0.0022uF/2kV	C502-504	1400223
0.0047uF	C508, 509	170433

CTM644 ALIGNMENT INSTRUCTIONS

STEP	FUNCTION	SIGNAL IN	SIGNAL OUT	METHOD	REMARKS
1.	Black and White Tracking.		Monitor Screen.	1. Turn R & B Drive Controls VR804 & VR805 fully counterclockwise. 2. Turn R, G & B Bias Controls VR801, 802, 803 fully counterclockwise. 3. Set Ser. Nor. Switch to Ser. position.	Monitor connected to CPC664.
2.	Black & White Tracking.		Monitor Screen. Monitor Oscilloscope.	1. Adjust 120V at the collector of Q802 with Brightness Control on the Oscilloscope. 2. Rotate the screen control to fully counterclockwise & bring it back to obtain a dim line of one prominent colour. 3. Rotate the other two colours till a dim white line is obtained. 4. Bring Ser. Nor. Switch to Nor. position.	Monitor connected to CPC664. If required, adjust the colour control.
3.	If no satisfactory results repeat step 2.				
4.	Vertical Size.	Program the paper edge.	Monitor Screen.	Adjust VR406 to obtain paper edge to be 145mm.	Use non magnetic ruler.
5.	Focus Adjustment.	Program the paper edge.	Monitor Screen.	Adjust Focus Control on the Flyback Tx. for maximum definition & details.	Brightness & Contrast controls set to normal viewing.
6.	5V Adjustment	Switch on the Monitor.	AVO Meter.	Connect A.V.O. across C518 & adjust VR501 to obtain 5V exactly.	
This adjustment (6) should not be disturbed under normal conditions.					
7.	Sub Brightness Control.	Switch on the Monitor.	A.V.O. Meter.	Connect A.V.O. to collector of Q802. Adjust VR402 to read 120V.	Keep Brightness Control to maximum position.
8.	Sub H. Hold & H. Hold Adjustment.	Switch on the Monitor.	Frequency Counter.	Rotate H. Hold fully counterclockwise. 1. Adjust VR404 to read 14500Hz. 2. Adjust VR403 to read 15625Hz	Read the Meter across CRT Heater & Earth.

CTM644 CABINET PARTS LIST

Value	Circuit Reference	Part No.
Polypropylene Capacitors		
0.012uF/1600V	C431	170434
0.1uF/250V	C501	1400202
0.82uF/200V	C429	170435
Polystyrene Capacitors		
0.001uF	C442	170850
0.0015uF	C408	170436
0.0047uF	C421	170437
0.0056uF	C415	170438
0.01uF	C413, 427	170439
0.015uF	C409	170441
0.039uF	C404	170440
0.047uF	C406	170442
0.068uF	C410, 422, 428	170443
Tantalum Capacitors		
1uF/16V	C411	1400225
2.2uF/16V	C426	1400226
I.C.s		
IC401	LA7800	1400106
IC402	LA7830/UPC1378	170444
IC501	STK7308	170445
IC502	L78MG	170446
IC503	UPC78M12	1422278
Circuit Ref.	Description	Part No.
Transistors		
Q401, 402, 504, 506	KTC1815Y	170447
Q403	KTA950Y	170448
Q404	2SC2271	170449
Q405	2SD1397	170450
Q501	2SD1207	170451
Q502	2SD880Y	170452
Q503, 505	KTA1015Y	170453
Q801-803	2SC3417	170454

Circuit Ref.	Description	Part No.
Diodes		
D401	Sil. IS2472T	170455
D402, 403	Zen. RB11EB	1400124
D404, 506, 508	Rect. DFC10E	1422115
D405, 407, 408	Sil. TVR 06K	170456
D406	Rect. BB-4	1422116
D501-504	Rect. 20E10	170848
D505, 507	Zen. RD 3.6FB	170458
D509	Rect. RGP 30J	170459
D510	Zen. SR2M	1400122
D511, 512	Rect. RU4A	170460
D901-903	Zen. GZA6.2Y	1422114
Coils & Transformers		
L401	Linearity Coil 1431MS	1400145
L501	Line Filter FKOB 160MH14	1400130
L502	Degauss Coil	170842
L801	Coil 100uH	1400148
T401	H. Drive 305Y001	170463
T402	Pin Cushion 1432MS	170464
T501	Switching Tx. 8142006	170845
Switches		
SW401	Slide Switch	900101
SW501	Power On/Off Switch	170306
Variable Resistors		
VR401	Rot. 500ohm	170315
VR402	S.F. 5k	1400227
VR403	S.F. 5k	1400227
VR404	S.F. 2k	1400230
VR405	Rot. 20k	1400035
VR406, 407	S.F. 1k	170466
VR801	S.F. 5k (R)	1400197
VR802	S.F. 5k (G)	1400198
VR803	S.F. 5k (B)	1400199
VR804	S.F. 500ohm (R)	1400200
VR805	S.F. 500ohm (B)	1400201
Miscellaneous		
FB401	FB/LOPT 3714004	170467
F501	Fuse 2A (T)	1400253
TH501	Degauss Element ERP.F5BOM180H	1400195
V001	C.R.T. 3701B22-TC20	170307
J501	D.C. Jack	170844
J801	C.R.T. Socket HPS0092-01-030	170843

CTM644 VOLTAGES

IC401 - LA7800

- 1 - 6.35V DC
- 2 - 6.48V DC
- 3 - 0.32V DC
- 4 - 0V DC
- 5 - 0V DC
- 6 - 0.85V DC
- 7 - 3.21V DC
- 8 - 0.33V DC
- 9 - 0.93V DC
- 10 - 5.55V DC
- 11 - 0.96V DC
- 12 - 11.04V DC
- 13 - 0.89V DC
- 14 - 11.18V DC
- 15 - 12.43V DC
- 16 - 4.11V DC

IC402 - LA7830/ UPC1378

- 1 - 0V DC
- 2 - 12.74V DC
- 3 - 24.4V DC
- 4 - 0.84V DC
- 5 - 0V DC
- 6 - 24.2V DC
- 7 - 2.5V DC

Q405 - 2SD1397

- E - 0V DC
- B - 0.1V DC
- C - 98.8V DC

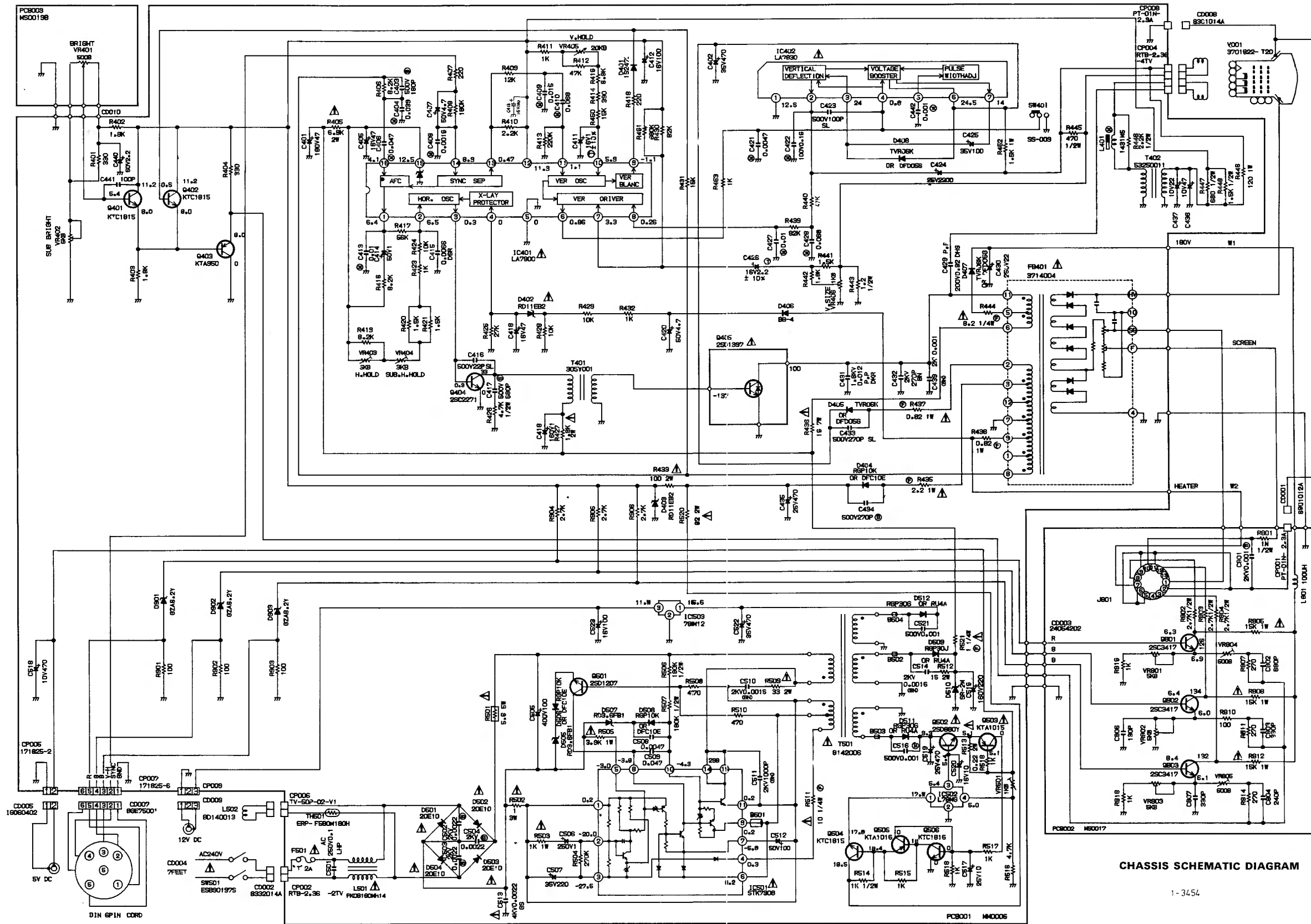
Q404 - 2SC2271

- E - 0V DC
- B - 0.3V DC
- C - 34.1V DC

IC502 - LM78M6

- 1 - 18V DC
- 2 - 0V DC
- 3 - 5.4V DC
- 4 - 5.0V DC

CTM644 CIRCUIT DIAGRAM



CAUTION: SINCE THESE PARTS MARKED BY Δ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN Δ ÉTANT DANGÉREUSES AN POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMÉNCLATURE DES PIÈCES.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CHASSIS SCHEMATIC DIAGRAM

1-3454

MAIN P.C. BOARD

C.R.T. P.C. BOARD

