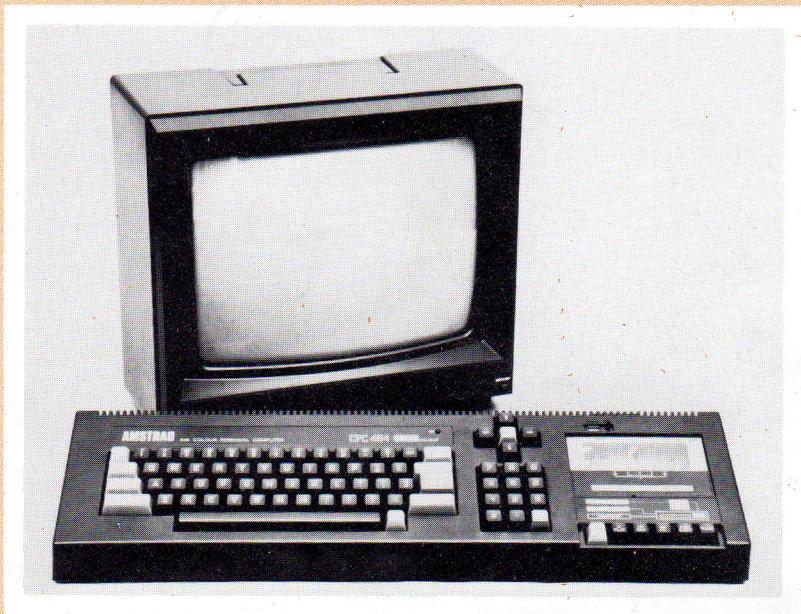


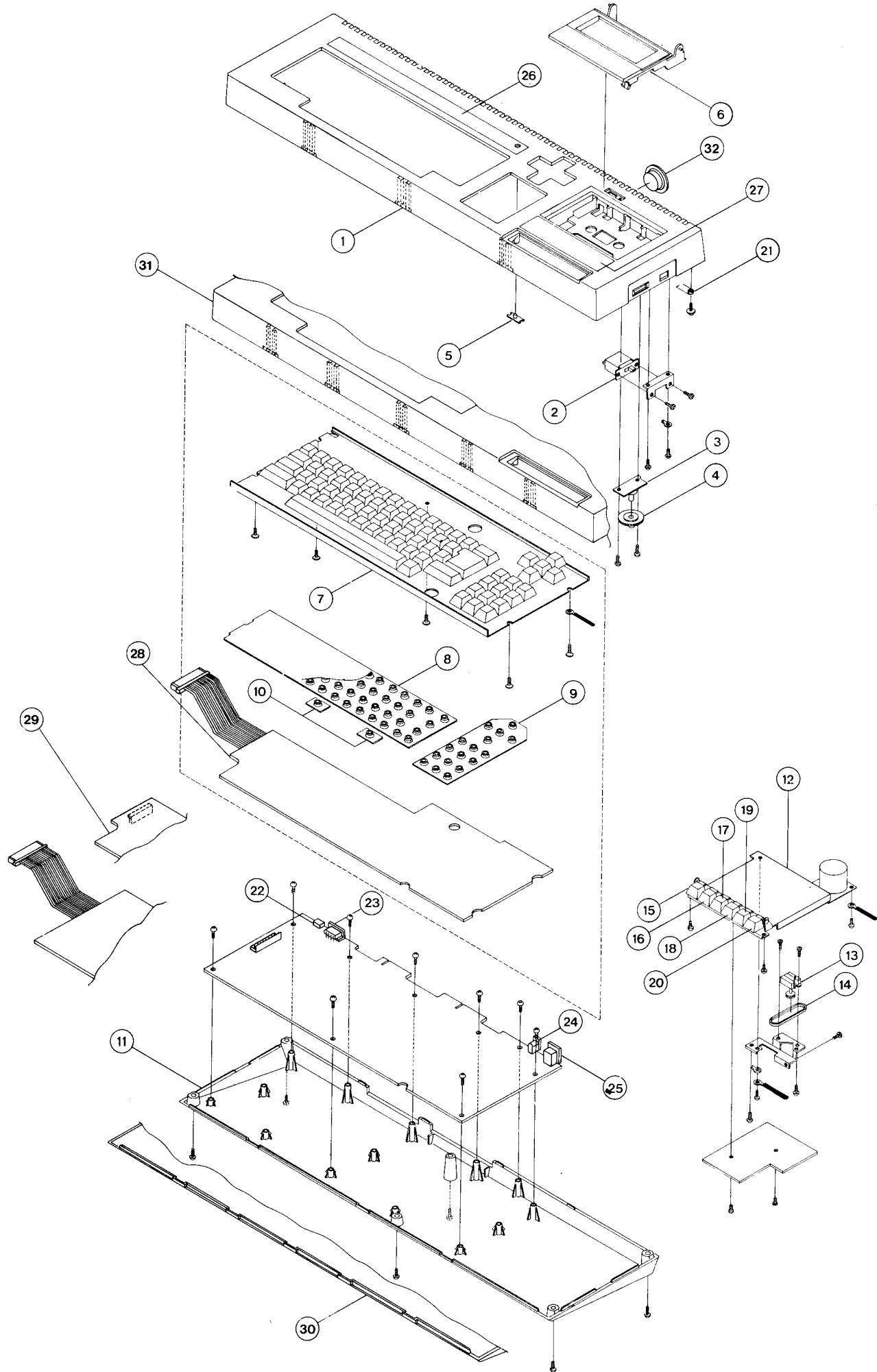
AMSTRAD



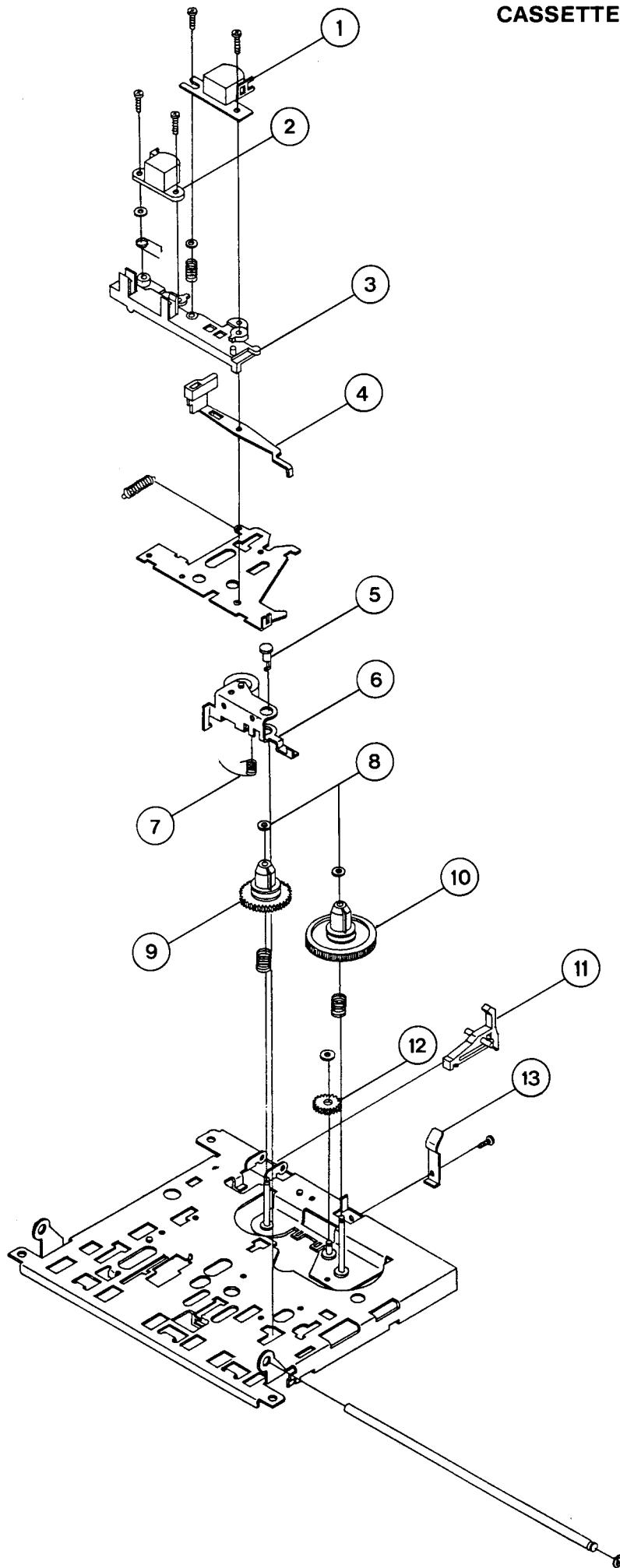
**CPC464
MICRO COMPUTER
CTM640
COLOUR MONITOR
GT64 GREEN MONITOR
SERVICE MANUAL**

Price: £5.00

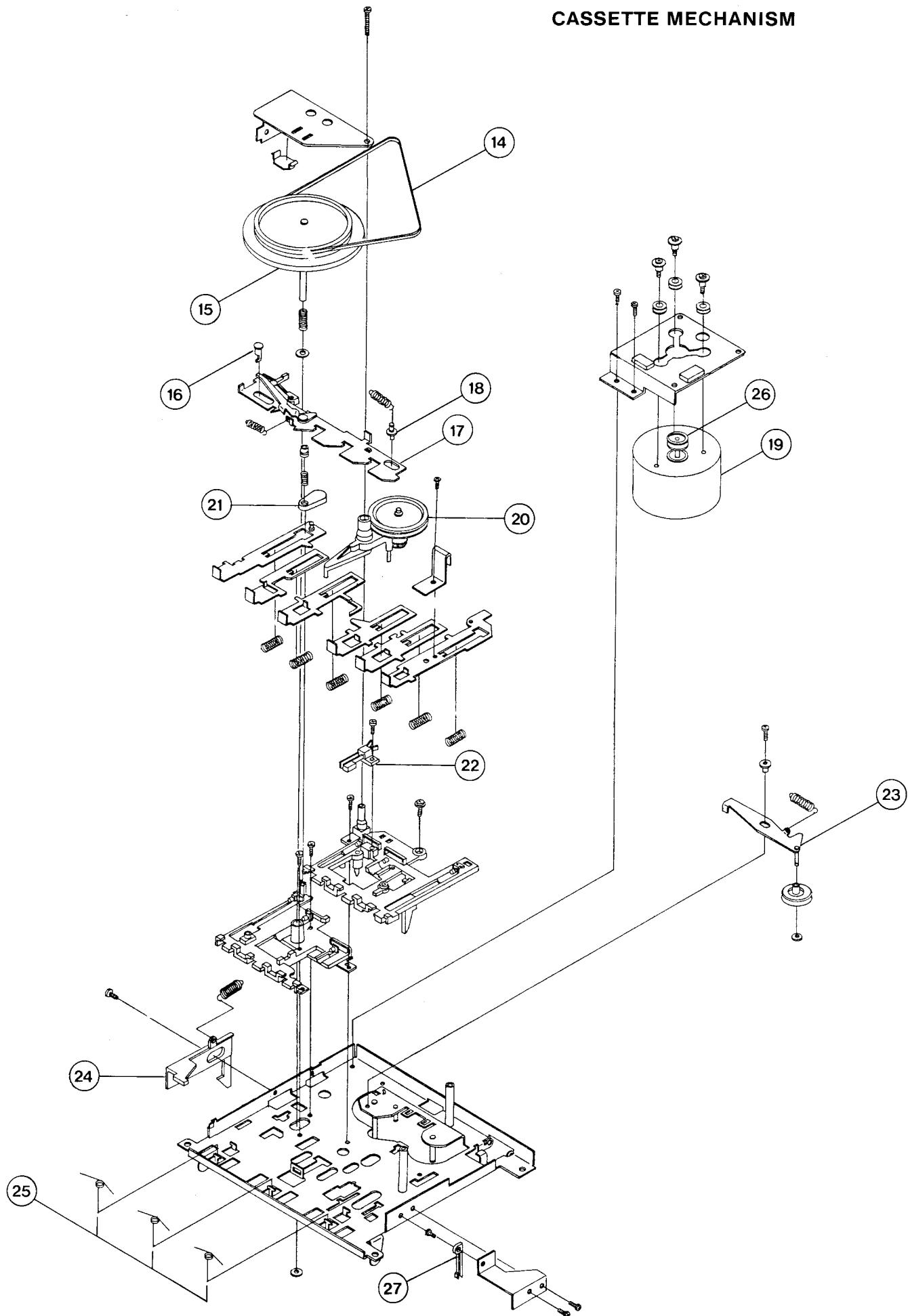
CPC464 CABINET DRAWING



CASSETTE MECHANISM



CASSETTE MECHANISM



CPC464 CASSETTE MECHANISM PARTS LIST

Sym	Description	Part No.
1.	R/P Head	170201
2.	Erase Head	170202
3	Head Base	809170
4.	Auto Stop Arm	809171
5	Stopper	809172
6	Pinch Roller Assembly	809162
7	Spring Pinch Roller	809161
8.	Fibre Washer	809175
9	Rewind Spool	809160
10	Take Up Spool	809159
11	Record Safety Lever	809158
12	Idler Gear	809173
13	Back Up Spring	170203
14	Main Belt	170204
15	Flywheel	809156
16	Locking Plate Stopper	170205
17	Locking Plate	170206
18	Spring Post Locking Plate	170207
19	Motor	170208
20	Idler Assembly	809155
21	Pause Lock Plate	809168
22	Leaf Switch	809157
23	F.F. Idler Arm Assembly	809152
24	Eject Lever Cassette Door	170209
25	Spring Cassette Buttons	170210
26	Motor Pulley	170211
27	Leaf Switch	170212

CASSETTE DECK ALIGNMENT INSTRUCTIONS

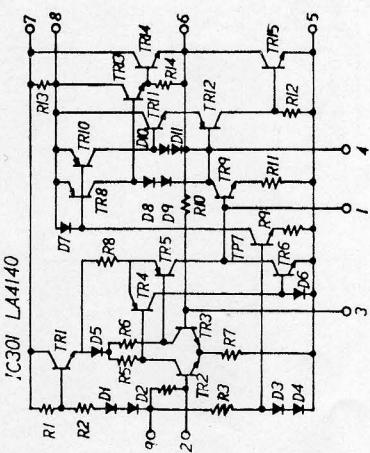
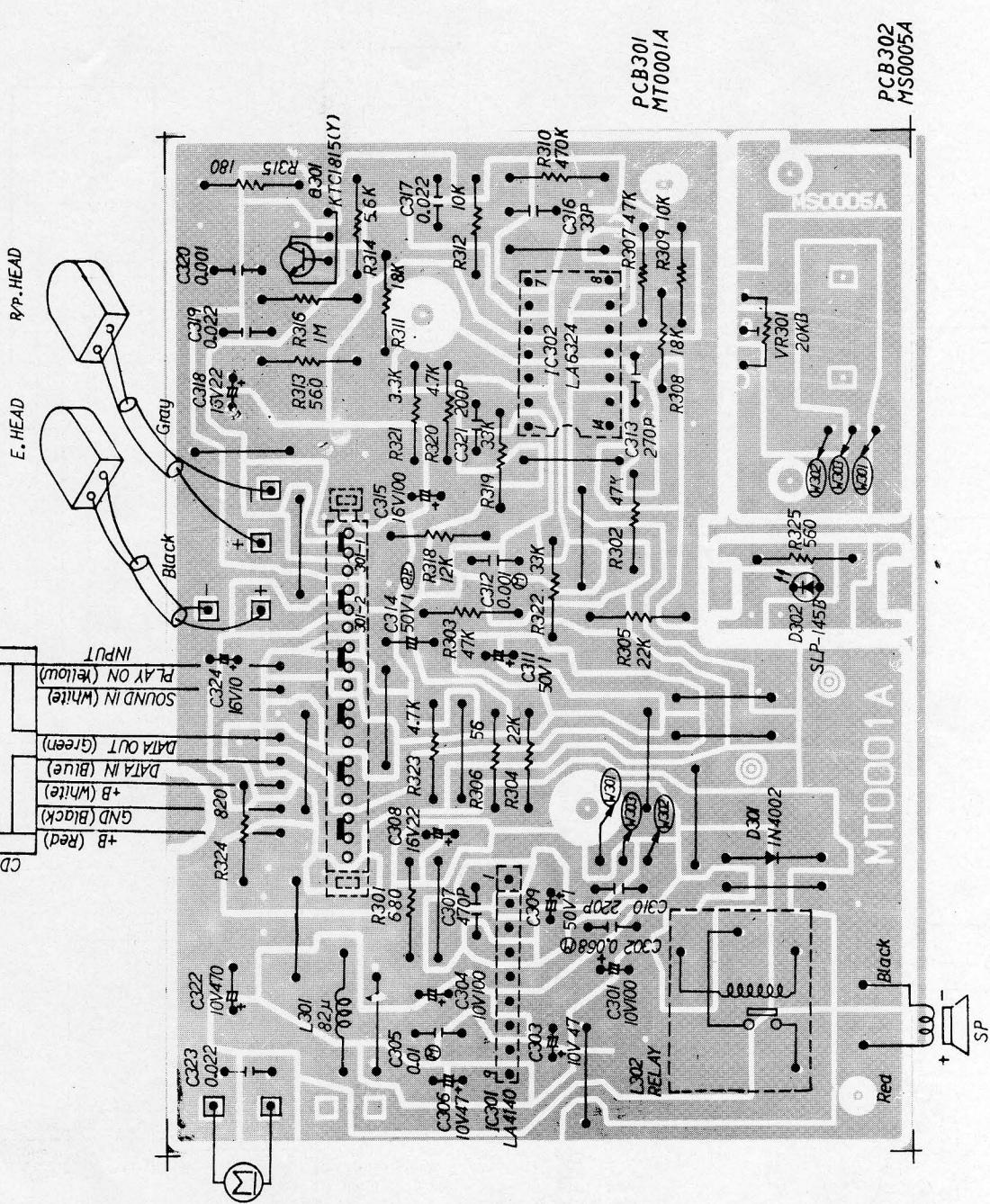
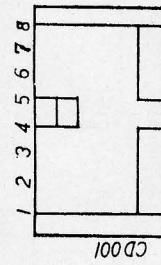
To check cassette module independently of the C.P.U. connect 5V DC across points B(-) and C(+), and link E to G and H to F. The cassette will then operate in an audio mode.

(See page 8 – Cassette Circuit Diagram)

Equipment Required: Frequency Counter, A.V.O., V.T.V.M., Oscilloscope & Test Tape.

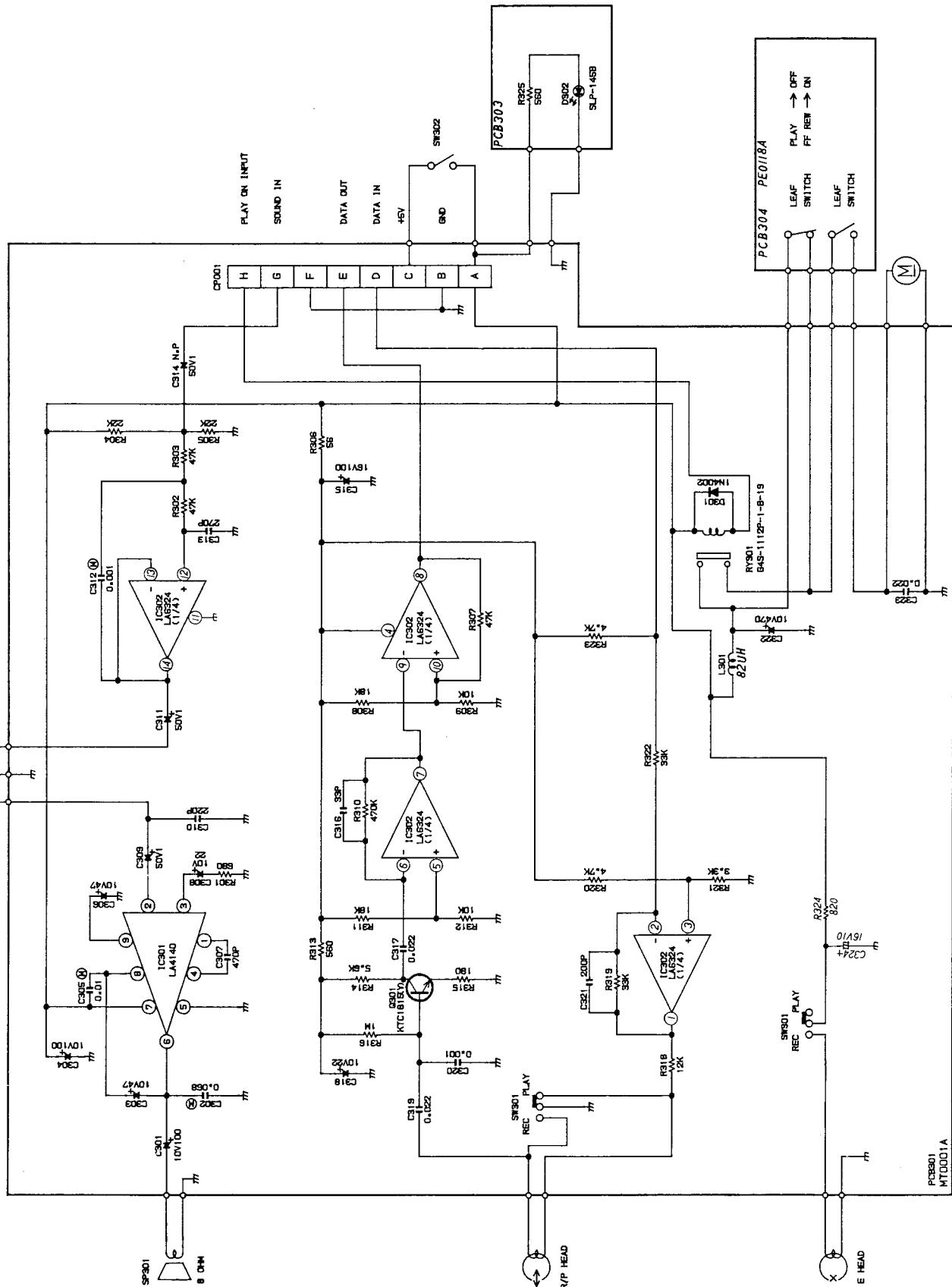
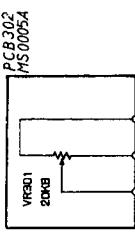
STEP	FUNCTION	SIGNAL IN	SIGNAL OUT	METHOD	REMARKS
1.	Cassette Azimuth Adjustment.		Monitor V.T.V.M.	1) Insert Test Tape recorded at 6kHz constant. 2) Set Volume to maximum on CPC464. 3) Connect V.T.V.M. to Pin 7 of I.C.302 to read between 330mV to 520mV. By adjusting azimuth screw on the cassette head.	Monitor switched on and fix connections.
2.	Speed Check.	Put the standard tape in the cassette mechanism.	Monitor Oscilloscope.	Check output from the tape on the oscilloscope. The range to be used is 100uS.	Speed variation $\pm 4\%$ will not affect software loading.

CPC464 CASSETTE PCB

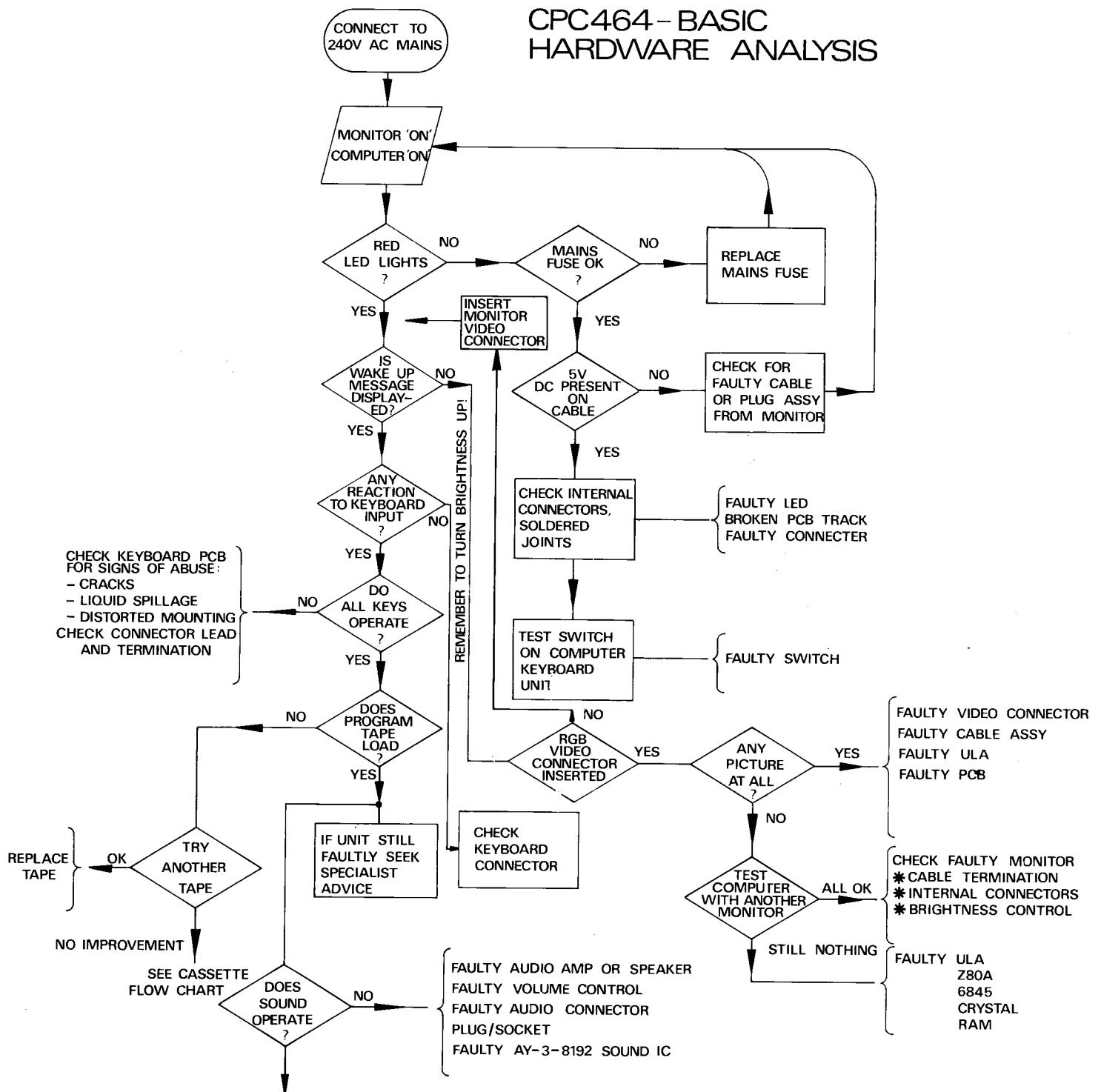


PC-1
3/1896

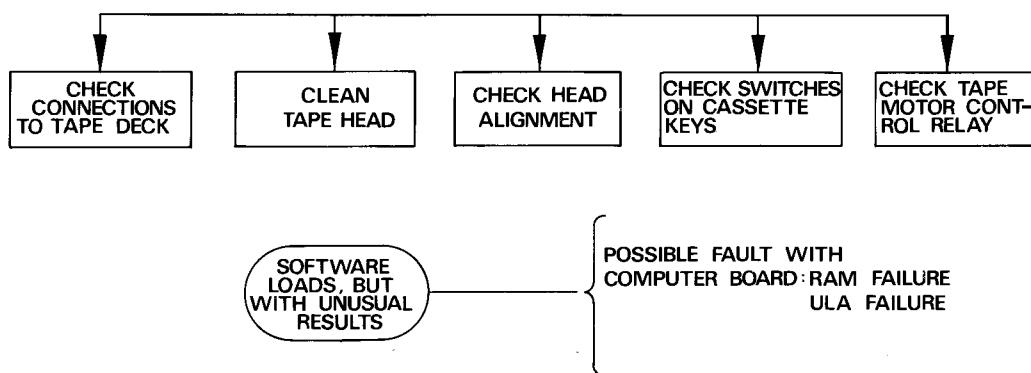
CPC464 CASSETTE DECK CIRCUIT DIAGRAM



CPC464 - BASIC HARDWARE ANALYSIS



CASSETTE & SOFTWARE ANALYSIS

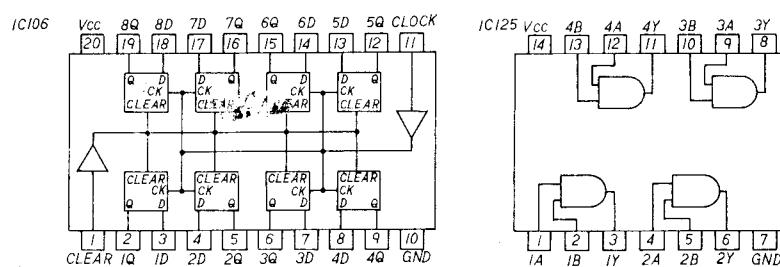
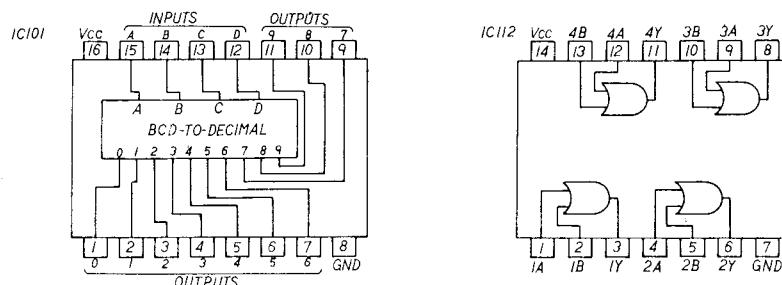
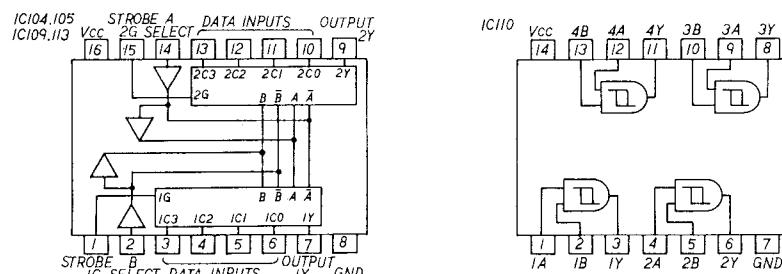
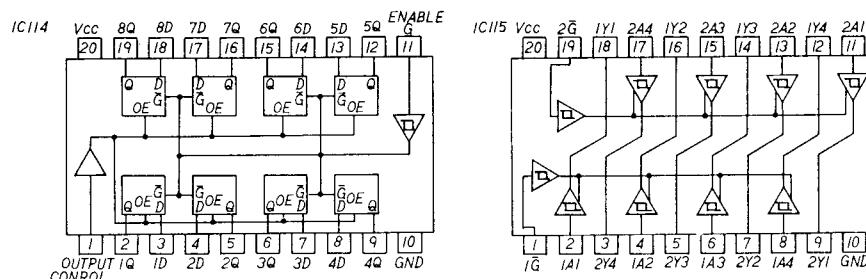


Full diagnostic tests on the C.P.U. can be carried out using the Amstrad RP1 Test Pack.

Please contact Amstrad PLC for information on same.

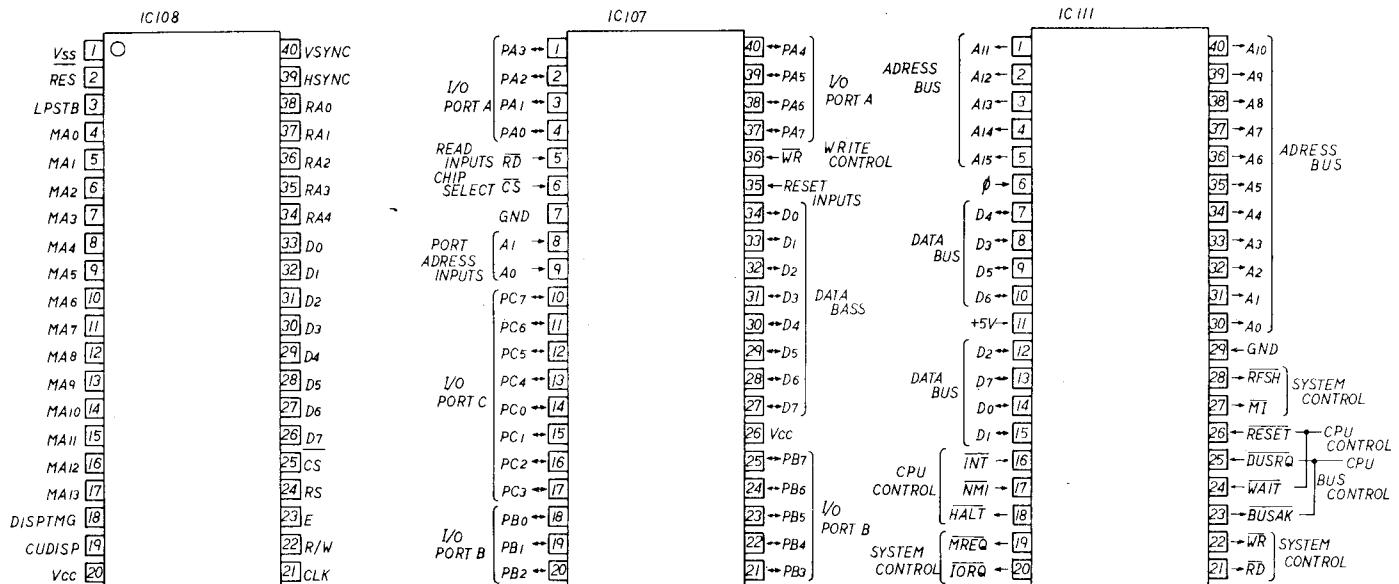
N.B ACTUAL 'PHYSICAL' DAMAGE TO SOFTWARE TAPE WILL PREVENT IT FROM LOADING AT ALL: IE THERE WILL BE NO 'HALF' WORKING PROGRAMS. THEY EITHER LOAD- OR THEY DON'T.

CPC464 FUNCTION DIAGRAMS

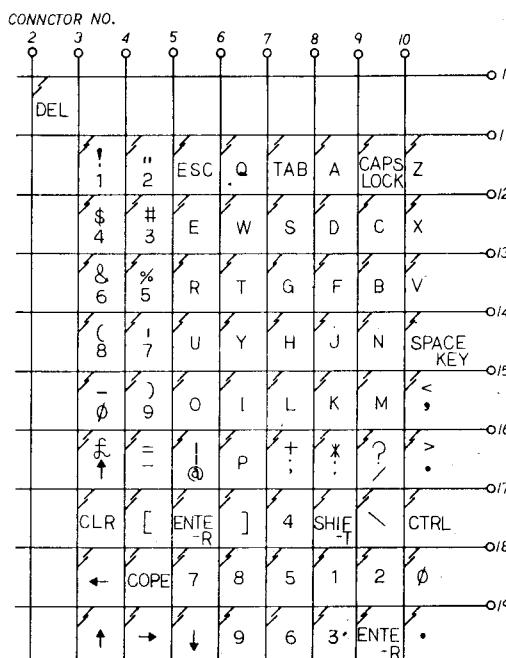


CPC464 FUNCTION DIAGRAMS

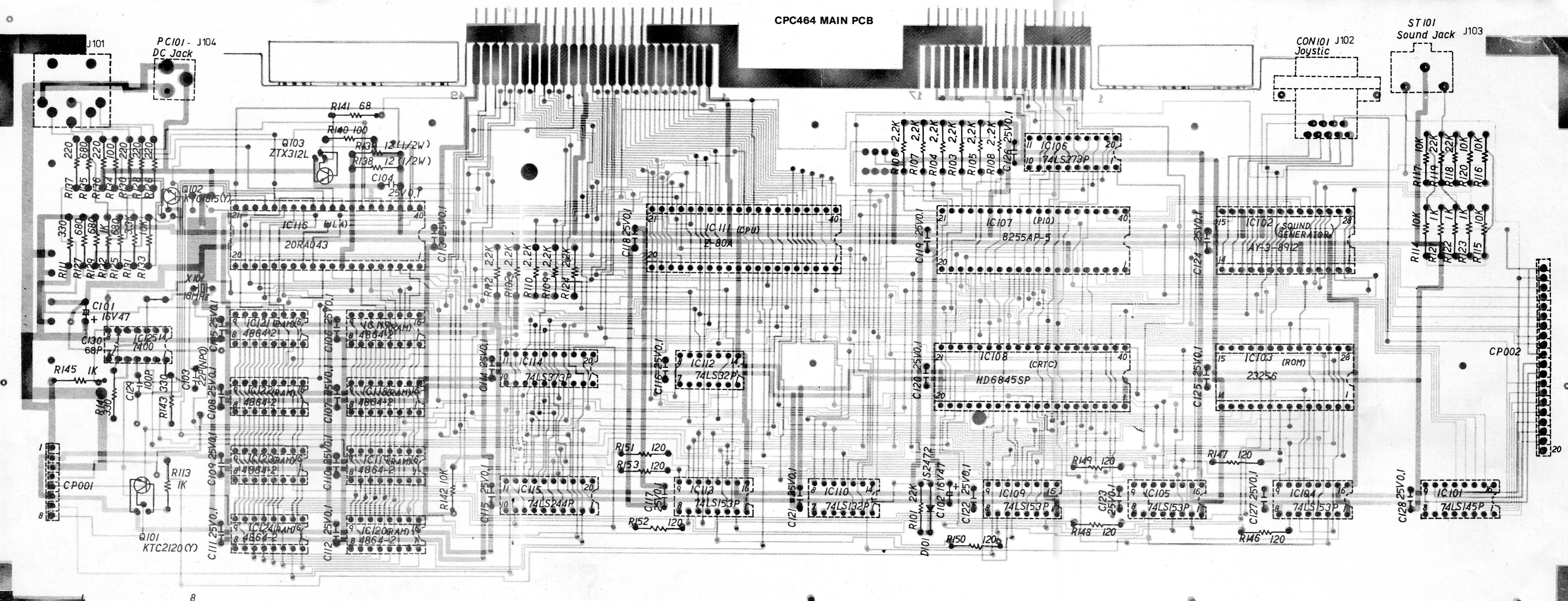
FUNCTION FOR A MICROCOMPUTER AND IC's



KEYBOARD SW.



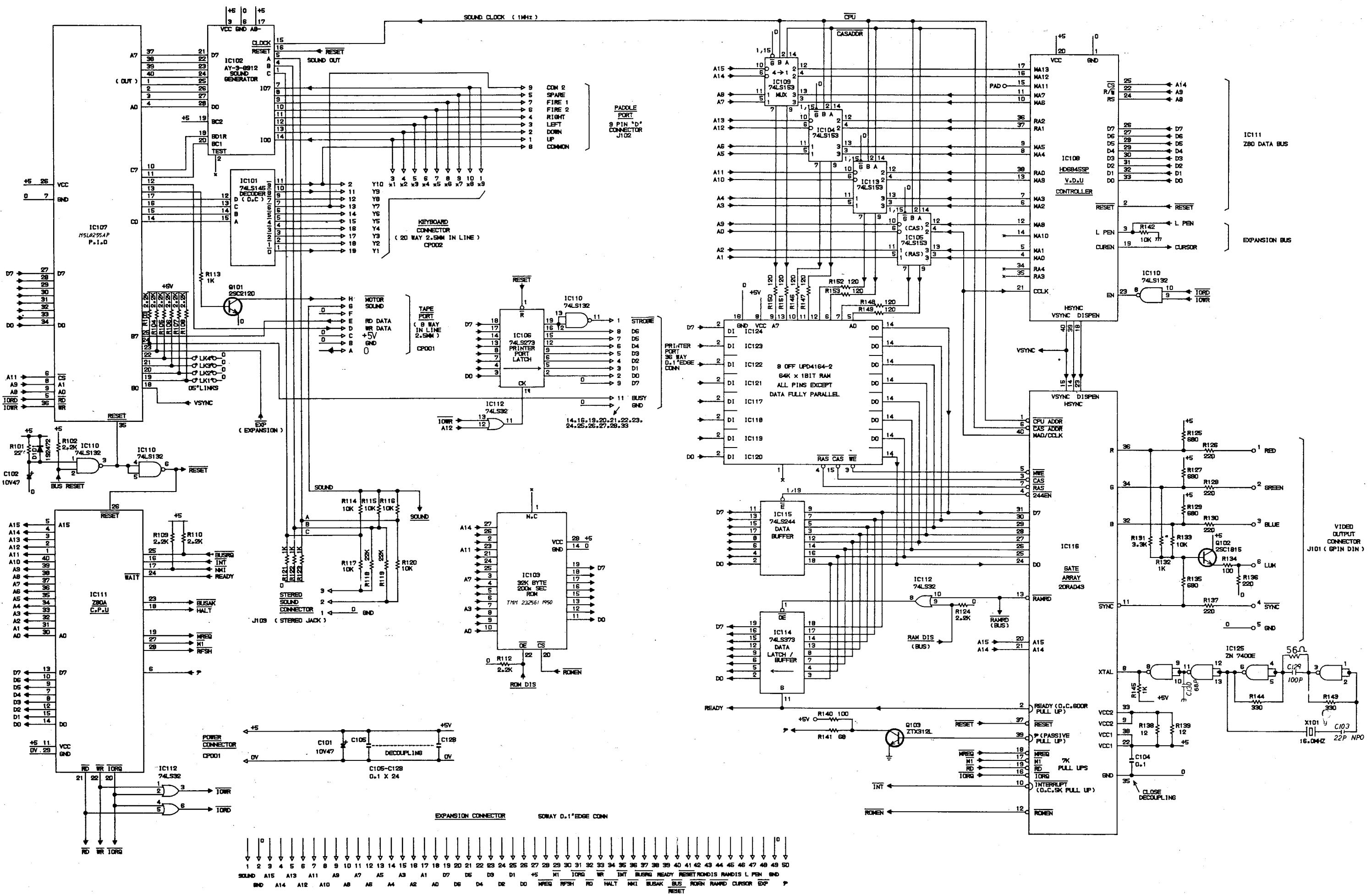
CPC464 MAIN PCB



IC114	74LS373P	Octal 3-State D-Latches
IC115	74LS244P	Octal 3-State Bus Buffers
IC104, IC105, IC109, IC113	74LS153P	Dual 4to1 Date Selectors
IC110	74LS132P	Quad 2 Input NAND Schmitt Triggers
IC101	74LS145P	O.C.BCD to DECIMAL Decoder/Driver
IC112	74LS32P	Quad 2 Input OR
IC106	74LS273	Octal D-FFs
IC125	7400	Quad 2 Input NAND

IC117-IC124	HM4864P-2	Memory
IC108	HD6845SP	CRTC
IC107	M5L8255AP-5	P10
IC103	23256	256K Bit Rom
IC102	AY-3-8912	Sound Generator
IC111	Z-80A	CPU
IC116	20RA043	ULA

CPC464 CIRCUIT DIAGRAM



CPC464 ELECTRICAL PARTS LIST

Value	Circuit Reference	Part No.
Carbon Film Resistors (all 1/4W unless shown otherwise)		
56ohm	R306	10022
68ohm	R141	10028
100ohm	R134, 140	10032
120ohm	R146-153	10034
180ohm	R315	10037
220ohm	R126, 128, 130, 136, 137	10040
330ohm	R143, 144	10044
560ohm	R154, 313, 325	10050
680ohm	R125, 127, 129, 135, 301	10052
820ohm	R324	10054
1kohm	R113, 121-123, 132, 145	10061
2k2ohm	R102-112, 124	10069
3k3ohm	R321	10073
4k7ohm	R320, 323	10077
5k6ohm	R314	10079
10kohm	R114-117, 120, 133, 142, 309, 312	10085
12kohm	R318	10087
18kohm	R308, 311	10091
22kohm	R101, 118, 119, 304, 305	10093
33kohm	R319, 322	10097
47kohm	R302, 303, 307	10101
180kohm	R317	10115
1Mohm	R316	10147
12ohm(1/2W)	R138, 139	170126

Electrolytic Capacitors

1uF/50V	C309, 311, 314	20062
10uF/16V	C324	20024
22uF/10V	C308, 318	20025
47uF/10V	C101, 102, 303, 306	1400244
100uF/10V	C301, 304	20028
100uF/16V	C315	20028
470uF/10V	C322	1400248

Ceramic Capacitors

33pF/50V	C316	150514
200pF/50V	C321	400107
220pF/50V	C310	400107
270pF/50V	C313	170126
470pF/50V	C307	24004
0.001uF/50V	C320	24007
0.022uF/50V	C317, 319, 323	24013
0.1uF/25V	C104-128	24020

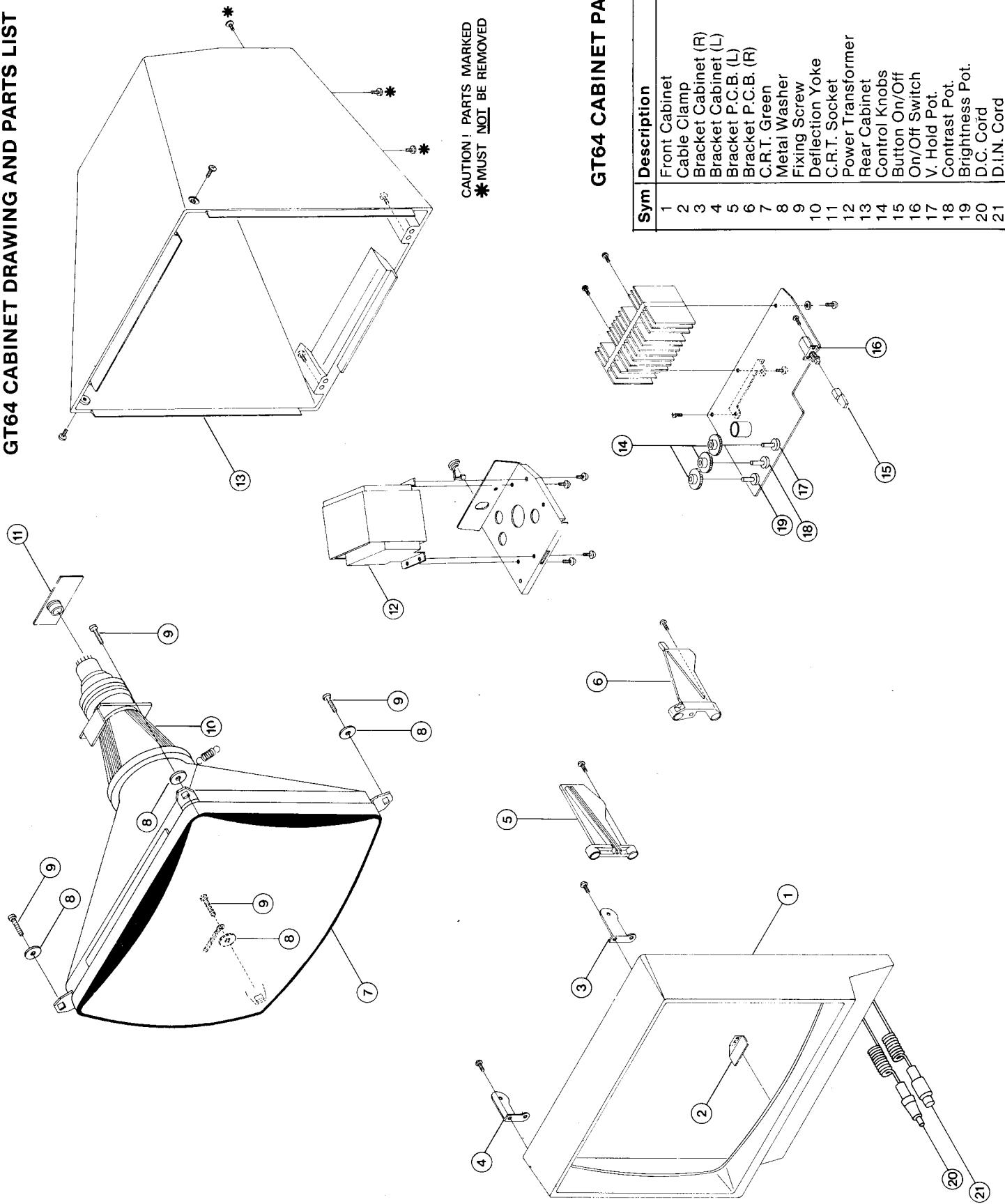
Polystyrene Capacitors

0.001uF	C312	170217
0.01uF	C305	170128
0.068uF	C302	170129

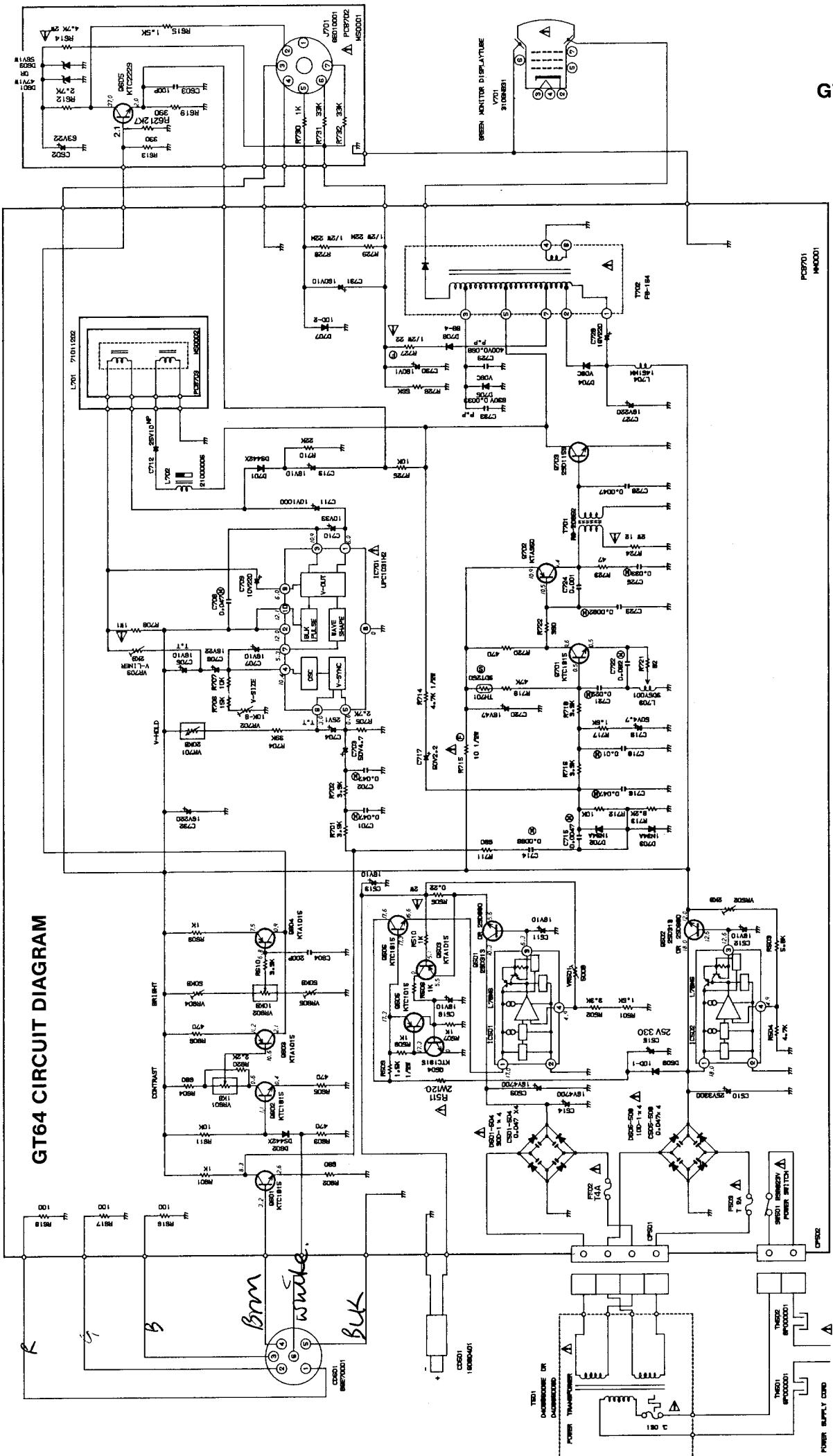
Circuit Ref.	Description	Part No.
I.C.s		
IC101	HD74LS145	170101
IC102	AY-3-8912	40001
IC103	TMM-23256P-1950	170102
IC104, 105, 109, 113	HD74LS153	170103
IC106	HD74LS273	170104
IC107	M5L8255AP-5	170105
IC108	HK6845SP	170106
IC110, 112	HD74LS132	170107
IC111	Z8400APS	40080
IC114	HD74LS373	170108
IC115	HD74LS244	170109
IC116	20RAO43	40007
IC117-124	HM4864U-2	170110
IC125	ZN7400E-D3	40008
IC301	LA4140	170111
IC302	LA6324	170112

Circuit Ref.	Description	Part No.
Transistors		
Q101	KTC2120Y	170113
Q102, 301	KTC1815Y	170114
Q103	ZTX312L	50001
Diodes		
D101	SIL - IS2472 - HL	170115
D301	SIL - IN4002	400111
D302	LED - Red. SLP145B	170116
Coils & Tx.		
L301	82uH	170117
T101	C-12	170118
Jacks & Connectors		
J101	DIN Socket 6 Pin	170025
J102	Joystick Socket 9 Pin	170023
J103	Input/Output Socket 3.5mm R.C.A.	170022
J104	DC Jack Socket	170024
J105-112, 116	Socket I.C. 8 Pin Dual In Line	170119
J113	Socket I.C. 14 Pin Dual In Line	170120
J114, 115	Socket I.C. 20 Pin Dual In Line	170121
Switches		
SW301	Slide Switch R/P	170122
SW302	Power On/Off	170002
SW303	Key Board Assembly	170007
Miscellaneous		
VR301	Volume Control 20k	170003
RY301	Relay	170123
SP301	Speaker	170124
X101	Crystal HC-18/u 16MHz	170125

GT64 CABINET DRAWING AND PARTS LIST



GT64 CIRCUIT DIAGRAM



GT64 VOLTAGE DATA

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 - L78MG

- 1 - 20.1V DC
- 2 - 0V DC
- 3 - 5.5V DC
- 4 - 5.0V DC

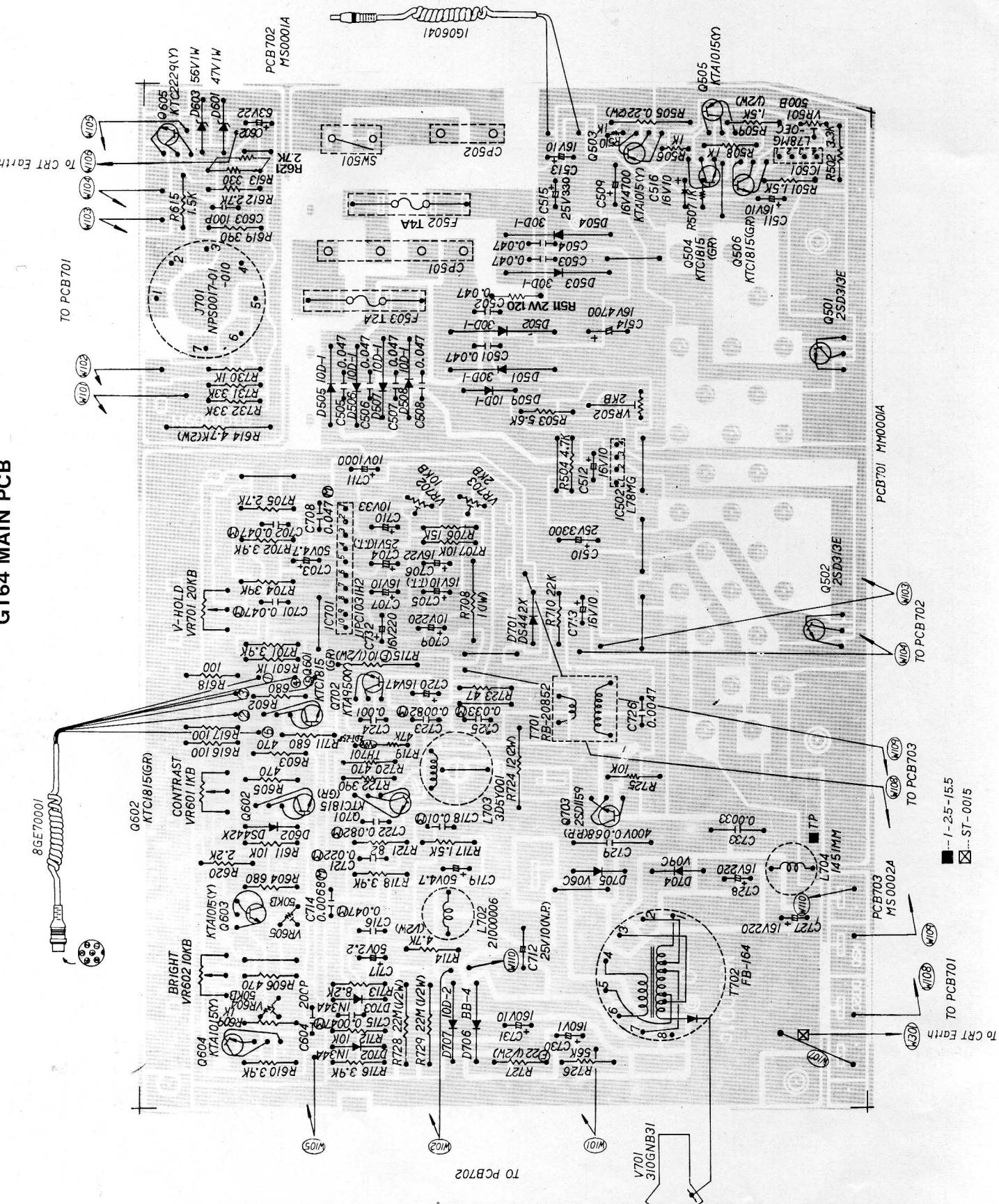
IC502 - L78MG

- 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: All parts shown with either the symbol or with an 'S' prefix on the part numbers; are safety critical items and must be replaced with items having an identical safety specification.
All these items may be purchased direct from AMSTRAD CONSUMER ELECTRONICS PLC.

GT64 MAIN PCB



GT64 ALIGNMENT INSTRUCTIONS

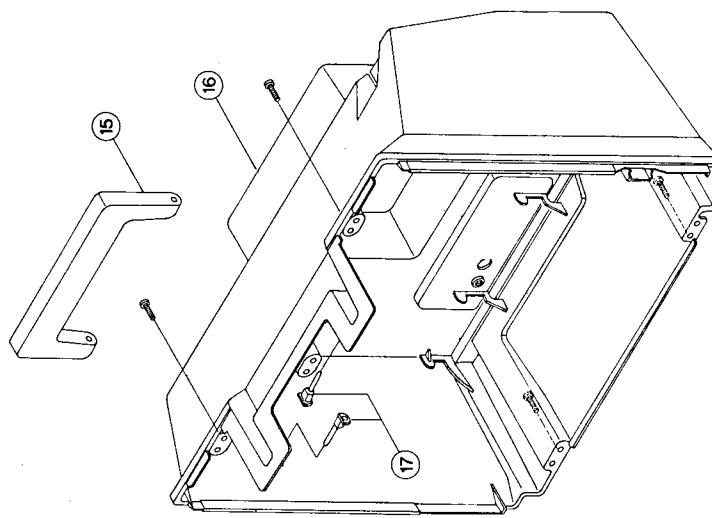
STEP	FUNCTION	SIGNAL IN	SIGNAL OUT	METHOD	REMARKS
1.	5V Adjustment.	Monitor Switched on.	A.V.O. across C519.	Adjust VR501 to obtain 5V.	
2.	12V Adjustment.	Monitor switched on.	Emitter of Q502 & Earth.	Adjust VR502 to obtain 12V.	
3.	H. Hold.	Monitor switched on.	Monitor Screen.	Connect Frequency Counter to CRT Heater. Adjust L703 to obtain 15625Hz on Frequency Counter.	
4.	V. Size & Linearity.	Page Program for Graphics.	Monitor Screen.	Top of the page can be adjusted with VR703 and Bottom of the page can be adjusted with VR702.	The adjustments are Linearity & V. Size respectively.
5.	Centering Adjustment.	Program Border - 26.	Monitor Screen.	Adjust the magnet on the back of the neck to centre the border.	

GT64 ELECTRICAL PARTS LIST

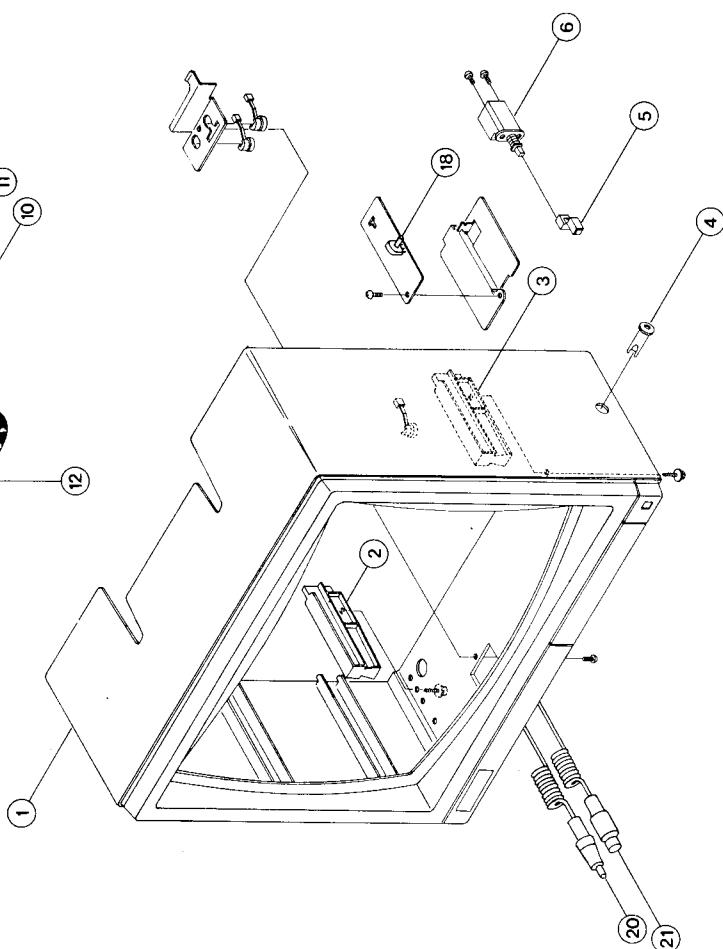
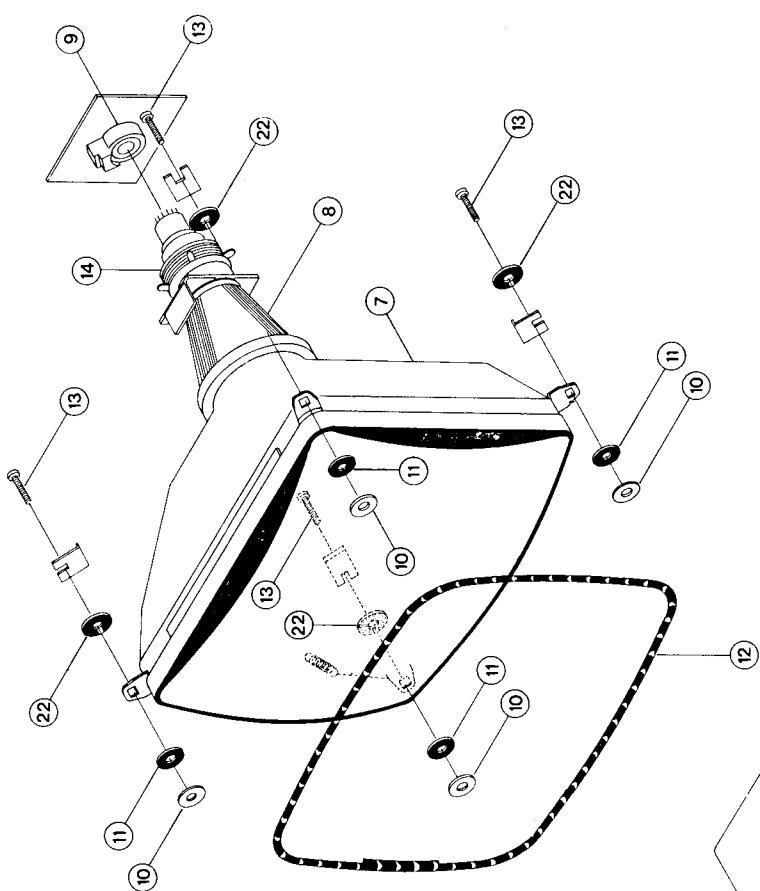
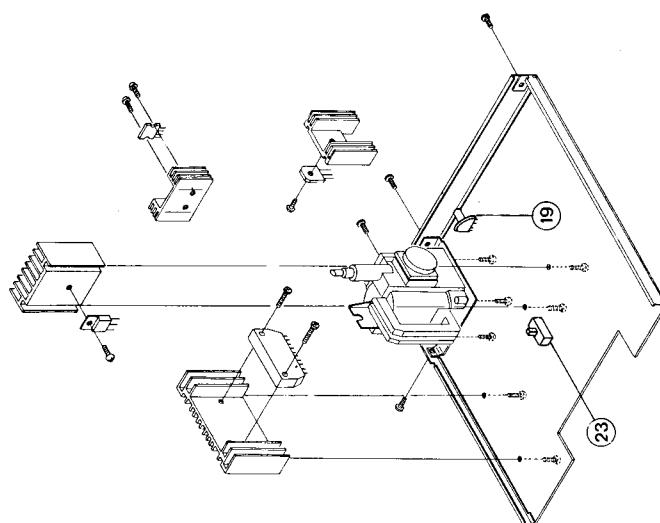
Value	Circuit Reference	Part No.
Carbon Film Resistors (1/4W)		
47ohm	R723	10021
82ohm	R721	10030
100ohm	R616-618	10032
330ohm	R613	10044
390ohm	R619, 722	10046
470ohm	R603-605, 606, 720	10048
680ohm	R602, 604, 711	10052
1kohm	R506-508, 510, 601, 609, 730	10061
1k5ohm	R501, 717	10065
2k2ohm	R620	10069
2k7ohm	R612, 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	C515	800370
220uF/10V	C709	170611
220uF/16V	C727, 728, 732	20029
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
I.C.s		Part No.
IC501	L78MG - OEC	170446
IC502	L78MG	170446
IC701	UPC1031H2	170622
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		
D501-504	Rect. 30D - IFC	170625
D505-508	Rect. 10D - IFC	1400125
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. 0866006	S/170512
T701	H.Drive Tx. RB20852	170633
T704	F.B./Lopt FB164	170634
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 20k	170517
VR702	S.F. 10k	1422191
Miscellaneous		
CD501	D.C. Cord IG060401	170316
CD601	D.I.N. Cord 8GE 70001	170317
F502	3.15A (T) Fuse	88020
F503	2A (T) Fuse	1400253
TH701	Thermistor SDT-250S	170635
V701	C.R.T. 310GNB31	170507

CTM640 CABINET DRAWING AND PARTS LIST



Sym	Description	Part No.
1	Front Cabinet	170301
2	Bracket (L) P.C.B.	170302
3	Bracket (R) P.C.B.	170303
4	Control Knob Brightness	170304
5	Button On/Off	170305
6	Power On/Off Switch	170306
7	C.R.T.	170307
8	Deflection Yoke	170308
9	C.R.T. Socket	170309
10	Metal Washer Bottom	1400011
11	Rubber Washer	1400012
12	Degauss Coil	170310
13	Fixing Screw	1400013
14	Static Rings	170311
15	Handle	170312
16	Rear Cabinet	170313
17	Handle Retainer	170314
18	Brightness Control	170315
19	V. Hold Control	1400035
20	D.C. Cord	170316
21	D.I.N. Cord	170317
22	Metal Washer Top	1400011
23	Service Normal Switch	900101



CTM640 ELECTRICAL 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		
0.0015uF	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	UPC1378H	170444
IC501	STK7308	170445
IC502	L78MG	170446
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. RGP-10K	1422115
D405, 407, 408	Sil. TVR 06K	170456
D406	Rect. BB-4	1422116
D501-504	Rect. IN4007	170457
D505, 507	Zen. RD 3.6FB	170458
D509	Rect. RGP 30J	170459
D510	Zen. SR2M	1400122
D511	Rect. RGP 30G	170460
D901-903	Zen. GZA6.2Y	1422114
Coils & Transformers		
L401	Linearity Coil 1431MS	1400145
L501	Line Filter FKOB 160MH14	1400130
L502	Degauss Coil	170461
L503	Coil 47uH	170462
L801	Coil 100uH	1400148
T401	H. Drive 305Y001	170463
T402	Pin Cushion 1432MS	170464
T501	Switching Tx. 8142004	170465
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	1400195
V001	ERP.F5BOM180H C.R.T. 3701B22-TC20	170307

CTM640 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 - UPC1378H

- 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

IC502 - LM78M6

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

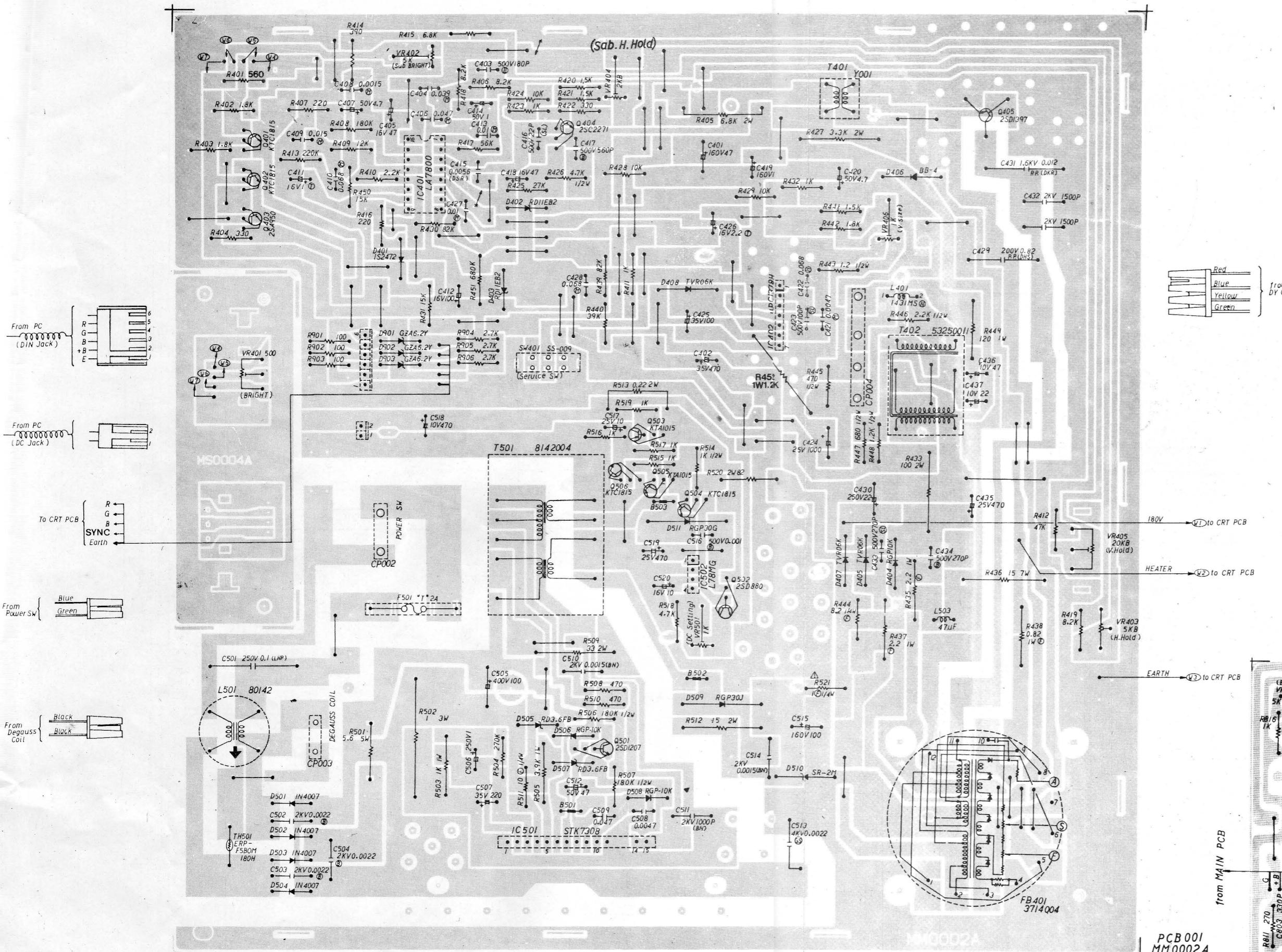
Q405 - 2SD1397

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

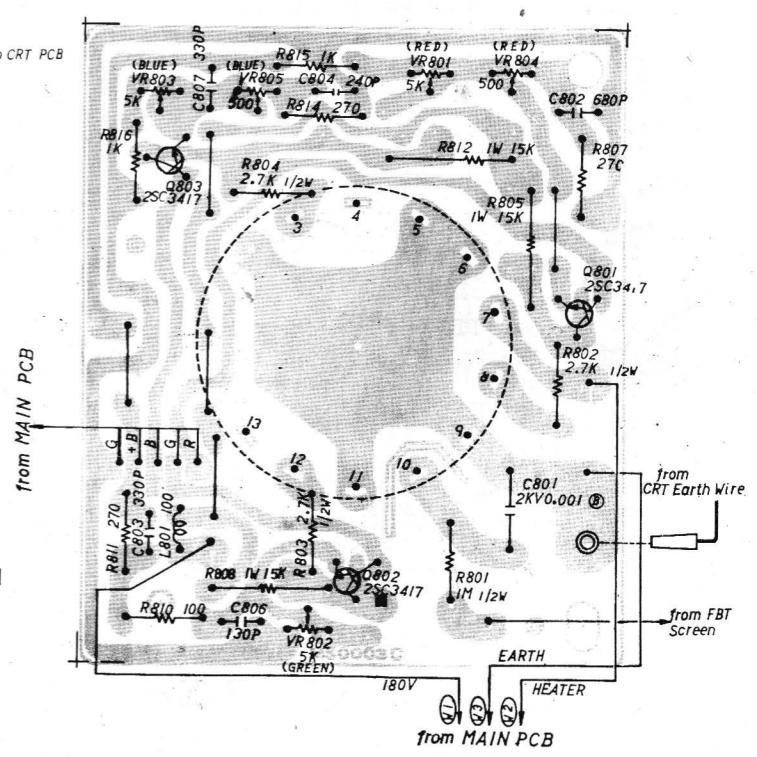
Q404 - 2SC2271

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

CTM640 PCB



CTM640 PCB



PCB 001
MM0002A

PCB002
MS0003

