

Service
Service
Service

VG 8010/00/19



36 517A12

Service Manual

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

See also:
REPAIR METHOD VG8000

(GB) SPECIFICATION

Micro processor : Z80A
Memory : 32k ROM
16k video RAM
16k user RAM/VG8000
32k user RAM/VG8010
Video display processor : TMS9129
Sound processor : AY-3-8910
Interfaces : RF output - 75 Ω
(UHF channel E32)
Monitor output
Audio cassette recorder
2 joysticks
2 cartridge slots
Keyboard : 72 keys
QWERTY /00/20
AZERTY /19
Power supply voltage : 220 V± 10%, 50 Hz

(NL) SPECIFICATIE

Micro processor : Z80A
Geheugen : 32k ROM
16k video RAM
16k gebruikers RAM/VG8000
32k gebruikers RAM/VG8010
Video display processor : TMS9129
Geluidsprocessor : AY-3-8910
Interfaces : RF uitgang - 75 Ω
(UHF kanaal E32)
Monitor uitgang
Audio cassette recorder
2 handbedieningen
2 cartridge sleuven
Toetsenbord : 72 toetsen
QWERTY /00/20
AZERTY /19
Voedingsspanning : 220 V± 10%, 50 Hz

(F) CARACTERISTIQUES TECHNIQUES

Micro processeur : Z80A
Mémoire : 32k ROM
16k RAM vidéo
16k RAM utilisateur/VG8000
32k RAM utilisateur/VG8010
Processeur vidéo : TMS9129
Processeur son : AY-3-8910
Interfaces : Sortie RF - 75 Ω
(canal UHF E32)
Sortie monitor
Audio cassette
2 poignées
2 "slots" cartouche
Clavier : 72 touches
QWERTY /00/20
AZERTY /19
Tension d'alimentation : 220 V± 10%, 50 Hz

(D) TECHNISCHE DATEN

Micro Prozessor : Z80A
Speicher : 32k ROM
16k Video RAM
16k Gebruichers-RAM/VG8000
32k Gebruichers-RAM/VG8010
Video Prozessor : TMS9129
Tone Prozessor : AY-3-8910
Schnittstellen : RF Ausgang - 75 Ω
(UHF-Kanal E32)
Monitor Ausgang
Audio Kasette Recorder
2 Handbedienungen
2 Kassetenschlitze
Tastatur : 72 Tasten
QWERTY /00/20
AZERTY /19
Versorgungsspannung : 220 V± 10%, 50 Hz

(I) DATI TECNICI

Microprocessore : Z80A
Memoria : 32k ROM
16k RAM video
16k RAM utilizzatori/VG8000
32k RAM utilizzatori/VG8010
Processore display video : TMS9129
Processore suono : AY-3-8910
Interfacce : Uscita RF - 75 Ω
(Canale UHF E32)
Uscita monitor
Registratore audio a cassetta
2 leve manuali
2 scanelature per cartuccia
Tastiera : 72 tasti
QWERTY /00/20
AZERTY /19
Tensione di alimentazione : 220 V± 10%, 50 Hz

Documentation Technique Service Dokumentation Documentazione di Servizio Huolto-Ohje Manual de Servicio Manual de Servicio



Subject to modification
4822 727 15121
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PHILIPS

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Original by Bas Kornalijnslijper, MCWF

GB

NOTES

On the PCB of the supply unit a hatched printing has been applied, warning the technician for unwanted contact with parts that connect directly to the mains voltage.

WARNING

Switch off the set before exchanging cartridges.

ADJUSTMENTS

Clock frequency /00/20

- Connect a frequency counter to 31C721.
- Adjust C900 for a frequency of 4.433619 MHz.

Modulation depth /00/20

- Adjust C901 for optimal picture and sound quality.

Voltage /19

- Adjust R576 so that at point R557-R558 the voltage is 2.5 V.

UHF-adjustment /00/20

- U101 is adjusted during the production to channel 32.
- The UHF-adjustment can be varied from channel 31 to channel 33 by L650.
- The other coils of U101 must remain unchanged.

Power supply voltage

- Adjust R168 for a voltage reading of 5 V across the output (C201).

NL

OPMERKINGEN

Op het printpaneel van de voedingsunit is een gearceerde opdruk aangebracht, waardoor de reparateur gewaarschuwd wordt voor ongewilde aanraking van delen die rechtstreeks met de netspanning zijn verbonden.

WAARSCHUWING

Het uitwisselen van cartridges dient plaats te vinden bij een uitgeschakeld apparaat.

INSTELLINGEN

Klokfrequentie /00/20

- Sluit een frequentieteller aan op 31C721.
- Regel C900 af op een frequentie van 4.433619 MHz.

Modulatielepte /00/20

- Stel C901 in voor optimale beeld- en geluidskwaliteit.

Spanning /19

- Regel R576 zodanig af dat er op het punt R557-R558 een spanning staat van 2,5 V.

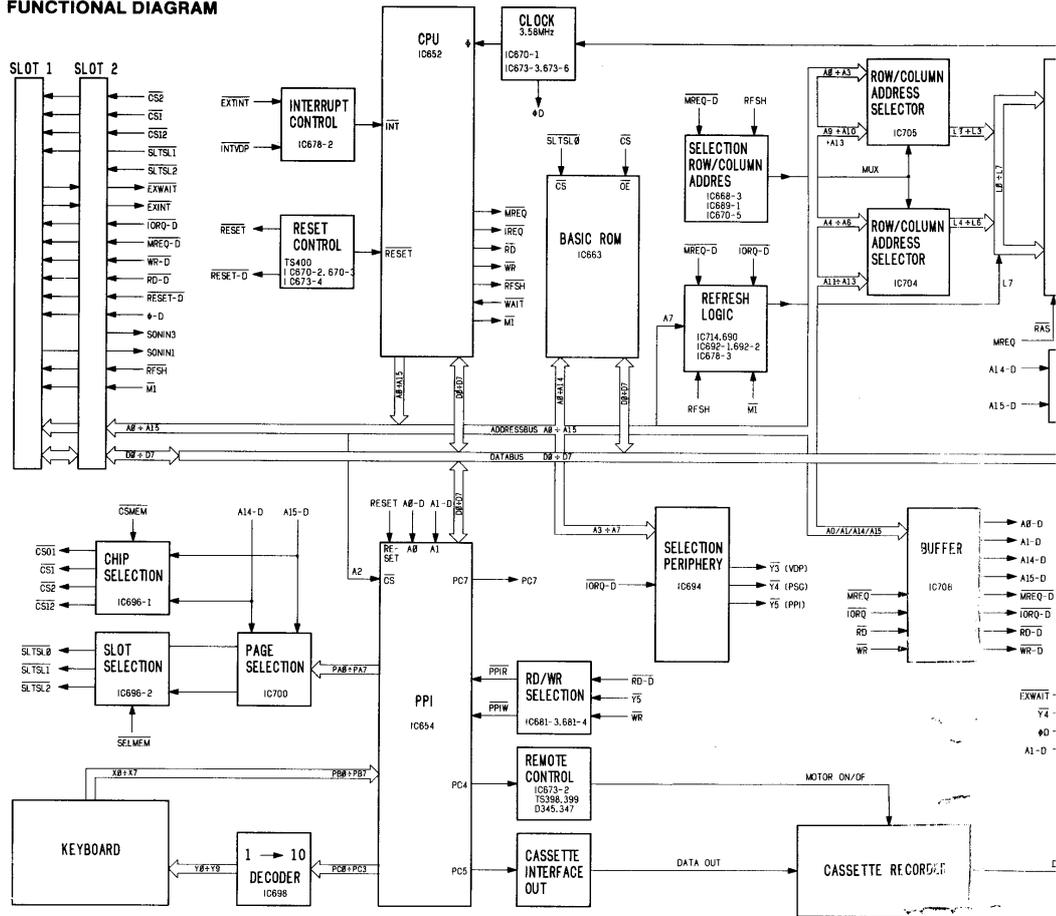
UHF-afstemming /00/20

- Tijdens de productie wordt U101 ingesteld op kanaal 32.
- Met L650 kan de UHF-afstemming gevarieerd worden van kanaal 31 tot kanaal 33.
- De andere spoelen van U101 moeten ongewijzigd blijven.

Voedingsspanning

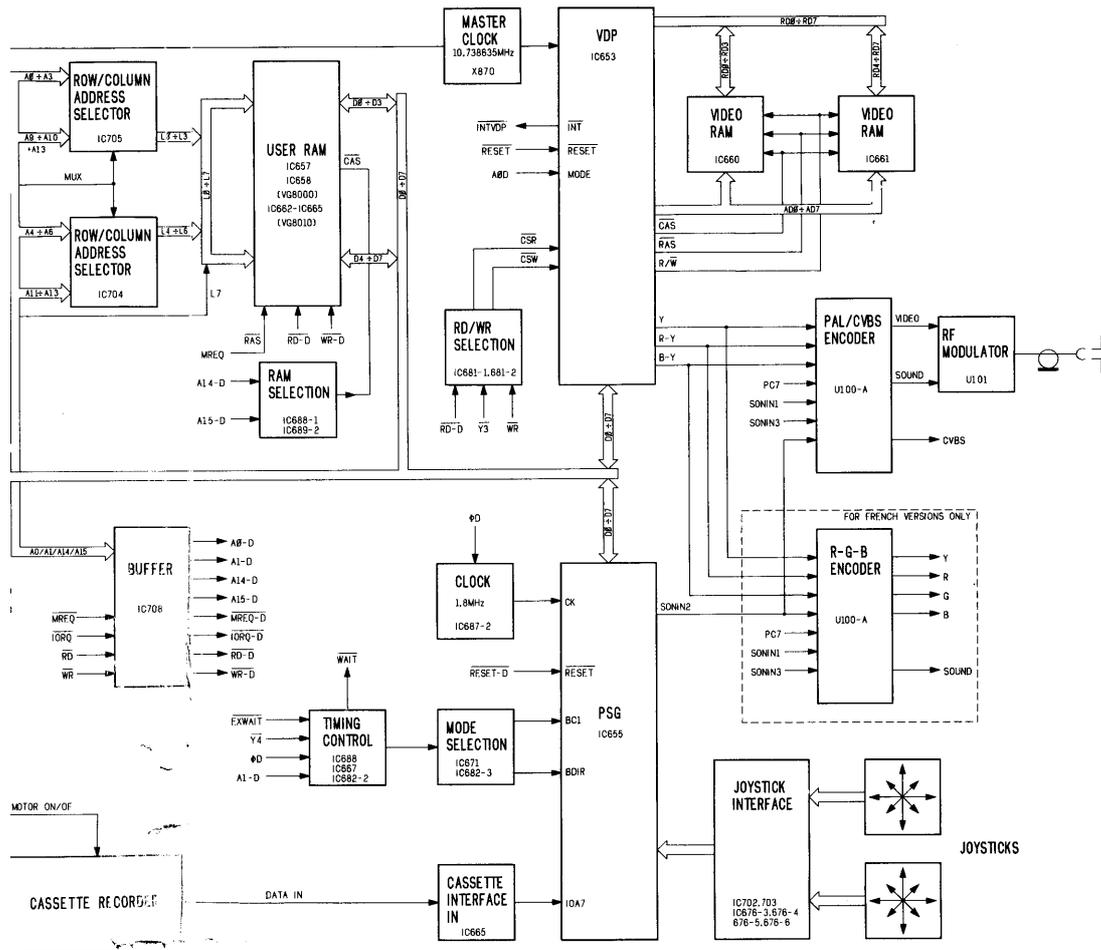
- Stel R168 in op een spanning van 5 V over de uitgang (C201).

FUNCTIONAL DIAGRAM



SPECIFICATION OF IC's

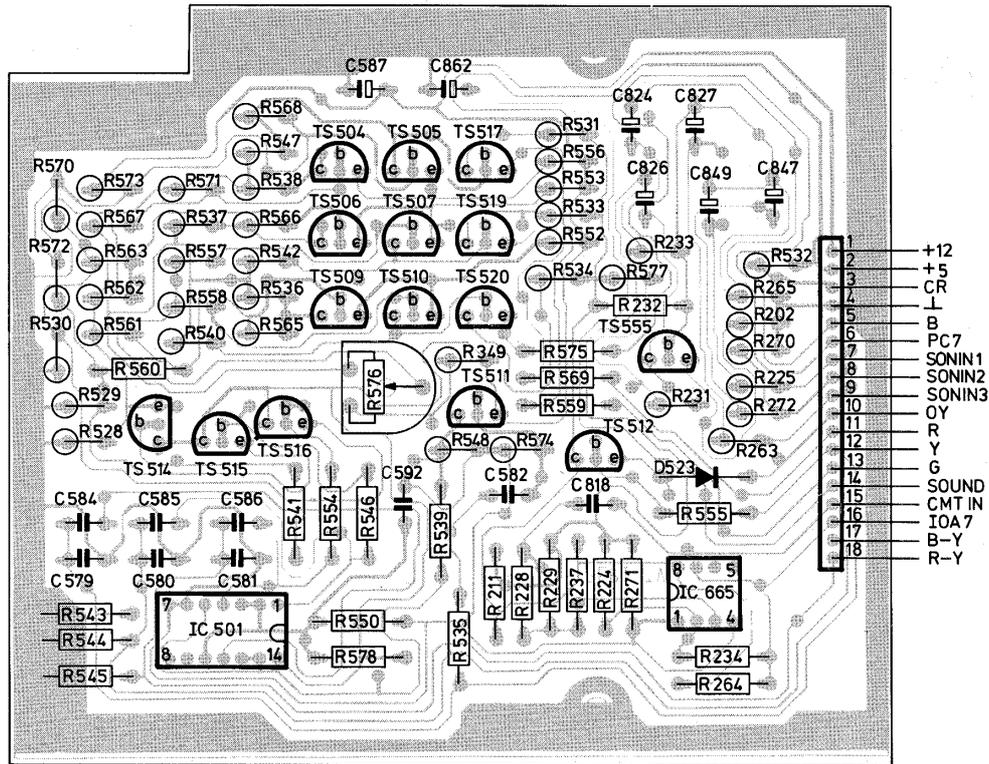
Position	Type	Description	Function	
IC652	Z80A	μ-Processor	C.P.U.	IC688
IC653	TMS9129	V.D.P.	Video display processor	IC689
IC654	MSM82C55A5RS	P.P.I.	Programmable peripheral interface	IC690
IC655	AY-3-8910	P.S.G.	Programmable sound generator	IC692
IC657	TMS4416-15	RAM	User RAM/VG8000	IC694
IC658	TMS4416-15	RAM	User RAM/VG8000	IC696
IC660	TMS4416-20NL	RAM	Video RAM	IC698
IC661	TMS4416-20NL	RAM	Video RAM	IC700
IC663	23256AC	ROM	BIOS	IC702
IC665	LM311N	Voltage comparator	Cassette interface in	IC703
IC667	74LS00N	4x 2-NAND	BC1-P.S.G.	IC704
IC668	74LS00N	4x 2-NAND	CS-RAM, SLTSL0, CK	IC705
IC670	74LS04N	6x inverter	RESET, CK, RFSH	IC708
IC671	74LS02N	4x 2-NOR	BDIR-P.S.G.	IC714
IC673	7406N-00	6x inverter	RESET, RESET-D, 0, 0-D	
IC676	7407N	6x buffer	TRG-A1, TRG-A2, TRG-B1, TRG-B2	VG8010
IC678	74LS08N	4x 2-AND	INT, CS, CS2, L7	IC662
IC681	74LS32N	4x 2-OR	PPIR, PPIW, CSW, CSR	IC663
IC682	74LS32N	4x 2-OR	PPIR, PPIW, CSW, CSR	IC664
IC687	74LS74AN	2x D-FF	CSMEM, SELMEM	IC665
			CK-P.S.G., EN - Page selector	IC666



PRS.00062

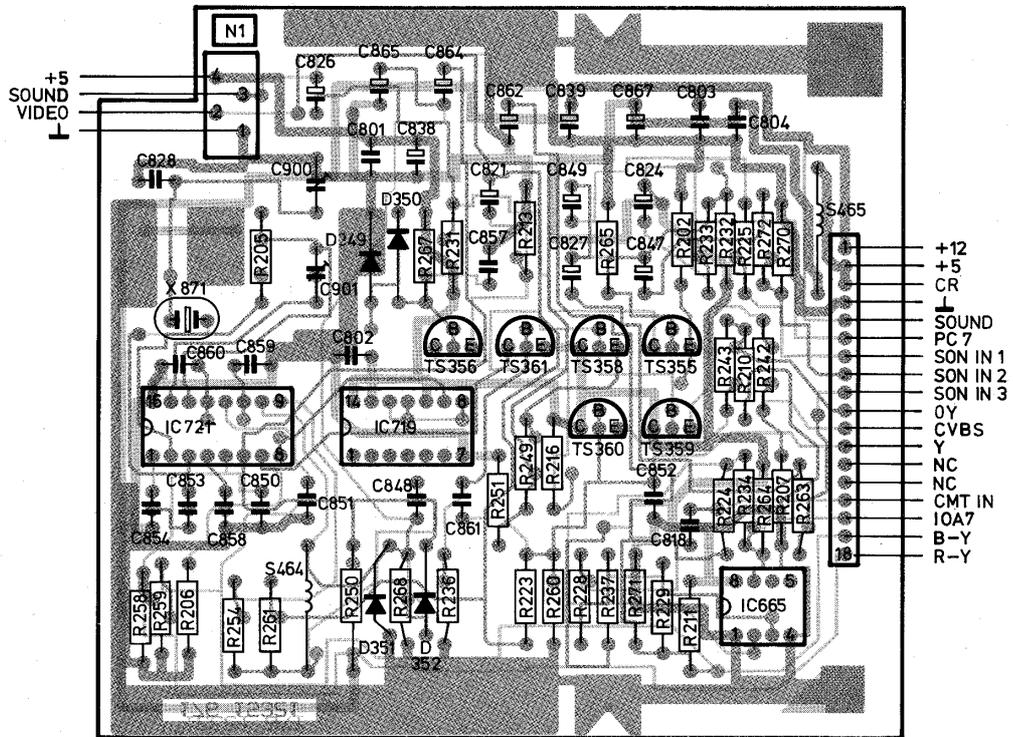
interface	IC688	74LS74AN	2x D-FF	WAIT
trator	IC689	74LS74AN	2x D-FF	MUX, CAS
	IC690	74LS74AN	2x D-FF	Selection M.S.B. row-address
	IC692	74LS125	4x 3-state buffer	Buffer M.S.B. row-address
	IC694	74LS138N	1 → 8 Decoder	Periphery selection
	IC696	74LS139N	2x 1 → 4 Decoder	Chip and slot selection
	IC698	74LS145N	1 → 10 Decoder	Keyboard
	IC700	74LS153N	2x 4 → 1 Multiplexer	Page selection
	IC702	74LS157N	2x 4-bit selector	Position joystick 1-2 selector
	IC703	74LS157N	2x 4-bit selector	Trigger joystick 1-2 selector
	IC704	74LS157N	2x 4-bit selector	Row/column address selector
	IC705	74LS157N	2x 4-bit selector	Row/column address selector
	IC708	74LS244N	8x tri-state buffer	Buffer
	IC714	74LS393N	2x 4-bit counter	256-cycle refresh counter
	VG8010 only:			
I, TRG-B2	IC662	TMS4416-15	RAM	User RAM
	IC663	TMS4416-15	RAM	User RAM
	IC664	TMS4416-15	RAM	User RAM
ctor	IC665	TMS4416-15	RAM	User RAM
	IC666	74LS74AN	2x D-FF	CAS1, CAS2

RGB ENCODER (only for versions with RGB out)



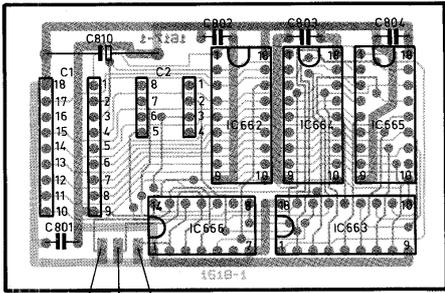
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PAL ENCODER (only for versions with CVBS out)



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32K RAM CIRCUIT

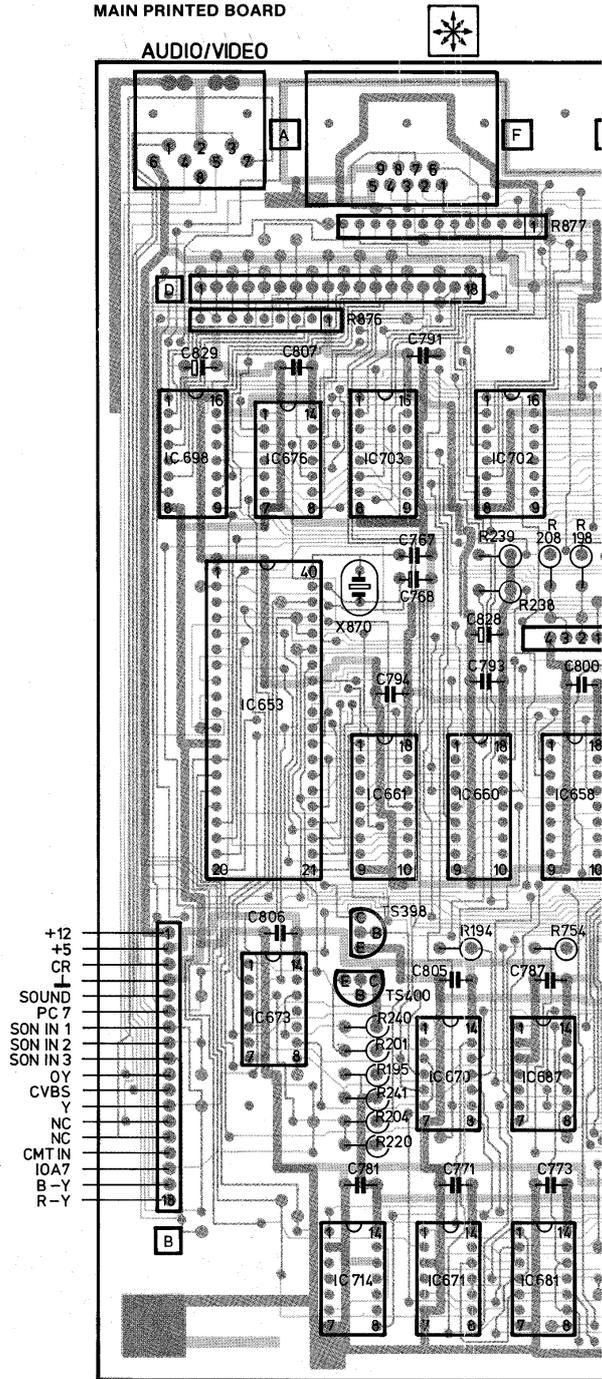


1-IC689 8-IC689 2-IC696

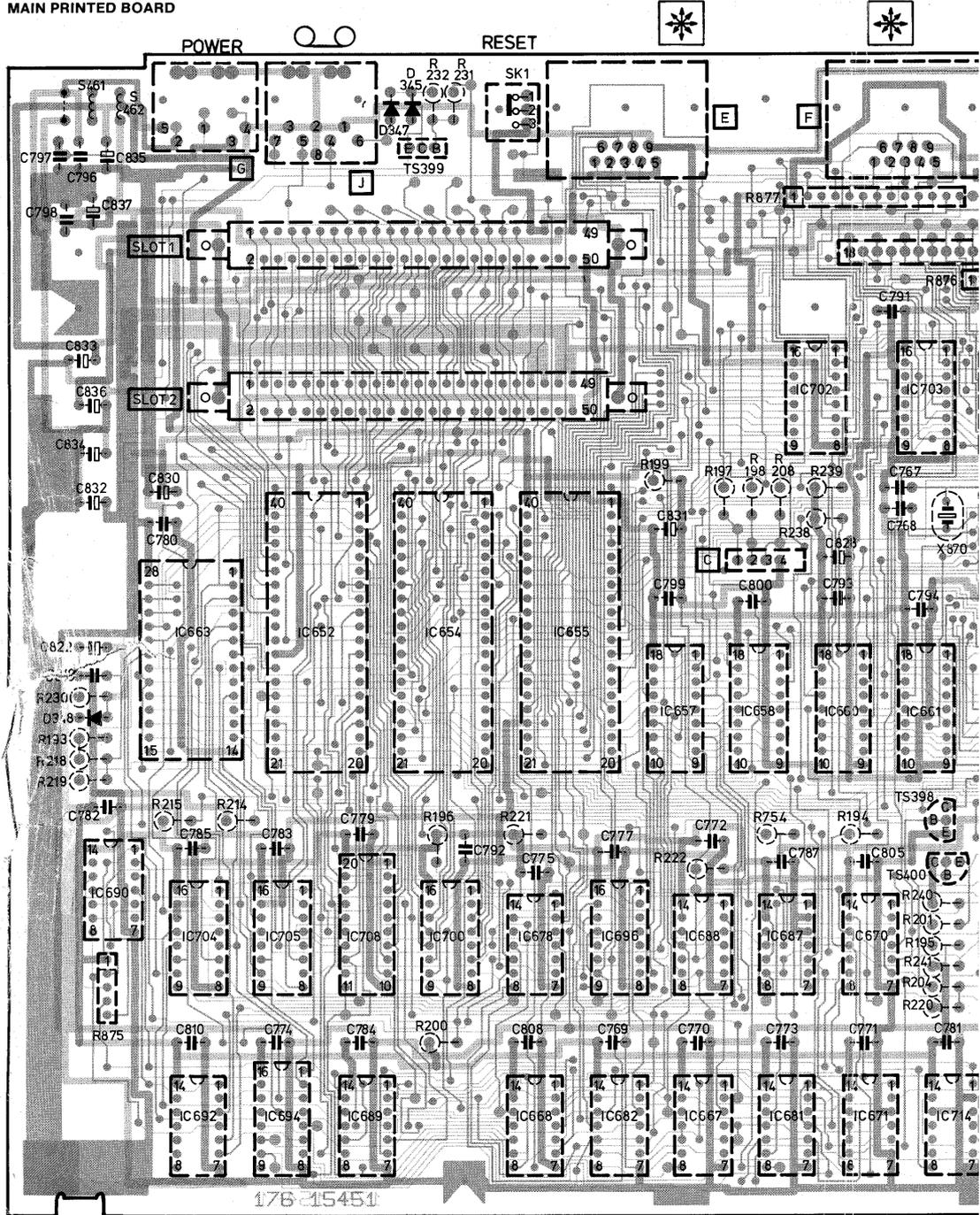
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MAIN PRINTED BOARD

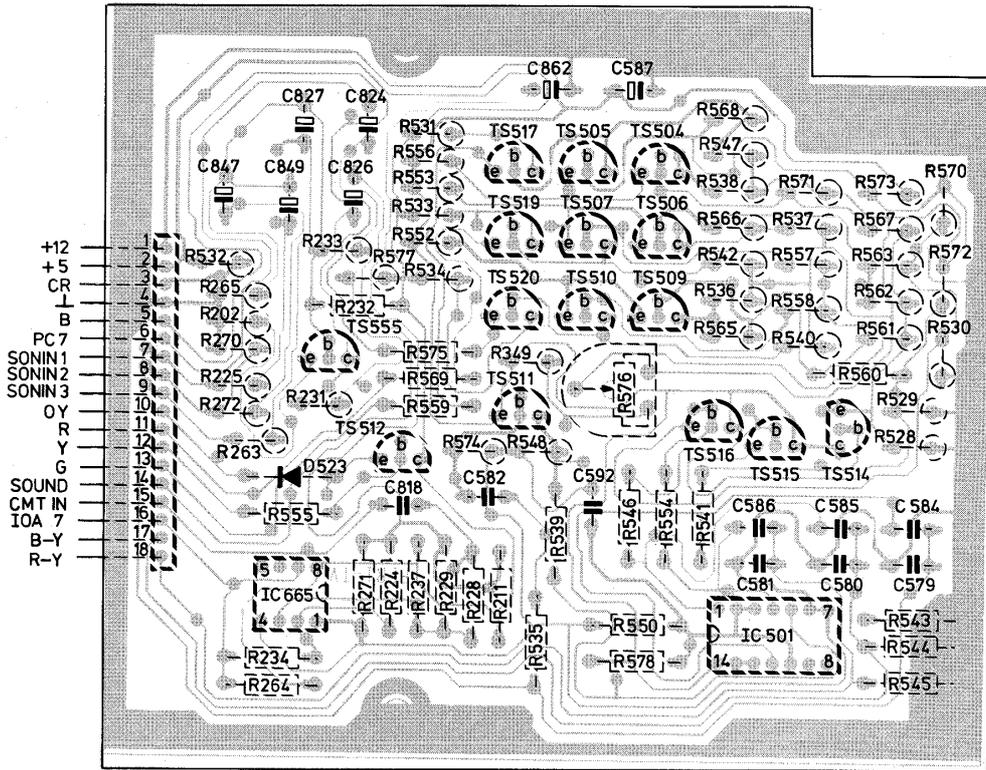
AUDIO/VIDEO



MAIN PRINTED BOARD

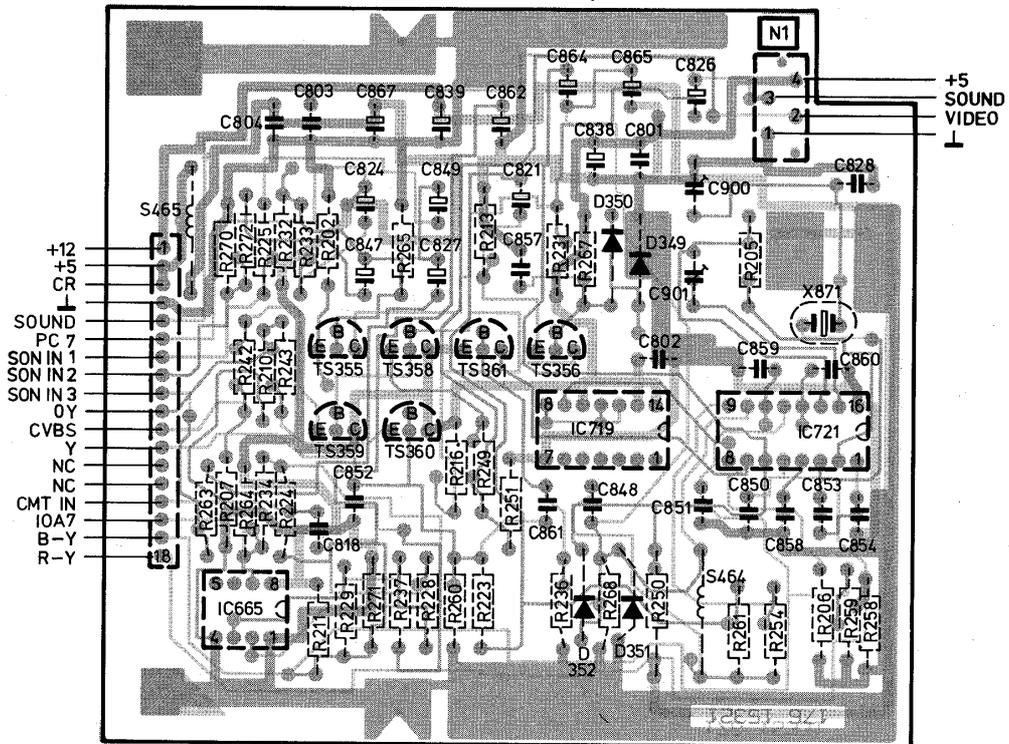


RGB ENCODER (only for versions with RGB out)



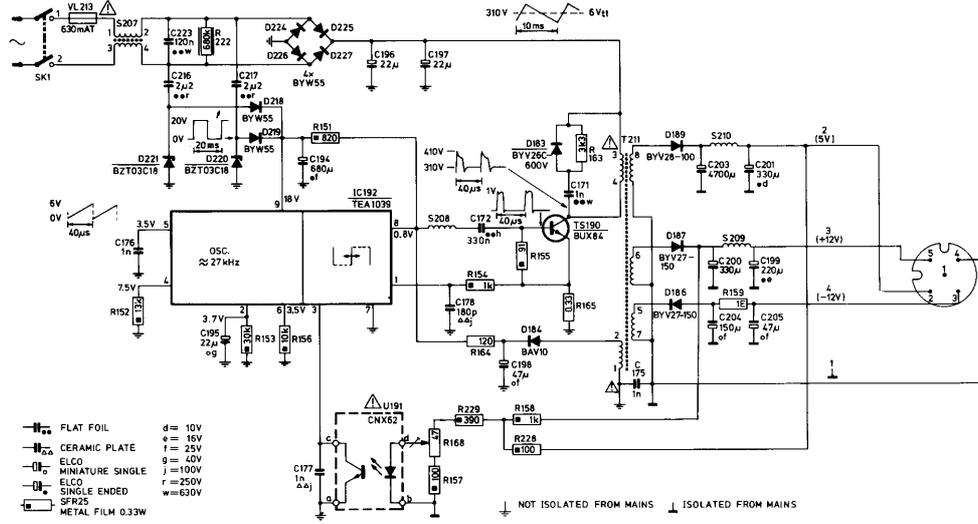
36 538B12

PAL ENCODER (only for versions with CVBS out)

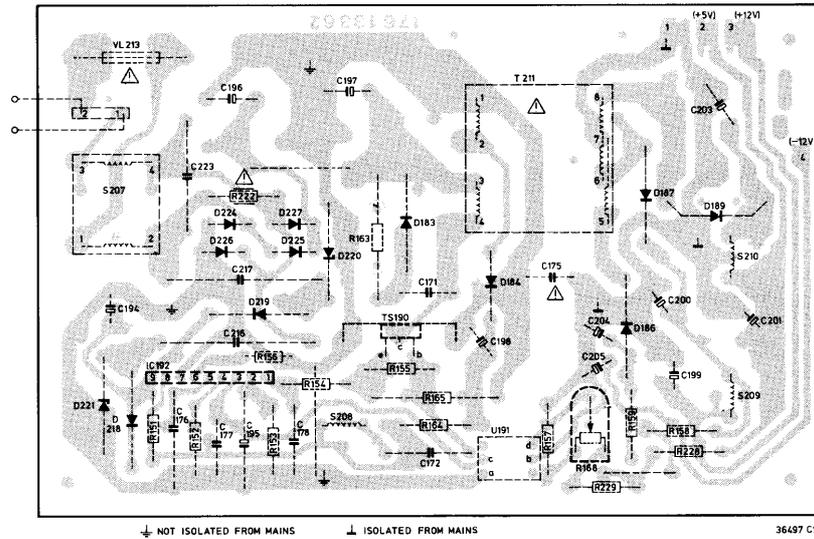


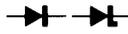
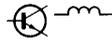
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EXTERNAL POWER SUPPLY UNIT



36498 C12



					
R159	1R	4822 111 30483	D218	BYW55	4822 130 31083
R163	3k3 PR52	4822 116 51153	D219	BYW55	4822 130 31083
R164	120 PR37	5322 116 55062	D220	BZT03C18	4822 130 32152
R165	33	4822 113 80324	D221	BZT03C18	4822 130 32152
R168	47 Trimming	4822 100 10679	D224	BYW55	4822 130 31083
R222	680k Safety	4822 111 30663	D225	BYW55	4822 130 31083
					
C175	1 nF	4822 122 10248	TS190	BUX84	4822 130 41121
C176	1 nF	4822 121 41729	S207		4822 156 21098
C196	22 mF - 385 V	4822 124 21306	S208		4822 157 51719
C197	22 mF - 385 V	4822 124 21306	S209		4822 157 51722
C200	330 mF	4822 124 21503	S210	4.5 μ H	4822 157 51922
C203	4700 mF - 10 V	4822 124 21408	Various		
			U191 CNX62 4822 130 90121		
IC192	TEA1039	4822 209 81434	TS211 Transformer 4822 146 30462		
			VL213 630 mA-T 4822 253 30018		
D183	BYV26C600	4822 130 32343	SK1 4822 410 23623		
D184	BAV10	4822 130 30594			
D186	BYV95A	4822 130 41601			
D187	BYV27/150	4822 130 31628			
D189	BYV28/100	4822 130 32151			

MAIN PRINTED BOARD

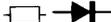
IC652	Z80A	4822 209 10569
IC653	TMS9129	4822 209 10904
IC654	MSM8255	4822 209 10902
IC655	AY-3-8910	4822 209 10903
IC657*	TMS4416-15	4822 209 10571
IC658*	TMS4416-15	4822 209 10571
IC660	TMS4416-20	4822 209 10553
IC661	TMS4416-20	4822 209 10553
IC663	23256AC	4822 209 50307/00/20
IC667	74LS00N	5322 209 84823
IC668	74LS00N	5322 209 84823
IC670	74LS04N	4822 209 80783
IC671	74LS02N	5322 209 85312
IC673	7406N-00	5322 209 86327
IC676	7407N	5322 209 84761
IC678	74LS08N	5322 209 84995
IC681	74LS32N	5322 209 85311
IC682	74LS32N	5322 209 85311
IC687	74LS74AN	4822 209 80782
IC688	74LS74AN	4822 209 80782
IC689	74LS74AN	4822 209 80782
IC690	74LS74AN	4822 209 80782
IC692	74LS125	5322 209 85966
IC694	74LS138N	5322 209 85647
IC696	74LS139N	5322 209 85839
IC698	74LS145N	4822 209 81083
IC700	74LS153N	5322 209 85488
IC702	74LS157N	5322 209 81521
IC703	74LS157N	5322 209 81521
IC704	74LS157N	5322 209 81521
IC705	74LS157N	5322 209 81521
IC708	74LS244N	5322 209 86017
IC714	74LS393N	4822 209 80447
TS398	BC548B	4822 130 40937
TS399	BD140	4822 130 40824
TS400	BC548B	4822 130 40937
R875	4x 4k7	4822 116 90135
R876	8x 4k7	4822 116 90134
R877	12x 5k6	4822 116 90136
X870	10.738635 MHz	4822 242 70842
D345	1N4148	4822 130 30621
D347	1N4148	4822 130 30621
D348	1N4148	4822 130 30621
D896	CQV60A4	4822 130 32464
D897	CQV61A	4822 130 32263
D898	CQV62	4822 130 32117
S461	0.47 MU	4822 157 50967
S462	0.47 MU	4822 157 50967

PAL ENCODER

U100	PAL encoder	4822 212 10206
IC665	LM311N	5322 209 85503
IC719	74LS74AN	4822 209 80782
IC721	TDA2501	4822 209 82146
TS355	BC548B	4822 130 40937
TS356	BC548B	4822 130 40937
TS358	BC548B	4822 130 40937
TS359	BC548B	4822 130 40937
TS360	BC548B	4822 130 40937
TS361	BC558B	4822 130 44197
C900	8 - 25 pF	4822 125 50233
C901	8 - 40 pF	4822 125 50234
C827	10 mF -50 V	4822 124 40435
C828	10 pF -10 V	4822 122 32185
C847	10 mF -50 V	4822 124 40435
C849	10 mF -50 V	4822 124 40435
C862	10 mF -50 V	4822 124 40435
X871	6,19 kHz	4822 242 70323
S464	10 μH	4822 157 51462
S465	0,47 μH	4822 157 50967
D349	1N4148	4822 130 30621
D350	1N4148	4822 130 30621
D351	BZX79C 3V3	5322 130 31504
D352	BZX79C 2V7	5322 130 34563

* Not for VG8010

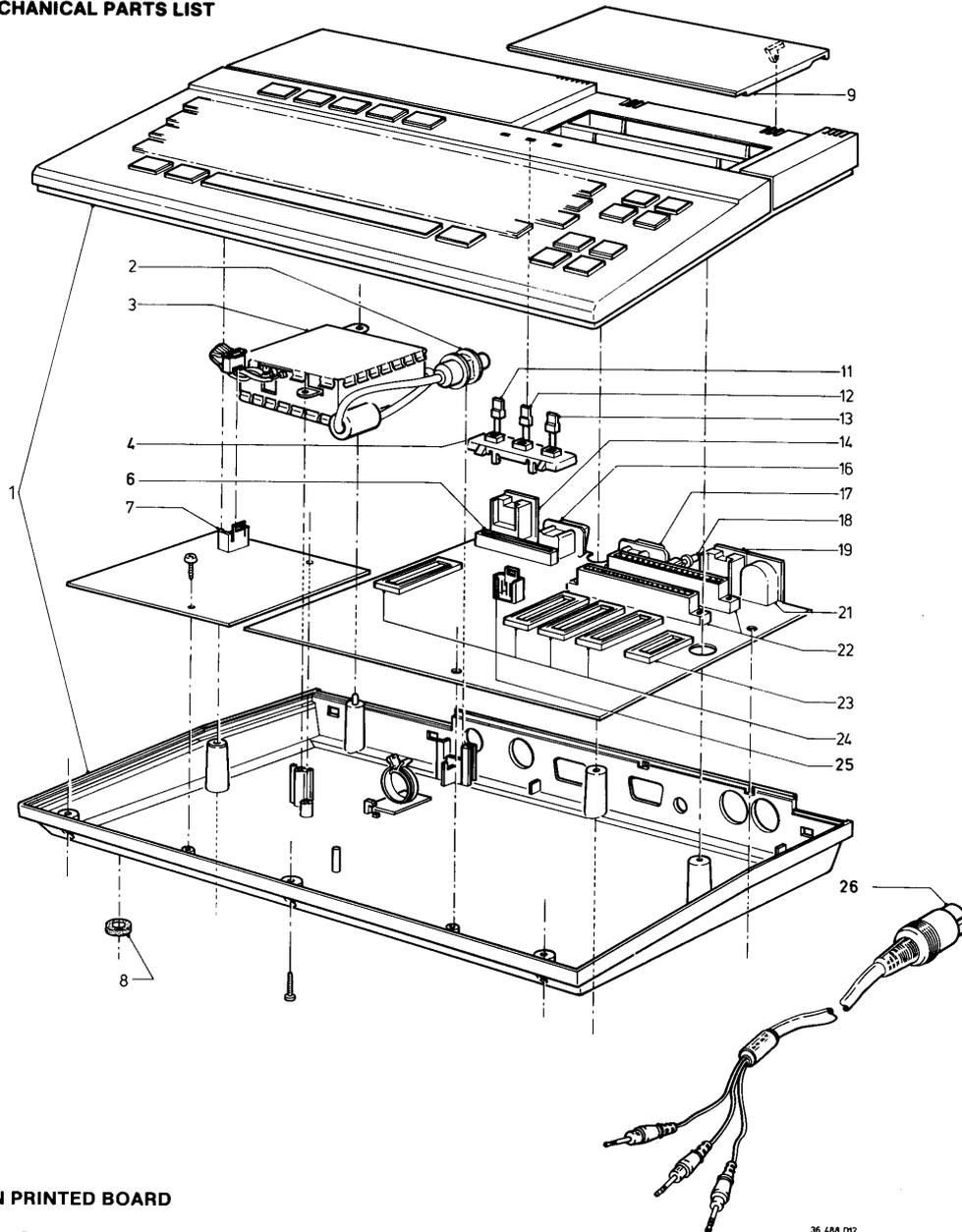
RGB ENCODER

		
U100	RGB ENCODER	4822 212 10207
		
TS355	BC548B	4822 130 40937
TS504	BF324	4822 130 41448
TS505	BF324	4822 130 41448
TS506	BF324	4822 130 41448
TS507	BF324	4822 130 41448
TS509	BF324	4822 130 41448
TS510	BF324	4822 130 41448
TS511	BC558B	4822 130 44197
TS512	BC548B	4822 130 40937
TS514	BC548B	4822 130 40937
TS515	BC548B	4822 130 40937
TS516	BC548B	4822 130 40937
TS517	BC548B	4822 130 40937
TS519	BC548B	4822 130 40937
TS520	BC548B	4822 130 40937
		
C592	68 nF - 63 V	4822 121 41156
C827	10 mF - 50 V	4822 124 40435
C847	10 mF - 50 V	4822 124 40435
C849	10 mF - 50 V	4822 124 40435
C862	10 mF - 50 V	4822 124 40435
		
R576	trimmer 1K	4822 100 10254
D523	1N4148	4822 130 30621
		
IC501	HEF4066BP	5322 209 10439
IC665	LM311N	5322 209 85503

32k RAM (for VG8010 only)

		
	32k RAM	4822 212 10213
		
IC662	TMS4416-15	4822 209 10571
IC663	TMS4416-15	4822 209 10571
IC664	TMS4416-15	4822 209 10571
IC665	TMS4416-15	4822 209 10571
IC666	74LS74AN	4822 209 80782

MECHANICAL PARTS LIST



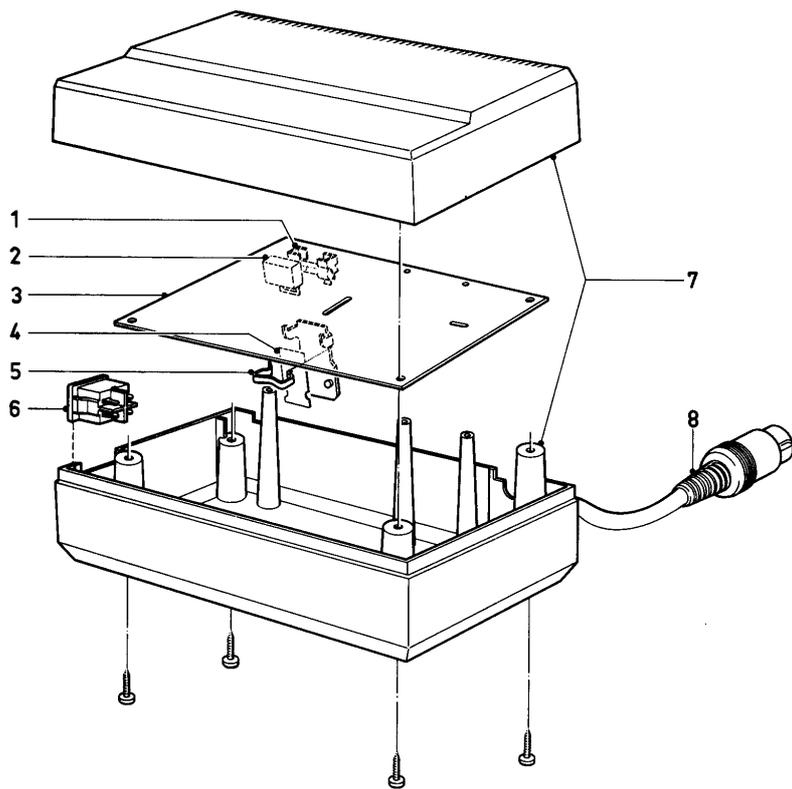
MAIN PRINTED BOARD

1	Cabinet/Keyboard /00/20	4822 432 30214	
1	Cabinet/Keyboard /19	To be ordered locally	
2	Cable UHF modulator	4822 321 20989	
3	UHF modulator 5,5 MHz/00	4822 212 10204	
4	Holder LEDS	4822 256 90658	
6	Keyboard socket (18p)	4822 267 50428	
8	Table protector	5322 466 64195	
9	Cover cartridge sockets	4822 450 60427	
11	Power LED (red)	4822 130 32464	
12	Caps LED (yellow)	4822 130 32263	
13	Code LED (green)	4822 130 32117	
14	Connector audio/video (8p)	4822 267 50461	
16	Connector left H.C. (9p)	4822 267 50481	
17	Connector right H.C. (9p)	4822 267 50481	
18	Push button RESET	4822 410 23622	
19	Connector cassette recorder (8p)	4822 267 50461	
21	Connector power supply (5p)	4822 267 40544	
22	Cartridge socket 2x 25 fold	4822 267 70133	
23	IC-socket (28p)	5322 255 44047	
24	IC-socket (40p)	5322 255 44217	
25	Socket (4p) LEDS	4822 267 40498	
26	Cassette recorder cable	4822 321 20982	

CONNECTORS 32 RAM CIRCUIT VG8010

Connector 4 Fold	5322 265 44057
Connector 9 Fold	5322 265 64028

36 488 012



36 432 C12

POWER SUPPLY

1	Fuse holder	4822 492 60063
2	AC-socket (2p)	4822 265 20172
3	Power supply	4822 212 10205
4	Mica plate	4822 466 91438
5	Clamping spring fixing transistor	4822 492 63066
6	Push button ON/OFF	4822 410 23623
7	Cabinet	4822 432 30205
8	Power supply cable	4822 321 20913

SYMBOLS USED IN CIRCUIT DIAGRAMS

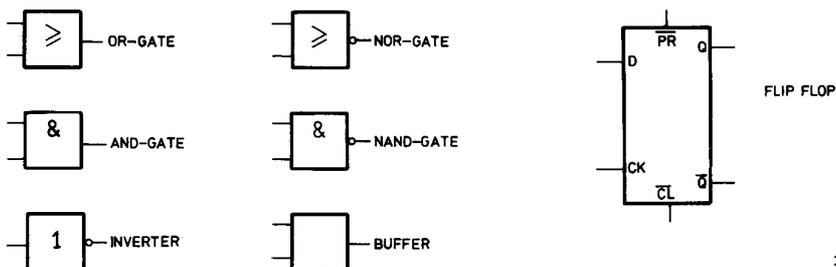
SYMBOL	TYPE	$t_{amb}^{P 70^{\circ}}$	TOLERANCE	SERIES	RANGE 2322...
	SFR16	0.2	10Ω-1M 5%	E24	180
	SFR25	0.33	1Ω-10M 5%	E24	181
	SFR30	0.5	1Ω-10M 5%	E24	182
	CR52	0.67	1Ω-1M 5%	E24	213
	MR25	0.4	1Ω-1M 1% (2%)	E24	151
	MR30	0.5	1Ω-1M 1% (2%)	E24	152
	VR37	0.5	220k-33M 5%	E24	242
	VR68	1	100k-68M 5%	E24	244

SYMBOL	TYPE	VOLTAGE DC	TOLERANCE	RANGE 2222...
	POLYESTER FLATFOIL	SEE NOTE	10%	342 ÷ 352 365 ÷ 368
	PLATE CERAMIC	SEE NOTE	DEPENDING ON CAPACITY	629 ÷ 683
	ELCO MINIATURE SINGLE	SEE NOTE	-10+50%	015 ÷ 033 041 ÷ 043
	ELCO SINGLE ENDED	SEE NOTE	± 20%	035

NOTE :

*	f = 25V	g = 40V	h = 63V	j = 100V	l = 125V	m = 150V	n = 160V	q = 200V	r = 250V	s = 300V	t = 350V	u = 400V	v = 500V	w = 630V	x = 1000V	z = 1600V	E = 20V	F = 35V	G = 50V	H = 75V	I = 80V
a = 2.5V	b = 4V	c = 6.3V	d = 10V	e = 16V																	

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Service Information

1985-02-07

VG8000/VG8010

CT85-2

Colour television

(GB)

In some versions of the VG8000 and the VG8010 crystal X871 on the PAL/CVBS encoder has been replaced by the oscillator circuit below.

(NL)

In sommige uitvoeringen van de VG8000 en VG8010 is het kristal X871 op de PAL/CVBS encoder vervangen door onderstaande oscillatorschakeling.

(F)

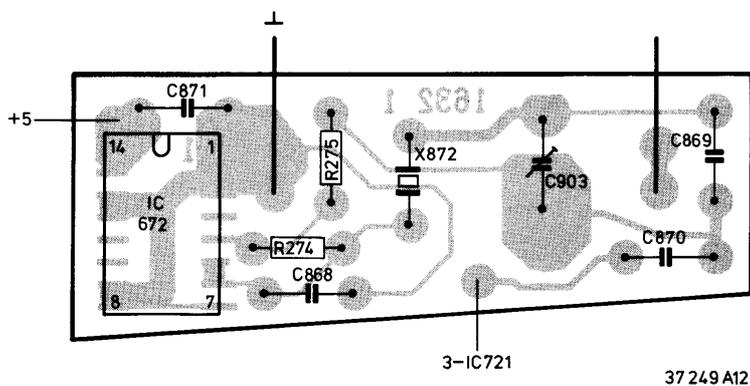
Dans certains versions du VG8000 et VG8010, le cristal X871 sur le codeur PAL/Vidéo composite est remplacé par le circuit oscillateur qui figure ci-dessous.

(D)

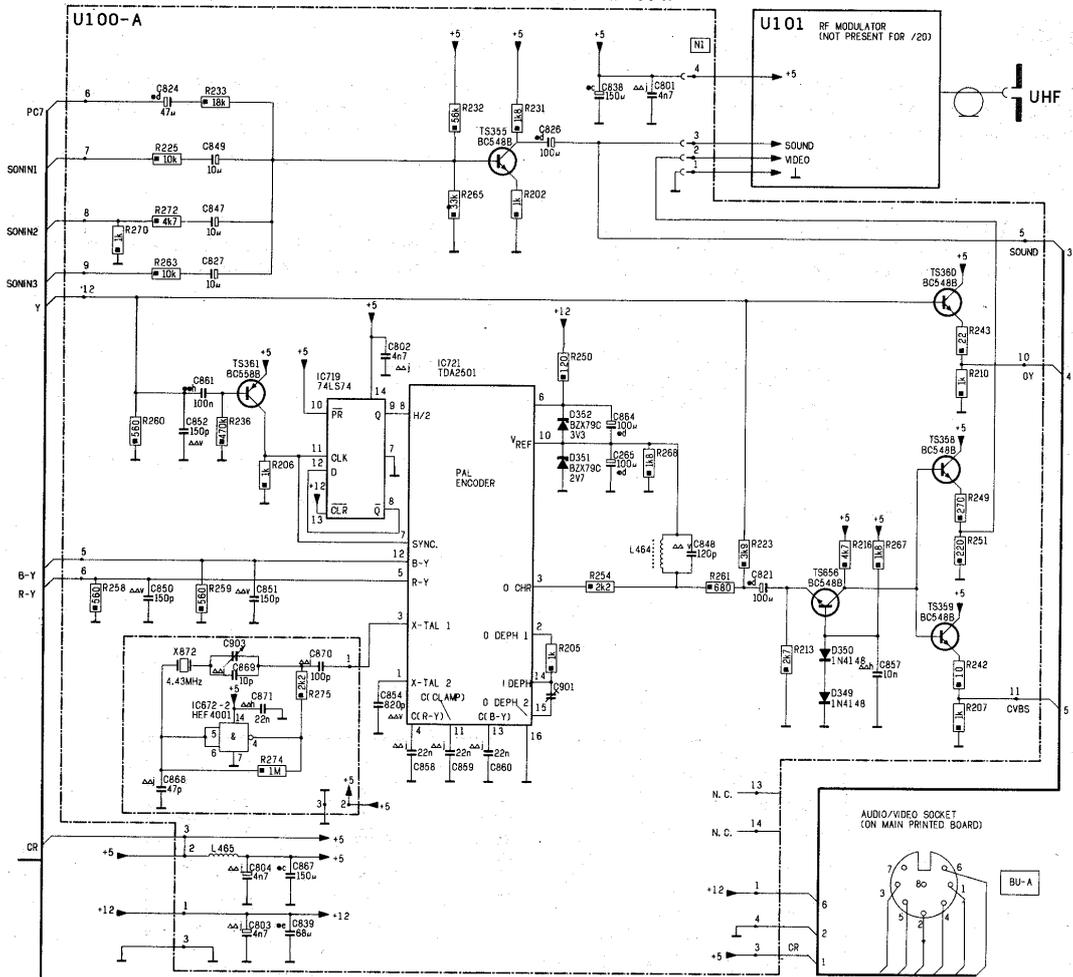
In manchen Ausführungen des VG8000 und VG8010 wurde Quarz X871 am PAL/CVBS - Codierer durch nachstehende Oszillatorschaltung ersetzt.

(I)

Su certe versioni de VG8000 e VG8010, il cristallo X871 sul codatore PAL/CVBS è stato sostituito dal circuito oscillatore di cui sotto.

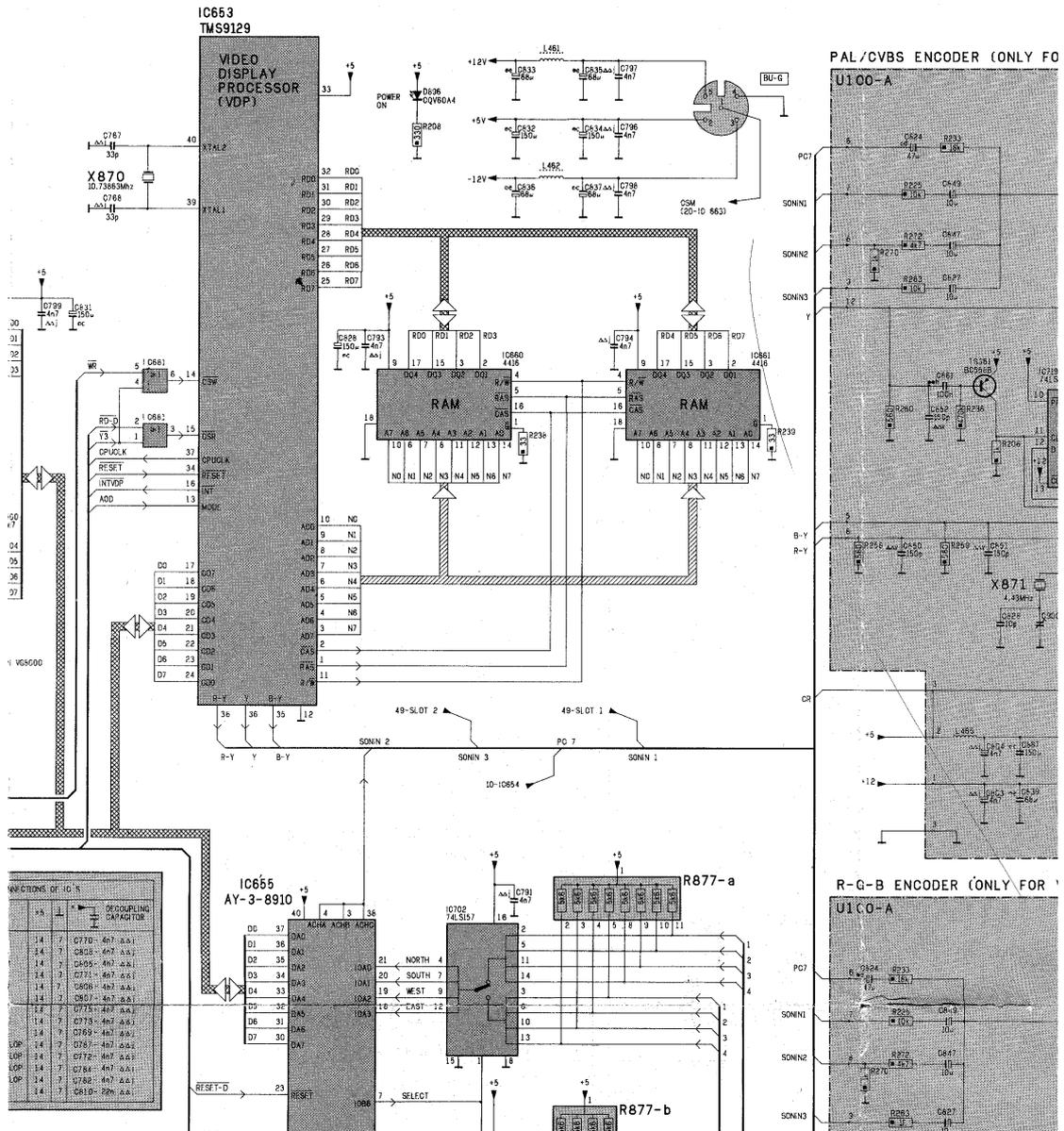


PAL/CVBS ENCODER (ONLY FOR VERSIONS WITH CVBS OR RF OUT)



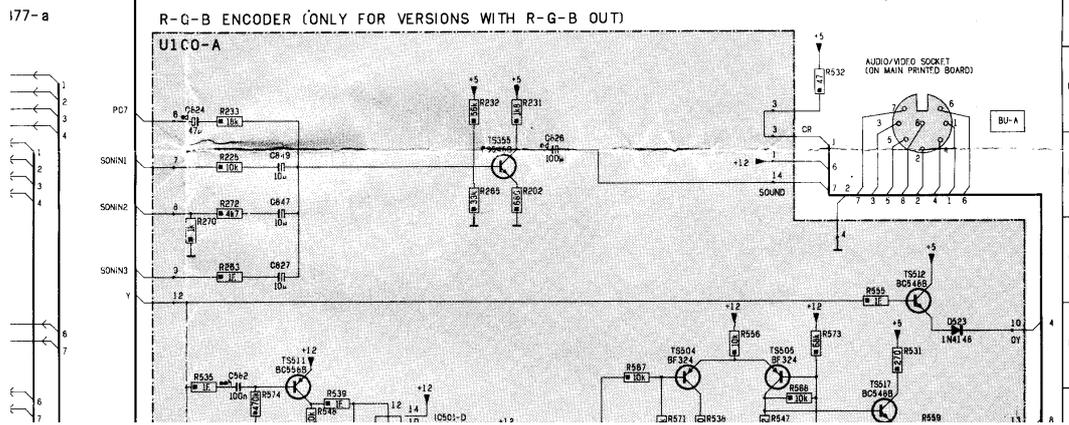
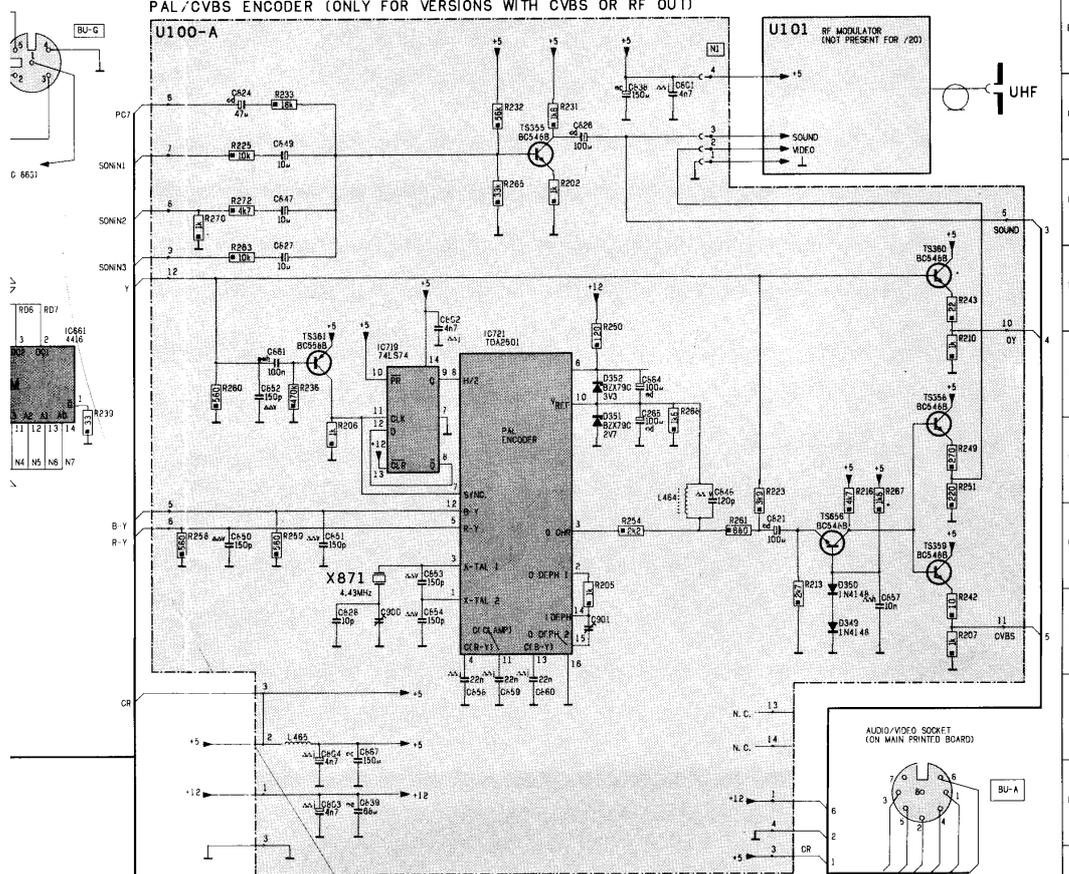
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ORA AA-1
T08

137	R546	R34	R554	S34	R561	S36	R568	P36	R574	S32	R754	J11	L465	J32	D351	F36	D000	U14	T8361	F32	IC501	R33	T8510	S37	T8517	P36	IC655	L23	IC663	E11	IC666	J14	IC670	C11	IC671	Q20	1		
134	R547	Q37	R555	S38	R562	S36	R569	S36	R575	S38	R755	J13	L466	J15	D352	F36	T8362	S34	T8363	S14	T8504	P36	T8511	P36	T8518	R39	T8520	S38	IC656	R36	IC664	T30	IC668	J10	IC670	Q	IC671	P30	1
137	R548	Q32	R556	P37	R563	S36	R570	S36	R576	S38	R756	J14	L467	J16	D353	F36	T8364	S35	T8365	S15	T8505	R38	T8512	Q39	T8519	S39	IC657	R18	IC665	Q11	IC669	Q	IC670	Q	IC671	S	IC672	S	1
132	R549	R38	R557	R38	R565	S36	R571	S36	R577	Q34	L461	Q27	D348	F	D773	S12	T8358	S38	T8400	F	T8507	R37	T8514	Q34	IC652	R	IC658	D18	IC659	P22	IC662	E14	IC670	C	IC671	S	IC672	S	1
132	R550	T34	R558	S38	R566	S36	R572	S36	R578	Q34	L462	C27	D349	S38	D885	R25	T8359	S38	IC501	Q34	T8507	P37	T8515	R34	IC653	Q22	IC660	S26	IC667	P19	IC670	Q14	IC671	Q21	IC672	S	IC673	S	1
132	R552	S37	R560	S36	R567	P36	R573	P36	R579	S34	L464	Q36	D350	S38	D887	T26	T8360	S38	IC501	Q34	T8508	S36	T8516	R34	IC654	L10	IC661	E28	IC668	P19	IC670	C14	IC671	Q21	IC672	S	IC673	D12	1

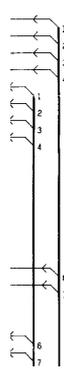


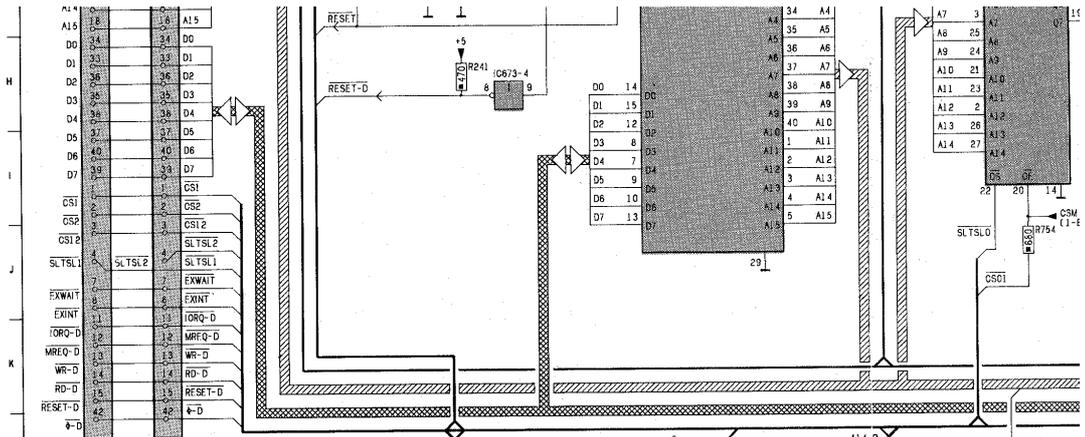
16517 P30	1C655 L23	1C663 E11	1C664 J14	1C670 C11	1C671 Q20	1C676 R26	1C678 E 6	1C681 R12	1C687 Q22	1C690 Q15	1C700 L 8	1C714 R13
16518 R30	1C656 R30	1C665 T30	1C668 I13	1C670 Q 6	1C671 P20	1C676 R26	1C678 R 6	1C681 R22	1C687 P12	1C690 R15	1C702 L25	1C719 F33
16520 R30	1C657 R19	1C667 Q21	1C668 Q14	1C670 Q 6	1C671 M 5	1C676 R26	1C678 R 6	1C681 P21	1C688 R18	1C695 R16	1C703 Q25	1C721 F34
1C652 A 7	1C658 Q18	1C667 P22	1C668 L14	1C670 C 5	1C673 C 5	1C676 S26	1C678 Q10	1C682 P19	1C688 P19	1C694 P15	1C704 M17	1C729 L16
1C653 R22	1C660 Q26	1C667 P21	1C670 Q14	1C671 Q21	1C673 Q12	1C676 R25	1C681 P22	1C682 Q 6	1C688 H14	1C698 L 7	1C705 Q17	
1C654 L10	1C661 Q29	1C667 P19	1C670 C14	1C671 Q21	1C673 Q12	1C676 U12	1C681 Q12	1C682 L 6	1C689 Q14	1C698 R 9	1C708 L15	

29 30 31 32 33 34 35 36 37 38 39 40



177-a





**PIN LAYOUT
CARTRIDGE SLOTS**

SLOT 1

49	45	41	37	33	29	25	21	17	13	9	5	1
48	44	40	36	32	28	24	20	16	12	8	4	0

SLOT 2

49	45	41	37	33	29	25	21	17	13	9	5	1
48	44	40	36	32	28	24	20	16	12	8	4	0

D KEYBOARD CONNECTOR

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**LAY-OUT KEYBOARD MATRIX
FOR FRENCH VERSION**

X0	X1	X2	X3	X4	X5	X6	X7		
1	X	S	I	\	DEAD KEY	L	B	Y0	
N	C	Q	A	J	^	J	V	Y1	
;	W	F	Z	[Ø	8	G	Y2	
/	U	D	2	M	-	I	T	Y3	
H	7	R	3	P	K	6		Y4	
	Y	E	4	[9	O	5	Y5	
↑	CTRL	GRPH	CAPS	CODE	F1	F2	F3	Y6	
F4	F5	ESC	TAB	STOP	←	SE-LECT	RET	Y7	
ES-SPACE	HOME	INS	EFF	←	↑	↓	→	Y8	

