

PHILIPS

14HT3152

MODEL

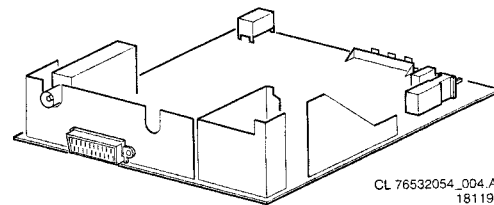
SERVICE MANUAL



Service Service Service

A7H.1

AA

CL 76532054_004.AI
181197

Service Manual

Table of contents

Page

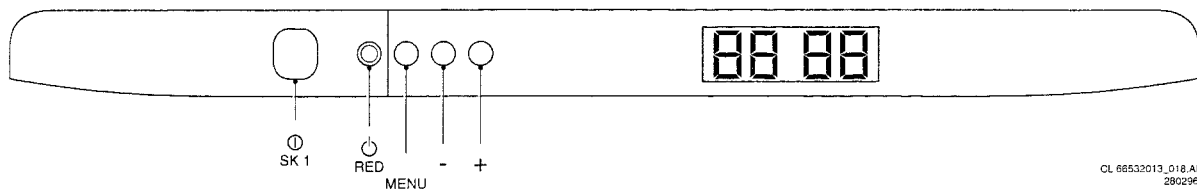
1.	Technical specifications	2		
2.	Connection facilities	2		
	Location of panels	2		
3.	Safety instructions, Maintenance instructions, Warnings and Notes	3		
4.	Mechanical instructions	3		
5.	Block diagram	4		
	Survey of test points	5		
	Overview wave forms	5		
	Diagram supply voltages survey	5		
6.	Fault finding tree	6		
	Repair facilities	6		
7.	<i>Electrical diagrams and print lay-outs</i>		<i>Diagram</i>	<i>PWB</i>
	Power supply (Diagram A1)	9		8
	Deflection (Diagram A3)	10		8
	Synchronisation (Diagram A4)	11		8
	Controls (Diagram A5)	12		8
	Tuner + IF + Scart (Diagram A6)	13		8
	Video + sound (Diagram A7)	14		8
	Smart loader interface (Diagram A6a)	15		15
	Interface (Diagram A8)	15		8
	Teletext (Diagram A9)	16		8
	CRT (14" mn, 20"+21" nn) (Diagram B1)	17		17
	Clock-display (Diagram E1)	18		18
	Radio-module (Diagram E2)	18		18
8.	Electrical adjustments	19		
9.	Circuit description	19		
10.	Directions for use	21		
11.	List of abbreviations	22		
12.	Spare parts list	23		



1. Technical specifications

Mains voltage	: 220 - 240 V $\pm$ 10% AC; 50 Hz $\pm$ 5%	Indications	: On Screen Display (OSD) green/red
Power cons. at 220V~	: 14" 43 W (stand-by $\leq$ 6 W) : 17" 45 W (stand-by $\leq$ 6 W) : 21" 63 W (stand-by $\leq$ 6 W)		: 1 LED ($\odot$ red for stand-by, $\odot$ green for TV-on, blinking red for "RC5" and error code)
Aerial input impedance TV	: 75 Ω - coax	VCR programs	: 0
Min. aerial input VHF	: 30 μ V	Tuning and operating system	: $\square$ PLL
Min. aerial input UHF	: 40 μ V		
Max. aerial input VHF/UHF	: 180mV	UV916E / IEC (PLL)	: VHFa: 48 - 118 MHz : VHFb: 118 - 300 MHz : Hyper: 300 - 470 MHz : UHF: 470 - 861 MHz : UHF: 470 - 861 MHz
Pull-in range colour sync	: $\pm$ 300Hz	U944 / IEC (PLL)	
Pull-in range horizontal sync	: $\pm$ 600Hz		
Pull-in range vertical sync	: $\pm$ 5Hz		
Picture tube range	: 14", 17", 21" : 1 W mono execution: 4" full range round 25 Ω 2W : 3 W mono execution: 4" woofer round 16 Ω 3W 1" tweeter round 16 Ω 3W		
TV Systems	: PAL I : PAL BG : PAL BG / SECAM BGDK : PAL BG / SECAM BGLL'		

Local operating functions

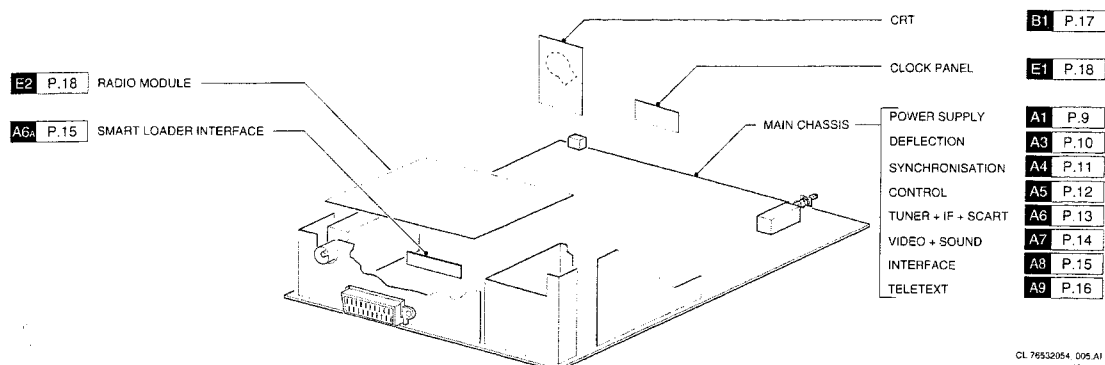
CL 66532013_018.AI
280296

2. Connection facilities

Euroconnector:

1 - Audio $\oplus$ R (0V5 RMS $\leq$ 1k Ω)	14 - +5SI to smart-loader
2 - Audio $\ominus$ R (0V2 - 2V RMS $\geq$ 10k Ω)	15 - Red (0V7 _{pp} /75 Ω)
3 - Audio $\oplus$ L (0V5 RMS $\leq$ 1k Ω)	16 - RGB-status (0-0V4 int.)(1-3V ext. 75 Ω)
4 - Audio $\perp$	17 - CVBS $\perp$
5 - Blue $\perp$	18 - CVBS $\perp$
6 - Audio $\ominus$ L (0V2 - 2V RMS $\geq$ 10k Ω)	19 - CVBS $\oplus$ (1V _{pp} /75 Ω)
7 - Blue (0V7 _{pp} /75W)	20 - CVBS $\ominus$ (1V _{pp} /75 Ω)
8 - CVBS-status 1 $\ominus$ (0-2V int., 10-12V ext.)	21 - Earthscreen
9 - Green $\perp$	
10 - SDA to smart-loader	
11 - Green (0V7 _{pp} /75 Ω)	
12 - SCL to smart-loader	
13 - Red $\perp$	

Location of panels

CL 76532054_005.AI
181197

3. Safety instructions, Maintenance instructions, Warnings and Notes

Chassis A7H.1

3

Safety instructions for repairs

1. Safety regulations require that **during** a repair:
 - The set should be connected to the mains via an isolating transformer;
 - Safety components, indicated by the symbol " ", should be replaced by components identical to the original ones;
 - When replacing the CRT, safety goggles must be worn.
2. Safety regulations require that **after** a repair the set must be returned in its original condition. In particular attention should be paid to the following points:
 - As a strict precaution, we advise you to resolder the solder joints through which the horizontal deflection current is flowing, in particular:
 - all pins of the line output transformer (LOT);
 - fly-back capacitor(s);
 - S-correction capacitor(s);
 - line output transistor;
 - pins of the connector with wires to the deflection coil;
 - other components through which the deflection current flows.

Note:

This resoldering is advised to prevent bad connections due to metal fatigue in solder joints and is therefore only necessary for television sets older than 2 years.

- The wire trees and EHT cable should be routed correctly and fixed with the mounted cable clamps.
- The insulation of the mains lead should be checked for external damage.
- The mains lead strain relief should be checked for its function in order to avoid touching the CRT, hot components or heat sinks.
- The electrical DC resistance between the mains plug and the secondary side should be checked (only for sets which have a mains isolated power supply). This check can be done as follows:
 - unplug the mains cord and connect a wire between the two pins of the mains plug;
 - set the mains switch to the on position (keep the mains cord unplugged!);
 - measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 M Ω and 12 M Ω ;
 - switch off the TV and remove the wire between the two pins of the mains plug.
- The cabinet should be checked for defects to avoid touching of any inner parts by the customer.

Maintenance instructions

It is recommended to have a maintenance inspection carried out by a qualified service employee. The interval depends on the usage conditions:

- When the set is used under normal circumstances, for example in a living room, the recommended interval is 3 to 5 years.
- When the set is used in circumstances with higher dust, grease or moisture levels, for example in a kitchen, the recommended interval is 1 year.

The maintenance inspection contains the following actions:

- Execute the above mentioned 'general repair instruction'.
- Clean the power supply and deflection circuitry on the chassis.
- Clean the picture tube panel and the neck of the picture tube.

Warnings

1. In order to prevent damage to ICs and transistors, all high-voltage flashovers must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 3.1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is 0V (after approx. 30s).

2. ESD

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.

Available ESD protection equipment:

anti-static table mat;	
large 1200x650x1.25mm	4822 466 10953
anti-static table mat;	
small 600x650x1.25mm	4822 466 10958
anti-static wristband	4822 395 10223
connection box	
(3 press stud connections, 1 M Ω)	4822 320 11307
extension cable (2 m, 2 M Ω ;	
to connect wristband to connection box)	4822 320 11305
connecting cable (3 m, 2 M Ω ;	
to connect table mat to connection box)	4822 320 11306
earth cable (1 M Ω ; to connect any	
product to mat or connection box)	4822 320 11308
complete kit ESD3 (combining all 6 prior	
products; small table mat)	4822 310 10671
wristband tester	4822 344 13999

3. Together with the deflection unit and any multipole unit, the flat square picture tubes used from an integrated unit. The deflection and the multipole units are set optimally at the factory. Adjustment of this unit during repair is therefore not recommended.
4. Be careful during measurements in the high-voltage section and on the picture tube.
5. Never replace modules or other components while the unit is switched on.
6. When making settings, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

Notes

1. The direct voltages and oscillograms should be measured with regard to the tuner earth ($\perp$), or hot earth ($\perp$) as this is called.
2. The direct voltages and oscillograms shown in the diagrams are indicative and should be measured in the **Service Default Mode** (see chapter 6) with a colour bar signal and stereo sound (L:3 kHz, R:1 kHz unless stated otherwise) and picture carrier at 475.25 MHz.
3. Where necessary, the oscillograms and direct voltages are measured with ($\perp$) and without aerial signal ($\times$). Voltages in the power supply section are measured both for normal operation ($\odot$) and in standby ($\odot$). These values are indicated by means of the appropriate symbols.
4. The picture tube PWB has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.
5. The semiconductors indicated in the circuit diagram and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.
6. Manufactured under license from Dolby Laboratories Licensing Corporation. DOLBY, the double D symbol $\square\square$ and PRO LOGIC are trademarks of Dolby Laboratories Licensing Corporation.

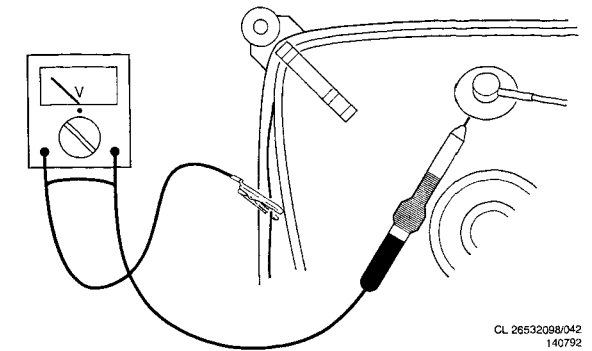


Fig. 3.1

4. Mechanical instructions

For the main carrier two service positions are possible (Fig. 4.1):

- A: For faultfinding on the component side of the main carrier.
- B: For (de)soldering activities on the copper side of the main carrier.

Position A can be reached by first removing the mains cord from its fixation, then loosen the carrier lips (1) and then pulling the carrier panel (2) for approximately 10 cm.

Position B can be reached from position A after disconnecting the degaussing cable.

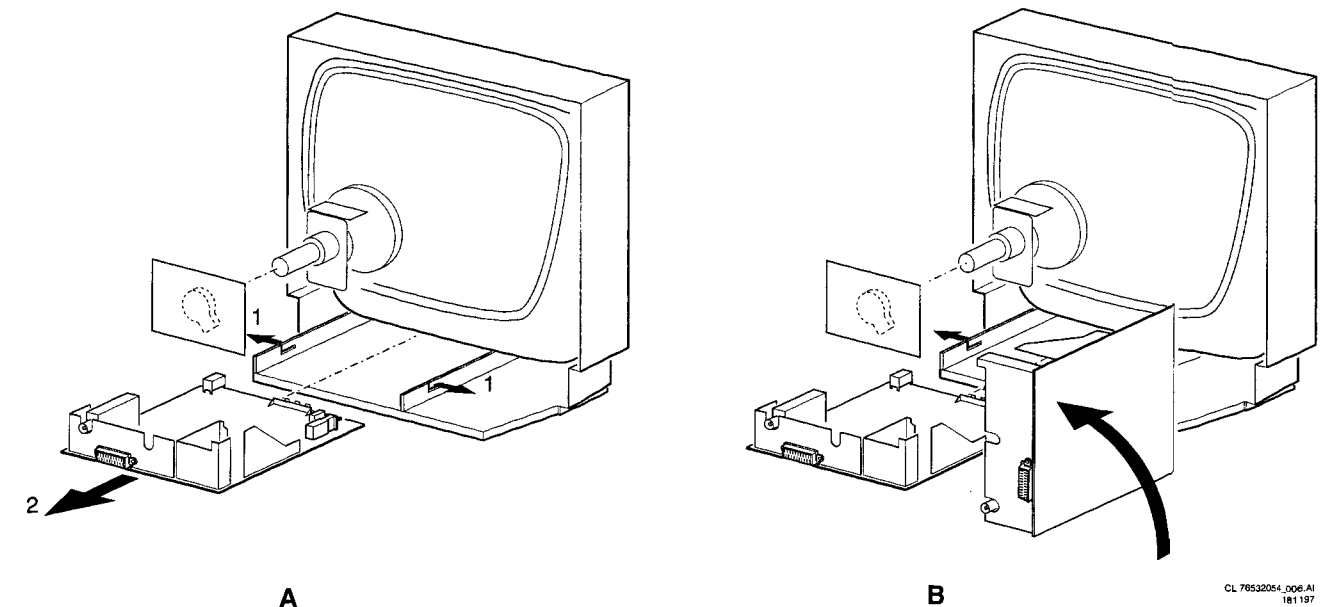
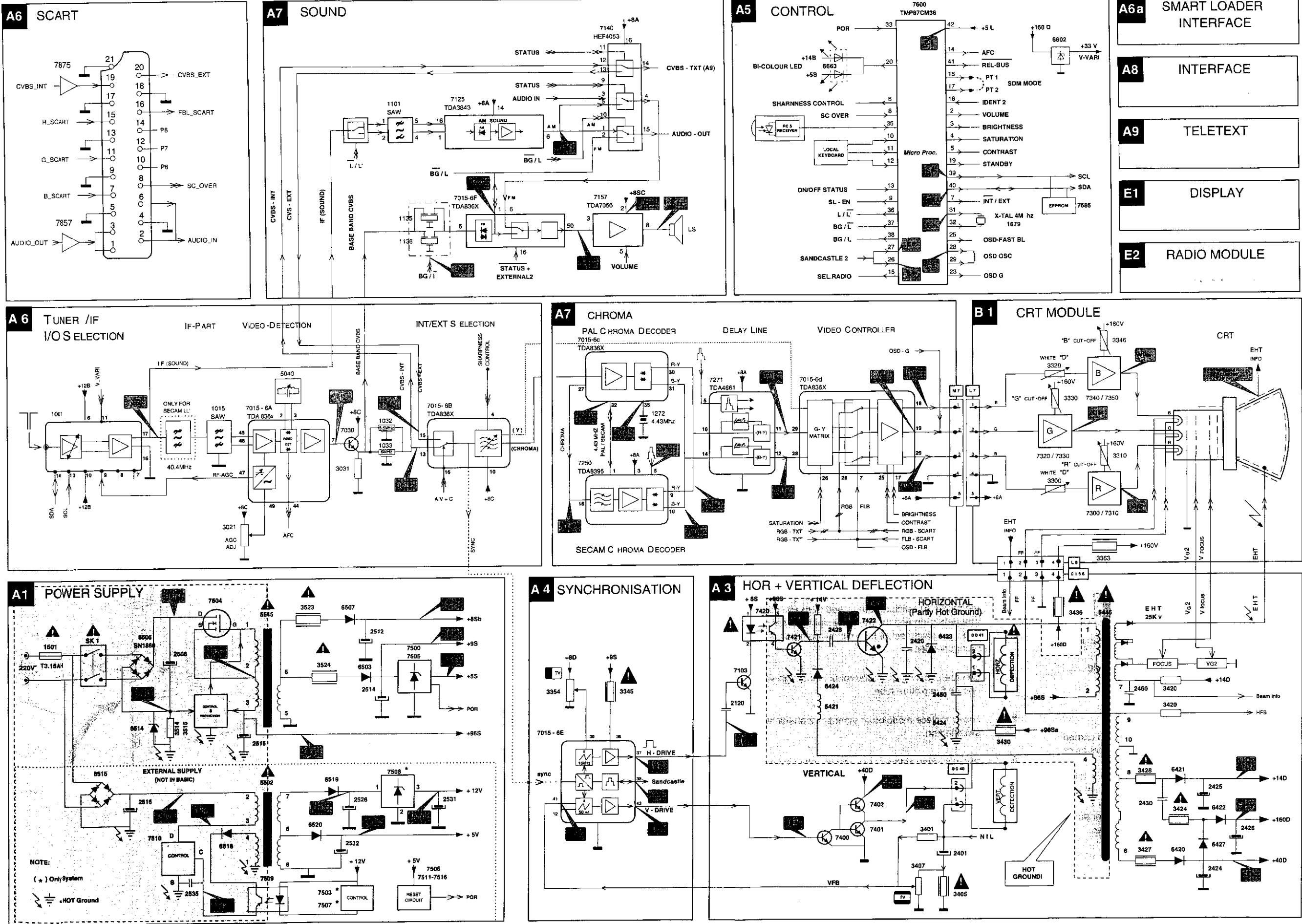
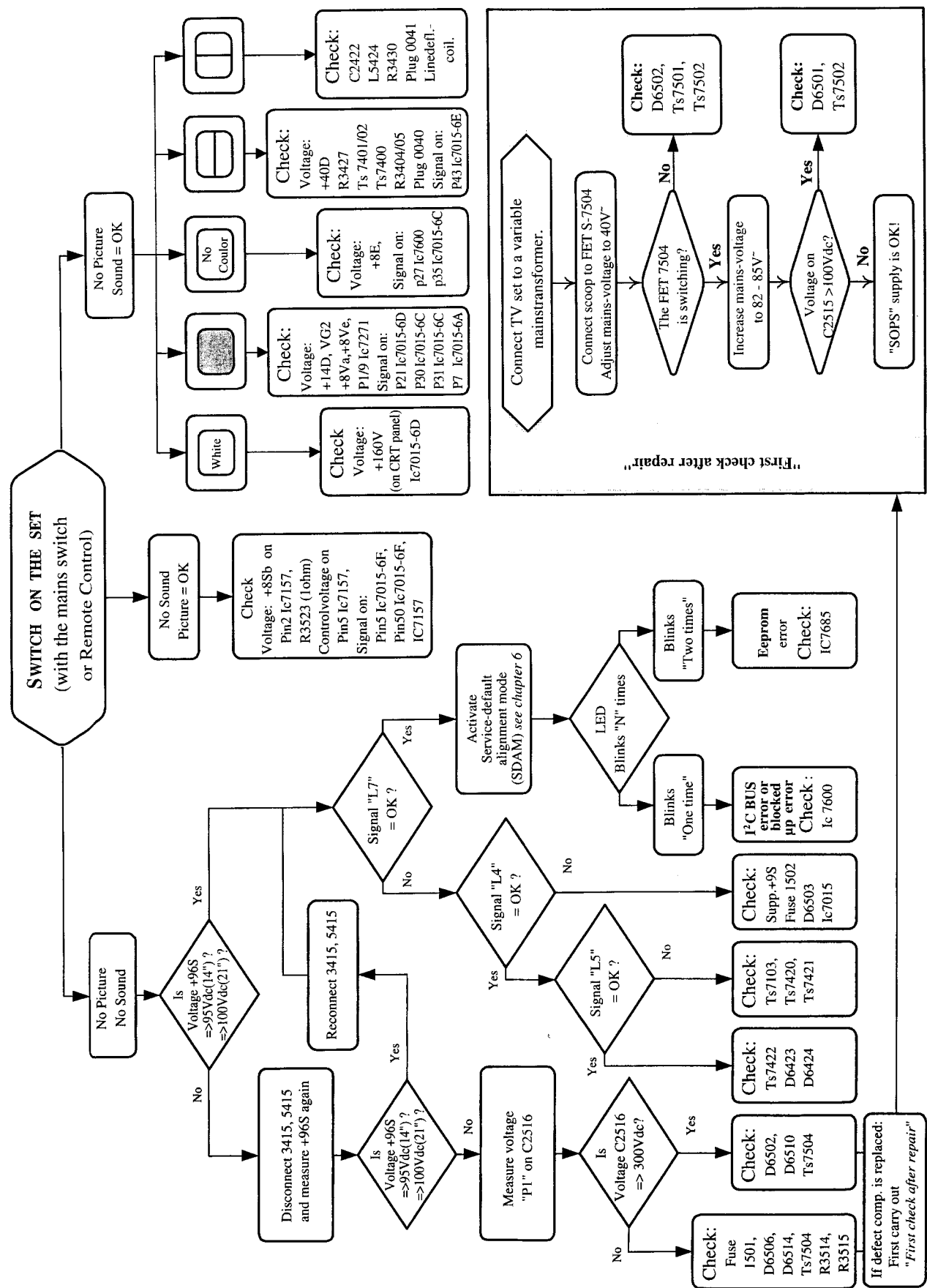


Fig. 4.1



6. Fault finding tree & Repair facilities /
Fehlersuchbaum & Reparaturhinweise /
Aide au depannage & Conseils pour la réparations



Repair facilities

1. Functional blocks

On both the service printing on the copper and the component side, functional blocks are indicated by lines and text.

2. Test points

The AA5H chassis is equipped with test points in the service printing on both sides of mono-board. These test points are referring to the functional blocks as mentioned above:

- * P1-P2-P3, etc: Test points for the power supply
- * L1-L2-L3, etc: Test points for the line drive and line output circuitry
- * F1-F2-F3, etc: Test points for the frame drive and frame output circuitry
- * S1-S2-S3, etc: Test points for the synchronisation circuitry
- * V1-V2-V3, etc: Test points for the video processing circuitry
- * A1-A2-A3, etc: Test points for the audio processing circuitry
- * C1-C2-C3, etc: Test points for the control circuitry
- * T1-T2-T3, etc: Test points for the teletext processing circuitry

The numbering is done in a for diagnostics logical sequence; always start diagnosing within a functional block, in the sequence of the relevant test points, for that functional block.

3. Service default-alignment mode (SDAM)

The service default-alignment mode is a pre-defined mode which can be used for faultfinding (especially when the TV gives no picture at all). All oscillograms and DC voltages in this service manual are measured in the service default-alignment mode. Alignment (if present) are also done in this mode.

Activate the service default-alignment mode can be done in 2 ways:

- By short-circuiting the service pins PT1 and PT2 of the microcomputer (pin 14 of IC7600) while pressing the mains-switch.
- From normal operation mode by pressing the button "DEFAULT" or "ALIGN" on the DST (Dealer Service Tool) RC7150.

Leaving the service default-alignment mode to normal operation can only be done by the stand-by on the remote control or by pressing diagnose 99 followed by the OK-button on the DST (so not via mains switch "off"; after mains switch "off" and then "on" again the set will start up in the service default-alignment mode again to enable easy faultfinding).

"S" for service menu active →

Option code + Counter + Software version →

Error code history →

Functions of the service default-alignment mode:

- All analogue settings (volume, contrast, brightness and saturation) are in the mid position.
- Set is tuned to 475.25 Mhz.
- Delta volume settings are not used (delta volume setting = a delta on the volume setting).
- OSD error message (present available error code) is displayed continuously.
- The +key and the -key of TV will act as search and auto store on the maximum program number.
- Automatic switch off function (set switches "off" after 15 minutes no IDENT) will be switched off.
- Hotel mode will be disabled.
- All other functions remain normal controllable.
- Software version of the microprocessor used in that typical set is displayed in the right top corner.
- A counter in the middle of the screen indicate the normal operation hours of the set in a hexadecimal code (every time the set is switched "on" the counter is incremented by 1 hour, so +1 at the counter).
- The "S" in the middle of the screen above the counter indicate that the set is in the service default-alignment mode.
- Option code
This code indicates the Options setting of the set.
- Error code history:
The 5 last different error codes occurred are stored in the EEPROM memory; last error code detected will be displayed on the left side (see for an overview of all possible error codes Fig. 6.3), so e.g.:

0 0 0 0	means no error codes present in the buffer.
3 0 0 0	means one error code present in the buffer; error code 3.
2 3 0 0	means two error codes present in the buffer; last detected error code is error code 2, previous detected error code is error code 3.

The error code history buffer is cleared when the Service Menu is left by the stand-by command or by diagnose 99 command. In case the Service Menu is left by the mains switch "off" the error code history buffer will not be cleared. With commands diagnose 1..5 on the DST it is possible to read out the error-buffer. This can be done on the following manner:

- press the diagnose button on the DST.
- press the number of the error position you want to read.
- press the OK-button on the DST.

Diagnose 1 is the most actual error. So the left position of the error-buffer. Diagnose 5 displays the most right position of the error-buffer. If there is an error on the selected position the led will blink twice the error code. The error code on the DST has to be ignored. Diagnose 1..5 is an powerfull tool to read out the error-buffer when there is no picture.

	S	
F4	003C	1.0
	23000	

Fig. 6.1

Repair facilities

Mapping main chassis

4. Option setting

All option setting are done in the normal menus. These menus can be selected by selecting the maximum TV-channel followed by pushing the volume/program selection button and at the same time pressing the volume-minus button for more than four seconds. With cursor up/down one of the items can be selected. With cursor right/left the items can be changed. New option settings are activated immediately. The following options can be chosen:

System	SINGLE	For a BG,DK or BG/DK set.
	MULTI F	For a BG+L+I set.
	UHF	For a I, UHF only set.
Teletext	YES/NO	Teletext can be selected yes or no.
Clock	YES/NO	Clock can be selected yes or no.
Radio	INT	To select internal radio tuner.
	EXT	This means that the radio is external. In this way TV-presets could be used as radio. The installation of these kind of programs is the same as for TV programmes. Radio channels can be modulated by the system installer on TV frequencies.
	NO	No radio available.

5. Option code

The option code is built up with 8 bits. The following table explains which option influences which bit.

BIT	Description
0 (LSB)	Not used
1	Interface system 0=non system 1=system
2	Radio internal 1=radio present
3	Not used
4	Clock 1=clock present
5	Teletext 1=txt present
6	Tv-system
7 (MSB)	Tv-system

Fig. 6.2

Tv-system (bit 7 and bit 6)

00 = single PAL
01 = PAL I
10 = not used
11 = MULTI-F

"OSD error number" (Service Menu)	"LED behaviour"	Error description	Possible defective component
0	No led blinking	No error	
1	LED blinks once	General I ² C bus	
2	LED blinks twice times	Eeprom error	IC7685
3	LED blinks three times	TXT-error	IC7700 / 7990 / wrong option
4	LED blinks four times	PLL-tuner error	Item 1001 / wrong option
5	LED blinks five times	Radio-module error	IC7904 / item 1910 / wrong option
6	LED blinks six times	Display error	IC7951

Fig. 6.3

Example: option code F4 (hexadecimal presented) means a full multi set non system with teletext, clock and internal radio. F4 is in binair 1111 0100.

6. Error messages

The microcomputer also detects errors in circuits connected to the I²C (Inter IC) bus. These error messages are communicated via OSD (On Screen Display) and a flashing LED in the service default-alignment mode. (error code history buffer):

- In normal operation:**
In normal operation no errors are indicated.
- In the service default-alignment mode:**
In the service default-alignment mode both the "OSD error code" and the "LED error" indication will display the present detected error twice.

7. Hotel mode

7.1 Hotel-mode "on"

To enter to hotel mode a setting must be changed in the installation menu.

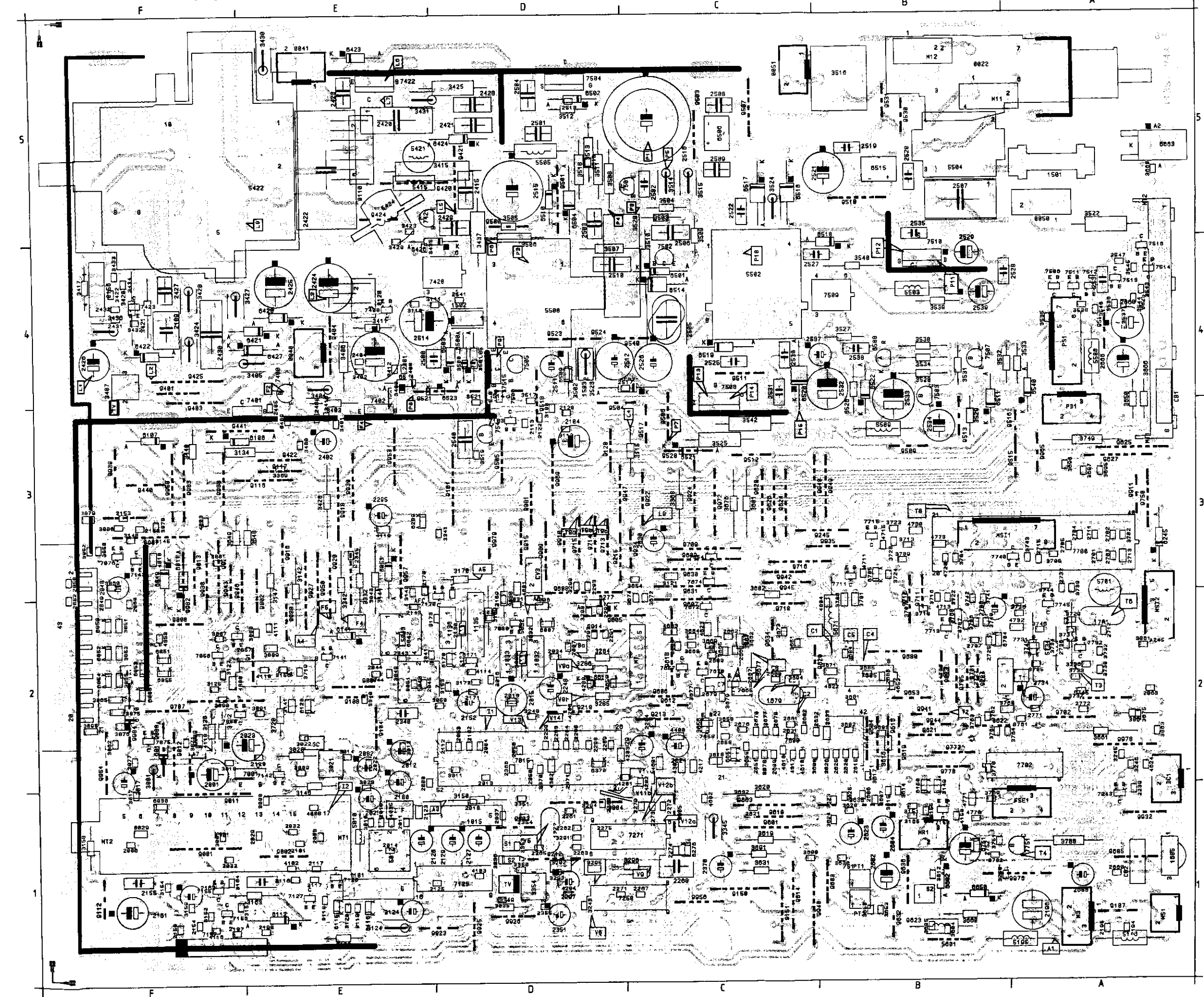
7.2 Fuction of the hotel mode

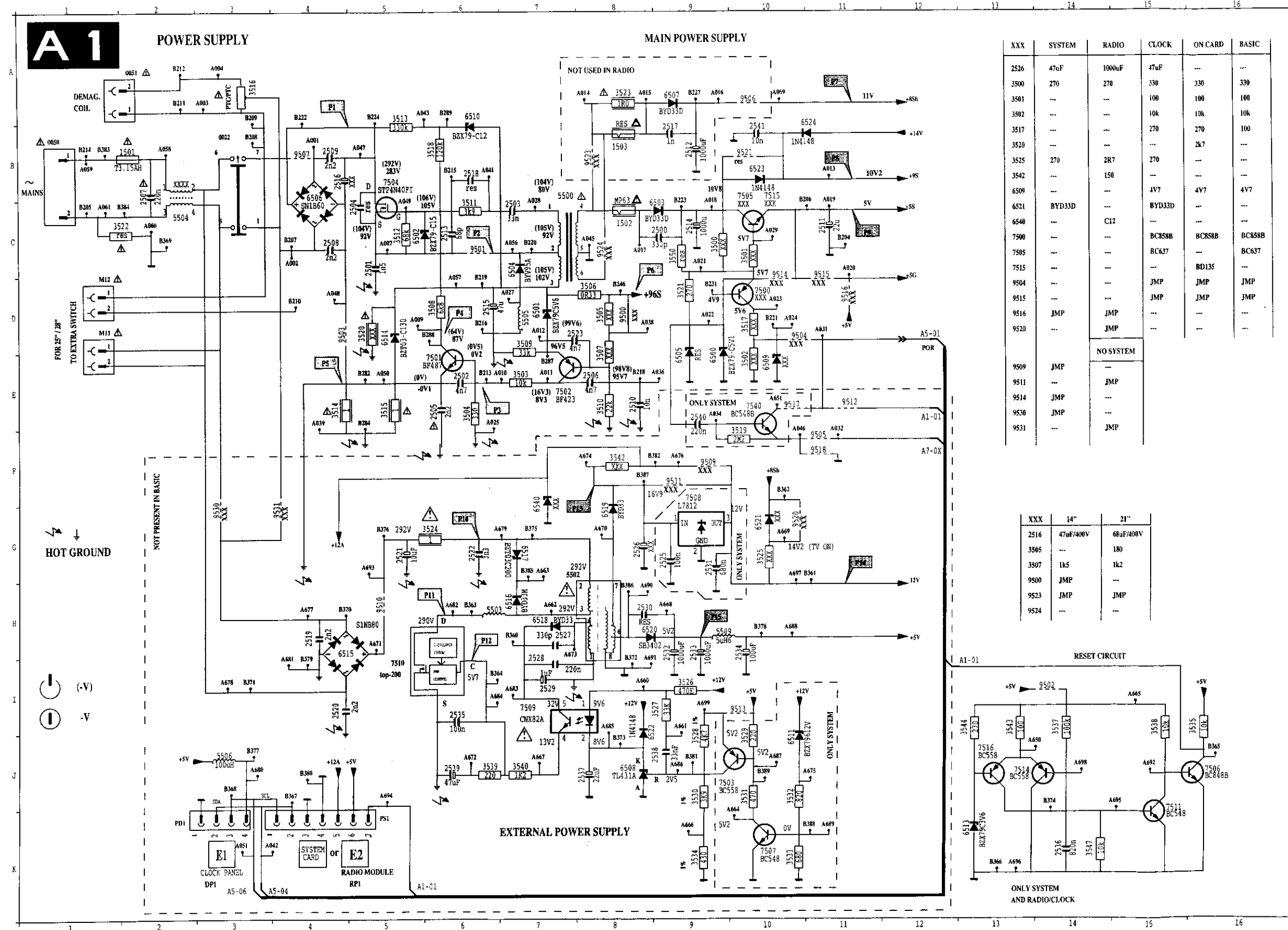
- Volume cannot be increased above the maximum level installed.
- Store open/close is ignored, message "LOCKED" is shown.
- Local keys are blocked. If the blocking option is set, a message "LOCKED" is shown when a local key is pressed.
- All protected programs cannot be selected. To free protected programmes the remote control key "PIP on/off" must be pressed or the relevant menu item must be changed. This key works as a toggle function.

7.3 Hotel-mode "off"

To leave to hotel mode a setting must be changed in the installation menu. Same setting as in the Hotel-mode "on".

0022	B	2263	D1*	2615	B2*	3121	C3*	3436	F4	3672	C2*	4003	F3*	6420	E4	7665	C2*	9616	B2	CB2	A1
0025	A4	2265	D1*	2620	B2*	3124	E1	3437	D4	3673	C2*	4006	D2*	6421	E4	7670	C2*	9618	C2	CV1	A2
0040	E4	2267	C1*	2623	B1*	3125	F2*	3440	F3	3674	C2*	4008	E1*	6422	F4	7672	C2*	9619	B2	CV3	D3
0041	E5	2268	C1	2624	C2	3126	F2	3500	D4*	3675	A2*	4035	E1*	6423	E5	7674	C3*	9620	B2	DC1	A1
0043	F2	2271	C1*	2625	B2*	3127	E2*	3501	D4*	3676	C3	4102	E1*	6424	D5	7685	B2	9621	B2	FSE1	A1
0050	A5	2272	C1*	2626	B2*	3134	E3	3502	D4	3677	C2*	4103	D1*	6426	D4	7700	A3	9622	A2	M11	A5
0051	B5	2273	C1*	2629	C2	3141	E2*	3503	C4	3678	C2*	4110	E2*	6427	E4	7702	A2	9623	B1	M12	B5
0110	E5	2274	C1*	2630	C3	3142	E3	3504	C5	3679	C2*	4111	E2*	6500	D4	7711	B3*	9624	C3	M3	A1
0120	E4	2275	D1*	2631	C2*	3143	E3*	3505	D4	3680	C2*	4114	D2*	6501	C4	7713	B2*	9625	A3	M7	C2
0156	F4	2279	C1*	2632	B2*	3144	E3	3506	D4	3681	B2*	4116	F1*	6502	D5	7715	B3*	9626	C3	ML1	F3
1001	F1	2280	D1*	2633	B2*	3145	F3*	3507	C4	3682	B2*	4118	F2*	6503	D4	7731	A2*	9627	A3	ML2	F3
1015	D1	2283	D2*	2651	C2*	3146	E2	3508	C5	3683	B2*	4119	E3*	6504	D5	7732	A2*	9628	C3	ML3	F3
1032	D2	2284	D2*	2658	C2*	3147	E3	3509	C4	3684	B2*	4150	B1*	6505	D4	7740	A3*	9630	C3	ML4	F2
1033	D2	2285	D2*	2660	A1*	3148	F3*	3510	C4	3685	B2*	4201	C2*	6506	C5	7745	A2*	9631	C3	ML5	F2
1101	E1	2289	C2*	2662	C2*	3149	B1*	3511	D5	3691	C1	4202	C2*	6507	C4	7751	A1	9632	B1	MR1	B1
1135	D2	2290	D2*	2663	C2*	3150	D1	3512	D5	3694	C2*	4203	C2*	6508	B4	7856	F2*	9633	C1	MS1	A1
1136	D2	2291	C2*	2666	A4	3151	B1*	3513	D5	3695	A3*	4204	D1*	6509	D4*	7857	E2*	9634	C2	MS1 A3	
1272	D1	2292	D2*	2667	C2*	3152	F1*	3514	C5	3696	A3*	4208	D2*	6510	D5	7858	E2*	9635	B1	MS12	A2
1501	A5	2293	D3*	2668	A4	3153	D2*	3515	C5	3697	A3*	4209	D2*	6511	A3	7875	F2*	9636	B1	PD1	A3
1502	D4	2294	C2*	2669	C2*	3154	F1*	3516	B5	3698	B2*	4217	C2*	6514	C4	7876	F3*	9653	B2	PS1	A4
1503	D4	2295	E3	2670	C2*	3155	B1*	3517	D4*	3702	A3*	4302	D2*	6515	B5	9000	F2	9680	B2	PT1	B1
1679	C2	2297	D1	2676	C2*	3156	E2*	3518	D5	3704	B3*	4303	C2*	6516	C5	9001	F1	9685	A1	PT2	B1
1685	A1	2298	D2*	2677	C2*	3157	E1*	3519	D3*	3705	A3*	4408	C2*	6517	C5	9002	E1	9701	B2	S2	B1
1701	A2	2340	E2	2678	C2*	3158	F1	3520	C4	3706	B2*	4601	C2*	6518	B4	9003	D1	9702	A2	*= Chip component	
2001	F2	2345	E3*	2679	C2*	3159	F1*	3521	D4*	3707	B2*	4602	C1*	6519	C4	9004	D1	9704	B2		
2006	F1*	2350	D2*	2680	C2*	3163	E1	3522	A4	3709	B3*	4603	C2*	6520	B4	9005	C1	9705	B2		
2007	D2*	2351	D1	2681	C2*	3164	E1*	3523	D4	3713	B3*	4616	B2*	6521	C3	9007	E2	9707	F2		
2008	E1*	2354	D1*	2682	B2*	3165	B1*	3524	C4	3714	A2*	4617	C2*	6522	B4	9008	F2	9708	E2		
2010	E1*	2355	D1*	2685	A1	3169	D2	3525	C3	3716	B2*	4618	C2*	6523	D4	9009	F2	9709	C3		
2011	E1*	2366	D2*	2686	B2*	3170	D3	3526	B4	3718	B2*	4622	B2*	6524	E4	9011	F1	9710	C2		
2012	E2	2370	C1	2689	C2*	3171	D3*	3527	B4	3719	E2*	4623	C2*	6540	A4	9012	F2	9711	B2		
2013	D2*	2371	D2*	2701	A3*	3172	D2*	3528	B4	3720	E2	4624	A2*	6602	B1	9013	F3	9712	B2		
2014	E1*	2400	E3*	2702	A3*	3173	D2*	3529	B3	3722	B2*	4653	B2*	6650	B1	9101	D3	9713	C3		
2015	D2	2401	E4	2703	A3*	3198	E1	3530	B4	3723	B3*	4711	B3*	6651	C2*	9104	E2	9714	D3		
2016	D2	2402	E3	2704	A3*	3243	D1*	3531	B4	3724	B3*	4713	B2*	6658	D2	9107	A1	9715	D3		
2017	F2	2404	E4*	2705	A3*	3245	A2*	3532	A4	3728	B3*	4715	B3*	6704	A2*	9108	E2	9716	B3		
2018	D1*	2405	E3*	2706	A2	3246	A2*	3533	A4	3729	A2*	4720	B3*	6705	B3*	9111	E2	9745	A2		
2022	E2*	2408	E4*	2707	B2*	3248	D2*	3534	B4	3731	A2*	4730	B3*	6751	B1*	9112	F1	9750	A3		
2023	E2	2415	D5	2711	A3*	3259	A1*	3535	A4*	3732	A2*	4732	A2*	6849	F3	9116	E3	9770	B2		
2025	E1	2420	E5	2712	A2*	3284	D2	3536	A4*	3733	A2*	4738	B2*	6850	F2*	9117	E3	9772	B2		
2029	E1*	2421	D5	2713	A3*	3285	D2	3537	A4*	3734	A2*	4770	B1*	6851	F2*	9120	C3	9802	E3		
2030	D2*	2422	E5	2715	A3*	3286	D2	3538	A4*	3735	A2*	4771	B1*	6852	F2*	9150	C1	9803	B2		
2031	E1	2423	E5	2725	A2*	3291	D1*	3539	B4	3736	A2*	4773	B3*	6853	F2*	9151	C1	9909	D3		
2032	E1*	2424	E4	2726	A2*	3292	D1*	3540	B4	3737	A2*	4804	B2*	6854	F2*	9212	D1	9910	D3		
2033	E1*	2425	E4	2727	B2*	3293	D1*	3542	C3	3738	A2*	4808	E2*	6855	F2*	9213	C2	9911	A3		
2034	D2*	2426	F4	2732	A3*	3294	D1*	3543	A4*	3739	A3*	4810	F3*	6865	F2*	9215	C3	9914	D2		
2037	D1*	2427	F4	2734	A2	3295	D1*	3544	A4*	3740	B2*	4853	F2*	7001	E2	9218	D2	9915	D3		
2041	D2*	2428	D5	2736	A2*	3296	C1	3545	A4*	3741	B2*	5010	E1	7015	D2	9245	B3	9916	E3		
2043	E2*	2429	D4	2752	B1	3297	D2*	3546	A4*	3742	E2*	5012	E1	7030	D2*	9401	F4	9918	E3		
2044	E2*	2430	F4	2771	A2*	3298	D2*	3547	A4*	3743	A3*	5032	D2	7103	D3*	9403	F4	9920	E3		
2045	D2*	2431	F4*	2772	A2*	3299	D3*	3601	C3	3744	A3*	5040	D2	7125	D1	9404	E4	9922	C3		
2050	D2*	2432	F4*	2848	F3	3332	E3	3602	C2	3745	A2	5043	E2	7126	E1*	9420	D5	9923	D1		
2053	D2*	2500	D4	2849	F2*	3340	E2*	3604	B1*	3746	A2*	5130	D2	7127	E1*	9421	D5	9924	C3		
2080	D2*	2501	D5	2850	F3*	3341	D3*	3605	B1*	3749	A3	5195	A1	7140	E2	9422	E3	9925	D1		
2082	E2	2502	C5	2852	F2*	3342	E3	3607	B1*	3751	A1*	5196	A1	7141	E2*	9424	E4	9926	D1		
2084	D2*	2503	D4	2860	F2*	3345	C1	3608	B1*	3752	A1*	5415	D5	7142	E2*	9425	F4	9927	E3		
2101	E1*	2504	D5	2863	A2*	3349	D1	3612	B1*	3760	A2*	5421	D5	7143	F3*	9440	F3	9928	F3		
2104	D3	2505	C4	2877	F2*	3350	D1*	3614	B1*	3761	A2*	5422	E5	7150	B1*	9441	E3	9930	E3		
2109	F4	2506	C4	3001	F2	3351	D1*	3615	B1*	3762	B2*	5424	E4	7155	F1*	9500	D4	9932	A1		
2112	D2*	2507	B5	3005	F1*	3353	D1*	3616	B2	3763	B2*	5500	D4	7156	E1*	9501	D5	9934	C3		
2113	D3*	2508	C5	3008	E1*	3354	D1	3617	B2*	3764	A2*	5502	C4	7157	F1	9502	A4	9935	B3		
2117	E1*	2509	C5	3009	E2*	3368	C3	3618	C2*	3765	A2*	5503	B4	7170	D2*	9503	C5	9937	F3		
2120	D3*	2510	C4	3010	E1*	3369	E3*	3619	C1	3768	B2	5504	B5	7243	A1*	9504	C3	9938	F3		
2122	D3*	2511	D4	3011	D2*	3370	D2*	3620	C1	3769	A1*	5505	D5	7250	C1	9505	D3	9939	F3		
2123	D1*	2512	C4	3012	E2*	3400	E3*	3621	C1*	3770	B2*	5506	A4	7271	C1	9506	C3	9940	B1		
2124	E1	2513	D5*	3014	E2*	3401	E3*	3623	B1*	3781	B2*	5509	B3	7400	E4	9507	C5	9941	B2		
2125	D1*	2514	D4	3016	D2*	3402	E4*	3624	B1*	3786	B2*	5601	B1	7401	E3	9509	B3	9942	C3		
2126	D1	2515	D5	3017	F1*	3403	E4	3625	B1*	3787	B2*	5671	B2	7402	E3	9510	B5	9943	E3		
2127	D1	2516	C5	3018	E2*	3404	E4	3628	B1*	3788	A1	5677	C2	7408	E4*	9511	C4	9944	B2		
2128	E2*	2517	C4*	3020	E2	3405	E4	3630	B1*	3850	F3*	5701	A2	7420	D4	9512	C3	9945	C3		
2129	D1	2518	D5*	3021	E2	3406	E4	3631	C1	3851	F2*	5704	A2	7421	D4	9513	B3	9946	E3		
2130	D2*	2519	B5	3022	E2*	3407	F4	3632	C1*	3852	F3*	5734	A2	7422	E5	9514	D4	9947	C3		
2143	D2*	2520	B5	3023	E1*	3408	E4*	3648	E3	3853	F2*	5999	E5	7423	F4*	9515	A3	9948	B3		
2152	D2	2521	B5	3029	F1*	3409	E3*	3649	E3	3855	F2*	6007	D2*	7500	D4	9516	A3	9949	B3		
2153	F3*	2522	C4	3030	D2	3410	E3*	3650	A3	3860											

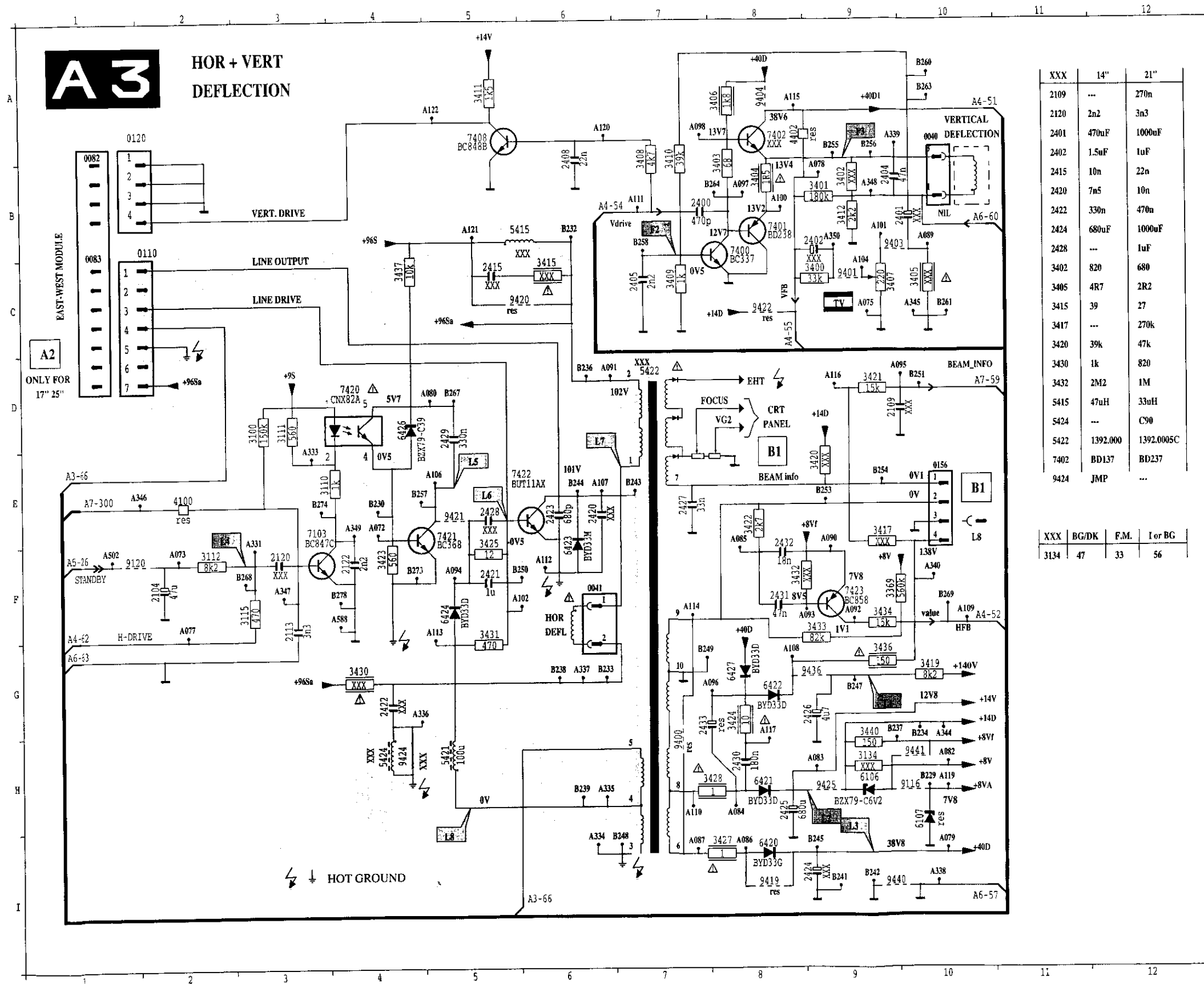




XXX	SYSTEM	RADIO	CLOCK	ON CARD	BASIC
2526	47uF	1000uF	47uF	---	---
3500	270	270	330	330	330
3501	---	---	100	100	100
3502	---	---	10k	10k	10k
3517	---	---	270	270	100
3520	---	---	2k7	---	---
3525	270	2R7	270	---	---
3542	---	150	---	---	---
6509	---	---	4V7	4V7	4V7
6521	---	BYD33D	BYD33D	---	---
6540	---	C12	---	---	---
7500	---	---	BC858B	BC858B	BC858B
7505	---	---	BC637	---	BC637
7515	---	---	BD135	---	---
9504	---	JMP	JMP	JMP	JMP
9515	---	JMP	JMP	JMP	JMP
9516	JMP	JMP	---	---	---
9520	---	JMP	---	---	---
NO SYSTEM					
9509	JMP	---	---	---	---
9511	---	JMP	---	---	---
9514	JMP	---	---	---	---
9530	JMP	---	---	---	---
9531	---	JMP	---	---	---

XXX	14"	21"
2516	47uF/400V	68uF/400V
3505	---	180
3507	1k5	1k2
9500	JMP	---
9523	JMP	JMP
9524	---	---

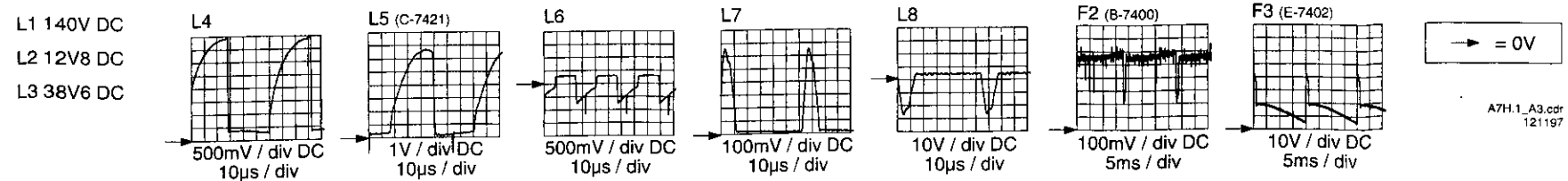
0002
7500
7501
7502
7503
7504
7505
7506
7507
7508
7509
7510
7511
7512
7513
7514
7515
7516
7517
7518
7519
7520
7521
7522
7523
7524
7525
7526
7527
7528
7529
7530
7531
7532
7533
7534
7535
7536
7537
7538
7539
7540
7541
7542
7543
7544
7545
7546
7547
7548
7549
7550
7551
7552
7553
7554
7555
7556
7557
7558
7559
7560
7561
7562
7563
7564
7565
7566
7567
7568
7569
7570
7571
7572
7573
7574
7575
7576
7577
7578
7579
7580
7581
7582
7583
7584
7585
7586
7587
7588
7589
7590
7591
7592
7593
7594
7595
7596
7597
7598
7599
7600
7601
7602
7603
7604
7605
7606
7607
7608
7609
7610
7611
7612
7613
7614
7615
7616
7617
7618
7619
7620
7621
7622
7623
7624
7625
7626
7627
7628
7629
7630
7631
7632
7633
7634
7635
7636
7637
7638
7639
7640
7641
7642
7643
7644
7645
7646
7647
7648
7649
7650
7651
7652
7653
7654
7655
7656
7657
7658
7659
7660
7661
7662
7663
7664
7665
7666
7667
7668
7669
7670
7671
7672
7673
7674
7675
7676
7677
7678
7679
7680
7681
7682
7683
7684
7685
7686
7687
7688
7689
7690
7691
7692
7693
7694
7695
7696
7697
7698
7699
7700
7701
7702
7703
7704
7705
7706
7707
7708
7709
7710
7711
7712
7713
7714
7715
7716
7717
7718
7719
7720
7721
7722
7723
7724
7725
7726
7727
7728
7729
7730
7731
7732
7733
7734
7735
7736
7737
7738
7739
7740
7741
7742
7743
7744
7745
7746
7747
7748
7749
7750
7751
7752
7753
7754
7755
7756
7757
7758
7759
7760
7761
7762
7763
7764
7765
7766
7767
7768
7769
7770
7771
7772
7773
7774
7775
7776
7777
7778
7779
7780
7781
7782
7783
7784
7785
7786
7787
7788
7789
7790
7791
7792
7793
7794
7795
7796
7797
7798
7799
7800
7801
7802
7803
7804
7805
7806
7807
7808
7809
7810
7811
7812
7813
7814
7815
7816
7817
7818
7819
7820
7821
7822
7823
7824
7825
7826
7827
7828
7829
7830
7831
7832
7833
7834
7835
7836
7837
7838
7839
7840
7841
7842
7843
7844
7845
7846
7847
7848
7849
7850
7851
7852
7853
7854
7855
7856
7857
7858
7859
7860
7861
7862
7863
7864
7865
7866
7867
7868
7869
7870
7871
7872
7873
7874
7875
7876
7877
7878
7879
7880
7881
7882
7883
7884
7885
7886
7887
7888
7889
7890
7891
7892
7893
7894
7895
7896
7897
7898
7899
7900
7901
7902
7903
7904
7905
7906
7907
7908
7909
7910
7911
7912
7913
7914
7915
7916
7917
7918
7919
7920
7921
7922
7923
7924
7925
7926
7927
7928
7929
7930
7931
7932
7933
7934
7935
7936
7937
7938
7939
7940
7941
7942
7943
7944
7945
7946
7947
7948
7949
7950
7951
7952
7953
7954
7955
7956
7957
7958
7959
7960
7961
7962
7963
7964
7965
7966
7967
7968
7969
7970
7971
7972
7973
7974
7975
7976
7977
7978
7979
7980
7981
7982
7983
7984
7985
7986
7987
7988
7989
7990
7991
7992
7993
7994
7995
7996
7997
7998
7999
8000

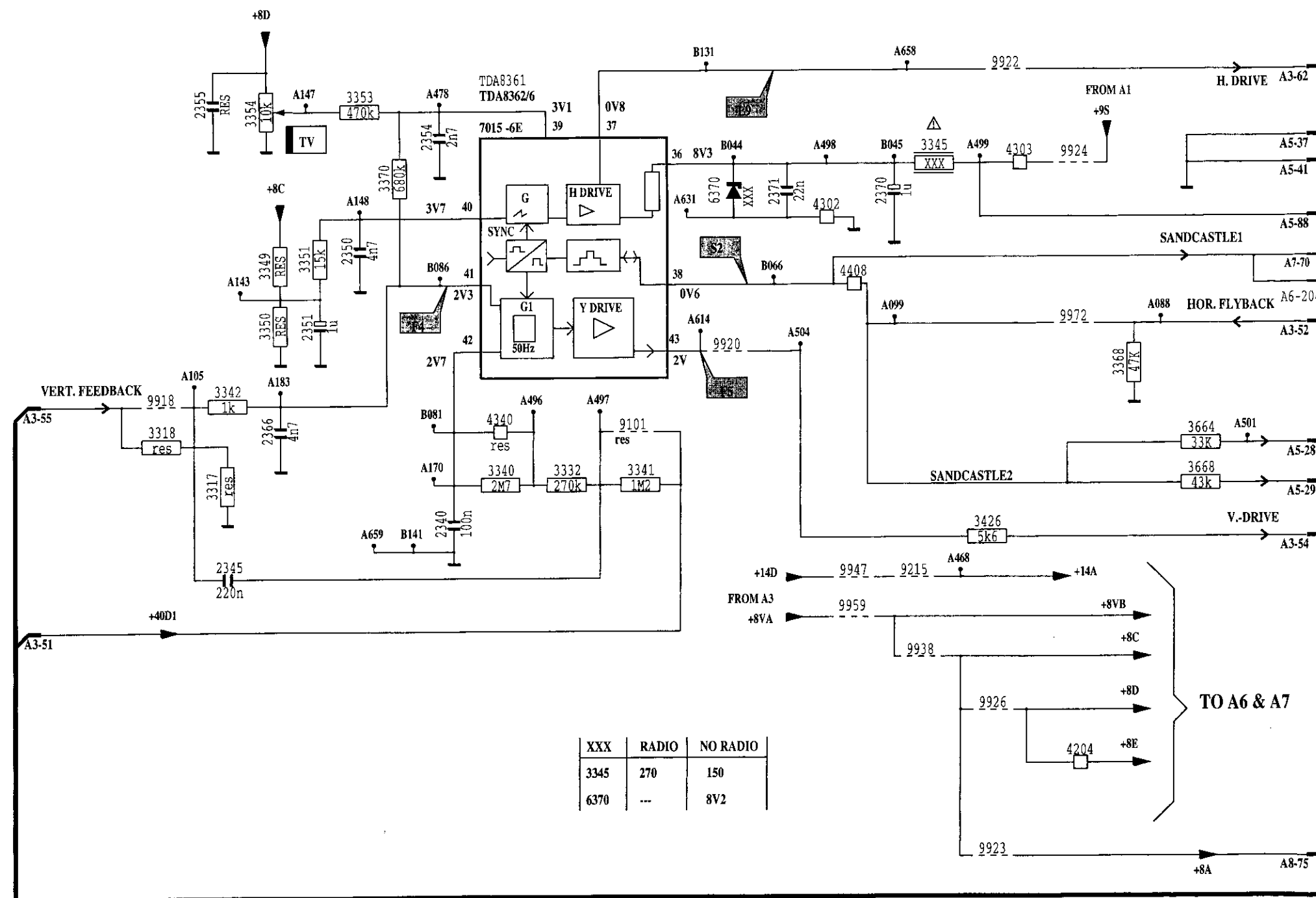


XXX	14"	21"
2109	---	270n
2120	2n2	3n3
2401	470uF	1000uF
2402	1.5uF	1uF
2415	10n	22n
2420	7n5	10n
2422	330n	470n
2424	680uF	1000uF
2428	---	1uF
3402	820	680
3405	4R7	2R2
3415	39	27
3417	---	270k
3420	39k	47k
3430	1k	820
3432	2M2	1M
5415	47uH	33uH
5424	---	C90
5422	1392.000	1392.0005C
7402	BD137	BD237
9424	JMP	---

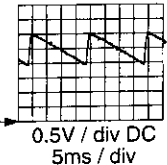
XXX	BG/DK	F.M.	I or BG
3134	47	33	56

0040 A10 7420 D 4 B248 I 7
0040 A10 7421 D 4 B249 G 7
0041 A10 7422 D 4 B250 G 7
0041 A10 7423 D 4 B251 G 7
0110 A10 7424 D 4 B252 G 7
0110 A10 7425 D 4 B253 G 7
0110 A10 7426 D 4 B254 G 7
0110 A10 7427 D 4 B255 G 7
0110 A10 7428 D 4 B256 G 7
0110 A10 7429 D 4 B257 G 7
0110 A10 7430 D 4 B258 G 7
0110 A10 7431 D 4 B259 G 7
0110 A10 7432 D 4 B260 G 7
0110 A10 7433 D 4 B261 G 7
0110 A10 7434 D 4 B262 G 7
0110 A10 7435 D 4 B263 G 7
0110 A10 7436 D 4 B264 G 7
0110 A10 7437 D 4 B265 G 7
0110 A10 7438 D 4 B266 G 7
0110 A10 7439 D 4 B267 G 7
0110 A10 7440 D 4 B268 G 7
0110 A10 7441 D 4 B269 G 7
0110 A10 7442 D 4 B270 G 7
0110 A10 7443 D 4 B271 G 7
0110 A10 7444 D 4 B272 G 7
0110 A10 7445 D 4 B273 G 7
0110 A10 7446 D 4 B274 G 7
0110 A10 7447 D 4 B275 G 7
0110 A10 7448 D 4 B276 G 7
0110 A10 7449 D 4 B277 G 7
0110 A10 7450 D 4 B278 G 7
0110 A10 7451 D 4 B279 G 7
0110 A10 7452 D 4 B280 G 7
0110 A10 7453 D 4 B281 G 7
0110 A10 7454 D 4 B282 G 7
0110 A10 7455 D 4 B283 G 7
0110 A10 7456 D 4 B284 G 7
0110 A10 7457 D 4 B285 G 7
0110 A10 7458 D 4 B286 G 7
0110 A10 7459 D 4 B287 G 7
0110 A10 7460 D 4 B288 G 7
0110 A10 7461 D 4 B289 G 7
0110 A10 7462 D 4 B290 G 7
0110 A10 7463 D 4 B291 G 7
0110 A10 7464 D 4 B292 G 7
0110 A10 7465 D 4 B293 G 7
0110 A10 7466 D 4 B294 G 7
0110 A10 7467 D 4 B295 G 7
0110 A10 7468 D 4 B296 G 7
0110 A10 7469 D 4 B297 G 7
0110 A10 7470 D 4 B298 G 7
0110 A10 7471 D 4 B299 G 7
0110 A10 7472 D 4 B300 G 7
0110 A10 7473 D 4 B301 G 7
0110 A10 7474 D 4 B302 G 7
0110 A10 7475 D 4 B303 G 7
0110 A10 7476 D 4 B304 G 7
0110 A10 7477 D 4 B305 G 7
0110 A10 7478 D 4 B306 G 7
0110 A10 7479 D 4 B307 G 7
0110 A10 7480 D 4 B308 G 7
0110 A10 7481 D 4 B309 G 7
0110 A10 7482 D 4 B310 G 7
0110 A10 7483 D 4 B311 G 7
0110 A10 7484 D 4 B312 G 7
0110 A10 7485 D 4 B313 G 7
0110 A10 7486 D 4 B314 G 7
0110 A10 7487 D 4 B315 G 7
0110 A10 7488 D 4 B316 G 7
0110 A10 7489 D 4 B317 G 7
0110 A10 7490 D 4 B318 G 7
0110 A10 7491 D 4 B319 G 7
0110 A10 7492 D 4 B320 G 7
0110 A10 7493 D 4 B321 G 7
0110 A10 7494 D 4 B322 G 7
0110 A10 7495 D 4 B323 G 7
0110 A10 7496 D 4 B324 G 7
0110 A10 7497 D 4 B325 G 7
0110 A10 7498 D 4 B326 G 7
0110 A10 7499 D 4 B327 G 7
0110 A10 7500 D 4 B328 G 7

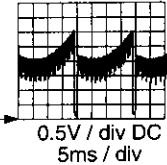


A 4**SYNCHRONISATION**

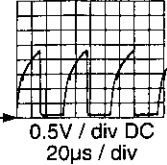
F4 (41-7015)



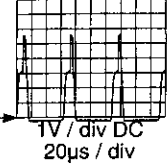
F5 (43-7015)



L9 (37-7015)



S2 (38-7015)



→ = 0V

A7H.1_A4.cdr
181197

A5

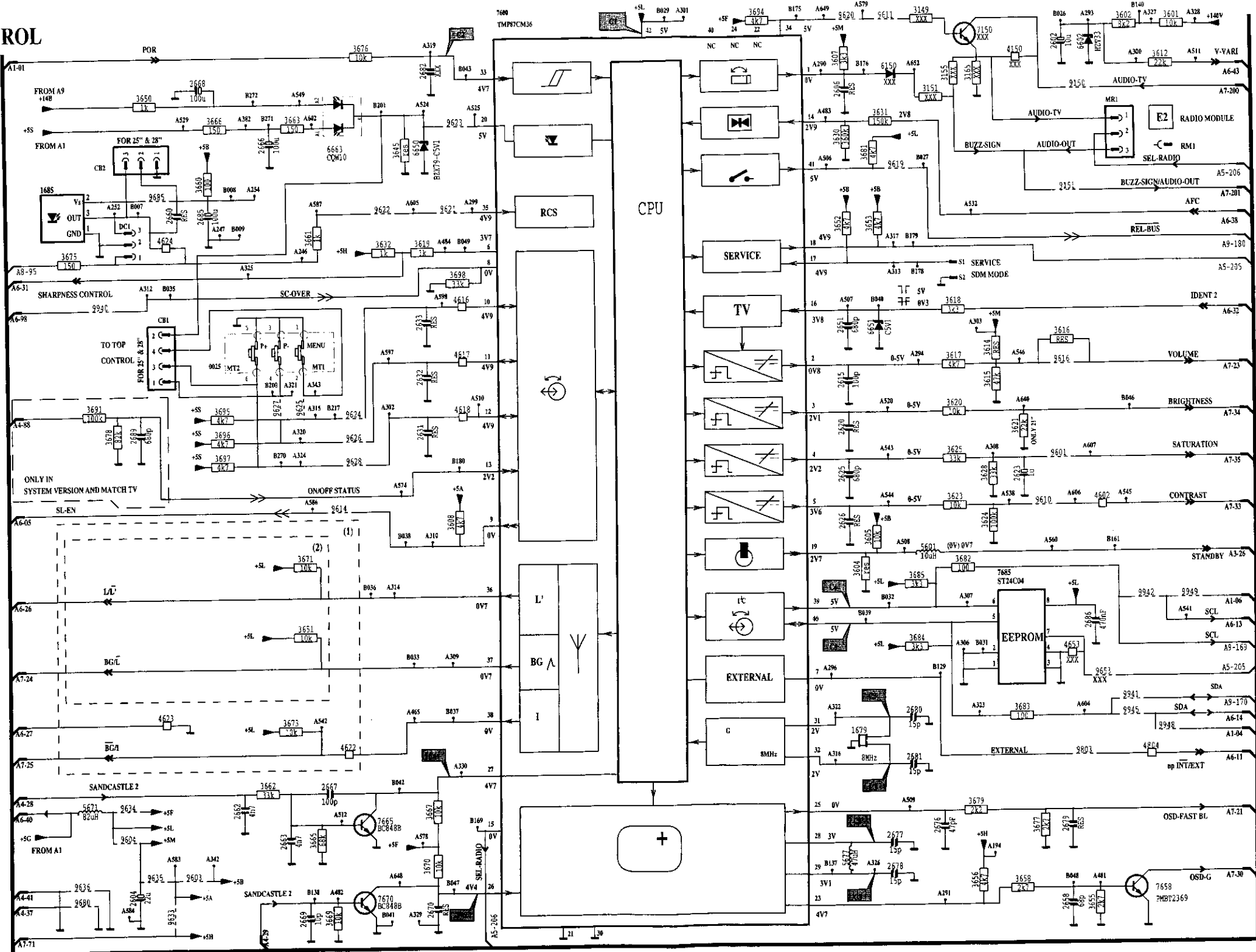
CONTROL

(1) ONLY FOR MULTI PAL/SECAM 3G/L/L/L
(2) ONLY FOR PAL/SECAM 3G/L/L/L

XXX	ON CARD or NO SYSTEM	SYSTEM
2682	100p	220m

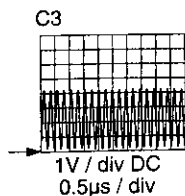
XXX	CLOCK	NO CLOCK	ON CARD
3149	22k	---	22k
3151	3k3	---	3k3
3165	10k	---	10k
4150	---	YES	---
6150	LL4148	---	LL4148
7150	BC848B	---	BC848B
3155	RADIO	NO RADIO	3k3

XXX	7685
4653	YES
9653	NOT

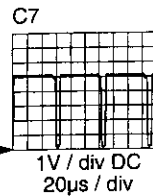
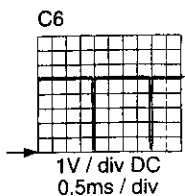


0025 1295 1305 1315 1325 1335 1345 1355 1365 1375 1385 1395 1405 1415 1425 1435 1445 1455 1465 1475 1485 1495 1505 1515 1525 1535 1545 1555 1565 1575 1585 1595 1605 1615 1625 1635 1645 1655 1665 1675 1685 1695 1705 1715 1725 1735 1745 1755 1765 1775 1785 1795 1805 1815 1825 1835 1845 1855 1865 1875 1885 1895 1905 1915 1925 1935 1945 1955 1965 1975 1985 1995 2005 2015 2025 2035 2045 2055 2065 2075 2085 2095 2105 2115 2125 2135 2145 2155 2165 2175 2185 2195 2205 2215 2225 2235 2245 2255 2265 2275 2285 2295 2305 2315 2325 2335 2345 2355 2365 2375 2385 2395 2405 2415 2425 2435 2445 2455 2465 2475 2485 2495 2505 2515 2525 2535 2545 2555 2565 2575 2585 2595 2605 2615 2625 2635 2645 2655 2665 2675 2685 2695 2705 2715 2725 2735 2745 2755 2765 2775 2785 2795 2805 2815 2825 2835 2845 2855 2865 2875 2885 2895 2905 2915 2925 2935 2945 2955 2965 2975 2985 2995 3005 3015 3025 3035 3045 3055 3065 3075 3085 3095 3105 3115 3125 3135 3145 3155 3165 3175 3185 3195 3205 3215 3225 3235 3245 3255 3265 3275 3285 3295 3305 3315 3325 3335 3345 3355 3365 3375 3385 3395 3405 3415 3425 3435 3445 3455 3465 3475 3485 3495 3505 3515 3525 3535 3545 3555 3565 3575 3585 3595 3605 3615 3625 3635 3645 3655 3665 3675 3685 3695 3705 3715 3725 3735 3745 3755 3765 3775 3785 3795 3805 3815 3825 3835 3845 3855 3865 3875 3885 3895 3905 3915 3925 3935 3945 3955 3965 3975 3985 3995 4005 4015 4025 4035 4045 4055 4065 4075 4085 4095 4105 4115 4125 4135 4145 4155 4165 4175 4185 4195 4205 4215 4225 4235 4245 4255 4265 4275 4285 4295 4305 4315 4325 4335 4345 4355 4365 4375 4385 4395 4405 4415 4425 4435 4445 4455 4465 4475 4485 4495 4505 4515 4525 4535 4545 4555 4565 4575 4585 4595 4605 4615 4625 4635 4645 4655 4665 4675 4685 4695 4705 4715 4725 4735 4745 4755 4765 4775 4785 4795 4805 4815 4825 4835 4845 4855 4865 4875 4885 4895 4905 4915 4925 4935 4945 4955 4965 4975 4985 4995 5005 5015 5025 5035 5045 5055 5065 5075 5085 5095 5105 5115 5125 5135 5145 5155 5165 5175 5185 5195 5205 5215 5225 5235 5245 5255 5265 5275 5285 5295 5305 5315 5325 5335 5345 5355 5365 5375 5385 5395 5405 5415 5425 5435 5445 5455 5465 5475 5485 5495 5505 5515 5525 5535 5545 5555 5565 5575 5585 5595 5605 5615 5625 5635 5645 5655 5665 5675 5685 5695 5705 5715 5725 5735 5745 5755 5765 5775 5785 5795 5805 5815 5825 5835 5845 5855 5865 5875 5885 5895 5905 5915 5925 5935 5945 5955 5965 5975 5985 5995 6005 6015 6025 6035 6045 6055 6065 6075 6085 6095 6105 6115 6125 6135 6145 6155 6165 6175 6185 6195 6205 6215 6225 6235 6245 6255 6265 6275 6285 6295 6305 6315 6325 6335 6345 6355 6365 6375 6385 6395 6405 6415 6425 6435 6445 6455 6465 6475 6485 6495 6505 6515 6525 6535 6545 6555 6565 6575 6585 6595 6605 6615 6625 6635 6645 6655 6665 6675 6685 6695 6705 6715 6725 6735 6745 6755 6765 6775 6785 6795 6805 6815 6825 6835 6845 6855 6865 6875 6885 6895 6905 6915 6925 6935 6945 6955 6965 6975 6985 6995 7005 7015 7025 7035 7045 7055 7065 7075 7085 7095 7105 7115 7125 7135 7145 7155 7165 7175 7185 7195 7205 7215 7225 7235 7245 7255 7265 7275 7285 7295 7305 7315 7325 7335 7345 7355 7365 7375 7385 7395 7405 7415 7425 7435 7445 7455 7465 7475 7485 7495 7505 7515 7525 7535 7545 7555 7565 7575 7585 7595 7605 7615 7625 7635 7645 7655 7665 7675 7685 7695 7705 7715 7725 7735 7745 7755 7765 7775 7785 7795 7805 7815 7825 7835 7845 7855 7865 7875 7885 7895 7905 7915 7925 7935 7945 7955 7965 7975 7985 7995 8005 8015 8025 8035 8045 8055 8065 8075 8085 8095 8105 8115 8125 8135 8145 8155 8165 8175 8185 8195 8205 8215 8225 8235 8245 8255 8265 8275 8285 8295 8305 8315 8325 8335 8345 8355 8365 8375 8385 8395 8405 8415 8425 8435 8445 8455 8465 8475 8485 8495 8505 8515 8525 8535 8545 8555 8565 8575 8585 8595 8605 8615 8625 8635 8645 8655 8665 8675 8685 8695 8705 8715 8725 8735 8745 8755 8765 8775 8785 8795 8805 8815 8825 8835 8845 8855 8865 8875 8885 8895 8905 8915 8925 8935 8945 8955 8965 8975 8985 8995 9005 9015 9025 9035 9045 9055 9065 9075 9085 9095 9105 9115 9125 9135 9145 9155 9165 9175 9185 9195 9205 9215 9225 9235 9245 9255 9265 9275 9285 9295 9305 9315 9325 9335 9345 9355 9365 9375 9385 9395 9405 9415 9425 9435 9445 9455 9465 9475 9485 9495 9505 9515 9525 9535 9545 9555 9565 9575 9585 9595 9605 9615 9625 9635 9645 9655 9665 9675 9685 9695 9705 9715 9725 9735 9745 9755 9765 9775 9785 9795 9805 9815 9825 9835 9845 9855 9865 9875 9885 9895 9905 9915 9925 9935 9945 9955 9965 9975 9985 9995

C1 5V DC
C2 4V6 DC

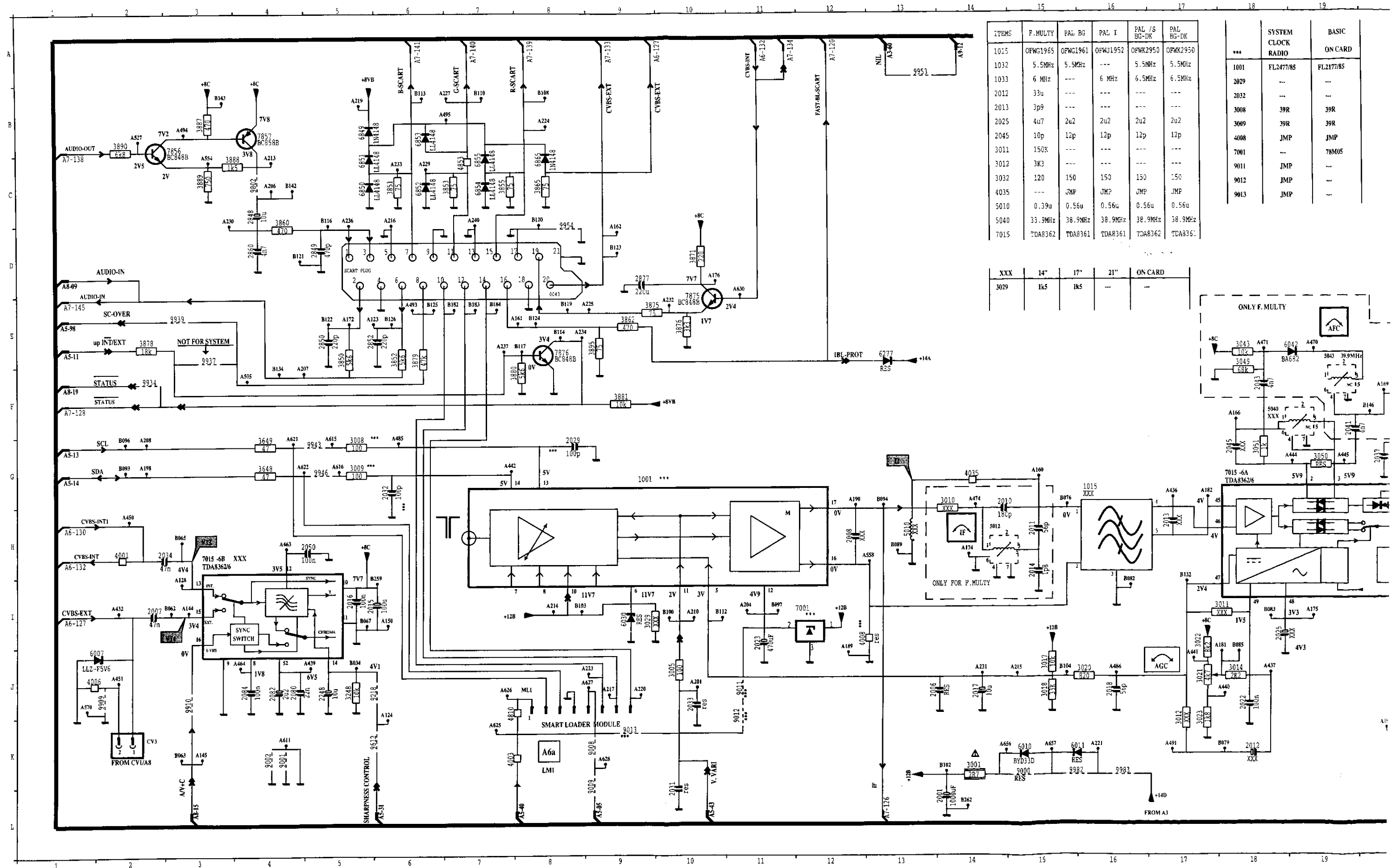


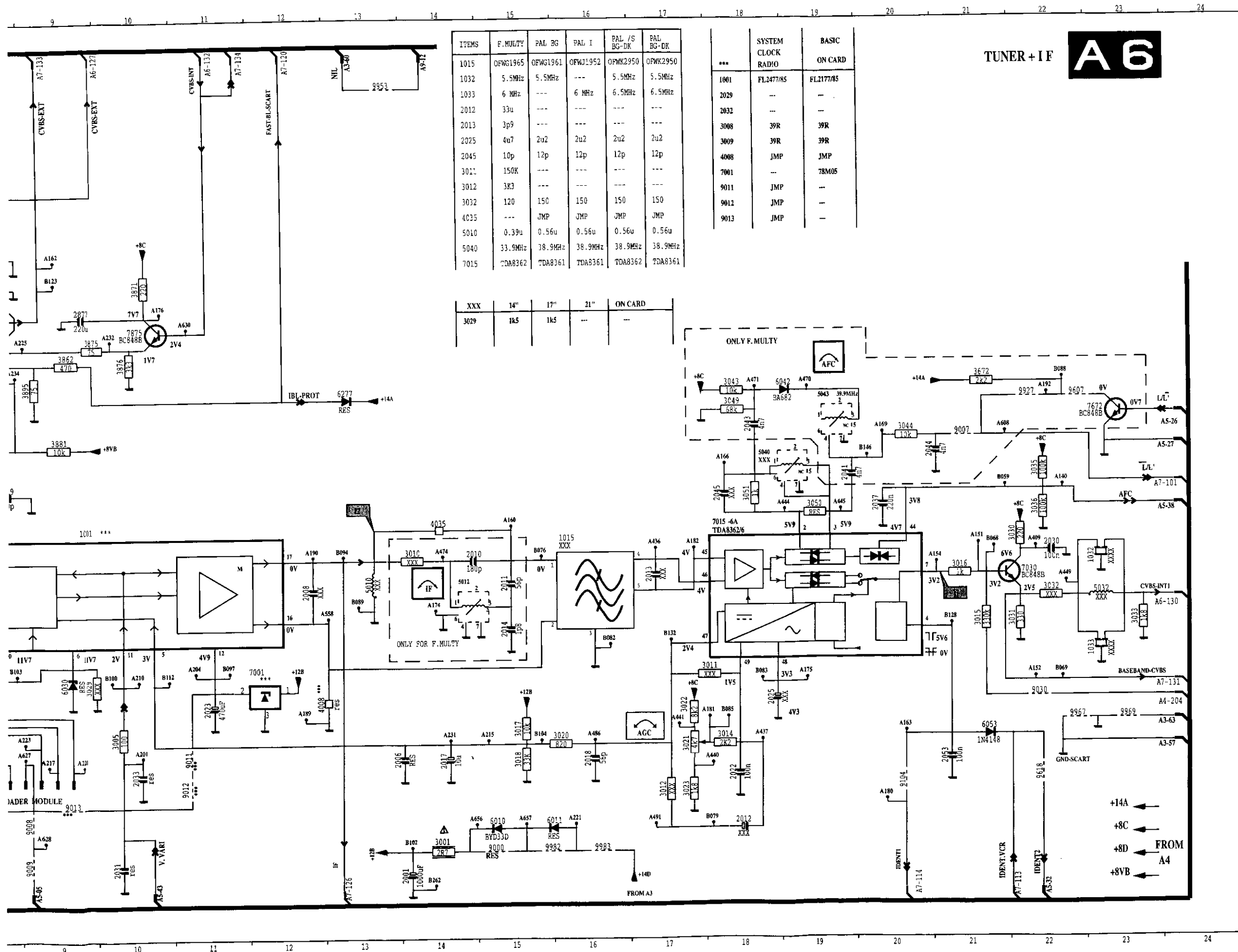
C4 5V DC
C5 5V DC



→ = 0V

A7H.1_A5 cdr
121197





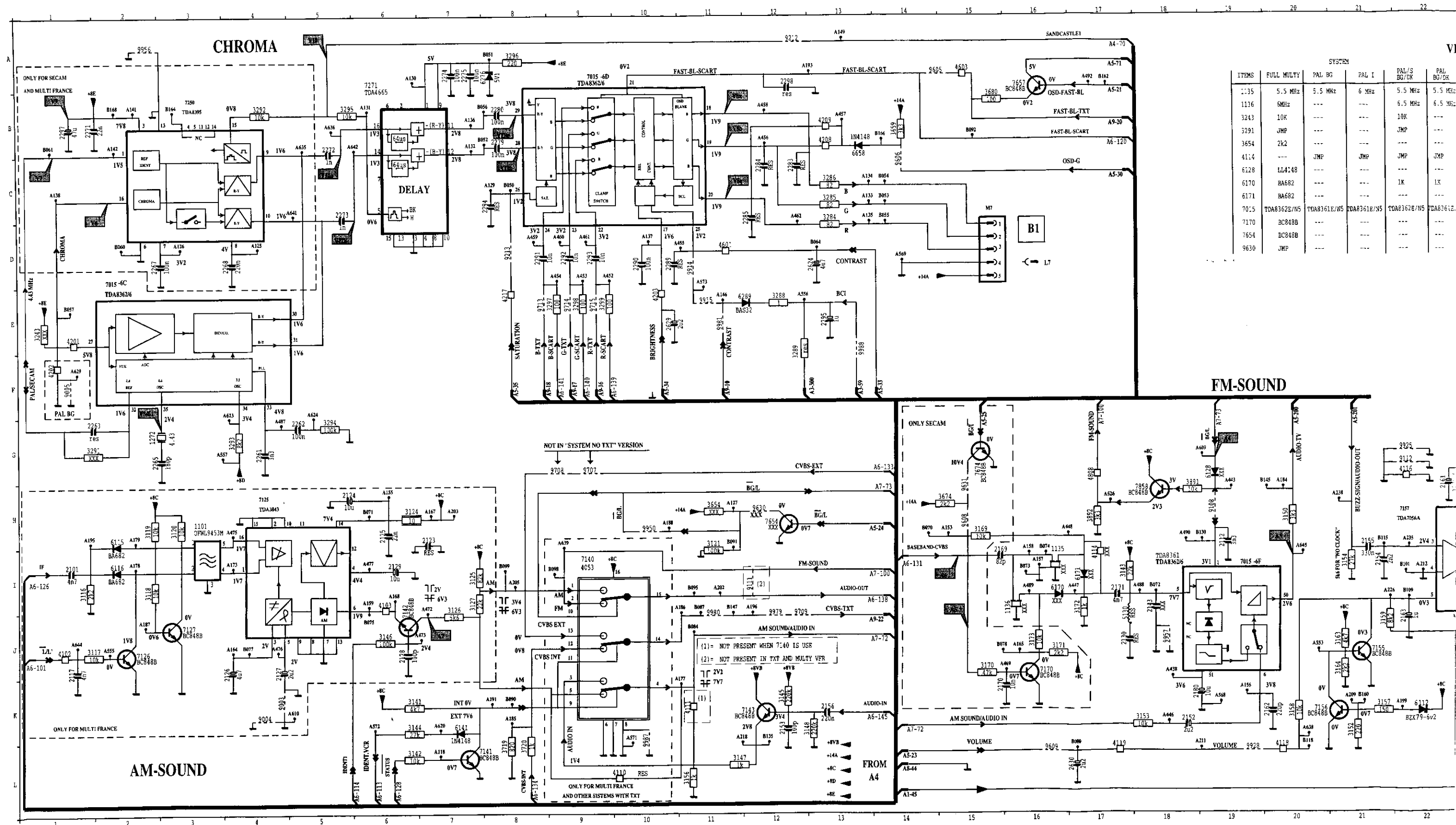
ITEMS	F.MULTY	PAL 2G	PAL I	PAL / S BG-DK	PAL BG-DK
1015	OFWG1965	OFWG1961	OFWJ1952	OFWK2950	OFWK2950
1032	5.5MHz	5.5MHz	---	5.5MHz	5.5MHz
1033	6 MHz	---	6 MHz	6.5MHz	6.5MHz
2012	33u	---	---	---	---
2013	3p9	---	---	---	---
2025	4u7	2u2	2u2	2u2	2u2
2045	10p	12p	12p	12p	12p
3011	150K	---	---	---	---
3012	3K3	---	---	---	---
3032	120	150	150	150	150
4035	---	JMP	JMP	JMP	JMP
5010	0.39u	0.56u	0.56u	0.56u	0.56u
5040	33.9MHz	38.9MHz	38.9MHz	38.9MHz	38.9MHz
7015	TDA8362	TDA8361	TDA8361	TDA8362	TDA8361

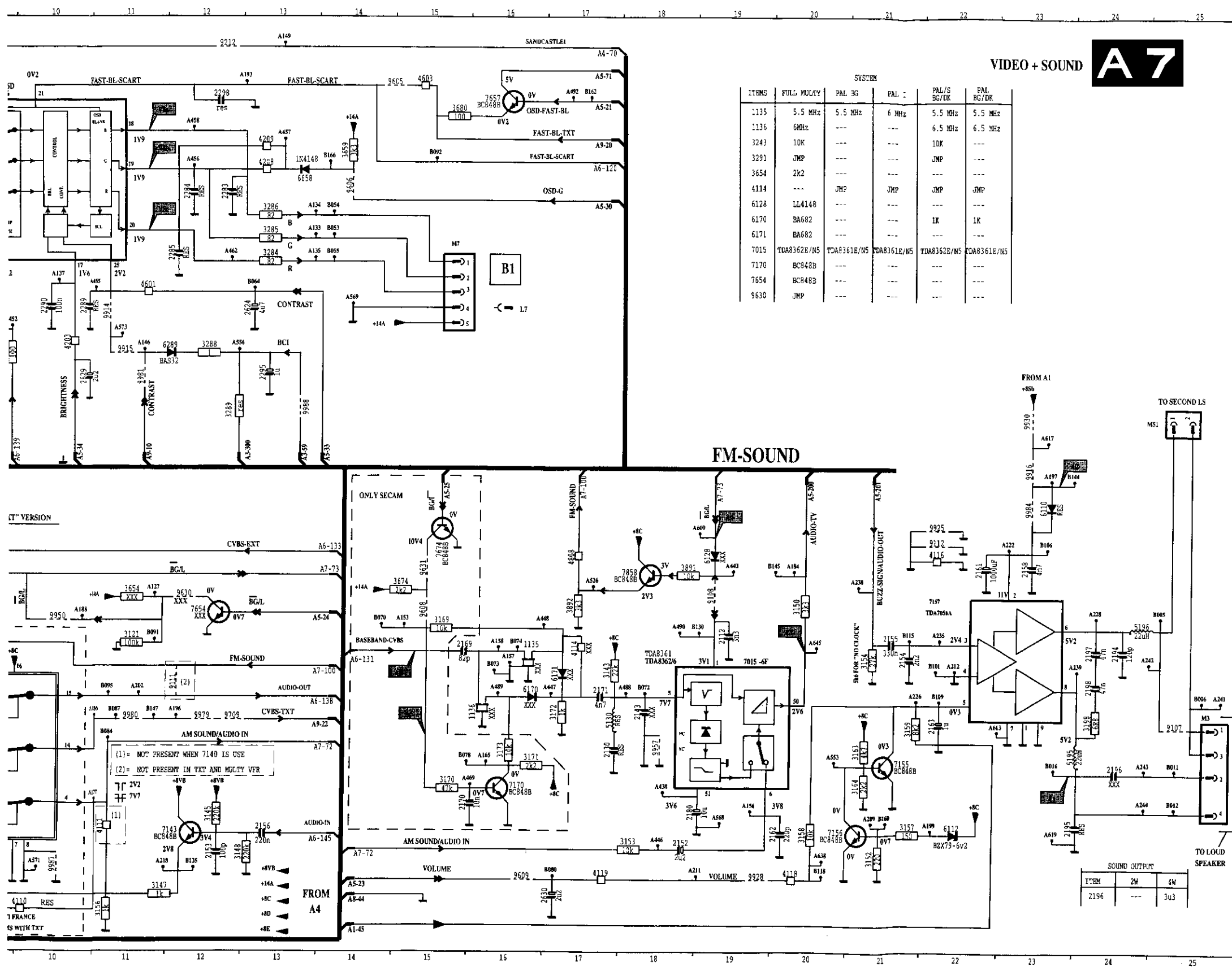
XXX	14"	17"	21"	ON CARD
3029	1K5	1K5	---	---

***	SYSTEM CLOCK RADIO	BASIC ON CARD
1001	FL2477/85	FL2177/85
2029	---	---
2032	---	---
3008	39R	39R
3009	39R	39R
4008	JMP	JMP
7001	---	78M05
9011	JMP	---
9012	JMP	---
9013	JMP	---

TUNER + IF **A6**

A	0043	D 9	7855	B 3	A486	J16
	1001	G 9	7857	B 4	A491	K17
	1015	H 10	7858	B 5	A492	L18
	1032	H21	7876	E 10	A493	E 6
	1033	L23	9000	K15	A494	J 7
	2001	K 13	9001	K16	A495	BB 7
	2006	J13	9002	K 4	A527	B 2
	2007	J 2	9007	F21	A554	A 5
	2008	H12	9008	K 9	A558	C H13
	2010	G14	9009	K 9	A570	G 1
B	2011	H11	J11	A608	J 7	
	2012	H12	J11	A613	F24	
	2013	H17	9013	K 9	A615	G 5
	2014	H15	9030	I22	A616	G 5
	2015	I 5	9104	J20	A621	G 4
	2016	I 6	9218	J 6	A625	G 4
	2017	J14	9607	E22	A626	K 1
	2018	J18	9618	J22	A627	J 9
	2023	I11	9862	C 4	A630	K 1
	2025	I16	9909	E 3	A638	DI14
C	2029	G 8	9917	E 3	A639	E 3
	2030	G22	9934	E 2	A640	J 5
	2031	G 6	9937	E 3	9059	G21
	2032	J10	9939	E 3	R062	I 5
	2034	H 2	9942	G 3	I K 1	H 5
	2037	G20	9946	G 3	B067	J 5
	2038	F18	9954	D 8	R068	G21
	2044	F20	9967	J22	R069	I22
	2045	G18	9969	J23	G16	G15
	2050	H 5	9982	K15	B077	K18
D	2052	J2	9990	K10	B078	K18
	2053	J 4	A6-120	I 1	B08	J18
	2082	J 4	A6-127	I 1	9085	J18
	2084	J 5	A5-127	A10	B088	E22
	2248	J 5	A6-132	E 4	B089	H11
	2848	E 2	A6-132	E 4	B094	G 2
	2850	E 2	A6-132	A11	R096	G 2
	2852	E 4	A7-101	G24	B097	I14
	2866	D 4	A7-113	L22	B100	K11
	2877	D 9	A7-113	L20	B102	K14
E	3001	K14	A7-120	A10	E102	J15
	3008	G 5	A7-128	F 1	B108	B 7
	3009	G 5	A7-131	I24	B110	B 8
	3010	G14	A7-133	A 9	B112	I10
	3011	I18	A7-134	A11	B113	B14
	3012	I17	A7-137	A 8	B116	B 8
	3015	H21	A7-140	A 6	B117	B 8
	3016	H21	A7-141	A 6	B119	B 8
	3017	J 5	A7-145	E 1	B120	B 8
	3018	J 5	A121	E 5	B121	B 8
F	3021	I17	A128	I 3	B123	D 9
	3022	I17	A140	G22	B124	E 8
	3023	K17	A144	I 3	B125	E 6
	3029	I 9	A145	K 3	B126	E 6
	3030	G22	A150	G 1	B132	E 11
	3032	H22	A152	I22	B134	F 4
	3033	H23	A154	E21	B142	C 4
	3035	F22	A160	G15	B143	B14
	3036	G26	A165	E 8	B146	F20
	3044	E18	A167	I20	B183	E 7
G	3049	F18	A166	F18	B184	E 7
	3050	G19	A169	E20	B259	I 6
	3051	G18	A172	E 5	B262	L14
	3248	G 4	A175	D10	B 35	E 7
	3649	G 4	A176	H14	B 39	E 1
	3672	E12	A180	K20	B-12	A14
	3850	E 5	A181	J18	B-13	C10
	3851	E 5	A182	G12	B-14	C10
	3852	E 5	A183	G12	B-15	C10
	3853	E 5	A190	G12	B-19	F 1
H	3855	E 7	A192	E22	B-26	F24
	3860	E 4	A198	G 2	B-27	F24
	3862	E 8	A201	I11	B-31	L24
	3863	E 8	A204	I11	B-32	H20
	3875	E 8	A207	F 8	B-40	L10
	3876	E10	A208	G 2	B-43	L10
	3878	E 6	A210	I10	B-60	A14
	3879	E 6	A213	C 4	B-63	E 3
	3880	E 7	A215	J15	B-98	K 8
	3887	F 9	A216	E 5	CV3	E 2
I	3888	C 3	A217	E 5	D-57	J24
	3889	C 3	A219	E 9	ML1	J24
	3890	C 3	A220	E 9	ML2	J24
	3900	C 3	A221	E 9	ML3	J24
	4003	C 3	A223	J16	ML4	J24
	4006	J 7	A224	E 8	ML5	J24
	4008	I12	A225	E 8	ML6	J24
	4009	G14	A227	E 6	ML7	J24
	4853	C 7	A231	E 8	ML8	J24
	J	5010	C17	A232	J10	
5012		H14	A234	E 6		
5013		H23	A234	E 6		
5014		H18	A236	E 8		
5043		E19	A237	E 7		
6007		J 2	A240	C 7		
6010		K15	A409	G22		
6011		K15	A432	L 2		
6042		E 9	A436	E 3		
6053		J21	A439	J18		
K	6277	E13	A440	J18		
	6849	E13	A441	J17		
	6850	E 5	A442	E19		
	6851	E 5	A443	E19		
	6852	E 5	A445	E19		
	6853	E 5	A449	H22		
	6854	E 7	A450	H 2		
	6855	C 8	A451	J 4		
	7015	H18	A470	E19		
	7015	G13	A471	E19		
L	7030	E23	A474	G16		
	7672	F23	A485	G 4		

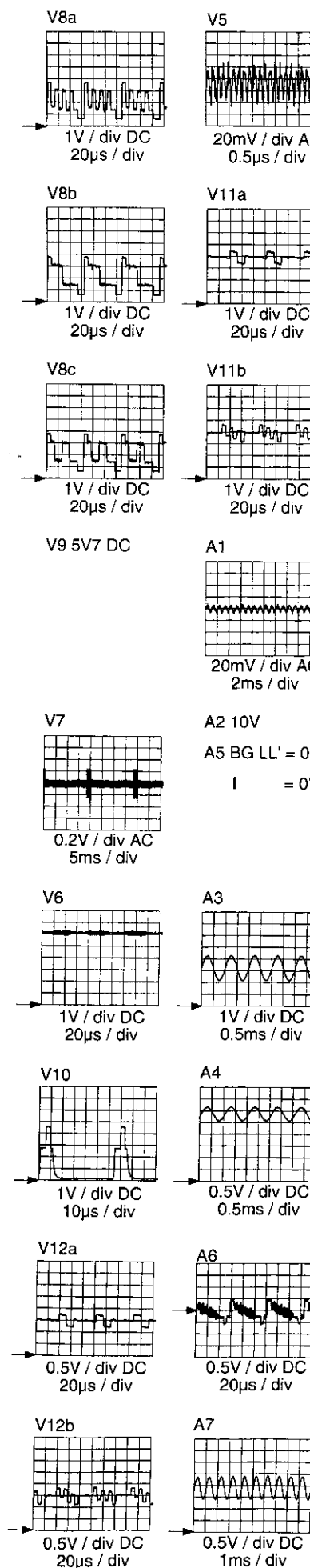




SYSTEM					
ITEMS	FULL MULPLY	PAL 3G	PAL 1	PAL/S BG/DK	PAL BG/DK
1135	5.5 MHz	5.5 MHz	6 MHz	5.5 MHz	5.5 MHz
1136	6MHz	---	---	6.5 MHz	6.5 MHz
3243	10K	---	---	10K	---
3291	JMP	---	---	JMP	---
3654	2k2	---	---	---	---
4114	---	JMP	JMP	JMP	JMP
6128	LL4148	---	---	---	---
6170	BA682	---	---	1K	1K
6171	BA682	---	---	---	---
7015	TD8362E/N5	TD8361E/N5	TD8361E/N5	TD8362E/N5	TD8361E/N5
7170	BC842B	---	---	---	---
7654	BC842B	---	---	---	---
9630	JMP	---	---	---	---

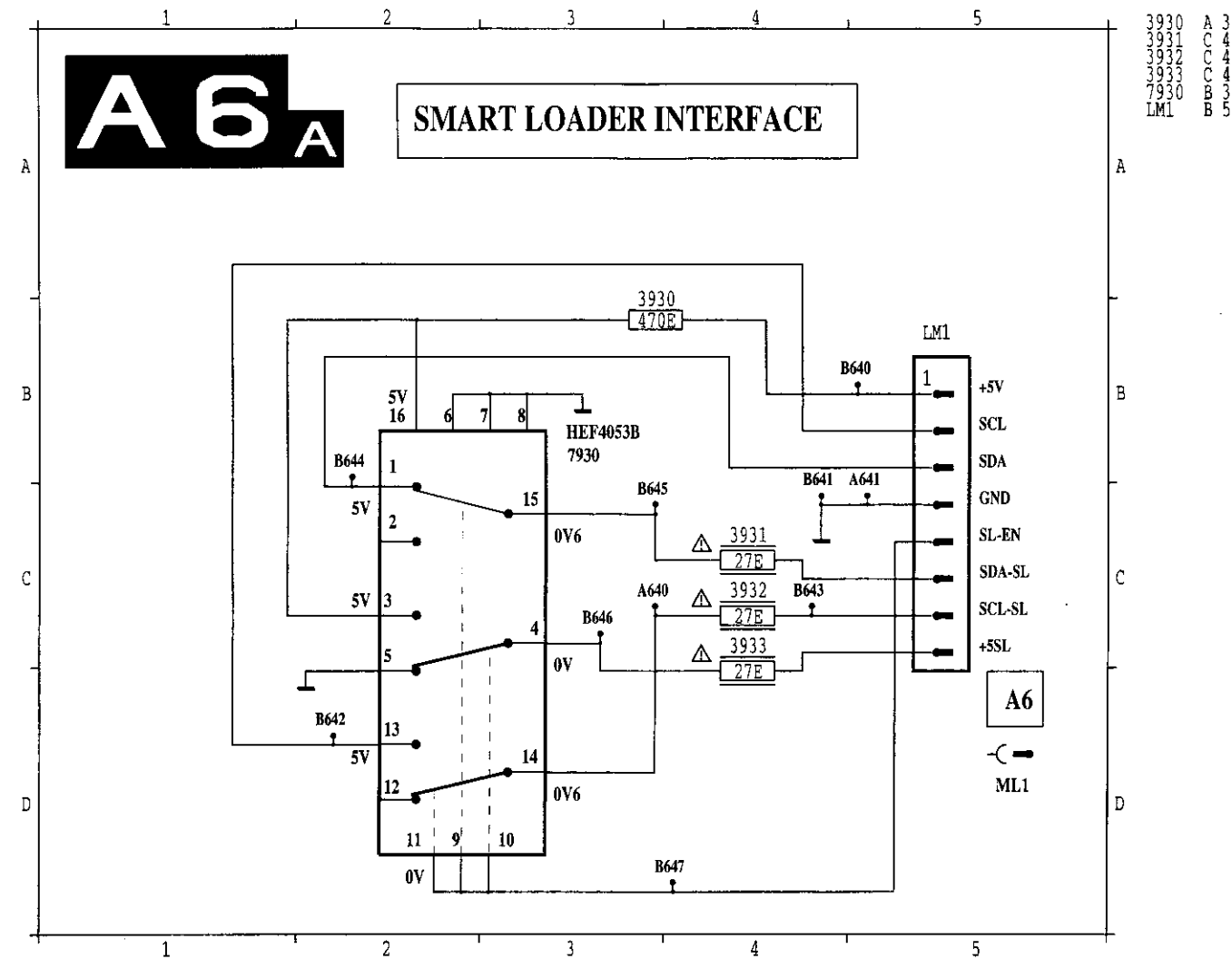
VIDEO + SOUND

A 7

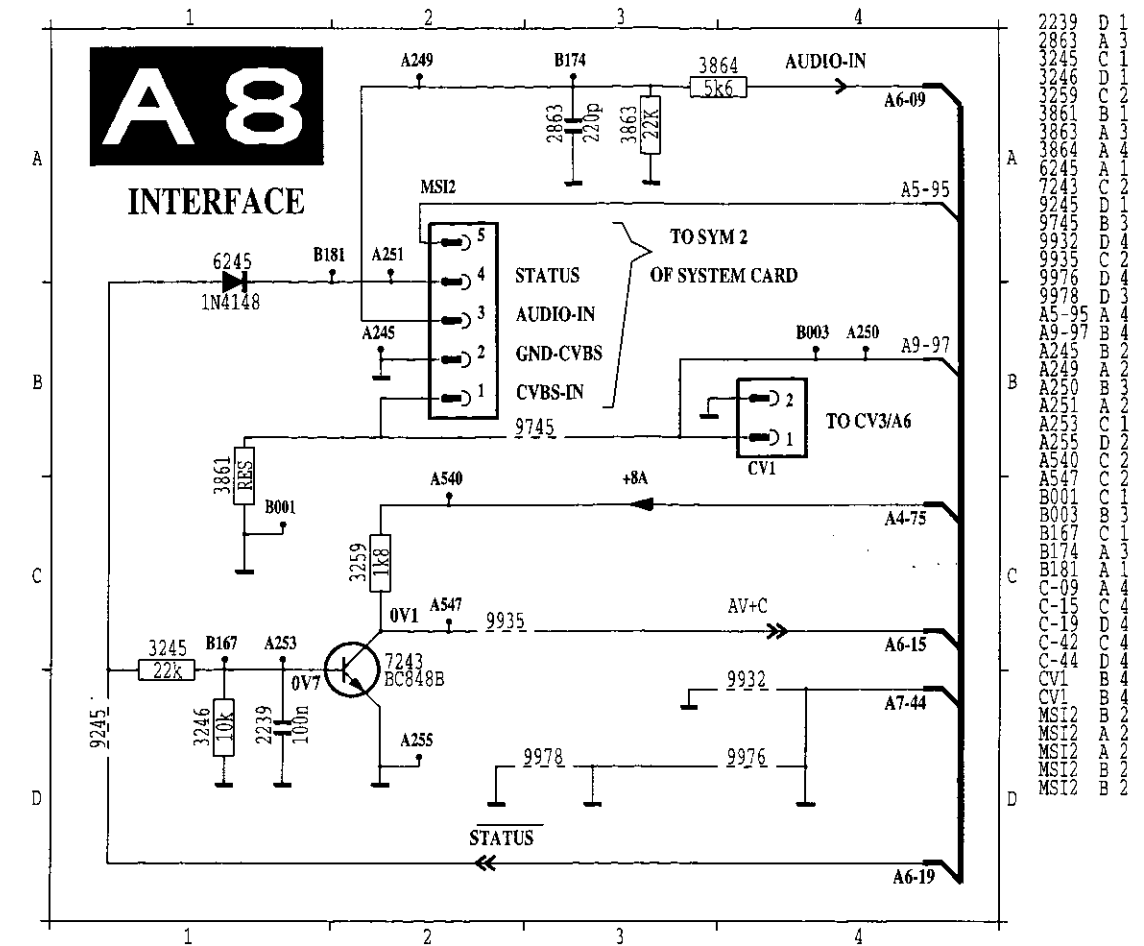
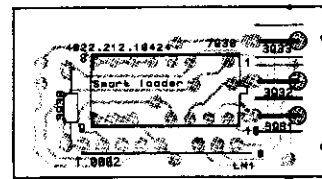


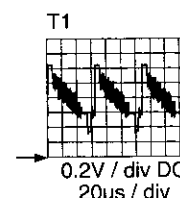
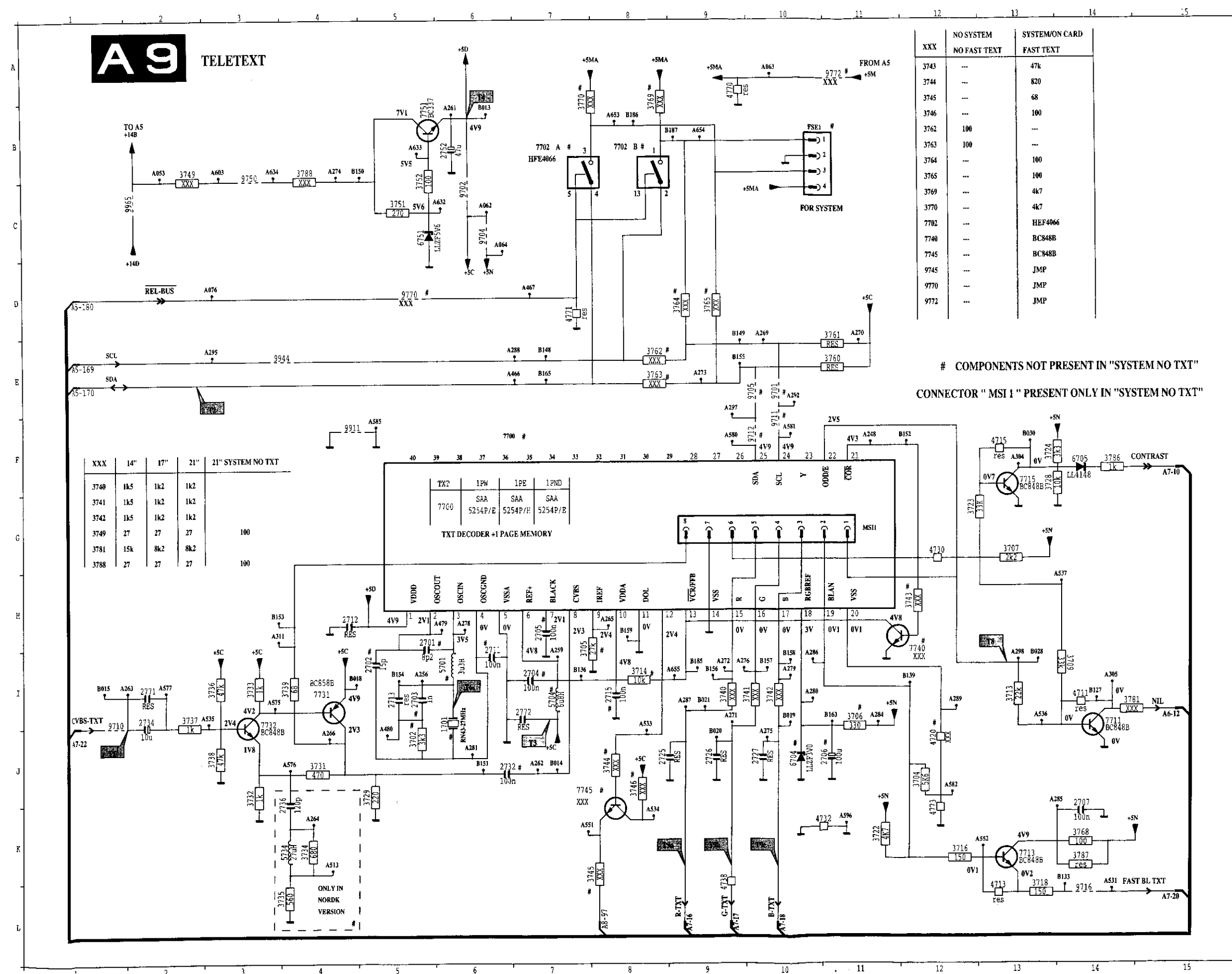
$\rightarrow = 0V$

A7H.1_A7.cdr
131197



Smart loader





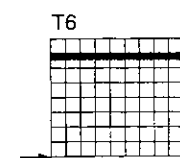
0.2V / div DC
20 μ s / div

T2 5V DC

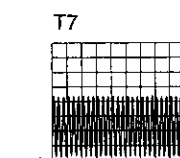
T3 4V9 DC

T4 4V9 DC

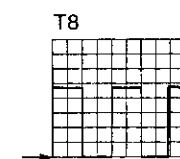
T5 5V DC



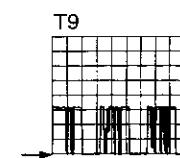
0.5V / div DC
0.5 μ s / div



1V / div DC
0.5μs / div



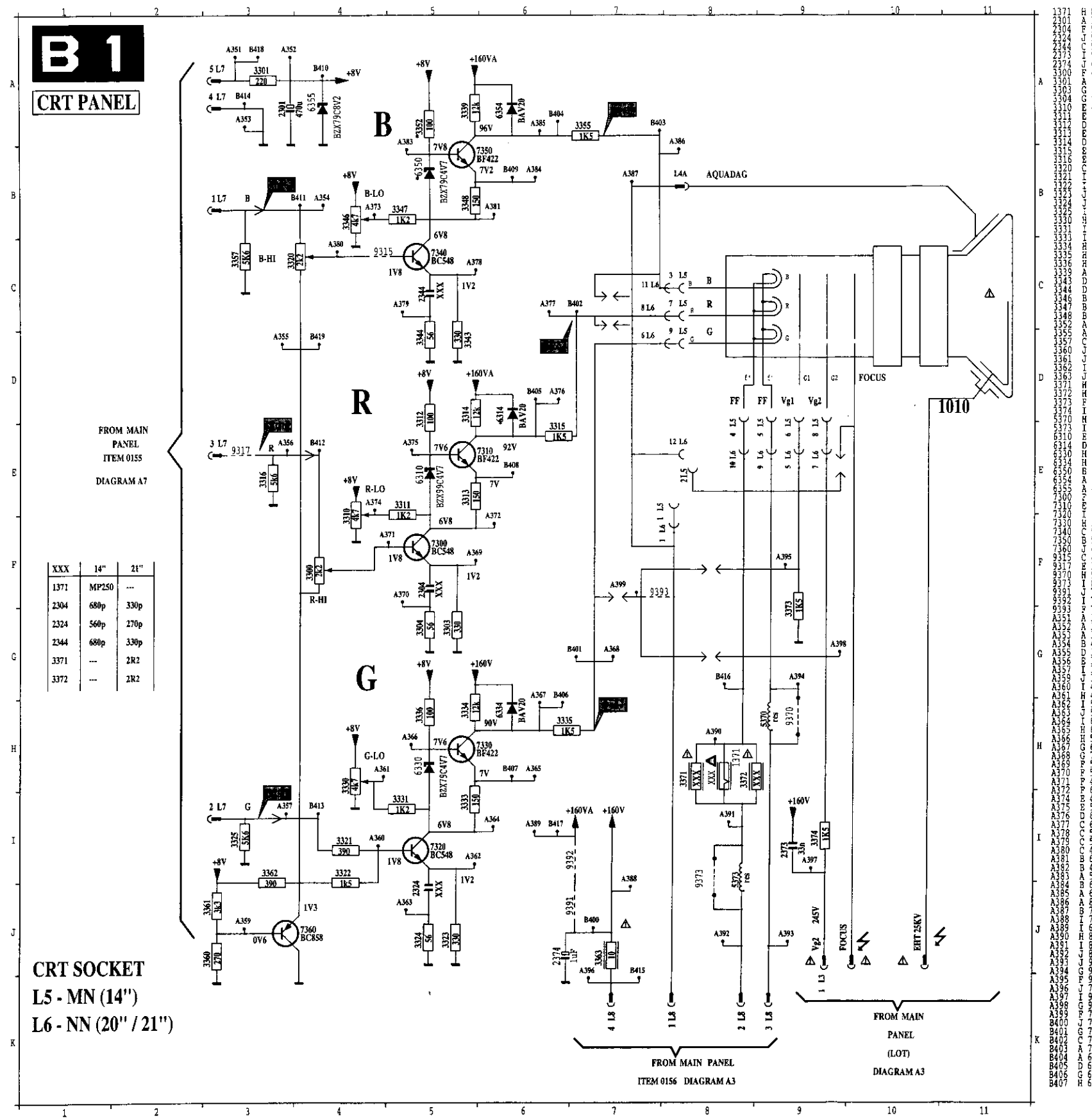
1V / div DC
10ms / div



1V / div DC
20 μ s / div

→ = 0V

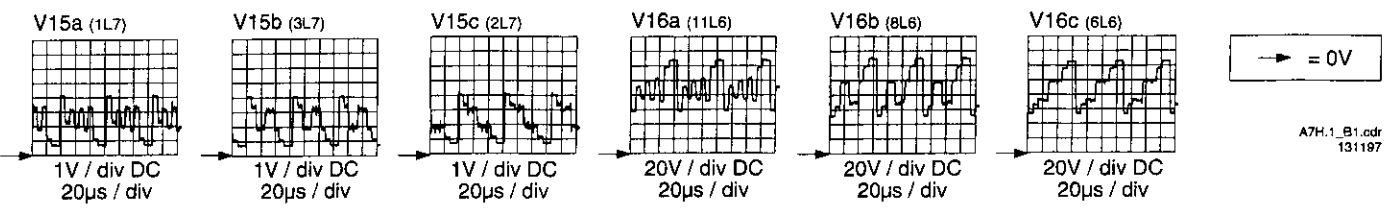
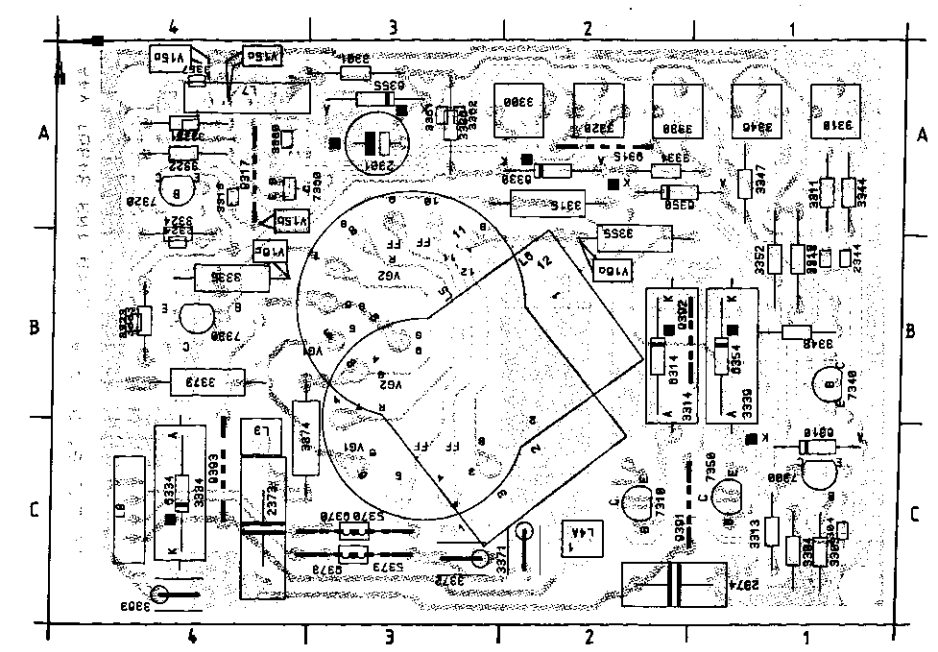
A7H.1_A9.cdr
131197



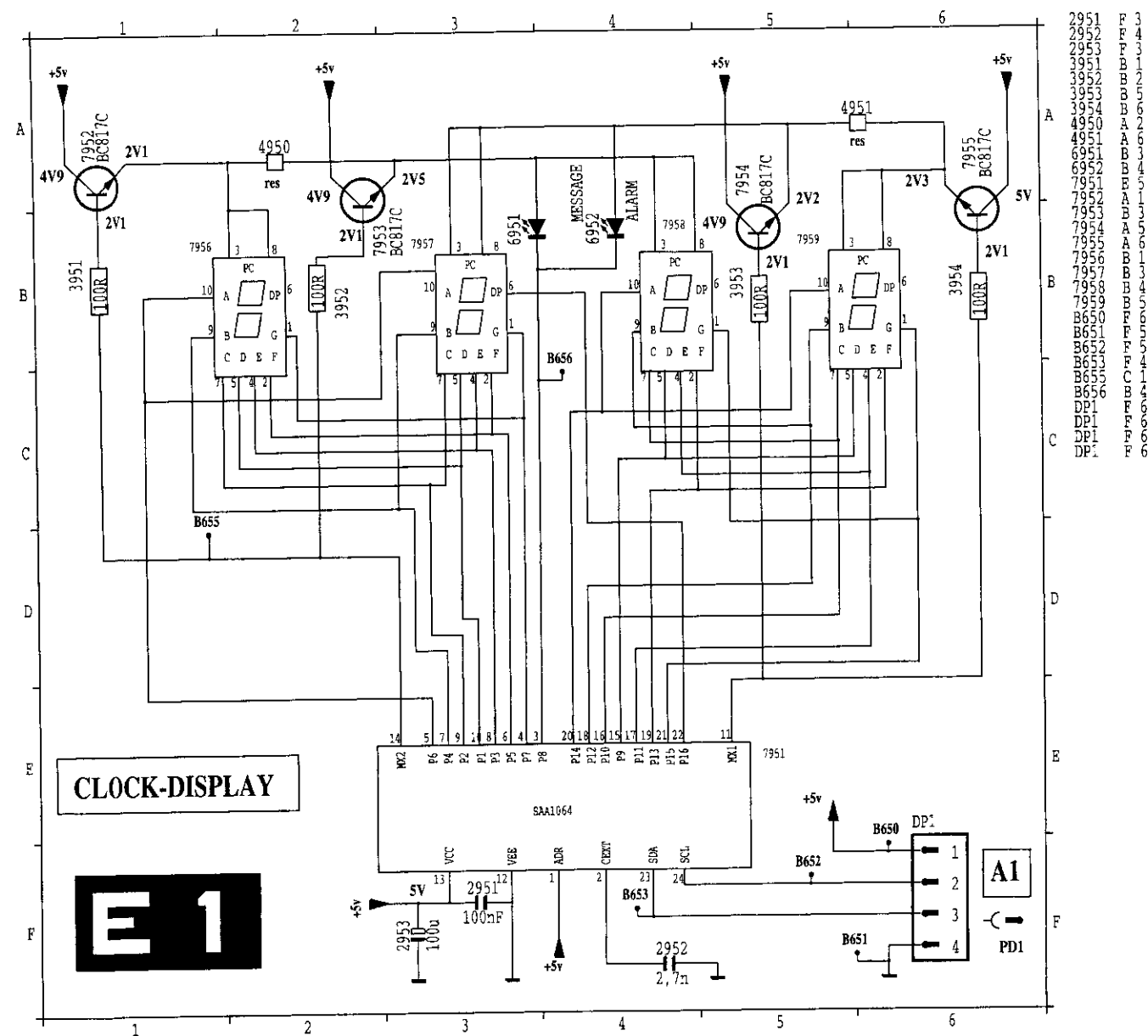
1371
1301
1304
2304
2324
2344
2373
2374
3300
3301
3303
3304
3310
3311
3312
3313
3314
3315
3316
3322
3323
3324
3325
3330
3331
3333
3334
3335
3336
3337
3338
3339
3340
3341
3342
3343
3344
3345
3346
3347
3348
3349
3350
3351
3352
3353
3354
3355
3356
3357
3358
3359
3360
3361
3362
3363
3364
3365
3366
3367
3368
3369
3370
3371
3372
3373
3374
3375
3376
3377
3378
3379
3380
3381
3382
3383
3384
3385
3386
3387
3388
3389
3390
3391
3392
3393
3394
3395
3396
3397
3398
3399
3400
3401
3402
3403
3404
3405
3406
3407
3408
3409
3410
3411
3412
3413
3414
3415
3416
3417
3418
3419
3420
3421
3422
3423
3424
3425
3426
3427
3428
3429
3430
3431
3432
3433
3434
3435
3436
3437
3438
3439
3440
3441
3442
3443
3444
3445
3446
3447
3448
3449
3450
3451
3452
3453
3454
3455
3456
3457
3458
3459
3460
3461
3462
3463
3464
3465
3466
3467
3468
3469
3470
3471
3472
3473
3474
3475
3476
3477
3478
3479
3480
3481
3482
3483
3484
3485
3486
3487
3488
3489
3490
3491
3492
3493
3494
3495
3496
3497
3498
3499
3500
3501
3502
3503
3504
3505
3506
3507
3508
3509
3510
3511
3512
3513
3514
3515
3516
3517
3518
3519
3520
3521
3522
3523
3524
3525
3526
3527
3528
3529
3530
3531
3532
3533
3534
3535
3536
3537
3538
3539
3540
3541
3542
3543
3544
3545
3546
3547
3548
3549
3550
3551
3552
3553
3554
3555
3556
3557
3558
3559
3560
3561
3562
3563
3564
3565
3566
3567
3568
3569
3570
3571
3572
3573
3574
3575
3576
3577
3578
3579
3580
3581
3582
3583
3584
3585
3586
3587
3588
3589
3590
3591
3592
3593
3594
3595
3596
3597
3598
3599
3600
3601
3602
3603
3604
3605
3606
3607
3608
3609
3610
3611
3612
3613
3614
3615
3616
3617
3618
3619
3620
3621
3622
3623
3624
3625
3626
3627
3628
3629
3630
3631
3632
3633
3634
3635
3636
3637
3638
3639
3640
3641
3642
3643
3644
3645
3646
3647
3648
3649
3650
3651
3652
3653
3654
3655
3656
3657
3658
3659
3660
3661
3662
3663
3664
3665
3666
3667
3668
3669
3670
3671
3672
3673
3674
3675
3676
3677
3678
3679
3680
3681
3682
3683
3684
3685
3686
3687
3688
3689
3690
3691
3692
3693
3694
3695
3696
3697
3698
3699
3700
3701
3702
3703
3704
3705
3706
3707
3708
3709
3710
3711
3712
3713
3714
3715
3716
3717
3718
3719
3720
3721
3722
3723
3724
3725
3726
3727
3728
3729
3730
3731
3732
3733
3734
3735
3736
3737
3738
3739
3740
3741
3742
3743
3744
3745
3746
3747
3748
3749
3750
3751
3752
3753
3754
3755
3756
3757
3758
3759
3760
3761
3762
3763
3764
3765
3766
3767
3768
3769
3770
3771
3772
3773
3774
3775
3776
3777
3778
3779
3780
3781
3782
3783
3784
3785
3786
3787
3788
3789
3790
3791
3792
3793
3794
3795
3796
3797
3798
3799
3800
3801
3802
3803
3804
3805
3806
3807
3808
3809
3810
3811
3812
3813
3814
3815
3816
3817
3818
3819
3820
3821
3822
3823
3824
3825
3826
3827
3828
3829
3830
3831
3832
3833
3834
3835
3836
3837
3838
3839
3840
3841
3842
3843
3844
3845
3846
3847
3848
3849
3850
3851
3852
3853
3854
3855
3856
3857
3858
3859
3860
3861
3862
3863
3864
3865
3866
3867
3868
3869
3870
3871
3872
3873
3874
3875
3876
3877
3878
3879
3880
3881
3882
3883
3884
3885
3886
3887
3888
3889
3890
3891
3892
3893
3894
3895
3896
3897
3898
3899
3900
3901
3902
3903
3904
3905
3906
3907
3908
3909
3910
3911
3912
3913
3914
3915
3916
3917
3918
3919
3920
3921
3922
3923
3924
3925
3926
3927
3928
3929
3930
3931
3932
3933
3934
3935
3936
3937
3938
3939
3940
3941
3942
3943
3944
3945
3946
3947
3948
3949
3950
3951
3952
3953
3954
3955
3956
3957
3958
3959
3960
3961
3962
3963
3964
3965
3966
3967
3968
3969
3970
3971
3972
3973
3974
3975
3976
3977
3978
3979
3980
3981
3982
3983
3984
3985
3986
3987
3988
3989
3990
3991
3992
3993
3994
3995
3996
3997
3998
3999
4000

2301 A3	3311 A1	3325 A4*	3348 B1	3374 C3	7310 C1	9392 B1
2304 C1*	3312 B1	3330 A1	3352 B1	5370 C3	7320 A4	9393 C4
2324 B4*	3313 C1	3331 A1	3355 B7	5373 C3	7330 B4	
2344 B1*	3314 B1	3333 B4	3357 A4*	6310 C1	7340 B1	L3 C3
2373 C3	3315 A2	3334 C4	3360 A3*	6314 B1	7350 C1	L4A C2
2374 C1	3316 A4*	3335 B4	3361 A2*	6330 A2	7360 A3*	L5 C3
3300 A2	3320 A2	3336 A2	3362 A2*	6334 C4	9315 A2	L6 B2
3301 A3	3321 A4	3339 B1	3363 C4	6350 A1	9317 A3	L7 A4
3303 C1	3322 A4	3343 B1*	3371 C2	6354 B1	9370 C3	L8 C4
3304 C1	3323 B4*	3346 A1	3372 C2	6355 A3	9373 C3	
3310 A1	3324 B4	3347 A1	3373 B4	7300 C1	9391 C1	

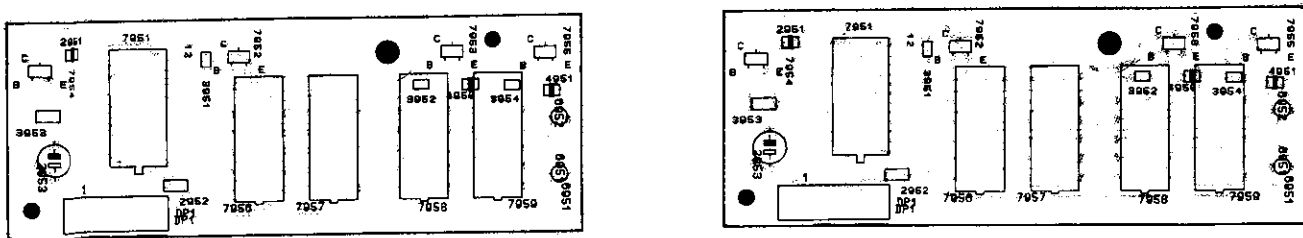
*=Chip component



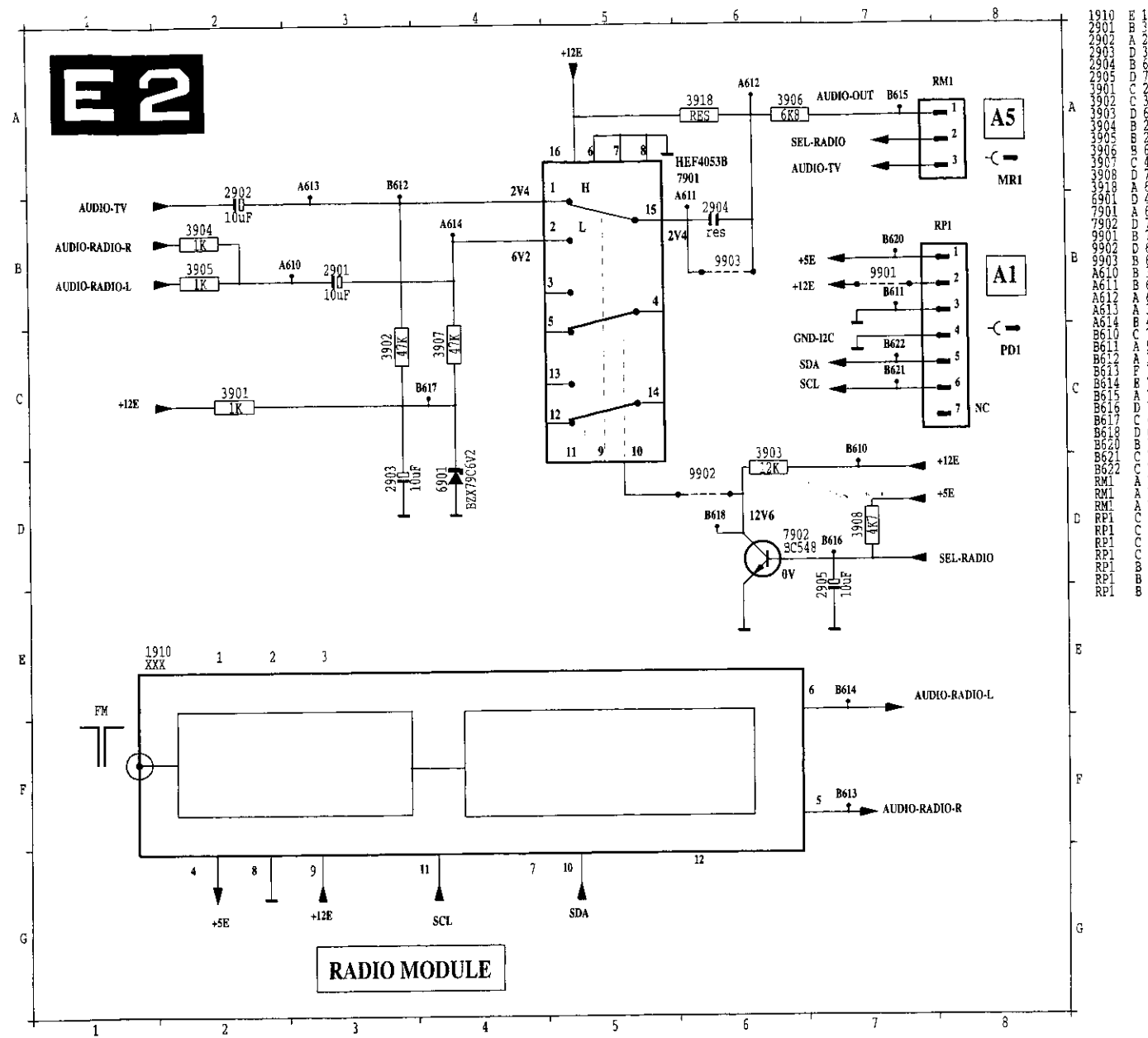
Clock-display / Uhr-Platte / Platine d'horloge



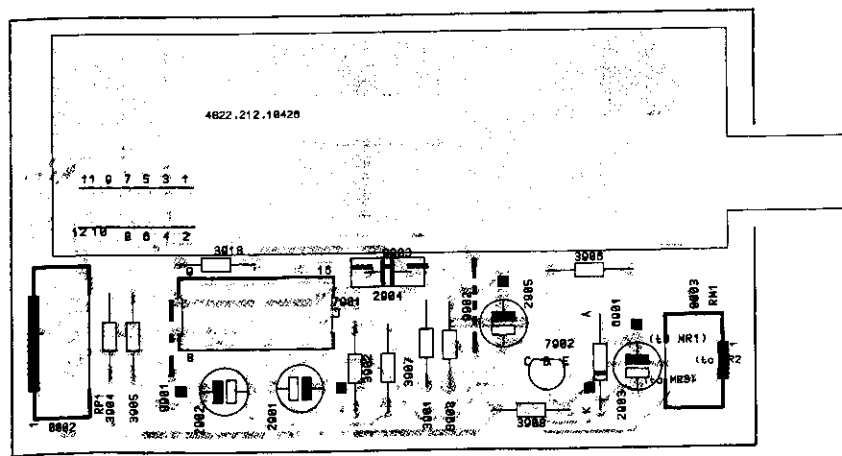
Clock panel



Radio-module / Radiomodul / Module de radio



Radio module



8. Electrical adjustments

1. Adjustments on the main panel (Fig. 8.1)

1.1 Horizontal centring

Is adjusted with potentiometer **R3354**.

1.2 Picture height

Is adjusted with potentiometer **R3407**.

1.3 Focusing

Is adjusted with the focusing potentiometer in the line output transformer.

1.4 IF filter (only for sets with SECAM LL' reception possibility)

Connect a signal generator (e.g. PM5326) via a capacitor of 5p6 to pin 17 of the tuner and adjust the frequency for 40.4 MHz.

Connect an oscilloscope to pin 1 of filter 1015.

Switch on the set and select system Europe (BG/L is "low" for BGIDK reception).

Adjust **L5012** for a minimum amplitude.

1.5 AFC

a. For sets with SECAM LL' reception possibility:

Connect a signal generator (e.g. PM5326) as indicated in point 1.6. Connect a voltmeter to pin 44 of IC7015/6A.

Adjust the frequency for 33.9 MHz and select system France (L/L' is "high" for L' reception). Adjust **L5040** for 3V5 (DC).

Next adjust the frequency for 38.9 MHz and select system Europe (L/L' is "low" for BGIDK reception). Adjust **L5043** for 3V5 (DC).

b. For sets without SECAM LL' reception possibility:

Connect a signal generator (e.g. PM5326) as indicated above and adjust the frequency for 38.9 MHz (for PAL I at 39.5 MHz). Connect a voltmeter to pin 44 of IC7015/6A. Adjust **L5040** for 3V5 (DC).

1.6 RF AGC

If the picture of a strong local transmitter is reproduced distorted, adjust potentiometer **R3021** until the picture is undistorted.

Or: Connect a pattern generator (e.g. PM5518) to the aerial input with RF signal amplitude = 1 mV.
Connect a multimeter (DC) at pin 5 of tuner.

Adjust **R3021** so that voltage at pin 5 of tuner is $7V5 \pm 0V5$ (DC).

2. Adjustments on the CRT panel (Fig. 8.1)

2.1 Vg2 cut-off points of picture tube

Apply a pattern generator (e.g. PM5518) and set it to a white raster pattern.

Adjust contrast and Vg2 at minimum (Vg2 with potentiometer in line output transformer to the left).

Adjust brightness until the DC voltage across potentiometer 3320 is 0V.

Adjust **R3346** (B), **R3330** (G) and **R3310** (R) for a level of 115V on the collectors of transistors 7350, 7310 and 7330.

Adjust **Vg2** potentiometer until the gun that first emits light is just no longer visible. Adjust the two other guns with the respective controls (3346, 3330 or 3310 or for until just no light will be visible.

2.2 Grey scale (white D)

Apply a test pattern signal and adjust the set for normal operation. Allow the set to warm up for about 10 minutes. Adjust **R3300** and **R3320** (R3263 and R3273 for 20") until the desired grey scale has been obtained.

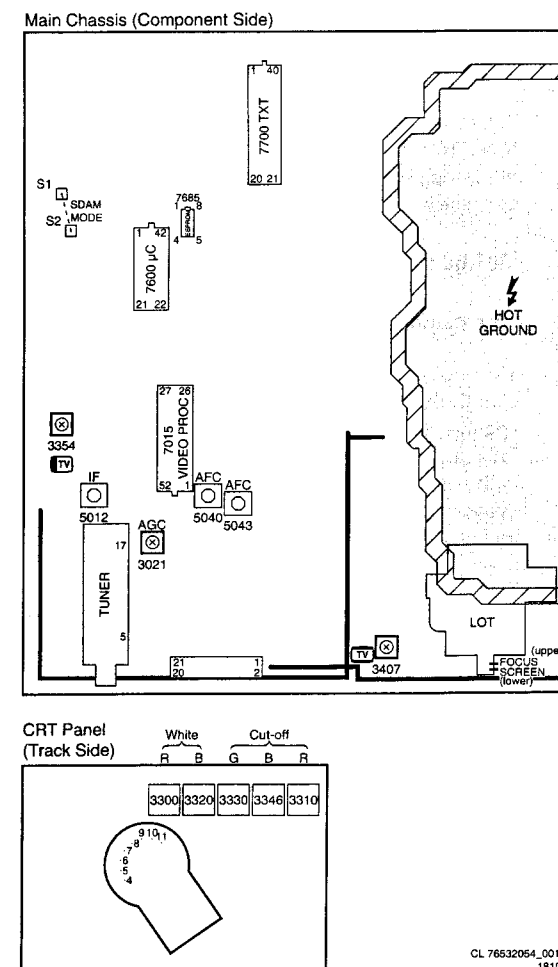


Fig. 8.1

9. Circuit description

For the description of the audio and video processing circuits see the description in the AA5 AA manual. For the description of the clock panel (Diagram E1), the radio module (Diagram E2) the TXT part (Diagram A9) and the smart loader panel (Diagram A6a), see AA5H.1 AA Chassis manual.

1. Description of the power supply and the deflection part

In the A7H.1 AA chassis all power circuits are mounted on the main carrier panel.

The power supply can be divided in 2 parts:

- External power supply (not switched off by power switch).
- Main power supply (switched off by power switch).

- External power supply (with transformer item 5502). This power supply is equal to the switched mode power supply as already introduced in the AA5H.1 chassis. Supply functions of the "Extra power supply" in AA5H.1 chassis are in A7H.1 taken over by the External power supply.

- Main power supply (with transformer item 5500) and deflection.

This power supply and deflection are the same ones as used in L6.1 and L6.2 chassis.

Warning: For this power supply is valid that the +96V supply for the line output stage is not mains isolated. And therefore the line output stage and horizontal deflection coil connections on the CRT are also not mains isolated.

Remark: With this supply single isolated picture tubes can be used.

For a description of the main power supply and belonging deflection circuit see below.

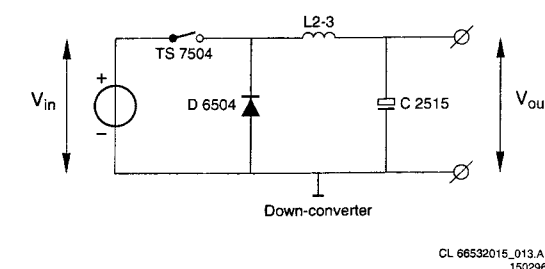


Fig. 9.1

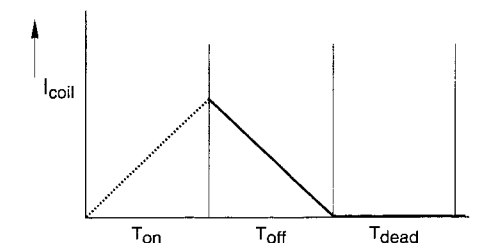
1.1 Principle of the down-converter (Fig 9.1)

The main power-supply is a self-oscillating down converter with an auxiliary winding to help the FET to switch.

When switch TS7504 is closed, the voltage on L2-3 is $V_{in} - V_{out}$. During this time, energy is stored in the coil and energy is delivered to the load. When switch TS7504 opens, the energy stored in the coil will be stored in the output capacitor (C2515). This is due to the fact that the current through the coil has to decrease linear. When the switch is open the current is floating through D6504, L2-3 and C2515. By controlling the duty-cycle of the switch, the output voltage can be regulated.

1.2 Start-up (see diagram A1)

When the switch TS7504 is closed, the input voltage is placed over winding 2-3 of transformer 5500, which acts as coil L2-3 in Fig 8.1. Via resistors R3513, R3518 and R3512 the switch is turned on for the first time. Zener diode D6502 prevents that the Ugs of the FET becomes higher than 15V. When the input voltage is on winding 2-3, there is also a voltage on winding 1-2. Via winding 1-2 the correct switching voltage is obtained. The DC-part of this voltage is blocked by capacitor C2503. Diode D6510 acts as a protection in start-up and in short-circuit situations. During start-up the output capacitor C2515 is empty. It takes a relative long time to charge the gate to a voltage high enough to switch on the FET. This is due to the fact the diode D6510 is conducting. When this diode is conducting, the current that would normally flow into the gate of the fet to switch on the FET, is now flowing into C2515. In this way a smooth start-up is guaranteed.



CL 66532015_014.AI
280296

Fig. 9.2

1.3 General way of working (Fig 9.2)

The state of the power-supply can be divided into three areas (see Fig. 9.2):

- **T-on;** In this state the FET is conducting and energy is stored in the coil and in the output capacitor.
- **T-off;** In this state the fet is non conducting and the energy stored in the coil is fed to the output capacitor.
- **Tdead;** Fet is out of conduction and there is no energy in the coil.

Circuit description

T-on; In the T-on state, switch TS7504 is switched on. When the switch is on the voltage over resistors R3514-R3515 is a direct measure for the current through winding 2-3. This is a negative voltage. When this voltage becomes below a certain level, TS7501 starts conducting and will switch off the fet. In this way it is prevented that the coil can go into saturation. This could be the case when the output voltage is very low. (long on time of the FET). When the output-voltage becomes too high during T-on the FET will be switched off. (see Output-voltage regulation)

T-off; Due to the stored energy a current will start to flow through D6504, C2515 and winding 2-3. Due to the fact that the current is flowing through this circuit, a voltage with reverse polarity is on winding 1-2. In this way the fet remains off until the current through winding 2-3 reaches zero. Now a new cycle will start. The fet will be switched on and all starts over again.

T-dead; If the output voltage is too high (for example in a low load situation) the FET remains off till the output-voltage is not to high anymore.

1.4 Output voltage regulation

This is done by the circuit D6501, R3509, TS7502, R3505, R3507, R3510. Transistor TS7502 can only conduct when the voltage on the base is 0V7 lower than the voltage the voltage on the emitter. This means that the voltage drop over resistors R3505 and R3507 should be 5V6 (zenerdiode) + 0V7(base-emitter). This is reached when the output voltage exceeds the 100V. Now transistor TS7502 starts conducting, which brings transistor TS7501 in conduction. As a consequence the gate voltage of the fet becomes very low and the fet stops conducting. As long as the output voltage is too high the fet stays out of conduction.

2. Protections

2.1 Overvoltage protection

A disadvantage of a down converter is that if the switch becomes a short-circuit, the output voltage will increase to the input voltage. This could damage circuits. In this power-supply there is a protection to prevent this. If the output voltage becomes higher than 130V, zener diode D6514 starts to conduct. The Vin will be short circuited. This will blown the main fuse 1501 and protect in this way all the other circuits.

2.2 Short-circuit and start-up protection

The short-circuit protection works the same as the start-up protection. If the output-voltage is very low in case of a start-up or a short-circuit condition, The gate will be charged very slowly due to the fact that zenerdiode D6510 is conducting. So the current is not only charging the gate but is also flowing into the output capacitor. In this way it takes a few milliseconds to switch on the fet. Diode D6510 takes also care that the fet never remains in his power consuming (linear) area. If the output voltage is very low, it also takes a large time before the current through winding 2-3 reaches zero. The power supplied to the circuit is in this way very low and protects in this way the circuit.

2.3 Other output voltages

The output voltages +8Sb,+14V +9S and +5S and +5G are made by winding 5-6. During the time that the FET TS7504 is not conducting, energy is transformed to this winding (flyback principle) and the voltages mentioned above are created. From the +9S, the +5S voltage is derived. This voltage is stabilized by transistors TS7505, TS7500 and zenerdiode D6500. D6500 is the reference voltage and TS7505 is delivering the current. When zenerdiode D6500 starts conducting, the voltage over resistor R3502 becomes high and a POR signal is created.

3. Degaussing

R3516 is a dual PTC (2 PTC's in one housing). After switching "on" the set, the PTC is cold, so low ohmic. This makes the degaussing current high. After degaussing the PTC is heated, so high ohmic. This makes the degaussing current low. After degaussing the PTC remains heated by the mains.

4. Line-circuit (Diagram A3)

The primary side of the line-circuit and the deflection coil are connected to the hot earth. The driver-circuit contains an opto-coupler to create isolation between the low-signal parts and the mains. The optocoupler is driven by pin 37 of IC7015-6E via transistor TS7103.

When TS7103 is not conducting,(the LED of the opto-coupler is also out of conduction) TS7421 is also not conducting. In this way TS7422 will conduct and the 96V is placed over winding 2-1 of the LOT. A voltage over winding 2-1 of the LOT will cause a voltage over the windings 8-10, 6-10 and 9-10. Now energy will be transformed from the primary to the secondary-side and charge capacitors C2424 and C2425.

Circuit description

C2430 will be charged to the difference of the +40D and +14D (=26V) when TS7422 is conducting. When TS7422 stops conducting, the voltage of pin 8 of the LOT will become very negative. This forces C2430 to be charged to 26V plus the absolute value of pin 8. When TS7422 starts conducting again the voltage of pin 8 of the LOT will increase and so the voltage on the anode of D6422. In this way the 160V is created. This means that during the off-time of TS7422, C2430 is charged and during the on-time of TS7422, the energy in C2430 is given to C2426.

When transistor TS7103 conducts, the LED of the opto-coupler will be activated. This causes the transistor of the opto-coupler to conduct, which drives TS7421 in conduction. This brings TS7422 out of conduction. Due to this construction, this circuit is protected against missing line-drive pulses. When a line-drive pulse is missed, the line-transistor stays out of conduction, due to the fact that the diode of the opto-coupler is forced into conduction by TS7103. In this way nothing can be damaged when there is no line-drive. Winding 4-3 is an extra winding to help TS7422 to switch.

On the secondary-side of the LOT there is a circuit consisting of TS7423, R3422, R3433, R3434, C2431 and C2432. This circuit creates a pulse when TS7422 switches off. This pulse indicates that horizontal flyback takes place. This information is fed to IC7015-6E to blank the picture.

4.1 Stand-by

The standby signal from the mC is low in case of stand-by. Now TS7103 is brought into conduction by R3112. As mentioned before this will switch off the line-output stage completely.

5. Deflection

5.1 Horizontal deflection

The voltage over capacitor C2422 is the same as the voltage over C2515 (96V, see Diagram A1). When TS7422 is conducting this voltage is placed over the horizontal deflection coil. This causes a linear increasing current through this coil. In this way deflection is created. When TS7422 switches of flyback takes place and it starts all over again. L5424 is used for linearity correction.

5.2 Vertical deflection

Vertical deflection is based on a balance amplifier. Or TS7401 or TS7402 is conducting. This depends on the signal V-drive. If V-drive is high TS7401 conducts and the voltage of C2401 is placed over the deflection coil. Now the picture is written. When V-drive is low, TS7402 conducts and the +40V supply voltage minus the voltage over C2401 is placed over the deflection coil. Flyback takes now place. In this way deflection is generated. R3407 is used to adjust the vertical shift. With this resistor the level of the signal VFB is adjusted. R3402 and C2404 are used to damp oscillation of the deflection coil with his parasitic capacitance. The signal NIL from the mC is used to create a non-interfaced mode. This is done by creating a small DC current through the deflection coil.

PHILIPS Hotel TV

This product has been especially designed by Philips for institutional applications. These istruction for use are a quick reference for installers. A complete instruction for use is also available. For more information ask the nearest Philips branch office.

TV INSTALLATION

The installation requires the remote control RC 8611.

Place the TV on a solid base.

Leave at least 5 cm around each side of the TV for ventilation.

To prevent any faults and unsafe situations, do not place any objects on top of the sets.

The TV can only operate at a mains voltage of 220/240 V~, 50 Hz.

- Select the last TV channel available by pressing TV -- or + .
- Press the $\triangle/\text{P}$ button on the local keyboard than press the $\triangle\text{--}$ button on the remote control for more than 4 seconds.
- ▷ Installation menu appears.
Use the cursor up and down to navigate into the menu lines. Use the cursor left and right to select the menu options. Use the digit button to insert numbers.

MENU

- **Language.**
To select the menu and the On Screen Display language: [ENGLISH - FRANCAIS - DEUTSCH].
- **Configuration.**
Attention : The configuration of the TV is set by Philips, changing the configuration may change the availability of the menu options and the featuring of the TV.
TV system: To choose the TV system [SINGLE - UHF - MULTI F].
Teletext: To enable the teletext [YES - NO].
Clock: To enable the clock [YES - NO].
Radio: To select the radio type [INT (internal) - EXT (external) - NONE].
Interface system: To enable the interface of the system [YES - NO].
- **Number of programs**
TV: To assign the max. number of TV programs [1-99].
INFO: To assign the max. number of info programs [1-99].
RADIO: To assign the max. number of radio programs [1-99].
Note: Radio available only if Configuration-Radio set to INT or EXT.
PAY TV: To assign the max. number of PAY TV programs [1-99].
Note: PAY TV available only if Configuration-Interface system set to YES.
The total max. number of programs available is 120.
- **TV installation**
System: To select the TV system: [EUROPE, FRANCE,UK].
Note: System appears only if "MULTI F" is selected in the Configuration menu.
Search: To search for the video channels or to input the frequency digit.
Fine tune: To adjust the tuning when a video channel is not well tuned.
Programme: To assign a video channel to a TV or INFO or PAY TV program.
More: More program options
 - **Protection:** To set the program protection [YES - NO].
 - **Picture Mute:** To blank the picture of a video program [YES - NO].
 - **Sound Mute:** To mute the sound of a video program [YES - NO].
Store: To store the selections.
- **Radio install**
Note: Available only if configuration radio set to INT or EXT.
Search: To search for the radio channels or to input the frequency digits.
Programme: To assign a radio channel to a radio program.

Protection: To set the program protection [YES - NO].

Store: To store the selections.

- **Parameter setting**
Initial setting

Switch on channel: To select the switch on program [TV - INFO].

Switch on volume: To set the switch on volume [00 - 63].

Display standby: To set the light intensity of the led display in standby mode [1-5].

Display on: To set the light intensity of the led display in TV on mode [1-5].

Welcome message: To display the welcome message [YES - NO].

To insert the message use the cursor up and down to select the character and the cursor left and right to navigate.

Picture setting

To set picture settings (low-normal-high) that can be recalled with the PICTURE button on the RC.

Block function

Hotel mode: To enable maximum volume, block local, free protected options [YES - NO].

Maximum volume: To set the max. volume limitation [00 - 63].

Block local: To lock the local controls of the TV.

Free protected: To free at once all the protected programs.

Time setting: To set the time of the clock.

Time downloading: To link the time of the clock to the teletext of the selected program (TV-INFO-PAY TV).

Tips

- **To quickly install the TV**
Philips has designed also other tools for quick installation, like the SMART-LOADER or the ACI. For more information ask the nearest Philips branch office.
- **To clean the TV**
Clean the TV using a slightly damp chamois leather.
Never use aggressive cleaning agents.
- **Problems with no solution:**
Switch your TV off and on again with the $\text{\textcircled{I}}$ button.
Never attempt to repair a defective TV set yourself.
Switch off the TV and call your dealer or TV-technician when nothing helps or when:
 - A white horizontal stripe appears across the whole screen.
 - The red lamp below the screen starts blinking when no buttons are pressed on the remote control.

Environmental information

Your TV contains material which can be recycled and reused. At end of life specialized companies can dismantle the discarded TV to concentrate the reusable materials and to minimize the ammount of materials to be disposed off.

Please find out about local regulations on disposal of your old TV set.

Televisions consume energy in the stand-by mode. Energy consumption contributes to air and water pollution. We advice you to switch off your TV overnight instead of leaving it on stand-by. You save energy and the picture tube is demagnetised which maintains good picture quality .

11. List of abbreviations

AV+C	AV switch signal (0V antenna, 4V SVHS, 8V scart)
AFC	Automatic Frequency Control
AGC	Automatic Gain Control
AM SOUND/AUDIO IN	AM modulated sound signal or audio external
AQUADAG	Conducting layer on rear side surface of CRT
AUDIO-IN	External Audio in via scart socket
AUDIO-OUT	Audio out via scart socket
B	Blue signal
B.SCART	Blue signal (via scart)
BASEBAND-CVBS	Output signal of video detector
BEAM-INFO	Beam current information
BG/1	Switch signal for PAL BG and PAL I
BG/L	Switch signal for PAL BG and SECAM L
BG/L'	Switch signal for PAL BG and SECAM L "
BRIGHTNESS	Brightness control
B-TXT	Blue signal via teletext
C	Chrominance signal
CONTRAST	Contrast control
CVBS-EXT	External CVBS - signal (via scart)
CVBS-INT	Internal CVBS-signal (input via scart)
CVBS-INT1	Internal CVBS-signal (via tuner)
CVBS-TXT	CVBS-signal for teletext
EHT	Extra high tension for CRT (25KV)
FAST BL.TXT	Fast blanking via teletext
FAST.BL.SCART	Fast blanking via scart
ff	filament voltage for the crt
FOCUS	Focus voltage for the CRT
G	Green signal
G.SCART	Green signal via scart
G-TXT	Green signal via teletext
H-DRIVE	Horizontal drive control
HFB	Horizontal feedback
IDENT.VCR	Status signal "high in the external mode. This signal blocks the IDENT of IC7015-6A temporarily, so the TV is not switched off after 15min..
IDENT1	IDENT-signal derived from IC7015-6A, that is used for suppressing of the AM-sound signal if no CVBS is present.
IDENT2	Status signal of IC7015-6B. Low CVBS present. High CVBS not present.
IF	Intermediate frequency
INT/EXT	Switch signal Internal/external
L/L'	Switch signal SECAM L/SECAM L'
L/L'	Switch signal SECAM L/SECAM L'
NIL	Non Inter Laced
ON/OFF STATUS	On/off status signal
OSD-FAST BL	Fast blanking via OSD
OSD-G	Green signal via OSD
POR	Power on reset
R	Red signal
R.SCART	Red signal via scart
REL-BUS	Release bus signal from system panel.
R-TXT	Red signal via teletext
SANDCASTLE1	Sandcastle-signal 1
SANDCASTLE2	Sandcastle -signal 2
SATURATION	Saturation
SC-OVER	Scart-signal suppression
SCL	Clock line IIC-bus
SDA	Data line of the IIC-bus
SDM	Service Default Mode
SHARPNESS	Sharpness control
CONTROL	
SL-EN	Signal to select the smart loader
STANDBY	Standby-switch signal
STATUS	Switch signal. High CVBS via scart. Low internal CVBS
V-DRIVE	Vertical drive
VFB	Vertical feedback
VG2	VG2 voltage
VOLUME	Volume control
V-VARI	Tuning voltage
Y	Luminance signal

Notes:

12. Spare parts list / Stükliste / Liste des pièces

Chassis A7H.1

23

Main carrier [A1,A3-A9]

Various

▲	4822 276 12597	Mains switch
	4822 276 13307	Operating switch
		assy
▲	4822 265 30389	Con. 2P (0041)
▲	4822 265 40596	Con. 2P (0050)
▲	4822 265 30389	Con. 2P (0051)
▲	4822 265 20709	Con. 2P (0061)
	4822 264 40207	Con. 3P (0040)
	4822 264 40239	Con. 3P (0063)
	4822 290 40284	Con. 3P RFK1
	4822 267 41213	Con. 4P eco duo
	4822 267 40699	Con. 4P (PD1)
▲	4822 267 41208	Con. 4P (0045)
	4822 265 30378	Con. 4P (0048)
	4822 265 30899	Con. 5P (0053)
	4822 267 30546	Con. 6P
	4822 265 40252	Con. 7P RFK1
	4822 290 40295	Con. 7P (0049)
	4822 265 40818	Con. 8P (0056)
▲	4822 267 60243	Con. 21P Scart
	4822 492 71655	Spring fix. IC7157
	4822 492 11528	Spring fix. IC7401, IC7402
	4822 492 70871	Spring fix. IC7422
	4822 492 70871	Spring fix. IC7504
▲	4822 256 92053	Fuse holder (1501)
	4822 256 91918	LED holder
	4822 404 31451	Bracket fix. IR receiver
	4822 402 10524	Tuner bracket (extended)
	4822 404 31452	Tuner bracket
	4822 402 10178	Interface bracket (TV cap)
1001	4822 210 10715	Tuner FL2477/B5 PLL
1015	4822 242 70936	Filter 38.9MHz OFWJ1952M
1015▲	4822 242 72197	Filter 38.9MHz OFWK2950M
1015	4822 242 81388	Filter 38.9MHz OFWG1961M
1015	4822 242 81737	Filter 38.9MHz OFWG1965M
1032	4822 242 72211	Filter 5.5MHz (TPS)
1032	4822 242 81712	Filter 5.5MHz (TPWA04B)
1033	4822 153 30025	Filter 6MHz (TFS)
1033	4822 242 81301	Filter 6.5MHz (TPS)
1033	4822 242 81572	Filter 6MHz (TPS)
1101	4822 242 81423	Filter 38.9MHz OFWL9453M
1135	4822 242 70714	Filter 5.5MHz
1135	4822 242 71841	Filter 6.0MHz
1136▲	4822 242 10316	Filter 6.5MHz
1136	4822 242 71713	Filter 6.0MHz
1501▲	4822 070 33152	Fuse3.15A
1502▲	4822 252 51185	Fuse 630mA
1679	4822 242 10328	X-tal 8MHz
1685	4822 212 30842	IR receiver
1701	4822 242 81246	X-tal 27MHz

II

2001	4822 124 40201	1000µF 20% 16V
2007▲	4822 126 12944	47nF 10% 50V
2008	5322 122 32967	5.6pF 10% 63V
2010	4822 126 10326	180pF 5% 63V
2011	5322 122 32661	56pF 5% 50V
2012	4822 124 42058	33µF 20% 50V
2013	5322 122 31944	3.9pF 5% 50V
2014	5322 126 10343	1.8pF 5% 63V
2015	4822 124 81029	100µF 20% 25V
2016▲	4822 126 10002	100nF 20% 25V
2017▲	4822 124 41579	10µF 20% 50V
2018	5322 122 32661	56pF 5% 50V
2022▲	4822 126 10002	100nF 20% 25V
2023	4822 124 80791	470µF 20% 16V
2025	4822 124 40763	2.2µF 100 V
2025	4822 124 40769	4.7µF 20% 100V
2030	4822 126 13482	470nF 80/20% 16V
2034▲	4822 126 12944	47nF 10% 50V
2037	4822 126 13061	220nF 20% 25V
2041▲	5322 126 10223	4.7nF 10% 63V
2043▲	5322 126 10223	4.7nF 10% 63V
2044▲	5322 126 10223	4.7nF 10% 63V

2045	4822 122 32139	12pF 2% 63V
2045	4822 126 13689	18pF 1% 63V
2050	4822 126 13296	100nF 10% 16V
2053	4822 126 13296	100nF 10% 16V
2080▲	5322 122 32654	22nF 10% 63V
2082	4822 124 40763	2.2µF 100 V
2084	4822 126 13296	100nF 10% 16V
2101▲	5322 126 10223	4.7nF 10% 63V
2104	4822 124 11529	16V 47U 20%
2109	4822 121 41738	270nF 5% 63V
2112	4822 122 33891	3.3nF 10% 63V
2113	4822 122 33891	3.3nF 10% 63V
2117▲	5322 126 10223	4.7nF 10% 63V
2120	4822 122 33175	2.2nF 20% 50V
2120	4822 122 33891	3.3nF 10% 63V
2122	4822 122 33175	2.2nF 20% 50V
2122	5322 122 31865	1.5nF 10% 63V
2123	4822 122 31644	2.2nF 10% 63V
2124▲	4822 124 41579	10µF 20% 50V
2125▲	5322 122 32654	22nF 10% 63V
2126	4822 124 40769	4.7µF 20% 100V
2127	4822 124 40763	2.2µF 100 V
2128	5322 122 32531	100pF 5% 50V
2129▲	4822 124 41579	10µF 20% 50V
2152	4822 124 40763	2.2µF 100 V
2153	5322 122 32531	100pF 5% 50V
2154	4822 122 33175	2.2nF 20% 50V
2155	5322 121 42661	330nF 5% 63V
2156	4822 126 13061	220nF 20% 25V
2158▲	5322 126 10223	4.7nF 10% 63V
2161	4822 124 40201	1000µF 20% 16V
2162	4822 122 33575	220pF 5% 50V
2163	4822 124 40756	1µF 20% 100V
2169	4822 122 33515	82pF 5% 63V
2170▲	4822 122 33177	10nF 20% 50V
2171▲	5322 126 10223	4.7nF 10% 63V
2180▲	4822 124 41579	10µF 20% 50V
2194	4822 122 33175	2.2nF 20% 50V
2196	4822 124 80927	3.3µF 20% 50V
2197▲	4822 126 12944	47nF 10% 50V
2198▲	4822 126 12944	47nF 10% 50V
2239	4822 126 13296	100nF 10% 16V
2248▲	4822 124 41579	10µF 20% 50V
2261	4822 122 33891	3.3nF 10% 63V
2262▲	4822 126 10002	100nF 20% 25V
2265	4822 126 13689	18pF 1% 63V
2267	4822 126 13296	100nF 10% 16V
2268	4822 121 42408	220nF 5% 63V
2271▲	5322 122 32654	22nF 10% 63V
2272▲	5322 122 34123	1nF 10% 50V
2273▲	5322 122 34123	1nF 10% 50V
2274	4822 126 13296	100nF 10% 16V
2275	4822 126 13296	100nF 10% 16V
2279	4822 126 13296	100nF 10% 16V
2280	4822 126 13296	100nF 10% 16V
2290	4822 126 13296	100nF 10% 16V
2291▲	4822 122 33177	10nF 20% 50V
2292▲	4822 122 33177	10nF 20% 50V
2293▲	4822 122 33177	10nF 20% 50V
2295	4822 124 40756	1µF 20% 100V
2297	4822 124 41751	47µF 20% 50V
2298	5322 122 32452	47pF 5% 63V
2340	5322 121 42366	100nF 5% 63V
2345	4822 126 13473	220nF 80-20% 50V
2350▲	5322 126 10223	4.7nF 10% 63V
2351	4822 124 40756	1µF 20% 100V
2354	4822 126 13473	220nF 80-20% 50V
2366▲	4822 122 33177	10nF 20% 50V
2370	4822 124 40756	1µF 20% 100V
2371▲	5322 122 32654	22nF 10% 63V
2400	5322 122 32268	470pF 10% 50V
2401	4822 124 41334	470µF 20% 35V
2401	4822 124 80065	1000µF 20% 50V
2402	4822 124 40243	1.5µF 20% 63V
2402	4822 124 40756	1µF 20% 100V
2404▲	4822 126 12944	47nF 10% 50V
2405	4822 122 33175	2.2nF 20% 50V
2415	4822 121 41922	22nF 10% 250V
2415▲	4822 121 42004	10nF 10% 400V
2420	4822 121 10513	7.5nF 1KV 5%
2420	4822 121 10514	1KV 10N 5%
2421	4822 121 51319	1µF 10% 63V
2422▲	4822 121 42365	330nF 5% 250V
2422▲	4822 121 42376	470nF 5% 250V
2423▲	4822 126 12269	680pF 10% (HR) 2KV
2424	4822 124 42105	1000µF 20% 50V
2424	4822 124 80064	680µF 20% 50V
2425	4822 124 80064	680µF 20% 50V
2426	4822 124 80676	4.7µF 20% 160V
2427	5322 121 42489	33nF 5% 250V
2428	4822 121 51319	1µF 10% 63V
2429	5322 121 42661	330nF 5% 63V
2430	4822 121 42047	180nF 10% 250V

2431▲	5322 126 10223	4.7nF 10% 63V
2432▲	4822 122 33893	18nF 10% 63V
2500	4822 126 13597	330pF 10% 500V
2501▲	4822 126 11524	1.5nF 10% 1KV
2502	4822 121 43856	4.7nF 5% 250V
2503	5322 121 42489	33nF 5% 250V
2505▲	4822 126 14037	2.2nF 20% 250V
2506	4822 121 43343	4.7nF 10% 400V
2507▲	4822 121 10512	275V 220N 20%
2508▲	4822 126 11141	2.2nF 10% 1KV
2509▲	4822 126 11141	2.2nF 10% 1KV
2510▲	4822 121 42004	10nF 10% 400V
2511	4822 124 41596	22µF 20% 50V
2512	4822 124 40201	1000µF 20% 16V
2513	4822 126 13694	68pF 1% 63V
2514	4822 124 40201	1000µF 20% 16V
2515	4822 124 81257	47µF 50/10% 200V
2516	4822 124 11532	47µF 400V 20%
2516	4822 124 11831	68µF 20% 400V
2517▲	5322 122 34123	1nF 10% 50V
2518	5322 122 32452	47pF 5% 63V
2519▲	4822 126 11141	2.2nF 10% 1KV
2520▲	4822 126 11141	2.2nF 10% 1KV
2521▲	4822 124 12126	10µF 20% 400V
2522	4822 126 13599	3.3nF 10% 500V
2525	5322 121 42386	100nF 5% 63V
2526	4822 124 40201	1000µF 20% 16V
2526▲	4822 124 40433	47µF 20% 25V
2527	4822 126 13597	330pF 10% 500V
2528	4822 121 42408	220nF 5% 63V
2529	4822 124 40756	1µF 20% 100V
2531	5322 121 42498	680nF 5% 63V
2532	4822 124 40201	1000µF 20% 16V
2533	4822 124 40201	1000µF 20% 16V
2534	4822 124 81029	100µF 20% 25V
2535	5322 121 42386	100nF 5% 63V
2536	5322 121 42498	680nF 5% 63V
2537	4822 124 41596	22µF 20% 50V
2538	5322 121 42489	33nF 5% 250V
2539▲	4822 124 40433	47µF 20% 25V
2540	4822 121 42408	220nF 5% 63V
2602▲	4822 124 41579	10µF 20% 50V
2604▲	4822 124 41579	10µF 20% 50V
2615	5322 122 32531	100pF 5% 50V
2623	4822 124 40756	1µF 20% 100V
2624	4822 124 40769	4.7µF 20% 100V
2625	4822 122 32535	680pF 10% 63V
2629	4822 124 40763	2.2µF 100 V
2630	4822 124 40763	2.2µF 100 V
2651	4822 122 32535	680pF 10% 63V
2658	4822 126 13694	68pF 1% 63V
2662	4822 122 33175	2.2nF 10% 63V
2663▲	5322 126 10223	4.7nF 10% 50V
2666	4822 124 40255	100µF 20% 63V
2667	5322 122 32531	100pF 5% 50V
2668	4822 124 40255	100µF 20% 63V
2669	5322 122 32448	10pF 5% 50V
2676	5322 122 32452	47pF 5% 63V
2677	5322 122 32448	10pF 5% 50V
2678	5322 122 32448	10pF 5% 50V
2680	5322 122 32658	22pF 5% 50V
2681	5322 122 32658	22pF 5% 50V
2682	4822 126 13061	220nF 20% 25V
2682	5322 122 32531	100pF 5% 50V
2685	4822 124 81029	100µF 20% 25V
2686	4822 126 13482	470nF 80/20% 16V
2689	4822 122 32535	680pF 10% 63V
2701	5322 122 33244	8.2pF 5% 50V
2702	4822 122 32504	15pF 2% 63V
2703	5322 126 10511	1nF 5% 50V
2704▲	4822 126 10002	100nF 20% 25V
2705▲	4822 126 10002	100nF 20% 25V
2706▲	4822 124 41579	10µF 20% 50V
2707	4822 126 13296	10

Spare parts list / Stükliste / Liste des pièces

3353	4822 051 20474	470k 5% 0.1W	3615	4822 117 10834	47k 1% 0.1W	3752	4822 051 20101	100Ω 5% 0.1W	6500	4822 130 34233	BZX79-B5V1
3354	4822 100 11483	10k 30% 0.1W	3617	4822 051 20472	4k7 5% 0.1W	3762	4822 051 20101	100Ω 5% 0.1W	6501	4822 130 34173	BZX79-B5V6
3368	4822 116 83884	47k 5% 0.5W	3618	4822 051 10332	3k3 2% 0.25W	3763	4822 051 20101	100Ω 5% 0.1W	6502	4822 130 34218	BZX79-B15
3369	4822 051 20224	220k 5% 0.1W				3764	4822 051 20101	100Ω 5% 0.1W	6503	4822 130 42488	BYD33D
3370	4822 051 20684	680k 5% 0.1W	3619	4822 050 11002	1k 1% 0.4W	3765	4822 051 20101	100Ω 5% 0.1W	6504	4822 130 41487	BYV95C
3400	4822 051 20333	33k 5% 0.1W	3620	4822 116 83864	10k 5% 0.5W	3768	4822 116 52175	100Ω 5% 0.5W	6506	4822 130 70021	S1NB60
3401	4822 051 20154	150k 5% 0.1W	3621	4822 051 20223	22k 5% 0.1W	3769	4822 051 20472	4k7 5% 0.1W			
3402	4822 051 20681	680Ω 5% 0.1W	3623	4822 117 10833	10k 1% 0.1W	3770	4822 051 20472	4k7 5% 0.1W	6507	5322 130 31938	BYV27-200
			3624	4822 051 20104	100k 5% 0.1W	3781	4822 051 10153	15k 2% 0.25W	6508	4822 209 81397	TL431CLPST
3403	4822 052 10689	68Ω 5% 0.33W	3625	4822 051 20333	33k 5% 0.1W				6509	4822 130 80883	BZV55-C4V7
3404	4822 052 10158	125 5% 0.33W	3628	4822 051 20333	33k 5% 0.1W	3786	4822 051 10102	1k 2% 0.25W	6510	4822 130 34197	BZX79-B12
3405	4822 052 11228	202 5% 0.5W	3630	4822 117 12345	360k 1% 0.1W	3788	4822 053 10279	27Ω 5% 1W	6511	4822 130 34197	BZX79-B12
3405	4822 052 11478	447 5% 0.5W	3631	4822 050 21504	150k 1% 0.6W	3788	4822 116 52175	100Ω 5% 0.5W	6514	5322 130 83584	BZT03-C130
3406	4822 053 10182	1k8 5% 1W				3850	4822 051 20562	5k6 5% 0.1W	6515	5322 209 12018	DF08M
3407	4822 101 11376	220Ω pot.meter				3851	4822 116 83953	75Ω 5% 0.125W	6516	4822 130 32896	BYD33M
3409	4822 051 10102	1k 2% 0.25W				3852	4822 051 20562	5k6 5% 0.1W	6517	5322 130 31932	BZT03-C200
3410	4822 051 20393	39k 5% 0.1W	3632	4822 051 10102	1k 2% 0.25W	3853	4822 116 83953	75Ω 5% 0.125W	6518	4822 130 42488	BYD33D
3412	4822 117 11449	2k2 1% 0.1W	3648	4822 116 52195	47Ω 5% 0.5W	3855	4822 116 83953	75Ω 5% 0.125W			
			3649	4822 116 52195	47Ω 5% 0.5W	3860	4822 051 20471	470Ω 5% 0.1W	6519	5322 130 31938	BYV27-200
3415	4822 053 12279	27Ω 5% 3W	3650	4822 050 11002	1k 1% 0.4W				6520	4822 130 32715	SB340
3415	4822 053 12399	39Ω 5% 3W	3651	4822 117 10833	10k 1% 0.1W	3862	4822 051 20471	470Ω 5% 0.1W	6521	4822 130 42488	BYD33D
3417	4822 116 52272	330k 5% 0.5W	3652	4822 051 20472	4k7 5% 0.1W	3863	4822 051 20223	22k 5% 0.1W	6522	4822 130 30621	1N4148
3419	4822 116 52303	8k2 5% 0.5W	3653	4822 051 20472	4k7 5% 0.1W	3864	4822 116 52289	5k6 5% 0.5W	6523	4822 130 30621	1N4148
3420	4822 116 83882	39k 5% 0.5W	3654	4822 117 11449	2k2 1% 0.1W	3865	4822 116 83953	75Ω 5% 0.125W	6524	4822 130 30621	1N4148
3420	4822 116 83884	47k 5% 0.5W	3655	4822 117 11384	2k7 1% 0.1W	3871	4822 117 11503	220Ω 1% 0.1W	6540	4822 130 34197	BZX79-B12
3421	4822 116 52244	15k 5% 0.5W	3656	4822 116 52283	4k7 5% 0.5W	3875	4822 116 83953	75Ω 5% 0.125W	6802	4822 130 82037	HZT33
3422	4822 117 11384	2k7 1% 0.1W				3876	4822 051 10332	3k3 2% 0.25W	6650	4822 130 34233	BZT03-B5V1
3423	4822 051 20561	560Ω 5% 0.1W	3658	4822 117 11384	2k7 1% 0.1W	3878	4822 117 10965	18k 1% 0.1W	6651	4822 130 80905	BZV55-F5V1
3424	4822 052 10109	10Ω 5% 0.33W	3659	4822 051 20182	1k8 5% 0.1W	3879	4822 051 10473	47k 2% 0.25W			
			3660	4822 116 52175	100Ω 5% 0.5W	3880	4822 051 20562	5k6 5% 0.1W	6658	4822 130 30621	1N4148
3425	4822 053 11129	10Ω 5% 2W	3661	4822 050 11002	1k 1% 0.4W				6663	4822 209 72895	TLUV5320
3426	4822 116 52289	5k6 5% 0.5W	3662	4822 051 20333	33k 5% 0.1W	3881	4822 117 10833	10k 1% 0.1W	6704	4822 130 82886	BZV55-B3V0
3427	4822 052 11108	1Ω 5% 0.5W	3663	4822 117 10353	150Ω 1% 0.1W	3887	4822 051 20471	470Ω 5% 0.1W	6705	4822 130 80446	BAS32L
3428	4822 052 11108	1Ω 5% 0.5W	3664	4822 051 20683	68k 5% 0.1W	3888	4822 117 11139	1k5 1% 0.1W	6751	4822 130 81227	BZV55-F5V6
3430	4822 052 10821	820Ω 5% 0.33W	3665	4822 051 20683	68k 5% 0.1W	3889	4822 051 10751	750Ω 2% 0.25W	6849	4822 130 30621	1N4148
3431	4822 052 11471	470Ω 5% 0.5W	3666	4822 116 83868	150Ω 5% 0.5W	3890	4822 117 11507	6k8 1% 0.1W	6850	4822 130 80446	BAS32L
3432	4822 051 20105	1M 5% 0.1W				3891	4822 117 10833	10k 1% 0.1W	6851	4822 130 80446	BAS32L
3432	4822 051 20225	2M2 5% 0.1W	3667	4822 116 83864	10k 5% 0.5W	3892	4822 116 52269	3k3 5% 0.5W	6852	4822 130 80446	BAS32L
3433	4822 051 20393	39k 5% 0.1W	3668	4822 051 20433	43k 5% 0.1W	3895	4822 116 83953	75Ω 5% 0.125W	6853	4822 130 80446	BAS32L
3434	4822 051 20223	22k 5% 0.1W	3669	4822 117 10833	10k 1% 0.1W	4xxx	4822 051 10008	0Ω 5% 0.25W			
			3670	4822 116 83864	10k 5% 0.5W				6854	4822 130 80446	BAS32L
3436	4822 052 10151	150Ω 5% 0.33W	3671	4822 051 10103	10k 2% 0.25W				6855	4822 130 80446	BAS32L
3437	4822 053 11103	10k 5% 2W	3672	4822 117 11449	2k2 1% 0.1W				6865	4822 130 80446	BAS32L
3440	4822 116 83868	150Ω 5% 0.5W	3673	4822 117 10833	10k 1% 0.1W						
3500	4822 051 20331	330Ω 5% 0.1W	3674	4822 117 11449	2k2 1% 0.1W	5010	4822 157 63081	0.56μH 20%			
3500	4822 117 11504	270Ω 1% 0.1W	3676	4822 116 83864	10k 5% 0.5W	5010	4822 157 63858	0.39μH			
3501	4822 051 20101	100Ω 5% 0.1W	3677	4822 117 11384	2k7 1% 0.1W	5012	4822 157 53539	0.27μH 5%			
3502	4822 116 83864	10k 5% 0.5W				5032	4822 157 53634	5.6μH 10%	7001	4822 209 80817	L7805CV
3503	4822 116 83864	10k 5% 0.5W	3678	4822 117 11149	82k 1% 0.1W	5040	4822 157 71518	33mH	7015	4822 209 15106	TD8361E/N5
3504	4822 116 52219	330Ω 5% 0.5W	3679	4822 117 11449	2k2 1% 0.1W	5040	4822 157 71522	38mH	7015	4822 209 15251	TD8362E/N5
3505	4822 116 52213	180Ω 5% 0.5W	3680	4822 051 20101	100Ω 5% 0.1W	5043	4822 157 71517	38mH	7030	5322 130 41982	BC848B
			3681	4822 051 20472	4k7 5% 0.1W	5195	4822 157 11213	22μH	7103	5322 130 42755	BC847C
3506	4822 117 12094	0.33Ω 5%	3682	4822 051 20101	100Ω 5% 0.1W	5196	4822 157 11213	22μH	7125	4822 209 63105	TD3843/V3
3507	4822 050 21202	1k2 1% 0.6W	3683	4822 051 20101	100Ω 5% 0.1W				7126	5322 130 41982	BC848B
3507	4822 050 21502	1k5 1% 0.6W	3684	4822 051 20332	3k3 5% 0.1W	5415	4822 157 10359	33μH	7127	5322 130 41982	BC848B
3508	4822 053 10682	6k8 5% 1W	3685	4822 051 20332	3k3 5% 0.1W	5415	4822 157 71519	47μH 5%	7140	5322 209 10576	HEF4053BD
3509	4822 116 52271	33k 5% 0.5W	3691	4822 116 52234	100k 5% 0.5W	5421	4822 157 11421	100μH 10%			
3510	4822 117 12096	22k 1%	3694	4822 051 20472	4k7 5% 0.1W	5422	4822 140 10639	LOT (Line output transformer)	7141	5322 130 41982	BC848B
3511	4822 053 10272	2k7 5% 1W	3695	4822 051 20472	4k7 5% 0.1W				7142	5322 130 41982	BC848B
3512	4822 116 52297	68k 5% 0.5W	3696	4822 051 20472	4k7 5% 0.1W	5424	4822 156 50097	Linearity coil	7143	5322 130 41982	BC848B
3513	4822 053 10334	330k 5% 1W	3697	4822 051 20472	4k7 5% 0.1W	5500	4822 146 10461	Power trafo	7150	5322 130 41982	BC848B
3514	4822 052 10108	1Ω 5% 0.33W	3698	4822 051 20333	33k 5% 0.1W	5502	4822 146 10748	Power trafo	7155	5322 130 41982	BC848B
			3702	4822 051 20332	3k3 5% 0.1W	5503	4822 526 10494	Ferrite bead	7156	5322 130 41982	BC848B
3515	4822 052 10108	1Ω 5% 0.33W	3704	4822 051 20562	5k6 5% 0.1W	5504	4822 157 53348	Choke	7157	4822 209 32531	TD47056A/N2
3516	4822 116 40137	PTC 36Ω 365V	3705	4822 051 20273	27k 5% 0.1W	5505	4822 157 70826	2.4μH	7170	5322 130 41982	BC848B
3517	4822 051 20101	100Ω 5% 0.1W	3706	4822 051 20331	330Ω 5% 0.1W				7243	5322 130 41982	BC848B
3517	4822 117 11504	270Ω 1% 0.1W	3707	4822 117 11449	2k2 1% 0.1W						
3518	4822 117 12952	120k 5% 1W	3709	4822 051 20333	33k 5% 0.1W	5506	4822 157 50964	100μH	7250	4822 209 90129	TD48395/N2
3519	4822 051 20105	1M 5% 0.1W				5509	4822 157 71915	5.6μH	7271	4822 209 12635	TD4665/V4
3521	4822 117 11504	270Ω 1% 0.1W	3713	4822 051 20223	22k 5% 0.1W	5601	4822 157 51462	10μH	7400	4822 130 40981	BC337-25
3523	4822 052 10108	1Ω 5% 0.33W	3714	4822 117 10833	10k 1% 0.1W	5671	4822 157 71703	82μH	7401	4822 130 40917	BD238
3524	4822 052 11108	1Ω 5% 0.5W	3716	4822 117 10353	150Ω 1% 0.1W	5677	4822 152 20678	33μH	7402	4822 130 40923	BD139
3525	4822 053 11278	2k7 5% 2W	3718	4822 117 10353	150Ω 1% 0.1W	5701	4822 157 60141	3.3μH	7402	4822 130 44235	BD237
			3719	4822 117 11454	820Ω 1% 0.1W	5704	4822 157 60123	6.8μH	7420	4822 130 10025	CNX82A
3525	4822 116 83876	270Ω 5% 0.5W	3720	4822 050 11002	1k 1% 0.4W				7421	5322 130 44647	BC368
3526	4822 116 83883	470Ω 5% 0.5W	3722	4822 051 20472	4k7 5% 0.1W				7422	4822 130 10206	BU111AX
3527	4822 116 52271	33k 5% 0.5W	3723	4822 051 20333	33k 5% 0.1W				7423		

7658▲ 4822 209 73852 PMBT2369
7665▲ 5322 130 41982 BC848B
7670▲ 5322 130 41982 BC848B
7672▲ 5322 130 41982 BC848B
7674▲ 5322 130 41982 BC848B
7685 4822 209 32709 ST24C04FB1
7700 4822 209 90125 SAA5254/P/E/MIC
7702 5322 209 10357 HEF4066BP

7711▲ 5322 130 41982 BC848B
7713▲ 5322 130 41982 BC848B
7715▲ 5322 130 41982 BC848B
7731 5322 130 41983 BC858B
7732▲ 5322 130 41982 BC848B
7740▲ 5322 130 41982 BC848B
7745▲ 5322 130 41982 BC848B
7751▲ 4822 130 41344 BC337-40
7856▲ 5322 130 41982 BC848B
7857 5322 130 41983 BC858B

7858▲ 5322 130 41982 BC848B
7875▲ 5322 130 41982 BC848B
7876▲ 5322 130 41982 BC848B

Smart Loader [A6A]

Various

4822 212 10424 Smart Loader
Panel
4822 265 10457 Con. 8P F-pin
(LM1)



3930 4822 116 83883 470Ω 5% 0.5W
3931▲ 4822 052 10279 27Ω 5% 0.33W
3932▲ 4822 052 10279 27Ω 5% 0.33W
3933▲ 4822 052 10279 27Ω 5% 0.33W



7930 5322 209 10576 HEF4053BD

CRT Panel [B1]

Various

4822 212 11573 CRT panel (14")
4822 212 11574 CRT panel (21")
▲ 4822 255 70261 CRT socket (21")
▲ 4822 255 70306 CRT socket (14"),
8P m-neck
1371▲ 4822 252 51175 Fuse 2.5A



2301 4822 124 80791 470μF 20% 16V
2304 5322 122 31863 330pF 5% 50V
2304 5322 126 10733 680pF 5% 50V
2324 4822 122 33216 270pF 5% 50V
2324 5322 116 80853 560pF 5% 63V
2344 5322 122 31863 330pF 5% 50V
2344 5322 126 10733 680pF 5% 50V
2373 4822 121 41926 33nF 5% 630V
2374 4822 124 81107 4.7μF 20% 250V



3300 4822 100 12226 2k2 30% LIN0.1W
3301 4822 116 83872 220Ω 5% 0.5W
3303 4822 116 52219 330Ω 5% 0.5W
3304 4822 116 52197 56Ω 5% 0.5W
3310 4822 100 12227 4k7 30% LIN0.1W
3311 4822 116 52207 1k2 5% 0.5W
3312 4822 116 52175 100Ω 5% 0.5W
3313 4822 116 83868 150Ω 5% 0.5W
3314▲ 4822 053 11123 12k 5% 2W

3315 4822 050 21502 1k5 1% 0.6W
3316 4822 051 20562 5k6 5% 0.1W
3320 4822 100 12226 2k2 30% LIN0.1W
3321 4822 116 52222 390Ω 5% 0.5W
3322 4822 116 52243 1k5 5% 0.5W
3323 4822 051 20331 330Ω 5% 0.1W
3324 4822 116 52197 56Ω 5% 0.5W
3325 4822 051 20562 5k6 5% 0.1W
3330 4822 100 12227 4k7 30% LIN0.1W
3331 4822 116 52207 1k2 5% 0.5W

3333 4822 116 83868 150Ω 5% 0.5W
3334▲ 4822 053 11123 12k 5% 2W
3335 4822 050 21502 1k5 1% 0.6W

3336 4822 116 52175 100Ω 5% 0.5W
3339▲ 4822 053 11123 12k 5% 2W
3343 4822 051 20331 330Ω 5% 0.1W
3344 4822 116 52197 56Ω 5% 0.5W
3346 4822 100 12227 4k7 30% lin.1W
3347 4822 116 52207 1k2 5% 0.5W
3348 4822 116 83868 150Ω 5% 0.5W

3352 4822 116 52175 100Ω 5% 0.5W
3355 4822 050 21502 1k5 1% 0.6W
3357 4822 051 20562 5k6 5% 0.1W
3360 4822 117 11504 270Ω 1% 0.1W
3361▲ 4822 051 20332 3k3 5% 0.1W
3362 4822 051 20681 680Ω 5% 0.1W
3363▲ 4822 052 10109 10Ω 5% 0.33W
3371▲ 4822 052 10228 2Ω 5% 0.33W
3372▲ 4822 052 10228 2Ω 5% 0.33W
3373 4822 050 21502 1k5 1% 0.6W
3374 4822 050 21502 1k5 1% 0.6W



6310 4822 130 34174 BZX79-B4V7
6314▲ 4822 130 42489 BYD33G
6330 4822 130 34174 BZX79-B4V7
6334▲ 4822 130 42489 BYD33G
6350 4822 130 34174 BZX79-B4V7
6354▲ 4822 130 42489 BYD33G
6355 4822 130 34382 BZX79-B8V2



7300 4822 130 40937 BC548B
7310 4822 130 41782 BF422
7320 4822 130 40937 BC548B
7330 4822 130 41782 BF422
7340 4822 130 40937 BC548B
7350 4822 130 41782 BF422
7360 5322 130 41983 BC858B

Clock Panel [E1]

Various

4822 212 10525 Clock panel
4822 267 41047 Con. 4P



2951▲ 4822 126 10002 100nF 20% 25V
2952 4822 122 33498 2.7nF 10% 63V
2953 4822 124 81029 100μF 20% 25V



3951▲ 4822 051 20101 100Ω 5% 0.1W
3952▲ 4822 051 20101 100Ω 5% 0.1W
3953 4822 051 10101 100Ω 2% 0.25W
3954▲ 4822 051 20101 100Ω 5% 0.1W



6951 4822 130 80312 TLHY4400
6952 4822 130 10212 TLHR4401



7951 4822 209 32304 SAA1064T
7952 4822 130 42615 BC817-40
7953 4822 130 42615 BC817-40
7954 4822 130 42615 BC817-40
7955 4822 130 42615 BC817-40
7956 4822 130 10213 LTS4801G
7957 4822 130 10213 LTS4801G
7958 4822 130 10213 LTS4801G
7959 4822 130 10213 LTS4801G

Radio Panel [E2]

Various

4822 212 10426 Radio Panel
4822 267 40722 Con. 6p (RP1)
4822 264 40239 Con. 3P (RM1)
1910 4822 210 10725 Radio tuner



2901▲ 4822 124 41579 10μF 20% 50V

2902▲ 4822 124 41579 10μF 20% 50V
2903▲ 4822 124 41579 10μF 20% 50V
2905▲ 4822 124 41579 10μF 20% 50V



3901 4822 050 11002 1k 1% 0.4W
3902 4822 116 83884 47k 5% 0.5W
3903 4822 116 52238 12k 5% 0.5W
3904 4822 050 11002 1k 1% 0.4W
3905 4822 050 11002 1k 1% 0.4W
3906 4822 116 52269 3k3 5% 0.5W
3907 4822 116 83884 47k 5% 0.5W
3908 4822 116 52283 4k7 5% 0.5W



6901 4822 130 34167 BZX79-B6V2



7901 5322 209 10576 HEF4053BD
7902 4822 130 40937 BC548B