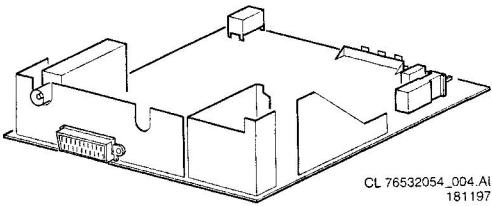


Service
Service
Service

A7H.1
AA



CL 76532054_004.AI
181197

Service Manual

Table of contents

Page

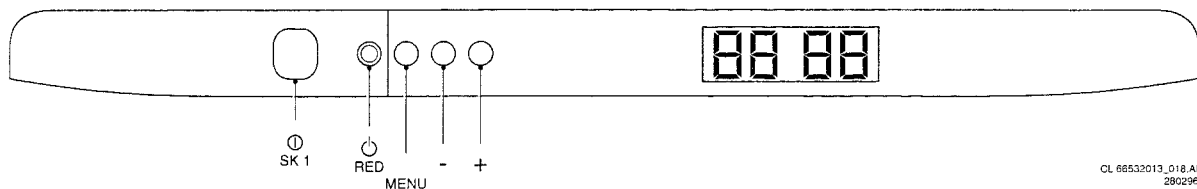
1.	Technical specifications	2		
2.	Connection facilities	2		
	Location of panels	2		
3.	Safety instructions, Maintenance instructions, Warnings and Notes	3		
4.	Mechanical instructions	3		
5.	Block diagram	4		
	Survey of test points	5		
	Overview wave forms	5		
	Diagram supply voltages survey	5		
6.	Fault finding tree	6		
	Repair facilities	6		
7.	Electrical diagrams and print lay-outs	Diagram	PWB	
	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

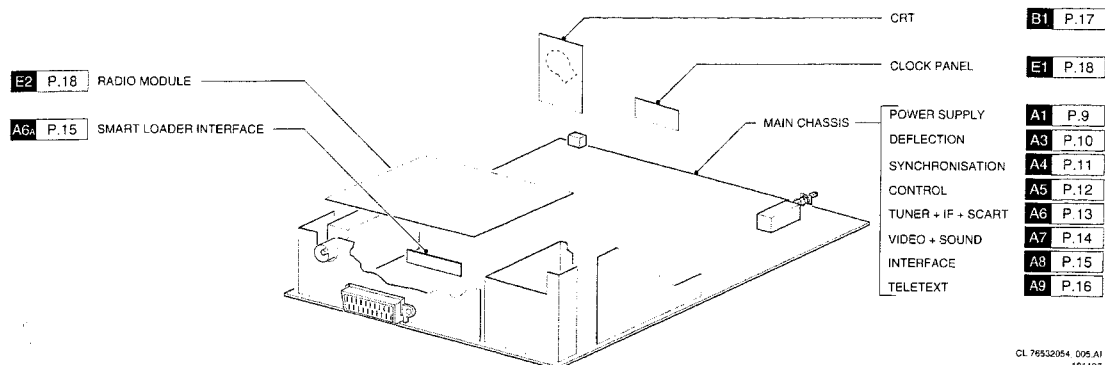


2. Connection facilities

Euroconnector:

1 - Audio $\odot$ 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 $\odot$ 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 $\odot$ (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



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 MΩ and 12 MΩ;
 - 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 MΩ)	4822 320 11307
extension cable (2 m, 2 MΩ;	
to connect wristband to connection box)	4822 320 11305
connecting cable (3 m, 2 MΩ;	
to connect table mat to connection box)	4822 320 11306
earth cable (1 MΩ; 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 (⊥), or hot earth (⊥ $\downarrow$) 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 (T) and without aerial signal (X). Voltages in the power supply section are measured both for normal operation (⊕) and in standby (⊖). 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  and PRO LOGIC are trademarks of Dolby Laboratories Licensing Corporation.

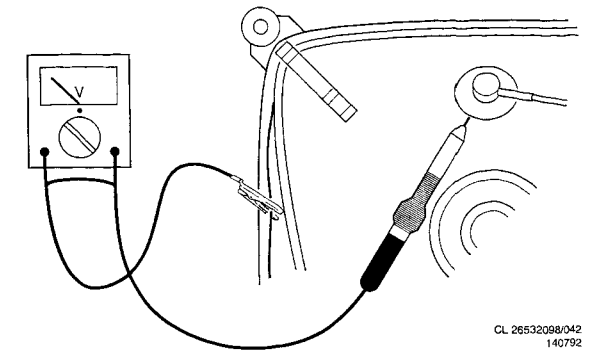


Fig. 3.1

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.

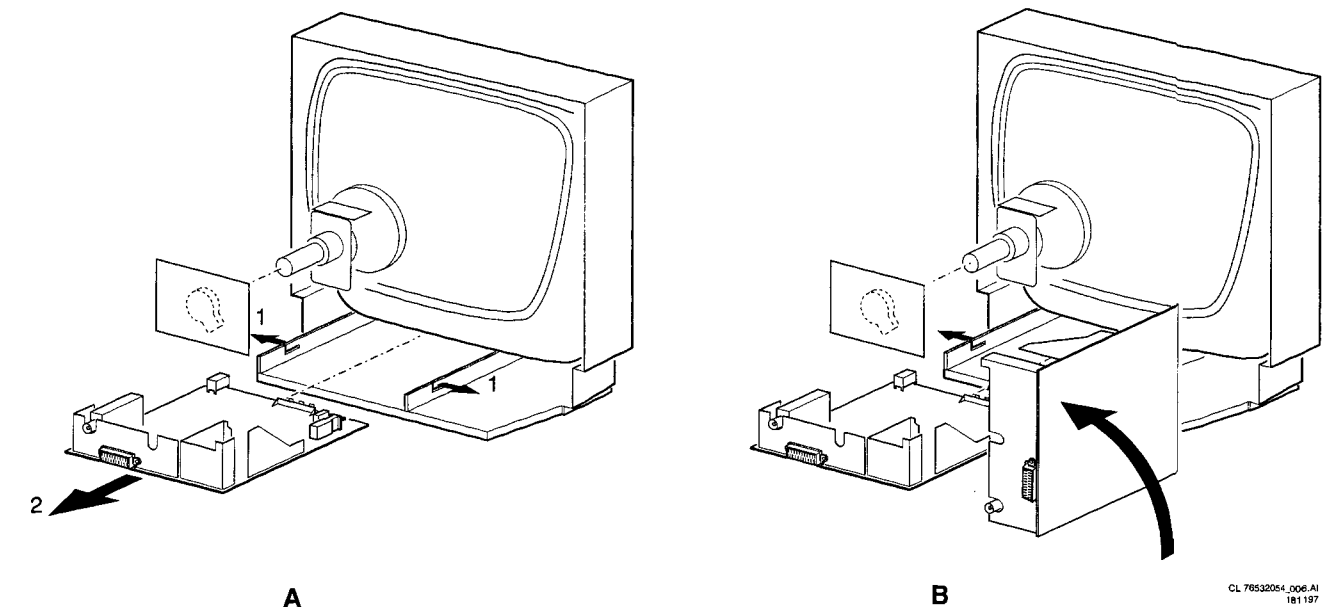
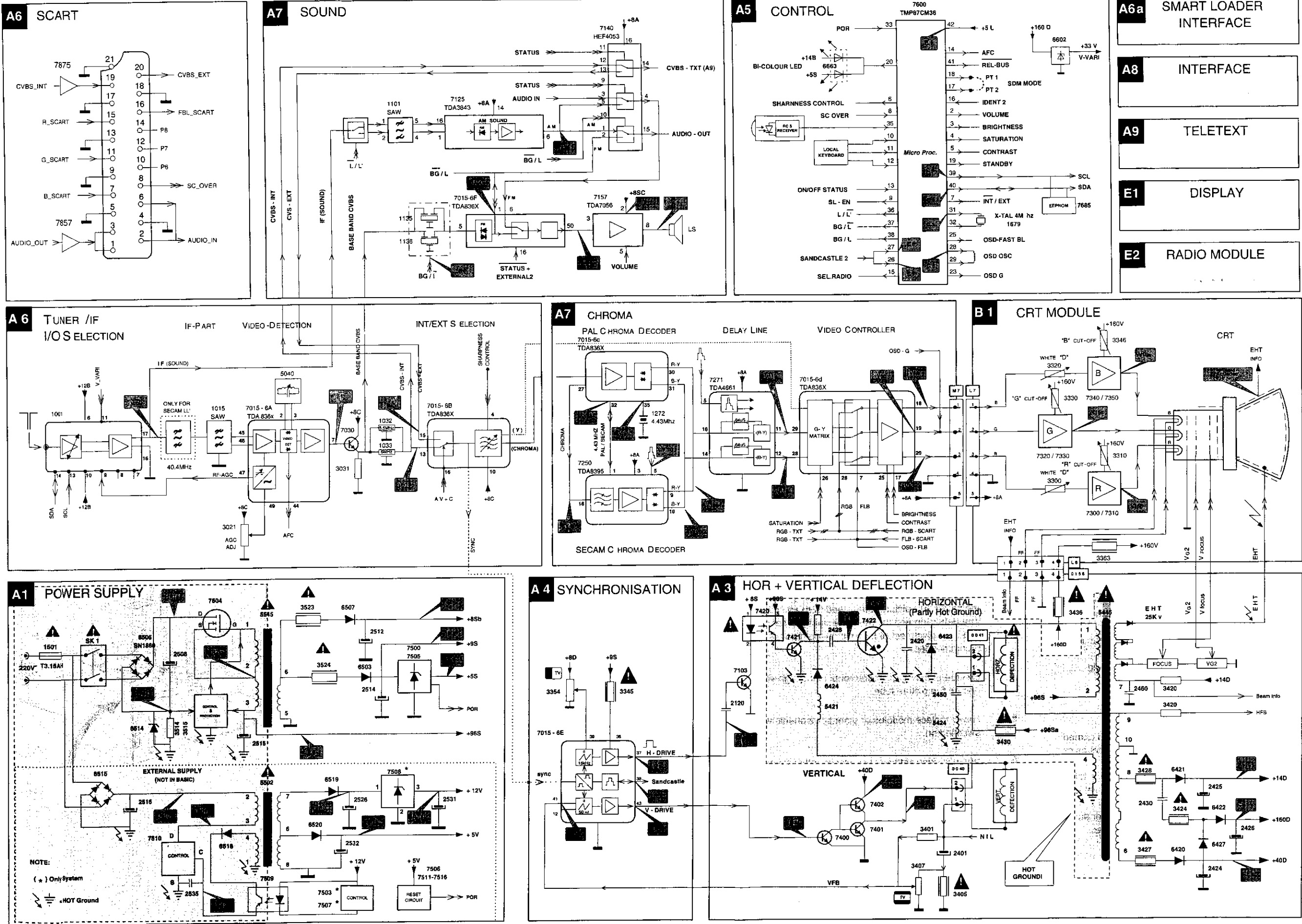
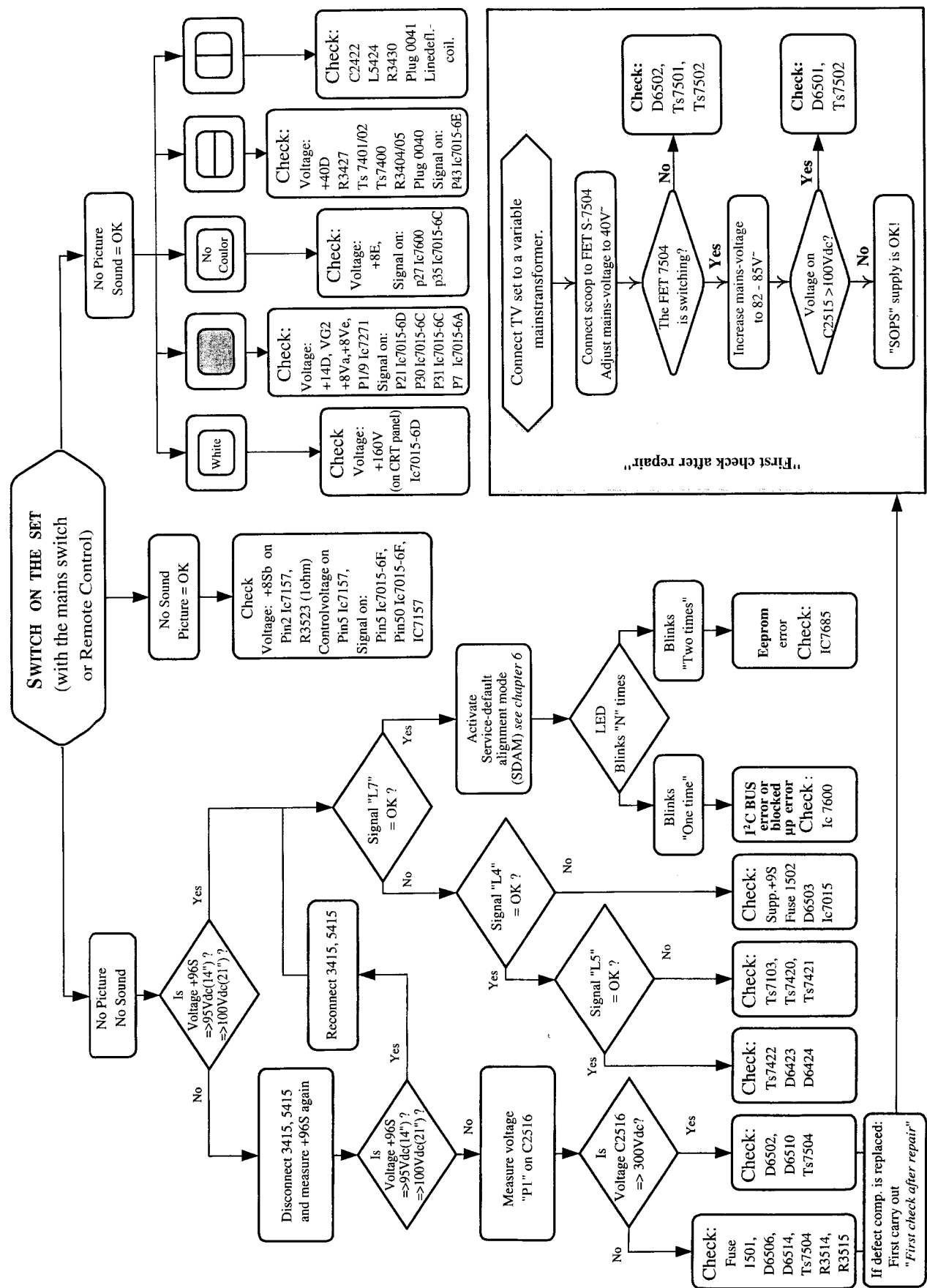


Fig. 4.1



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



FAULTTREE.A1
181197

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 →

	S	
F4	003C	1.0
	23000	

Fig. 6.1

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 0	means no error codes present in the buffer.
3 0 0 0 0	means one error code present in the buffer; error code 3.
2 3 0 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 a powerfull tool to read out the error-buffer when there is no picture.

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.

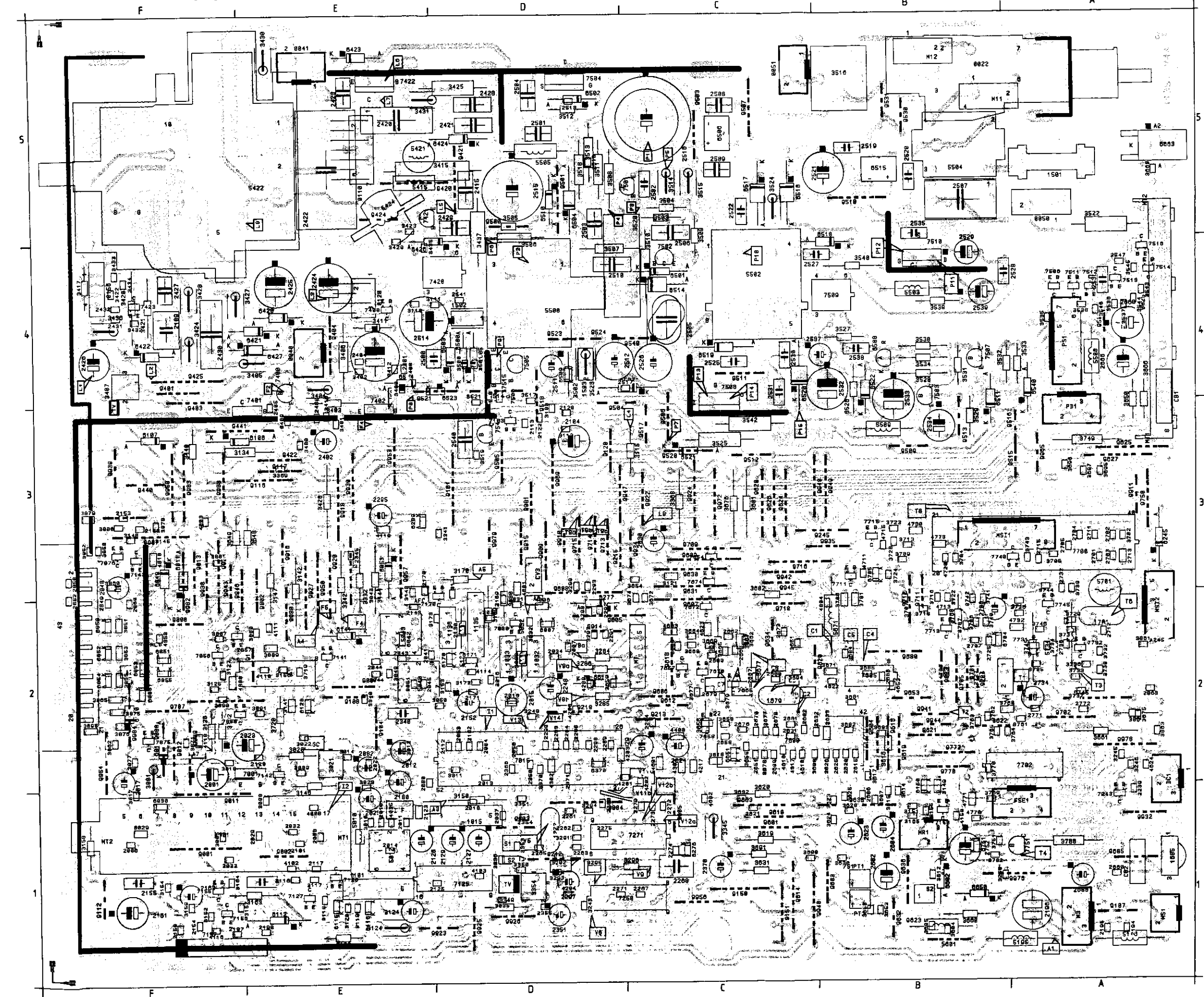
7.2 Fuction of the hotel mode

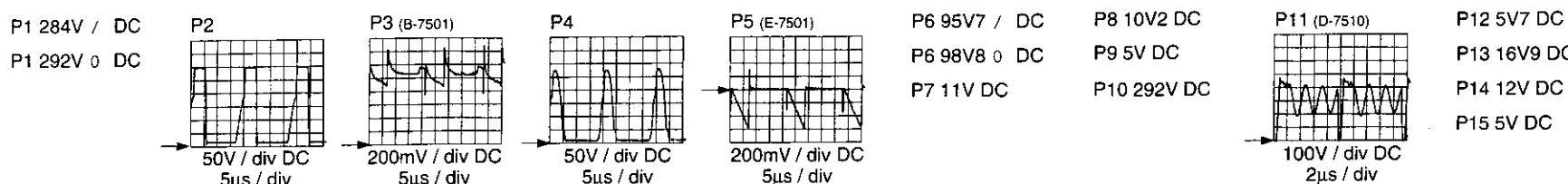
- Volume cannot be increased above the maximum level installed.
- Store open/close is ignored, message "LOCKED" is shown.
- Local keys are blocked. If the blocking option is set, a message "LOCKED" is shown when a local key is pressed.
- All protected programs cannot be selected. To free protected programmes 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.

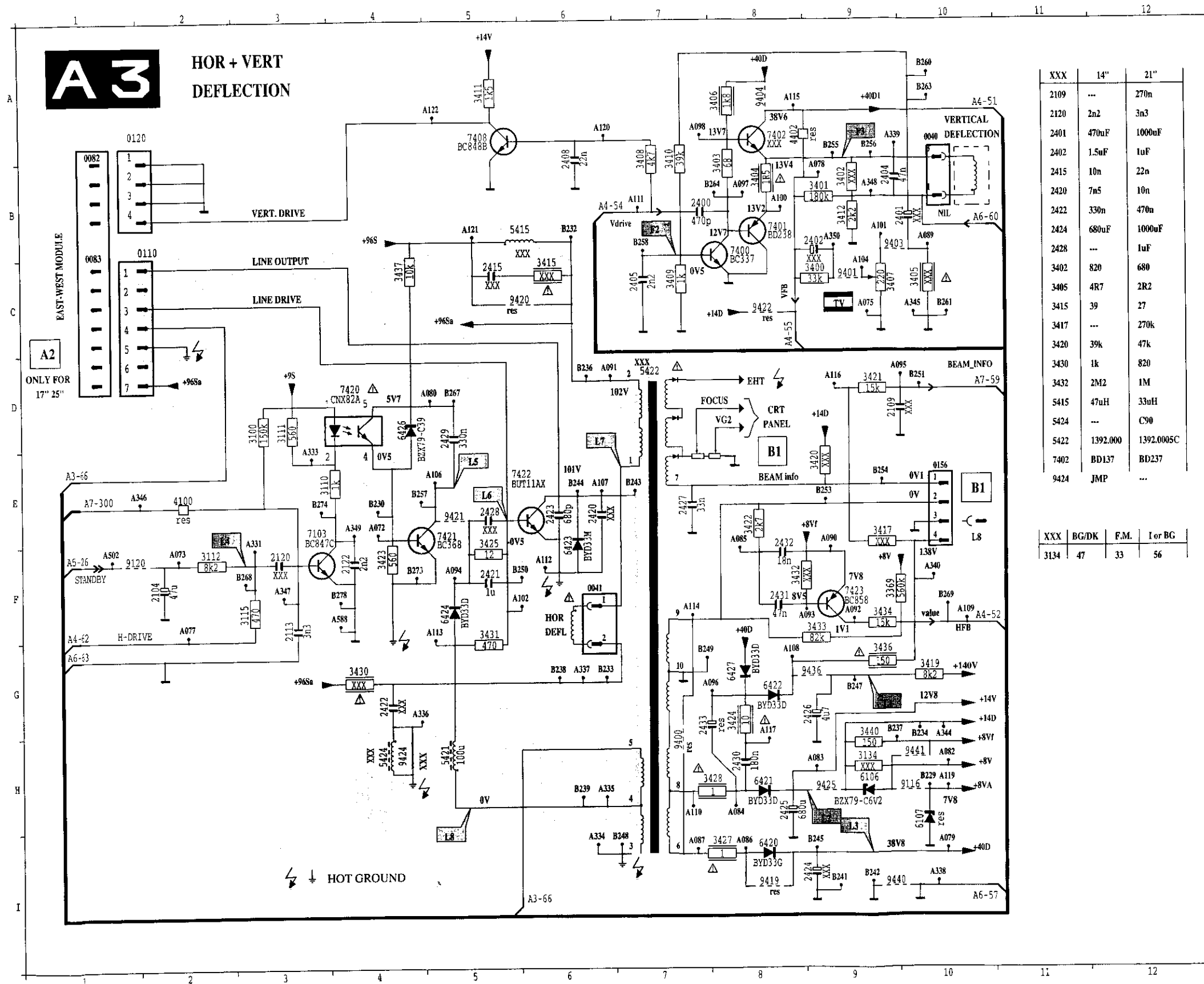
7.3 Hotel-mode "off"

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*	6427 E4	7700 A3	9622 A2	M11 A5
0051 B5	2273 C1*	2629 C2	3141 E2*	3503 C4	3678 C2*	4110 E2*	6500 D4	7711 B3*	9623 B1	M12 B5
0110 E5	2274 C1*	2630 C3	3142 E3	3504 C5	3679 C2*	4111 E2*	6501 C4	7713 B2*	9624 C3	M3 A1
0120 E4	2275 D1*	2631 C2*	3143 E3*	3505 D4	3680 C2*	4114 D2*	6502 D5	7715 B3*	9625 A3	M7 C2
0156 F4	2279 C1*	2632 B2*	3144 E3	3506 D4	3681 B2*	4116 F1*	6503 D4	7731 A2*	9626 C3	ML1 F3
1001 F1	2280 D1*	2633 B2*	3145 F3*	3507 C4	3682 B2*	4118 F2*	6504 D5	7732 A2*	9628 C3	ML2 F3
1015 D1	2283 D2*	2651 C2*	3146 E2	3508 C5	3683 B2*	4119 E3*	6505 D4	7740 A3*	9630 C3	ML3 F3
1032 D2	2284 D2*	2658 C2*	3147 E3	3509 C4	3684 B2*	4150 B1*	6506 C5	7745 A2*	9631 C3	ML4 F2
1033 D2	2285 D2*	2660 A1*	3148 F3*	3510 C4	3685 B2*	4201 C2*	6507 C4	7751 A1	9632 B1	ML5 F2
1101 E1	2289 C2*	2662 C2*	3149 B1*	3511 D5	3691 C1	4202 C2*	6508 B4	7856 F2*	9633 C1	MR1 B1
1135 D2	2290 D2*	2663 C2*	3150 D1	3512 D5	3694 C2*	4203 C2*	6509 D4*	7857 E2*	9634 C2	MS1 A3
1136 D2	2291 C2*	2666 A4	3151 B1*	3513 D5	3695 A3*	4204 D1*	6510 D5	7858 E2*	9635 B1	MS2 A2
1272 D1	2292 D2*	2667 C2*	3152 F1*	3514 C5	3696 A3*	4208 D2*	6511 A3	7875 F3*	9636 B1	PD1 A3
1501 A5	2293 D3*	2668 A4	3153 D2*	3515 C5	3697 A3*	4217 C2*	6515 B5	9000 F2	9653 B2	PS1 A4
1502 D4	2294 C2*	2669 C2*	3154 F1*	3516 B5	3698 B2*	4302 D2*	6516 C5	9001 F1	9685 A1	PT2 B1
1503 D4	2295 E3	2670 C2*	3155 B1*	3517 D4*	3702 A3*	4303 C2*	6517 C5	9002 E1	9701 B2	S2 B1
1679 C2	2297 D1	2676 C2*	3156 E2*	3518 D5	3704 B3*	4408 C2*	6518 B4	9003 D1	9702 A2	*= Chip component
1685 A1	2298 D2*	2677 C2*	3157 E1*	3519 D3*	3705 A3*	4601 C2*	6519 C4	9004 D1	9704 B2	
1701 A2	2340 E2	2678 C2*	3158 F1	3520 C4	3706 B2*	4602 C1*	6520 B4	9005 C1	9705 B2	
2001 F2	2345 E3*	2679 C2*	3159 F1*	3521 D4*	3707 B2*	4603 C2*	6521 C3	9007 E2	9707 F2	
2006 F1*	2350 D2*	2680 C2*	3163 E1	3522 A4	3709 B3*	4616 B2*	6522 B4	9008 F2	9708 E2	
2007 D2*	2351 D1	2681 C2*	3164 E1*	3523 D4	3713 B3*	4617 C2*	6523 D4	9009 F2	9709 C3	
2008 E1*	2354 D1*	2682 B2*	3165 B1*	3524 C4	3714 A2*	4618 C2*	6524 E4	9011 F1	9710 C2	
2010 E1*	2355 D1*	2685 A1	3169 D2	3525 C3	3716 B2*	4622 B2*	6540 A4	9012 F2	9711 B2	
2011 E1*	2366 D2*	2686 B2*	3170 D3	3526 B4	3718 B2*	4623 C2*	6602 B1	9013 F3	9712 B2	
2012 E2	2370 C1	2689 C2*	3171 D3*	3527 B4	3719 E2*	4624 A2*	6650 B1	9101 D3	9713 C3	
2013 D2*	2371 D2*	2701 A3*	3172 D2*	3528 B4	3720 E2	4653 B2*	6651 C2*	9104 E2	9714 D3	
2014 E1*	2400 E3*	2702 A3*	3173 D2*	3529 B3	3722 B2*	4711 B3*	6658 D2	9107 A1	9715 D3	
2015 D2	2401 E4	2703 A3*	3198 E1	3530 B4	3723 B3*	4713 B2*	6704 A2*	9108 E2	9716 B3	
2016 D2*	2402 E3	2704 A3*	3243 D1*	3531 B4	3724 B3*	4715 B3*	6705 B3*	9111 E2	9745 A2	
2017 F2	2404 E4*	2705 A3*	3245 A2*	3532 A4	3728 B3*	4720 B3*	6751 B1*	9112 F1	9750 A3	
2018 D1*	2405 E3*	2706 A2	3246 A2*	3533 A4	3729 A2*	4730 B3*	6849 F3	9116 E3	9770 B2	
2022 E2*	2408 E4*	2707 B2*	3248 D2*	3534 B4	3731 A2*	4732 A2*	6850 F2*	9117 E3	9772 B2	
2023 E2	2415 D5	2711 A3*	3259 A1*	3535 A4*	3732 A2*	4733 B2*	6851 F2*	9120 C3	9802 E3	
2025 E1	2420 E5	2712 A2*	3284 D2	3536 A4*	3733 A2*	4770 B1*	6852 F2*	9150 C1	9803 B2	
2029 E1*	2421 D5	2713 A3*	3285 D2	3537 A4*	3734 A2*	4771 B1*	6853 F2*	9151 C1	9909 D3	
2030 D2*	2422 E5	2715 A3*	3286 D2	3538 A4*	3735 A2*	4773 B3*	6854 F2*	9212 D1	9910 D3	
2031 E1	2423 E5	2725 A2*	3291 D1*	3539 B4	3736 A2*	4804 B2*	6855 F2*	9213 C2	9911 A3	
2032 E1*	2424 E4	2726 A2*	3292 D1*	3540 B4	3737 A2*	4808 E2*	6865 F2*	9215 C3	9914 D2	
2033 E1*	2425 E4	2727 B2*	3293 D1*	3542 C3	3738 A2*	4810 F3*	7001 E2	9218 D2	9915 D3	
2034 D2*	2426 F4	2732 A3*	3294 D1*	3543 A4*	3739 A3*	4853 F2*	7015 D2	9245 B3	9916 E3	
2037 D1*	2427 F4	2734 A2	3295 D1*	3544 A4*	3740 B2*	5010 E1	7030 D2*	9401 F4	9918 E3	
2041 D2*	2428 D5	2736 A2*	3296 C1	3545 A4*	3741 B2*	5012 E1	7103 D3*	9403 F4	9920 E3	
2043 E2*	2429 D4	2752 B1	3297 D2*	3546 A4*	3742 E2*	5032 D2	7125 D1	9404 E4	9922 C3	
2044 E2*	2430 F4	2771 A2*	3298 D2*	3547 A4*	3743 A3*	5040 D2	7126 E1*	9420 D5	9923 D1	
2045 D2*	2431 F4*	2772 A2*	3299 D3*	3601 C3	3744 A3*	5043 E2	7127 E1*	9421 D5	9924 C3	
2050 D2*	2432 F4*	2848 F3	3332 E3	3602 C2	3745 A2	5130 D2	7140 E2	9422 E3	9925 D1	
2053 D2*	2500 D4	2849 F2*	3340 E2*	3604 B1*	3746 A2*	5195 A1	7141 E2*	9424 E4	9926 D1	
2080 D2*	2501 D5	2850 F3*	3341 D3*	3605 B1*	3749 A3	5196 A1	7142 E2*	9425 F4	9927 E3	
2082 E2	2502 C5	2852 F2*	3342 E3	3607 B1*	3751 A1*	5415 D5	7143 F3*	9440 F3	9928 F3	
2084 D2*	2503 D4	2860 F2*	3345 C1	3608 B1*	3752 A1*	5421 D5	7150 B1*	9441 E3	9930 E3	
2101 E1*	2504 D5	2863 A2*	3349 D1	3612 B1*	3760 A2*	5422 E5	7155 F1*	9500 D4	9932 A1	
2104 D3	2505 C4	2877 F2*	3350 D1*	3614 B1*	3761 A2*	5424 E4	7156 E1*	9501 D5	9934 C3	
2109 F4	2506 C4	3001 F2	3351 D1*	3615 B1*	3762 B2*	5500 D4	7157 F1	9502 A4	9935 B3	
2112 D2*	2507 B5	3005 F1*	3353 D1*	3616 B2	3763 B2*	5502 C4	7170 D2*	9503 C5	9937 F3	
2113 D3*	2508 C5	3008 E1*	3354 D1	3617 B2*	3764 A2*	5503 B4	7243 A1*	9504 C3	9938 F3	
2117 E1*	2509 C5	3009 E2*	3368 C3	3618 C2*	3765 A2*	5504 B5	7250 C1	9505 D3	9939 F3	
2120 D3*	2510 C4	3010 E1*	3369 E3*	3619 C1	3768 B2	5505 D5	7271 C1	9506 C3	9940 B1	
2122 D3*	2511 D4	3011 D2*	3370 D2*	3621 C1*	3770 B2*	5509 B3	7400 E4	9507 C5	9941 B2	
2123 D1*	2512 C4	3012 E2*	3400 E3*	3622 B1*	3781 B2*	5601 B1	7401 E3	9509 B3	9942 C3	
2124 E1	2513 D5*	3014 E2*	3401 E3*	3623 B1*	3786 B2*	5671 B2	7402 E3	9510 B5	9943 E3	
2125 D1*	2514 D4	3016 D2*	3402 E4*	3624 B1*	3787 B2*	5677 C2	7408 E4*	9511 C4	9944 B2	
2126 D1	2515 D5	3017 F1*	3403 E4	3625 B1*	3788 A1	5701 A2	7420 D4	9512 C3	9945 C3	
2127 D1	2516 C5	3018 E2*	3404 E4	3628 B1*	3789 F3*	5704 A2	7421 D5	9513 B3	9946 E3	
2128 E2*	2517 C4*	3020 E2	3405 E4	3630 B1*	3851 F2*	5734 A2	7422 E5	9514 D4	9947 C3	
2129 D1	2518 D5*	3021 E2	3406 E4	3631 C1	3852 F3*	5999 E5	7423 F4*	9515 A3	9948 B3	
2130 D2*	2519 B5	3022 E2*	3407 F4	3632 C1*	3853 F2*	6007 D2*	7500 D4*	9516 A3	9949 B3	
2143 D2*	2520 B5	3023 E1*	3408 E4*	3633 E3	3855 F2*	6010 F2	7501 C5	9517 C3	9950 E3	
2152 D2	2521 B5	3029 F1*	3409 E3*	3634 E3	3856 F3*	6011 F3	7502 C4	9518 D3	9953 E3	
2153 F3*	2522 C4	3030 D2	3410 E3*	3635 A3	3861 A2*	6030 F1*	7503 B4	9519 C3	9954 F2	
2154 F1*	2525 C4	3031 D2*	3411 E4	3636 B2*	3862 F2*	6042 E2*	7504 D5	9521 D4	9956 C1	
2155 F1	2526 C4	3032 D2*	3412 E4*	3637 B1*	3863 A2*	6106 E3	7505 D4	9522 D4	9957 E3	
2156 F3*	2527 B4	3033 D2*	3415 D5	3638 A2*	3864 A2	6107 F3	7506 A4*	9530 B5	9965 A3	
2158 F1*	2528 A4	3035 D1*	3417 F4	3639 C2*	3865 F2*	6110 F2	7507 B4	9531 B5	9967 F3	
2161 F1	2529 B4	3036 D1*	3420 F4	3640 C2*	3871 F2*	6112 E1	7508 C4	9540 C4	9969 D3	
2162 D2*	2530 C4	3043 E3*	3421 F4	3641 C2*	3872 F2*	6116 E1*	7511 A4*	9603 B1	9976 A1	
2163 F1	2531 C4	3044 E2*	3422 F4*	3642 C2*	3873 F2*	6128 E2*	7512 A4*	9604 B2	9978 A2	
2169 D2*	2532 B4	3049 E2*	3423 E4*	3643 C2*	3874 F2*	6141 E2	7513 A4*	9605 C2	9979 D3	
2170 D3*	2533 B3	3050 D2*	3424 F4	3644 C2*	3875 F2*	6150 B1*	7514 A4*	9606 C2	9980 E2	
2171 D2*	2534 B3	3051 D2*	3425 D5	3645 C2*	3876 F2*	6170 D2*	7515 D4	9607 C2	9981 D3	
2180 E2	2535 B4	3100 D3*	342							



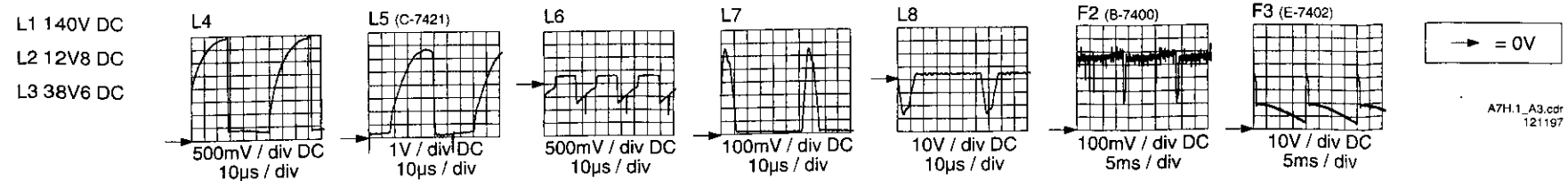


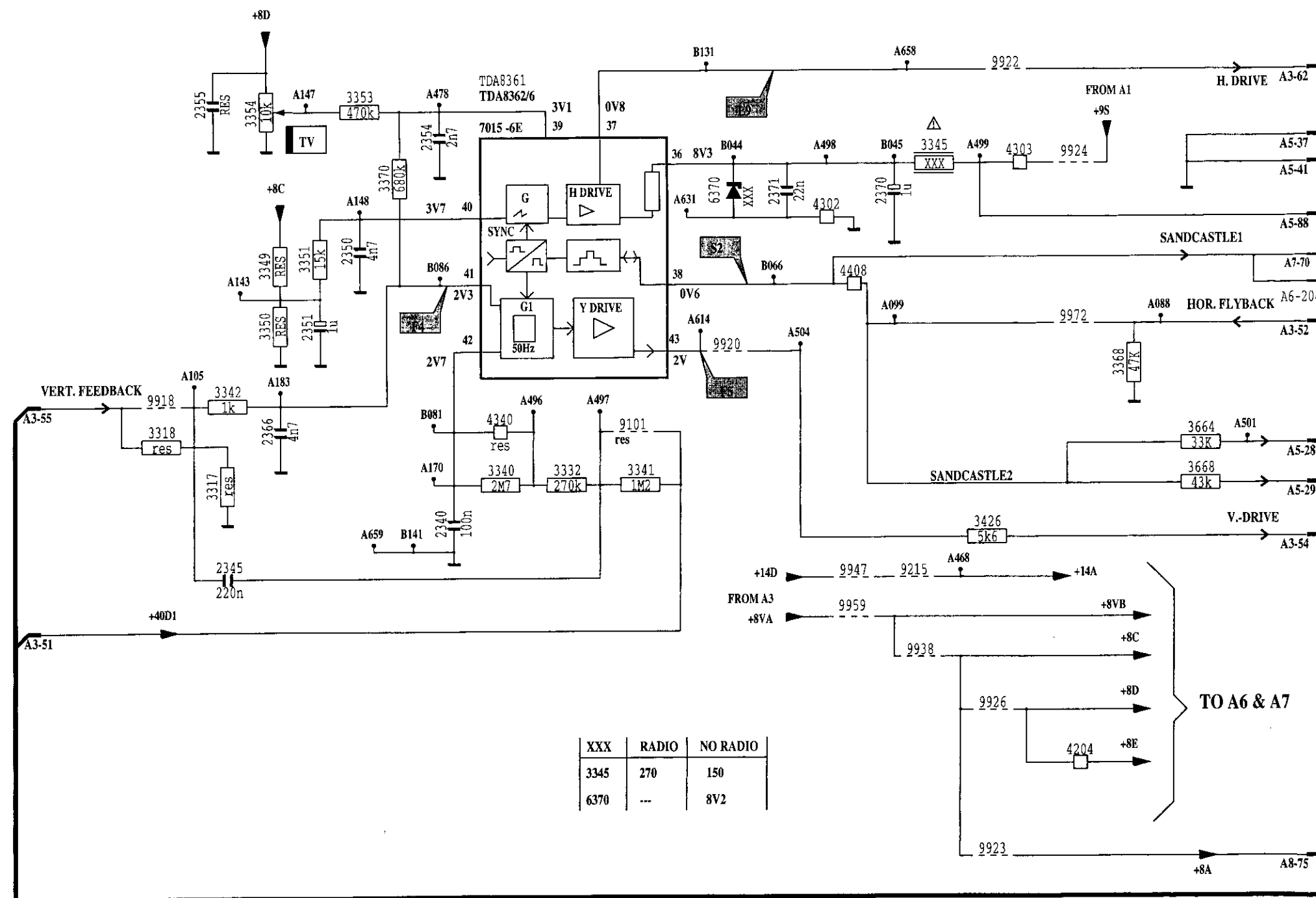


XXX	14"	21"
2109	---	270n
2120	2n2	3n3
2401	470uF	1000uF
2402	1.5uF	1uF
2415	10n	22n
2420	7n5	10n
2422	330n	470n
2424	680uF	1000uF
2428	---	1uF
3402	820	680
3405	4R7	2R2
3415	39	27
3417	---	270k
3420	39k	47k
3430	1k	820
3432	2M2	1M
5415	47uH	33uH
5424	---	C90
5422	1392.000	1392.0005C
7402	BD137	BD237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

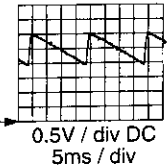
XXX	BG/DK	F.M.	I or BG
3134	47	33	56

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

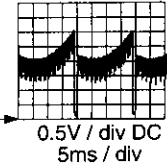


A 4**SYNCHRONISATION**

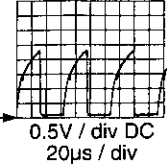
F4 (41-7015)



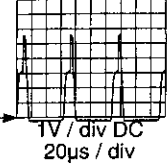
F5 (43-7015)



L9 (37-7015)



S2 (38-7015)



→ = 0V

A7H.1_A4.cdr
181197

A5

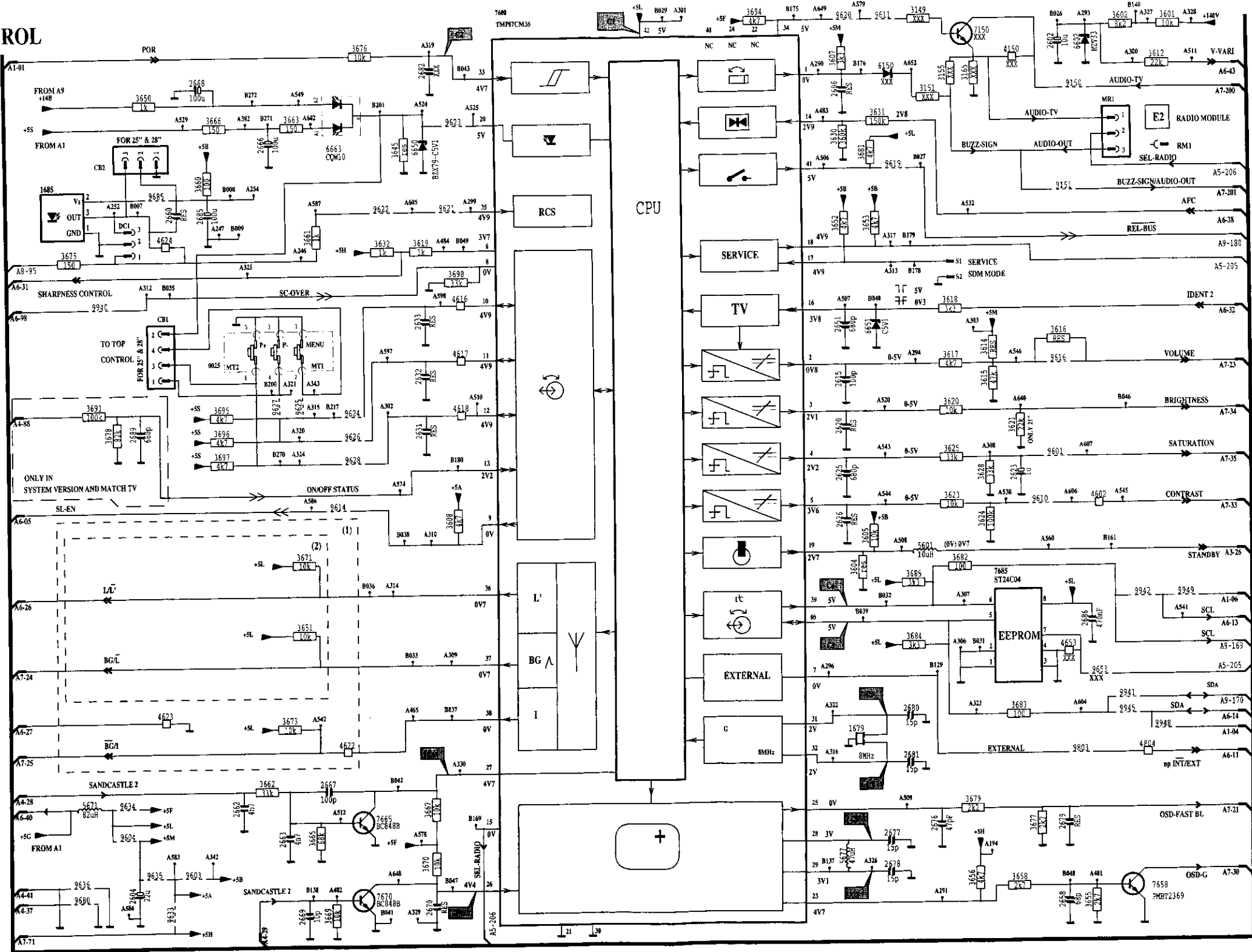
CONTROL

(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

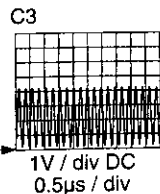
XXX	CLOCK	NO CLOCK	ON CARD
3149	22k	---	22k
3151	3k3	---	3k3
3165	10k	---	10k
4150	---	YES	---
6150	LL4148	---	LL4148
7150	BC848B	---	BC848B
3155	RADIO	NO RADIO	3k3

XXX	7685
4653	YES
9653	NOT

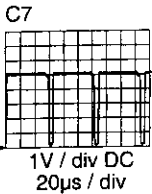
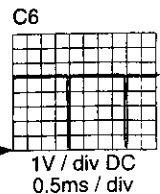


0025 1295 1305 1315 1325 1335 1345 1355 1365 1375 1385 1395 1405 1415 1425 1435 1445 1455 1465 1475 1485 1495 1505 1515 1525 1535 1545 1555 1565 1575 1585 1595 1605 1615 1625 1635 1645 1655 1665 1675 1685 1695 1705 1715 1725 1735 1745 1755 1765 1775 1785 1795 1805 1815 1825 1835 1845 1855 1865 1875 1885 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

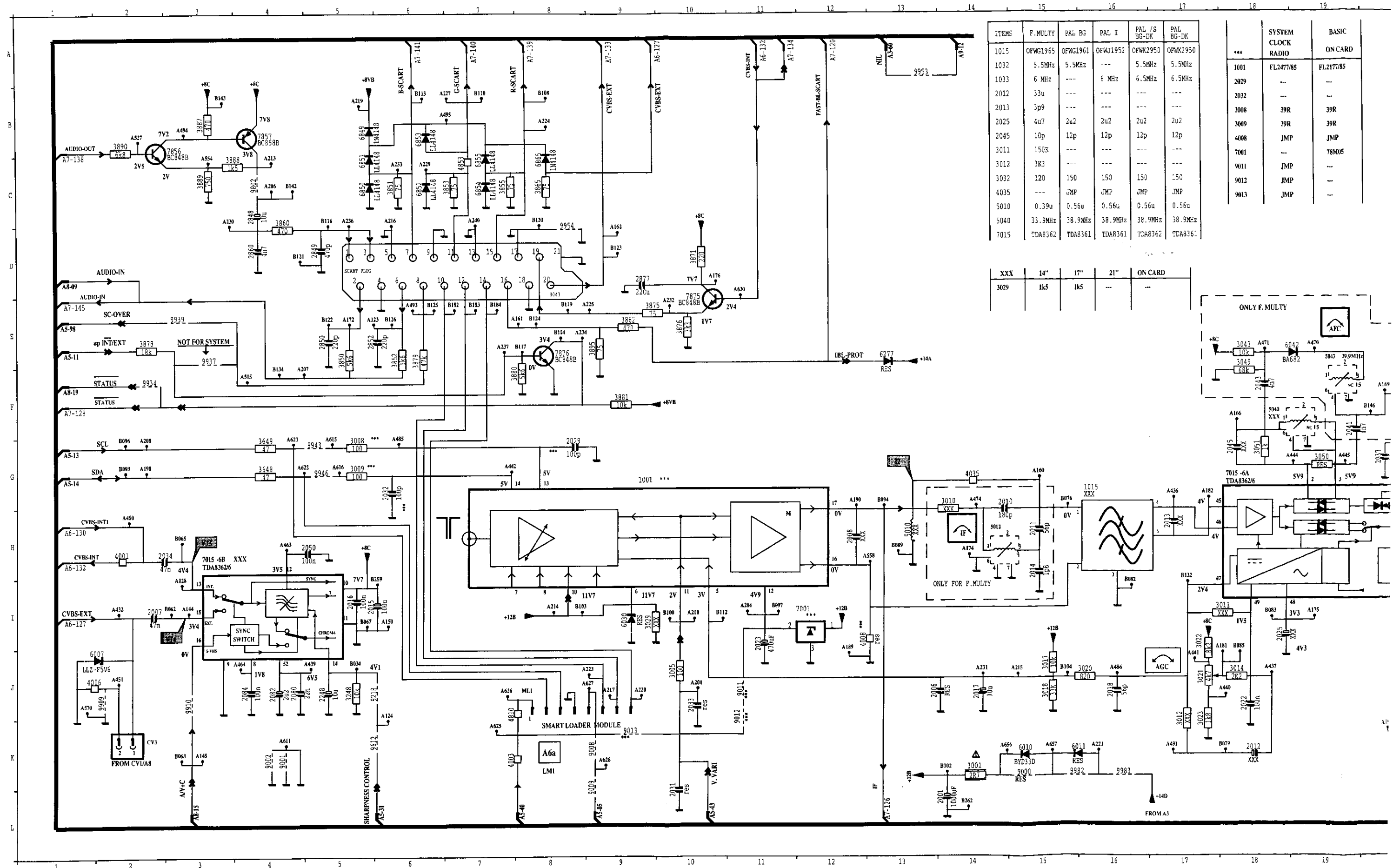


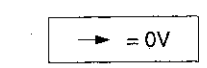
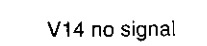
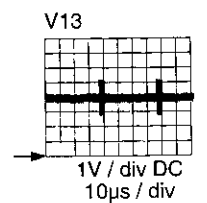
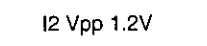
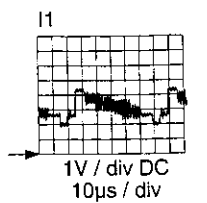
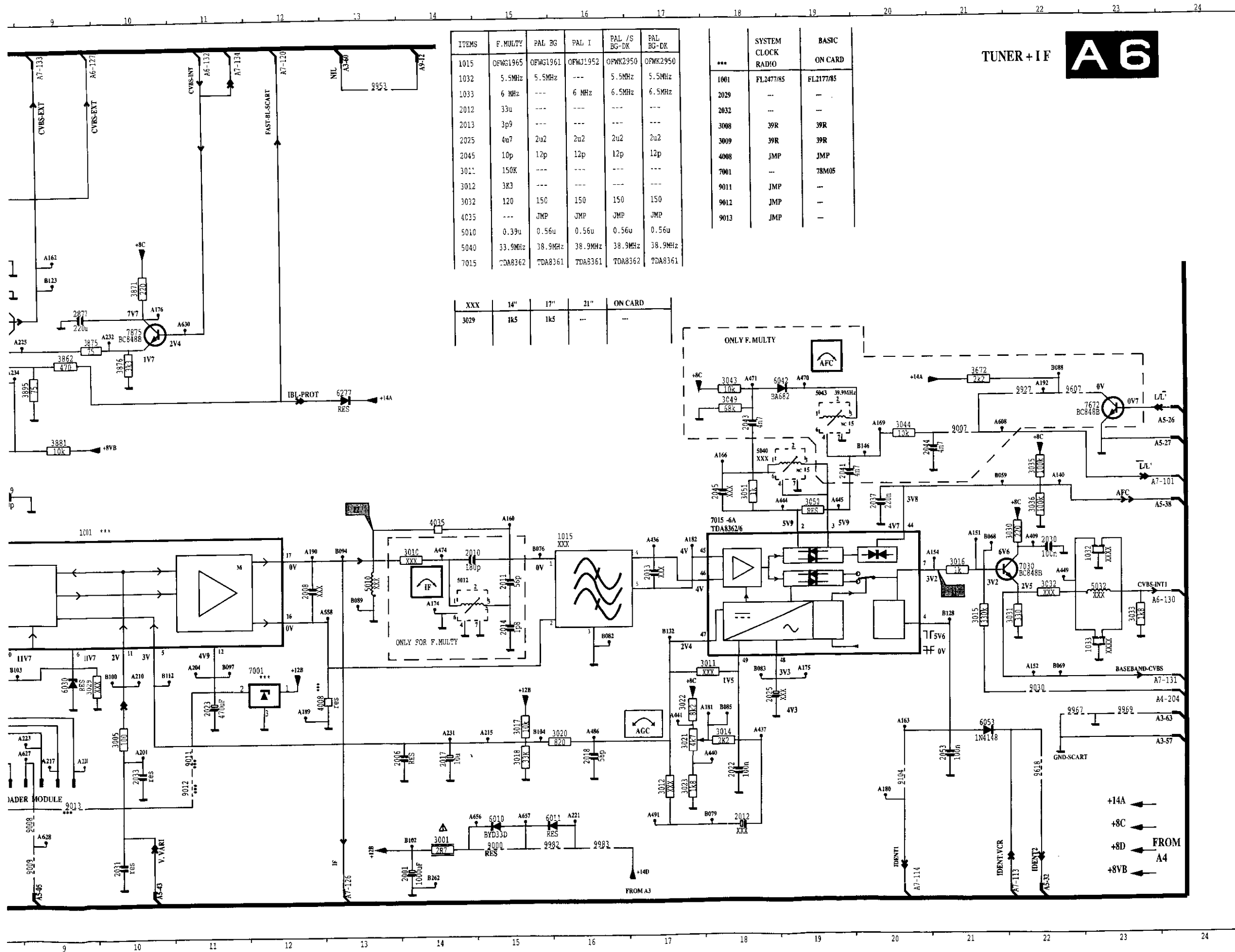
C4 5V DC
C5 5V DC



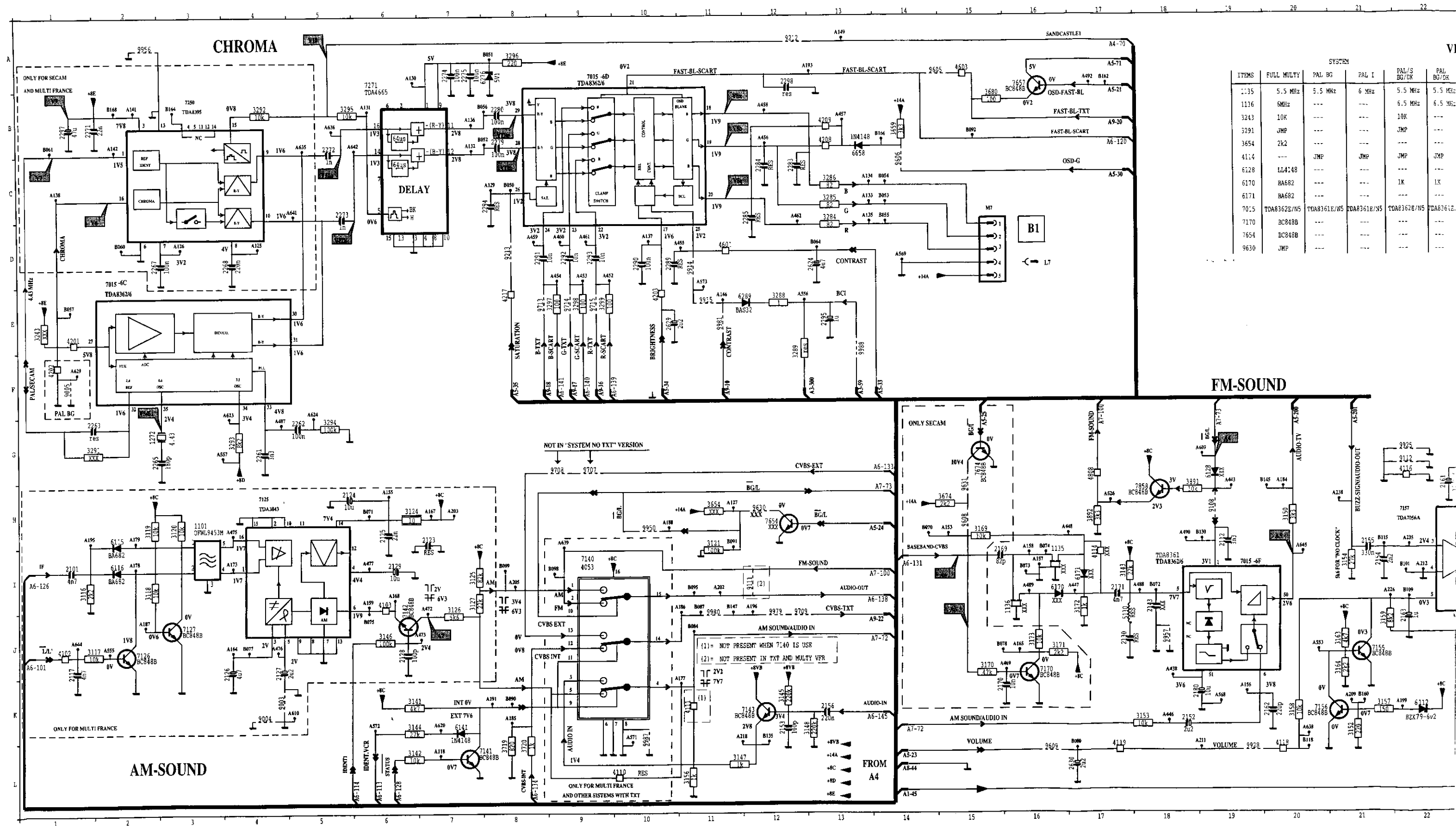
→ = 0V

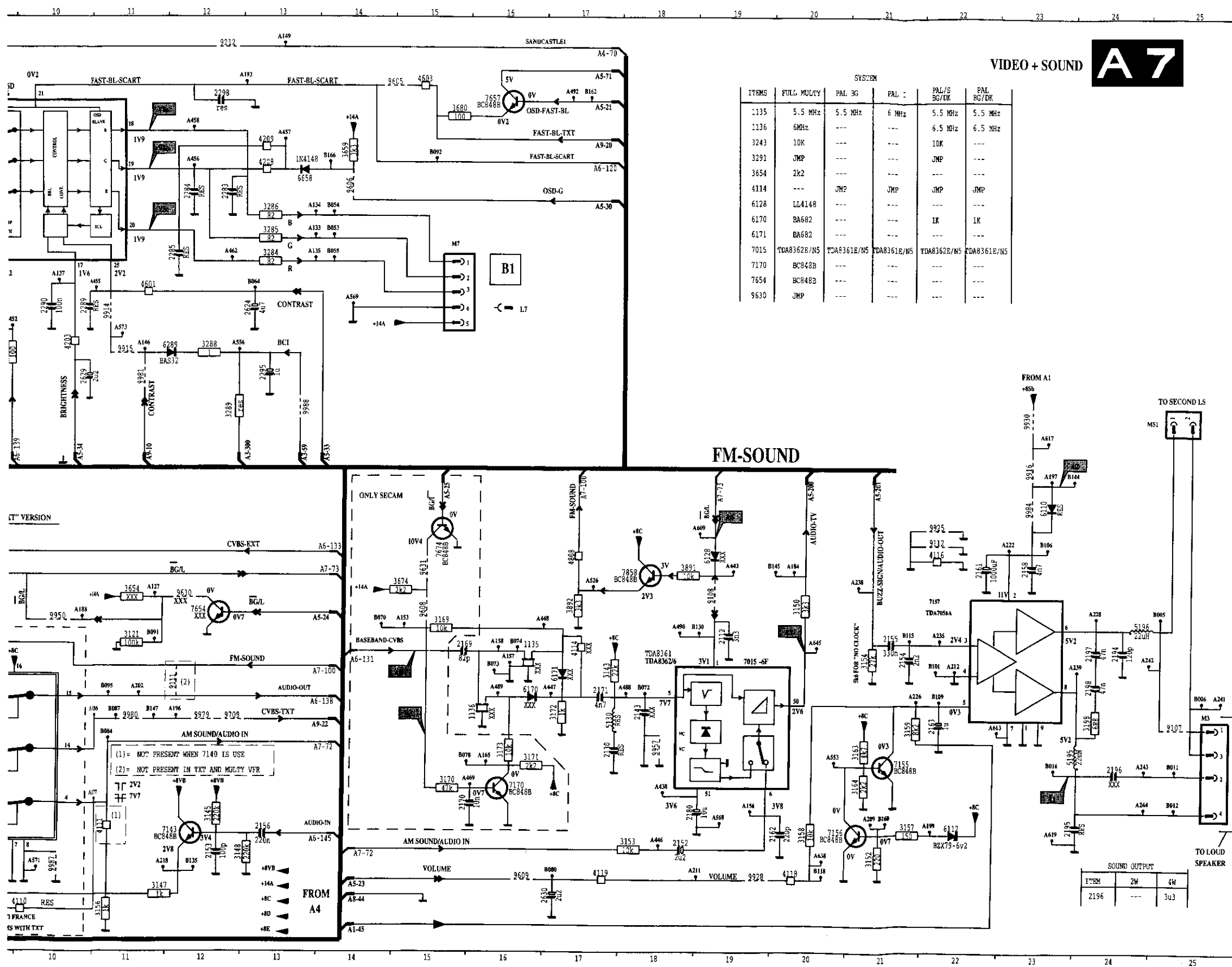
A7H.1_A5 cdr
121197





A7H.1_A6.cdr
121197

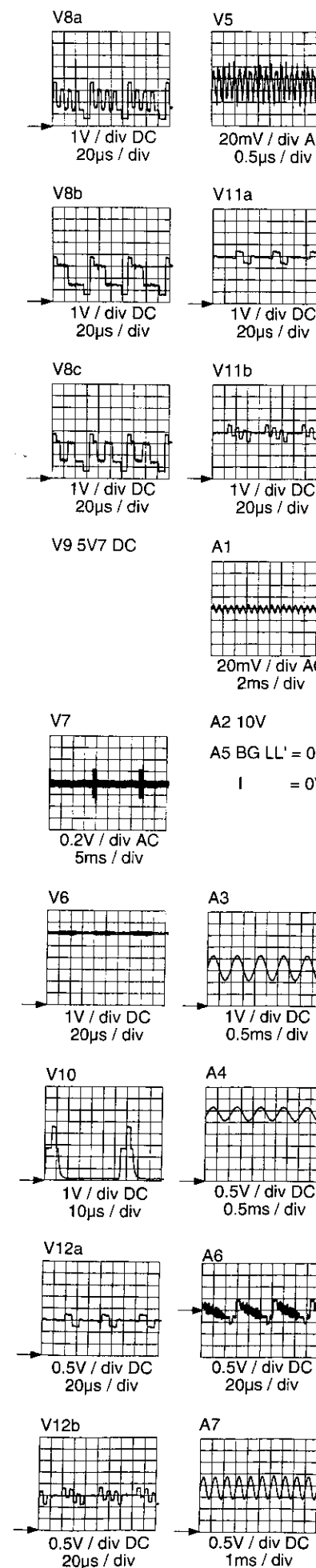




SYSTEM					
ITEMS	FULL MULPLY	PAL 3G	PAL 1	PAL/S BG/DK	PAL BG/DK
1135	5.5 MHz	5.5 MHz	6 MHz	5.5 MHz	5.5 MHz
1136	6MHz	---	---	6.5 MHz	6.5 MHz
3243	10K	---	---	10K	---
3291	JMP	---	---	JMP	---
3654	2k2	---	---	---	---
4114	---	JMP	JMP	JMP	JMP
6128	LL4148	---	---	---	---
6170	BA682	---	---	1K	1K
6171	BA682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

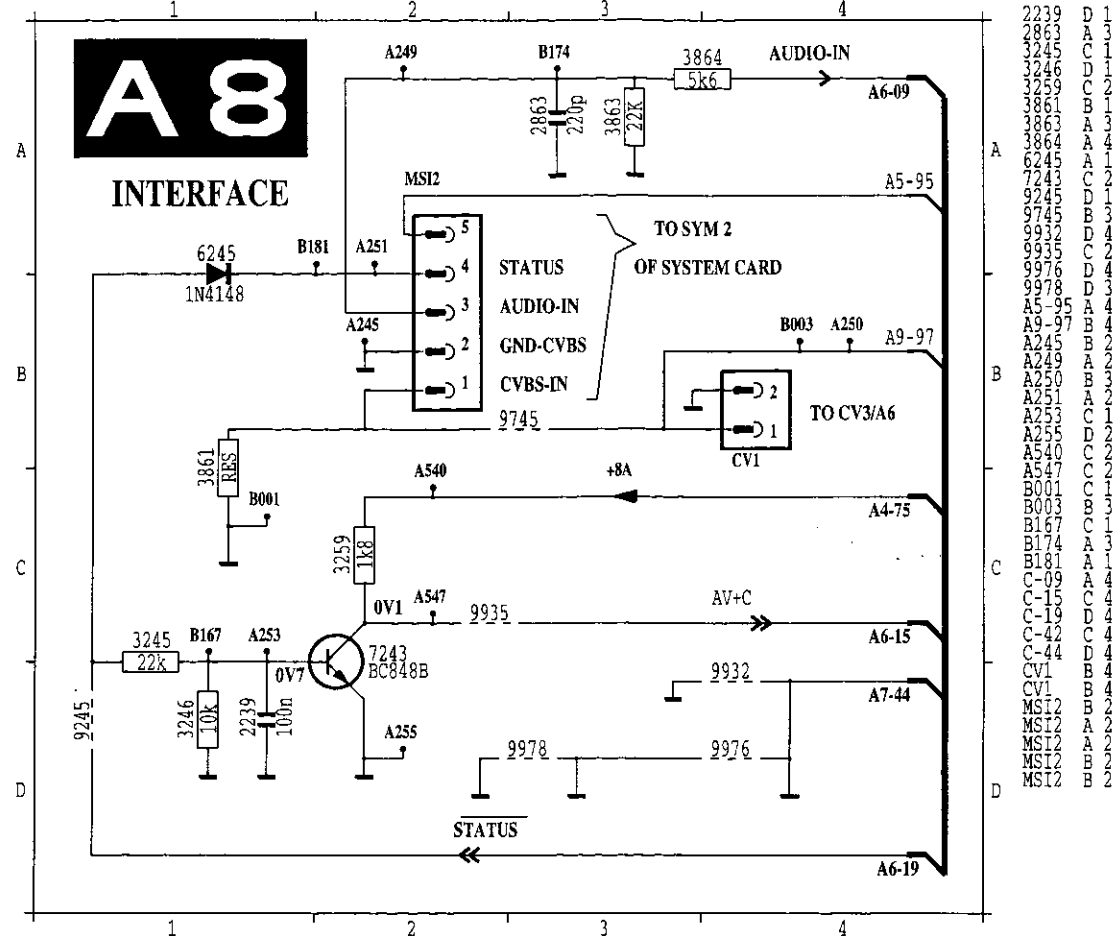
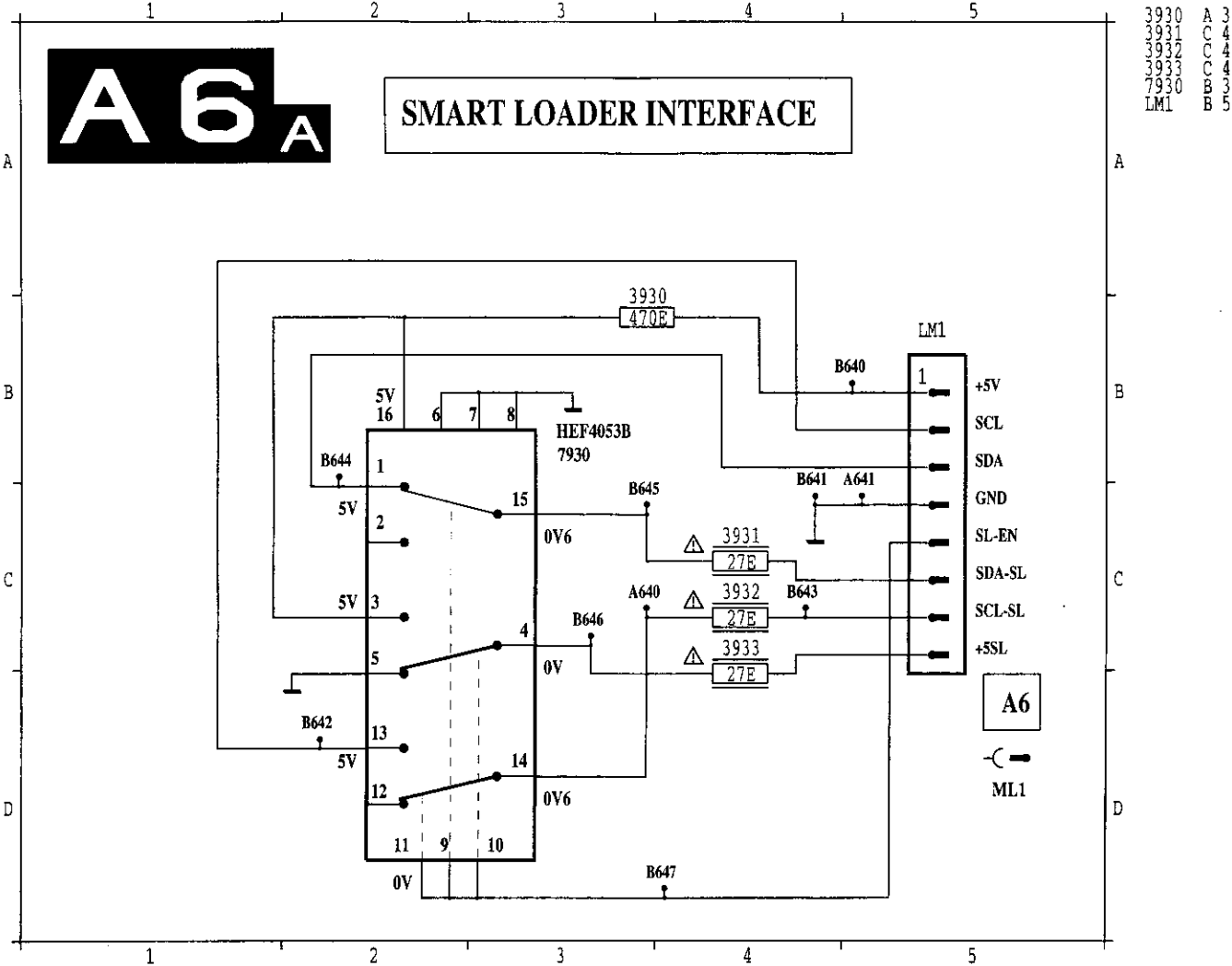
VIDEO + SOUND

A 7

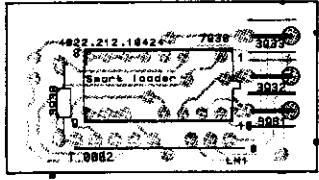


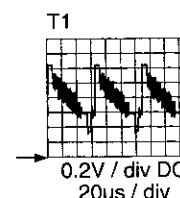
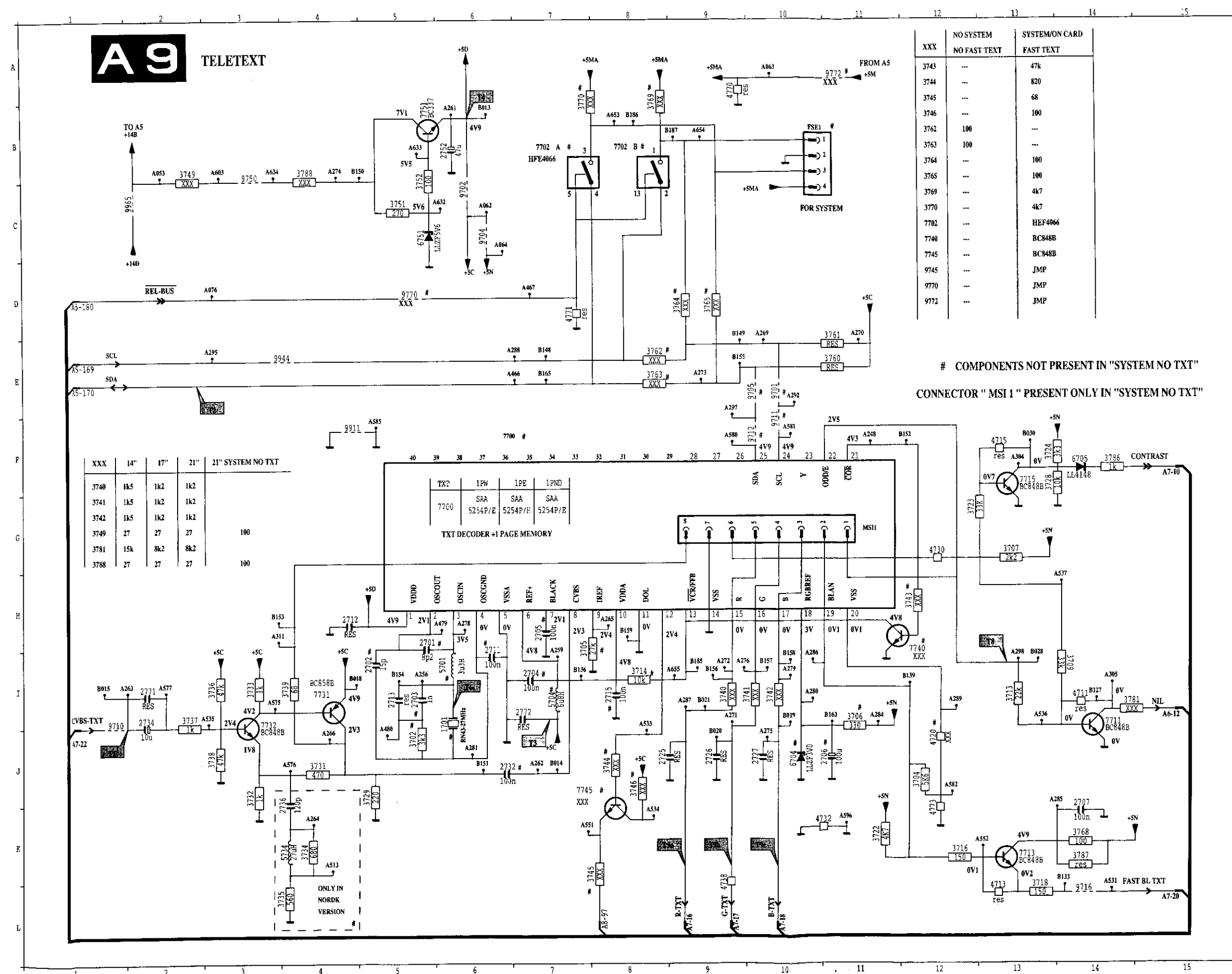
$\rightarrow = 0V$

A7H.1_A7.cdr
131197



Smart loader





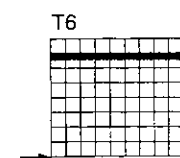
0.2V / div DC
20 μ s / div

T2 5V DC

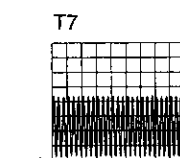
T3 4V9 DC

T4 4V9 DC

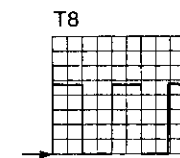
T5 5V DC



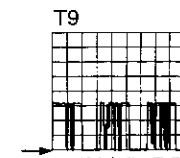
0.5V / div DC
0.5 μ s / div



1V / div DC
0.5 μ s / div



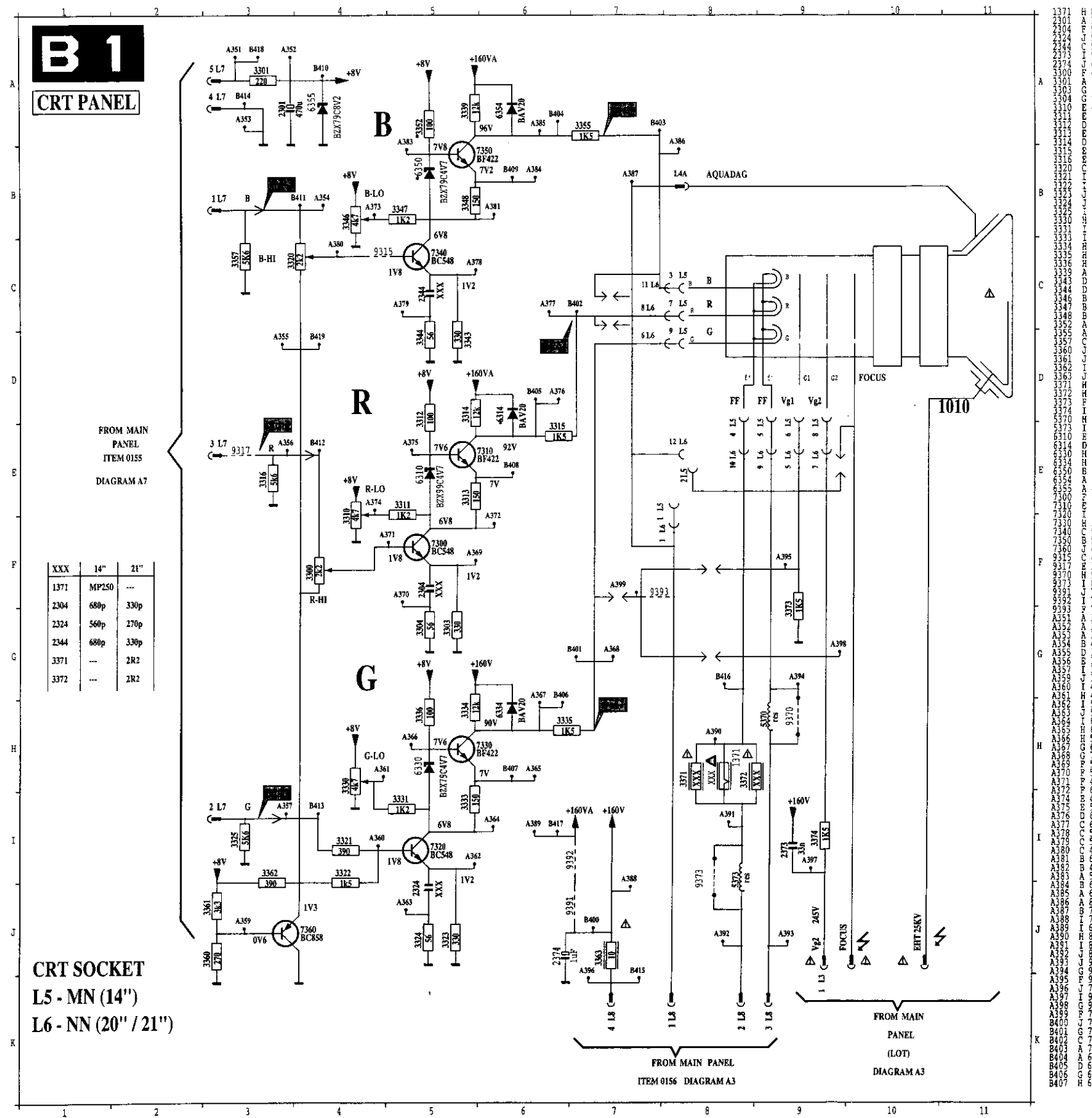
1V / div DC
10ms / div



1V / div DC
20 μ s / div

$\rightarrow = 0V$

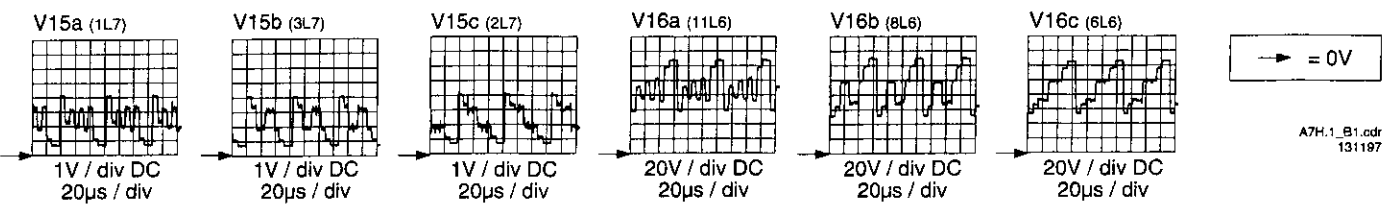
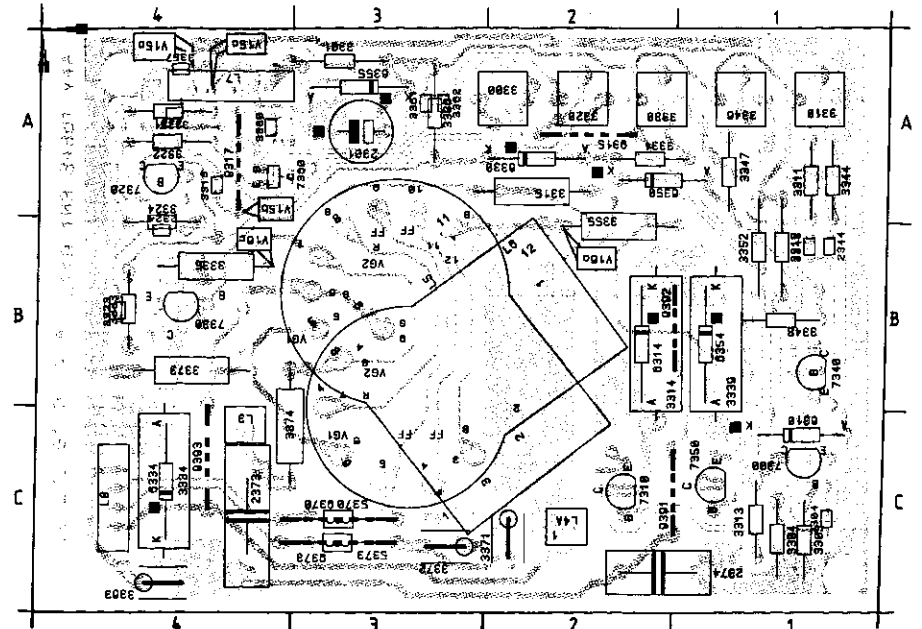
A7H.1_A9.cdr
131197

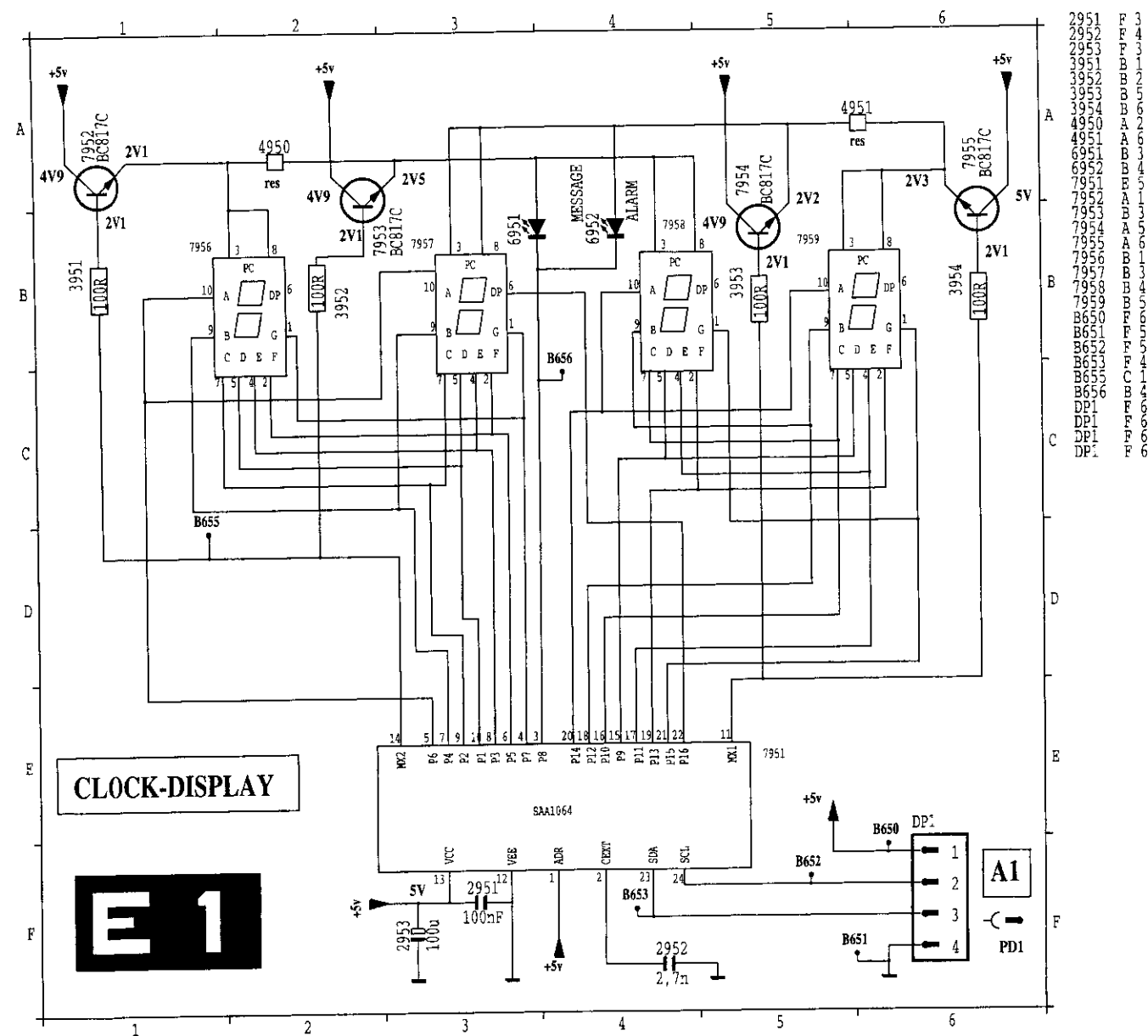


1371
1301
1304
2304
2324
2344
2373
2374
3300
3301
3303
3304
3310
3311
3312
3313
3314
3315
3316
3322
3323
3324
3325
3330
3331
3333
3334
3335
3336
3337
3338
3339
3340
3341
3342
3343
3344
3345
3346
3347
3348
3349
3350
3351
3352
3353
3354
3355
3356
3357
3358
3359
3360
3361
3362
3363
3364
3365
3366
3367
3368
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

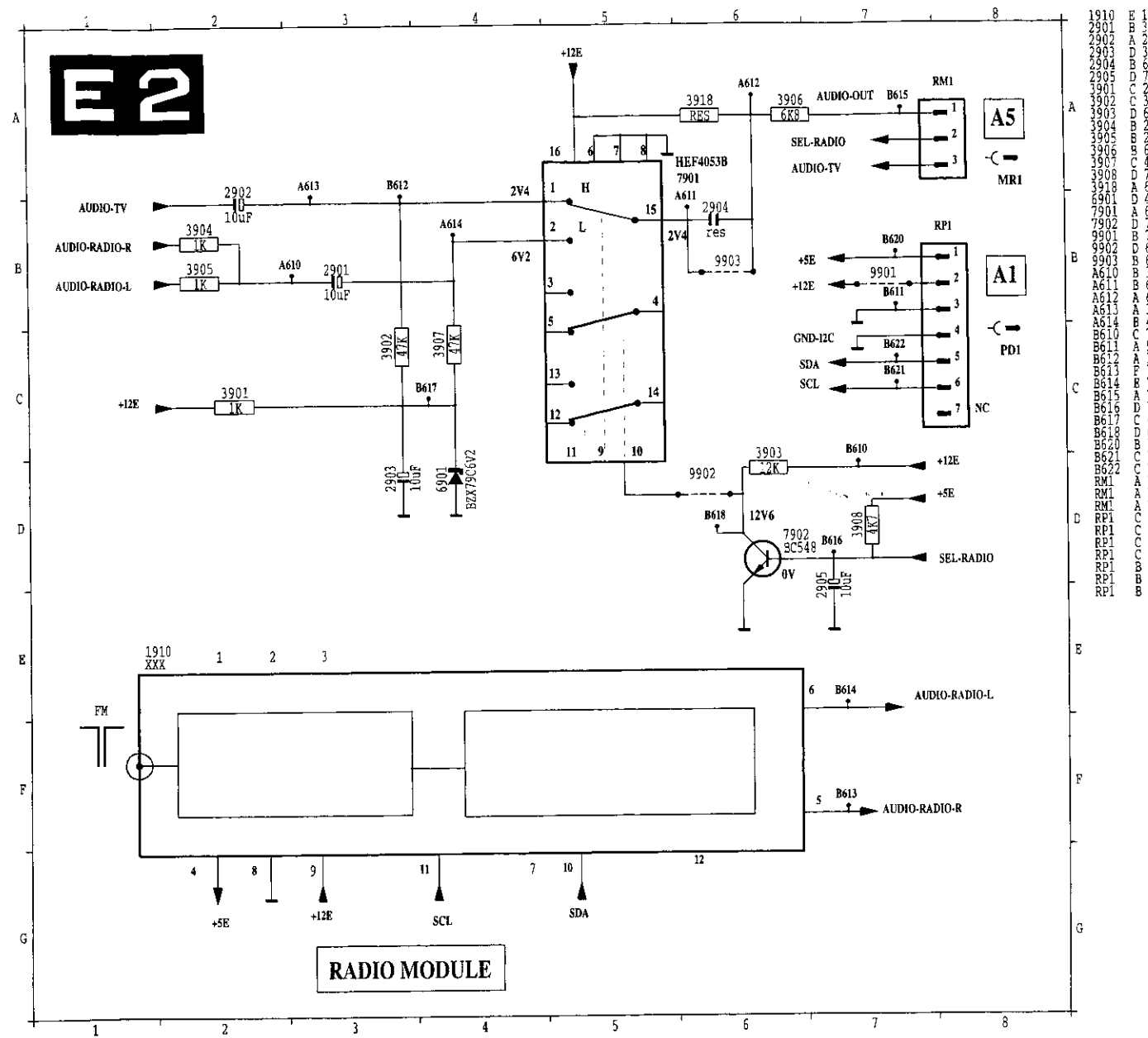
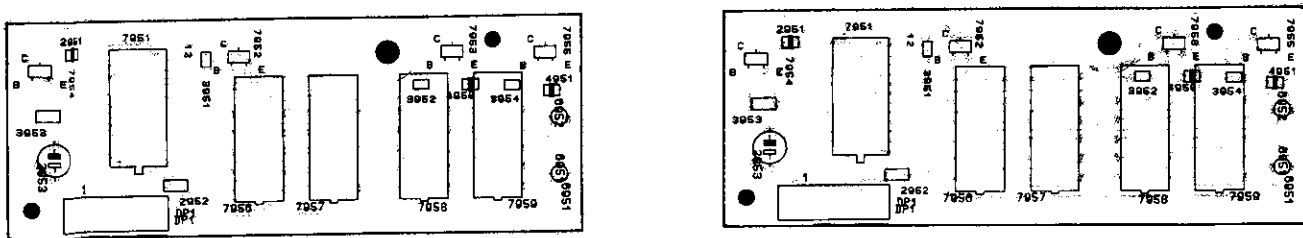
2301 A3	3311 A1	3325 A4*	3348 B1	3374 C3	7310 C1	9392 B1
2304 C1*	3312 B1	3330 A1	3352 B1	5370 C3	7320 A4	9393 C4
2324 B4*	3313 C1	3331 A1	3355 B7	5373 C3	7330 B4	
2344 B1*	3314 B1	3333 B4	3357 A4*	6310 C1	7340 B1	L3 C3
2373 C3	3315 A2	3334 C4	3360 A3*	6314 B1	7350 C1	L4A C2
2374 C1	3316 A4*	3335 B4	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

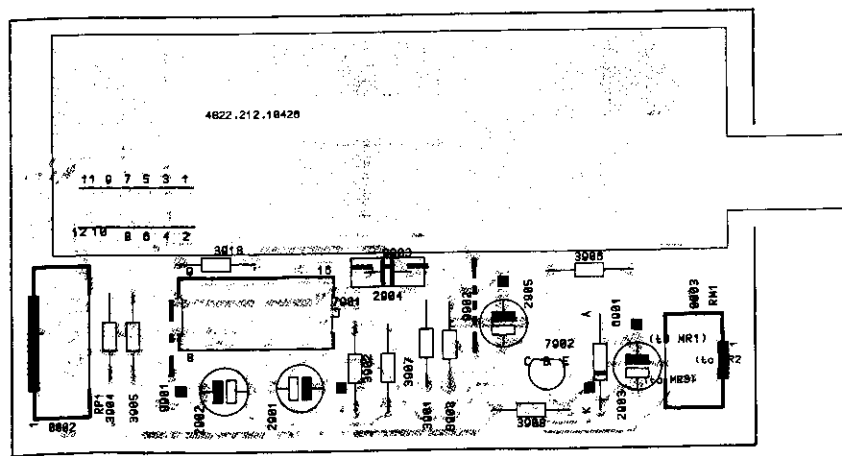




Clock panel



Radio module



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  button on the local keyboard than press the  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  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
AMSD/	AM modulated sound signal or audio extern in
AUDIO IN	
AQUADAG	Conducting layer on rear side surface of CRT
AUDIO-IN	Extern 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 Lace
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-bud
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	4k7 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	102Ω 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	12Ω 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							7142	5322 130 41982	BC848B
3512	4822 116 52297	68k 5% 0.5W	3695	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	3696	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	3697	4822 051 20472	4k7 5% 0.1W	5502	4822 146 10748	Power trafo	7155	5322 130 41982	BC848B
			3698	4822 051 20333	33k 5% 0.1W	5503	4822 526 10494	Ferrite bead	7156	5322 130 41982	BC848B
3515	4822 052 10108	1Ω 5% 0.33W	3702	4822 051 20332	3k3 5% 0.1W	5504	4822 157 53348	Choke	7157	4822 209 32531	TD47056A/N2
3516	4822 116 40137	PTC 36Ω 365V	3704	4822 051 20562	5k6 5% 0.1W	5504	4822 157 70826	2.4μH	7170	5322 130 41982	BC848B
3517	4822 051 20101	100Ω 5% 0.1W	3705	4822 051 20273	27k 5% 0.1W				7243	5322 130 41982	BC848B
3517	4822 117 11504	270Ω 1% 0.1W	3706	4822 051 20331	330Ω 5% 0.1W	5506	4822 157 50964	100μH	7250	4822 209 90129	TD8395/N2
3518	4822 117 12952	120k 5% 1W	3707	4822 117 11449	2k2 1% 0.1W	5509	4822 157 71915	5.6μH	7271	4822 209 12635	TD4665/V4
3519	4822 051 20105	1M 5% 0.1W	3709	4822 051 20333	33k 5% 0.1W	5601	4822 157 51462	10μH	7400	4822 130 40981	BC337-25
3521	4822 117 11504	270Ω 1% 0.1W				5671	4822 157 71703	82μH	7401	4822 130 40917	BD238
3523	4822 052 10108	1Ω 5% 0.33W	3713	4822 051 20223	22k 5% 0.1W	5677	4822 152 20678	33μH	7402	4822 130 40923	BD139
3524	4822 052 11108	1Ω 5% 0.5W	3714	4822 117 10833	10k 1% 0.1W	5701	4822 157 60141	3.3μH	7402	4822 130 44235	BD237
3525	4822 053 11278	2k7 5% 2W	3716	4822 117 10353	150Ω 1% 0.1W	5704	4822 157 60123	6.8μH	7420	4822 130 10025	CNX82A
			3718	4822 117 10353	150Ω 1% 0.1W				7421	5322 130 44647	BC368
3525	4822 053 11278	2k7 5% 2W	3719	4822 117 11454	820Ω 1% 0.1W				7422	4822 130 10206	BUT11AX
			3720	4822 050 11002	1k 1% 0.4W				7423	5322 130 41983	BC858B
3525	4822 116 83876	270Ω 5% 0.5W	3722	4822 051 20472	4k7 5% 0.1W						
3526	4822 116 83883	470									

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