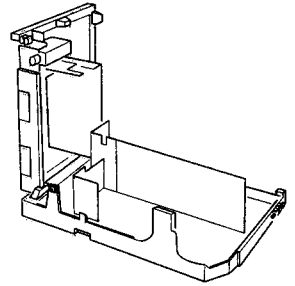


Service
Service
Service

MD1.2E
AA



Service Manual

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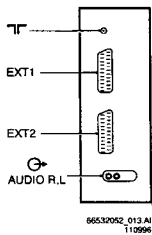
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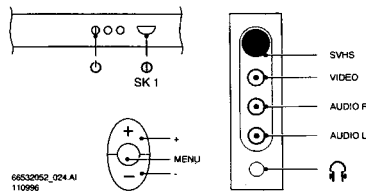
1. Technical specifications

Mains voltage	: 220-240V AC ($\pm 10\%$)
Power consumption	
nominal output power (Watt)	: 100 (21° 90°); 130 (110° SF 4:3); 150 (110° SF 16:9)
peak output power (Watt)	: 160 (21° 90°); 180 (110° SF 4:3); 220 (110° SF 16:9)
standby (Watt)	: 3 ($\pm 10\%$)
Mains frequency	: 50 Hz ($\pm 10\%$)
Pull-in range colour synchronisation	: $> \pm 300\text{Hz}$
Pull-in range horizontal synchronisation	: $> \pm 600\text{Hz}$

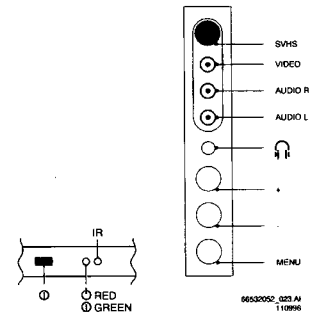
2. Connection facilities and Chassis overview



Rear connections



Front + Top control + Side I/O



Front + Side control + Side I/O

Specification of the terminal sockets

REAR

EXT1 - CVBS (in/out) + RGB (in) - tuner at output

EXT2 - CVBS (in/out) + SVHS (in)
- Input: EXT2 then output = tuner; input: other then output = input

Cinch - audio out

- ⊖ CINCH Audio L (red) ⊕ (0.5V_{RMS} < 1kΩ)
- ⊖ CINCH Audio R (white) ⊕ (0.5V_{RMS} < 1kΩ)

1	-	Audio	⊕ R (0.5V _{RMS} ≤ 1kΩ)
2	-	Audio	⊖ R (0.2-2V _{RMS} ≥ 10kΩ)
3	-	Audio	⊕ L (0.5V _{RMS} ≤ 1kΩ)
4	-	Audio	⊖ L (0.2-2V _{RMS} ≥ 10kΩ)
5	-	Blue	⊖ (0.7V _{pp} /75Ω)
6	-	Audio	⊖ L (0.2-2V _{RMS} ≥ 10kΩ)
7	-	Blue	⊖ (0.7V _{pp} /75Ω)
8	-	CVBS status	(0-2V: INT; 4,5-7V: EXT1-16/9; 9,5-12V: EXT1-4/3)
9	-	Green	⊖
10	-		
11	-	Green	⊖ (0,7V _{pp} /75Ω)
12	-		
13	-	Red	⊖
14	-	RGB status	⊖
15	-	Red	⊖ (0,7V _{pp} /75Ω)
16	-	RGB status	(0-0,4V: INT; 1-3V: EXT1/75Ω)
17	-	CVBS	⊖
18	-	CVBS	⊖
19	-	CVBS	⊕ (1V _{pp} /75Ω)
20	-	CVBS	⊖ (1V _{pp} /75Ω)
21	-	Earth screen	

1	-	Audio	⊕ R (0.5V _{RMS} ≤ 1kΩ)
2	-	Audio	⊖ R (0.2-2V _{RMS} ≥ 10kΩ)
3	-	Audio	⊕ L (0.5V _{RMS} ≤ 1kΩ)
4	-	Audio	⊖ L (0.2-2V _{RMS} ≥ 10kΩ)
5	-		
6	-	Audio	⊖ L (0.2-2V _{RMS} ≥ 10kΩ)
7	-		
8	-	CVBS status	(0-2V: INT; 4,5-7V: EXT2-16/9; 9,5-12V: EXT2-4/3)
9	-		
10	-		
11	-		
12	-		
13	-	C	⊖
14	-		
15	-	C	⊖ (300mV _{pp} /75Ω)
16	-		
17	-	CVBS	⊖
18	-	CVBS	⊖
19	-	CVBS	⊕ (1V _{pp} /75Ω)
20	-	CVBS/Y	⊖ (1V _{pp} /75Ω)
21	-	Earth screen	

FRONT

Audio/video in

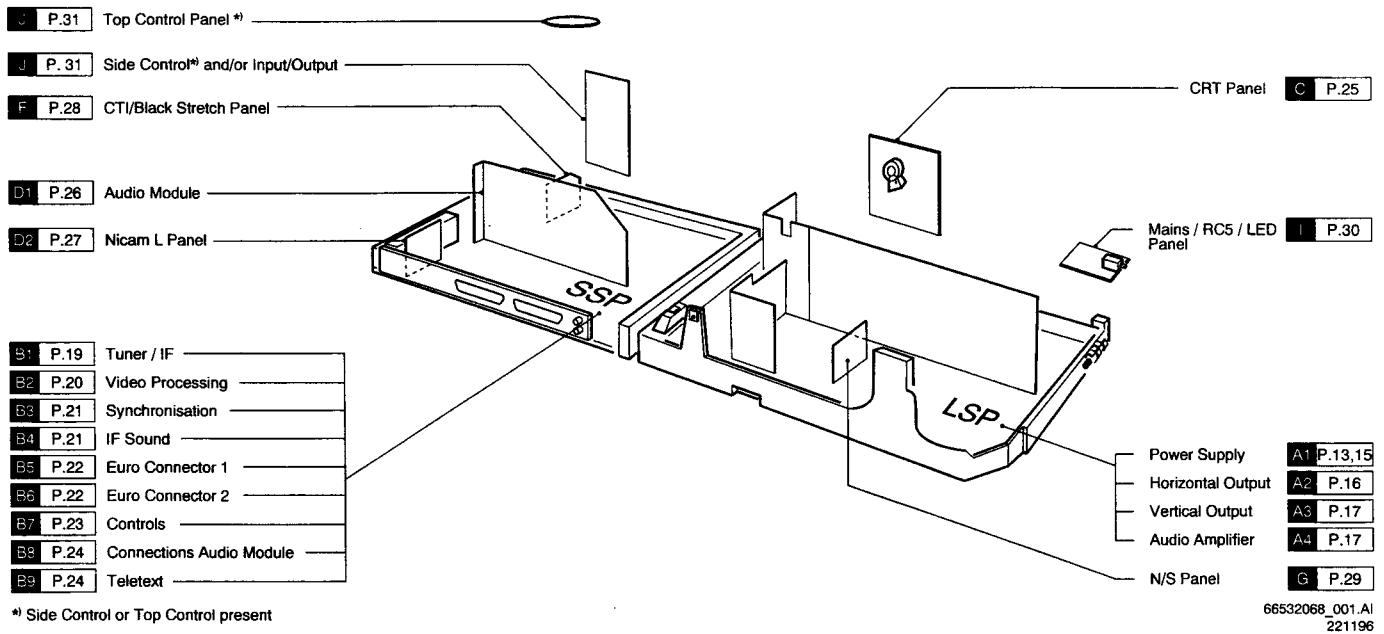
- ⊖ CINCH CVBS ⊖ (1V_{pp}/75Ω)
- ⊖ CINCH Audio L (red) ⊖ (2V_{RMS} ≥ 10kΩ)
- ⊖ CINCH Audio R (white) ⊖ (2V_{RMS} ≥ 10kΩ)

Headphone

⊖ 8-600Ω

SVHS

- ⊖ 1 - ⊖
- ⊖ 2 - ⊖
- ⊖ 3 - Y ⊖ (1V_{pp}/75Ω)
- ⊖ 4 - C ⊖ (0,3V_{pp}/75Ω)



3. Safety instructions for repairs, Maintenance instructions, Warnings and Notes

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 sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten the life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the earth of the unit. Keep components and tools also at this same potential.
3. Together with the deflection unit and any multipole unit, the flat square picture tubes used form 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 when taking 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 with a lightning bolt) as this is called.
2. The direct voltages and oscillograms shown in the diagrams should be measured in the **Service Default Mode** (see chapter 8) 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 (D) and in standby (C). 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.

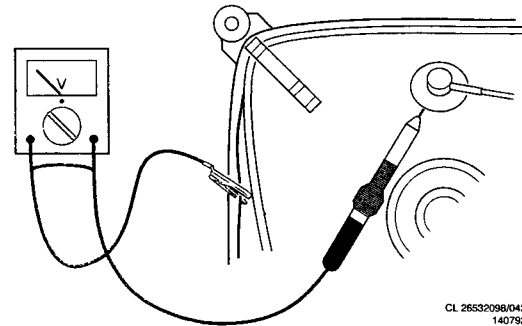



Figure 3.1



Manufactured under license from Dolby Laboratories Licensing Corporation.

DOLBY, the double-D symbol  and PRO LOGIC are trademarks of Dolby Laboratories Licensing Corporation.

The MD1.2E chassis has two different mechanical executions.

4.1 Styling with top control and side input/output (also applicable for MD1.1E Widescreen)

Removing the rear cover

1. First all screws on the rear cover have to be removed.
 - 4 Screws are located at each corner of the cabinet.
 - 2 Screws are located at the left and right bottom corners of the rear cover.
 - 4 Screws are fixed at the 4 corners of the I/O panel with the Euroconnectors and aerial input.
2. The rear cover is now held in position by 6 clicks between the cabinet and the rear cover. There are 2 clicks at the left, 2 at the right and 2 at the top. After loosening all clicks (by releasing them with a screwdriver), the rear cover can be removed.
3. The cover plate on the I/O panel with the Euroconnectors and aerial input can be removed in the following way: remove the screw in the middle, release the click connection at the bottom and lift the cover plate.

Process position

The process position provides easier access to the entire chassis.

1. Release the mains cord from its fixation brackets.
2. Push back the clicks between bottom plate and rear cover and pull the cabinet at the same time backwards.

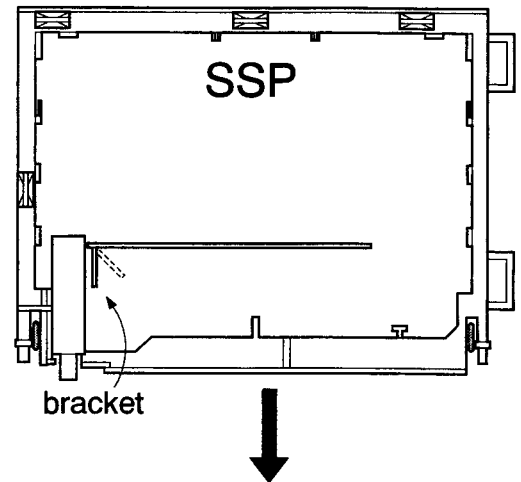
For some service positions cables may have to be removed from their cable clamps and channels. Afterwards, put the cables back in their original position.

Service positions

Small Signal Panel (SSP) component side (Figure 4.1)

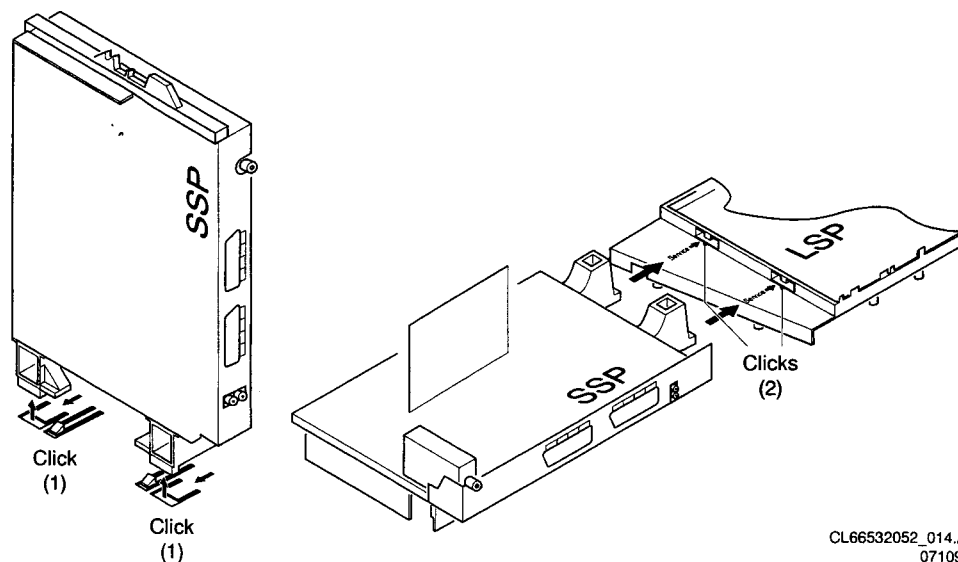
1. Push down the clicks of the SSP bracket (1) and shift the SSP to the left.
2. Pull up the SSP and tilt the SSP counter clockwise to a horizontal position (180° with Large Signal Panel (LSP)).
3. Put the SSP in the clicks (2) marked "Service" on the bottom plate.

When all cables on the SSP are disconnected, the SSP can also be removed from its bracket (Figure 4.2), providing better access to component and copper side.



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100496

Figure 4.2



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Figure 4.1

LSP component side (Figure 4.3)

1. Put the SSP in the horizontal service position as described above.
2. Remove screw (3) from the LOT bracket.
3. Remove the bracket by releasing click (4) and pulling the bracket upwards.
4. Release clicks (5) and (6).
5. Lift the LSP PWB out of its bracket (indicated by the arrow) and pull it a little back.

Warning! The heat sinks are not connected to ground.

LSP copper side with table/workbench (Figure 4.4)

1. Disconnect the cable to the degaussing coil (yellow connector L02 on LSP).
2. If necessary, disconnect the cable on the left loudspeaker.
3. Lift the LSP from its bracket as described above (LSP component side).
4. Turn the LSP underneath the CRT panel (keep cable S15/L15 UNDER the audio module) as indicated by the arrow (7).

The LSP now rests on the bottom plate, held in place by the cable clamp on the heat sink and the LOT bracket.

Warning! Be careful not to damage the CRT-panel or picture tube neck.
The heat sinks are not connected to ground.

SSP and LSP copper side without table/workbench (Figure 4.5)

For this service position MD1 cable extension kit (service code number 4822 320 11695) is required.

1. Break the service pin (marked M1 - see Figure 4.3) from its position at the right hand side of the bottom plate.
2. Disconnect the cable to the degaussing coil (yellow connector L02 on LSP) and the cable on the left loudspeaker.
3. Remove cables S10/L10, S11/L11 and S15/L15 from LSP to SSP and cable I28/L28 from Audio module to LSP.
4. Lift the LSP from its bracket as described earlier (LSP component side).
5. Put the LSP to the vertical position (Figure 4.5), copper side at the right hand, LOT above (8). For this position, special grooves are made in the bottom plate of the cabinet.
6. Fix the position of the LSP by putting the service pin between LSP (heat sink) and bottom plate (9). There are special holes in the heat sink and the bottom plate to put the service pin in.
7. Reconnect cable I28/L28.
8. Use the cables from the MD1 cable extension kit to reconnect connectors S10/L10, S11/L11 and S15/L15.

Warning! All cables should be reconnected correctly.

After use the service pin can be placed in the spare hole at the right hand side in the bottom plate.

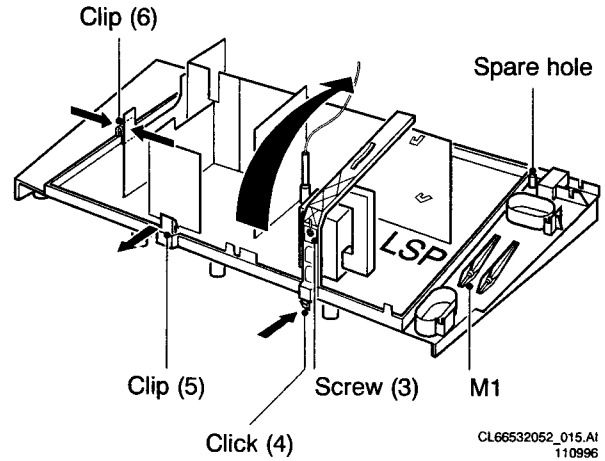


Figure 4.3

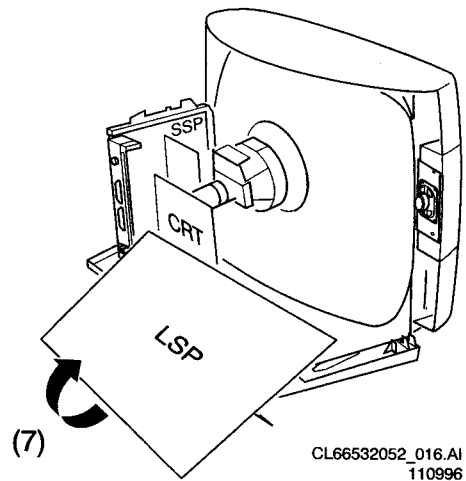


Figure 4.4

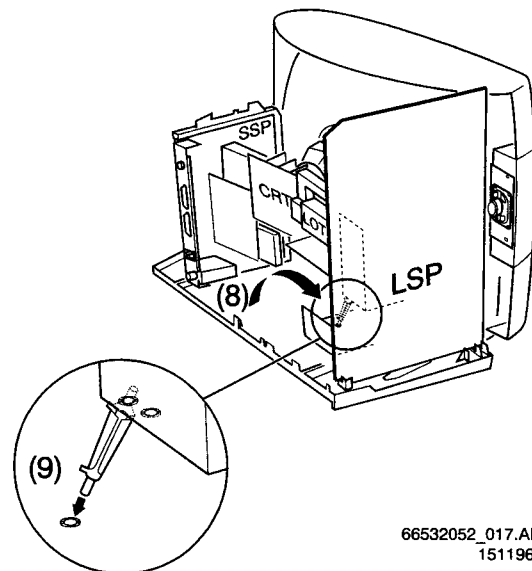


Figure 4.5

Accessing the module with mains switch, LED and RCS receiver (Fig. 4.6)

1. Cut the tie rap of the degaussing coil at the left hand bottom side (10). Remove the degaussing coil in the left bottom corner from its fixation bracket (11) to get more space to handle the mains module.
2. Remove the red mains panel bracket by lifting the end and pulling it backwards (12).
3. To get more movement space, the left top of the cabinet can be pushed or pulled upwards (13).
4. The mains panel can now be removed.

Afterwards the degaussing coil should be retied at position (10).

4.2 Styling with side control and side input/output (no top control)

Removing the rear cover

1. First all screws on the rear cover have to be removed.
 - 6 Screws are located at the corners of the cabinet.
 - 2 Screws are located at the left and right bottom of the rear cover.
 - 3 Screws are located just above, under and left of the cover plate of the I/O connections.

For some service positions cables may have to be removed from their cable clamps and channels. Afterwards, put the cables back in their original position.

Process position

The process position provides easier access to the entire chassis during the service positions.

1. The chassis can be lifted, pulled forward (± 5 cm) and fixed in the bottom plate.
2. When the clicks between bottom plate rear cover are pushed back, the chassis and the bottom plate can be pulled backwards.

Service positions

SSP copper and component side, module servicing (Figure 4.7)

1. Release the click construction (14) between the SSP and LSP.
2. Lift the SSP a little and turn it to an angle of 135° (15) or 180° (16) from the LSP.
This provides better access to the component side of the SSP and also allows for the removal of modules.

Service position with table/workbench (Fig. 4.8)

1. Disconnect the cable to the degaussing coil (yellow connector L02 on the LSP).
2. Lift the chassis from the bottom plate and pull it backwards (17).
3. Turn the entire chassis around the CRT panel (18). The chassis rests on the SSP with the copper side of the LSP backwards.

Warning! Be careful not to damage the CRT-panel or picture tube neck.
The heat sinks are not connected to ground.

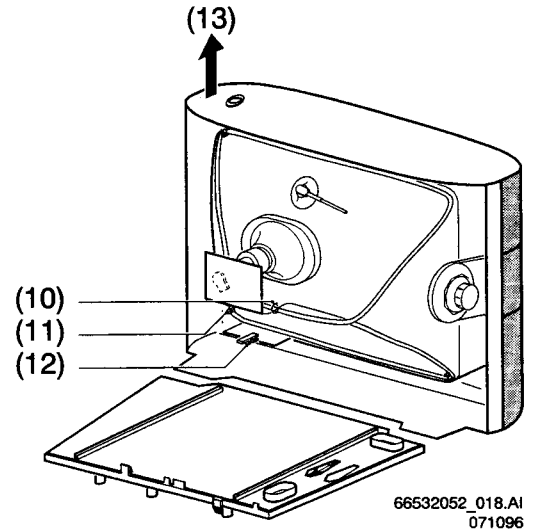


Figure 4.6

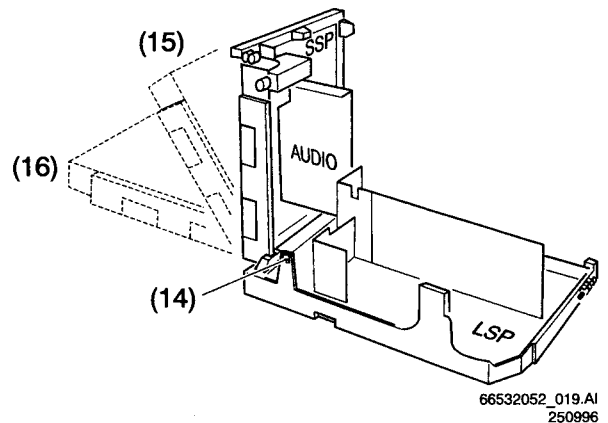


Figure 4.7

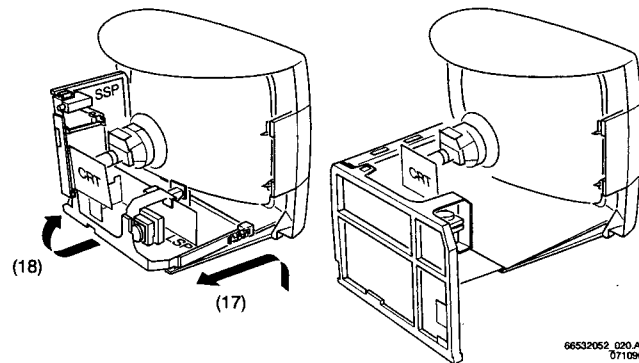


Figure 4.8

Service position (LSP copper side) without table/workbench (Fig. 4.9)

1. Disconnect the cable to the degaussing coil (yellow connector L02 on the LSP).
2. Lift the chassis from the bottom plate and turn it counter clockwise (19).
3. The SSP can be fixed with a screwdriver to the bottom plate (20). The copper side of the LSP can now be accessed.

Warning! Be careful not to damage the CRT-panel or picture tube neck.
The heat sinks are not connected to ground.

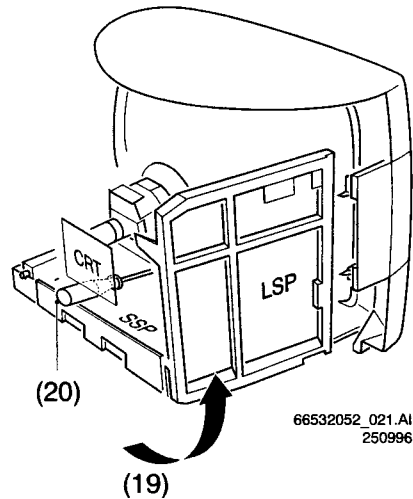


Figure 4.9

Small Signal Panel (Fig. 4.2)

First, remove all cables connected to the Small Signal Panel. The SSP can be removed by sliding it out of the SSP bracket (in the direction of the arrow).

Large Signal Panel (Fig. 4.10)

After removing the screw (21), and pushing back the clips (22), the LSP can be lifted out the bracket as indicated by the arrow.

Accessing the panel with mains switch, LED and RC5 receiver

The mains module is located in the middle of the set, below the picture tube.

1. Push the clicks between bottom plate and rear cover back and pull the chassis back as far as possible.
2. Release the click construction (14 - Fig. 4.7) between the SSP and LSP, lift the SSP a little and turn it to an angle of 180° (16 - see Fig. 4.7) from the LSP. The mains panel can now be accessed when reaching over the SSP/LSP.
3. Remove the 2 screws left and right on the mains panel bracket. The complete mains panel can now be removed by pulling it backwards.

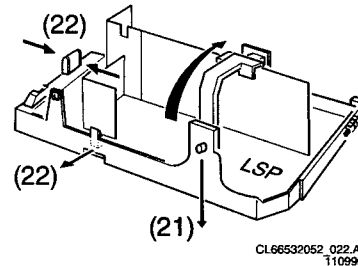
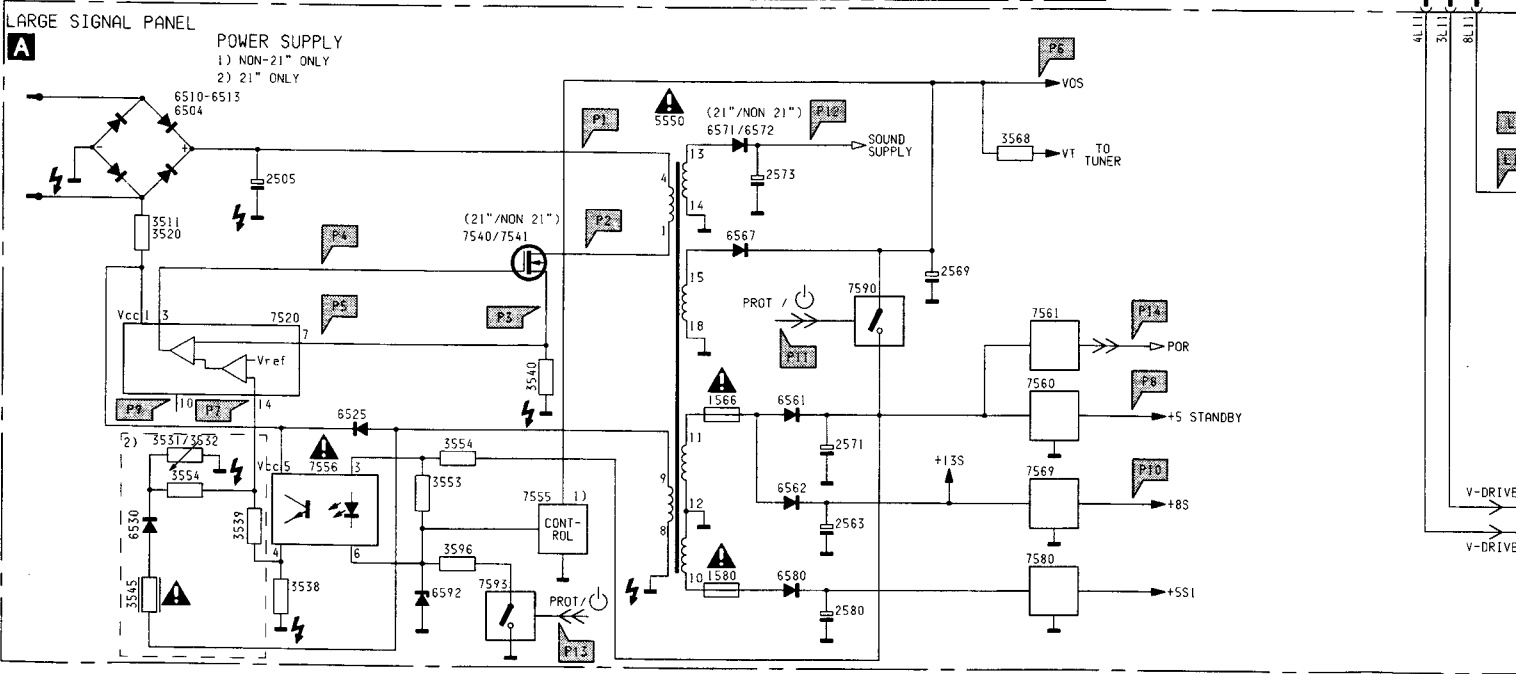
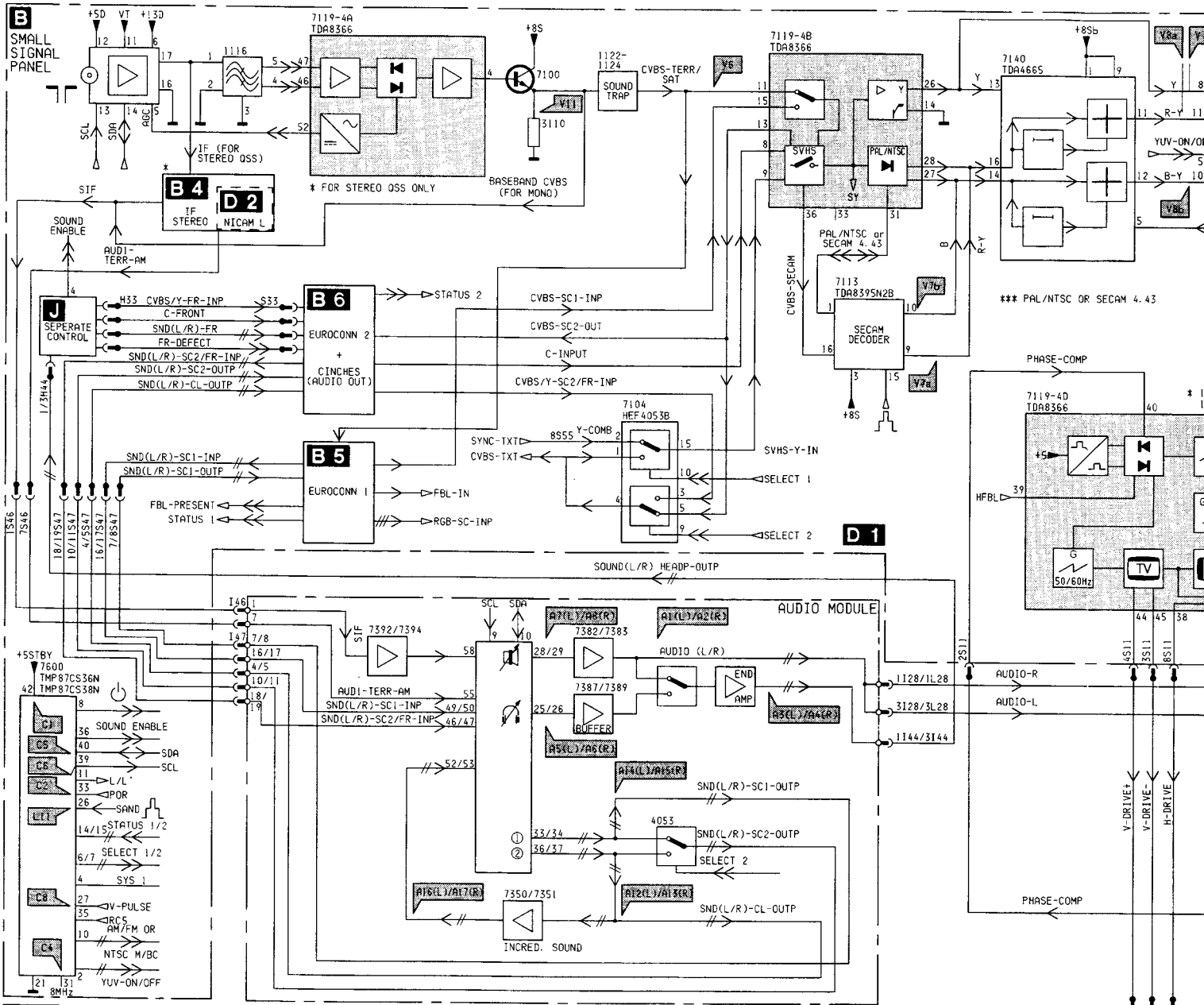
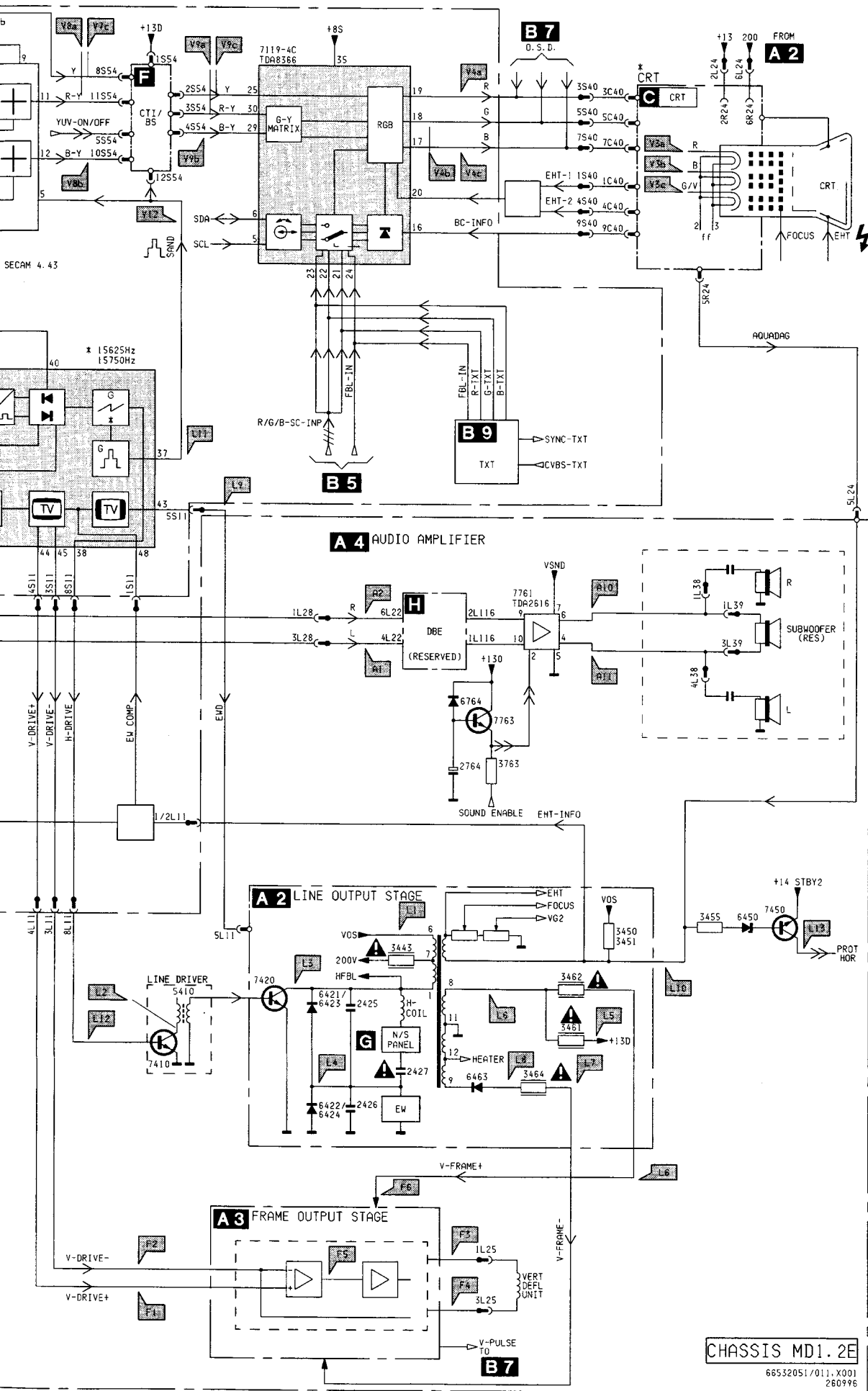


Figure 4.10





SECAM 4.43

A 4 AUDIO AMPLIFIER

A 2 LINE OUTPUT STAGE

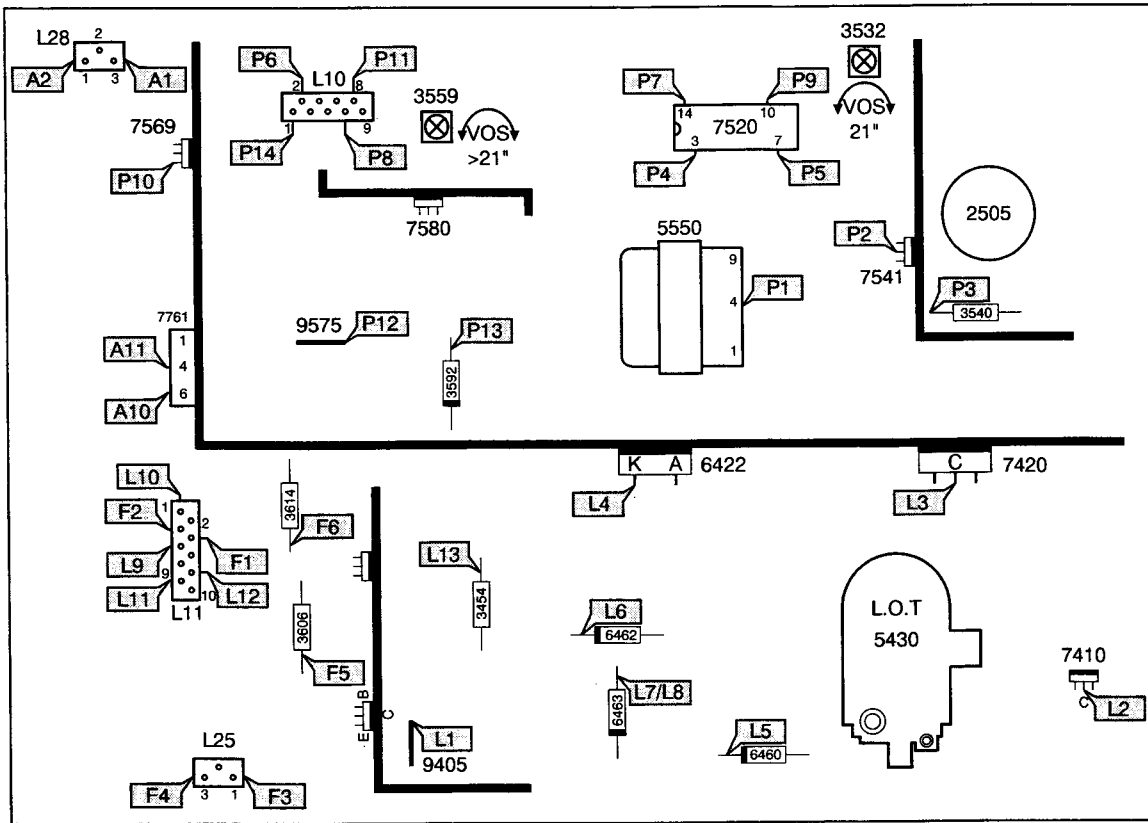
A 3 FRAME OUTPUT STAGE

CHASSIS MD1.2E

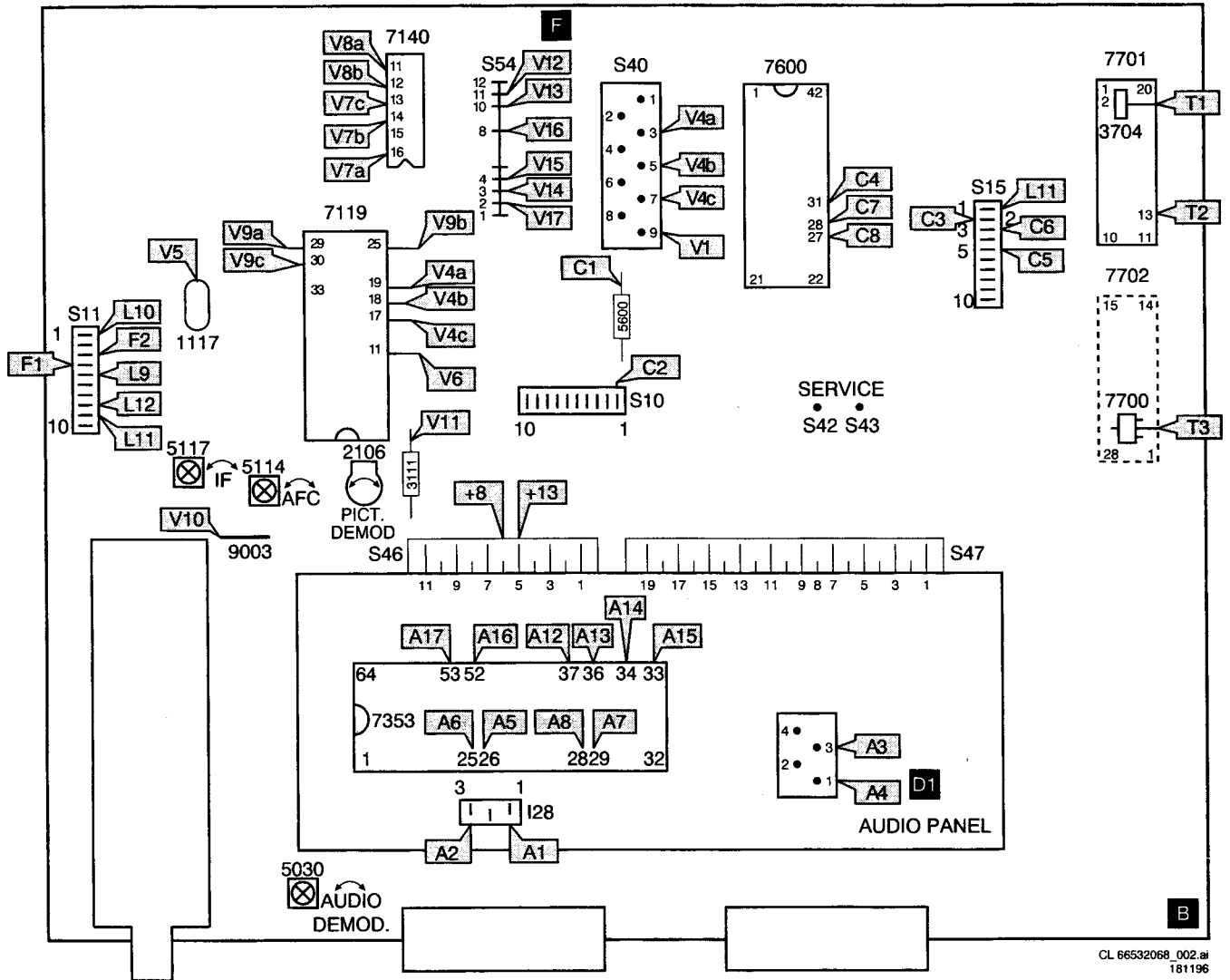
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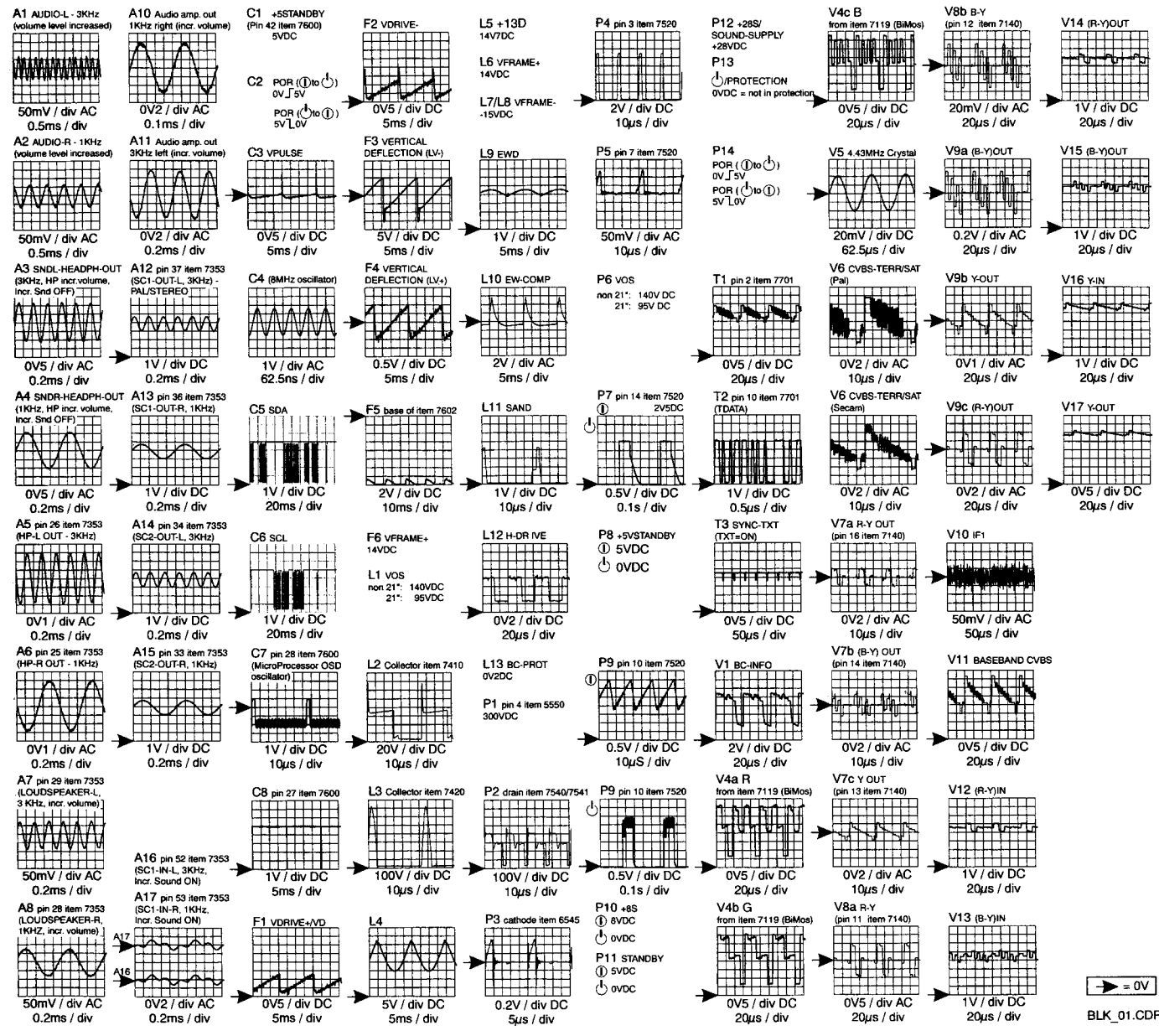
Testpoint overview / Testpunkt Übersicht / Relevé des points de test

Large signal panel / Groß-Signal Platine / Platine forts signaux



Small signal panel / Klein-Signal Platine / Platine petits signaux



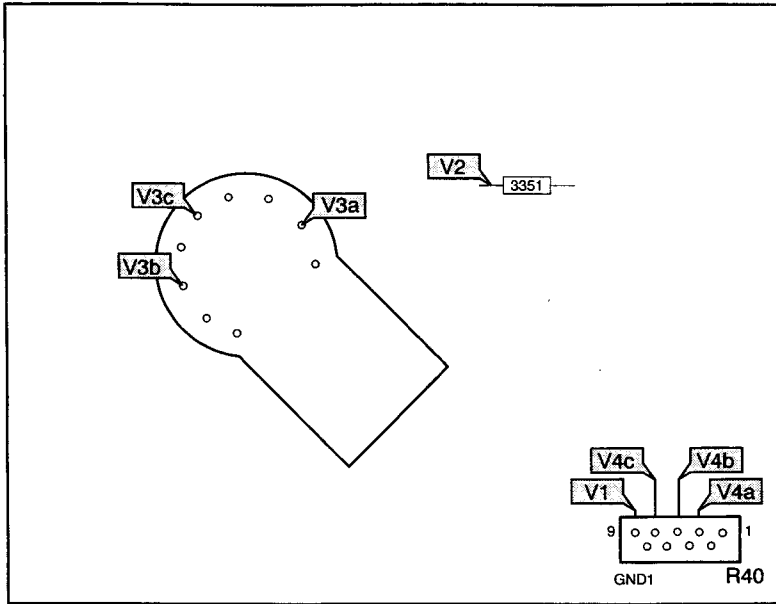


→ = 0V
BLK_01.CDR

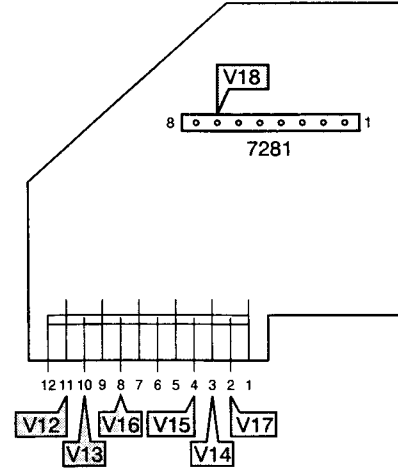
Testpoint overview / Testpunkt Übersicht / Relevé des points de test

CRT panel / CRT-Platine / Platine tube cathodique

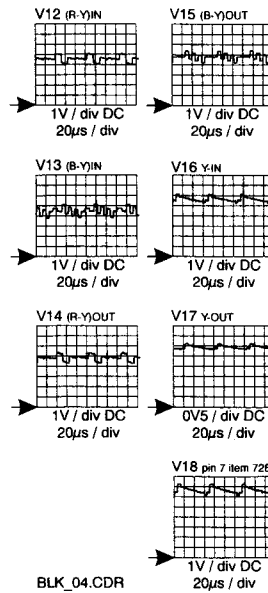
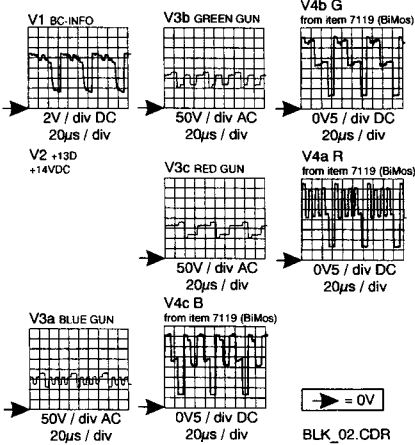
CTI/Black Stretch panel /
CTI/Black Stretch Platine /
Platine CTI/Black Stretch



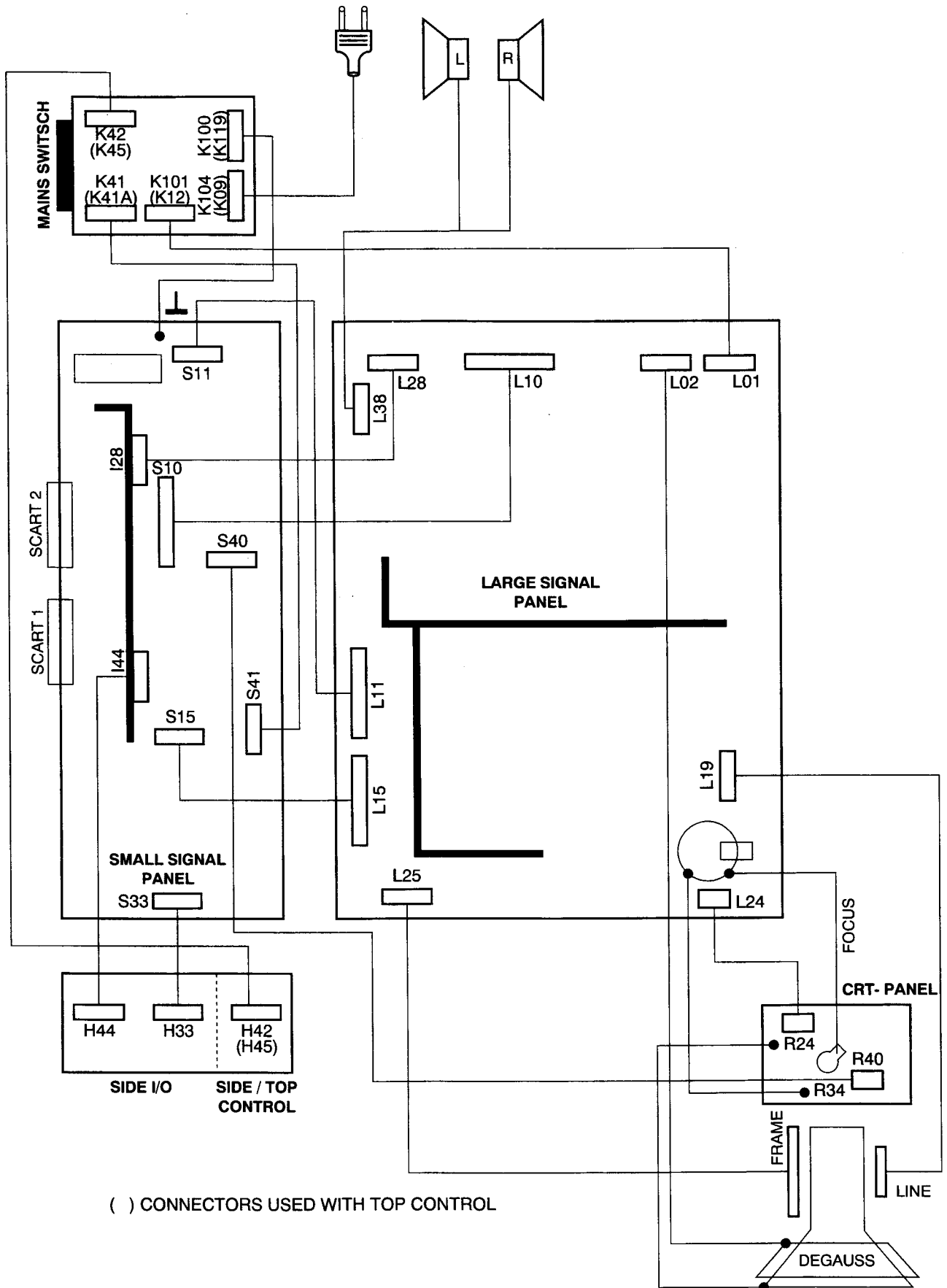
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Wiring diagram / Verdrahtungsschema / Schéma de câblage



6. Service Modes, DST, Error messages, Protections, Faultfinding and Repair tips

In this chapter the following paragraphs are included:

- 6.1 Test points
- 6.2 Service Modes and Dealer Service Tool (DST)
- 6.3 Error codes and "blinking LED" procedure
- 6.4 Protections
- 6.5 Fault finding and repair tips

6.1 Test points

The MD1 chassis is equipped with test points in the service printing. These test points are referring to the functional blocks:

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

6.2 Service modes and Dealer Service Tool (DST)

For easy installation and diagnosis the dealer remote control RC7150 is introduced. The RC7150 can be used for all new TV sets, including all set of the MD1 chassis. The RC7150 is also called Dealer Service Tool or DST. The ordering number of the DST (RC7150) is 4822 218 21232.

6.2.1 Installation features for the dealer

The dealer can use the RC7150 for programming the TV-set with presets, TV-settings, Dish settings.

10 Different program tables can be programmed into the DST via a GFL or MD2 TV-set (downloading from the GFL or MD2 to the DST; see GFL or MD2 service manuals) or by the DST-I (DST/PC interface; ordering code 4822 218 21277). For explanation of the installation features of the DST, the directions for use of the DST are recommended (For the MD1 chassis, download code 4 should be used).

6.2.2 Diagnose features for the servicer

The MD1.2 sets can be put in the two service modes via the DST RC7150. These are the Service Alignment Mode (SAM) and the Service Default Mode (SDM). SDM can also be entered by short circuiting the "service" pins on the SSP.

6.2.2.1 Service Default Mode (SDM)

Entering the SDM:

- By transmitting the "DEFAULT" command with the RC7150 Dealer Service Tool.
- By temporarily shorting pins S42 and S43 on the Small Signal Panel.

Exiting the SDM:

- Switch the set to stand-by (the error buffer is also cleared).

Note: *When the mains power is switched off while the set is in SDM, the set will enter to SDM immediately when the mains is switched on again.*

The SDM has the following pre-defined conditions for all microprocessor controlled tuning and linear functions:

- For recognition of the SDM "SER" is displayed at the top of the screen.
- Tuning at 475.25 MHz (Secam on Multi-France sets (with Nicam L), PAL on other sets).
- Volume level is set to 25% (of the maximum volume level). Other picture and sound settings are set to 50%.
- Auto switch off disabled (normally the set is automatically switched off when no video signal (IDENT) was received for 15 minutes).
- Sleep timer is disabled.
- All other controls operate normally.
- *When the microprocessor supports the "blinking LED" procedure (See 6.3) and an error code is present in the error buffer, the LED will blink the number of times, equal to the value of the last error code.*
This function will also work when there is no sound or picture.

6.2.2.2 Service Alignment Mode (SAM)

Entering SAM:

- By transmitting the "ALIGN" command with the RC7150 Dealer Service Tool (this works both while the set is in normal operation mode or in the SDM).
- By pressing the "MENU" and "-" key on the local keyboard simultaneously when the set is in SDM.

Exiting SAM:

- Switch the set to stand-by.

Note: *When the mains power is switched off while the set is in SAM, the set will enter SDM immediately when the mains is switched on again.*

In the SAM the following information is displayed on the screen:

- Software version (the software version of the microprocessor in the set is displayed. This software version identification corresponds with the software versions in the Software Survey as published in the Product Survey.
- Error code buffer (see paragraph 6.3).
- Options (see paragraph 8.4).
- Alignment and geometry information (see paragraph 8.2.1, 8.3.1 and 8.3.2).

- (1) Software version
- (2) Error buffer
- (3) Options
- (4) Alignments and geometry

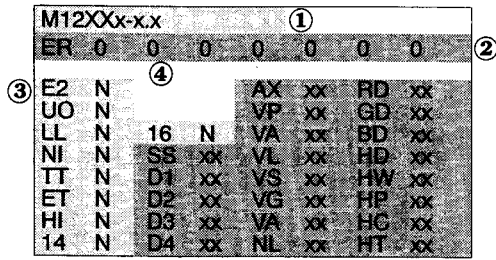


Figure 6.1 Screen of the Service Alignment Mode (SAM)

6.3 Error codes and “blinking LED” procedure

The error code buffer contains all errors detected since the last time the buffer was erased. The buffer is written from left to right.

- The last error detected (actual) is the error at the left side
- The error buffer will be reset in the following cases:
 1. exiting the SAM with the “standby” command on the remote control
 2. transmitting the commands “DIAGNOSE 9 9 OK” with the DST
- By leaving the SAM with the mains switch, the error buffer is not reset.

Examples:

ERROR: 0 0 0 0 0: No error code detected
 ERROR: 3 0 0 0 0: Error code 3 is the last and only detected error
 ERROR: 5 3 0 0 0: Error code 3 first and error code 5 last detected

The contents of the error buffer can also be made visible through the “blinking LED” procedure. This is especially useful when there is no picture. There are two methods:

1. When the SDM is entered, the LED will blink the number of times, equal to the value of the *last* error code. The LED will stay off briefly and blink again the number of times, equal to the value to the *last* error code
2. With the DST *all* error codes in the error buffer can be made visible. While in SDM, transmit the command: “DIAGNOSE x OK” where x is the position in the error buffer to be made visible x ranges from 1, (the last (actual) error) to 7 (the first error)

The LED will operate in the same way as in point 1, but now for the error code on position x.

Example:

Error code position 1 2 3 4 5 6 7
 Error buffer 2 4 1 0 0 0 0

- after entering SDM blink (2x) - pause - blink (2x)
- after transmitting “DIAGNOSE 2 OK” with the DST blink (4x) - pause - blink (4x)
- after transmitting “DIAGNOSE 3 OK” with the DST blink - pause - blink
- after transmitting “DIAGNOSE 4 OK” with the DST nothing happens

Note! Note that it may take up to 7 seconds before the set responds to a DIAGNOSE command. Interruption of the blinking sequence may lead to incorrect results.

Important! Not all software versions of the MD1.2E chassis support the blinking LED procedure and the DIAGNOSE 99 command. Software versions NOT supporting the blinking LED procedure are M12BAX-x.x and M12COx-3.x.

Error code	Error description	Blinking LED	Possible defective components
0	No error detected	—	—
1	BIMOS (TDA8366) error	1x	IC7119 (SSP)
2	MSP3400/3410 error	2x	IC7353 (SSP)
3	I ² C bus error	3x	All I ² C-related components
4	Wrong EEPROM	4x	IC7685 (SSP)
5	EEPROM defective	5x	IC7685 (SSP)
6	Tuner error	6x	U1000 (SSP)
7	TXT error	7x	IC7702 (SSP)
8	Histogram Proc. error	8x	IC7210 (reserved)
9	16:9 processor error	9x	IC7440 (16x9 module)
10	WSSB module error	10x	IC7540 (WSSB module)
11	Dolby processor error	11x	IC7600 (Audio module)

Table 6.1 Error code list

Protections, Faultfinding and Repair tips

6.4 Protections

6.4.1 In the MD 1.2E the following protections are possible:

Protections generated by the power supply:

- Overload protection → Hick up mode
- Underload → Hick up mode
- Over voltage → Hick up mode
- Under voltage → Hick up mode

Deflection:

- Horizontal Protection → Supply to standby
- EW-Protection → Supply to standby
- Vertical Protection → BIMOS standby mode

Software protection

- BIMOS IC7119 defective → (Error code 1)
Set can be switched between standby and ON, but there is no picture, no OSD, sound is only noise.
- SDA or SCL shorted → (Error code 3)
Set is switched to standby via standby line, set tries to restart.
- No +5Db or +8Sc at μC → Set is switched to standby via standby line, set tries to restart.

6.4.2 Power supply protections

The power supply will go to a very good audible hick-up mode in the following situations:

- Overload protection
- Under load
- Over voltage
- Under voltage

In hick-up mode

Pin 1 of IC7520 starts up from the start circuit for approximately 2 seconds, immediately after that the protection is activated. This cycle is constantly repeated in hick-up mode. When the set is in hick-up mode a short squeak is audible every 2 seconds.

6.4.3 Horizontal-protection

When the beam current becomes too high for a long period the voltage across C2450 will drop. D6450 will start conducting and as soon as the voltage drop across R3456 is 0V7, TS7450 will conduct, making PROT high.

Via the hold-circuitry of the power supply, the set will stay in the protection mode (standby) and can only be reset by switching the set off and on via the mains switch. If the fault is still present, the set will switch to standby (protection mode) again.

6.4.4 EW-protection (not for 21" sets)

The East/West protection switches the power supply to standby via the signal line STANDBY-SUPPLY PROTECTION. Via the hold-circuitry of the power supply, the set will stay in the protection mode (standby) and can only be reset by switching the set off and on via the mains switch. If the fault is still present, the set will switch to standby (protection mode) again.

The East/West protection detects when the current through the East/West power output stage with TS7480 is too high.

Note: *A current through the East/West stage that is too high can be caused by a defective part in the line-deflection circuitry!*

The current through the East/West stage is measured on the LSP via 2 precision resistors (R3483 and R3484). In case of a line problem, the east/west-current becomes too high and the voltage across resistors R3483 and R3484 rises. When the voltage level exceeds 0.6V, D6480 starts to conduct and STANDBY-SUPPLY PROTECTION becomes HIGH. When the voltage across C2480 is very high

(e.g. when a line problem is already present when the set is switched on with the mains switch), D6481 and D6482 conduct and EW-PROTECTION is activated very fast.

The East/West protection becomes active in the following cases:

1. Bad contacts of horizontal deflection circuit:
 - bad contacts of horizontal deflection coil
 - bad contacts of linearity corrector coil L5421
 - bad contacts of S-correction capacitor C2427
 2. Bad contacts of flyback capacitor C2425.
 3. Shorted flyback diode D6421 or D6423.
 4. Shorted S-correction capacitor C2427.
 5. Bad solder contacts in the line output stage.
- When EW-protection has been active, the line output transistor 7420 may also be defective.

6.4.5 Vertical-protection

The vertical output stage creates VERTICAL-PROTECTION pulses at every flyback pulse when it is functioning correctly. These pulses are sensed by the BIMOS IC7119-4D on pin 37. When the pulse train is interrupted, the BIMOS will switch to BIMOS STANDBY mode. In the BIMOS STANDBY mode, the BIMOS switches off the VDRIVE+ and VDRIVE- while the RGB outputs are blanked. Circuit breaker 1463 may be open. Probably, the line output stage will not work and the power supply will switch to hick-up mode (under voltage protection).

6.4.6 Software protection

The software protection is managed by the microprocessor. It continuously verifies the presence of the +5 and +8 supply voltages on pin 34 and the activity of the I²C bus. When the protection becomes active, the software will switch the power supply on and off continuously via the STANDBY line. In this situation the power supply produces a squeaking sound.

- I²C protection
The I²C bus is controlled at each I²C-command. Therefore every I²C command has a defined start/stop condition. When the defined start/stop condition is repeatedly incorrect, error 3 is placed in the error buffer and the set switches to software protection. I²C-protection is generated in the following situations:
 - SDA shorted to earth
 - SCL shorted to earth
 - SDA and SCL shorted
 When SCL or SDA is shorted, the set tries to restart and the LED lights in a clearly recognisable pattern.
 - SDA/SCL shorted when the set is switched ON with the mains switch:
LED is 8 seconds RED, 8 seconds GREEN, flashes RED, 8 seconds GREEN, flashes RED, etcetera.
 - SDA/SCL shorted during operation
LED is 8 seconds GREEN, flashes RED, 8 seconds GREEN, flashes RED, etcetera.
- +5Db and +8Sc protection of the microprocessor
+5Db and +8Sc are the main supply voltages of the entire small signal processing of the set. At pin 34 the microprocessor senses whether the supply voltages +5SDB or +8SC coming from the power supply are present. When one or both the supply voltages are missing, the set switches to software protection.

6.5 Fault finding and repair tips

Note that for 21" sets, voltages and wave forms may differ.

6.5.1 General

LED indication after start-up procedure is completed

- No LED
Set is switched OFF, supply problem or microprocessor problem.
- LED continuously
Set is in standby, control part defective, standby mode defective.
- LED blinking
Set in SDM, transmitting error buffer.

Audible checks

- Demagnetisation audible: mains voltage is present at LSP.
- EHT audible: supply is operational (line output stage only works in case VOS (+140V for 25 & 29"; +95V for 21") is present.
- Hick-up sound power supply audible: power supply is shorted. Check the LOT (item 5430) and the line output transistor TS7420.

6.5.2 Fault finding in the power supply

In case of a power supply problem, the power supply can be simplified to a stand alone power supply at low voltages (low risk) as follows:

Control part of the power supply

1. Disconnect the SSP (as a result the line will not function any more and therefore will no longer be a load of the power supply) or disconnect the line by removing jumper 9400 and R3400 (if present) on the LSP.
2. Connect an external DC power supply between supply pin 1 IC7520 (via a diode - e.g. BYD33D - with cathode to supply pin 1 IC7520) and hot earth (e.g. earth of the big smoothing capacitor C2505).
3. Connect a oscilloscope to test point P4 at pin 3 IC7520.
4. Turn up the external DC supply voltage slowly to 17V DC.

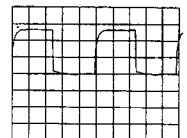
Remark:

The IC starts at a supply voltage of 14V DC, after that the supply voltage can drop to approx. 9V DC. At approximately 18V DC, over voltage protection becomes active, resulting in a supply voltage drop below 7V DC before a new start-up is performed by turning up the supply voltage above 14V DC.

5. The correct (measured) situation is displayed in . Other results indicate a defect in the power supply control part (IC7520 or peripheral components at pins 10 or 11).

Figure 6.2:

5V/div; 5uS/div
→ 40KHz pulse



Energy transfer of the power supply (only if control part is OK)

6. Apply action 1, 2 and 4 as described earlier.
7. Connect a lamp of 230V/100W across the VOS output capacitor C2569.
8. Connect a 1kΩ resistor between the +5STANDBY (connector 7L10) and the STANDBY line (connector 8L10) to switch the power supply to normal operation.
9. Connect the mains connector to a VARIAC but leave it at 0.
10. Connect a voltmeter across C2569 and an oscilloscope between the drain of TS7541 (25 & 29") or TS7540 (21") and hot earth.
11. Slowly increase the mains input voltage by the VARIAC (in this way further damage to the power supply can be avoided).

Protections, Faultfinding and Repair tips

The wave forms for the following mains voltage are given:

Mains in voltage

10V AC: 20kHz and VOS 7V5

20V AC: 40kHz and VOS 30V

40V AC: 40kHz and VOS 80V

65V AC: 40kHz and VOS 140V

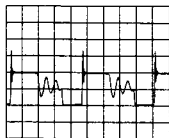
> 65V AC: Stable situation, so 40kHz and 140V

In case of a feedback problem, the situation will not stabilise or the voltage will exceed 140V (95V with 21")

1. Figure 6.3:

Mains in 10V AC

10V/div; 10 μ s/div



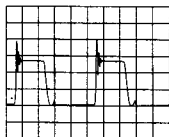
2. Figure 6.4:

Mains in 20V AC

20V/div; 5 μ s/div

→ 40kHz pulse

→ VOS 30V



3. Figure 6.5:

Mains in 40V AC

50V/div; 5 μ s/div

→ 40kHz pulse

→ VOS 80V



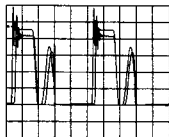
4. Figure 6.6:

Mains in 65V AC

50V/div; 5 μ s/div

→ 40kHz pulse

→ VOS 140V



6.5.3 Fault finding of the horizontal circuitry

When the horizontal circuitry itself is defective, it can be simplified to a stand alone "switched mode supply" at low voltages (low risk) as follows:

1. Disconnect the set from mains.
2. Disconnect the SSP by removing all cables to the SSP.
3. Connect an external 50V DC (or 40V DC) supply with current measurement possibility across C2400.
4. Replace the HDRIVE by an external LF generator (TTL level (between 0 and 5V); duty cycle 50%) with a 16 kHz pulse at the base of TS7410 (near LOT at the side of the PCB).
5. Connect an oscilloscope to test point L1 (collector of line output transistor 7420).

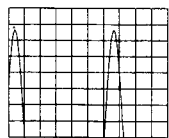
Possibilities:

1. Figure 6.7:

L3; test point at collector line output transistor (7420)

50V/div; 10 μ s/div

Current from external DC supply approx. 100mA



Observation: normal 16kHz pulses and 100mA supply current

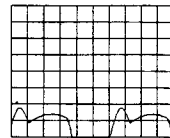
Correct horizontal circuitry

Note that the amplitude of the signal strongly depends on the frequency of the generator.

2. Figure 6.8:

L3; test point at collector line output transistor (7420)

50V/div; 10 μ s/div



Line deflection open:

Current from external DC supply is approximately 100mA.

Observation: small pulse followed by wide pulse and 100mA supply current

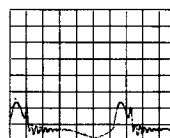
Causes: horizontal deflection coil open
linearity coil L5421 open
S-correction C2427 open

3. Figure 6.9:

L3; test point at collector line output transistor (7420)

50V/div; 10 μ s/div

Current from external DC supply approx 500mA !!



Observation: fast oscillations and 500mA supply current

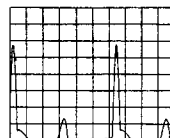
Cause: horizontal deflection shorted (e.g. line deflection coil shorted)

When the line deflection is not completely shorted but only a number of windings are shorted, the wave form does not show the oscillation and the current of the external DC supply is approximately 200mA.

4. Figure 6.10:

L3; test point at collector line output transistor (7420)

100V/div; 10 μ s/div



Current from external DC supply is approximately 150mA

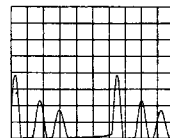
Observation: flyback time is shorter, one extra pulse in between, 150mA supply current

Cause: flyback capacitor C2425 open

5. Figure 6.11:

L3; test point at collector line output transistor (7420)

100V/div; 10 μ s/div



Current from external DC supply > 1A

Observation: 2 pulses per cycle extra and supply current from more than 1A

Cause: short-circuit in picture tube (e.g. EHT to Aquadag)

6.5.4 Fault finding “no picture, no protection” (problem in the video controller IC part TDA8366-4C)

When there is no picture and no protection, it is most likely that there is a problem with the BC_INFO caused by the TDA8366, the RGB amplifiers or the picture tube.

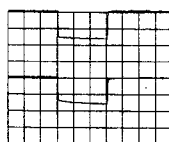
For measuring, connect a video generator (e.g. PM5518) at the aerial input with a white pattern to the tuner. Trigger the oscilloscope field frequent. A stable picture is obtained if triggered with VDRIVE+ at pin 4 S11.

Normal start up procedure

1. First phase of start up; 4 white measuring lines (lines 15, 16, 17, 18) and the main picture is muted (wave forms are better visible if the picture tube is cold);

Figure 6.12:

Red (pin 8 of connector R43 on the CRT panel) and green gun (pin 6) 100V/div DC; 100µs/div



The total beam current is measured and fed back to pin 16 TDA8366 (IC7119)

The TDA8366 checks the voltage at pin 16 of the TDA8366 during these lines

< 4.5V : set remains in this phase

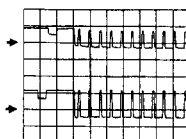
≥ 4.5V : set continues with start up phase 2

2. Second phase of start up; each beam is separately measured and the main picture is still muted. Line 15 is Red, line 16 is Green and line 17 is Blue. BC_INFO is measured.

- differences between the lines (guns) are compensated
- when the differences are minimal the set continues with phase 3, otherwise it remains in phase 2

Figure 6.13:

Red (lower line) (pin 8 of connector R43 on the CRT panel) and green (upper line) gun (pin 6) 50V/div AC; 100µs/div



3. After start up the picture is present and differences in cut-off points of the R, the G and the B gun are compensated continuously.

Repair procedure

Typical situation: no picture and no error codes

- Switch the set on.
- In a 4:3 set, press “picture size” to switch the set to “16:9 compressed” mode.
- In a 16:9 set, shift down the picture with the cursor keys.

The start up phase of the set can be identified:

1. **A bright white horizontal line at the top; the rest of the picture is dark**

(set hangs in first phase of start up procedure)

Oscilloscope picture of the voltage over the guns looks like figure 6.12.

TDA8366 (IC7119), picture tube and RGB amplifiers are OK

There should be 4.5V at pin 16 TDA8366.

Possible problem: if there is no 4.5V present at pin 16 of TDA8366, there is a defect (in one or more of the components) in the BC_INFO feedback loop.

2. **Small horizontal red, green and blue lines at the top; the rest of the picture is dark**

(set hangs in second phase of start up procedure)

TDA8366 is OK

Possible problem: one or more of the guns of the picture tube are bad

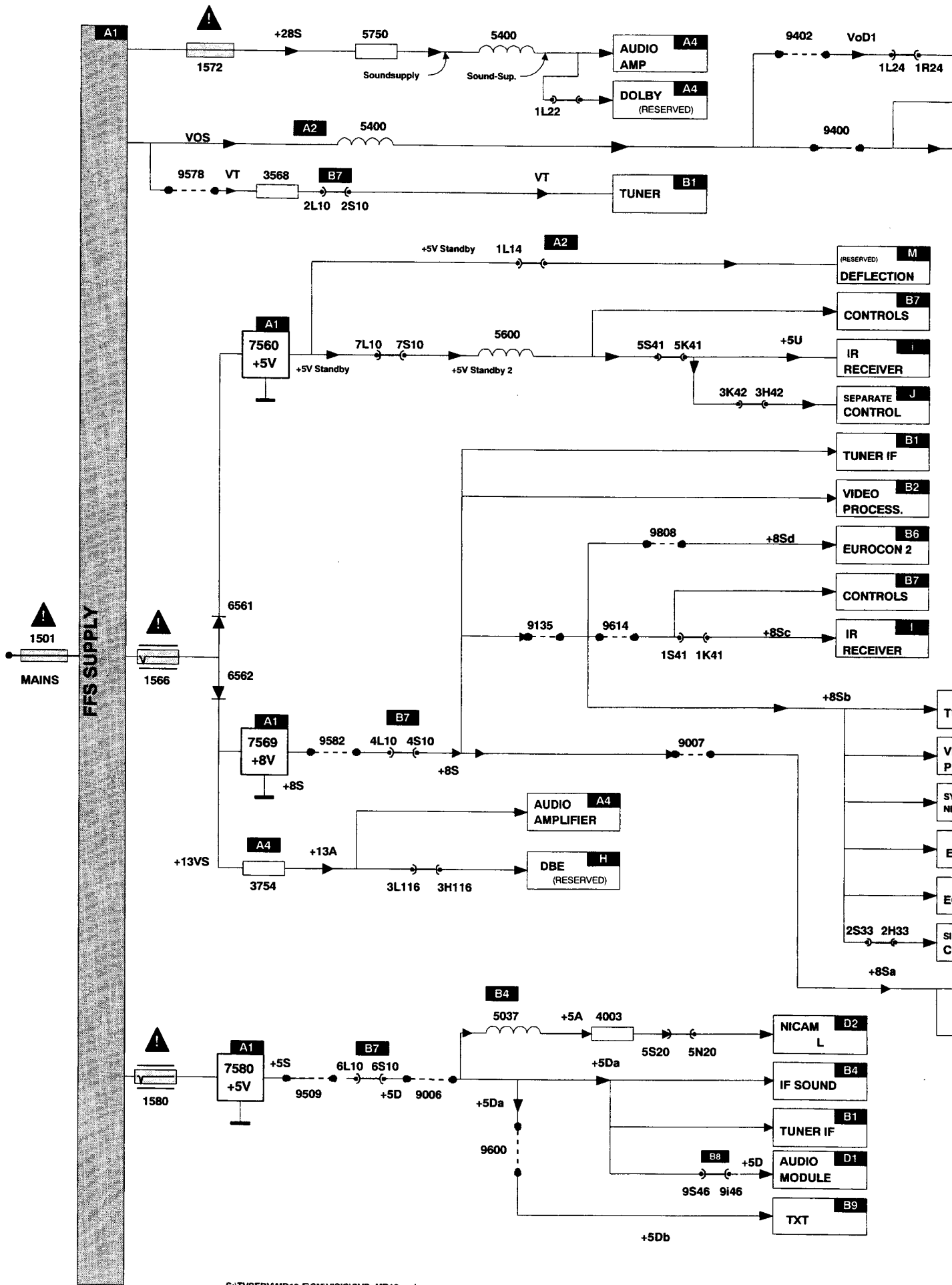
Measure at pin 16 TDA8366 which feedback line(s) (the R or G or B line) is/are smaller; the corresponding amplifier(s) or gun(s) is/are faulty.

3. **No lines visible (picture dark)**

Measure pin 16 TDA8366; possible measurements:

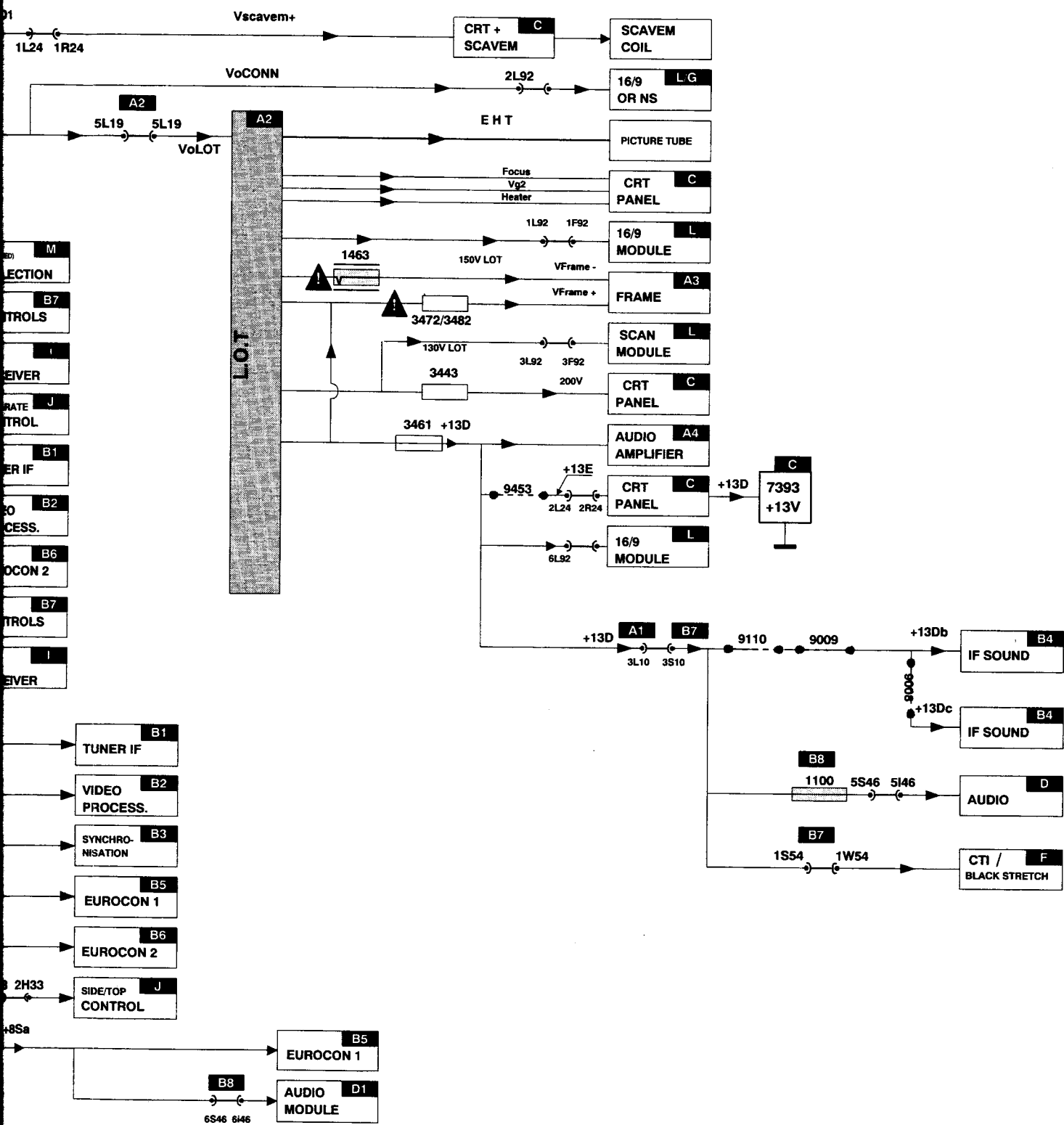
- 0V : Check TDA8366 (sandcastle and the supply voltage)
- 5V : Check RGB amplifiers
Short pin 16 TDA8366 to ground, now there will be measuring lines (at continuously 5V, phase 1 and 2 is bypassed)
- Pulses : there is a measuring line, so the TDA8366 is OK
Measure on cathode on the CRT panel if the measuring lines are present:
Yes → BC_INFO circuit is open or no HEATER voltage
No → RGB amplifier problem

7. Supply voltage diagram /



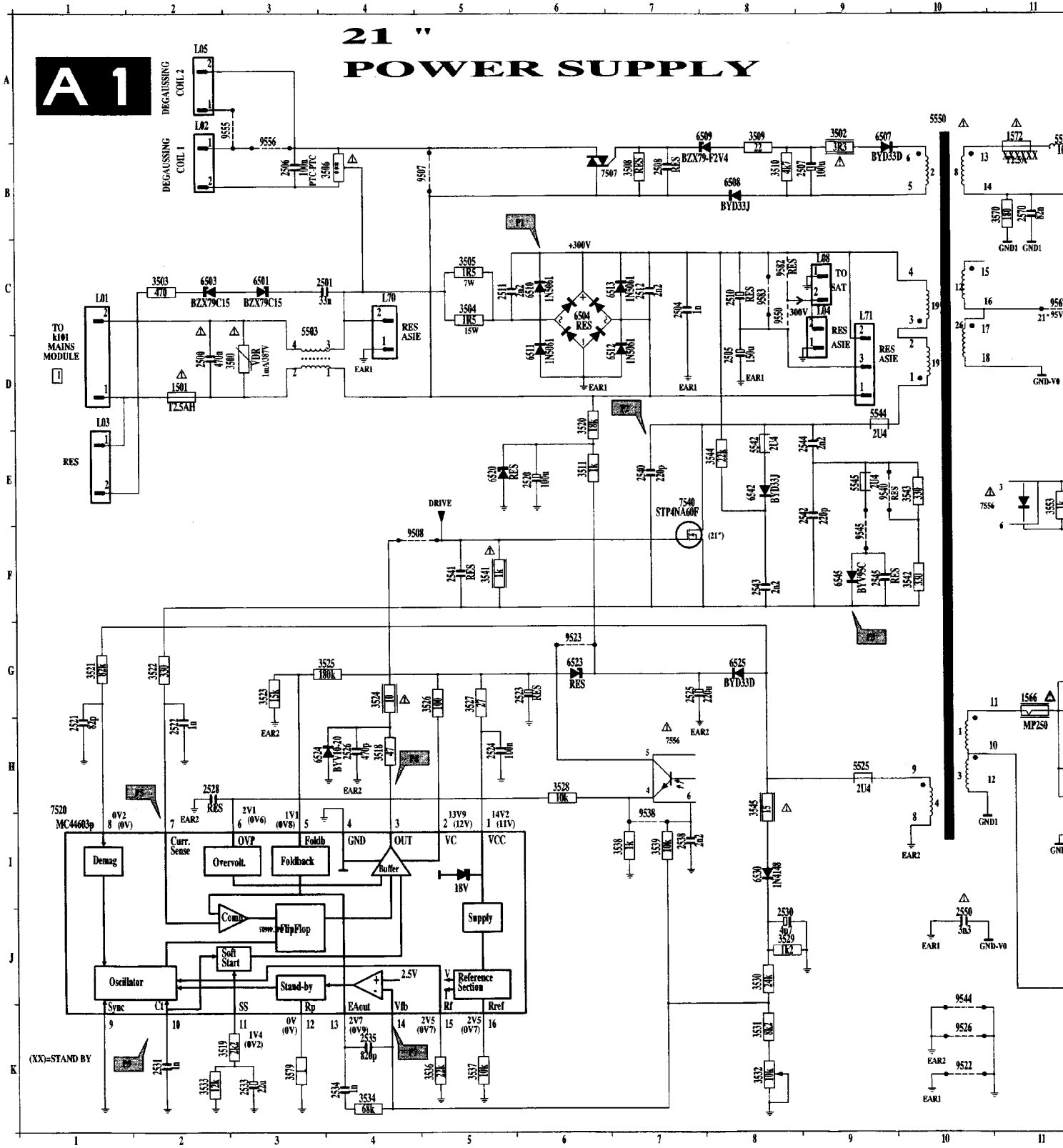
S:\TVSERV\MD12-E\SM\VISIO\SVD_MD12.vsd

Speisespannung Schaltplan / Diagramme de tension d'alimentation



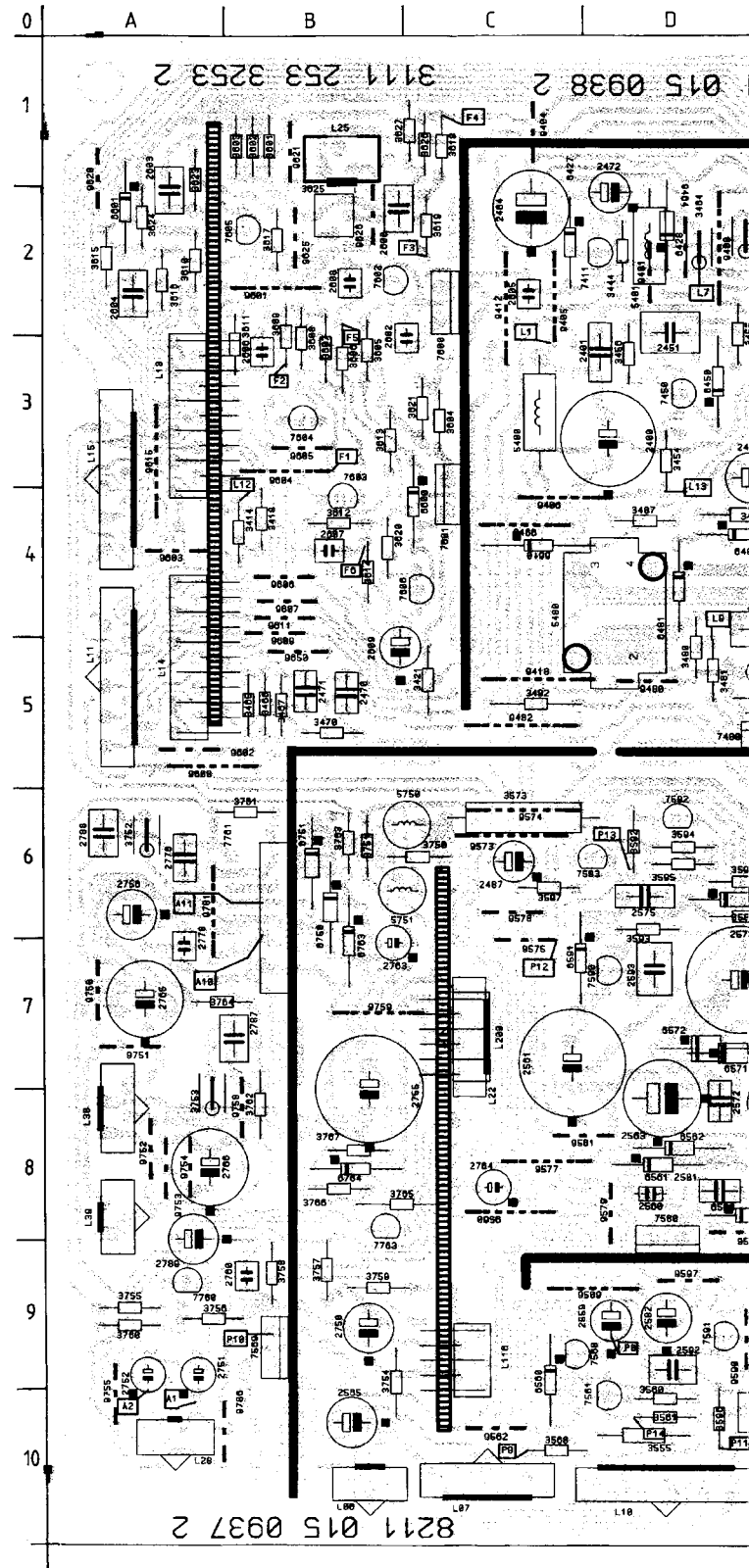
A1

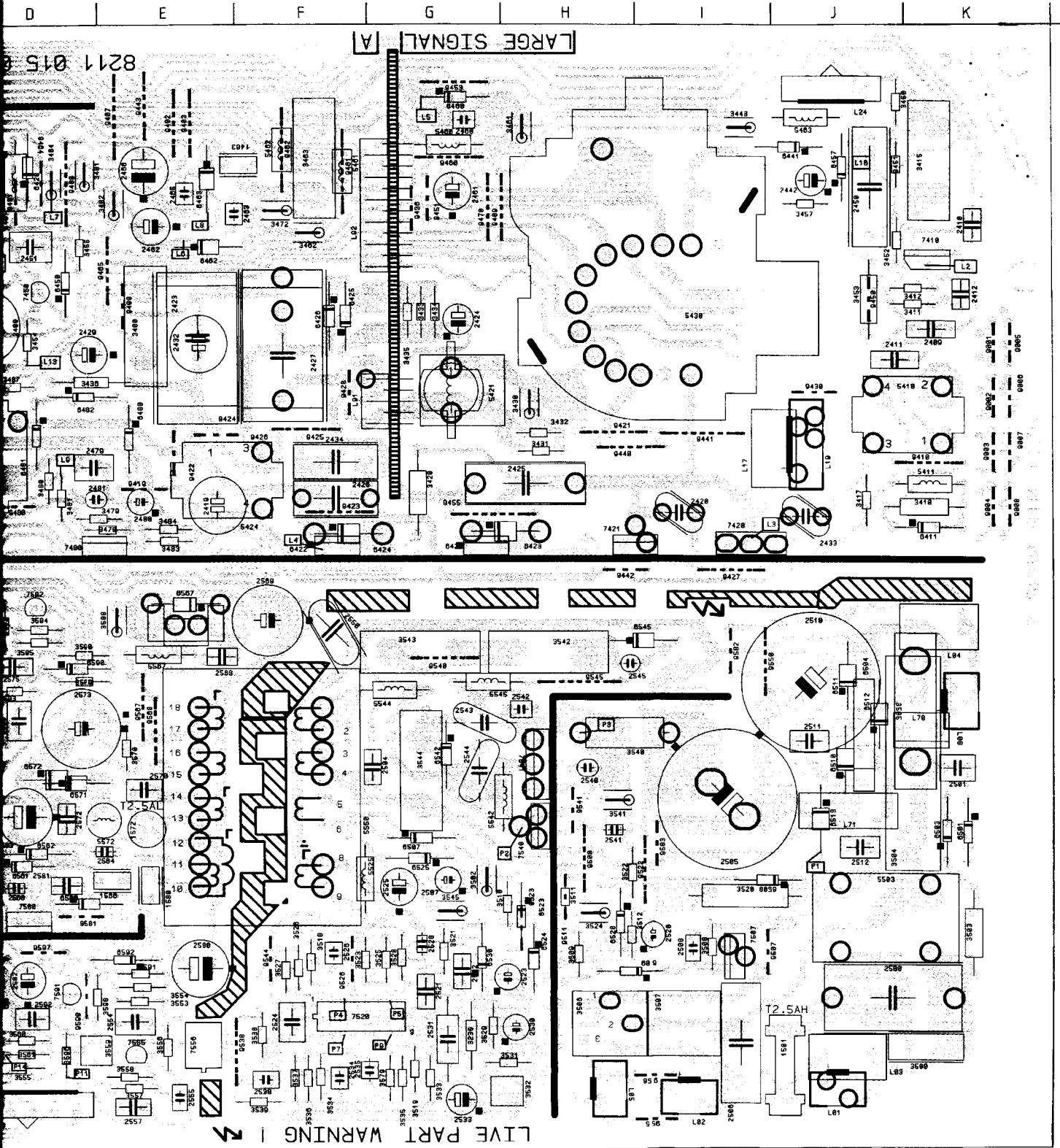
21" POWER SUPPLY

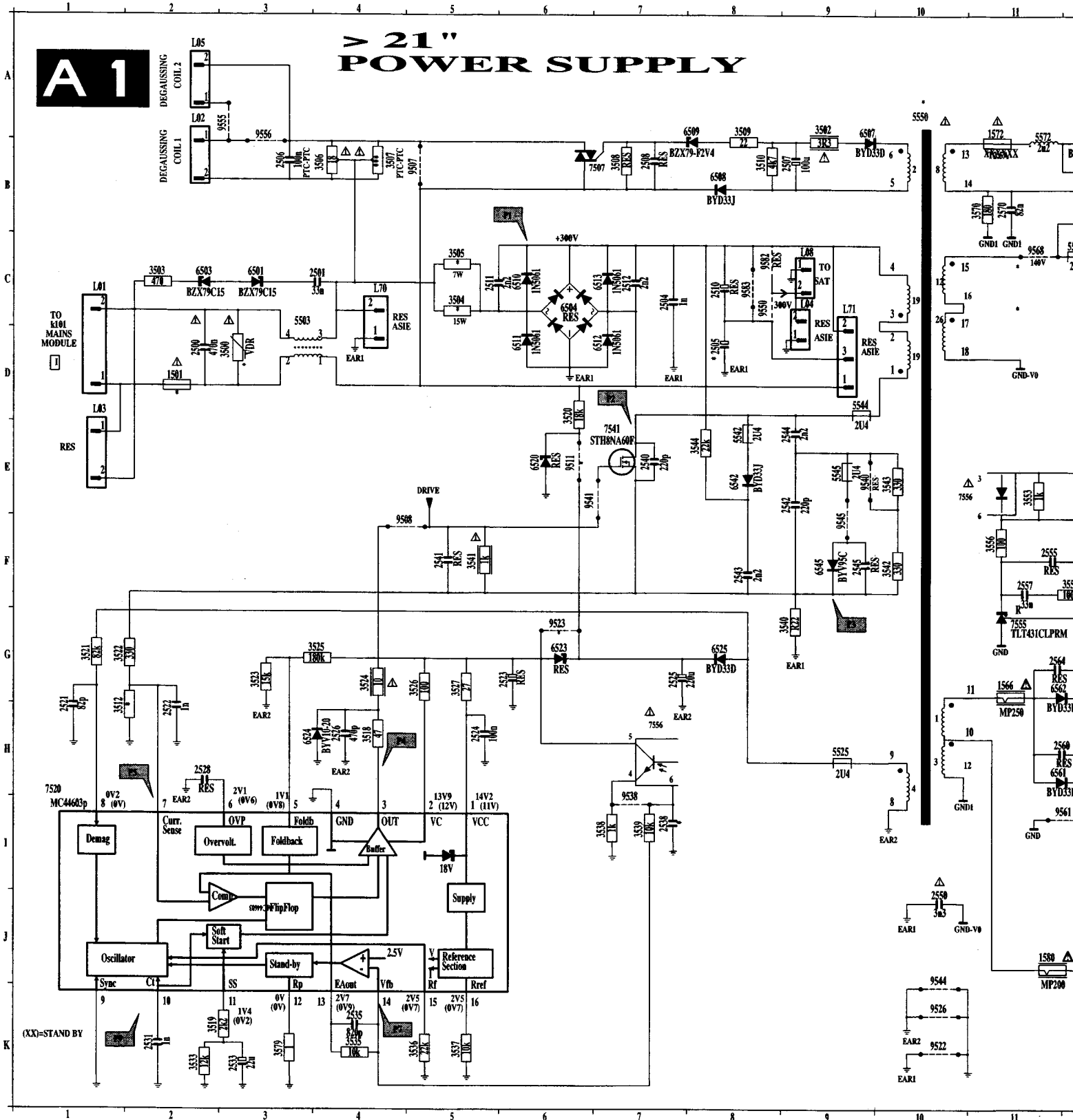


Large signal panel / Groß-Signal Platine / Platine forts signaux

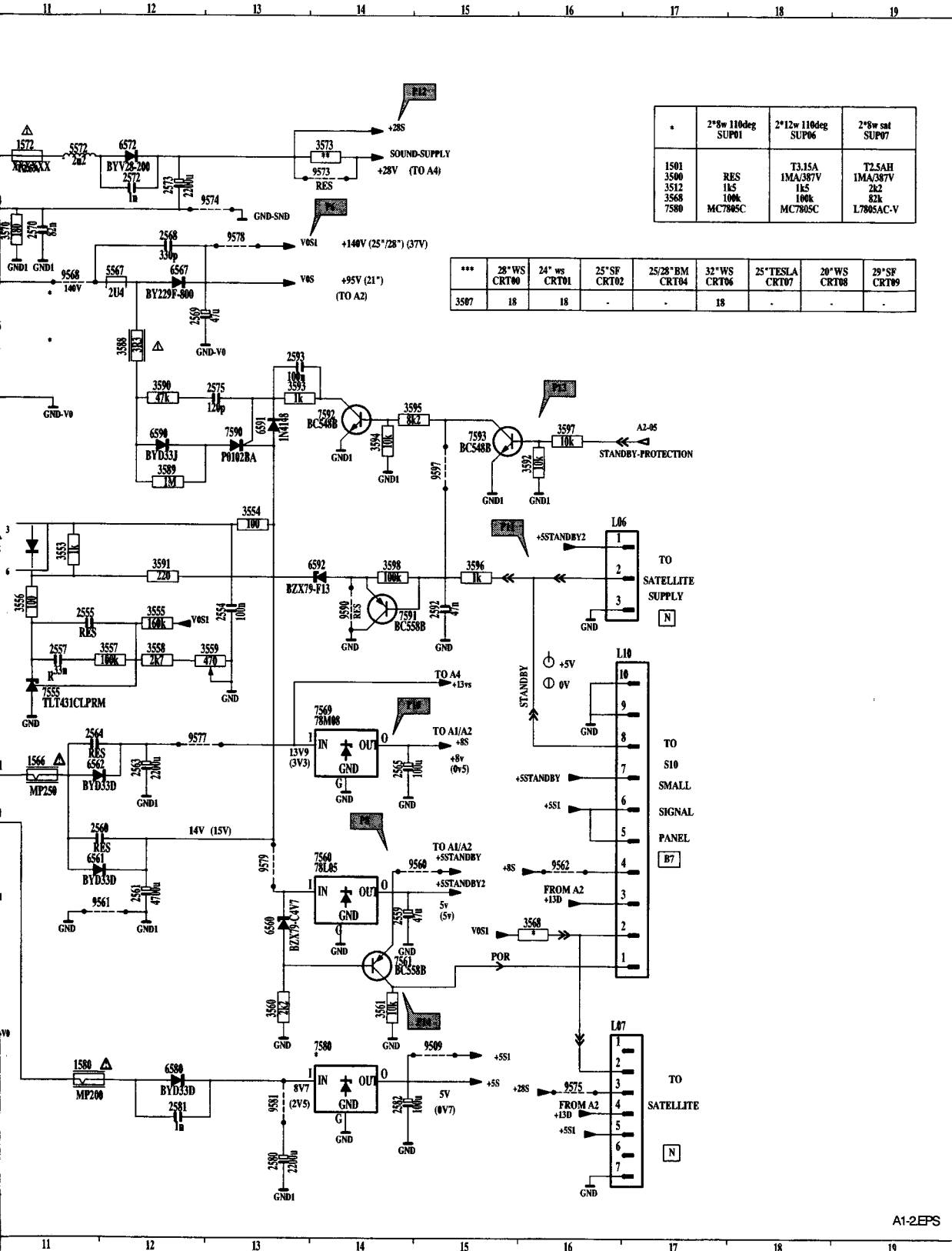
L01 J10	2545 H6	3503 K9	3756 A9	7540 H8	9577 C8
L02 J10	2550 F6	3504 J7	3757 B9	7541 H7	9578 C6
L03 J10	2554 E9	3505 K7	3758 B9	7555 E10	9579 D8
L04 K6	2555 E10	3506 H9	3759 B9	7556 E10	9581 D8
L05 H10	2557 E10	3507 I9	3760 A9	7560 C9	9582 I6
L06 B10	2559 D9	3508 I9	3761 B6	7561 D10	9583 I8
L07 C10	2560 D8	3509 H9	3762 B8	7569 B9	9590 D9
L08 K7	2561 C7	3510 G8	3763 B6	7580 D9	9597 D9
L10 D10	2563 D8	3511 H8	3764 A7	7590 D7	9601 B2
L11 A5	2564 D8	3512 H9	3765 B8	7591 D9	9602 A5
L13 A3	2565 B10	3516 F9	3766 B8	7592 D6	9603 A4
L14 A5	2568 E6	3519 G10	3767 B8	7593 C6	9604 B3
L15 A3	2569 F6	3520 I8	5400 C3	7600 C2	9605 B3
L17 I4	2570 E7	3521 G9	5401 D2	7601 C4	9606 B4
L19 J4	2572 D8	3522 H8	5410 J4	7602 B2	9607 B4
L22 C7	2573 D7	3523 F9	5411 K5	7603 B4	9608 A5
L24 J1	2575 D6	3524 H8	5421 G4	7604 B3	9609 B4
L25 B1	2580 E9	3525 G9	5424 E5	7605 B2	9611 B4
L28 A10	2581 D8	3526 F9	5430 H3	7606 B4	9615 A3
L38 A8	2582 D9	3527 F9	5460 G2	7760 A9	9620 A1
L39 A8	2592 D9	3528 G9	5461 F2	7761 B6	9621 B1
L70 K7	2593 D7	3529 G9	5462 F2	7763 B8	9625 B2
L71 J8	2600 B2	3530 G10	5463 J1	9001 K3	9626 B2
L91 F4	2602 B3	3531 G10	5480 D4	9002 K4	9650 B5
L92 F2	2603 A2	3532 G10	5503 J8	9003 K4	9750 A7
L116 C9	2604 A2	3533 G10	5525 F8	9004 K5	9751 A7
L200 C7	2605 C2	3534 F10	5542 G7	9005 K3	9752 A8
1463 E2	2606 B3	3535 G10	5544 G6	9006 K4	9753 A8
1566 E8	2607 B4	3536 F10	5545 G6	9007 K4	9754 A8
1572 E8	2608 B2	3537 F10	5550 F7	9008 K5	9755 A10
1580 E8	2609 B5	3538 F10	5567 E6	9400 E3	9758 B8
2400 D3	2750 D9	3539 F10	5572 D8	9401 D2	9759 B7
2401 D3	2751 A9	3540 H7	5750 B6	9402 E1	9781 A6
2409 K3	2752 A9	3541 H7	5751 B6	9403 E1	9786 A10
2410 K2	2755 B7	3542 H6	6411 K5	9404 C1	
2411 J3	2756 A6	3543 G6	6421 G5	9405 C2	
2412 K3	2760 B9	3544 G7	6422 F5	9406 C4	
2419 E5	2763 B7	3545 G8	6423 G5	9407 E1	
2420 I5	2764 C8	3553 E9	6424 F5	9408 D2	
2423 E3	2765 A7	3554 E9	6425 F3	9409 G2	
2424 G3	2766 A8	3555 D10	6426 F3	9410 K4	
2425 H5	2776 A6	3556 E10	6427 C2	9412 C2	
2426 F5	2778 A7	3557 E10	6428 D2	9418 C5	
2427 F3	2787 A7	3558 E10	6441 J2	9419 E5	
2429 D3	2788 A6	3559 D10	6450 D3	9420 F4	
2432 E3	2789 A8	3560 D10	6457 J2	9421 H4	
2433 J5	3400 E3	3561 D10	6460 G1	9422 E4	
2434 F4	3401 D2	3568 C10	6462 E2	9423 F5	
2442 J2	3402 E2	3570 E7	6463 E2	9424 E4	
2450 J2	3410 K5	3573 C6	6480 E4	9425 F4	
2451 D2	3411 J3	3579 G10	6481 D4	9426 F4	
2460 G1	3412 J3	3588 E6	6482 D4	9427 I5	
2461 G2	3414 A4	3589 D6	6501 K8	9430 J4	
2462 E2	3415 K2	3590 D6	6503 K8	9436 G2	
2463 E2	3417 J5	3591 E9	6504 J7	9440 H4	
2464 C2	3418 B4	3592 D6	6507 G8	9441 I4	
2465 E2	3420 G5	3593 D6	6508 I8	9442 H5	
2466 E2	3421 C5	3594 D6	6509 H9	9443 E1	
2470 B5	3430 H4	3595 D6	6510 J7	9450 J3	
2471 B5	3431 H4	3596 D10	6511 J6	9451 G2	
2472 D2	3432 H4	3597 C6	6512 J7	9453 J1	
2479 D4	3433 G3	3598 D9	6513 J8	9455 G5	
2480 E5	3434 G3	3601 B1	6520 H8	9460 G2	
2481 D5	3435 G3	3602 B1	6523 H8	9461 F2	
2487 C6	3436 D4	3603 A1	6524 H9	9462 F2	
2500 J9	3443 I1	3604 C3	6525 G8	9464 D2	
2501 K7	3444 D2	3605 B3	6530 G9	9465 D3	
2504 F7	3450 J1	3606 B3	6542 G7	9466 C4	
2505 I7	3451 J2	3607 B3	6545 H6	9470 G2	
2506 I10	3452 J2	3608 B3	6560 C9	9480 D5	
2507 G8	3453 J3	3609 B3	6561 D8	9482 C5	
2508 I9	3454 D3	3610 A2	6562 D8	9507 I9	
2510 J6	3455 D2	3611 A3	6567 E6	9508 H8	
2511 J7	3456 D3	3612 B4	6571 D7	9509 C9	
2512 J8	3457 J2	3613 B3	6572 D7	9511 H8	
2520 I9	3461 H1	3614 B4	6580 D8	9522 H8	
2521 G9	3462 F2	3615 A2	6590 D6	9523 H9	
2522 G9	3463 F2	3616 A2	6591 C7	9526 F9	
2523 G9	3464 D2	3617 B2	6592 E9	9538 E10	
2524 F9	3465 B5	3618 C1	6600 B4	9540 G6	
2525 G8	3466 B5	3619 C2	6601 A2	9541 H8	
2526 F9	3467 B5	3620 B4	6610 C4	9544 F9	
2528 G9	3470 B5	3621 C3	6750 B6	9545 H6	
2530 G9	3472 F2	3623 A1	6751 B6	9550 I6	
2531 G10	3478 D5	3624 A2	6763 B7	9555 I10	
2533 G10	3479 D5	3625 B2	6764 B8	9556 I10	
2534 F10	3480 D5	3626 C1	7410 K3	9560 C8	
2535 F10	3481 D5	3627 B1	7411 D2	9561 C8	
2538 F10	3482 C5	3750 B6	7420 I5	9562 C10	
2540 H7	3483 E5	3751 B6	7421 H5	9567 E7	
2541 H8	3484 E5	3752 A8	7450 D3	9568 E7	
2542 H7	3487 D4	3753 A8	7480 D5	9573 C6	
2543 G7	3500 K10	3754 B9	7507 I9	9574 C6	
2544 G7	3502 G8	3755 A9	7520 F9	9575 C7	







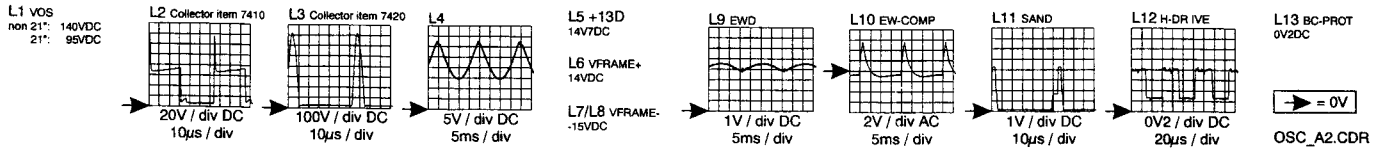
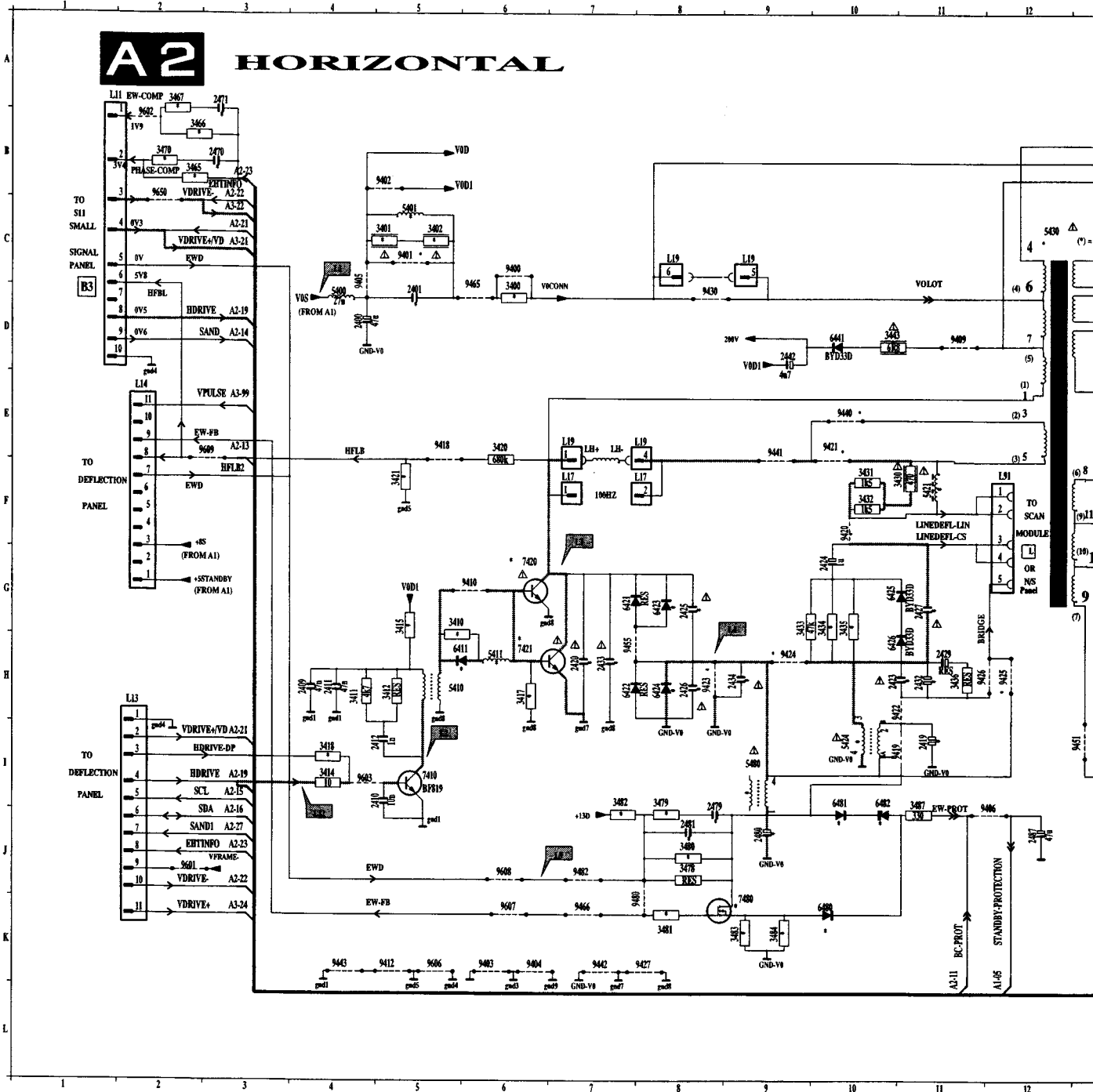
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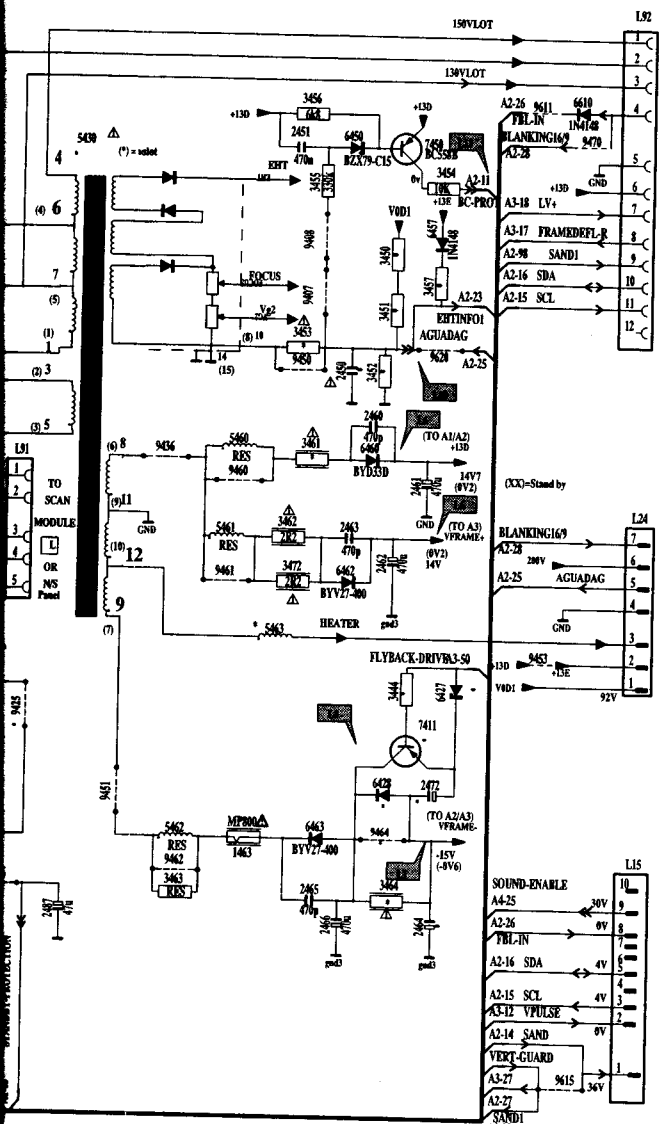
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A1-2EPS

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Sortie horizontale



	28°WS CRT10	24°WS CRT11	25°SE CRT12	25/28°BM CRT14	21°BM CRT15	32°WS CRT16	25°TESLA CRT17	28°WS CRT18	29°SW CRT19
2401	185	1a5	RES	RES	10a	RES	RES	60p	RES
2423	470n	470n	39n	370n	11a	470n	370n	470n	470n
2425	15n	15n	15n	6a2	15n	15n	370n	15n	15n
2426	18n	18n	27n	22n	18n	18n	22n	15n	27n
2427	500n	500n	470n	390n	RES	500n	390n	600n	500n
2432	1a	1a5	1a	1a5	1a5	1a5	1a	1a5	1a5
2433	100n	100n	220n	100n	100n	220n	100n	47n	220n
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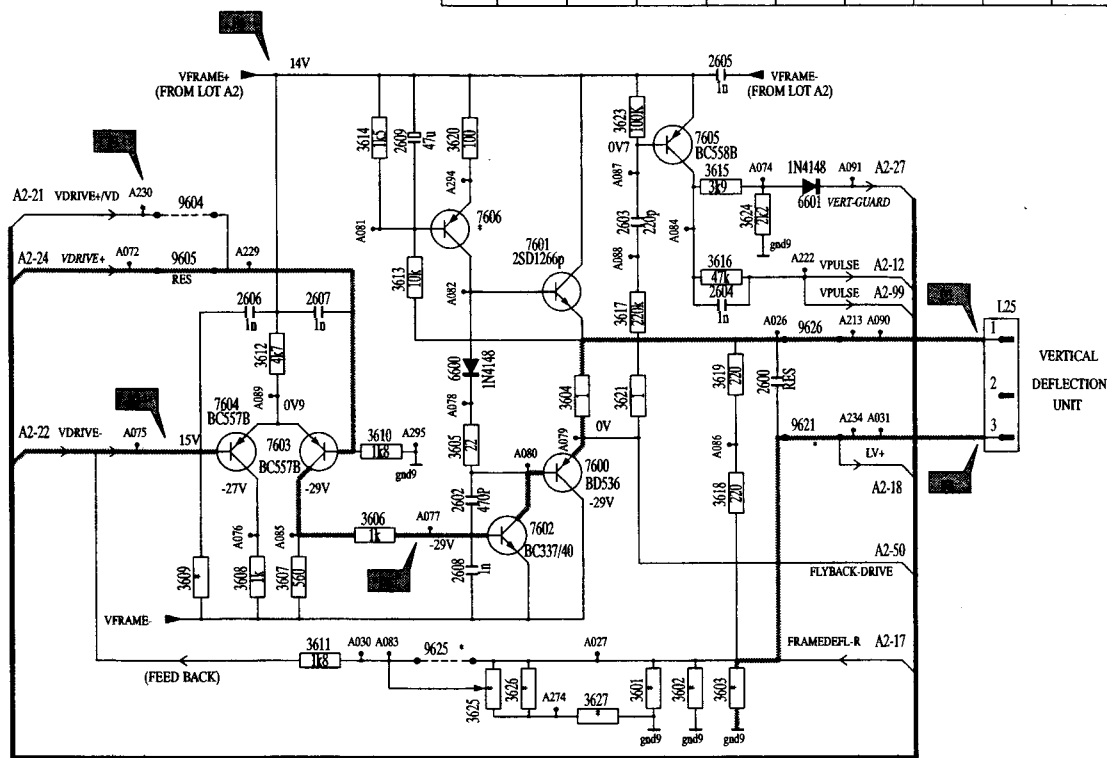
2°1W 110deg SUP61	2°5W 90deg SUP64	2°12W 110deg SUP66	2°1W SAT SUP97
3461 1R5	2R2	1R5	1R5

2600 E7	2608 E5	3606 F4	3613 D4	3620 C5	6600 E5	7605 C6	A2-12 D8	A2-50 F8	A274 G5	2750 A4
2605 E6	3601 C4	3608 E3	3614 C4	3621 E6	6601 D7	7606 D5	A2-17 G8	A2-58 D8	A284 D5	2751 A3
2606 D6	3602 C6	3609 E3	3615 C4	3622 E6	6602 D7	7607 D5	A2-18 G8	A2-59 D8	A295 E4	2752 B4
2607 D7	3603 C6	3610 E3	3616 D7	3623 D7	6603 D7	7608 D5	A2-19 G8	A2-5A D7	L25 D9	2753 B3
2608 D4	3604 E4	3611 E4	3617 D7	3624 C5	6604 D7	7609 D5	A2-20 D7	A2-5B D7		2754 B3
2609 D4	3605 E5	3612 E3	3618 E7	3627 G6	6605 E3	760A E7	A2-21 C8	A2-5C E8		2755 B3

A3

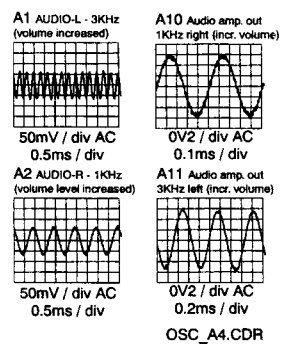
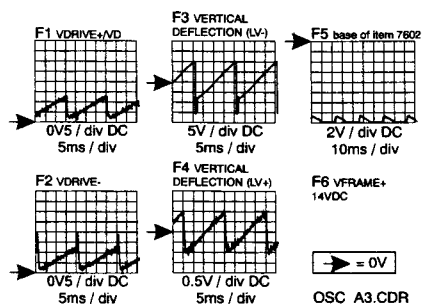
VERTICAL

	28"WS CRT00	24"WS CRT01	25"SF CRT02	25/28"BM CRT04	21"BM CRT05	32"WS CRT06	25"TESLA CRT07	20"WS CRT08	29"SF CRT09
3601	3R3	3R3	2R2	2R2	3R9	4R7	2R2	6R8	1R8
3602	3R3	3R3	2R2	2R2	3R3	4R7	2R2	6R8	1R8
3603	3R9	3R9	2R2	2R2	3R9	4R7	6R8	6R8	3R3
3609	2M2	2M2	2M2	1M5	2M2	2M2	1M5	2M2	-
3625	100	100	-	-	-	100	-	100	-
3626	10	10	-	-	-	RES	-	4R7	-
3627	-	-	-	-	-	6R8	-	100	-
7606	-	-	BC557B	BC557B	BC557B	-	BC557B	BC557B	BC557B
9621	+	+	+	+	+	+	+	+	+
9622	+	+	+	+	+	+	+	+	+
9625	RES	RES	+	+	+	RES	+	RES	+



VERTICAL DEFLECTION UNIT

A3.CDR

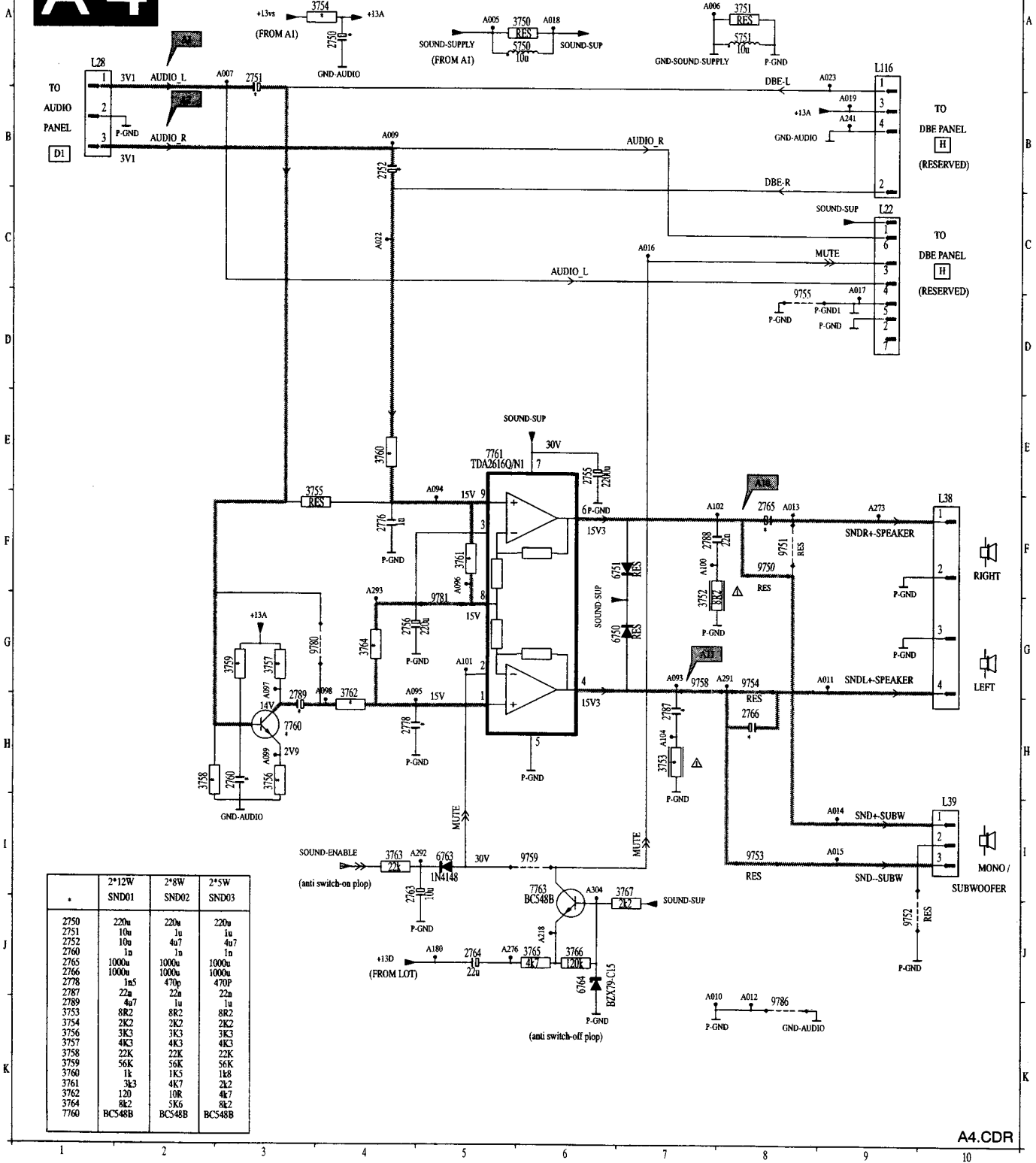


Audio amplifier / Ton Verstärker / Amplification audio

2750 A4	2764 F5	2789 H3	3756 H3	3763 L4	6750 G7	9750 F8	9759 L6	L38 F10
2751 A3	2765 F8	3750 A6	3757 G3	3764 G4	6751 F7	9751 F8	9780 G4	L39 I10
2752 A3	2766 F8	3751 A8	3758 H4	3765 I6	6763 I5	9752 F8	9781 G5	
2753 P6	2767 F4	3752 H7	3759 H4	3766 I9	6764 I6	9753 L8	9782 I8	
2754 G4	2768 H4	3753 H7	3760 F4	3767 I7	7760 H3	9754 G8	1116 A9	
2755 H3	2769 F7	3754 A4	3761 F5	3768 A6	7761 E5	9755 D8	L22 C9	
2756 L4	2770 F7	3755 F4	3762 H4	3751 A8	7763 I6	9758 G7	L28 A1	

A 4

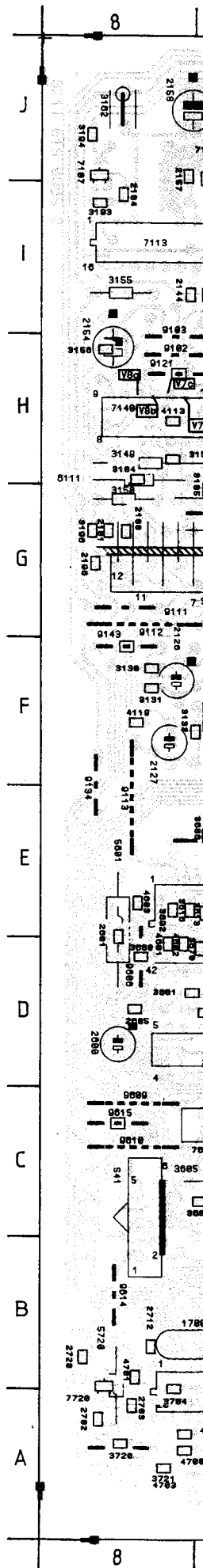
AUDIO AMPLIFIER



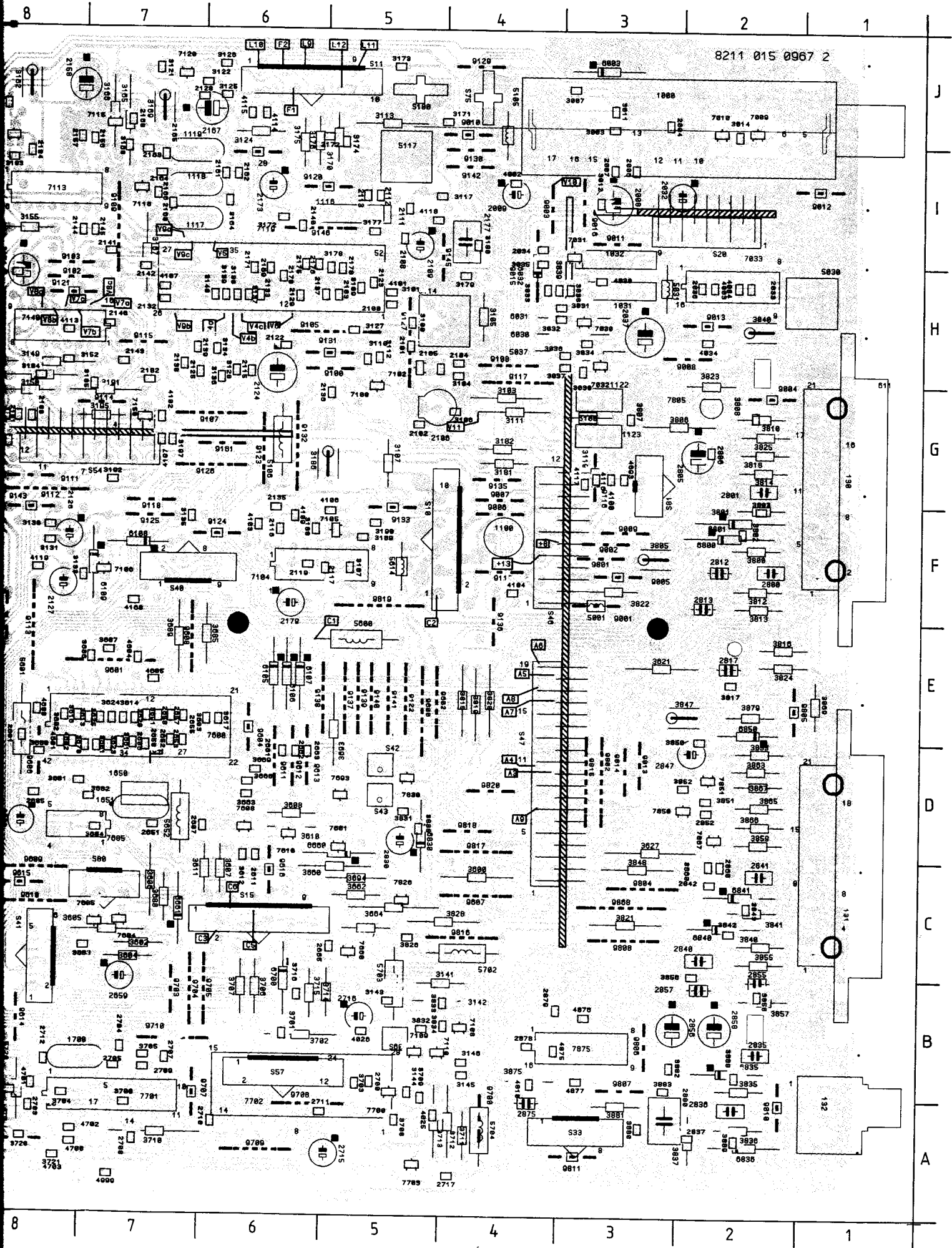
A4.CDR

S11	J6	2160	I7*	3036	H3*	3613	E7*	3852	D2*	6836	A2	9135	G4
S15	C6	2161	I6*	3037	H3*	3614	E7*	3853	D2	6840	C2	9136	F4
S20	I2	2162	I6*	3038	H3*	3616	E8*	3855	C2	6841	C2	9137	E5
S33	A3	2163	I7*	3039	H3*	3617	E6*	3856	C2*	6850	E2	9138	E5
S40	F7	2164	I7*	3040	H2	3620	E7*	3857	B2	7009	J2*	9139	E5
S41	C8	2165	I7*	3100	H5*	3621	E3	3858	B2*	7010	J2*	9140	E5
S42	D5	2166	I7*	3101	H5*	3623	D7*	3859	D2	7030	H3*	9141	E5
S43	D5	2167	J6	3103	G4	3624	E7*	3860	C2*	7031	I3*	9142	I4
S46	F4	2168	J7*	3104	H4*	3625	E7*	3863	D2	7032	H3*	9143	F8
S47	D4	2169	H6*	3105	H4	3627	D3	3865	D2	7033	H2	9145	I4
S54	G7	2170	H6*	3106	G4*	3660	C5	3866	D2	7100	H5*	9146	I6
S57	B6	2171	H6*	3107	G5	3661	D7*	3867	D2	7102	H5*	9161	G6
S60	B5	2172	J5*	3109	H5*	3662	C5	3869	E1	7104	F5	9600	E5
S75	J4	2173	I6	3110	H5*	3663	D6*	3875	B4	7105	F5*	9601	E7
S80	C7	2175	I6*	3111	G4	3664	C5	3879	E2	7106	F7*	9602	E5
S81	G3	2176	I6*	3112	H5*	3666	D6*	3880	A3*	7107	J8*	9604	E6
S100	J5	2177	I4	3113	J5	3669	D6*	3881	A3	7108	B4*	9606	D8
130	F1	2178	H5*	3117	I4*	3670	D7*	3882	B3*	7109	B5*	9607	C4
131	C1	2179	F6	3119	G3	3680	D8*	3883	B3*	7110	B4*	9608	E7
132	A1	2180	G8*	3121	J7*	3681	D8*	3888	B2*	7113	I8	9609	C8
1000	J3	2181	G8*	3122	J6*	3682	D7*	3889	A2*	7115	J7*	9610	C8
1031	H3	2182	H7*	3124	J6	3683	C7*	4002	I4*	7116	I7*	9611	D6
1032	I3	2184	I8*	3125	J6*	3684	D7*	4003	H2*	7119	H6	9612	D6
1100	F4	2196	G8*	3126	J6*	3685	E6	4004	H2*	7120	J7*	9613	D6
1116	I5	2600	D8	3127	H5*	3686	E7*	4025	A4*	7140	H8	9614	B8
1117	I7	2601	E8*	3128	H6*	3687	E7*	4026	B5*	7150	G7*	9615	C8
1118	I7	2606	D7*	3130	F8*	3688	C7	4030	H3*	7600	E7	9616	C6
1119	I7	2607	D6*	3131	F8*	3689	E7	4034	H2*	7601	D5*	9700	A4
1122	G3	2611	D6*	3133	F8*	3691	E7*	4100	G3*	7604	C7*	9703	B7
1123	G3	2650	D7*	3134	H6*	3692	E8*	4101	H5*	7605	C7*	9704	B7
1650	D7	2651	D7*	3135	F7*	3693	E5	4102	G7*	7608	D6*	9705	B6
1651	D7	2652	E7*	3136	H6*	3694	C5	4103	F6*	7610	D6*	9707	B7
1700	B8	2653	E7*	3137	H6*	3700	A7*	4104	F4*	7660	C5*	9708	A6
1800	F1*	2655	E7*	3138	H6*	3701	B6*	4106	F5*	7685	D8	9709	A6
1801	F1*	2657	E7*	3139	H6*	3702	B6	4107	H7*	7693	D5*	9710	B7
1802	F1*	2658	E7*	3140	H6*	3703	B5*	4109	F6*	7700	B5*	9720	A8
1803	F1*	2659	B7	3141	B4	3704	B8*	4113	H8*	7701	A7	9801	F3
1804	C1*	2661	D6*	3142	B4	3705	B7*	4114	J6*	7702	B6	9802	D3
1805	C1*	2662	D6*	3143	B5*	3706	B6	4115	J6*	7703	A5*	9804	C3
1806	C1*	2663	D6*	3144	B5*	3707	B6	4116	G3*	7720	B8*	9805	E1
1807	C1*	2665	C5*	3145	B4*	3708	A5*	4117	G3*	7805	G2	9806	B3
2004	J3*	2685	D8*	3146	B4*	3709	B5*	4118	I5*	7826	C5*	9807	B3
2006	I3*	2700	B5*	3149	H8	3710	A7	4119	F8*	7830	D5*	9808	C3
2007	I3*	2702	A8*	3150	G8	3711	A4	4160	F7*	7850	D2*	9810	A2
2008	I3	2703	A8*	3152	H8*	3712	A4	4197	G7*	7851	D2*	9811	A3
2009	I4	2704	B7*	3155	I8	3713	A4	4601	D8*	7867	D2*	9813	D3
2032	I2	2705	B7*	3156	H8*	3714	B5	4602	D8*	7875	B3	9814	D3
2033	H2*	2707	B7*	3162	J8	3715	B6	4603	E8*	9001	F3	9815	D3
2034	I4*	2708	A7*	3164	I6*	3716	B6*	4604	E7*	9002	F3	9816	C4
2036	H2*	2709	B7*	3165	J7	3720	A8*	4605	E7*	9003	I4	9817	D4
2037	H3	2710	A6*	3166	J7	3721	A8*	4693	G3*	9004	G2	9818	D4
2100	H5*	2711	A5*	3167	I7	3800	F2	4700	A8*	9005	F3	9819	F5
2101	H5*	2712	B8*	3168	J7*	3801	F2	4701	B8*	9006	F4	9820	D4
2102	G5*	2715	A5	3169	J7	3802	F2*	4702	A8*	9007	G4	9868	C3
2103	H5*	2716	B5	3170	J5	3803	F2*	4703	A8*	9008	H2		
2104	H4*	2717	A4*	3171	J4*	3805	F3	4810	B4*	9009	F3		
2105	H4*	2720	B8*	3172	I6*	3806	G2	4875	B3*	9010	J4		
2106	G5	2800	F2	3173	J5*	3807	G3*	4876	B3*	9011	I3		
2108	I5*	2801	G2	3174	J5*	3808	G2*	4877	B3*	9012	I1		
2109	I5	2805	G2	3175	J6	3810	G2	5001	F3	9013	H2		
2111	I5*	2806	G2*	3176	J6	3812	F2	5030	H1	9015	I4		
2112	I5*	2812	F2	3177	I5*	3813	F2	5031	H3	9016	I3		
2113	I5*	2813	F2	3178	I5*	3814	G2	5037	H3	9100	H5		
2115	H6*	2817	E2	3179	H4*	3815	E4	5100	G3	9102	H8		
2116	F6*	2830	D5	3180	I4*	3816	E2	5105	J4	9103	I8		
2117	F5*	2835	B2	3181	G4	3817	E2*	5106	G6	9105	H5		
2119	F6*	2836	A2	3182	G4	3818	G2	5114	H4	9107	G6		
2122	H6*	2837	A2*	3184	H8*	3819	E4	5117	I5	9108	H4		
2123	H5*	2840	C2	3185	H7*	3820	E4	5600	E5	9109	I7		
2124	H6	2841	C2	3186	G5	3821	C3	5601	E8	9110	F4		
2125	H7*	2842	C2*	3187	F5*	3822	F3	5614	F5	9111	G8		
2126	F8	2847	D2	3188	F6*	3823	H2	5652	D7	9112	G8		
2127	F8	2852	D2*	3189	F5*	3824	E2	5702	C4	9113	E8		
2128	J7*	2855	B2	3190	F5*	3825	G2	5703	B5	9114	G7		
2129	H6*	2856	B2	3191	G7	3826	C5*	5704	A4	9115	H7		
2132	H7*	2857	B2	3192	G7*	3827	C5	5720	B8	9116	G3		
2133	H6*	2858	B2	3193	I8*	3828	C4	6003	J3	9117	H4		
2135	F6*	2860	C2*	3194	J8*	3830	D5*	6030	H3	9118	G7		
2136	G5*	2875	A4	3195	G7	3831	D5*	6031	H3	9120	I5		
2137	H5*	2878	B4*	3196	G8*	3832	B5*	6032	I4	9121	H8		
2138	H7*	2879	B3*	3197	G7*	3833	B4*	6105	E6	9122	E5		
2139	H7*	2880	A3	3600	C4	3834	B4*	6106	E6	9123	G6		
2140	I6*	3003	J3*	3601	D7*	3835	B2	6107	E6	9124	F6		
2141	I7*	3007	J3*	3602	C7	3836	A2	6108	F7	9125	F7		
2142	H7*	3011	J3*	3603	E6*	3837	A2	6109	F7	9126	G6		
2143	H7*	3012	I3*	3604	C7	3840	C2	6111	H8	9127	H5		
2144	I8*	3014	J2*	3605	C7	3841	C2	6660	D5	9128	I6		
2145	I7*	3030	H3*	3606	C7	3842	C2*	6661	C7	9129	J4		
2146	H7*	3031	H3*	3607	C6	3843	C2*	6700	B6	9130	I4		
2154	H8	3032	H3*	3608	D6	3847	E2	6800	F2	9131	H5		
2156	J7*	3033	H4*	3610	D6	3848	C3	6801	F2	9132	G6		
2157	J8*	3034	H3*	3611	C6	3850	E2*	6830	D5	9133	F5		
2158	J8	3035	I4*	3612	D6*	3851	D2*	6835	B2	9134	F8		

* = SMD component



Platine petits signaux

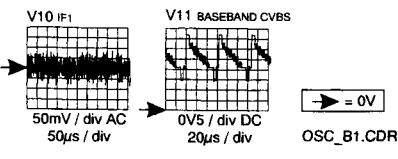
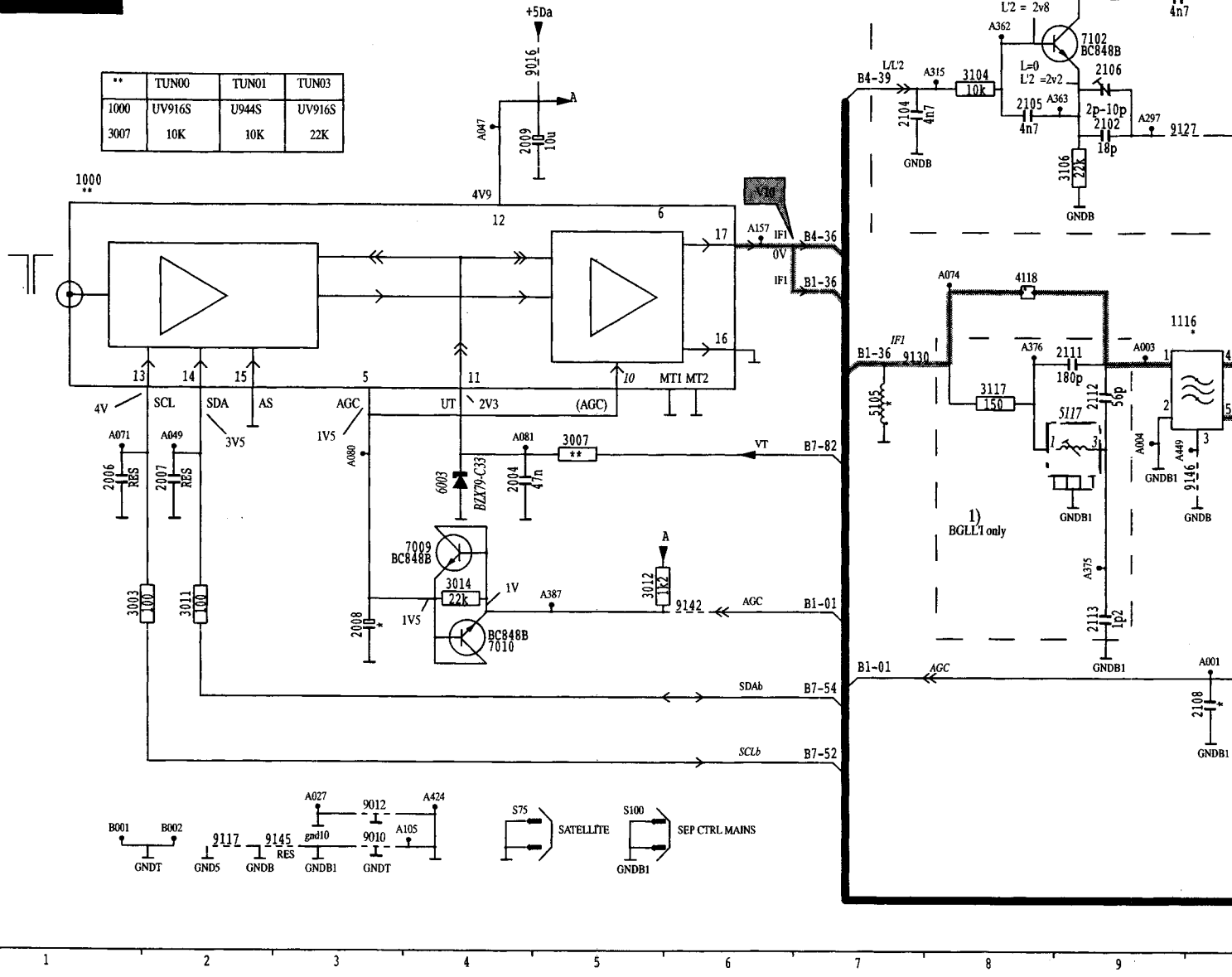


Tuner + IF / Tuner + ZF / Syntoniseur + FI

1000	C 1	2006	E 1	2101	A 9	2106	B 9	2113	F 9	3007	E 5	3101	C11	3110	E13	4100	D16	5106	C14	7010	F 4	9012	H 3	9127	B 9	B1-01	F 7	B7-52	G
1116	D 9	2007	E 2	2102	B 9	2108	G10	2123	F13	3011	F 2	3104	B 8	3111	D14	4101	C10	5114	B12	7100	D13	9016	B 5	9130	D 7	B2-19	D17	B7-54	G
1122	D14	2008	E 3	2103	F12	2109	F11	2124	C14	3012	F 5	3105	A 9	3112	D13	4118	C 8	5117	D 9	7102	B 9	9100	C13	9142	F 6	B4-36	D 7	B7-82	E
1123	C14	2009	B 4	2104	B 7	2111	D 9	2129	C12	3014	F 4	3106	C 9	3117	D 8	5100	E14	6003	E 4	7119	D10	9116	D15	9145	H 3	B4-39	B 7	B8-19	D1
2004	E 4	2100	C11	2105	B 8	2112	D 9	3003	F 1	3100	B11	3109	F12	3119	D15	5105	D 7	7009	F 4	9010	H 3	9117	H 2	9146	E10	B5-19	D17	B8-20	E1

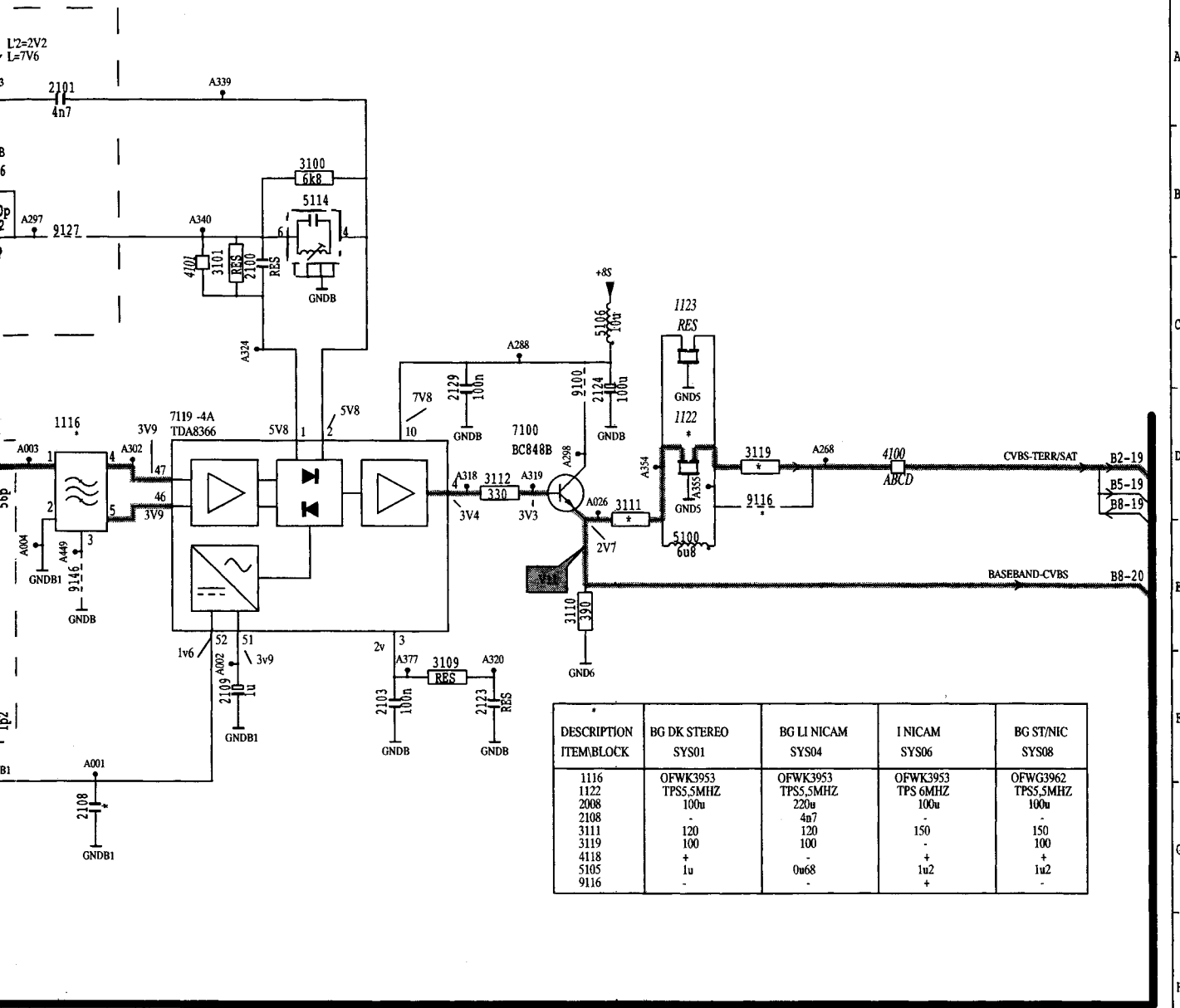
B 1 TUNER + IF (BIMOS-IC)

**	TUN00	TUN01	TUN03
1000	UV916S	U944S	UV916S
3007	10K	10K	22K



F 7 B7-52 G 7 S100 H 5
 D17 B7-54 G 7 S75 H 4
 D 7 B7-82 E 7
 B 7 B8-19 D17
 D17 B8-20 E17

9 10 11 12 13 14 15 16 17

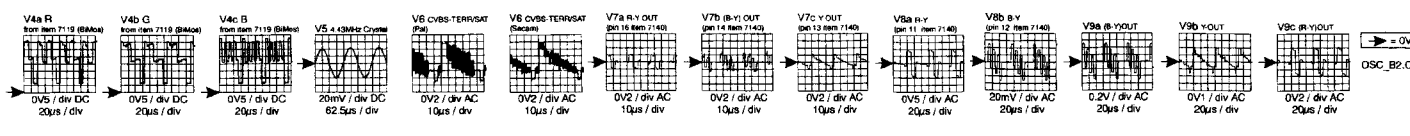
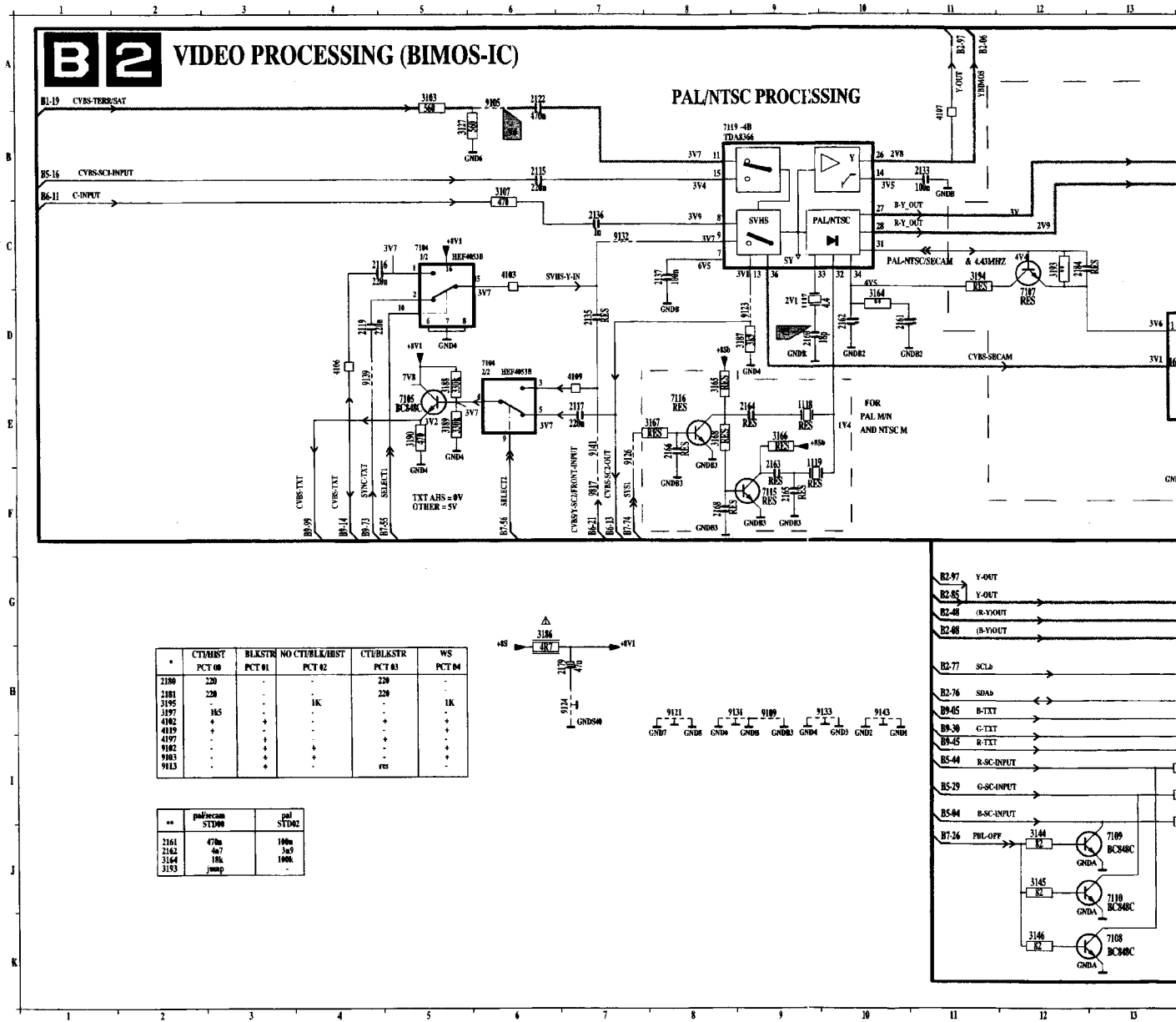


DESCRIPTION ITEM/BLOCK	BG DK STEREO SYS01	BG LI NICAM SYS04	I NICAM SYS06	BG ST/NIC SYS08
1116	OFWK3953	OFWK3953	OFWK3953	OFWK3962
1122	TPS5.5MHZ	TPS5.5MHZ	TPS 6MHZ	TPS5.5MHZ
2008	100u	220u	100u	100u
2108	-	4n7	-	-
3111	120	120	150	150
3119	100	100	-	100
4118	+	-	+	+
5105	1u	0u68	1u2	1u2
9116	-	-	+	-

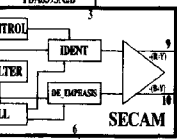
B1.CDR MD 1.2

9 10 11 12 13 14 15 16 17

Video processing / Video Verarbeitung / Traitement video

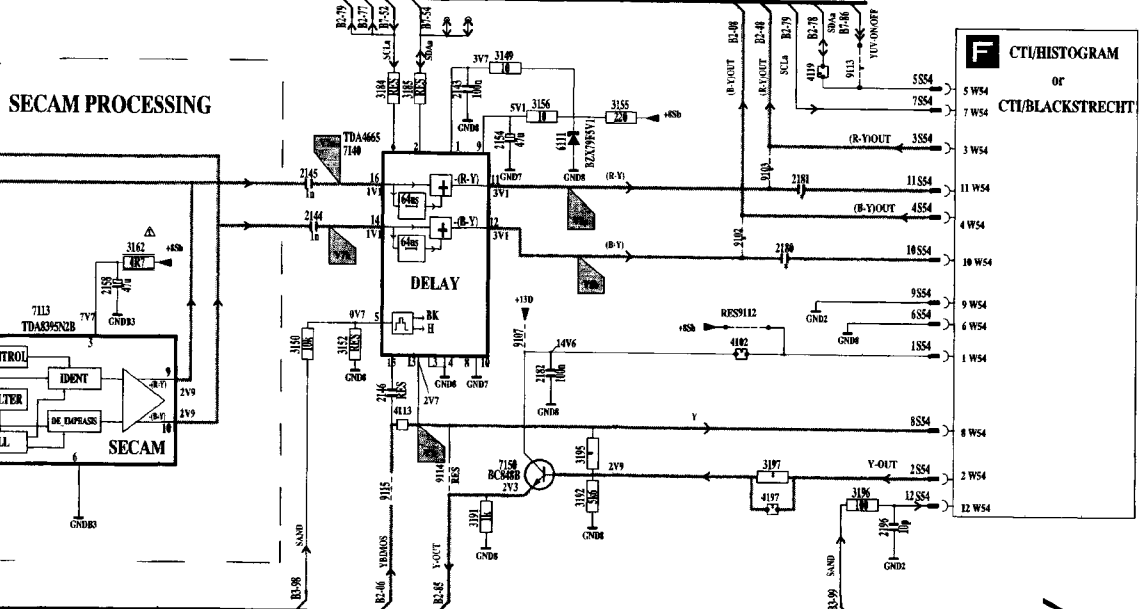


SECAM PROCESSING



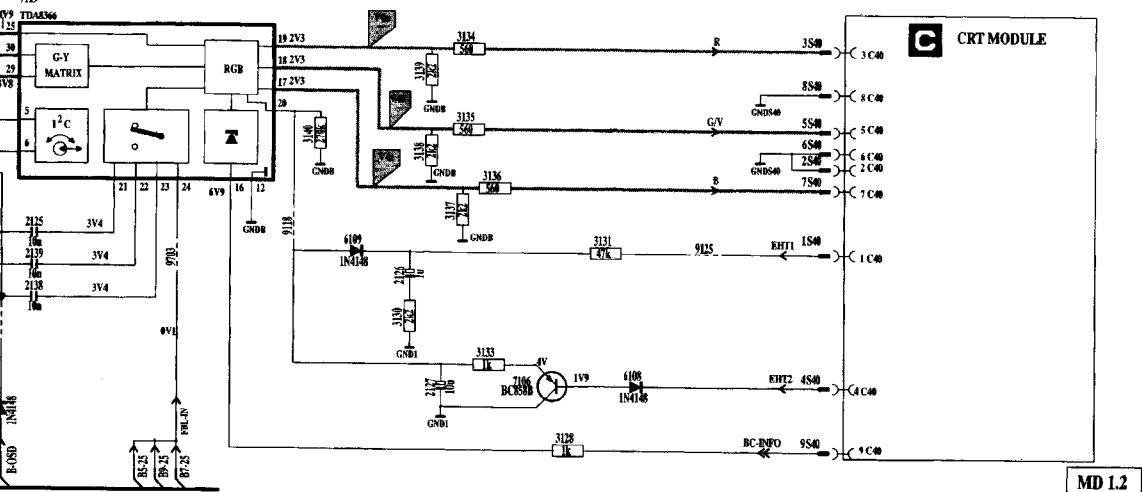
DELAY

F CTU/HISTOGRAM OF CTU/BLACKSTRECHT



VIDEO CONTROL

C CRT MODULE



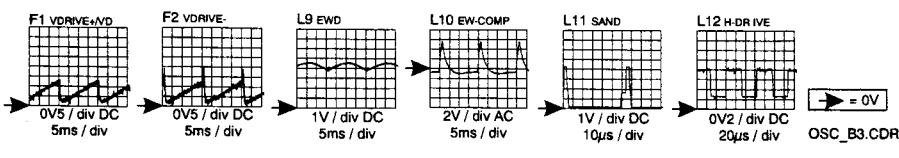
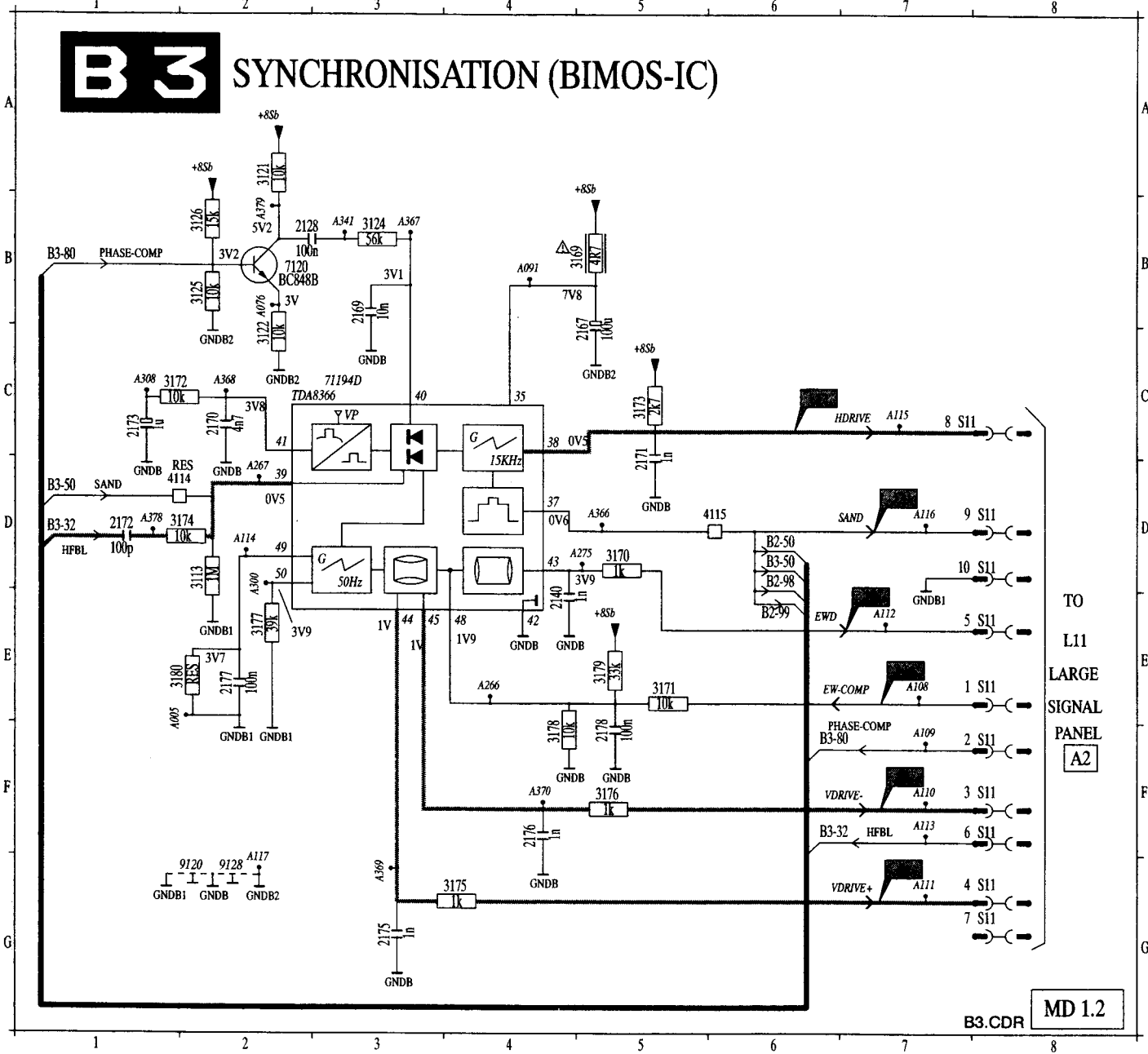
MD 1.2
B2.EPS

YOUT
→ OV
OSC. B2.COR
R/div AC
100/div

Synchronisation / Synchronisierung / Synchronisation

2128 B2	3173 C1	3122 C7	3172 C1	3179 E5	9128 G2	B3-80 F6
2140 B4	3175 G5	3124 C8	3173 C2	3180 E2	B2-50 D6	S11 C7
2169 B5	3176 F4	3125 C9	3174 C3	4114 D2	B3-32 D1	
2170 C2	3177 F5	3126 C0	3175 C4	4115 D6	B3-50 D6	
2171 C3	3178 D2	3127 C1	3176 C5	7129 C3	B3-80 D1	
2172 D1	3121 A2	3171 E5	3178 F4	9120 G2	B3-80 B1	

1031 E4
2032 F4
2033 C7
2034 C2
2036 F6
2037 H2

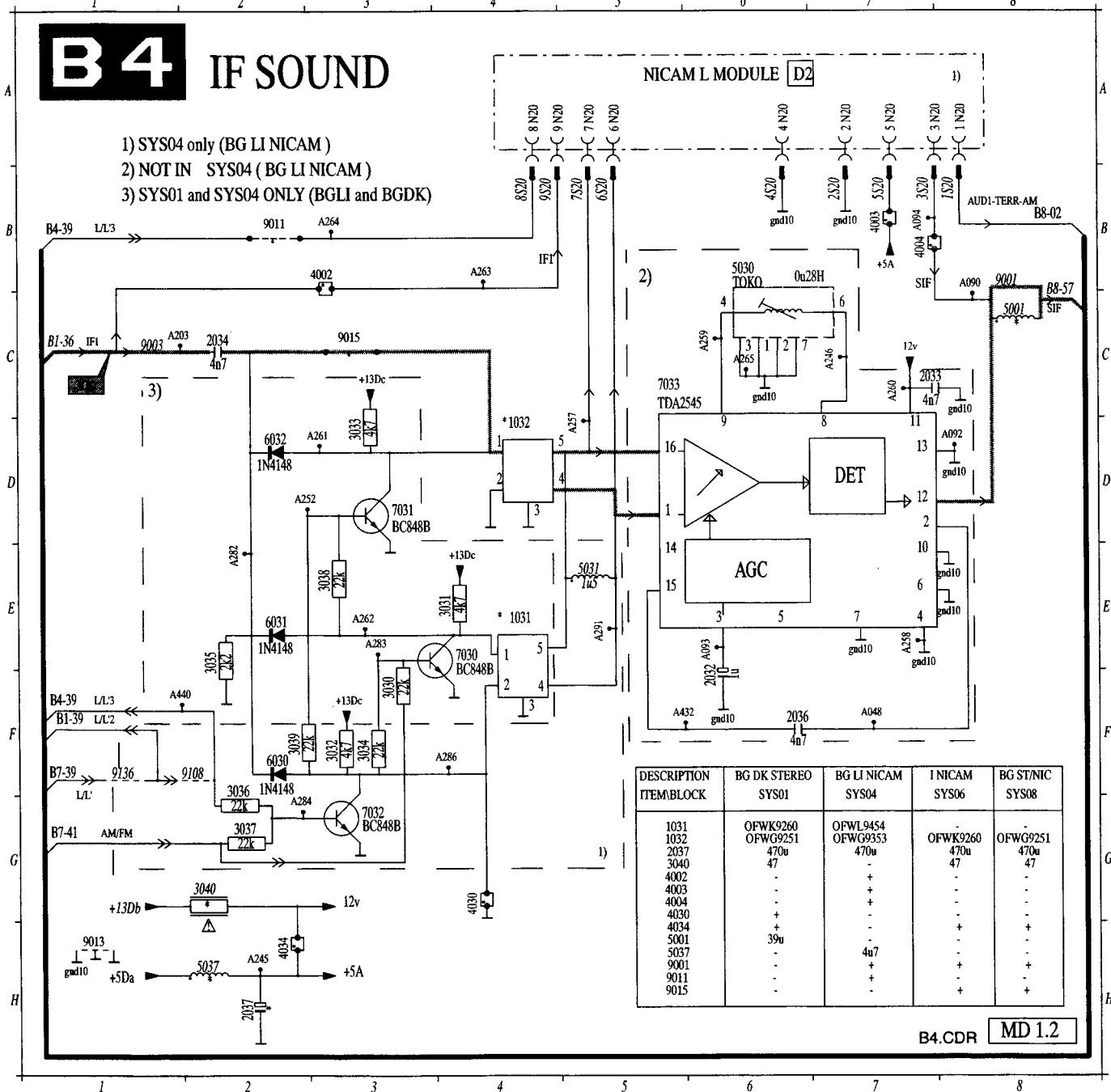


IF sound / ZF Ton / FI son

1031 E4	3030 F3	3037 G2	4030 G4	6031 E2	9003 C1	B1-39 F1	B8-57 D8
1032 D4	3031 F4	3038 F3	4034 H2	6032 D3	9011 B2	B4-39 F1	B8-57 B8
2032 F6	3032 F3	3039 F3	5001 C6	7030 C8	9013 H4	B4-39 B1	S20 B4
2033 C7	3033 F3	4040 G3	5002 F6	7031 E3	9015 C2	B4-39 F1	
2034 F6	3034 F3	4041 G3	5003 F6	7032 E3	9136 F1	B8-02 B8	
2035 F6	3035 F3	4042 G3	5004 F7	7033 C8	9001 B8	B8-39 F1	
2037 H2	3036 F2	4004 B7	6030 F2	9001 B8	B1-36 C1		

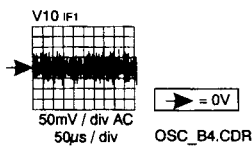
B4 IF SOUND

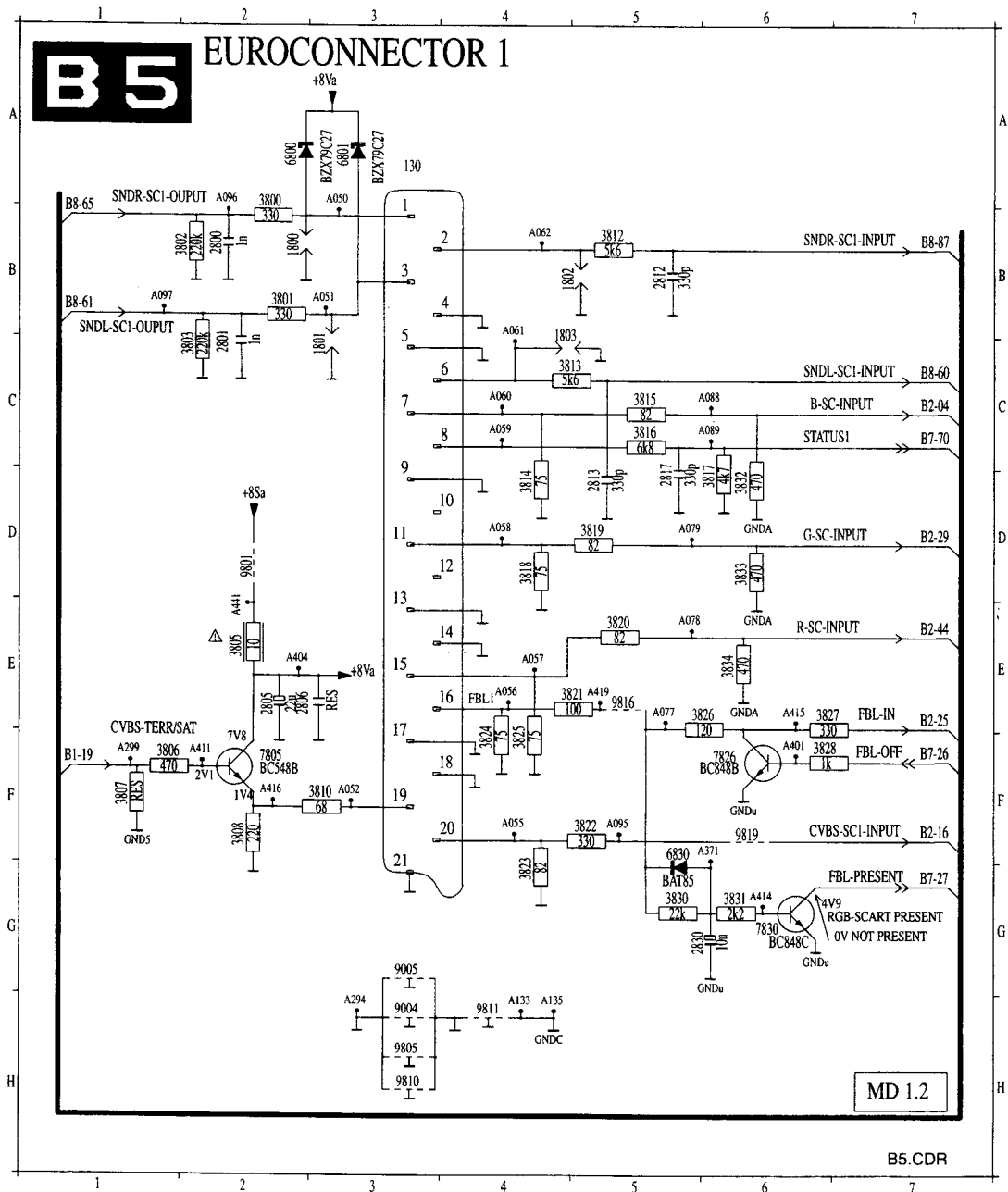
- 1) SYS04 only (BG LI NICAM)
- 2) NOT IN SYS04 (BG LI NICAM)
- 3) SYS01 and SYS04 ONLY (BGLI and BGDK)



DESCRIPTION ITEM/BLOCK	BG DK STEREO SYS01	BG LI NICAM SYS04	I NICAM SYS06	BG ST/NIC SYS08
1031	OFWK9260	OFWL9454	-	-
1032	OFWG9251	OFWG9353	OFWK9260	OFWG9251
2037	470u	470u	470u	470u
3040	47	+	47	47
4002	-	+	-	-
4003	-	+	-	-
4004	-	+	-	-
4030	+	+	-	-
4034	+	-	+	+
5001	39u	-	-	-
5037	-	4u7	-	-
9001	-	+	+	+
9011	-	+	-	-
9015	-	-	+	+

B4.CDR MD 1.2



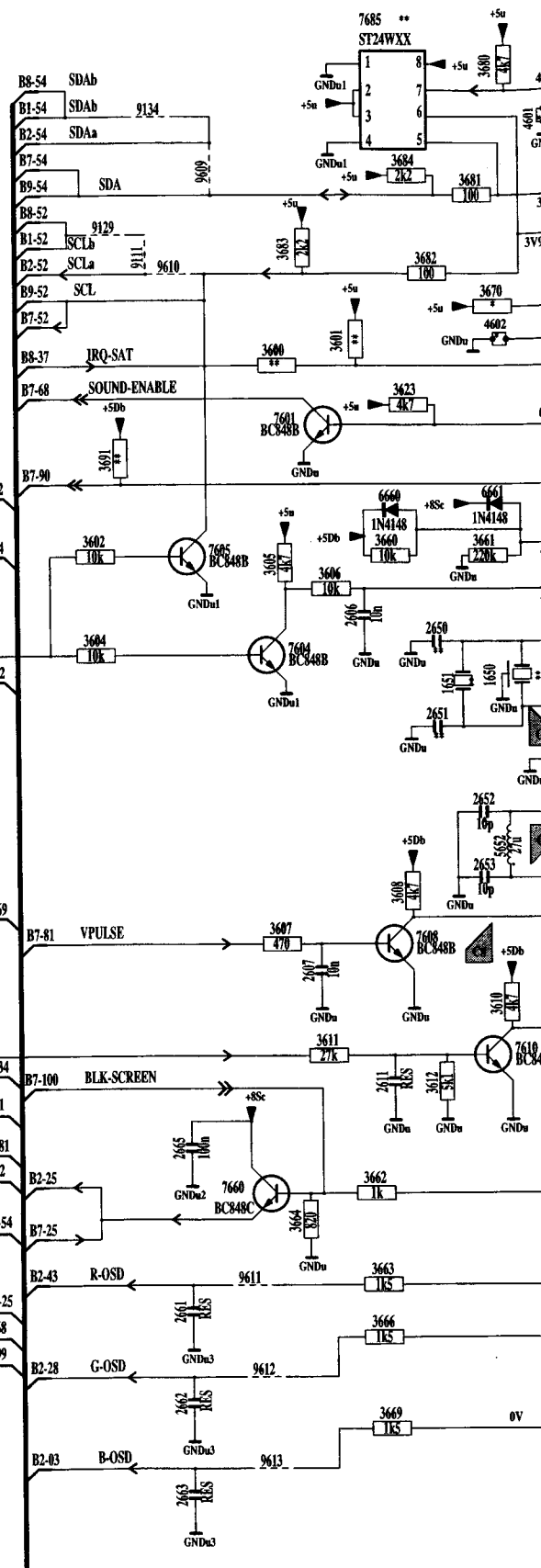
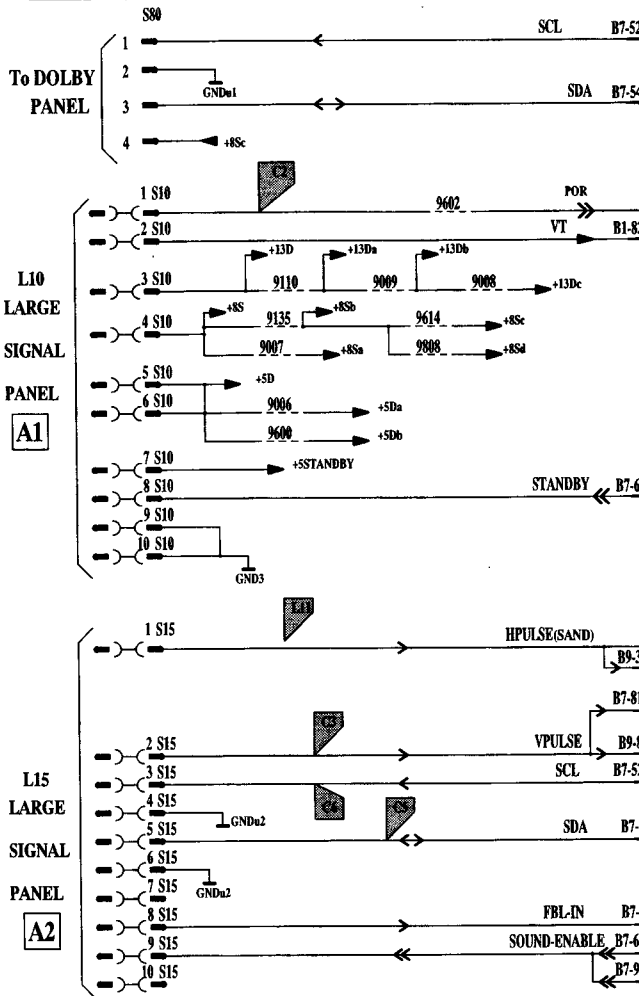


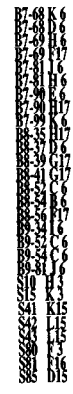
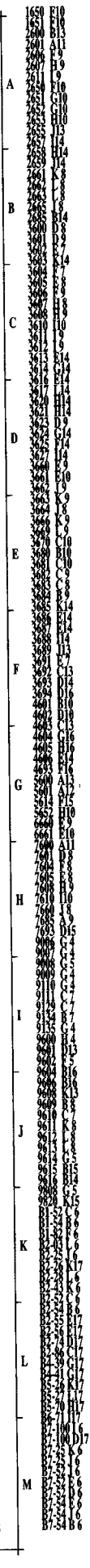
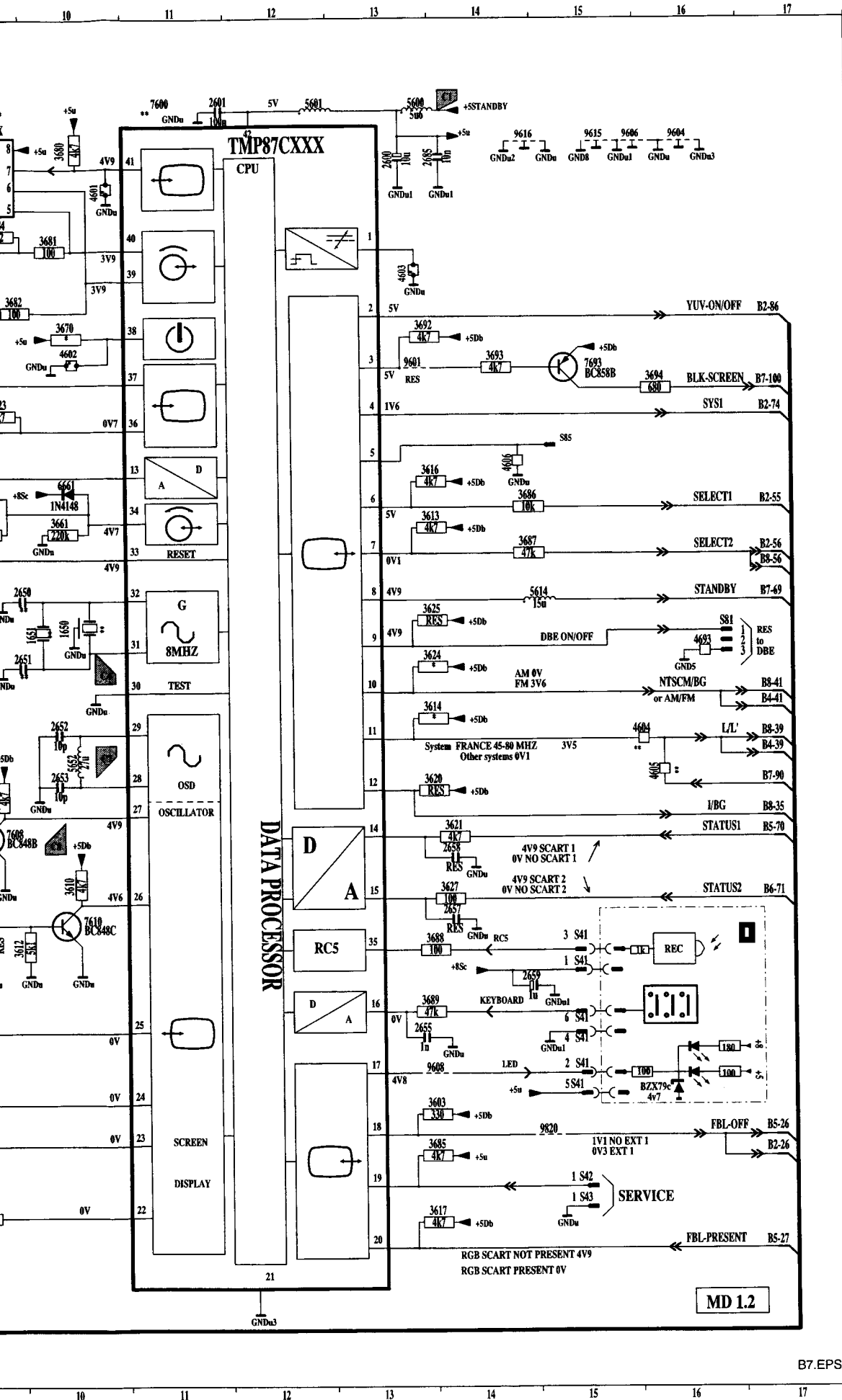
- 130 A3
- 1300 B2
- 1301 C2
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- 1999 C2
- 2000 C2

B7 CONTROLS

DESCRIPTION * ITEM/BLOCK	BG DK STEREO SYS01	BGLI NICAM SYS04	I NICAM SYS06	BG ST/NIC SYS08
3614	-	4K7	-	-
3624	4K7	4K7	-	-
3670	-	-	4K7	-
4662	+	+	-	4K7

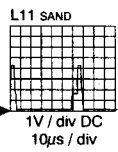
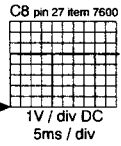
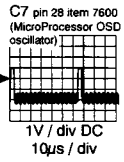
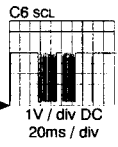
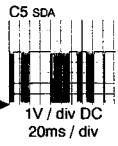
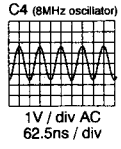
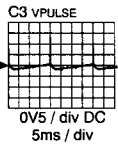
**	UP32K BASIC UPR0-04	UP32K SAT UPR09	UP60K UPR08
1650	CER 8MHZ	-	-
1651	-	XTL8MHZ	XTL8MHZ
2650	-	27P	27P
2651	-	27P	27P
3600	-	100	-
3601	-	4K7	-
3691	-	-	4K7
4604	+	-	-
4603	-	-	+
4605	-	-	+
7600	TMP87CM36 ST24W04	TMP87CM36 ST24W04	TMP87CS38N ST24W16
7685	-	-	-





C1 +5STANDBY
(Pin 42 item 7600)
5VDC

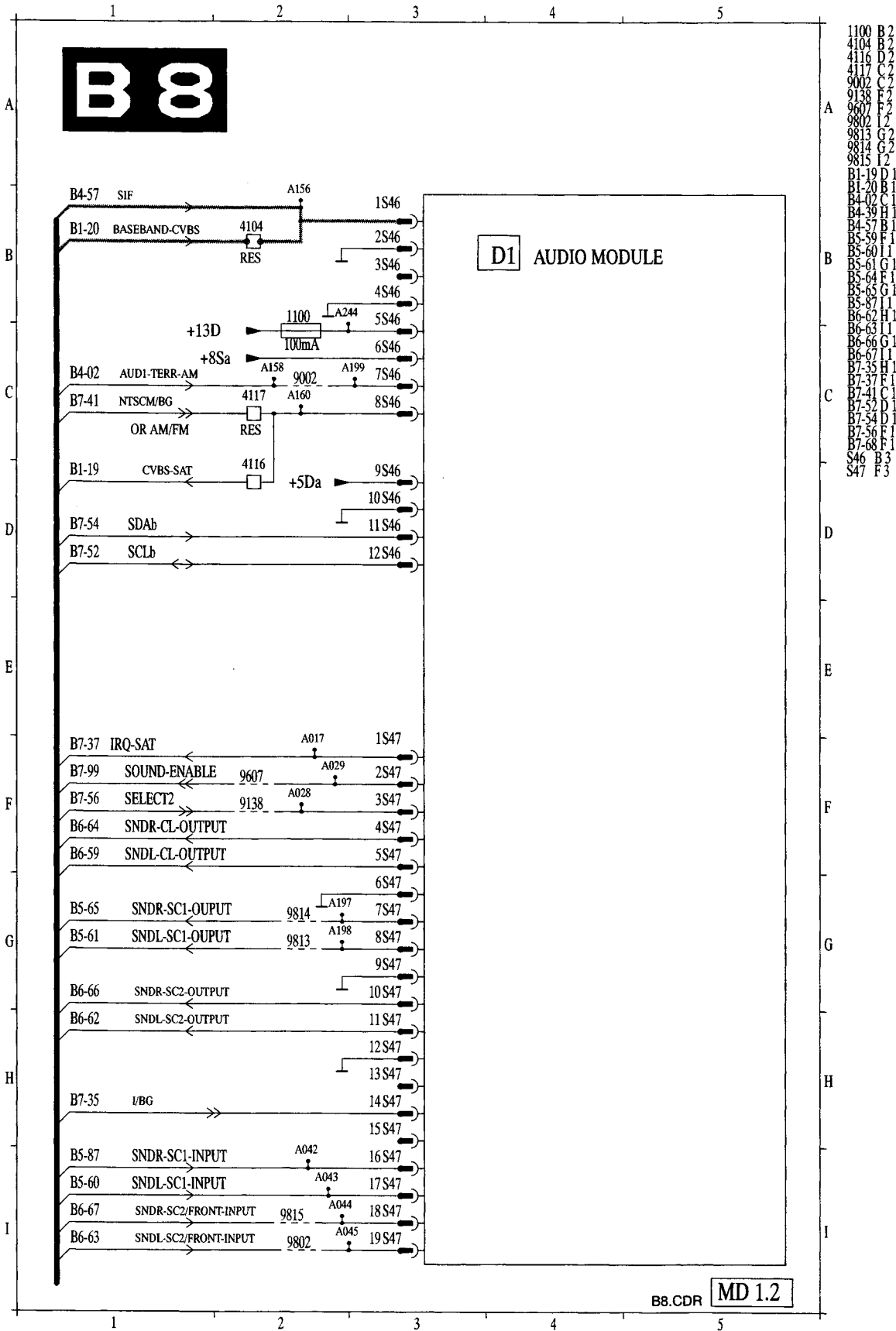
C2 POR (① to ②)
0V / 5V
POR (③ to ④)
5V / 0V

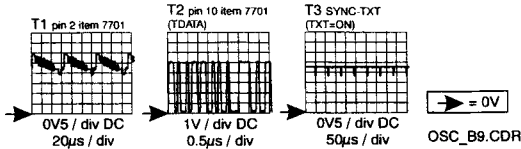
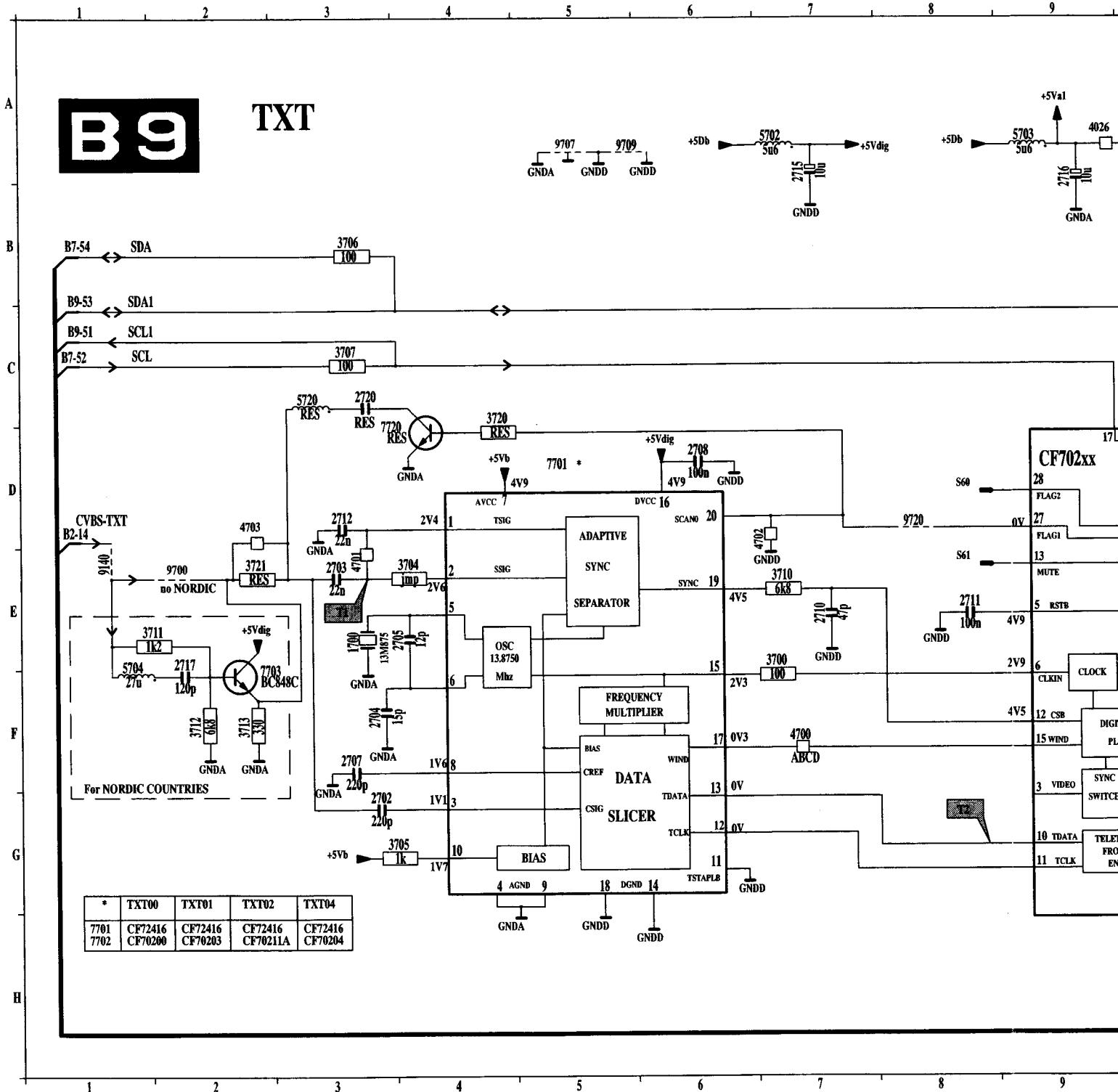


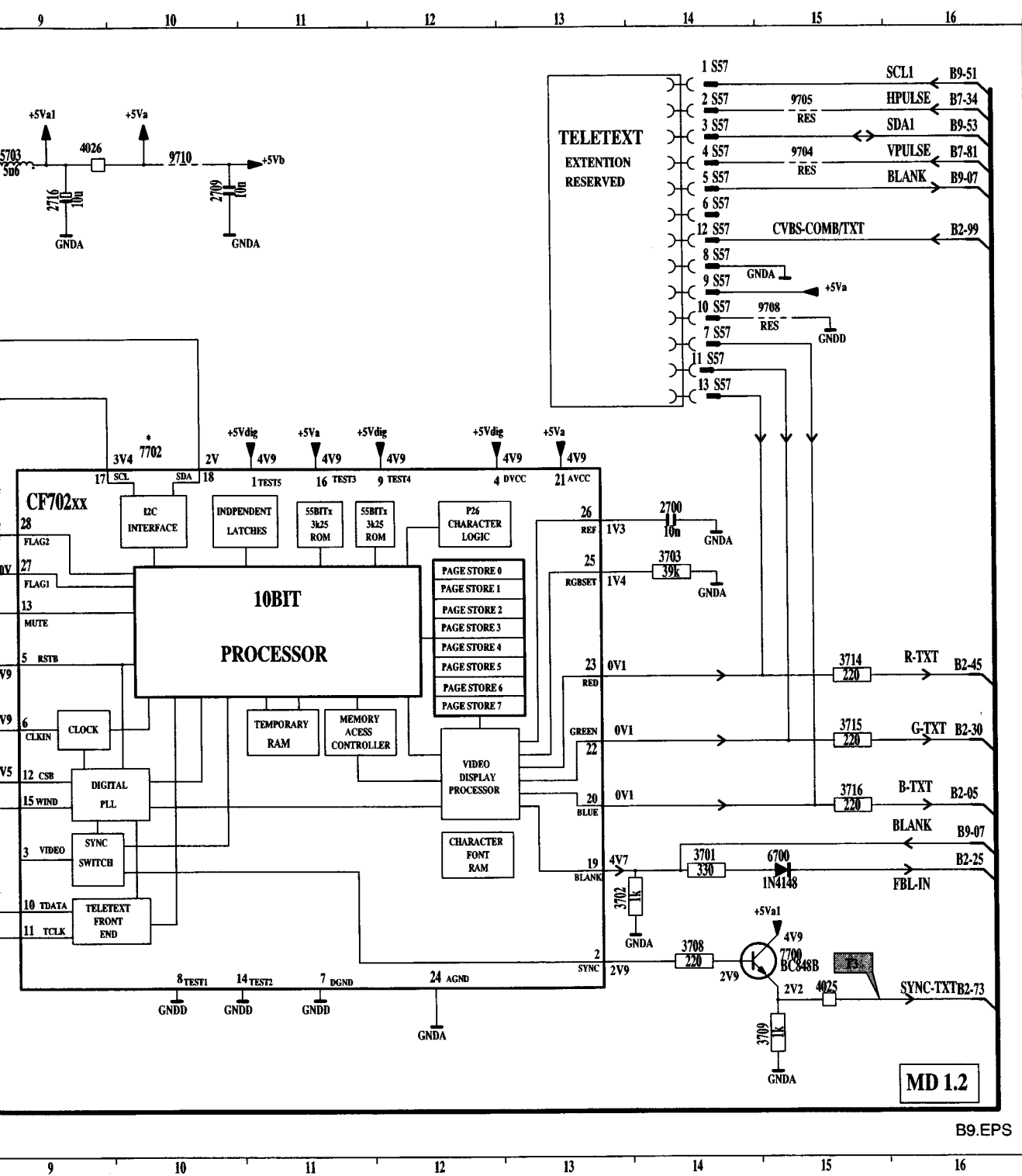
→ = 0V

OSC B7.CDR

Connections audio module / Verbindungen Audio Modul / Connections de module audio





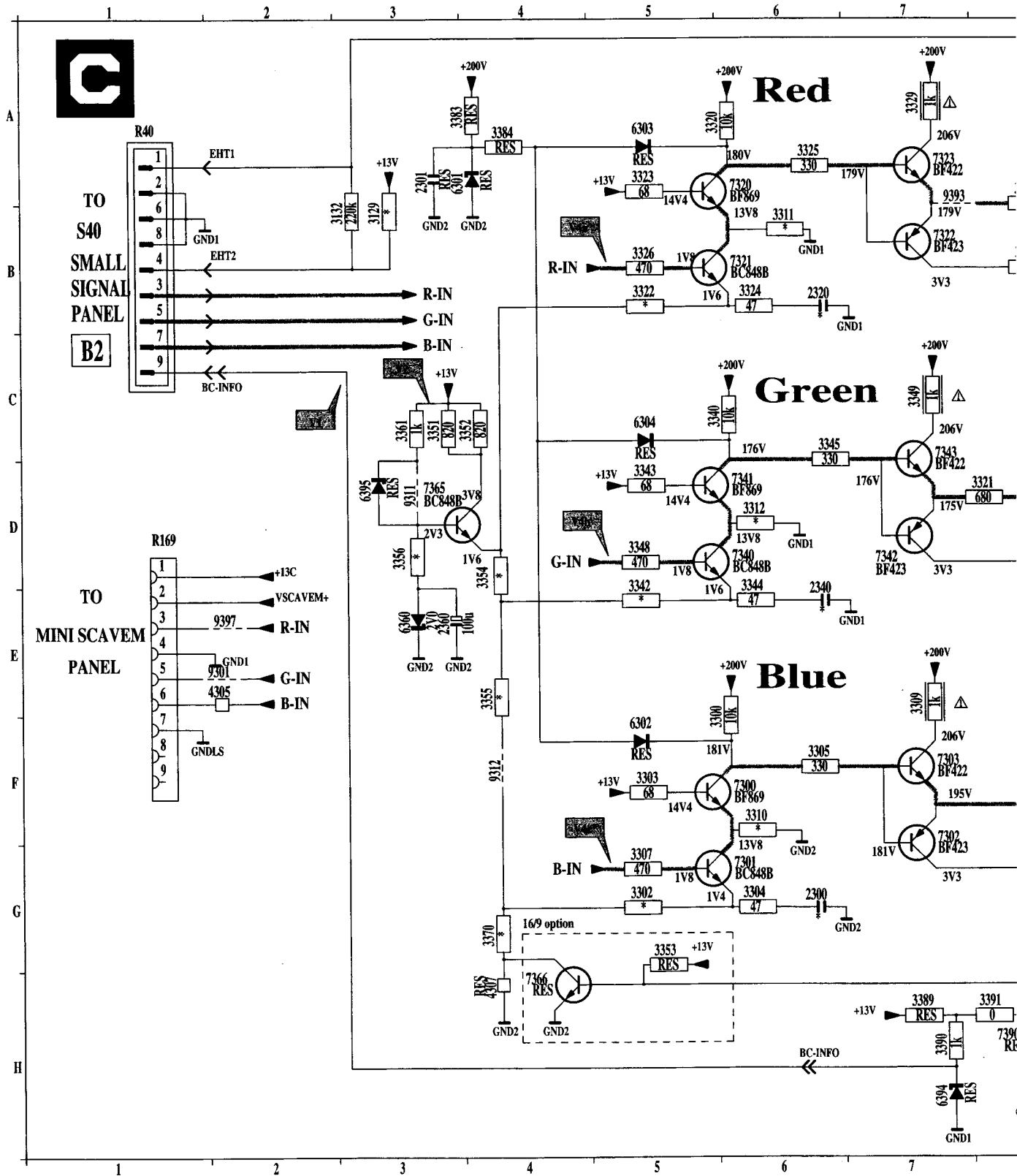


1700 E3
 1701 D14
 1702 E3
 1703 E3
 1704 E3
 1705 E3
 1706 D3
 1707 D3
 1708 D6
 1709 A10
 1710 E7
 1711 E8
 1712 D3
 1713 E7
 1714 A9
 1715 E2
 1716 C3
 1717 E7
 1718 E7
 1719 G14
 1720 G13
 1721 D14
 1722 E4
 1723 G4
 1724 G4
 1725 C3
 1726 C3
 1727 G14
 1728 H15
 1729 E7
 1730 E7
 1731 E7
 1732 E7
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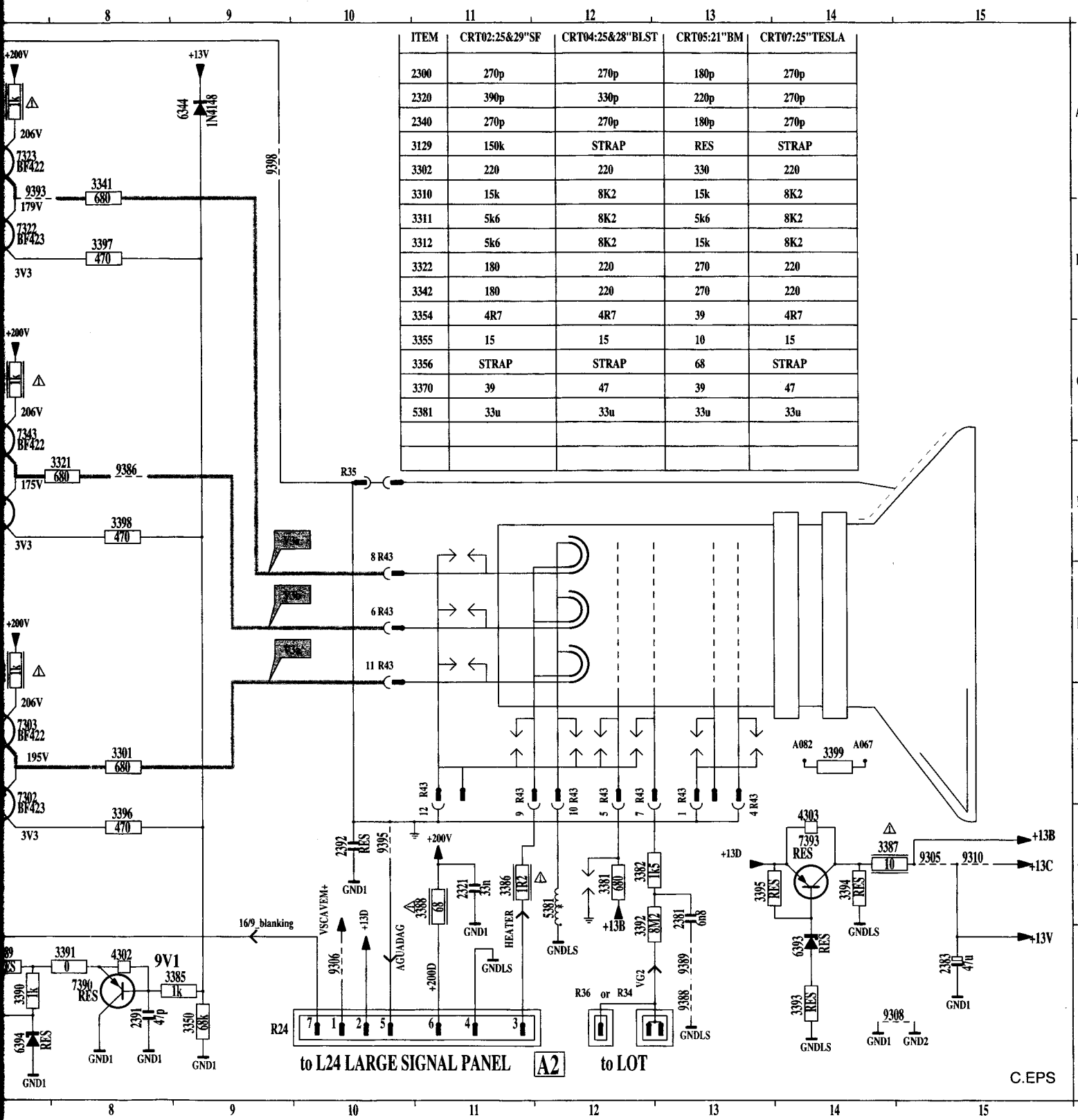
B9.EPS

MD 1.2

1000	C15	2360	E 3	3300	F 6	3309	F 7	3323	A 5	3342	E 5	3351	C 3	3370	G 4	3387	G14	3394	G14	4303	G14	6304	C 5		
1300	C12	2381	F13	3301	F 6	3310	F 6	3324	A 6	3343	E 5	3352	C 4	3381	G12	3388	G11	3395	G13	4305	E 2	6344	A 9		
1500	C 7	2383	H15	3302	F 6	3311	F 6	3325	A 6	3344	E 5	3353	C 5	3382	G12	3389	H 7	3396	G 8	4307	H 4	6360	E 3		
1520	B 8	2391	H 8	3303	F 6	3312	F 6	3326	D 6	3345	D 6	3346	D 6	3354	D 4	3390	A 4	3397	E 8	5301	G12	6393	H14		
1521	B 8	2392	H 8	3304	F 6	3313	F 6	3327	D 6	3347	D 6	3348	D 6	3355	D 4	3391	H 8	3398	D 8	6301	A 4	6394	H 7		
1522	C11	2393	H 8	3305	F 6	3314	F 6	3328	D 6	3349	D 6	3350	D 6	3356	D 3	3392	G12	3399	F14	6302	E 5	6395	D 3		
1540	E 6	3132	B 3	3306	F 6	3315	F 6	3329	D 5	3341	A 8	3350	H 9	3361	C 3	3386	G11	3393	H14	4302	H 8	6303	A 5	7300	F 6

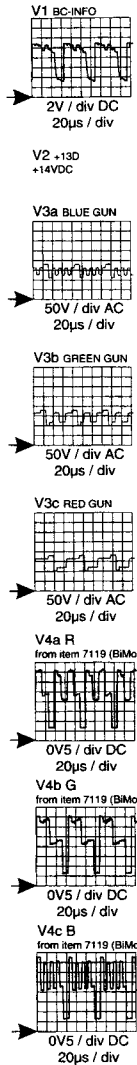


6304 C5	7301 G6	7340 D6	7393 G14	9312 F4	9398 A9	R40 A1
6344 A9	7302 E7	7341 D6	9301 E2	9386 D8	A067 F14	R43 E10
6360 E3	7303 F7	7342 D7	9305 G15	9388 H13	A082 F14	R169 D1
6393 H14	7320 A6	7343 C7	9306 H10	9389 H13	R24 H9	
6394 H7	7321 B6	7365 D3	9308 H14	9393 A7	R34 H12	
6395 D3	7322 B7	7366 H4	9310 G15	9395 G10	R35 D10	
7300 F6	7323 A7	7390 H8	9311 D3	9397 E2	R36 H12	

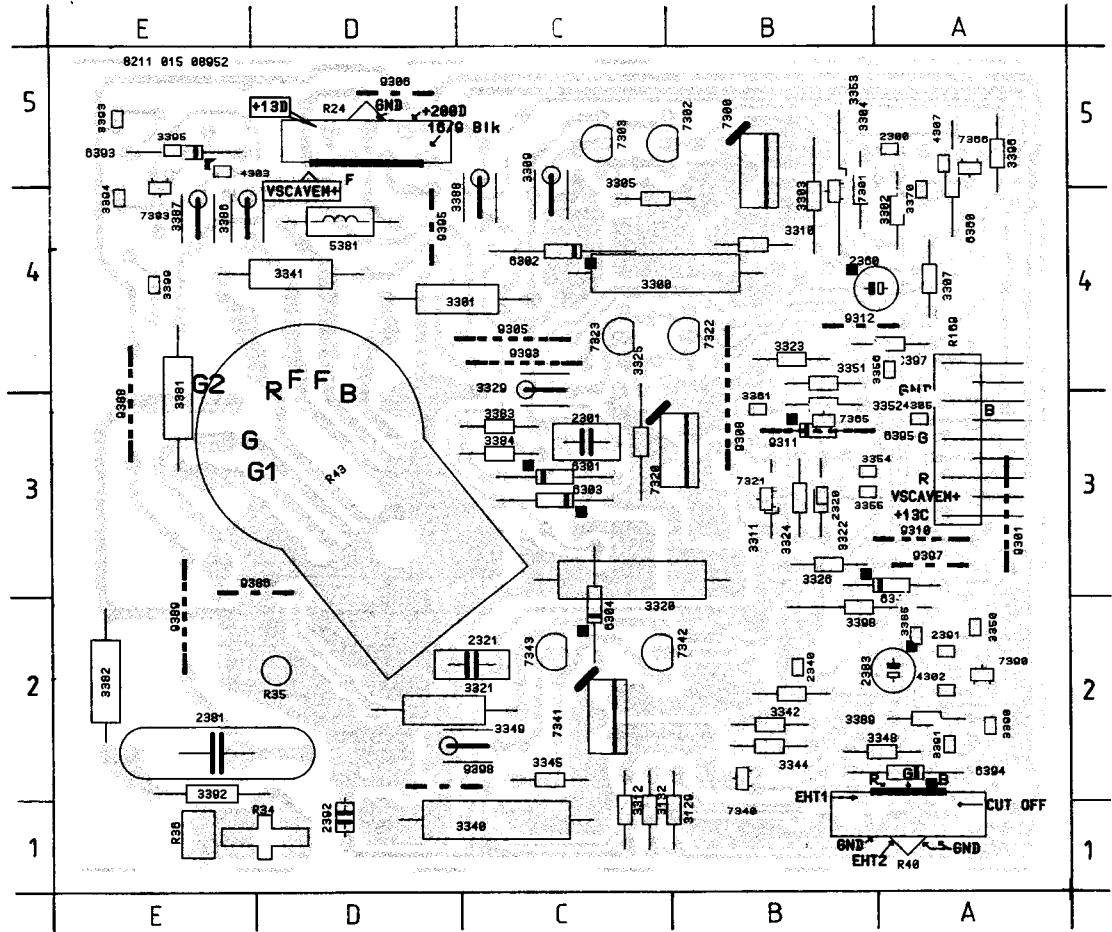


ITEM	CRT02:25&29"SF	CRT04:25&28"BLST	CRT05:21"BM	CRT07:25"TESLA
2300	270p	270p	180p	270p
2320	390p	330p	220p	270p
2340	270p	270p	180p	270p
3129	150k	STRAP	RES	STRAP
3302	220	220	330	220
3310	15k	8K2	15k	8K2
3311	5k6	8K2	5k6	8K2
3312	5k6	8K2	15k	8K2
3322	180	220	270	220
3342	180	220	270	220
3354	4R7	4R7	39	4R7
3355	15	15	10	15
3356	STRAP	STRAP	68	STRAP
3370	39	47	39	47
5381	33u	33u	33u	33u

CRT panel / CRT-Platine / Platine tube cathodique

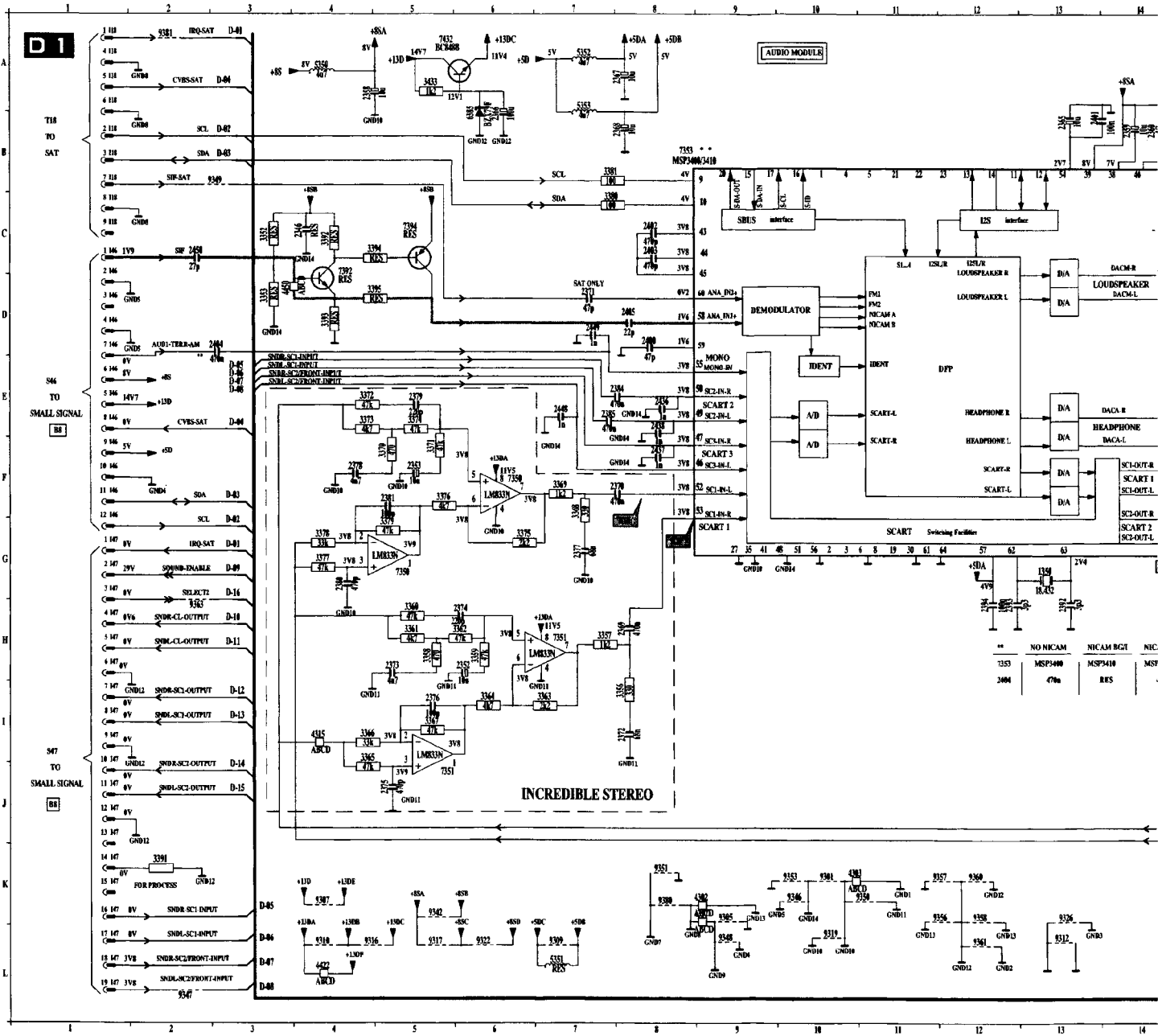


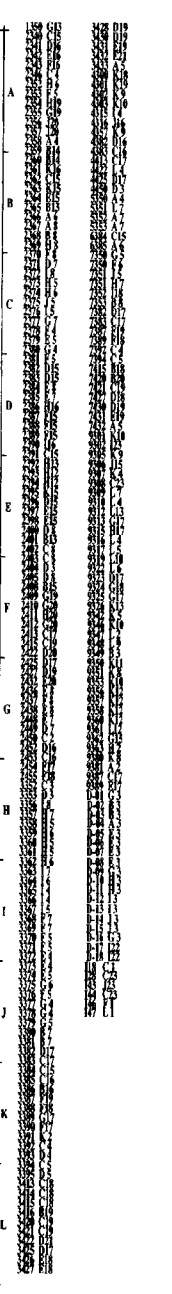
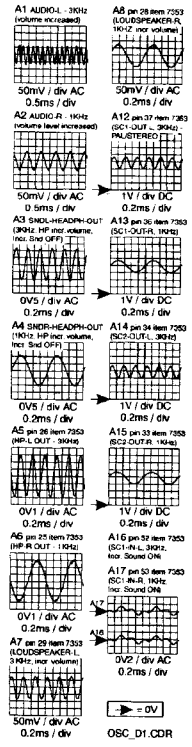
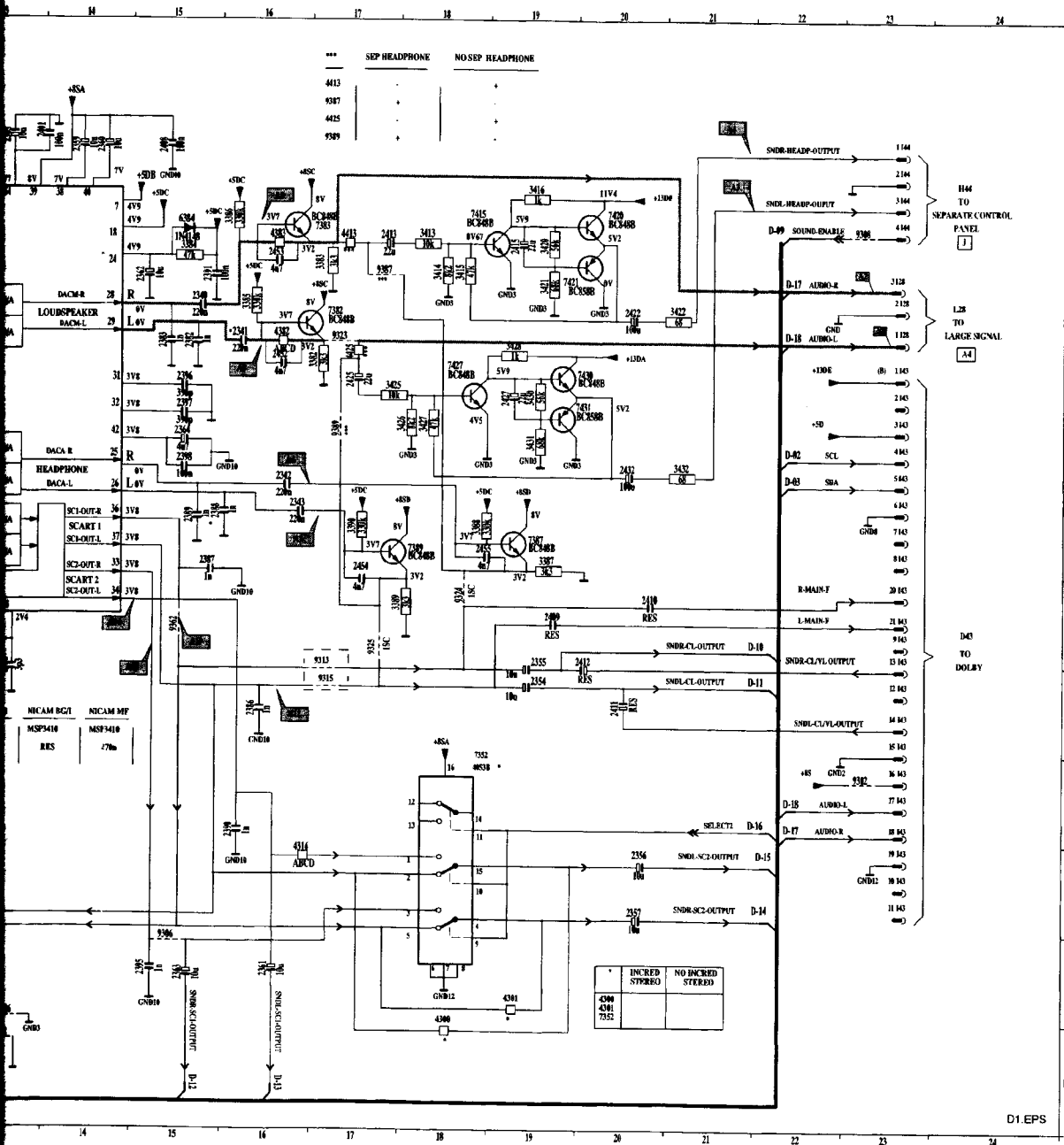
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OSC_C.CDR

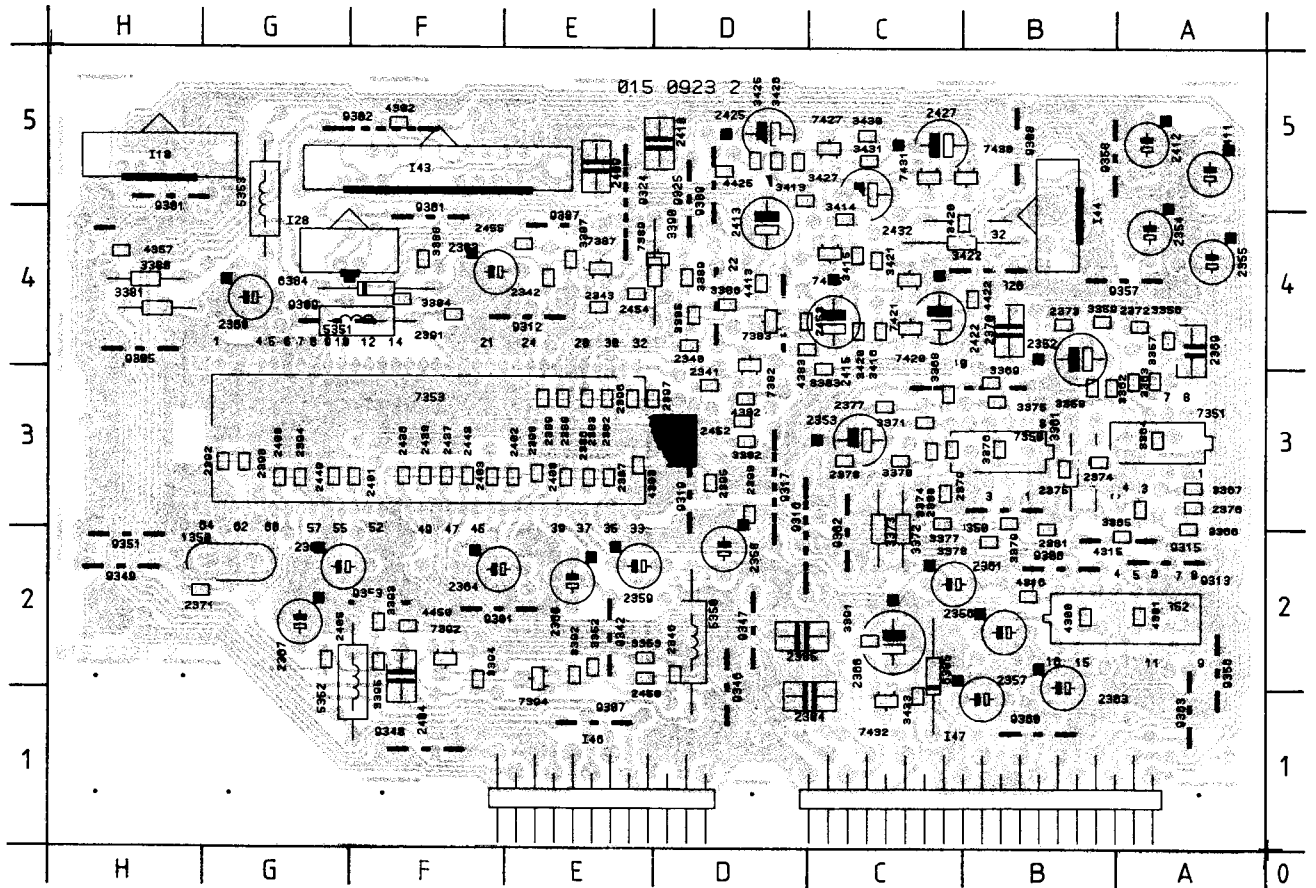


R34	D1	2360	A4	3305	B4	3326	B3	3352	B3	3386	D4	3398	A2	6360	A2	7340	B2*	9310	A3
R35	D2	2381	E2	3307	A4	3329	C3	3353	B4	3387	E4	3399	E4*	6393	E5	7341	C2	9311	B3
R36	E1	2383	A2	3309	C4	3340	C1	3354	A3*	3388	C4	4302	A2*	6394	A2	7342	B2	9312	A4
R40	A1	2391	A2*	3310	B4	3341	D4	3355	A3*	3389	A2	4303	E4*	6395	B3	7343	C2	9386	D2
R43	D3	2392	D1	3311	B3	3342	B2	3356	A4*	3390	A2*	4305	A3*	7300	B4	7365	B3*	9388	E3
R169	A3	3129	B1	3312	C1	3343	B2	3361	B3*	3391	A2*	4307	A5*	7301	B4*	7366	A4*	9389	E2
1300	E3*	3132	C1	3320	C3	3344	B2	3370	A4*	3392	E2	5381	D4	7302	B5	7390	A2*	9393	C4
2300	A5*	3300	B4	3321	D2	3345	C2	3381	E3	3393	E5*	6301	C3	7303	C5	7393	E4*	9395	D4
2301	C3	3301	C4	3322	B3	3348	A2	3382	E2	3394	E4*	6302	C4	7320	B3	9301	A3	9397	A3
2320	B3*	3302	A4	3323	B4	3349	C2	3383	C3	3395	E5*	6303	C3	7321	B3*	9305	C4	9398	D2
2321	C2	3303	B4	3324	B3	3350	A2*	3384	C3	3396	A5	6304	C2	7322	B4	9306	D5		*
2340	B2*	3304	A4	3325	C3	3351	B3	3385	A2*	3397	A4	6344	A3	7323	C4	9308	B3		

Audio module / Audio Modul / Module audio



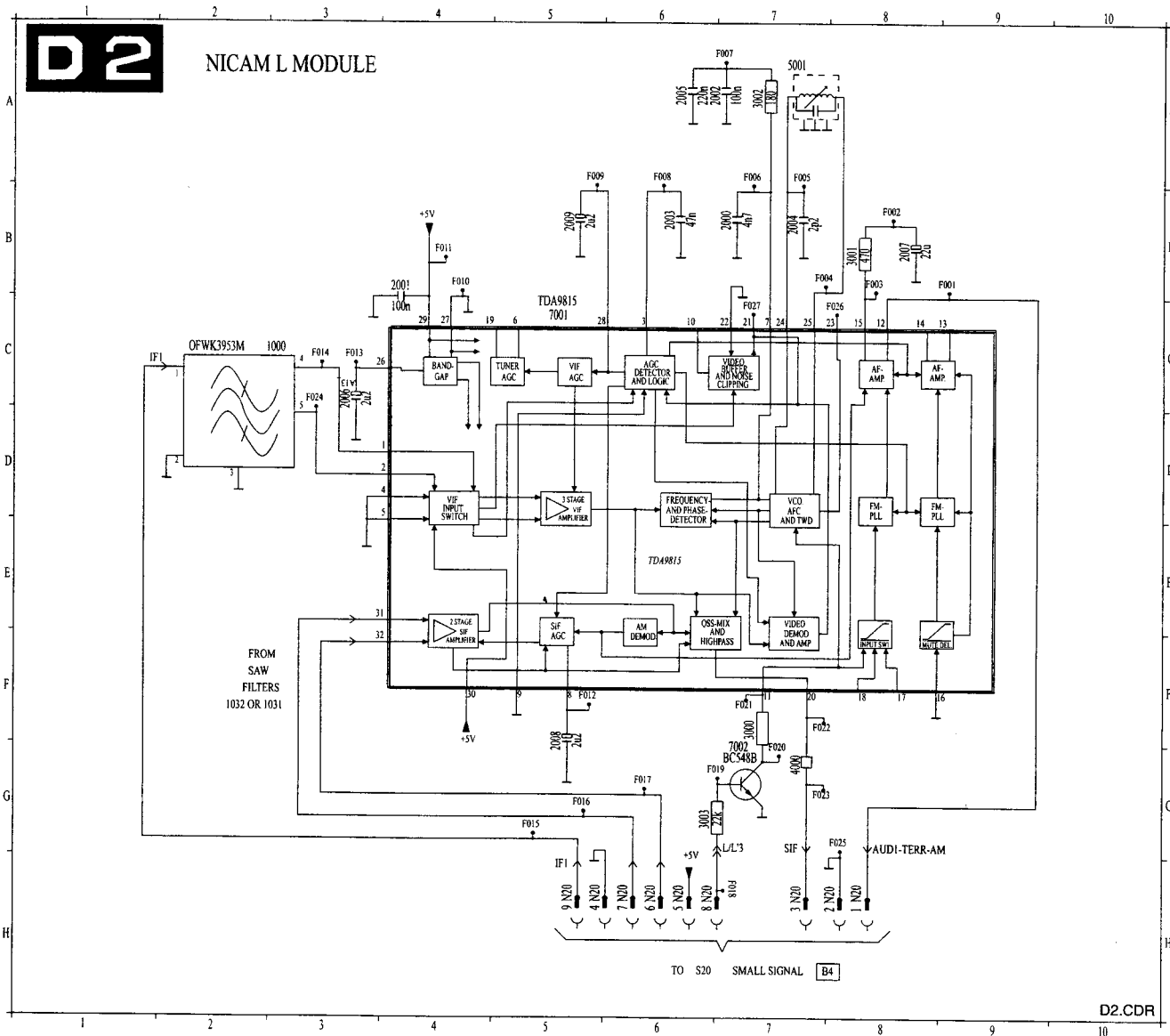




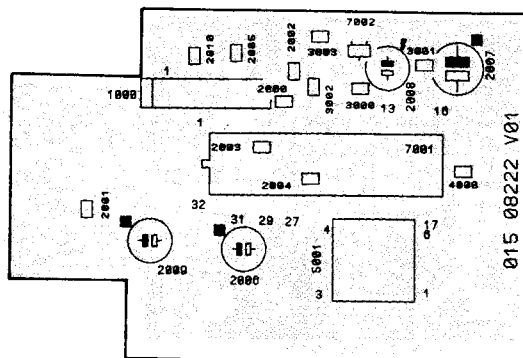
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143	F5	2361	C2	2380	C3*	2400	G3*	2438	F3*	3365	A3*	3384	F4*	3425	D5*	4425	D5*	7420	C4*	9319	D3	9362	C3
144	B5	2362	F4	2381	B3*	2401	G3*	2448	F3*	3366	A3*	3385	D4*	3426	D5*	4450	F2*	7421	C4*	9322	D4	9363	A1
146	E1	2363	B2	2382	E3*	2402	E3*	2449	G3*	3367	A3*	3386	D4*	3427	D5*	5350	D2	7422	C5*	9323	D4	9380	H4
147	B1	2364	F2	2383	E3*	2403	F3*	2450	E2*	3368	C3*	3387	E4*	3428	C5*	5351	F4	7430	C5*	9324	E5	9381	H5
1350	G2	2365	G2	2384	C2	2404	F2	2452	D3*	3369	B4*	3388	F4*	3430	C5*	5352	F2	7431	C5*	9325	D5	9387	E5
2340	D4*	2366	C2	2385	D2	2405	G2*	2453	D4*	3370	C3*	3389	D4*	3431	C5*	5353	G5	7432	C1*	9326	B4	9389	D5
2341	D3*	2367	G2	2386	E3*	2408	E3*	2454	E4*	3371	C3*	3390	E4	3432	B5	6384	F4	9301	F2	9342	E2		
2342	E4*	2368	G4	2387	E3*	2409	E5	2455	E4*	3372	C3	3391	C2*	3433	C1*	6385	C2	9302	F5	9346	D2		
2343	E4*	2369	A4	2388	E3*	2410	D5	3352	E2*	3373	C3	3392	E2*	4300	B2*	7350	B3	9303	F2	9347	D2		
2346	D2*	2370	B4	2389	E3*	2411	A5	3353	E2*	3374	C3*	3393	F2*	4301	A2*	7351	A3	9306	B2	9348	F1		
2352	B4	2371	H2*	2390	D3*	2412	A5	3356	A4*	3375	B3*	3394	F2*	4302	F5*	7352	A2	9307	E1	9349	H2		
2353	C3	2372	A4*	2391	F4*	2413	D5	3357	A4*	3376	B3*	3395	F2*	4303	E3*	7353	F3	9308	B5	9350	B3		
2354	A4	2373	B4*	2392	G3*	2415	C4	3358	B3*	3377	C3*	3413	D5*	4315	A3*	7382	D4*	9309	G4	9351	H3		
2355	A4	2374	B3*	2393	G3*	2422	C4	3359	B4*	3378	B2*	3414	C5*	4316	B2*	7383	D4*	9310	B3	9353	F2		
2356	B2	2375	B3*	2394	G3*	2425	D5	3360	B3	3379	B3*	3415	C4*	4357	H4*	7387	E4*	9312	E4	9356	A2		
2357	B1	2376	A3*	2395	D3*	2427	C5	3361	B3	3380	H4	3416	C4*	4382	D3*	7389	E4*	9313	A2	9357	A4		
2358	D2	2377	C3*	2396	E3*	2432	C5	3362	B3*	3381	H4	3420	C4*	4383	D4*	7392	F2*	9315	A3	9358	A5		
2359	E2	2378	C3*	2397	E3*	2436	F3*	3363	A4*	3382	D3*	3421	C4*	4413	D4*	7394	E2*	9316	D3	9360	B1		

* = SMD component

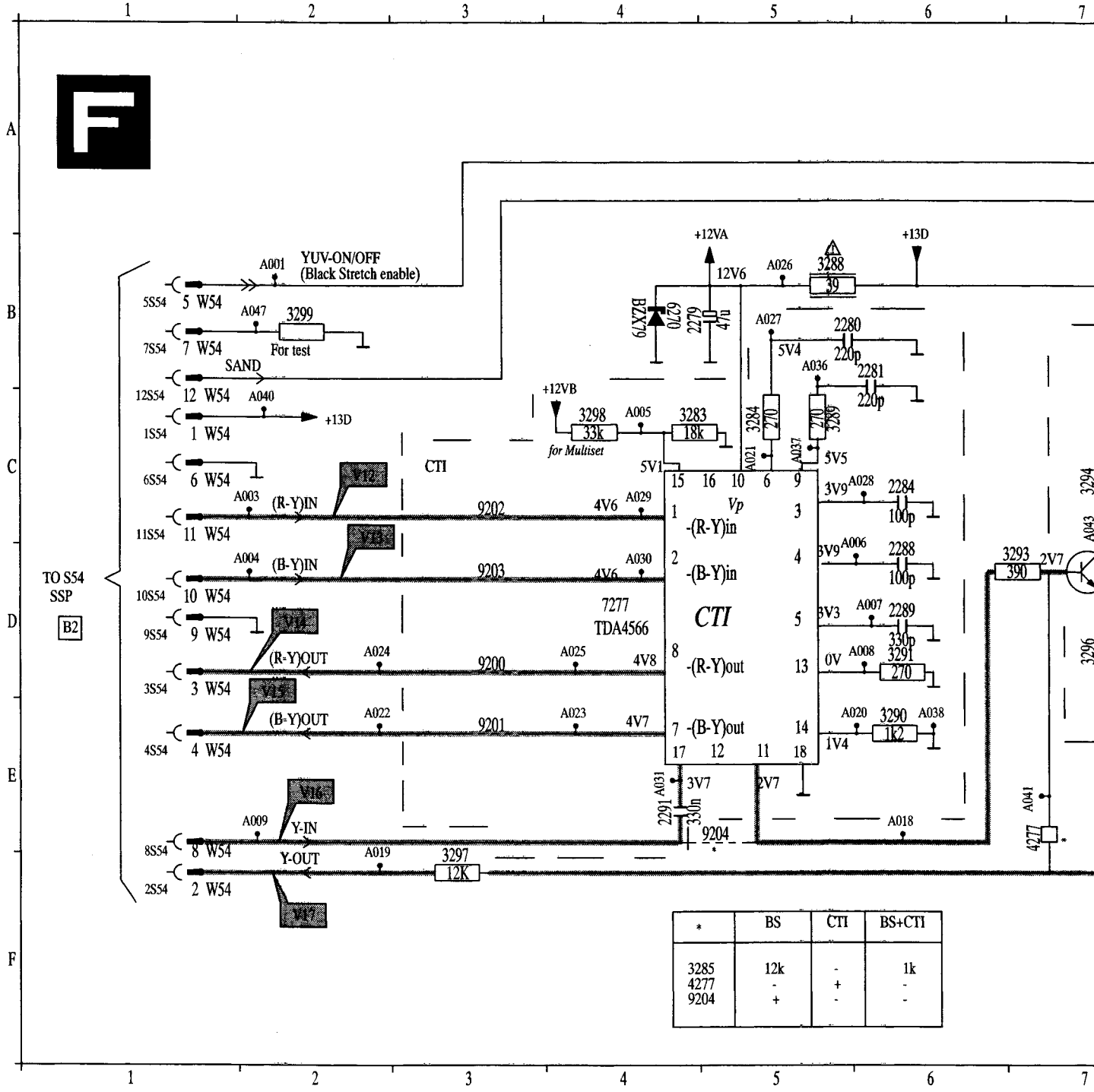
Nicam L module / Nicam L Modul / Module Nicam L



NICAM L MODULE / NICAM L MODUL / MODULE NICAM L



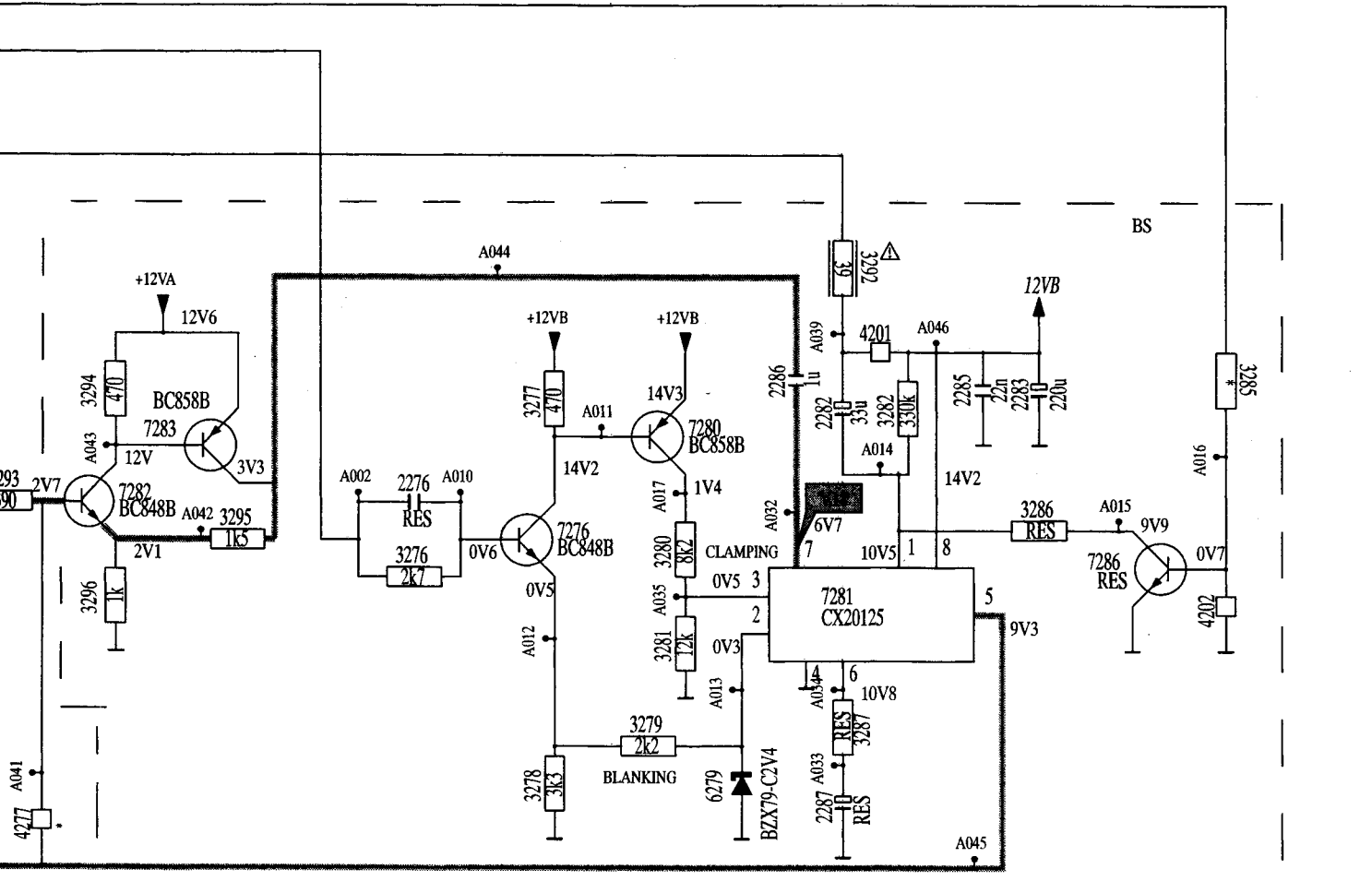
2276 D 9	2284 C 6	2291 E 4	3281 D10	3287 E11	3293 D 7	3299 B 2	7276 D10	7286 D13	W54 B 1
2279 B 5	2285 C12	3276 D 9	3282 C11	3288 B 5	3294 C 7	4201 C11	7277 D 4	9200 D 3	
2280 B 5	2286 C11	3277 C 9	3283 C 4	3289 C 5	3295 D 8	4202 D13	7280 C10	9201 E 3	
2281 B 6	2287 E11	3278 E 9	3284 C 5	3290 E 6	3296 D 7	4277 E 7	7281 D11	9202 C 3	
2282 C11	2288 D 6	3279 E10	3285 C13	3291 D 6	3297 F 3	6270 B 4	7282 D 7	9203 D 3	
2283 C12	2289 D 6	3280 D10	3286 D12	3292 B11	3298 C 4	6279 E10	7283 C 7	9204 E 5	



CTI/Black Stretch Platine / Platine CTI/Black Stretch

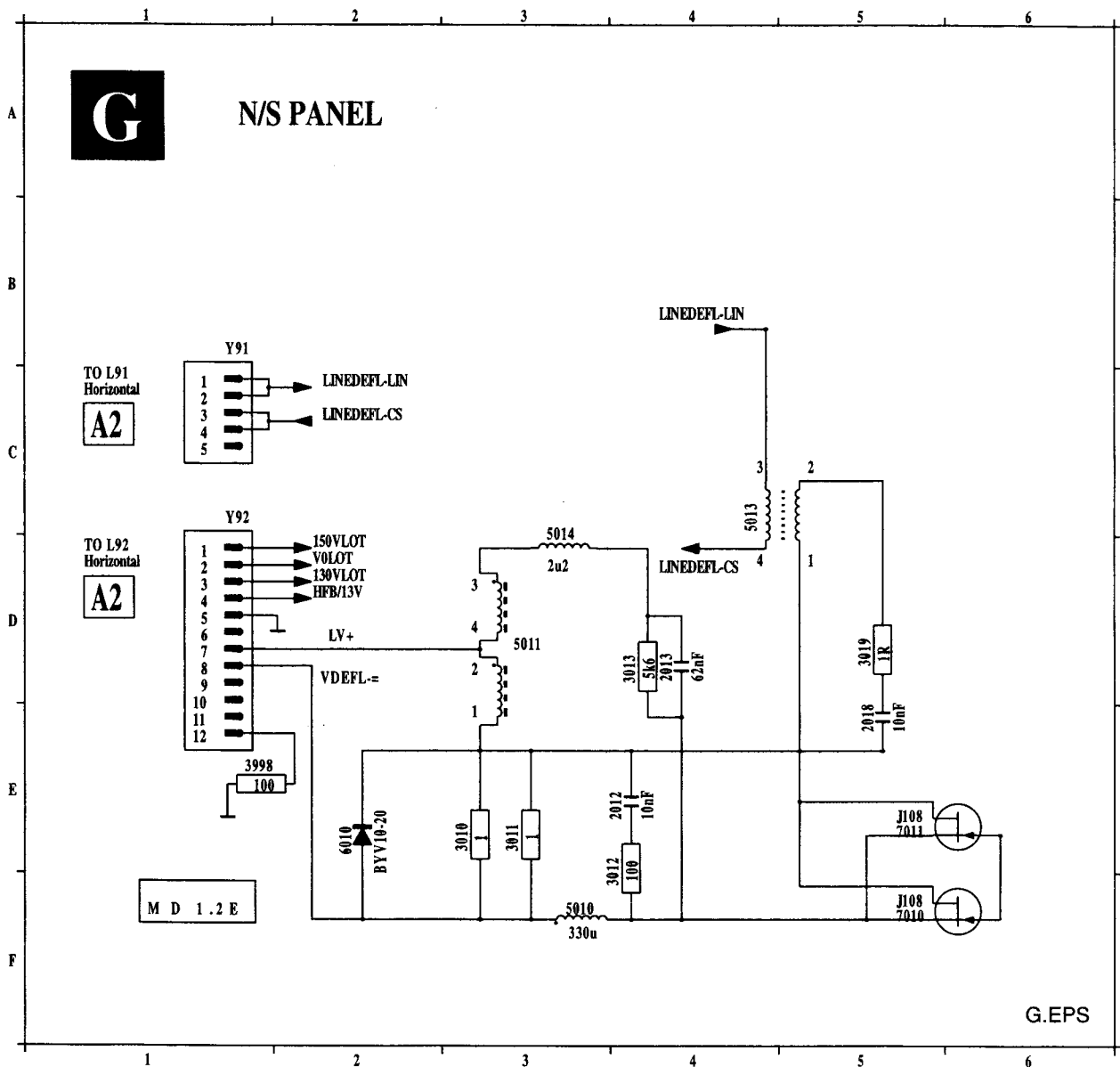
7 8 9 10 11 12 13

A
B
C
D
E
F

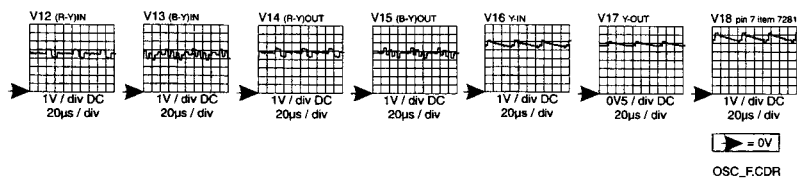


7 8 9 10 11 12 13

F.CDR

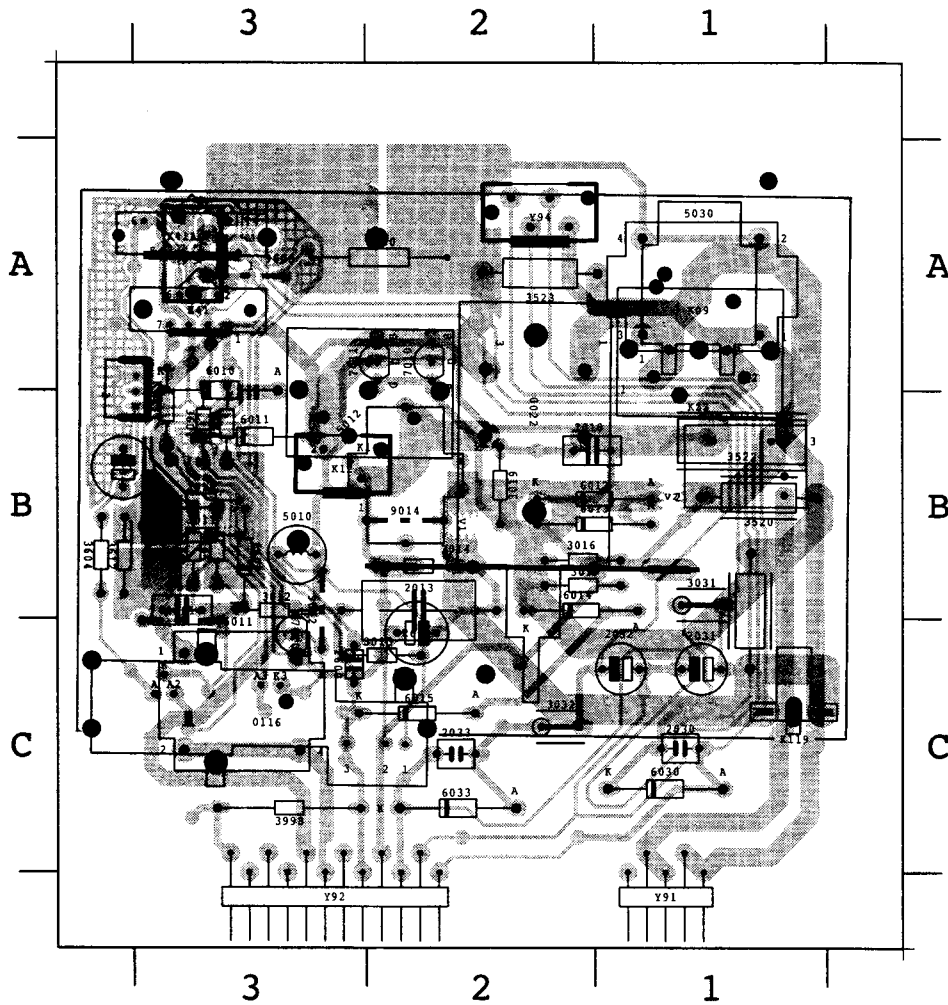


- 2012 E 4
- 2013 D 4
- 2018 E 5
- 3010 E 3
- 3011 E 3
- 3012 E 4
- 3013 D 4
- 3019 D 5
- 3998 E 1
- 5010 F 3
- 5011 D 3
- 5013 C 4
- 5014 C 3
- 6010 E 2
- 7010 F 5
- 7011 E 5
- Y91 B 1
- Y92 D 1

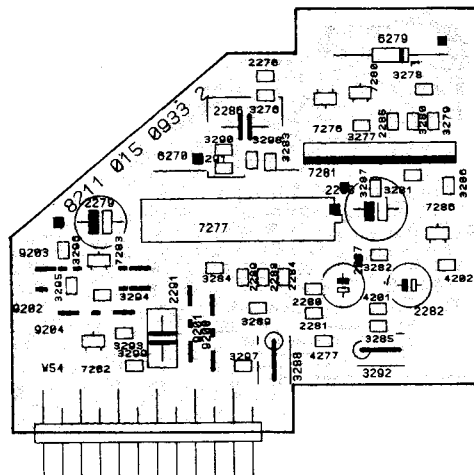


N/S PANEL / N/S PLATINE / PLATINE N/S

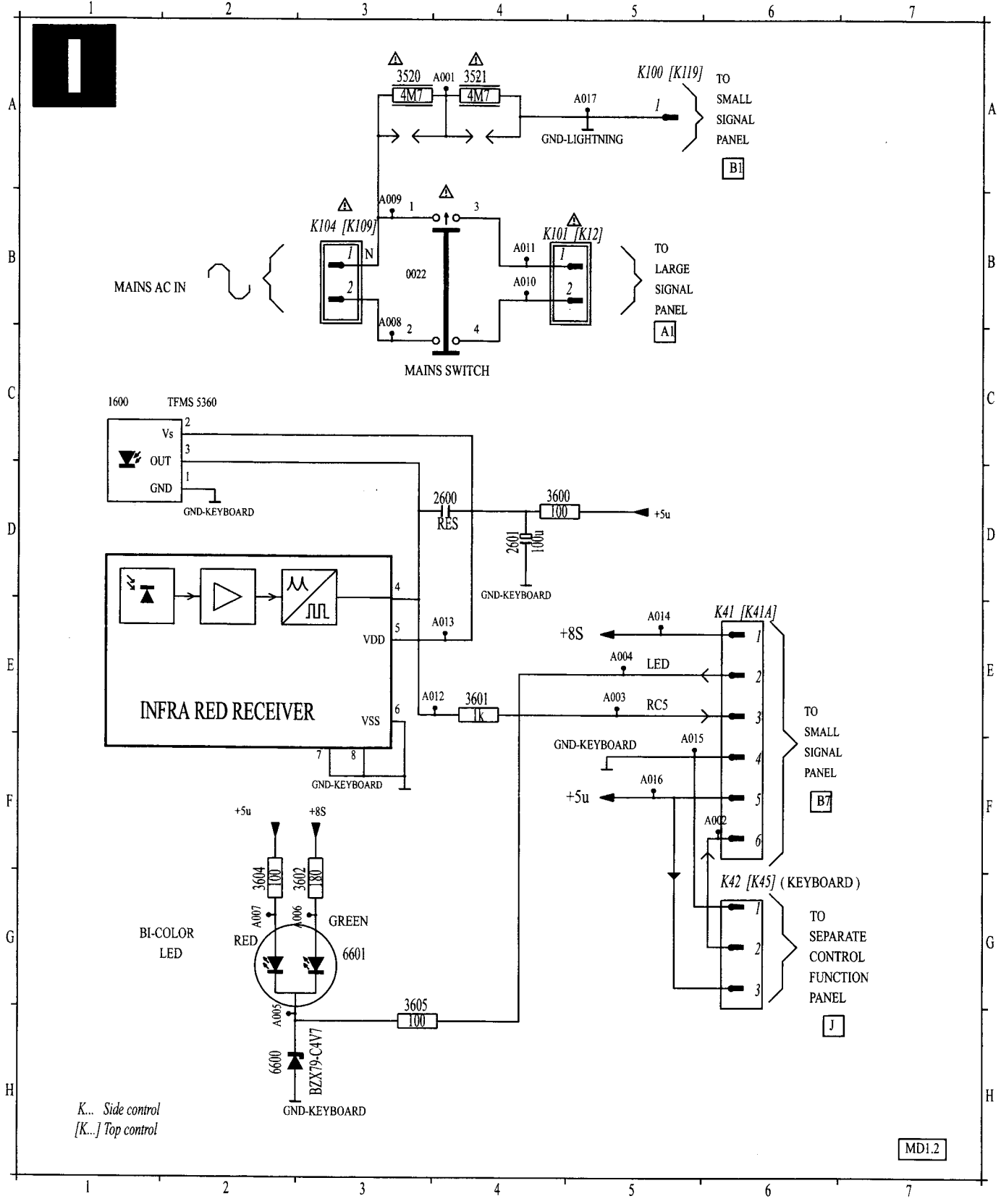
2012 B 3	2031 C 1	3011 B 3	3016 B 1	3031 B 1	5011 C 3	6010 B 3	6014 B 1	7010 A 2	Y92 C 2
2013 B 3	2032 C 1	3012 B 3	3017 B 2	3032 C 2	5012 B 2	6011 B 3	6015 C 2	7011 A 2	Y93 A 3
2018 B 1	2033 C 2	3013 C 3	3019 B 2	3998 C 3	5013 B 1	6012 B 1	6030 C 1	9014 B 2	Y94 A 2
2030 C 1	3010 B 3	3014 B 2	3030 A 2	5010 B 3	5030 A 1	6013 B 1	6033 C 2	Y91 C 1	



CTI/BLACK STRETCH PANEL / CTI/BLACK STRETCH PLATINE / PLATINE CTI/BLACK STRETCH

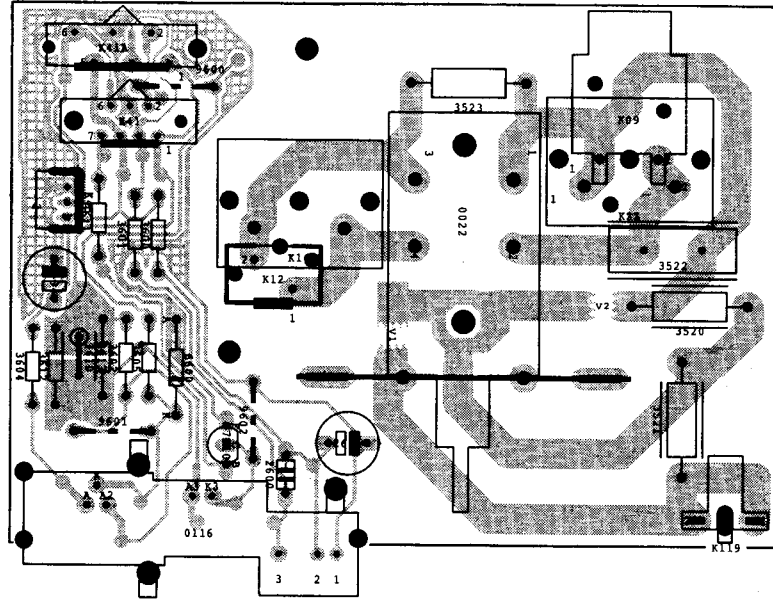


0022 B 3	3520 A 3	3602 G 3	6601 G 3	A004 E 5	A008 B 3	A012 E 4	A016 F 5	K104 B 3
1600 C 1	3521 A 4	3604 G 2	A001 A 4	A005 H 2	A009 B 3	A013 F 4	A017 A 5	K41 E 6
2600 D 4	3600 D 4	3605 H 3	A002 F 6	A006 G 3	A010 B 4	A014 F 5	K100 A 5	K42 G 6
2601 D 4	3601 E 4	6600 H 2	A003 E 5	A007 G 2	A011 B 4	A015 F 5	K101 B 4	

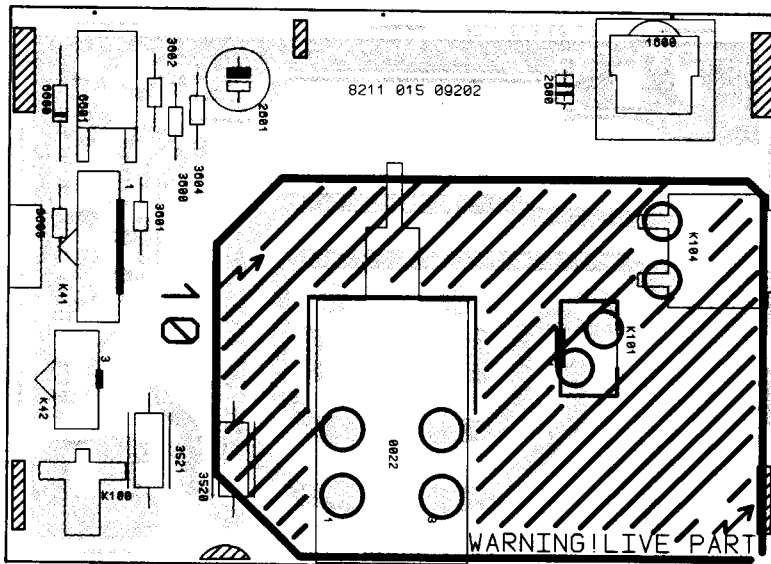


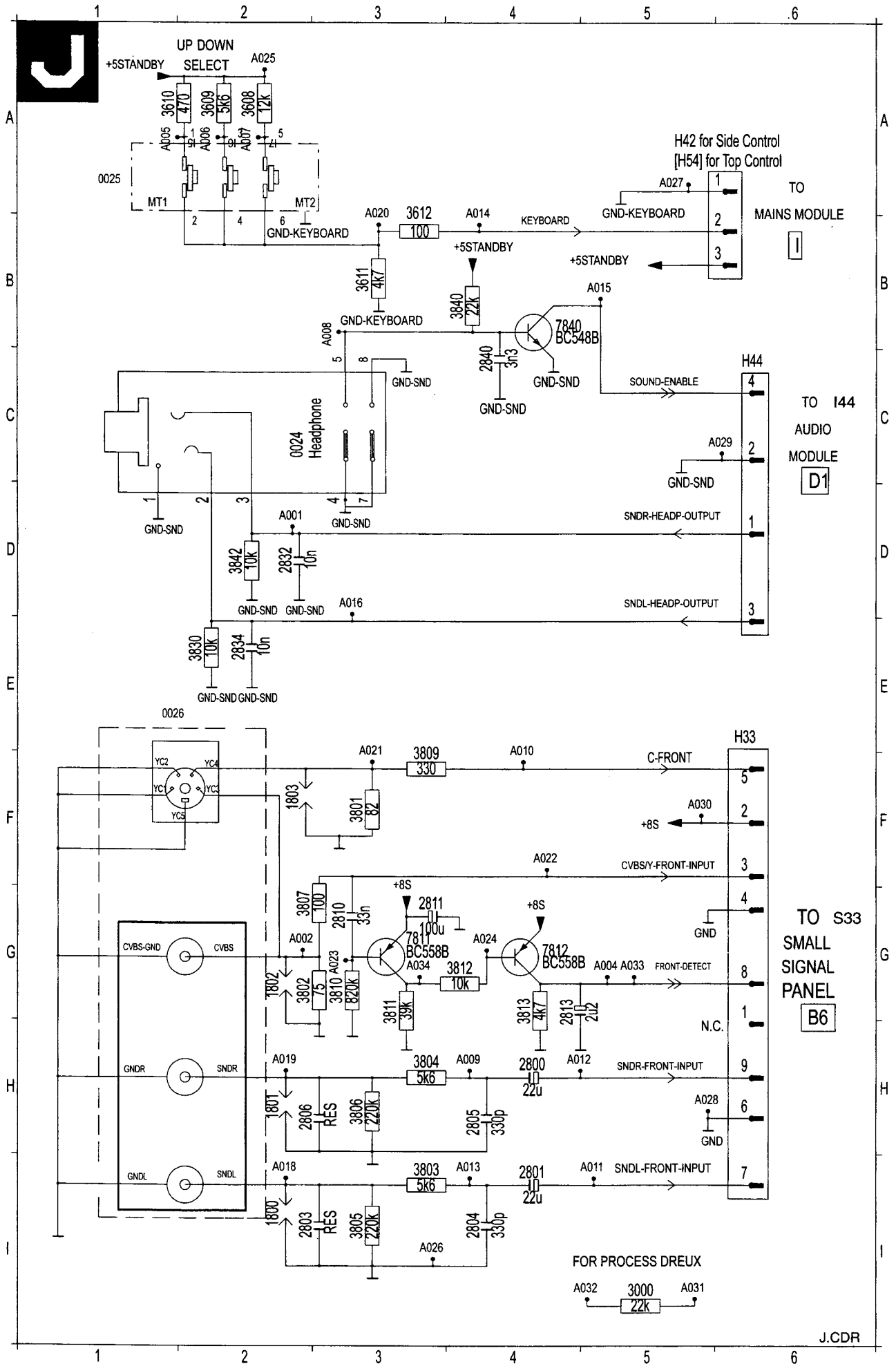
Platine Rescan/RC5/LED

MAINS/RC5/LED PANEL FOR STYLING WITH SIDE I/O AND TOP CONTROL



MAINS/RC5/LED PANEL FOR STYLING WITH SIDE I/O AND SIDE CONTROL





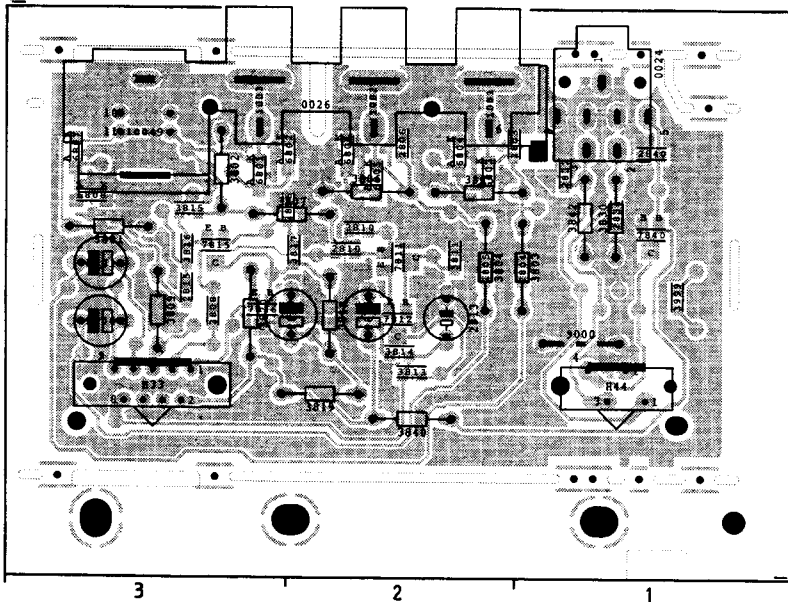
0024
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0100

Bedienung und Eingang/Ausgang / Commande et Entrée/Sortie

Styling with side Input/Output and top control

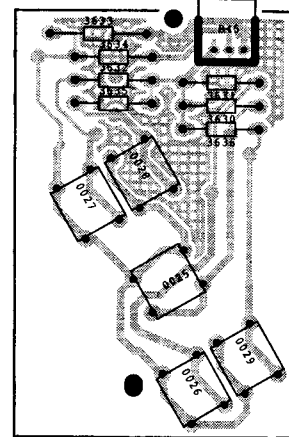
SIDE I/O PANEL

TOP CONTROL PANEL



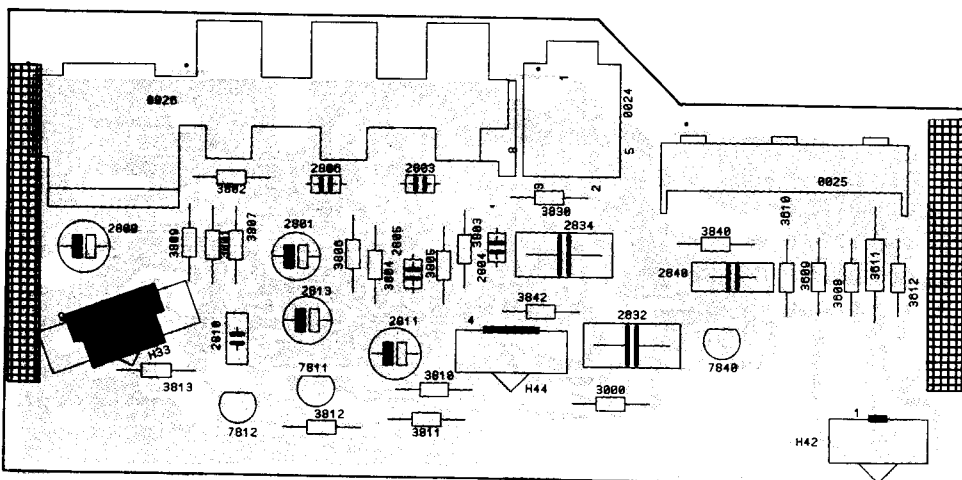
A

B



Styling with side control + side Input/Output

SIDE CONTROL + I/O PANEL



General: the Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter 6.

Alignment conditions:

All electrical adjustments should be performed under the following conditions:

- Power supply voltage: $240V \pm 10\%$, $50Hz \pm 5\%$.
- Warm-up time: ≈ 10 minutes
- The voltages and oscillograms are measured in relation to the tuner earth.
- Test probe: $R_i > 10M\Omega$; $C_i < 2,5 pF$.

8.1 Adjustments on the large signal panel

8.1.1 95V/140V supply voltage

For 21" TV-sets

Connect a voltmeter to the cathode of D6567. With the aid of R3532 adjust the power supply voltage to $95V \pm 0,5V$.

For sets 21"

Connect a voltmeter to the cathode of D6567. With the aid of R3559 adjust the power supply voltage to $140V \pm 1V$.

8.1.2 VG2 adjustment

Connect a pattern generator displaying a full black picture. Switch the TV-set to the service default mode (see chapter 6). Connect an oscilloscope to the picture tube cathodes for red, green and blue (pins 6, 8 en 11 of the picture tube socket). Set the oscilloscope to DC, 50V/div and 2 ms/div. Measure the DC level of the measuring pulses at the end of the frameblanking (see fig. 8.1). Using the Vg2 potentiometer on the linetransformer (bottom potentiometer) the measuring pulse with the highest level must be set to $+160V \pm 2V$.

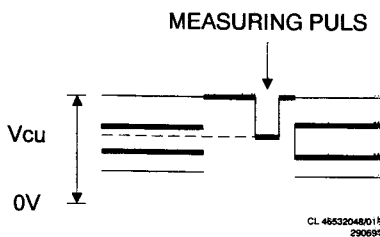


Figure 8.1

8.1.3 Focusing

Is aligned using the focuspotentiometer on the linetransformer (top potentiometer).

8.2 Alignments on the small signal panel

8.2.1 40.4 MHz IF filter (only for sets with SECAM LL' reception)

Using a signal generator (e.g. PM5326) and a capacitor of 5,6 pF supply a 40,4 MHz signal to pin 17 of the tuner. Connect an oscilloscope to pin 1 of filter 1016. Switch on the set and select in the installation menu MANUAL; SYSTEM EUR.W. Align coil L5117 for maximum DC output voltage.

8.2.2 AFC

Switch the set to service default mode (see chapter 8). Using a pattern generator (e.g. PM5518) supply a signal on a frequency of 475,25 MHz. Align coil L5114 for optimal picture quality.

8.2.3 Picture demodulator (only for sets with SECAM LL' reception)

Using a signal generator (e.g. PM5326) supply a 32.95MHz signal via a 5,6 pF capacitor to pin 17 of the tuner. Align the signal level of the generator so that the DC-voltage on pin 5 of the tuner is 5V. Switch on the set and select in the installation menu MANUAL; SYSTEM FRANCE. Align capacitor C2106 for minimal voltage on pin 5 of the tuner.

8.2.4 RF-AGC

If the signal of a strong local transmitter is distorted, align the value for AX (AGC crossover) in the service menu (see chapter 8) until the picture is no longer distorted.

8.2.5 Audio demodulator (Not for sets with LL' and NICAM reception possibility)

Using a signal generator (e.g. PM5326) supply a 38.9MHz signal via a 5,6 pF capacitor to pin 17 of the tuner. Connect an oscilloscope (2ms/div) to pin 12 of IC7033 (TDA3845). Align coil L5030 for minimal amplitude.

8.3 Picture tube alignments

8.3.1 Whitebalance

Connect a pattern generator and select a white picture. Set contrast to maximum (63) for 21" or to 40 for 21" tv-sets. Use the \uparrow / \downarrow keys to select an alignment and the \leftarrow / \rightarrow keys to change the value. Set GD to 50, RD to 57 and BD to 45. If necessary change the settings for RD and BD for a correct white balance.

8.3.2 Geometry adjustments (for software versions M12COx-3.x and M12BAx-x.x)

Connect a pattern generator and select a geometry pattern (signal at 475.25 MHz)

- Switch to the Service Default Mode, then to the Service Alignment Mode.
- Select the desired alignment with the ↑ / ↓ keys.
- Change the selected alignment with the ← / → keys.
- A value between 0 and 63 can be selected.
- Changed values are stored immediately.

Vertical

- VP : Vertical Shift
Set this for the correct vertical position.
- VA : Picture height
Set this for the correct picture height.
- VL : Vertical linearity
Set this so that the vertical centre of the picture is at the centre of the tube.
- VS : Vertical S-correction
Set this so that the height of the squares in the top of the picture equal the height in the bottom of the picture.

Horizontal

- HD : Horizontal shift.
Set this so that the horizontal centre of the picture is on the centre of the tube.

For sets with a screen size larger than 21", the following alignments can be done as well. For 21" sets these alignments have no function.

- HW : East-west width
Align the picture width with this.
- HP : East-west parabola correction
Set this so that the vertical lines at the sides of the screen are straight.
- HC : East-west corner-correction.
Set this so that the vertical lines are straight in the corners.
- HT : Trapezium correction
Set this so that the vertical lines are as vertical as possible.

Adjustments for 16:9 sets (reserved)

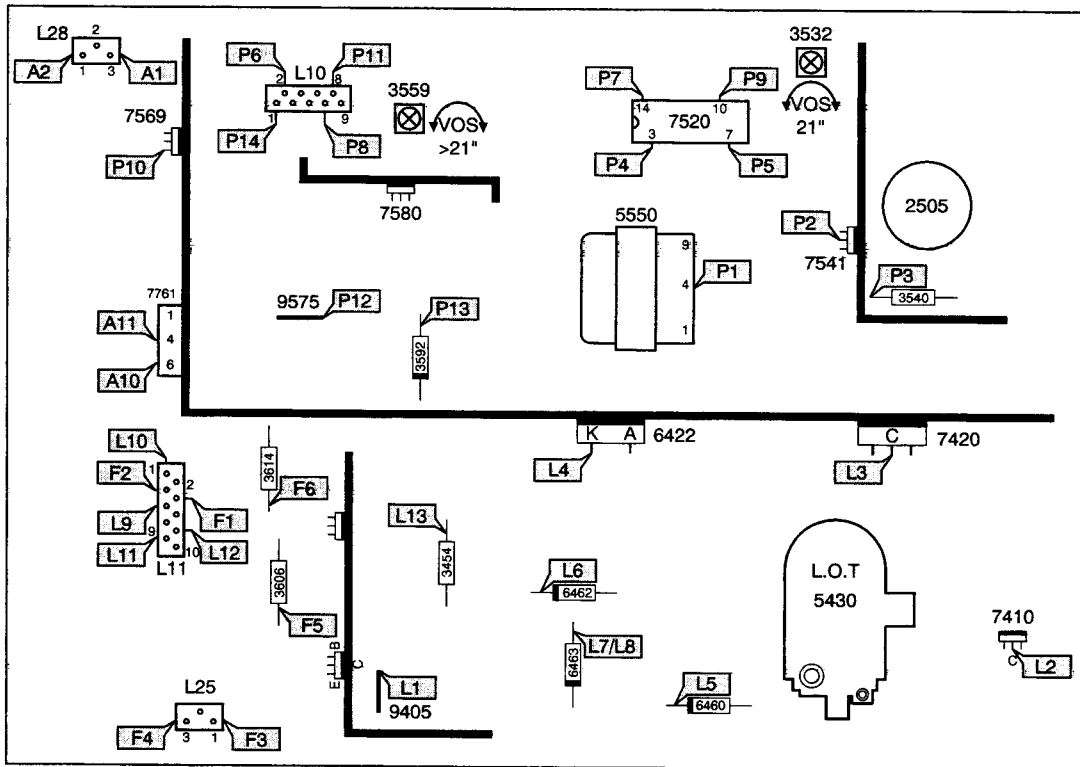
16 = N 4:3 tube (options SS, D1, D2, D3 and D4 not available (blue))

16 = Y 16:9 tube (options SS, D1, D2, D3 and D4 available)

8.4 Options

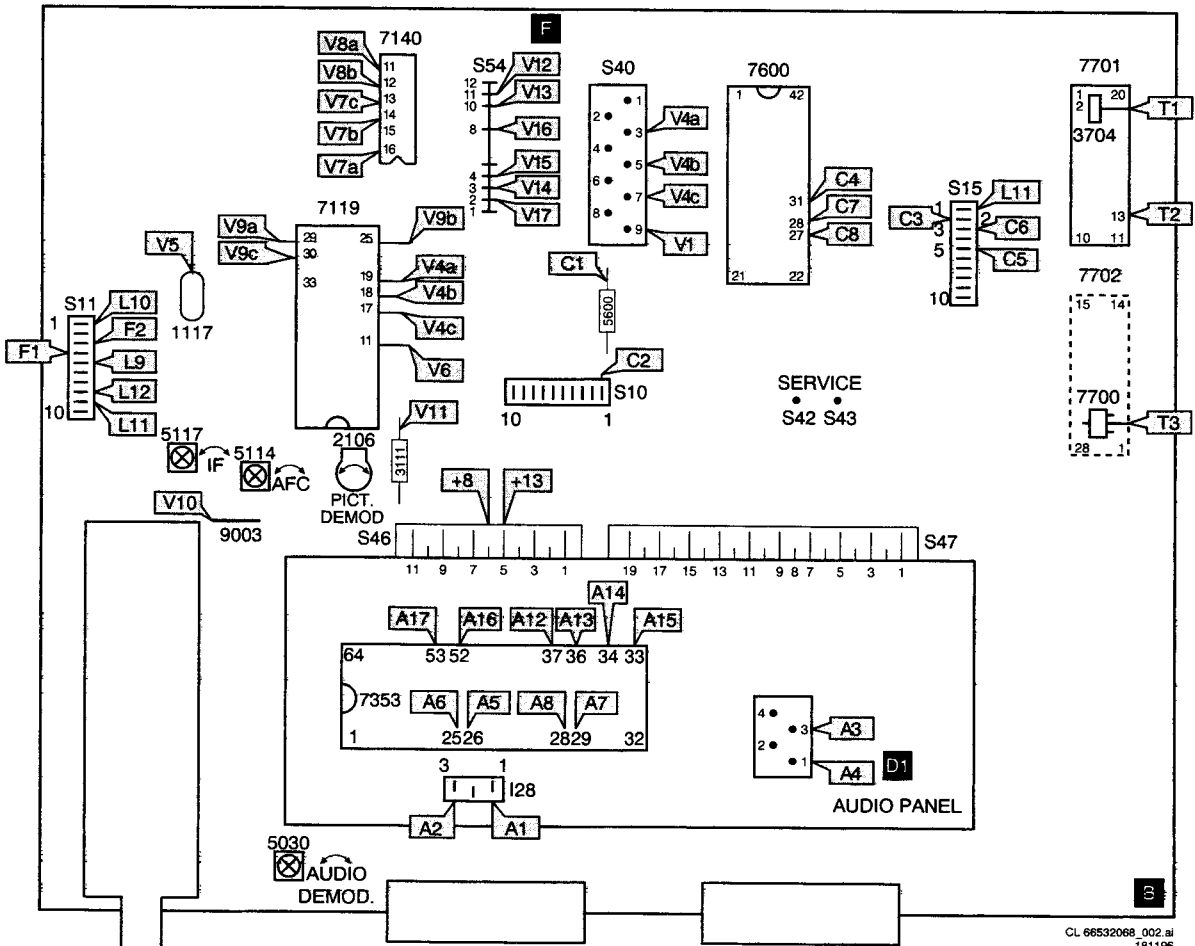
- E2 : Number of Euro/Scart connectors (options N or Y)
N 1 Euro/Scart connector present
Y 2 Euro/Scart connectors present
- UO : Tuner type
N UHF/VHF tuner (item 1000 is UV916S)
Y UHF tuner (item 1000 is UV944S).
Used in the United Kingdom (/05 sets)
- LL : Nicam L (options N or Y)
N Nicam L not present
Y Nicam L present (Nicam L panel required and item 7353 is MSP3410)
- NI : Nicam (stereo) sound (options N or Y)
N Only 2CS stereo, no Nicam (item 7353 is MSP3400)
Y 2CS and Nicam stereo (item 7353 is MSP3410)
- TT : Teletext (options N or Y)
N No Teletext present
Y Teletext present
- ET : (Eastern Europe) teletext type (options N or Y)
N No Eastern Europe teletext
Y Eastern Europe teletext (/58 sets)
- 14 : 14:9 Picture format supported by 4:3 tube (options N or Y)
N Not supported
Y Supported
- HI : Histogram (not with software version M12BAx-x.x)
N No Histogram present (options VG, VA and NL not available (blue))
Y Histogram present (options VG, VA and NL available)
- M2 : MD1.1E or MD1.2E chassis (only with software version M12BAx-x.x)
N MD1.1E chassis
Y MD1.2E chassis

Large signal panel / Groß-Signal Platine / Platine forts signaux



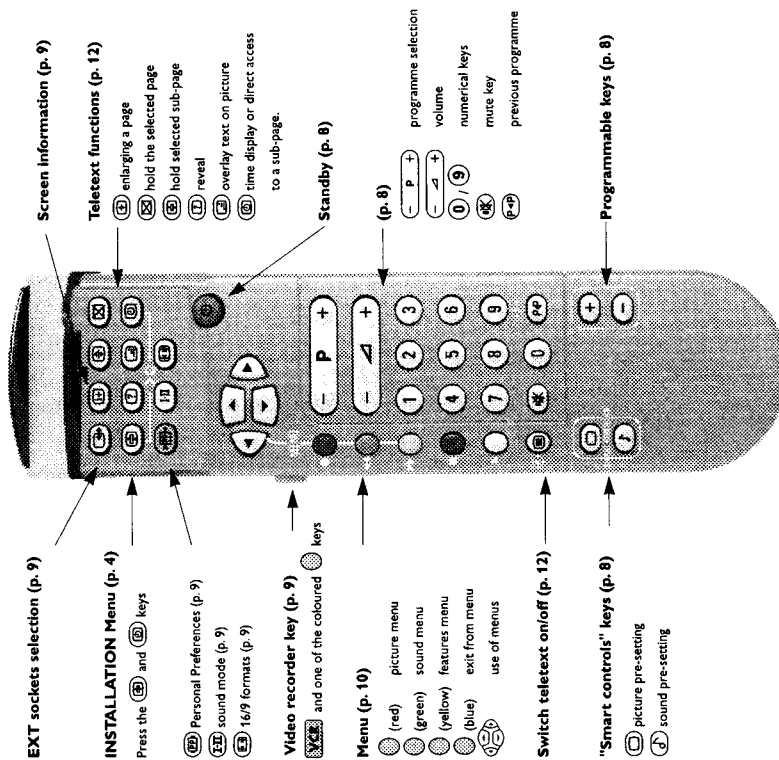
CL 66532051.002
190996

Small signal panel / Klein-Signal Platine / Platine petits signaux



CL 66532068.002
181196

Remote control keys



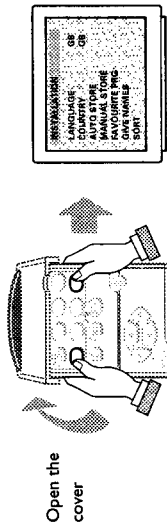
The keys on the TV set

The television has 3 keys: MENU, - and +. These keys are located on the top, front or side of the set, (if on the front or side of the set they may be concealed by a flap). The MENU key is used to select the function to be altered. The - and + keys are used to select programmes or modify the selected MENU item.

Installation Menu

This Menu enables you to tune in the channels on the TV set.

To call up the INSTALLATION menu:



Open the cover

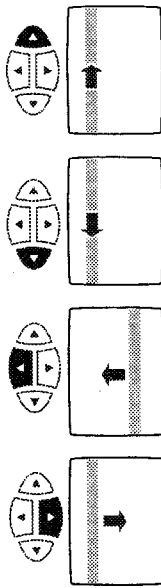


Press the **Ⓜ** and **Ⓢ** keys at the same time. The INSTALLATION menu appears on the screen.

If the menu display is not stable, press the **- P +** key.

To use the menus:

These 4 keys allow you to move around in the menus, make adjustments and access the sub-menus.



To exit from the menus

Press the blue **Ⓢ** key.

Selecting the menu language

From the INSTALLATION menu:

- ✧ Select the LANGUAGE adjustment using the **Ⓢ**/**Ⓢ** keys.
- ✧ Select the language you wish to use by means of the **Ⓢ** or **Ⓢ** keys.
- ✧ The text for all the menus will appear in the language you have chosen.

Selecting the country

- ✧ Select the COUNTRY adjustment using the **Ⓢ**/**Ⓢ** keys
 - ✧ Select your country using the **Ⓢ** or **Ⓢ** keys (GB for Great Britain).
- Warning: It is essential for correct channel tuning that these two adjustments are set correctly.*

Tuning-in the TV channels

There are two ways the television can be tuned in : automatic store or manual store (tuning - in channel by channel).

Automatic store

- From the INSTALLATION menu (Ⓜ) and (Ⓜ) keys) (after ensuring LANGUAGE and COUNTRY have been set correctly)
 - Select AUTO STORE (Ⓜ) keys) and press .
 - The AUTO STORE menu appears. Searching begins. The message SEARCHING PLEASE WAIT appears on the screen.
- The TV set searches through the complete frequency range in your local region and stores all the programmes it finds. The search operation takes a few minutes. When the search is complete, the INSTALLATION menu reappears automatically.
- This TV set is equipped with an Easy Tune system which automatically sorts the programmes by name.
- If the transmitter emits the correct signal, the programmes are correctly numbered.

In certain cases, the system may ask you to indicate your local region using keys

(0) to (9)

- If no signal is emitted, the programmes will be numbered in descending order starting from 99, 98, 97... Should this occur, the SORT menu should be used to re-number the programmes.

If no picture is found, refer to the Chapter entitled "Tips" (page 17).

Sort

This menu allows you to re-number the programmes in the order you prefer.

- Select SORT (Ⓜ) keys) and press .
- The SORT menu appears.
- The menu provides a list of all the programme numbers with their names (where provided), or frequencies or channels.

1 Using the (Ⓜ) keys, select the programme to be re-numbered.

If, for example, you want to re-number programme 96 as 2: Select 96 using (Ⓜ) keys (or type (0)).

The number chosen (96) will appear in blue in the list.

2 Press the key to enter.

A yellow rectangle appears on the name of the programme (or on its frequency or channel).

3 Enter the new number using keys (0) to (9).

In our example, type (2). Programme 02 appears.

The number (02) appears in blue in the list.

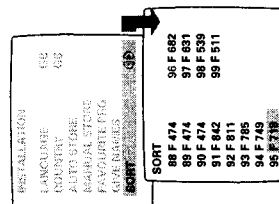
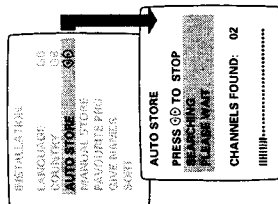
4 Press the key to enter (can be used to cancel).

The exchange of numbers is now complete. In our example, programme No. 96 has become No. 02 (and programme No. 02 has become No. 96).

Repeat this operation for other programmes you wish to re-number

To exit from the menu

- Press the blue key.



Manual store

- From the INSTALLATION menu (Ⓜ) and (Ⓜ) keys).
- Select MANUAL STORE (Ⓜ) keys) and press .
- The MANUAL STORE menu appears.

1 Select channel or frequency mode

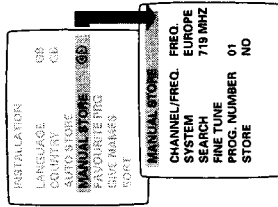
For certain countries this adjustment is not available.

- Select CHANNEL/FREQUENCY (Ⓜ) keys).
- Use the (0) keys to select tuning mode.
- FREQ. (frequency search) or CHAN.C and CHAN.S (channel search if you know the channel numbers on which the programmes are broadcast).

2 Selecting the TV system

- Select SYSTEM (Ⓜ) keys).
 - Use (0) to select EUROPE, EUR, W, EUR, E, UK or FRANCE (according to model).
- Selecting EUROPE guarantees automatic detection, with the exception of transmissions from France (standard LL; select FRANCE) or in certain cases of poor reception where EUR, W (BG), EUR, E (DK) or UK (I) should be selected.

For more information, see glossary on p. 18



3 Search

- Select SEARCH (Ⓜ) keys) and press .
- The search begins. As soon as a programme is found, the search will stop. Go to section 4.

- If you know the frequency (or the channel) of the programme you wish to receive, you can enter its number in directly using keys numbered (0) to (9).

If no picture is found, refer to "Tips" chapter (page 17).

If you want to return the search, press again.

Fine tuning

If reception is not satisfactory, you can use the fine tuning function.

- Select FINE TUNE (Ⓜ) keys).
- Hold down the (0) keys to adjust.

4 Programme number

- Select PRG NUMBER (Ⓜ) keys).
- Use the (0) keys or the (0) to (9) keys to enter the required number.

5 Store

- Select STORE (Ⓜ) keys) and press .
- The OK message appears. The programme and its name (if it has one) are stored.

repeat 3, 4, 5 for each programme to be stored.

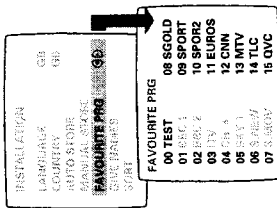
To exit from the menu:

- Press the blue key.

Favourite Programmes

This menu allows you to choose which programmes can be accessed using the **INSTALLATION** menu.

- From the **INSTALLATION** menu:
 - Select **FAVOURITE PRG** (⊖ ⊕ keys) and press
 - The **FAVOURITE PRG** menu appears. All programmes found during the search are automatically included in the menu and appear in green.
 - Use the ⊖ ⊕ keys to select any programme you wish to remove from the list of favourites.
 - Press ⊖ to de-activate (or activate) a programme.
 - The de-activated programmes appear in white, the activated programmes appear in green.
 - Only the programmes and **EXT** sockets that are displayed in green in this menu can be accessed using the **INSTALLATION** key.
- Warning: If all programmes are de-activated, the **INSTALLATION** key will cease to function.*



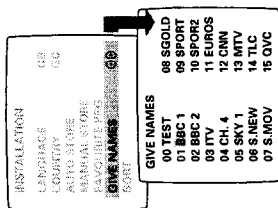
To exit from the menu:

- Press the blue **EXIT** key.

Programme names

This menu allows you to name and modify names for programmes and EXT sockets.

- From the **INSTALLATION** menu:
 - Select **GIVE NAMES** (⊖ ⊕ keys) and press
- The **GIVE NAMES** menu appears with the list of programmes found automatically during installation.
- Certain programmes may not be named (the signal needed for identification is not always transmitted) or may be inappropriately named (only 5 characters are displayed).
- Use the ⊖ ⊕ key to select the required programme.
- Use the ⊖ ⊕ keys to move to the area in which the programme name appears (up to 5 characters)
- A yellow rectangle appears in the chosen area.
- Use the ⊖ ⊕ keys to select the character to be modified.
- Use the ⊖ ⊕ keys to modify the selected character.
- Use the ⊖ ⊕ keys to move around in the next programme.

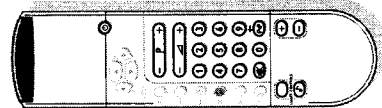


To exit from the INSTALLATION menu:

- Press the blue **EXIT** key twice.

Using the remote control

Press:



Standby

The TV set is switched off and the red indicator lights up. To switch the TV set on again, press **POWER** or keys **1** to **9**.
For further information, see "Tips" (p. 17).

Selecting TV programmes

Move up or down a programme.
NB: Only programmes activated in the **FAVOURITE PRG** menu can be accessed (see p. 7).

Volume

The volume is adjusted.

Numerical keys

Choose a programme. The number (and name if it exists) appears on the screen.
For a 2 figure number, the second figure must be entered before the dash disappears.

Mute key

Disables or enables the sound.

Previous programme

Return to the last programme watched.

"Smart Controls" keys

To access the presets of the TV set.
Picture presets: **PICTURE** key.
Each time it is pressed, a different picture preset is selected: **RICH, SOFT, NATURAL** or **MANUAL**.
Sound presets: **SOUND** key.
Each time it is pressed, a different sound preset is selected: **SPEECH, MUSIC, THEATRE** or **MANUAL**.
The values corresponding to these presets are given in the **PICTURE** and **SOUND** menus (see p. 10).

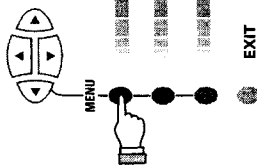
Programmable keys

These allow direct access to any adjustment made in the **PICTURE** and **SOUND** menus (see p. 10).
To program the keys:
If, for example, you wished to gain direct access to the **BRIGHTNESS** adjustment. Display the **PICTURE** menu (red key) and select **BRIGHTNESS** (⊖ ⊕). Use keys **1** and **2** to adjust, rather than the **PICTURE** keys. The keys are now programmed. Exit from the menu (blue key). Press **1** and **2** again. This will give you direct access to the brightness adjustment. Repeat for any other adjustment you may wish to make.

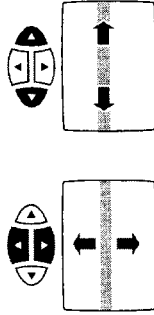
Directions for use

Using the menus

Press the coloured key (red, green or yellow) to display the menu of your choice.
Press the blue key to exit from the menu displayed.



Use the (left/right) keys to select your adjustments and the (up/down) keys to adjust or access the sub-menus.



Picture

- Display PICTURE menu (red key).
 - Use (left/right) keys to select the adjustments and (up/down) keys to adjust.
 - You can now access the adjustments BRIGHTNESS, COLOUR, CONTRAST, SHARPNESS and TINT. Sharpness adjusts the clarity of the picture, Tint adjusts the colour temperature of the picture from "cool" (blue white) to "warm" (red white).
 - NOISE REDUCT: Useful in case of poor reception to reduce picture noise (snowy picture).
 - DYNAMIC CONTR. (only on certain models) Automatically adapts the contrast to suit the picture content.
- For picture adjustment see also "Tips" (p. 17).

BRIGHTNESS	28
COLOUR	00
CONTRAST	32
SHARPNESS	40
TINT	00
NOISE REDUCT.	OFF
DYNAMIC CONTR.	OFF

Sound

- Display SOUND menu (green key).
- You can now access the BALANCE, TREBLE, BASS, HEADPHONES adjustments and activate the INCR. SOUND option. INCR. SOUND enhances the stereo effect, giving the impression that the speakers are positioned further apart. For mono transmissions a stereo effect is created.
- HEADPHONES: Allows you to adjust the headphones volume independently from the loud-speakers on the TV set.

BALANCE	00
TREBLE	35
BASS	54
INCR. SOUND	ON
HEADPHONES	15

To exit from the menus:

- Press the blue key.

Other functions

Press:

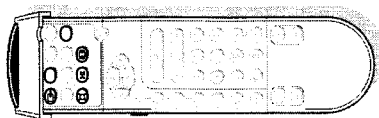
(E2) Select EXT sockets

(E3) Screen information

(E4) Time display

(E5) Personal Preferences

(E6) Sound mode

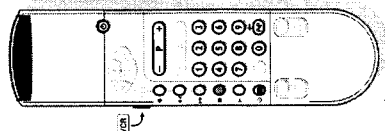


(E7) 16/9 Formats

(E8) Video recorder keys

- record,
- rewind,
- fast forward,
- stop,
- play,
- programming (on certain models),
- 1- or 2- digit programmes,
- programme selection,
- enter a programme number,
- standby

These keys function with video recorders in our range and with all models which use the RCS signalling standard.



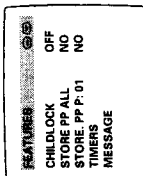
Directions for use

Features

Child Lock

The child lock function is an electronic lock which disables the keys on the TV set.

- Display the FEATURES menu (yellow key).
- Select CHILD LOCK (OFF/ON keys).
- Use the TV set and remove the remote control. The television can no longer be used.
- The TV set can only be switched on using the remote control.
- To cancel: Return CHILD LOCK to OFF in the features menu.



Storing adjustments

This function allows you to store your own picture and sound adjustments. The adjustments are restored every time your set is switched on, or by pressing the green key on your remote control.

General storing

- First carry out your PICTURE and SOUND adjustments and adjust the volume (key) and then:
- Display the FEATURES menu (yellow key).
- Select STORE PP ALL (keys) and press
- The message OK appears. All the PICTURE and SOUND menu adjustments as well as the volume are stored.

Storing adjustments for each programme

This function allows you to correct any differences in levels which may exist between TV channels and/or EXT sockets. It allows you to store BRIGHTNESS, COLOUR, SHARPNESS, NOISE REDUCT. and volume adjustments (key).

Carry out desired corrections to settings for the programme (or EXT connection), and then:

- Display the FEATURES menu (yellow key).
- Select STORE PP P. (keys) and press
- The message OK appears. The adjustments are stored.
- Repeat for each programme that needs correcting.

Programming

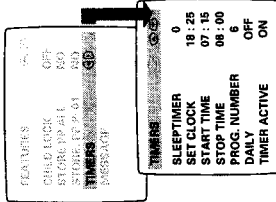
Sleeptimer

- From the FEATURES menu (yellow key).
- Select PROGRAMMING (keys) and press
- Select SLEEPTIMER and use key to enter the length of time after which the TV will switch to standby mode (up to 180 mins). Press the key to display the length of time remaining.
- To cancel: Switch SLEEPTIMER back to 0.

Programmed Switch on

The following adjustments allow you to program the TV to automatically switch on with the programme of your choice.

- Select the adjustments using (keys):
- SET CLOCK: Use keys to or the keys.
- N.B.: Every time the TV is switched on the clock is automatically updated on the basis of the teletext information in programme No. 1. If the TV set does not feature teletext, this update will not occur.
- START TIME: Use keys to or keys.
- STOP TIME: Use keys to or keys.
- PRG NUMBER: Use keys to or keys.
- DAILY: Set this option to ON (key) if you want the programming to apply every day.
- TIMER ACTIVE Set this option to ON to activate the timer.
- Press the blue key to exit from menu.
- If you now switch the TV set onto standby (key), it will automatically switch on at the time programmed.
- To cancel: Switch TIMER ACTIVE back to OFF.

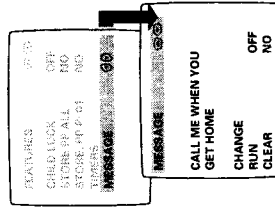


N.B.: For programming to function correctly do not use the on/off key on the front of the TV set to switch off the TV.
The programmed switch on-off can be used together with the child lock function in order to limit the use of the TV set to a certain length of time.

Message

This menu allows you to leave a message which will appear on the screen when the TV is switched on (e.g.: "call me when you get home").

- From the FEATURES menu (yellow key).
- Select MESSAGE (keys) and press
- The MESSAGE menu appears. Select the adjustments using (keys):
- CHANGE: Press the key to display CHANGE menu.
- Use the keys to select the positioning of the characters (44 characters spaced over 2 lines).
- Use the (keys) to select each character.
- When the message has been entered:
- Press the blue key to return to previous menu.
- RUN: Press the key to switch ON.
- Exit from the menu by pressing the blue key.
- The message will remain on the screen.
- To erase the message: Press the blue key.
- N.B.: The message will reappear every time the TV is switched on.
- To cancel: Switch RUN back to OFF.
- CLEAR: Press key to erase message.
- To exit: Press the blue key repeatedly.



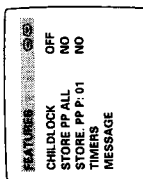
Directions for use

Features

Child Lock

The child lock function is an electronic lock which disables the keys on the TV set.

- Display the FEATURES menu (yellow key).
- Select CHILD LOCK (OFF/ON keys).
- Use keys to switch to ON.
- Switch off the TV set and remove the remote control. The television can no longer be used.
- The TV set can only be switched on using the remote control.
- To cancel: Return CHILD LOCK to OFF in the features menu.



Storing adjustments

This function allows you to store your own picture and sound adjustments. The adjustments are restored every time your set is switched on, or by pressing the green key on your remote control.

General storing

- First carry out your PICTURE and SOUND adjustments and adjust the volume (key) and then:
- Display the FEATURES menu (yellow key).
- Select STORE PP ALL (keys) and press
- The message OK appears. All the PICTURE and SOUND menu adjustments as well as the volume are stored.

Storing adjustments for each programme

This function allows you to correct any differences in levels which may exist between TV channels and/or EXT sockets. It allows you to store BRIGHTNESS, COLOUR, SHARPNESS, NOISE REDUCT. and volume adjustments (key).

Carry out desired corrections to settings for the programme (or EXT connection), and then:

- Display the FEATURES menu (yellow key).
- Select STORE PP P: _ _ _ (keys) and press
- The message OK appears. The adjustments are stored.
- Repeat for each programme that needs correcting.

Programming

Sleeptimer

- From the FEATURES menu (yellow key).
- Select PROGRAMMING (keys) and press
- The PROGRAMMING menu appears.
- Select SLEEPTIMER and use to enter the length of time after which the TV will switch to standby mode (up to 180 mins). Press the key to display the length of time remaining.
- To cancel: Switch SLEEPTIMER back to 0.

Programmed Switch on

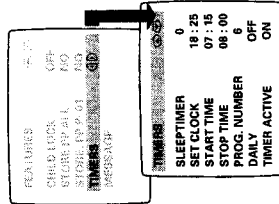
The following adjustments allow you to program the TV to automatically switch on with the programme of your choice.

- Select the adjustments using (keys):
- SET CLOCK: Use keys to or the keys.
- N.B.: Every time the TV is switched on the clock is automatically updated on the basis of the teletext information in programme No. 1. If the TV set does not feature teletext, this update will not occur.
- START TIME: Use keys to or keys.
- STOP TIME: Use keys to or keys.
- PRG NUMBER: Use keys to or keys.
- DAILY: Set this option to ON (key) if you want the programming to apply every day.

TIMER ACTIVE Set this option to ON to activate the timer.

- Press the blue key to exit from menu.
- If you now switch the TV set onto standby (key), it will automatically switch on at the time programmed.
- To cancel: Switch TIMER ACTIVE back to OFF.

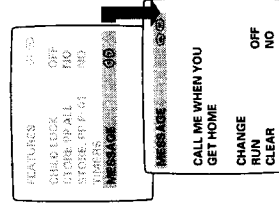
N.B.: For programming to function correctly do not use the on/off key on the front of the TV set to switch off the TV.
The programmed switch on-off can be used together with the child lock function in order to limit the use of the TV set to a certain length of time.



Message

This menu allows you to leave a message which will appear on the screen when the TV is switched on (e.g.: "call me when you get home").

- From the FEATURES menu (yellow key).
- Select MESSAGE (keys) and press
- The MESSAGE menu appears. Select the adjustments using (keys):
- CHANGE: Press the key to display CHANGE menu.
- Use the keys to select the positioning of the characters (44 characters spaced over 2 lines).
- Use the (keys) to select each character.
- When the message has been entered:
- Press the blue key to return to previous menu.
- Run: Press the key to switch to ON.
- Exit from the menu by pressing the blue key.
- The message will remain on the screen.
- To erase the message: Press the blue key.
- N.B.: The message will reappear every time the TV is switched on.



Teletext

Teletext is an information system, broadcast by certain TV channels, which can be consulted in the same way as a newspaper. It also provides subtitles for the hard of hearing or people who are unfamiliar with the broadcast language (cable TV network, satellite channels, etc.).

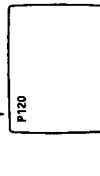
Press:

Switch teletext on/off

Result:
Display or exit from teletext. The main index page presents a list of subjects to which you have access. Each subject has a corresponding page number (always 3 digits).
If the selected TV channel does not broadcast teletext, P100 is displayed and the screen remains black (if this is the case, switch off teletext and choose another TV channel).

/ Selecting a teletext page

To type in the page number required. E.g. page 120, type . The number is displayed in the top left-hand corner of the screen, the page counter starts searching and then the page selected is displayed. Repeat to consult another page.
If > xxx < flashes briefly or the counter continues searching, this means the page selected is not broadcast or is not available. If this is the case, choose another number.



- + Previous page/Next page selection

To consult the previous page (-) or the next page (+).

Direct access to a subject

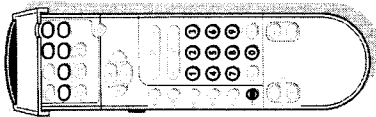
Coloured zones are displayed at the bottom of the screen. The coloured keys allow access to the subjects or their corresponding pages.

Main index

To return to the main index (generally on page 100). Press the white key .

- Previous page

To return to the page displayed previously.



Teletext (special features)

Result:

To stop or return to the teletext display. The symbol is displayed, and the television programme reappears on the screen. This function allows you to wait when the search for pages takes a long time.

Press:

Temporary interruption of the display

To display the upper part, the lower part and then to return to the normal page size.

Enlarging a page

To activate/de-activate the screen overlay.

Overlaying teletext on the TV picture

To reveal/conceal hidden information (solutions to games or questions/answers).

Reveal

Certain pages have sub-pages which follow on automatically. If this is the case, this key will allow you to stop or start the sequence. The message appears on the top left-hand corner of the screen.

Stop the sequence of sub-pages (hold)

To access a sub-page directly, press . The page number followed by four dashes will appear in the bottom left-hand corner of the screen. Type the number of the sub-page required using 4 numbers, e.g. type 0002 to consult sub-page 2. The page counter searches and then the sub-page is displayed. Press to return to current page.

Direct selection of a sub-page

Consult the main index to find out the page number for subtitles.

/ Subtitles

Enter the subtitles page number (e.g. 888). The page counter searches and then the subtitles appear on screen. If no subtitles are available the page counter will continue to search. To exit from subtitles, press .

When subtitling is switched on, you have to switch off teletext (key) to be able to change programmes.

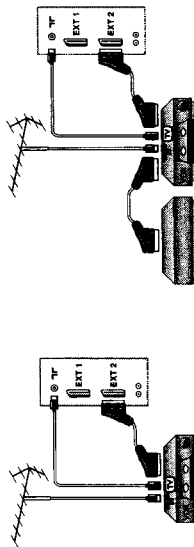


Connecting peripheral equipment

The EXT1 socket has audio and video inputs/outputs and RGB inputs.
The EXT2 socket has audio and video inputs/outputs and S-VHS inputs.
For further information, see *glossary* (p. 18).

Video recorder

...with Decoder



- If your video recorder has a euroconnector socket, carry out the above connections. Euroconnector sockets ensure better picture quality.
- If your video recorder does not have a euroconnector socket (or if this is already being used by another device), then the only connection possible is via the aerial cable. Your video recorder is then considered as a TV programme by your TV set. You will therefore need to tune in your video recorder's test signal and assign it programme number 0 (see manual store chapter, p. 5).

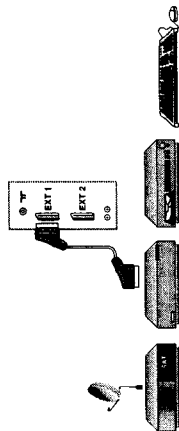
To reproduce the video recorder picture, press the **0** key.

Refer to your video recorder's operating instructions concerning the test signal (the video recorder must be equipped with an HF modulator).

Connecting other equipment

(satellite receiver, decoder, CDV/CDI, games...)

Connect to EXT1 socket. If the external product produces S-VHS signals, it should be connected to the EXT2 socket.



To select connected equipment

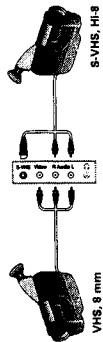
- Use **0** key to select E1 (EXT1), E2 (EXT2) or, for S-VHS or Hi-8 equipment, E2 Y/C.
- Most equipment (decoder, video recorder) carries out the switchover itself.*

15

Front connections

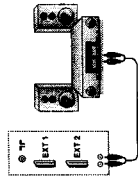
Carry out one of the following connections and then:

- Use the **0** key to select E2 (for VHS or 8mm cameras) or E2 Y/C (S-VHS or Hi-8 cameras).
- N.B.: If a peripheral is connected to EXT2, it is advisable to switch it off while using a front S-VHS connection.*



Amplifier

Use an audio connection cable and connect the **L** sockets "L" and "R" on the set to the "AUDIO IN" "L" and "R" input on your hi-fi amplifier.



Headphones

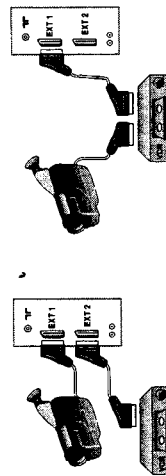
To adjust the headphones volume, use the HEADPHONES adjustment in the SOUND menu (p. 10). To adjust the volume on the TV set, use the **←** or **→** keys. You can also access the HEADPHONES adjustment directly using programmable keys **0** and **1** on the remote control (see p. 8).



To make a copy of recordings:

Carry out one of the following connections, then:

- Press **0** to select E1.
 - On the video recorder, select the euroconnector socket as the recording source.
- N.B.: Copying is not possible using front connectors.*



16

11. List of abbreviations

AC	Alternating Current
AF_AMP	Audio frequency amplifier
AGC	Automatic gain control
AM	Amplitude modulation
ATS	Automatic Tuning System
AQUADAG	Earth from the CRT
AUD_TERR_AM	Audio (AM) from the antenna
AUD1_TERR_AM	Audio (AM) from the antenna
AUDIO L	Audio left
AUDIO R	Audio right
AUDIO_L	Left to DBE module
AUDIO_R	Right to DBE module
B	Blue signal to CRT panel
B_IN	Blue signal input
BC_INFO	Beam current information
B_SC_INPUT	Blue input from Euro connector
B_TXT	Blue Teletext signal
(B-Y) IN	B-Y input signal
(B-Y) OUT	Colour difference signal out
BC_INFO	Black current info from CRT panel
BG DK STEREO	System PAL BG DK; stereo sound
BG LI NICAM	System PAL BGI; NICAM sound
BG LI STEREO	The stereo signal from PAL BGI or SECAM L
BG_ST/NIC	System BG stereo with NICAM sound
Bk	Burst key pulse
BLANK	Blanking signal
BLK	Black stretch
BLKSTR	Black stretch
BLS	Black line S
BLKSCREEN	Blank screen, signal from the microcomputer
BM	Black matrix
B_OSD	Blue on screen display signal
C_AFU	Centre signal to module
C_FILTER	Chrominance filter
C_FRONT	Chrominance signal from separate controls panel
C_INPUT	Chrominance from Euro connector 2
CRT	Cathode ray tube
CRT..	Indicator for different CRT types
CTI	Colour transient improvement
CURR.SENZE	Current sense to detect current
CUT_OFF	Signal to align the black level of the RGB signals
CVBS	Composite Video Blanking Synchronisation
CVBS/Y_FRONT	CVBS or luminance from separate controls
CVBS/Y_SC2/FRONT_INPUT	CVBS/luminance signal from Euro connector/front input
CVBS_COMB/TXT	CVBS signal to teletext
CVBS_SC1_INPUT	CVBS signal from Euro connector 1
CVBS_SC2	CVBS signal from Euro connector 2
CVBS_SC2_OUT	CVBS outgoing signal from Euro connector 2
CVBS_SECAM	CVBS signal to SECAM IC
CVBS_TERR	CVBS from the antenna
CVBS_TERR/SAT	CVBS Signal from antenna or from satellite
CVBS_TXT	CVBS to Teletext
CVBS_SAT	CVBS signal from satellite tuner
D/A	Digital to analogue converter
DACA_L	Left output signal from DFP to headphone (independent volume controlled)
DACA_R	Right output signal from DFP to headphone (independent volume controlled)
DACAM_L	Left output signal from DFP to loudspeaker
DACAM_R	Right output signal from DFP to loudspeaker
DC	Direct Current
DEGAUSS	Degaussing
DELAY	Luminance delay
DET	Detector
DFP	Digital Sound Processor
DEM0D	Demodulator

EAR1	Earth 1 (ground)
EARTH	Earth (ground)
EAST EU	East Europe
EHT	Extra high tension
EHTINFO	Voltage related to beam current
EHTINFO1	Voltage related to beam current to CRT panel
EW	East-west
EW_COMP	East-west compensation
EWD	East-west drive
FBL_IN	Fast blanking in
FBL_OFF	Fast blanking off
FBL_PRESENT	From Euro connector, detects if there is a full page RGB at the Euro connector or OSD or a MENU from an external source
FILA_CRT	Filament for the CRT
FM	Frequency modulation
FOLDB	Foldback
FRAMEDEFL_R	Frame deflection right signal
FRONT_DETECT	Signal to detect if on separate controls panel video signals are present
FRONT_INPUT	Input from separate controls panel at front side of the TV set
G_IN	Green signal in
G_OSD	Green (on screen display) signal
G_SC_INPUT	Green input from Euro connector
G_TXT	Green Teletext signal
G-Y	Colour difference signal
G_Y MATRIX	RGB luminance matrix
GND..	Ground ..
GND_AUDIO	Ground
GND_KEYBOARD	Ground of keyboard
GND_LIGHTNING	Ground on mains module
GND_LINE_SS	Ground from SS-panel for line drive
GND_SOUND_SUPPLY	Ground to the audio amplifier
GND_VO	Ground to the deflection
GNDB	Ground B
GNDD	Ground D
G/V	Green signal to CRT panel
H	Horizontal pulse
HDRIVE	Horizontal drive signal
HEATER	Output voltage to the tube heater
HFBL	Feedback from line deflection
HPULSE	From deflection module, horizontal pulse for OSD synchronisation
HIST	Histogram
I/BG	To Sound module, selects the audio system
IDENT	Identification
I NICAM	System NICAM/PAL I
IF	Intermediate-frequency
INT/EXT	Internal or external switching
IRQ	From the Satellite or Teletext module, interrupt signal from these modules
ITT	Type indication Sound module
I ² C	Inter IC bus
I/O	Input/Output
LED	Light emitting diode
LF	Low frequency
L/L	To BIMOS module and Sound module, switches between the L and L' system
LINEDEFL_CS	Connection for geometry correction panels
LINEDEFL_LIN	Connection for geometry correction panels
LOT	Line output transformer
NC	Not connected
NICAM	Near Instantaneous Compending Audio Multiplex (digital sound system)
NICAM L	System L-NICAM
NO NORDIC	Not used in set for Nordic countries
NTSCM/BG	Switching signal
OK	Correct
OSC	Oscillator

PAL	Phase Alternating Line (colour system)
P_GND	Audio power ground
PHASE COMP	Phase compensation
PLL	Phase lock loop
POR	Power-on reset
PROT	Protection
R	Red signal to CRT panel
RC5	Remote Control signal
R-IN	Red input signal
(R-Y)IN	Colour difference (R-Y) input signal
R_OSD	Red (on screen display) signal
R_SC_INPUT	Red input from Euro connector
R_TXT	Red Teletext
R_Y OUT	Colour difference signal out
RGB	Red Green Blue
SAND	Sand castle
SAND1	Sand castle signal to Scan module
SBUS	Sound bus
SCART_L	Sound signal L from Euro connector
SCART_R	Sound signal R from Euro connector
SAT	Satellite
SCL	I ² C Clock signal
SCLI	Serial clock pulse
SDA	I ² C data
SDAa	To every other module, serial data
SDAI	Serial data pulse
SECAM	SEquential Couleur A Memoire (colour system)
SECAM L	System L-SECAM
SELECT	Selection signal for Euroconnectors or separate controls
SEP CTRL	Separate controls
SF	Super flat
SIF	Sound IF
SIF_SAT	Sound IF from satellite tuner
SNDL	Sound left,
SNDL_CL_OUTPUT	Left sound to CL output from sound module
SNDL_FRONT	Left sound signal from separate controls panel
SND_HEADP_OUTPUT	Output sound left to the headphone connector
SNDL_SC1_INPUT	Left sound output signal from the audio module
SNDL_SC1_OUTPUT	Output signal, sound left to Euro connector 1
SNDL_SC2_FRONT_INPUT	Input signal sound L from Euro connector 2 or front input
SNDL_SC2_OUTPUT	Output signal sound L to Euro connector 2
SNDL_SPEAKER	Sound L signal to loudspeaker
SNDR	Sound right
SNDR_CL/VL_OUTPUT	Right CL/VL audio signal from Dolby
SNDR_CL_OUTPUT	Sound right, constant level output to rear cinches
SNDR_FRONT	Sound right from separate controls panel
SNDR_HEADP_OUTPUT	Output sound right to the headphone connector
SNDR_SC1_INPUT	Input signal, sound right to Euro connector 1
SNDR_SC1_OUTPUT	Output signal sound R to Euro connector 1
SNDR_SC2_OUTPUT	Right sound to Euro connector 2 output from sound module
SNDR+ SPEAKER	Sound R signal to loudspeaker
SNDR_SUBW	Sound R signal to subwoofer
SOUND_ENABLE	To the Audio Amplifier module, switches on and off the amplifier
SOUND_SUP	Supply voltage of amplifier
STANDBY	To supply module, switches the set in and out of standby
STATUS1	Status signal from Euro connector input to control module
STATUS2	Status signal from Euro connector 2 input to control module
STD..	Indicator for different standards
SVHS	Super VHS
SYNC	Synchronisation signal
SYNC_TXT	Synchronisation signal from Teletext
SYS	System switching signal
SYS..	Indicator for different systems
1SC	One carrier sound
2SC	Two carrier sound

TCLK	Teletext clock signal
TDATA	Teletext data signal
TUNING	Tuning voltage
TUN	Indicator for different tuners
VDRIVE	Vertical drive
VDRIVE+/VD	Vertical drive positive side
V0S	140 Volt (95 Volt for 21")
VFRAME (+ or -)	Positive or negative supply voltage for frame amplifier
VG1_CRT	VG1 input to the picture tube
VG2	G2 input to the picture tube
VIF	Video intermediate frequency
VDD	Supply voltage
V0D	Voltage used in horizontal output stage
V0D1	Voltage used in horizontal output stage
V0LOT	Voltage to line output transformer
V0CONN	Voltage to Scan module
VP	Video processor
VPROT	Protection voltage
VPULSE	From deflection module, vertical pulse for OSD synchronisation
VSS	Ground
VSCAVEM	Supply voltage for SCAVEM
VT	Tuning voltage
Y_COMB	Y (or CVBS) signal to TDA8366
Y_FRONT	Luminance signal from separate controls panel
Y_OUT	Luminance signal out
YUV_ON/OFF	To Histogram/black stretch module, switch on & off
UPR	Indicator for different control systems
WEST-EU	West Europe
21" EUR	21" Europe
+	Present, in diversity tables
-	Not present in diversity tables

NICAM L MODULE [D2]

Various

1000 4822 212 10919 Nicam L Module
4822 242 81436 OFWK3953M
38.9MHz

-II-

2000A 5322 126 10223 4.7nF 10% 63V
2001 4822 126 13161 100nF 10% 25V
2002 4822 126 13473 220nF 20% 50V
2003 4822 126 13161 100nF 10% 25V
2006 4822 124 40763 2.2uF 100 V
2008 4822 124 40763 2.2uF 100 V
2009 4822 124 40763 2.2uF 100 V

□

3000 4822 051 20562 5k6 5% 0.1W
3002 4822 051 20471 470uF 5% 0.1W
3003 4822 051 20223 22k 5% 0.1W

~

5001 4822 157 11014 Adj. coil

⊗ □

7001 4822 209 13003 TDA9811/V3
7002A 5322 130 41982 BC848B

CTI/BS PANEL [F]

Various

4822 212 10921 CTI/BIStr. Module
4822 265 10419 12P F-pin conn.

-II-

2279A 4822 124 40433 47uF 20% 25V
2280 4822 122 33575 220pF 5% 50V
2281 4822 122 33575 220pF 5% 50V
2282 4822 124 42058 33uF 20% 50V
2283 4822 124 80791 470uF 20% 16V
2284 5322 122 32531 100pF 5% 50V
2285A 5322 122 32654 22nF 10% 63V
2286 4822 121 51319 1uF 10% 63V
2288 5322 122 32531 100pF 5% 50V
2289 5322 122 31863 330pF 5% 50V
2291 5322 121 42661 330nF 5% 63V

□

3276 4822 051 20272 2k7 5% 0.1W
3277 4822 051 20471 470uF 5% 0.1W
3278A 4822 051 20332 3k3 5% 0.1W
3279 4822 117 11449 2k2 1% 0.1W
3280 4822 051 20822 8k2 5% 0.1W
3281 4822 117 11383 12k 1% 0.1W
3282 4822 051 20334 330k 5% 0.1W
3283 4822 051 20183 18k 5% 0.1W
3284 4822 051 20271 270uF 5% 0.1W
3285 4822 051 10102 1k 2% 0.25W
3288A 4822 052 10399 39uF 5% 0.33W
3289 4822 051 20271 270uF 5% 0.1W
3290 4822 051 20122 1k2 5% 0.1W
3291 4822 051 20271 270uF 5% 0.1W
3292A 4822 052 10689 68uF 5% 0.33W
3293 4822 051 20391 390uF 5% 0.1W
3294 4822 051 20471 470uF 5% 0.1W
3295 4822 117 11139 1k5 1% 0.1W
3296 4822 051 10102 1k 2% 0.25W
3297 4822 117 11383 12k 1% 0.1W
3298 4822 051 20333 33k 5% 0.1W

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6270 4822 130 34197 BZX79-C12
6279 4822 130 80655 BZX79-F2V4

⊗ □

7276A 5322 130 41982 BC848B
7277 4822 209 14895 TDA4566/V2
7280 5322 130 41983 BC858B
7281 4822 209 30711 CX20125
7282A 5322 130 41982 BC848B
7283 5322 130 41983 BC858B

NS PANEL [G]

Various

4822 212 10958 NS Panel

-II-

2012 4822 121 41857 10nF 5% 250V
2013 4822 121 10618 62nF 2% 63V
2018 4822 121 41857 10nF 5% 250V

□

3010 4822 116 80176 1uF 5% 0.5W
3011 4822 116 80176 1uF 5% 0.5W
3012 4822 116 52175 100uF 5% 0.5W
3013 4822 116 52289 5k6 5% 0.5W
3019 4822 116 80176 1uF 5% 0.5W
3998 4822 116 52175 100uF 5% 0.5W

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5010 4822 157 11017 330uH 10%
5011 4822 157 71033 NS corr. coil
5013A 4822 142 40344 Driver transformer
5014 4822 157 62552 2.2uH

→

6011A 4822 130 31631 BYV10-20

⊗ □

7010 4822 130 63441 FET J108
7011 4822 130 63441 FET J108

Top Control & Side IO

MAINS PANEL [I]

Various

4822 212 10975 Mains/RC5/LED
panel
0022A 4822 276 13592 Mains switch
▲ 4822 265 30389 2P conn. vert. K12
▲ 4822 267 51348 2P conn. K09
4822 265 31246 6P conn. K41A
4822 265 10423 3P connector K45
1600 4822 212 30842 IR Rec. TFM55360

-II-

2601 4822 124 11485 100uF 20% 16V
2604 4822 124 11486 220uF 20% 16V

□

3520A 4822 053 21475 4M7 5% 0.5W
3521A 4822 053 21475 4M7 5% 0.5W
3600 4822 116 52175 100uF 5% 0.5W
3601 4822 116 52175 100uF 5% 0.5W
3602 4822 116 52213 180uF 5% 0.5W
3604 4822 116 52175 100uF 5% 0.5W
3605 4822 116 52175 100uF 5% 0.5W

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6600 4822 130 34174 BZX79-C4V7
6601 4822 209 72895 TLUV5320 Bi.col
LED

Side I/O [J]

Various

4822 459 04021 Side IO Panel
4822 267 31014 3.5mm headphone
4822 256 92101 IO connections
4822 265 41451 9P conn. H33
4822 265 31245 4P conn. H44

-II-

2800 4822 124 41596 22uF 20% 50V
2801 4822 124 41596 22uF 20% 50V
2804 4822 122 33805 330pF 10% 63V
2805 4822 122 33805 330pF 10% 63V
2810A 4822 122 33342 33nF 10% 63V
2811 4822 124 41643 100uF 20% 16V
2813 4822 124 41576 2.2uF 20% 50V
2832A 4822 122 33177 10nF 20% 50V
2834A 4822 122 33177 10nF 20% 50V

□

3801 4822 116 52202 82uF 5% 0.5W
3802 4822 116 52201 75uF 5% 0.5W
3803 4822 116 80175 4k7 5% 0.5W
3804 4822 116 80175 4k7 5% 0.5W
3805 4822 116 83874 220k 5% 0.5W
3806 4822 116 83874 220k 5% 0.5W
3807 4822 116 52175 100uF 5% 0.5W
3808 4822 051 20101 100uF 5% 0.1W
3809 4822 116 52219 330uF 5% 0.5W
3810 4822 051 20824 820k 5% 0.1W
3811 4822 051 20393 39k 5% 0.1W
3813A 4822 051 20008 0uF (jumper)
3814A 4822 051 20472 4k7 5% 0.1W
3830 4822 116 80173 10k 5% 0.5W
3840 4822 116 52257 22k 5% 0.5W
3842 4822 116 80173 10k 5% 0.5W
3998 4822 116 52219 330uF 5% 0.5W
3999 4822 117 10353 150uF 1% 0.1W

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6803 4822 130 82346 LLZ-C27
6804 4822 130 82346 LLZ-C27
6805 4822 130 82346 LLZ-C27
6806 4822 130 82346 LLZ-C27

⊗ □

7811 5322 130 41983 BC858B
7812 5322 130 41983 BC858B
7840A 5322 130 41982 BC848B

TOP CONTROL [J]

Various

4822 212 10976 Top control panel
4822 276 13396 Push button
4822 265 10449 3P conn. H45

□

3630 4822 116 52238 12k 5% 0.5W
3631 4822 116 52289 5k6 5% 0.5W
3632 4822 116 52224 470uF 5% 0.5W
3633 4822 050 24702 4k7 1% 0.6W
3634 4822 116 52175 100uF 5% 0.5W

Side Control & IO

MAINS PANEL [I]

Various

1000 4822 212 10929 Mains/RC5/LED
panel
▲ 4822 276 13603 Mains switch
4822 265 31246 6P conn. K41
4822 265 31248 3P conn. K42
▲ 4822 265 30389 2P conn. vert. K101
▲ 4822 267 51348 2P conn. K104
▲ 4822 256 91766 LED holder
1600 4822 130 83821 GP1U720Q IR rec.

-II-

2601 4822 124 41584 100uF 20% 10V

□

3520A 4822 053 21475 4M7 5% 0.5W
3521A 4822 053 21475 4M7 5% 0.5W
3600 4822 116 52175 100uF 5% 0.5W
3601 4822 050 11002 1k 1% 0.4W
3602 4822 116 52213 180uF 5% 0.5W
3604 4822 116 52175 100uF 5% 0.5W

3605 4822 116 52175 100uF 5% 0.5W

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6600 4822 130 34174 BZX79-C4V7
6601 4822 209 72895 TLUV5320

Side Control + IO [J]

Various

1055 4822 212 10931 Side Control+IO
panel
4822 267 31014 3.5mm headphone
4822 276 30422 Push buttons (3x)
4822 256 92101 IO connections
4822 265 41451 9P conn. H33
4822 265 31248 3P conn. H42
4822 265 31245 4P conn. H44

-II-

2800 4822 124 41596 22uF 20% 50V
2801 4822 124 41596 22uF 20% 50V
2804 4822 126 13597 330pF 10% 500V
2805 4822 126 13597 330pF 10% 500V
2810 5322 121 42489 33nF 5% 250V
2811 4822 124 81029 100uF 20% 25V
2813 4822 124 40763 2.2uF 100V
2832 4822 121 41677 10nF 10% 400V
2834 4822 121 41677 10nF 10% 400V
2840 4822 126 13599 3.3nF 10% 500V

□

3000 4822 116 52257 22k 5% 0.5W
3608 4822 116 52238 12k 5% 0.5W
3609 4822 116 52289 5k6 5% 0.5W
3610 4822 116 52224 470uF 5% 0.5W
3611 4822 050 24702 4k7 1% 0.6W
3612 4822 116 52175 100uF 5% 0.5W
3801 4822 116 52202 82uF 5% 0.5W
3802 4822 116 52201 75uF 5% 0.5W
3803 4822 116 52289 5k6 5% 0.5W
3804 4822 116 52289 5k6 5% 0.5W

3805 4822 116 83874 220k 5% 0.5W
3806 4822 116 83874 220k 5% 0.5W
3807 4822 116 52175 100uF 5% 0.5W
3809 4822 116 52219 330uF 5% 0.5W
3810 4822 116 52305 820k 5% 0.5W
3811 4822 116 83882 39k 5% 0.5W
3812 4822 116 83864 10k 5% 0.5W
3813 4822 116 52283 4k7 5% 0.5W
3830 4822 116 83864 10k 5% 0.5W
3840 4822 116 52257 22k 5% 0.5W

3842 4822 116 83864 10k 5% 0.5W

⊗ □

7811A 4822 130 44197 BC558B
7812A 4822 130 44197 BC558B
7840 4822 130 40937 BC548B