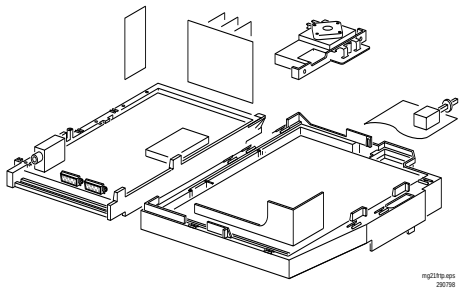
Colour Television — Chassis

MG2.1E

AA

Service
Service
Service



Service Manual

Content

1. Technical specifications 2
2. Connection facilities, chassis overview 3
3. Safety instructions, maintenance, warnings and Notes 5
4. Mechanical instructions 7
5. Service modes, DST, error messages, protections, faultfinding and repair tips including: 9
   - Errorcodes-table 15
   - Protection-structure (overview and detailed) 17
   - Fault find tree 22
6. Block diagrams 29
   - Block diagram (Supply, Deflection, CRT) 29
   - Block diagram (Video, Audio, Control) 30
   - Survey of testpoints 31
   - Oscillograms 32
   - Wiring diagram 33
   - Overview I^2C -ICs 33
   - Supply lines overview 34
7. Electrical Diagrams and PWB lay-outs

		Diagram	*PWB*
Power Supply	(Diagram A1)	35	36,37
Line Deflection	(Diagram A2)	38	36,37
Frame Deflection / Frame Rotation	(Diagram A3)	39	36,37
Audio Amplifier	(Diagram A4)	40	36,37
Mains switch Panel	(Diagram E)	41	41
CRT / Scavem Panel	(Diagram F)	42	43
Tuner, IF, I/O, Video processing	(Diagram K1)	46	44,45
Input / Output	(Diagram K2)	47	44,45
Sound processing	(Diagram K3)	48	44,45
Audio Dolby	(Diagram K4)	49	44,45
Secam Correction	(Diagram U)	49	49
Featurebox 6 (Eco)	(Diagram K5)	50	44,45
Video control & Geometry	(Diagram K6)	51	44,45
Teletext & Control	(Diagram K7)	52	44,45
Side I/O Panel	(Diagram O)	53	53
Top Control Panel	(Diagram P)	54	54
DC Shift	(Diagram G)	54	54
Diversity tables		55	

8. Electrical alignments 57
9. Circuit Descriptions: not available (see Training Manual) 63
10. Directions for use 64
11. List of abbreviations 75
12. Spare parts list 77

Published by CO 9871 TV Service Department Printed in The Netherlands Subject to modification GB 4822 727 21622

PHILIPS

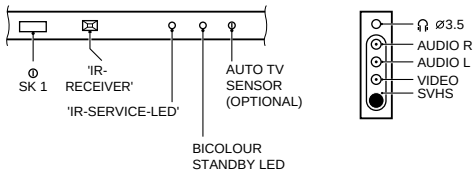
1 Technical specifications

Mains voltage	:	220V - 240V (± 10%); 50-60Hz (± 5%)
Aerial input impedance	:	coaxial 75 Ω
Minimal aerial voltage	:	30µV (VHF), 40µV (UHF)
Maximum aerial voltage	:	180 mV
Programmes	:	0-99
VCR programmes	:	0, 90-99

2 Specification connections

2.1 Front connections

TOP CONTROL FL7/FL8 STYLING



CL 86532057_top.AI
310798

Figure 2-1

2.1.1 Audio/Video

-	Video	1Vpp/75Ω	
-	Audio	L(0.5Vrms ≥10kΩ)	
-	Audio	R(0.5Vrms ≥10kΩ)	
-	Headphone	(32-600Ω ≥10mW)	

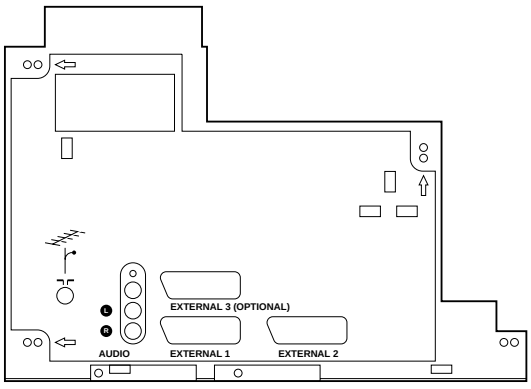
2.1.2 SVHS

1 -			
2 -			
3 -	Y	(1Vpp; 75Ω)	
4 -	C	(0.3 Vpp;75Ω)	

2.2 Rear connections

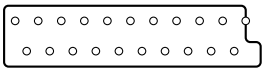
See figure 2.2

2.2.1 External 1(in/out): RGB+CVBS



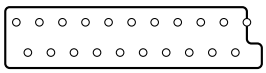
CL 86532057_rear.AI
310798

Figure 2-2



1 -	Audio	R (0.5Vrms ≤1kΩ)	
2 -	Audio	R (0.5Vrms ≥10kΩ)	
3 -	Audio	L (0.5Vrms ≤1kΩ)	
4 -	Audio		
5 -	Blue		
6 -	Audio	L (0.5Vrms ≥10kΩ)	
7 -	Blue	(0.7Vpp/75Ω)	
8 -	CVBS-status	0-1.3V:INT	
		4.5-7V:EXT 16:9	
		9.5-12V:EXT 4:3	
9 -	Green		
10-			
11-	Green	(0.7Vpp/75Ω)	
12-			
13-	Red		
14-	RGB-status		
15-	Red	(0.7Vpp/75Ω)	
16-	RGB-status	0-0.4V:INT	
		1-3V:EXT/75Ω	
17-	CVBS		
18-	CVBS		
19-	CVBS	(1Vpp/75Ω)	
20-	CVBS	(1Vpp/75Ω)	
21-	Earth socket		

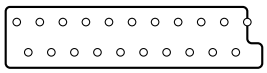
2.2.2 External 2 (in/out): SVHS+RGB+CVBS (intended for VCR.)



1 -	Audio	R (0.5Vrms ≤1kΩ)	
2 -	Audio	R (0.5Vrms ≥10kΩ)	
3 -	Audio	L (0.5Vrms ≤1kΩ)	
4 -	Audio		
5 -	Blue		
6 -	Audio	L (0.5Vrms ≥10kΩ)	
7 -	Blue / Chroma out	(0.7Vpp/75Ω)	
8 -	CVBS-status	0-1.3V:INT	
		4.5-7V:EXT 16:9	
		9.5-12V:EXT 4:3	
9 -	Green		
10-		Easy link	
11-	Green	(0.7Vpp/75Ω)	
12-			
13-	Red		
14-	RGB-status		
15-	Red / chroma-in	(0.7Vpp/75Ω)	
16-	RGB-status	(0-0.4V:INT	
		1-3V:EXT/75Ω)	
17-	CVBS		
18-	CVBS		
19-	Y/CVBS	(1Vpp/75Ω)	
20-	Y/CVBS	(1Vpp/75Ω)	
21-	Earth socket		

2 Specification connections

2.2.3 External 3 (in): CVBS+Audio (optional)



1 -			
2 -	Audio	R (0.5Vrms >10kΩ)	⊕
3 -			
4 -	Audio		⊥
5 -			
6 -	Audio	L (0.5Vrms>10kΩ)	⊕
7 -			
8 -	CVBS-status	0-1.3V:INT	
		4.5-7V:EXT 16:9	
		9.5-12V:EXT 4:3	⊕
9 -			
10-			
11-			
12-			
13-			
14-			
15-			
16-			
17-	CVBS		⊥
18-	CVBS		⊥
19-			
20-	CVBS	(1Vpp/75Ω)	⊕
21-	Earth socket		

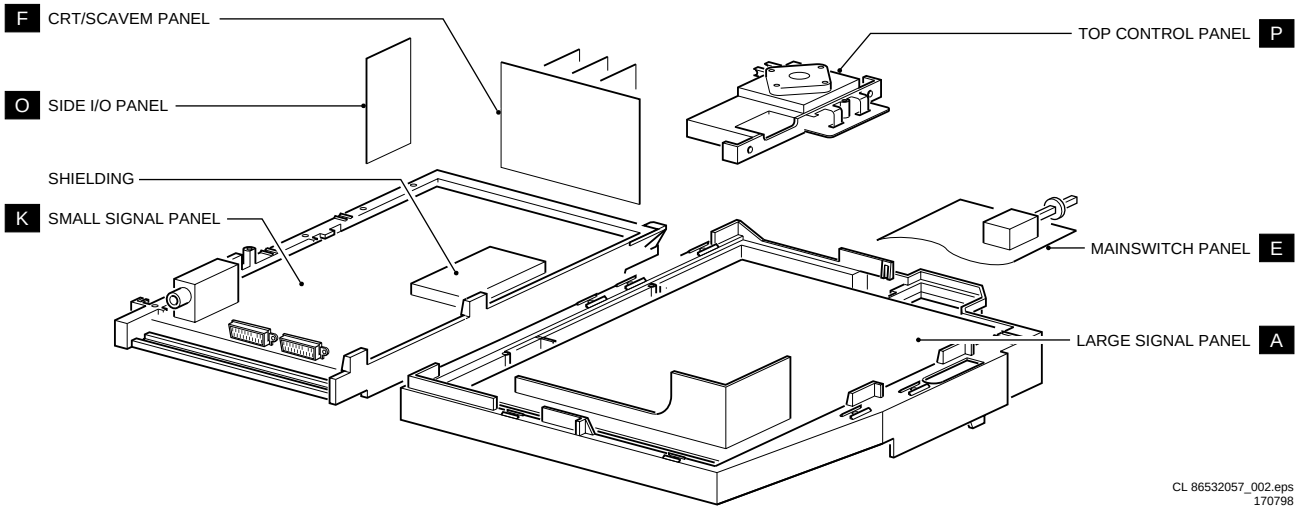


Figure 2-3

3 Safety instructions, Maintenance instruction, MG2.1E 5

3.1 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 Δ, 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. h
   – As a strict precaution, we advise you to resolder the solder joints through which the horizontal deflection current is flowing, in particular: ('general repair instruction')
     • 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.

3.2 Maintenance instruction

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.

3.3 Warnings

1. In order to prevent damage to ICs and transistors, all high-voltage flashovers must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 3.1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is 0V (after approx. 30s).
2. ESD All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.
   – Available ESD protection equipment:
   – anti-static table mat (large 1200x650x1.25mm) 4822 466 10953
   – anti-static table mat (small 600x650x1.25mm) 4822 466 10958
   – anti-static wristband 4822 395 10223
   – connection box (3 press stud connections, 1 M ohm) 4822 320 11307
   – extension cable (2 m, 2 M ohm; to connect wristband to connection box) 4822 320 11305
   – connecting cable (3 m, 2 M ohm; to connect table mat to connection box) 4822 320 11306
   – earth cable (1 M ohm; to connect any product to mat or connection box) 4822 320 11308
   – complete kit ESD3 (combining all 6 prior products - small table mat) 4822 310 10671
   – wristband tester 4822 344 13999

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

3.4 Notes

1. The direct voltages and oscillograms should be measured with regard to the tuner earth , or hot earth as this is called (see fig. 3.3)
2. The direct voltages and oscillograms shown in the diagrams are indicative and 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 and without aerial signal. Voltages in the power supply section are measured both for normal operation and in standby . These values are indicated by means of the appropriate symbols (see fig. 3.3).
4. The picture tube PWB has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.
5. The semiconductors indicated in the circuit diagram and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.
6. Manufactured under license from Dolby Laboratories Licensing Corporation.
7. DOLBY, the double D symbol and PRO LOGIC are trademarks of Dolby Laboratories Licensing Corporation.

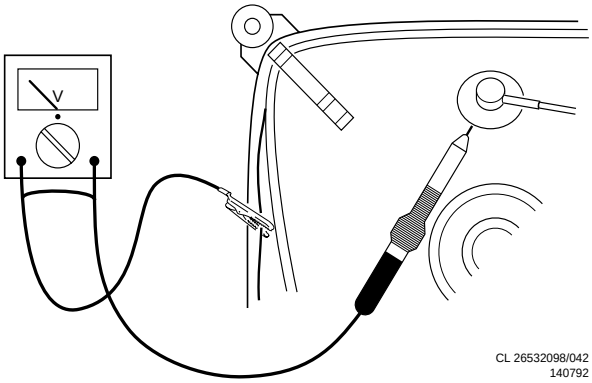


Figure 3-1

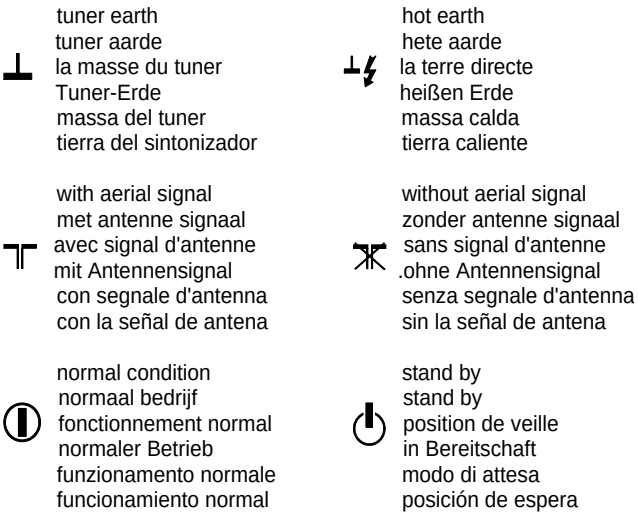


Figure 3-2

4 Mechanical instructions

4.1 Removing the rear cover

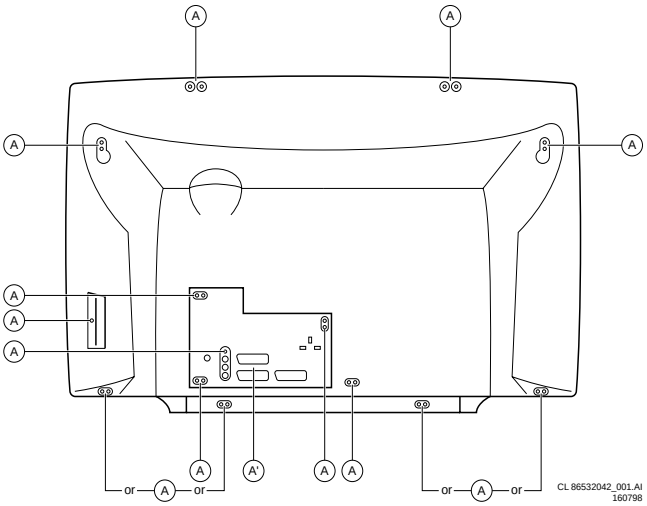


Figure 4-1

1. Remove the fixation screws (A) of the rear cover, notice also the screw for the side-I/O, see figure 4.1. The screw A is only valid for the 3-scart configuration.
2. Remove the rear cover.

4.2 Service positions

There are two predefined service positions:

1. Service position for the top side (component-side)
2. Service position for the bottom side (only valid for LSP) (copper-side)

4.2.1 Service position top side

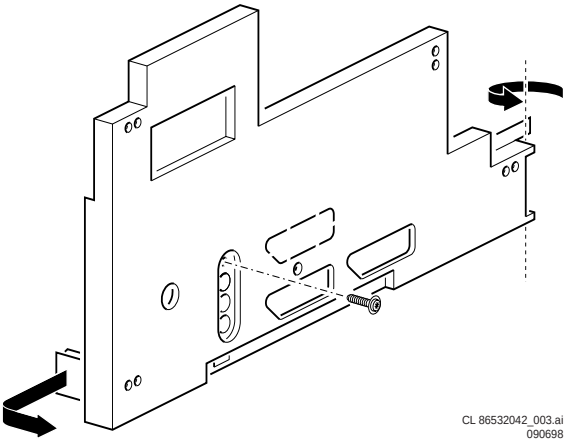


Figure 4-2

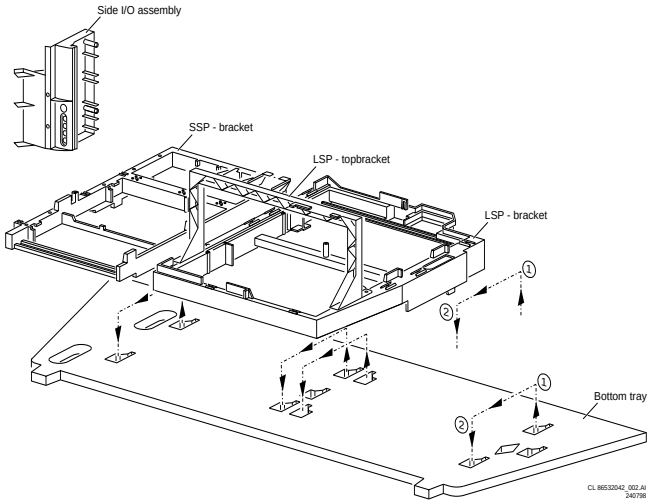


Figure 4-3

1. Remove 1 screw in case of a 2-scart I/O coverplate and 2 screws in case of a 3-scart I/O coverplate (see figure 4.2).
2. Remove the I/O coverplate by releasing the snap at the left side. Pull the I/O cover plate to the left and then backwards. The I/O-bracket hinges at the right side. It can be removed now.
3. Pull backwards (about 8 cm) the bracket with the SSP and the LSP. These brackets are not fixed to each other, but can be repositioned backwards, as if they were one bracket.
4. Hook the brackets in the first row of fixation-holes of the bottom tray; see figure 4.3. In other words re-position the fixation from (1) to (2).

4.2.2 Service position bottom side (only for LSP)

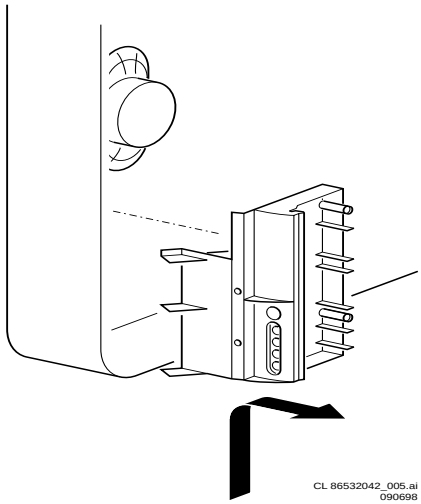


Figure 4-4

4 Mechanical instructions

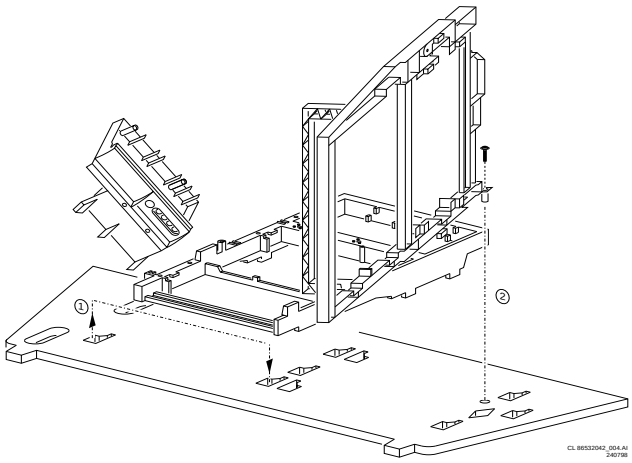


Figure 4-5

1. Referring to previous Service position one must remove the SSP and LSP from bottom tray by pulling back these two panels.
2. Disconnect the SSP from the LSP bracket.
3. The two panels must be shifted some 25 cm to the right. When doing this the side-assembly can be taken out of the hinge (see figure 4.4), and placed on the bottom tray.
4. Either the LSP-topbracket must be removed first, or the cabling from SSP to LSP (0310 and O311) must be re-routed outside the LSP-topbracket to get room to position these panels.
5. Turn the LSP 90 degrees anti clock wise and place the LSP in the hole of the bottom tray. If needed a screw can reinforce the stability of this position (see figure 4.5) (see (2)).
6. The left front hook of the SSP panel can be fixed in a fixation-hole, that was used in previous service-position for the right front hook of the SSP. See described movement-action (1). (There is no right fixation hole.)

4.2.3 (Service position bottom side SSP)

1. (See figure 4.3). Remove the two fixation screws of the LSP-topbracket (one on the left hand side, one on the right hand side).
2. Disconnect wirings from cable-clamps of LSP-topbracket.
3. In case the line transformer is changed by a bigger type a part of the LSP-topbracket can be removed by breaking it.

4.3 Removing the LSP-top bracket

1. (See figure 4.3). Remove the two fixation screws of the LSP-topbracket (one on the left hand side, one on the right hand side).
2. Disconnect wirings from cable-clamps of LSP-topbracket.
3. In case the line transformer is changed by a bigger type a part of the LSP-topbracket can be removed by breaking it.

4.4 Removing the SSP from SSP-bracket

1. Release the three fixation clamps on the right hand side of the bracket.
2. Press the board upwards and remove the board from the bracket.

4.5 Removing the LSP from LSP-bracket

1. Release the two fixation clamps on the right hand side of the bracket.
2. Press the board upwards and remove the board from the bracket.

4.6 Removing the top control board

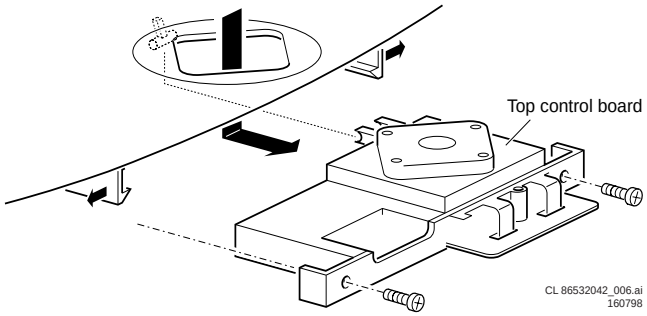


Figure 4-6

1. See figure 4.6. Pull 2 clamps to the outer side.
2. Top control board can be pushed down now, while it hinges still in the front.
3. Now the board can be pulled backwards.
4. (If by accident the hinge in front is damaged or one of the clamps is broken, the top control board can also be fixed by 2 screws.)

4.7 Removing the side I/O board

1. The complete Side I/O-assembly can be lifted out of the hinges and placed on the bottom tray of the set (see fig 4.4).
2. The board can easily be removed out of the bracket by releasing the fixation clamps.

4.8 Removing the mains switch/LED board

1. Release the two fixation clamps.
2. Pull the board backwards.

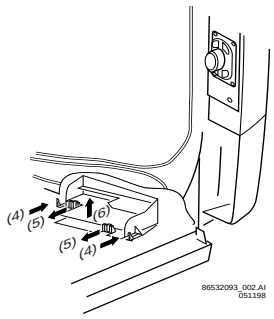


Figure 4-7

4.9 Mounting the rear cover

Before mounting the rear cover, check whether the mains cord is mounted correctly in the guiding brackets.

5 Service modes, error codes and protections

In this chapter the following paragraphs are included:
5.1 Test points
5.2 Service modes and Dealer Service Tool and ComPair (including fault finding tips related to CSM-mode)
5.3 Error codes
5.4 Protections
Fault find tree

5.1 Test points

The MG2.1E chassis is equipped with test points in the service printing. These test points are referring to the functional blocks:

- P1-P2-P3, etc.: Test points for the power supply.
- L1-L2-L3, etc.: Test points for the line drive and line output circuitry.
- F1K-F2K-F3K, etc on Small Signal Panel: Test points for the frame drive.
- F1F-F2F-F3F, etc. on CRT/Scavem Panel: Test points for the CRT-panel circuitry.
- F1-F2-F3, etc. on Large Small Signal Panel: Test points for the frame output circuitry.
- S1-S2-S3, etc: Test points for the synchronisation circuitry.
- V1-V2-V3, etc: Test points for the video processing circuitry.
- I1-I2-I3, etc: Test points for the Tuner/IF part.
- A1-A2-A3, etc. on Small Signal Panel: Test points for the audio processing circuitry.
- A1-A2-A3, etc. on Large Signal Panel: Test points for the audio amplifiers.
- C1-C2-C3, etc: Test points for the control circuitry.
- T1-T2-T3, etc: Testpoints for the teletext circuitry.
- SC1-SC2-SC3, etc: Test points for the Scavem circuitry.

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

5.2 Service modes, Dealer Service Tool and ComPair

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 MG2.1E chassis. The RC7150 is also called Dealer Service Tool or DST. The ordering number of the DST (RC7150) is 4822 218 21232.

5.2.1 Installation features for the dealer

The dealer can use the RC7150 for programming the TV-set with presets. 10 Different program tables can be programmed into the DST via a TV-set (downloading from the GFL, MD2 or MG2.1 to the DST; see GFL, MD2 and MG2.1 service manuals) or by the DST-I (DST interface; ordering code 4822 218 21277).

For explanation of the installation features of the DST, the directions for use of the DST (4822 727 20073) are recommended (for the MG2.1E chassis, download code 4 should be used).

5.2.2 Diagnose features for the servicer

The MG2.1E sets can be put in the two service modes via the DST RC7150. These are the Service Default Mode (SDM) and the Service Alignment Mode (SAM). The SDM and SAM can also be entered by short circuiting the relevant pins on the SSP.

Service Default Mode (SDM)
Specification of the SDM:

- Tuning frequency 475.25 MHz.
- TV-system for BGLM sets set to BG, for BGLL'I sets to LL'.
- All picture settings at 50% (brightness, colour, contrast, HUE).
- All sound settings at 50% except volume at 25% (so bass, treble, balance at 50%, volume at 25%).
- All service-unfriendly modes are disabled (like sleep timer, child lock, blue mute).

Entering the SDM can be done in 2 ways:

- By the "DEFAULT" key on the DST while the set is in the normal operation mode.
- By short-circuiting for a moment the two pins (pin 2 and 3 of connector 0356) on the component side of the SSP with the indication "SDM" (activation can be performed in all modes except when the set has a problem with the main-processor).

Note: If the SDM is entered via the pins, all the protections are de-activated.

Exiting the SDM can only be done via the STANDBY command. By switching off-on the set with the mains switch the MG2.1E will come up again in the SDM.

Service Alignment Mode (SAM)
Specification of the SAM:

- Software alignments (see chapter 8).
- Option settings (see chapter 8).
- Error buffer reading and erasing. The most recent error code is displayed on the left side.
- Operation counter.
- Software version.

Entering the SAM can be done in 2 ways:

- By the > button on the DST while the set is in the normal operation mode (or SDM). Enter the password '3-1-4-0' and press OK.
- By short-circuiting for a moment the two pins (pin 1 and 2 of connector 0356) on the component side of the SSP with the indication "SAM" (activation can be performed in all modes except when the set has a problem with the microprocessor).

Note: If the SAM is entered via the pins, all protections are de-activated.

Exiting the SAM can be done via the MENU command or via switching off-on the set with the mains switch.

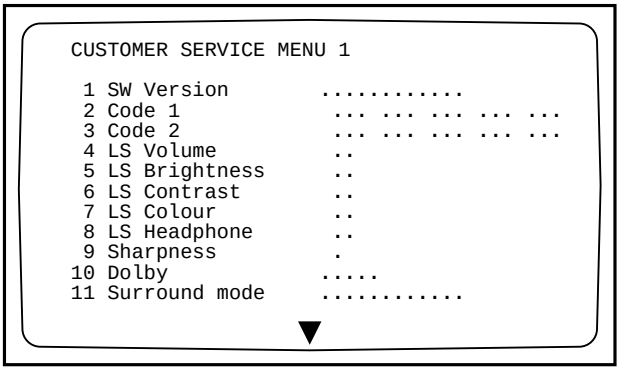
Customer Service Mode (CSM)
All MG2.1E sets are equipped with the 'Customer Service Mode' (CSM). This 'Customer Service Mode' is a special service mode which can be activated and deactivated by the customer upon request of the service technician/dealer during a telephone conversation in order to identify the status of the set. This CSM is a 'read only' mode, therefore modifications in this mode are not possible.

Switching-on of the Customer Service Mode
The Customer Service Mode will switch-on after pressing simultaneously the "MUTE" knob on the remote control handset and the "MENU" button on the TV for at least 4 seconds. This activation only works if there is no menu on the screen.

Switching-off the Customer Service Mode
The Customer Service Mode will switch-off after pressing any key of the remote control handset (with exception of the

"cursor-up" and "cursor-down" keys), or the buttons on the TV or by switching off the TV set with the mains switch.

Detailed explanation of the Customer service Mode
After switching on the Customer Service Menu the following screen will appear:



86532061_004.AI
230798

Figure 5-1 Customer Service Menu 1

Line 1: Software version; the build in software version (AAAABCX.Y)

- AAAA= MG21(chassis name)
- B = E (Europe)
- C = 1 (language cluster)
- X = main version number
- Y = sub version number

Details on the software version can be found in the chapter "Software Survey" of the publication "Product Survey - Colour Television".

Line 2: Code 1; gives the last 5 errors of the error buffer. As soon as the built-in diagnose software has detected an error the buffer is adapted.

Line 3: Code 2; gives the first 5 errors of the error buffer. As soon as the built-in diagnose software has detected an error the buffer is adapted.

The last occurred error is displayed on the leftmost position of code 2. Each error code is displayed as a 3 digit number. When less than 10 errors occur, the rest of the line(s) is(are) empty. In case of no errors the text "No Errors" is displayed. See paragraph 5.3 of this chapter for a description of the error codes.

Line 4: LS Volume; gives the Last Status of the volume as set by the customer for this selected transmitter. The value can vary from 0 (volume is minimum) to 24 (volume is maximum). Volume values can be changed via the volume key on the remote control handset.

Line 5: LS Brightness; gives the Last Status of the brightness as set by the customer for this selected transmitter. The value can vary from 0 (brightness is minimum) to 63 (brightness is maximum). Brightness values can be changed via the "cursor left" and "cursor right" keys on the remote control handset after pressing the red button for picture menu and selecting "brightness".

Line 6: LS Contrast; gives the Last Status of the contrast as set by the customer. The value can vary from 0 (contrast is minimum) to 63 (contrast is maximum). Contrast values can be changed via "cursor left" and "cursor right" keys on the remote control handset after pressing the red button for picture menu and selecting "contrast".

Line 7: LS Colour; gives the Last Status of the colour saturation, as set by the customer. The value can vary from 0 (colour is minimum) to 63 (colour is maximum). Colour values can be changed via "cursor left" and "cursor right" keys on the remote control handset after pressing the red button for picture menu and selecting "colour".

Line 8: LS Headphone; gives the Last Status of the headphone volume, as set by the customer. The value can vary from 0 (volume is minimum) to 24 (volume is maximum). Headphone volume values can be changed via the "cursor left" and "cursor right" keys on the remote control handset after pressing the green button for sound menu and selecting "headphone".

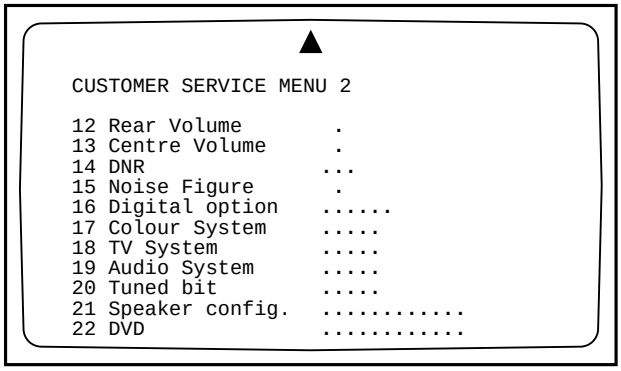
Line 9: Sharpness; gives the sharpness value. The value can vary from 0 (sharpness is minimum) to 7 (sharpness is maximum). In case of bad antenna signals a too high value of the sharpness can result in a noisy picture. Sharpness values can be changed via the "cursor left" and "cursor right" keys on the remote control handset after pressing the red button for picture menu and selecting "sharpness".

Line 10: Dolby; indicates whether the received transmitter transmits Dolby sound (present) or not (not present). Attention: The presence of Dolby can only be tested by the software on the Dolby Signalling bit. If a Dolby transmission is therefore received without a Dolby Signalling bit, then this indicator will show "not present" even though such a Dolby transmission is received.

Line 11: Surround Mode; indicates the by the customer selected surround mode. In case the set is a Non-Dolby set there will be displayed "0". If it is a Dolby-set then is displayed: "Pro Logic", "Dolby 3 Stereo", "Hall" or "Off". For Dolby-set surround mode can be changed via the "cursor left" and "cursor right" keys on the remote control handset after pressing the green button for sound menu and selecting "Surround settings".

By means of the "cursor-down" knob on the remote control handset the Customer Service Menu 2 will appear. By means of the "cursor-up" knob on the remote control handset the Customer Service Menu 1 will appear again.

Customer Service Menu 2 represents following information:



86532061_005.AI
230798

Figure 5-2 Customer Service Menu 2

Line 12: Rear Volume; gives the volume value of the surround sound loudspeakers. This value can vary from 0 (minimum volume) to 63 (maximum volume). Rear volume can be changed via the "cursor left" and "cursor right" keys on the remote control handset after pressing the green button for

sound menu, selecting "Surround settings" and selecting "Rear volume". This feature is only available when surround mode is in "Dolby Pro Logic" or "Hall".

Line 13: Centre Volume; gives the volume value of the centre loudspeakers. This value can vary from 0 (minimum volume) to 63 (maximum volume). Centre volume can be changed via the "cursor left" and "cursor right" keys on the remote control handset after pressing the green button for sound menu, selecting 'Dolby Pro Logic' and selecting "centre volume". This feature is only available when surround mode is in "Dolby Pro Logic" or "Dolby 3 Stereo".

Line 14: DNR (Dynamic Noise Reduction); gives the setting of the DNR for the selected transmitter. The following selections are possible:

- "off", "min", "med" or "max"
- "off" or "automatic" (MG2.1E with "Automatic Noise Reduction").

The DNR can be changed via the "DNR" key on the remote control handset.

Line 15: Noise Figure; gives the selected noise ratio for this selected transmitter. This value can vary from 0 (good signal) to 127 (average signal) and to 255 (bad signal). This only works in case the DNR selection is "off/automatic".

Line 16: Digital Option; gives the selected digital mode, "100Hz", Digital Scan" or "Natural Motion". Digital option can be changed via the "cursor left" and "cursor right" keys on the remote control handset after pressing the red button for picture menu and selecting "digital options".

Line 17: Colour System; gives information about the colour system of the selected transmitter.

– Black and white: No colour carrier received
– PAL: PAL signal received
– SECAM: SECAM signal received
– NTSC: NTSC signal received

Line 18: TV System; gives information about the video system of the selected transmitter.

– BG: BG signal received
– DK: DK signal received
– I: PAL I signal received
– L: SECAM L signals received
– M38.9: NTSC M signal received with video carrier on 38.9 MHz
– MN: NTSC M signal received

Line 19: Audio System; gives information about the audio system of the selected transmitter.

– Sound Muted: No sound
– Dolby Pro Logic: Dolby Pro Logic sound received
– Mono: Mono sound received
– Stereo: Stereo sound received
– Dual I: Language I received
– Dual II: Language II received
– Digital Mono: Digital mono sound is received
– Digital Stereo: Digital stereo sound is received
– Digital Dual I: Digital language I is received
– Digital Dual II: Digital language II is received

Line20: Tuned Bit; gives information about the tuning method of the stored preset. If the value is "Yes" the preset is stored via manual entry of the frequency when a transmitter was not present on that frequency. In that case the TV will attempt to perform a micro-search every time the preset number is selected. Once the micro-search has been successful the Tuned Bit will be set to "No".

Line 21: Speaker configuration; gives the configuration setting for the speakers. In case the set is a Non-Dolby set there will be displayed "0". If it is a Dolby-set then is displayed: "Full internal", "L/R external", "Surround external" or "Full external". For the Dolby-set the speaker configuration can be changed via the "cursor left" and "cursor right" keys on the remote control handset after opening the installation menu and selecting "set-up". The installation menu can be opened by pressing "timer" and "enlarge" at the same time. This feature is only available when the set has virtual Dolby.

Line 22: DVD; gives the configuration setting for DVD. This can be "Present" or "Not Present". If "Present" is selected the starting point is a top quality signal and a number of settings are therefore changed automatically. DVD can be changed via the "cursor left" and "cursor right" keys on the remote control handset after opening the installation menu and selecting "set-up". The installation menu can be opened by pressing "timer" and "enlarge" at the same time.

Problems and solving tips
The procedures to change the value or the status of the different settings is described in the paragraph 'Detailed explanation of the Customer Service Mode'.

Picture problems
Worse picture quality in case of DVD pictures Check line 22 "DVD". In case line 22 gives the indication "Not Present" change the setting into "Present".

Snowy/noisy picture

1. Check line 15 "Noise Figure". In case the value is 127 or higher and the value is also high on other programs check the aerial cable/aerial system.
2. Check lines 9 "Sharpness", 14 "DNR" and 15 "Noise Figure". In case the value of line 9 is 3 or 4 and the value of line 15 is high (127 or higher), lower the value of line 9 "sharpness" and switch DNR (line 14) to "automatic", "on" or to a higher value.

Picture too dark

1. Press "Smart Picture" button on the Remote Control handset. In case picture improves, raise the brightness value or raise the contrast value. The new value(s) are automatically stored for all TV channels.
2. After switching on the Customer Service Mode the picture is OK. Raise the brightness value or raise the contrast value. The new value(s) are automatically stored for all TV channels.
3. Check lines 6 "LS Brightness" and 7 "LS Contrast". The value of line 6 is low (<10) or the value of line 7 is low ((10). Raise the brightness value or raise the contrast value.

Picture too bright

1. Press "Smart Picture" button on the Remote Control handset. In case picture improves, reduce the brightness value or reduce the contrast value. The new value(s) are automatically stored for all TV channels.
2. After switching on the Customer Service Mode the picture is OK. Reduce the brightness value or reduce the contrast value. The new value(s) are automatically stored for all TV channels.
3. Check lines 6 "LS Brightness" and 7 "LS Contrast". The value of line 6 is high (>40) or the value of line 7 is high ((50). Reduce the brightness value or raise the contrast value.

Fading picture

Digital scan effect. Check line 14 "DNR". The status of "DNR" is 'med' or 'max'. Reduce "DNR" to 'min' or switch off the digital scan.

White line around picture elements and text

1. Press "Smart Picture" button on the Remote Control handset. In case picture improves, reduce the sharpness value. The new value(s) are automatically stored for all TV channels.
2. After switching on the Customer Service Mode the picture is OK. Reduce the sharpness value. The new value(s) are automatically stored for all TV channels.
3. Check line 8 "Sharpness". Reduce the sharpness value. The new value(s) are automatically stored for all TV channels

No picture. Check line 20 "Tuned bit". In case the value is 'Yes', install the required program again. Open the installation menu by pressing "timer" and "enlarge" at the same time and perform manual installation.

Blue picture. No proper signal is received. Check the aerial cable/aerial system.

Blue picture and/or unstable picture. A scrambled or decoded signal is received.

Black and white picture. Check line 5 "LS colour". In case the value is low ((10) raise the value of colour. The new value(s) are automatically stored for all TV channels.

No colours/colour lines around picture elements.

1. Check lines 17 "Colour System" and 18 "TV System". In case line 17 is 'PAL' and line 18 is 'M 38,9', the installed system for this preset is 'USA', while 'West Europe' is required. Install the required program again. Open the installation menu by pressing "timer" and "enlarge" at the same time and perform manual installation. Select 'System; West Europe'.
2. In case line 17 is 'PAL' and line 18 is 'L', the installed system for this preset is 'France', while 'West Europe' is required. Install the required program again. Open the installation menu by pressing "timer" and "enlarge" at the same time and perform manual installation. Select 'System; West Europe'.

No colours/noise in picture

1. Check lines 17 "Colour System" and 18 "TV System". In case line 17 is 'Black and White' and line 18 is 'BG', the installed system for this preset is 'West Europe', while 'USA' is required. Install the required program again. Open the installation menu by pressing "timer" and "enlarge" at the same time and perform manual installation. Select 'System; USA'.
2. In case line 17 is 'Black and White' and line 18 is 'L', the installed system for this preset is 'France', while 'USA' is required. Install the required program again. Open the installation menu by pressing "timer" and "enlarge" at the same time and perform manual installation. Select 'System; USA'

Colours not correct. Check lines 17 "Colour System" and 18 "TV System". In case line 17 is 'PAL' and line 18 is 'L', the installed system for this preset is 'France', while 'West Europe' is required. Install the required program again. Open the installation menu by pressing "timer" and "enlarge" at the same time and perform manual installation. Select 'System; West Europe'.

Colours not correct/unstable picture. Check lines 17 "Colour System" and 18 "TV System". In case line 17 is 'SECAM' and line 18 is 'BG', the installed system for this preset is 'USA', while 'France' is required. Install the required program again. Open the installation menu by pressing "timer" and "enlarge" at the same time and perform manual installation. Select 'System; France'.

Unstable picture. Check lines 17 "Colour System" and 18 "TV System". In case line 17 is 'SECAM' and line 18 is 'M 38,9', the installed system for this preset is 'West Europe', while 'France' is required. Install the required program again. Open the installation menu by pressing "timer" and "enlarge" at the same time and perform manual installation. Select 'System; France'.

Menu text not sharp enough.

1. Press "Smart Picture" button on the Remote Control handset. In case picture improves, reduce the contrast value. The new value(s) are automatically stored for all TV channels.
2. After switching on the Customer Service Mode the picture is OK. Reduce the contrast value. The new value(s) are automatically stored for all TV channels.
3. Check line 7 "LS Contrast". The value of line 7 is high (>50). Reduce the contrast value.

Sound problems

No sound from left and right speaker.

1. Press "Smart Sound" button on the Remote Control handset. In case sound improves, raise the volume value. The new value(s) are automatically stored for all TV channels.
2. After switching on the Customer Service Mode the volume is OK. Raise the volume value. The new value(s) are automatically stored for all TV channels.
3. Check line 4 "LS Volume". The value is low. Raise the value of "Volume". The new value(s) are automatically stored for all TV channels.

Sound too loud for left and right speaker.

1. Press "Smart Sound" button on the Remote Control handset. In case sound improves, reduce the volume value. The new value(s) are automatically stored for all TV channels.
2. After switching on the Customer Service Mode the volume is OK. Reduce the volume value. The new value(s) are automatically stored for all TV channels.
3. Check line 4 "LS Volume". The value is high. Reduce the value of "LS Volume". The new value(s) are automatically stored for all TV channels.

No sound from "centre" speaker. Check line 12 "Centre Volume". The value is low. Raise the value of the "Centre Volume"

Sound too loud from "centre" speaker. Check line 12 "Centre Volume". The value is high. Reduce the value of the "Centre Volume"

Diagnose Mode (only active during transmission of error codes and diagnose 99)

This mode is activated by the DIAGNOSE command on the DST for reading the error codes and erasing the error buffer by the DST even when the set is in protection and so there is no picture (assuming that the power supply and the control part are working). For activation see paragraph 5.3. The diagnose Mode is only a temporarily mode (the set will go back to the previous mode), and can not be switched on permanently.

Note: The diagnose mode can not be entered if the SAM is activated.

Compair
ComPair (Computer Aided Repair) is a service tool for Philips Consumer Electronics products. ComPair is a further development on the DST service remote control allowing faster and more accurate diagnostics. ComPair has three big advantages:

- ComPair helps you to quickly get an understanding how to repair the MG2.1E in short time by guiding you step by step through the repair procedures.
- ComPair allows very detailed diagnostics (on I^2C level) and is therefore capable of accurately indicating problem areas. You do not have to know anything about I^2C commands yourself; ComPair takes care of this.
- ComPair speeds up the repair time since it can automatically communicate with the MG2.1E (when the micro processor is working) and all repair information is directly available. When ComPair is installed together with the SearchMan MG2.1E electronic manual, schematics and PCBs are only a mouse-click away.

ComPair consists of a Windows based fault finding program and an interface box between PC and the (defective) product. The ComPair interface box is connected to the PC via a serial or RS232 cable. In case of the MG2.1E chassis, the ComPair interface box and the television communicate with each other via bi-directional infrared signal.

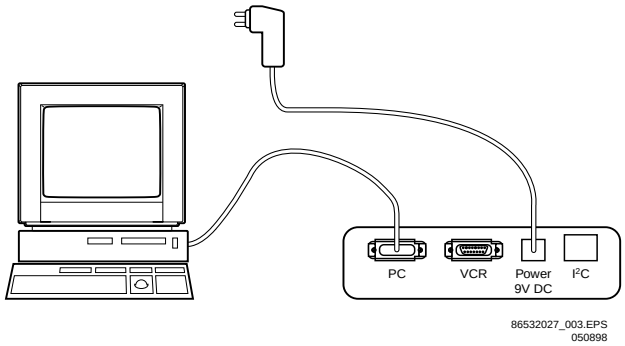


Figure 5-3

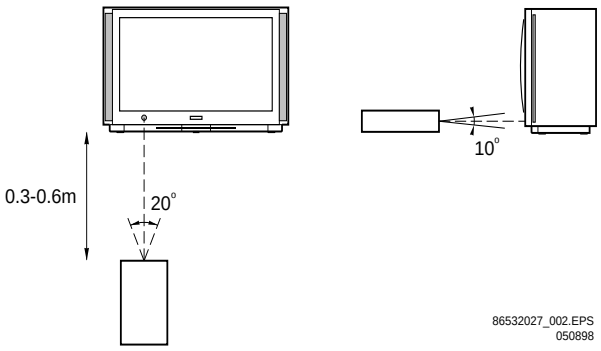


Figure 5-4

The ComPair fault finding program is able to determine the problem of the defective television. ComPair can gather diagnostic information in 2 ways:

1. Communication to the television (automatic)
2. Asking questions to you (manually)

ComPair combines this information with the repair information in its database to find out how to repair the MG2.1E.

Automatic information gathering
Step-by-step start up. Under normal circumstances, a fault in the power supply or an error during start-up will switch the television to protection-mode. ComPair can take over the initialisation of the television. In this way it is possible to distinguish which part of the start-up routine (hence which circuitry) is causing the problem.

Reading out the error buffer, ComPair can automatically read out the contents of the entire error buffer.

Diagnosis on I^2C level. ComPair can access the I^2C bus of the television without a physical connection. ComPair can send and receive infrared commands to the micro controller of the television. These commands are translated by the controller to I^2C commands and vice versa. In this way it is possible for ComPair to communicate (read and write) to devices on the I^2C busses of the MG2.1E.

Manual information gathering
Automatic diagnosis is only possible if the micro controller of the television is working correctly and only to a certain extend. When this is not the case, ComPair will guide you through the fault finding tree by asking you questions and showing you examples. You can answer by clicking on a link (e.g. text or an oscillogram) that will bring you to the next step in the faultfinding process.

A question could be: Do you see snow? (Click on the correct answer)

YES / NO

An example can be: Measure testpoint I7 and click on the correct oscillogram you see on the oscilloscope

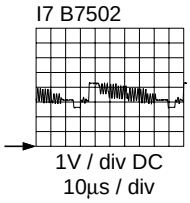


Figure 5-5

By a combination of automatic diagnostics and an interactive question/answer procedure, ComPair will enable you to find most problems in a fast and effective way.

Additional features
Beside fault finding, ComPair provides some additional features like:

- Uploading/downloading of presets
- Managing of preset lists
- Emulation of the Dealer Service Tool

SearchMan (electronic service manual)
When ComPair is installed in combination with SearchMan, all schematics and PCBs will be directly available while you repair a television if you click on a PCB or schematic link.

Example: Measure the DC voltage on C2568 (PCB/schematic) on the small signal level.

Clicking on PCB will automatically pop-up a picture of the PCB with the location of C2568 marked. Clicking on schematic will

automatically pop-up the schematic with the location of C2568 marked.

Stepwise Startup /Shutdown feature of set can be used via Compair

Stepwise startup explanation
Via ComPair the stepwise startup (see also chapter 4) can be realised. This is very helpful when a protection is activated.

State	Description mode	Display leds	Errorcode possible
0	Low Power Standby/uC in Stby	Red on	None
1	High Power Standby/set in Stby	Red 0.5Hz	None
2	Supply on. Protections 5V2, 8V6, DC-Prot activated.	Orange/Green 0.25 Hz	67,68,76
3	ICs initialized. (Sound) Protection 3V3 activated	Orange/Green 0.5 Hz	plus 77
4	EHT startup. No blackcurrent stabilisation. Protections VFB, HFB, LDP, BC-prot activated (blanked picture)	Orange/Green 2 Hz	plus 70,71,73,74
5	TV operates, unblanked picture	Orange/Green 10 Hz	

Stepwise shutdown explanation
In the stepwise shutdown mode, state 2 is skipped. (ICs can not be de-initialised).

State	Description mode	Display leds (Note *)	Prot. de-activated
5	TV operates, unblanked picture	Orange/Green 10 Hz	-
4	No blackcurrent stabilisation (no picture)	Orange/Green 2 Hz	-
3	ICs stay initialised. (Sound) All protections are off	Orange/Green 0.5 Hz	74,73,71,70
1	High Power Standby/set in Stby	Red 0.5Hz	77,76,68,67
0	Low Power Standby/uC in Stby	Red on	-

Note: When set is in stepwise-mode and due to stepping-up a protection is activated, the set really will go into protection (blinking red led). The set will not leave the stepwise-mode however. By stepping up the set can be activated again, until state X, where protection was activated. At state (X-1) diagnostic measurements can be performed.

5.3 Error codes

5.3.1 Reading error codes from the error buffer

The error buffer can be read in 2 ways:

1. On the screen via the Service Alignment Mode (SAM). In case picture is OK, the error buffer can be read the easiest via the SAM. In the main menu of the SAM the last 10 different error codes occurred are displayed. The most recent detected error code is displayed on the left side, so e.g.: 0 0 0 0 0means no error codes present in the buffer 3 0 0 0 0means one error code present in the buffer; error code 3 2 3 0 0 0 means two error codes present in the buffer; error code 2 is the most recent, error code 3 is detected before 2
2. On the display of the DST. If an error has been detected by the MG2.1E chassis, the set might go into protection. Without the presence of a picture the errors can be read by the DST, as long as the main-processor is still active (green LED continuous and red LED blinking fast (5Hz); in case of red LED is blinking slow (1,25Hz) there is a main-processor problem). To transmit the errors from the TV to the DST:
   1. Press the "DIAGNOSE" key (in all modes except the SAM)
   2. Press "1" to view the last error detected.
   3. Hold the DST 5 to 10 cm from in front of the stand-by LED of the set (the IR-sending LED of MG2.1E is located near the stand-by LED).
   4. Press the "OK" key.

The error is represented by a 2 digit number. The 2 digits on the DST are displayed sequentially, with a pause before it is repeated. The digit after the pause is the 1st digit. If the display reads 4 - 7, the error code is 47. To read other error codes, press "DIAGNOSE" and one of the other digit keys. Note:

– If the DST cannot communicate to the MG2.1E in a proper way, ERROR 2 is shown in the display of the DST. Trying again by changing the DST position a little bit might often help.
– If the error buffer of MG2.1E is empty, no errors are displayed by the DST; the display remains blank.

5.3.2 Clearing the error buffer

The error buffer can be cleared in 2 ways:

1. In the SAM by selecting the item RESET ERROR BUFFER in the main menu.
2. By the "DIAGNOSE 99" command of the DST (in all modes except the SAM). Press the DIAGNOSE key on the DST, followed by 9 and 9 and then >.

Note: When error buffer is full (10 codes), no new error can be stored anymore. However of every error raised is monitored

how long it exists in the error buffer. When for any reason a false raised error exists in the buffer, it will be deleted after 50 hours. If this error still is actual after 50 hours, it will be raised again. In this way is safeguarded that history of error codes is stored. Sometimes it is an option to first write down the error buffer content, reset the buffer, and look again which error codes are generated by the set.

5.3.3 Error code table

Table 5-1 Error messages

Error	Device	Description	Defective item	Diagram	Defective module indication
1	ST24E16	Non volatile memory	IC7008	K7	Control
2	ST24E32 or M24C32	Non volatile memory	IC7008	K7	
3	SAA5800	OTC2.5 microprocessor/TXT	IC7003	K7	
5	UV1316	Tuner	U1102	K1	Tuner
15	TDA9320H	HIP I/O-video processing	IC7501	K1	Chroma IF IO
20	TDA9330H	HOP video control/deflection processor	IC7300	K6	Video Controller
25	MSP3410D	ITT sound processor	I 7751	K3	Audio module
26	SAA7712H	SEDSP dolby processor	IC7770	K4	
50	SAA4978H	Picnic	IC7609	K5	Feature Box
51	SAA4990H	Prozonic	IC7608	K5	
65	Slow I^2C bus blocked		fig 5.7		Slow I^2C bus blocked
66	Fast I^2C bus blocked		fig 5.7		Fast I^2C bus blocked
67	Supply 5V	5V2	fig 5.6		+5 V Supply
68	Supply 8V	8V6	fig 5.8		+8V Supply
70	V fail protection	VFB	fig 5.9	A3/A2/K6	Vertical Flyback
71	H fail protection	HFB	fig 5.9	A2/K6	Horizontal Flyback
73	Line Deflection protection	LDP	IC7484	A2/K6	Line Deflection
74	Beam Current Protection	BC-PROT	TS7351	K6/K7	Beam Current
76	DC Sound protection	DC-PROT	TS7762	A4/A1	Sound Output
77	Feature box protection	FBX-PROT	fig 5.6	K4	+3V3 (FBX) Supply

Remark:If on the DST the text "ERROR 2" is displayed, this means that the communication from the TV to the DST has failed.

5.4 Protections

5.4.1 General

The MG2.1E "Protection Diagram" shows the structure of the protection system. See protection diagram (fig 5.6).

One micro-processor. The MG2.1E has only one micro-processor (OTC) and it remains active during Standby. This because power of the microprocessor and the attached memory chip set is coming from the 3V3 supply, which is derived from the 5V Standby-circuitry. So in both power-on as in Standby-mode the microprocessor is connected to this power supply. The micro processor controls the Standby-line for switching on and off the main supply. In the standby-mode or in the protection-mode the Standby-line will open the contacts of relay 1002 via T7000 and T7001, this results in switching off the mains input to the main supply (FFS). In the mean time via T7550 the intensity of LED of the opto-coupler will increase, which results in a quick slow-down of the FFS supply.

Two service-modes. To get a quick diagnoses the MG2.1E has two service-modes implemented:

- The service default mode. Start-up of the set in a predefined way.
- The service alignment mode. In this mode items of the set can be adjusted via a menu and with the help of test patterns.

Both modes can be entered via the service connector on the SSP (connector 0356) or via the DST (dealer service tool) or via ComPair. The service alignment mode can not be entered in Standby, the set has to be in normal operation.

Protection levels. If a fault situation is detected an error code will be generated and if necessary the set will be put in the protection-mode. The protection-mode is indicated by blinking of the red LED. In some error cases the micro processor does not put the set in the protection-mode. The error codes of the error buffer can be read via the service-menu (SAM) or via the service send-LED and the DST/ ComPair . The DST diagnose functionality will force the set into the Service-standby, which is

alike the usual Standby, however the micro-processor has to remain in normal operation completely.

The protections of the MG2.1E can be divided in 4 groups ;

- Protection from I^2C-busses (Fast and Slow) or I^2C-IC errors (device errors).
- Protection from the inputs on the OTC.
- Protections from the status register of the HOP (communicated via I^2C-bus).
- DC-protection (sound amplifiers) monitored on OTC.

5.4.2 Protection from the I^2C bus (fig. 5.7)

In normal operation some registers of the I^2C controlled ICs will be refreshed every 200 msec. During this sequence three I^2C-busses and the I^2C -ICs as well will be checked. The I^2C protection will take place if the SDA and SCL are whether short circuited to ground or to each other. An I^2C error can also occur, if the power supply of the IC is missing.

5.4.3 Protection from the inputs on the OTC (fig.5.8)

If a protection is detected at an input of the OTC, all protection inputs of the OTC will be scanned every 200 msec. for 5 times. If the protection on one of the inputs is still activated after 1 sec., then the set will be put in the protection-mode. Before the scanning is started a so-called ESD-refresh will be carried out first, because the interrupt on one of the inputs may be caused either by a FLASH or by ESD. As a FLASH or ESD can harm the settings of some ICs, the HOP-HIP-ITT-EDRIC-TEA6417-TEA6422-LTP-PICNIC and Tuner are initialised again to ensure the normal picture and sound conditions of the set.

- 8V6 and 5V2 protection (see detailed figure 5.8). The presence of the 8V6 and 5V2 is sensed by the OTC. If the 8V6 and 5V2 is not present, then an error code is stored in the error buffer and the set is put in the protection-mode.
- BC protection (Beam Current). (See detailed figure 5.8). The beam current is measured by a circuit on the SSP. If the beam current exceeds a certain reference level, then via D6350 and T7351 the BC-input of the OTC is set to high. The error code is stored in the error buffer and the set is put in the protection-mode.
- DC-protection. (Fig. 5.10) This is an urgent protection, the circuitry is located at the LSP. The output of the protection circuit will slow-down the FFS power supply immediately via the opto-coupler and via the Standby-relay the supply will be switched into Standby-mode at once. To be able to store the error code in the error buffer the protection signals are also wired to the OTC. The protection is activated in case of :
  - Unbalance of +Vs and -Vs
  - Unbalance of +7V7 and -7V7
  - DC output present on one of the audio amplifiers

5.4.4 Protections from the status register of the HOP (fig. 5.9)

Every 200 msec. the status register of the HOP is read by the OTC via I^2C. If a protection signal is detected on one of the inputs of the HOP, then the relevant error bit in the HOP register is set to 'high'. If the error bit is still 'high' after 1 sec., the OTC will store the error code in the error buffer and depending on the relevancy of the error bit the set will either go into the protection-mode or not.

- HFB: Horizontal Flyback (See detailed figure 5.9). If the horizontal flyback is not present, then this is detected via the HOP. One status bit is set to 'high'. The error code is stored in the error buffer and the set will go into the protection mode
- VFB: Vertical Flyback (See detailed figure 5.9). The HOP will blank the screen , if the vertical flyback signals are not present at the VFB-guard input .The relevant status bit will be set in the register of the HOP. The error code is stored in the error buffer, in this case protection is not necessary.
- LDP-protection (Line Deflection Protection) (See detailed figure 5.8). Two protection circuits are connected to the LDP-input of the HOP :
  1. Flash detection. From the EHT-info, via D6341 and T7341 a flash will stop the H-drive and line output stage immediately. The FLS-bit in the status register of the HOP is set to 'high'. As the duration of a flash is very short the FLS-bit will be reset to 'low' again after the flash refresh, so via a slow start the set will be started again.
  2. LDP detection. The EW-protection, coming from the line-output is also connected to the same input as above. The current through the EW-stage is measured by R3483 and R3484 on the LSP. The voltage across these precision resistors will increase in case of a failure at the line output stage. If the voltage becomes higher than 1 V, then the output of IC7484 will become 'high' and remains 'high' via D6485 and R3490. Via D6344 the H-drive will be stopped. The FLS-bit will be set to 'high' and remains 'high' by means of the software filtering even after a flash refresh. The OTC will put the set in Standby-mode. The error code is stored in the error buffer and the set gets into the protection mode.

5.5 Fault find trees

See fault find trees at the end of this chapter. (figures 5.11-5.17)

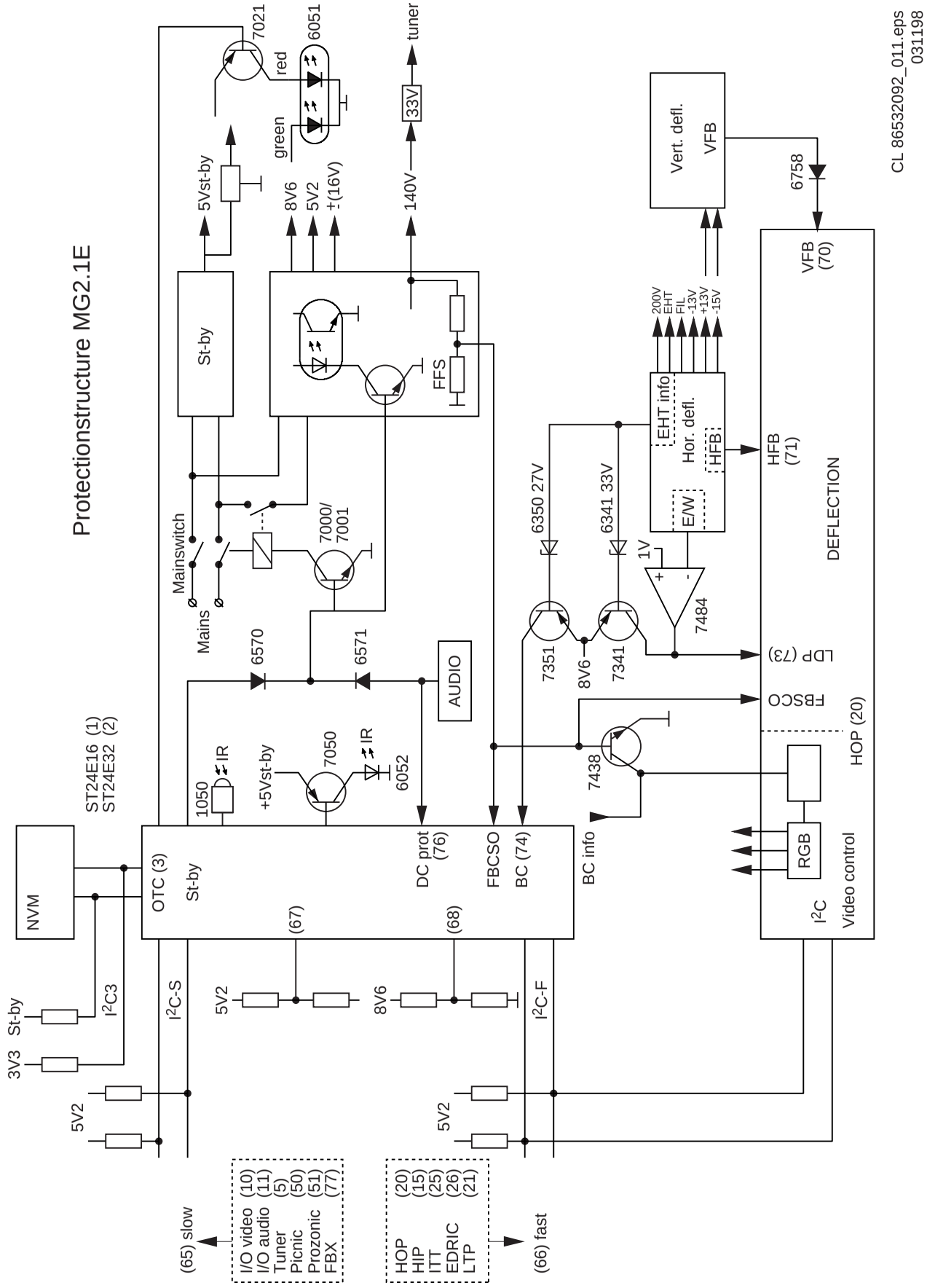
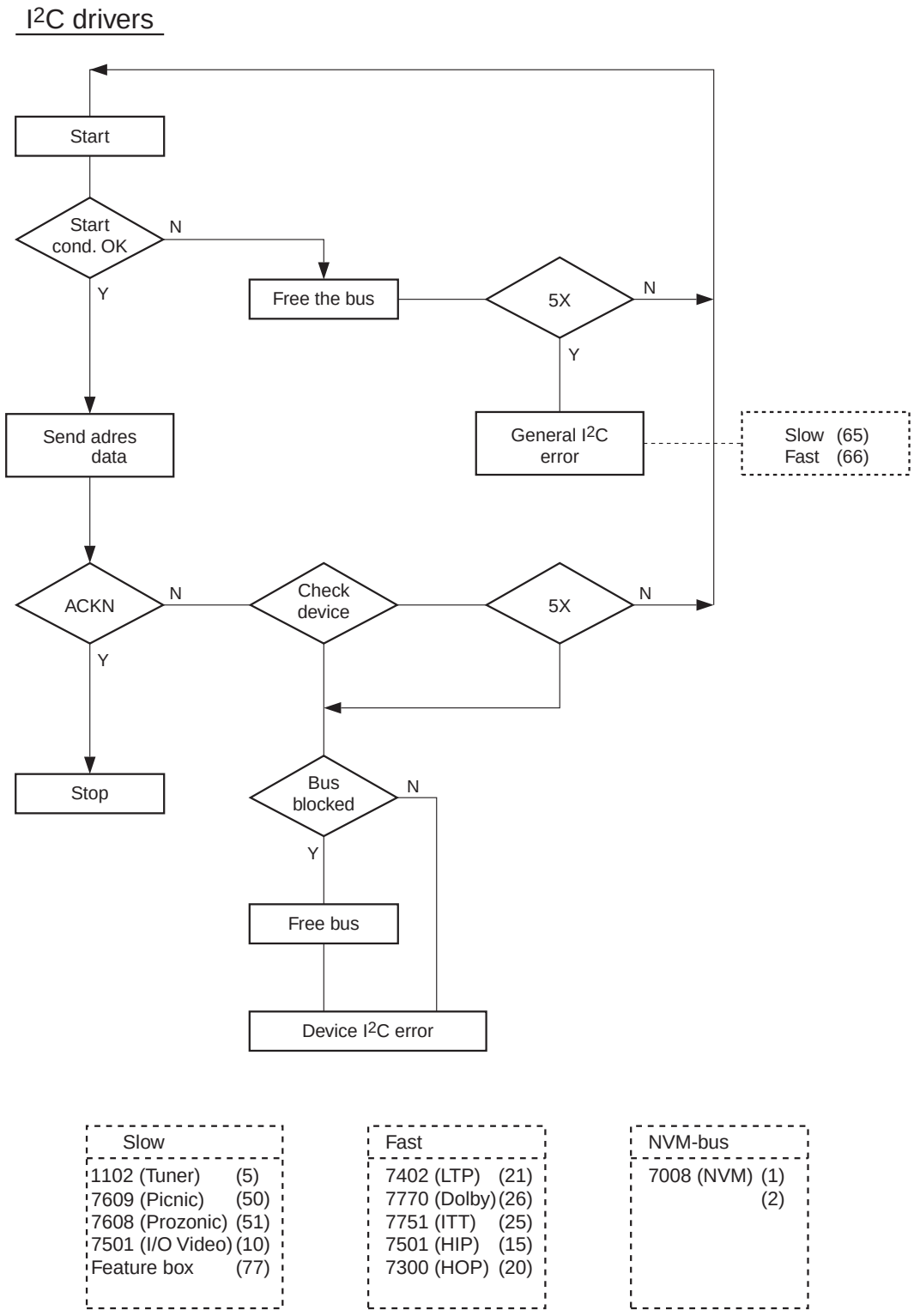

Protectionstructure MG2.1E
CL 86532092_011.eps
031198
ST24E16 (1)
ST24E32 (2)
NVM
OTC (3)
St-by
3V3 St-by
I²C3
5V2
I²C-S
(65) slow
I/O video (10)
I/O audio (11)
Tuner (5)
Picnic (50)
Prozonic (51)
FBX (77)
(67)
5V2
8V6
(68)
I²C-F
(66) fast
HOP (20)
HIP (15)
ITT (25)
EDRIC (26)
LTP (21)
5V2
DC prot (76)
FBSCO
BC (74)
BC info
1050
IR
+5Vst-by
7050
IR
6052
AUDIO
6570
6571
Mainswitch
Mains
7000/
7001
St-by
5Vst-by
7021
red
green
6051
8V6
5V2
+(16V)
140V
33V
tuner
FFS
7351
8V6
7341
6350 27V
6341 33V
7438
1V
7484
EHT info
Hor. defl.
HFB
E/W
Vert. defl.
VFB
6758
200V
EHT
FIL
-13V
+13V
-15V
VFB
(70)
HFB
(71)
DEFLECTION
LDP (73)
FBSCO
HOP (20)
RGB
I²C
Video control

Figure 5-6



jsp 86532047_036.eps
261198

Figure 5-7

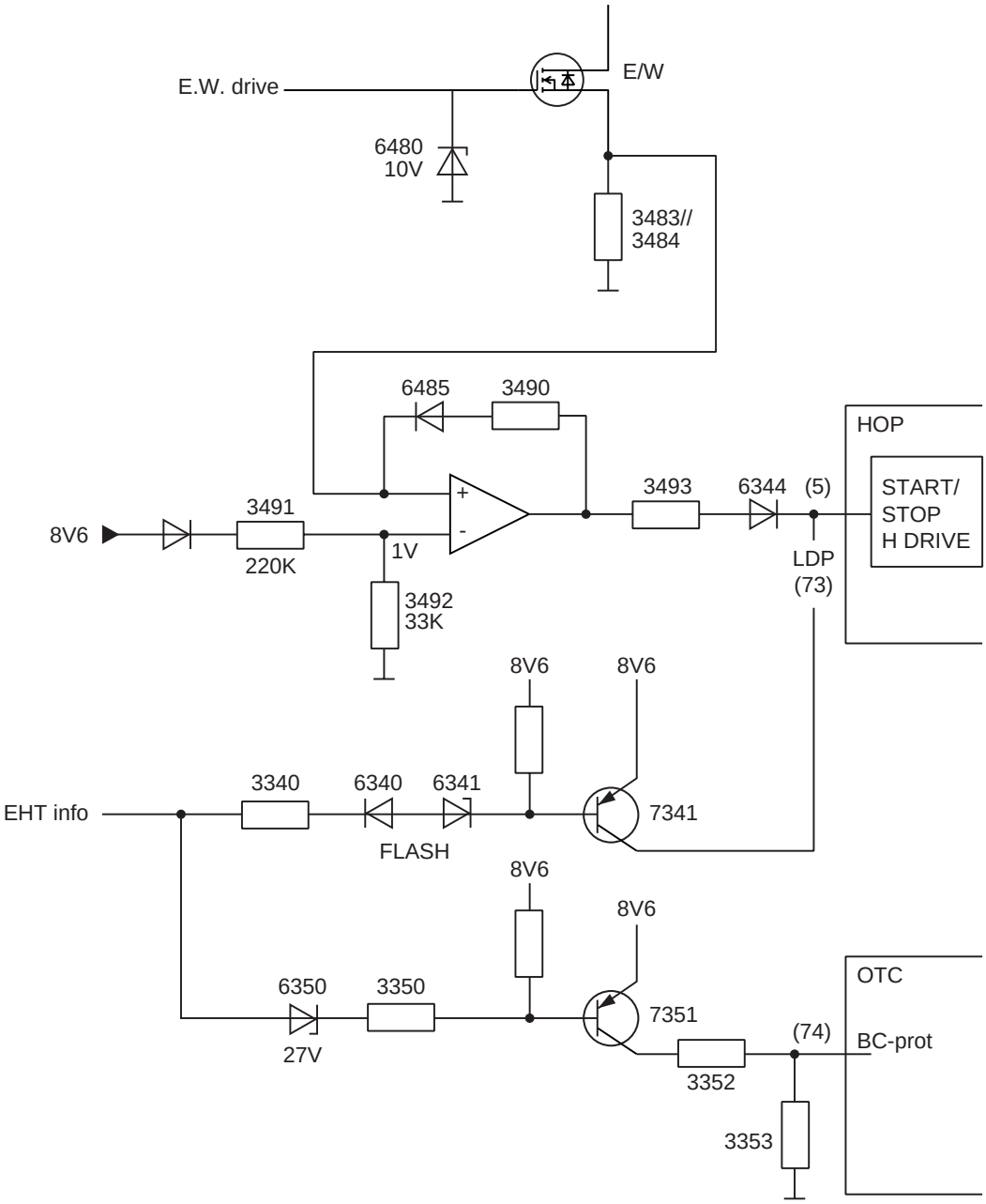
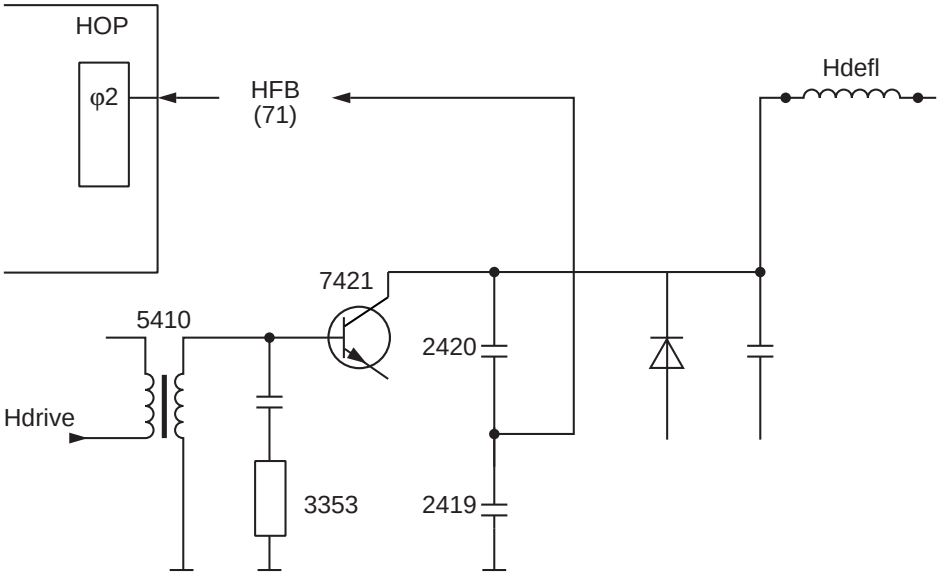
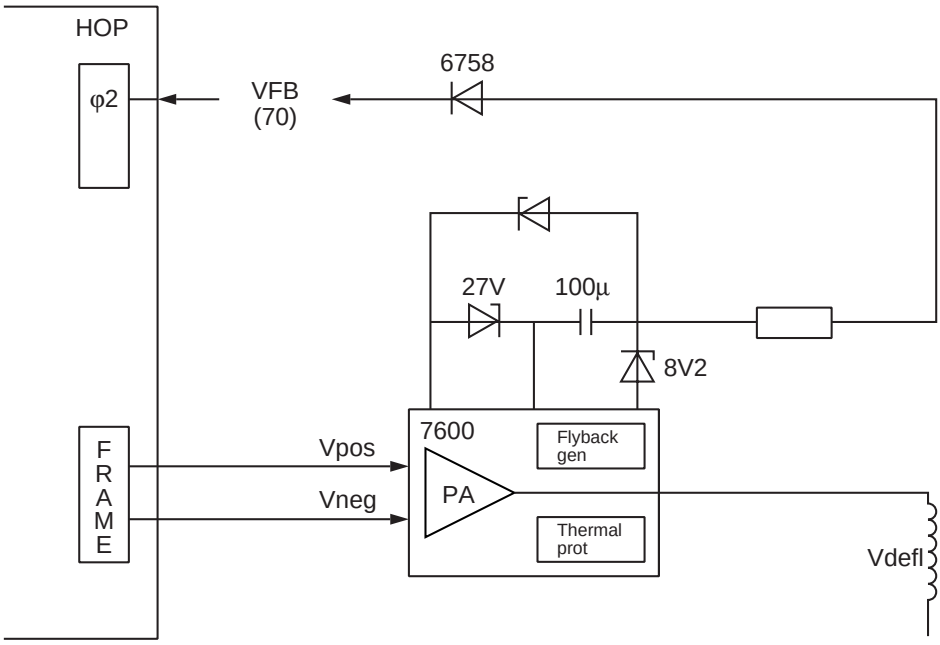

E.W. drive
E/W
6480
10V
3483//
3484
6485
3490
HOP
START/
STOP
H DRIVE
3493
6344
(5)
LDP
(73)
8V6
3491
220K
1V
3492
33K
8V6
8V6
3340
6340
6341
EHT info
7341
FLASH
8V6
8V6
OTC
6350
3350
7351
(74)
BC-prot
27V
3352
3353
CL 86532092_013.eps
031198

Figure 5-8

HFB horizontal fly-back



VFB vertical fly-back



SM 86532047_039.eps
290798

Figure 5-9

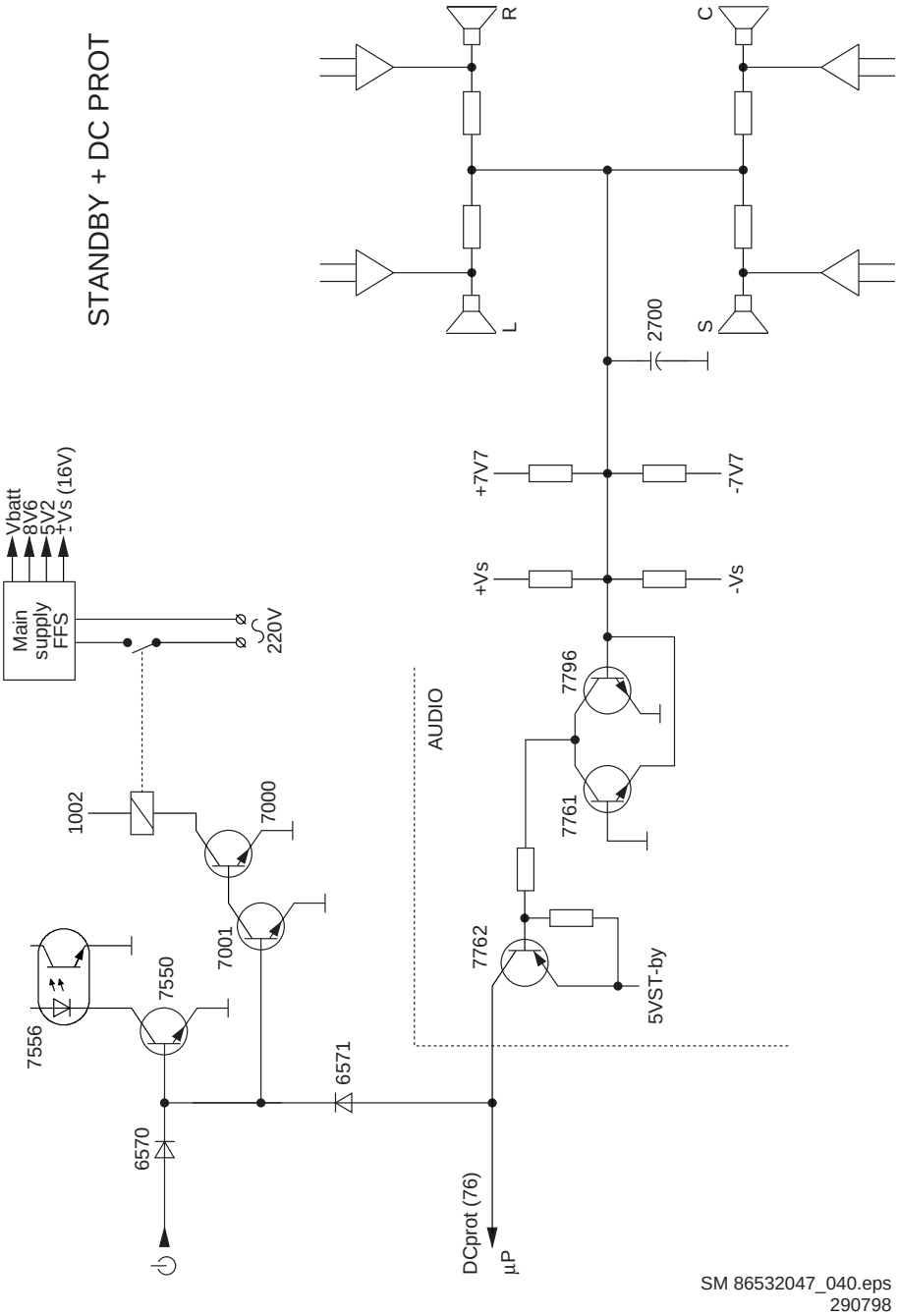

STANDBY + DC PROT
R
C
L
S
2700
+7V7
-7V7
+Vs
-Vs
Vbatt
8V6
5V2
+Vs (16V)
Main supply FFS
220V
AUDIO
7796
7761
1002
7000
7001
7762
5VST-by
7550
7556
6571
6570
DCprot (76)
µP
SM 86532047_040.eps
290798

Figure 5-10

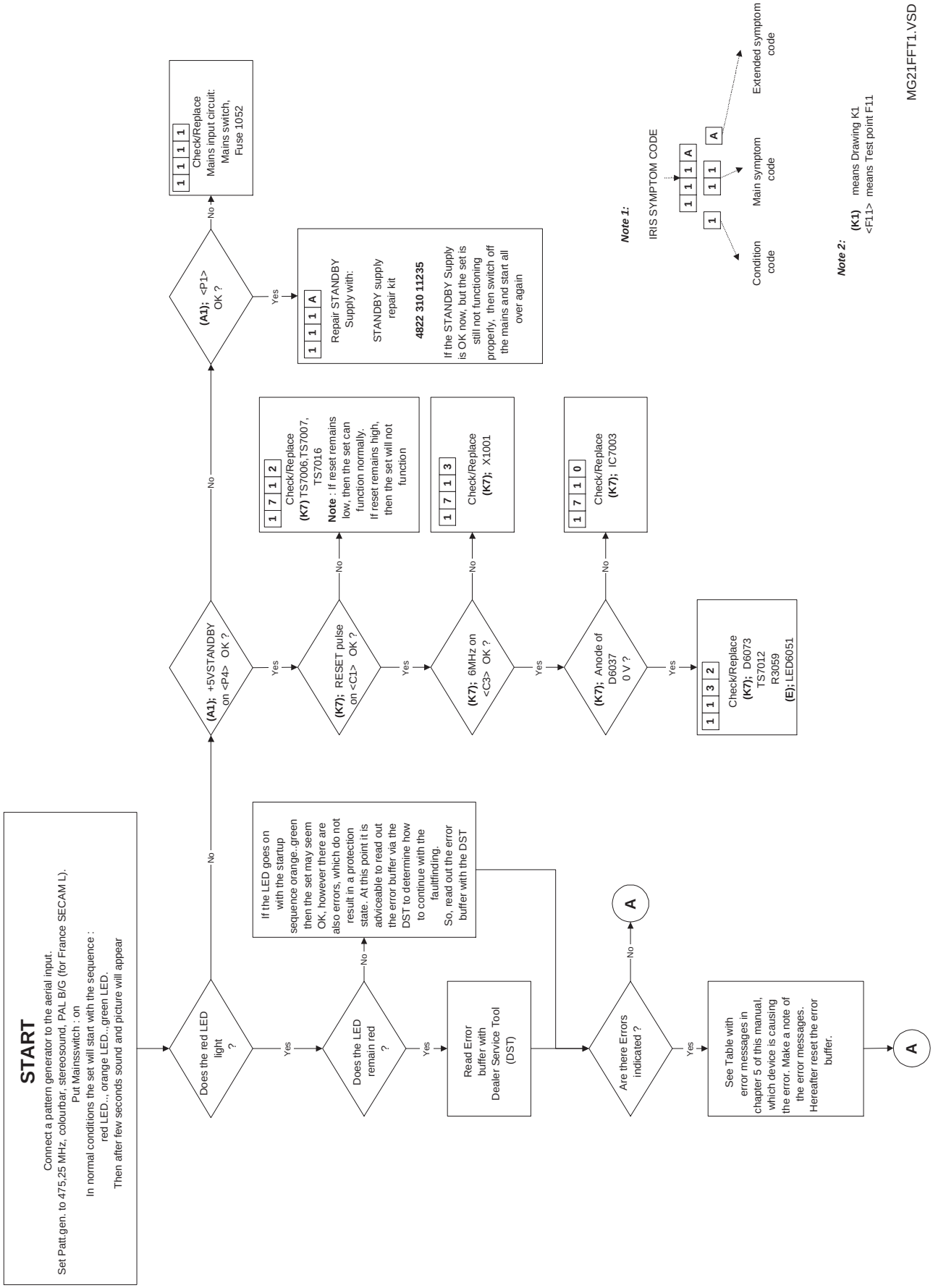
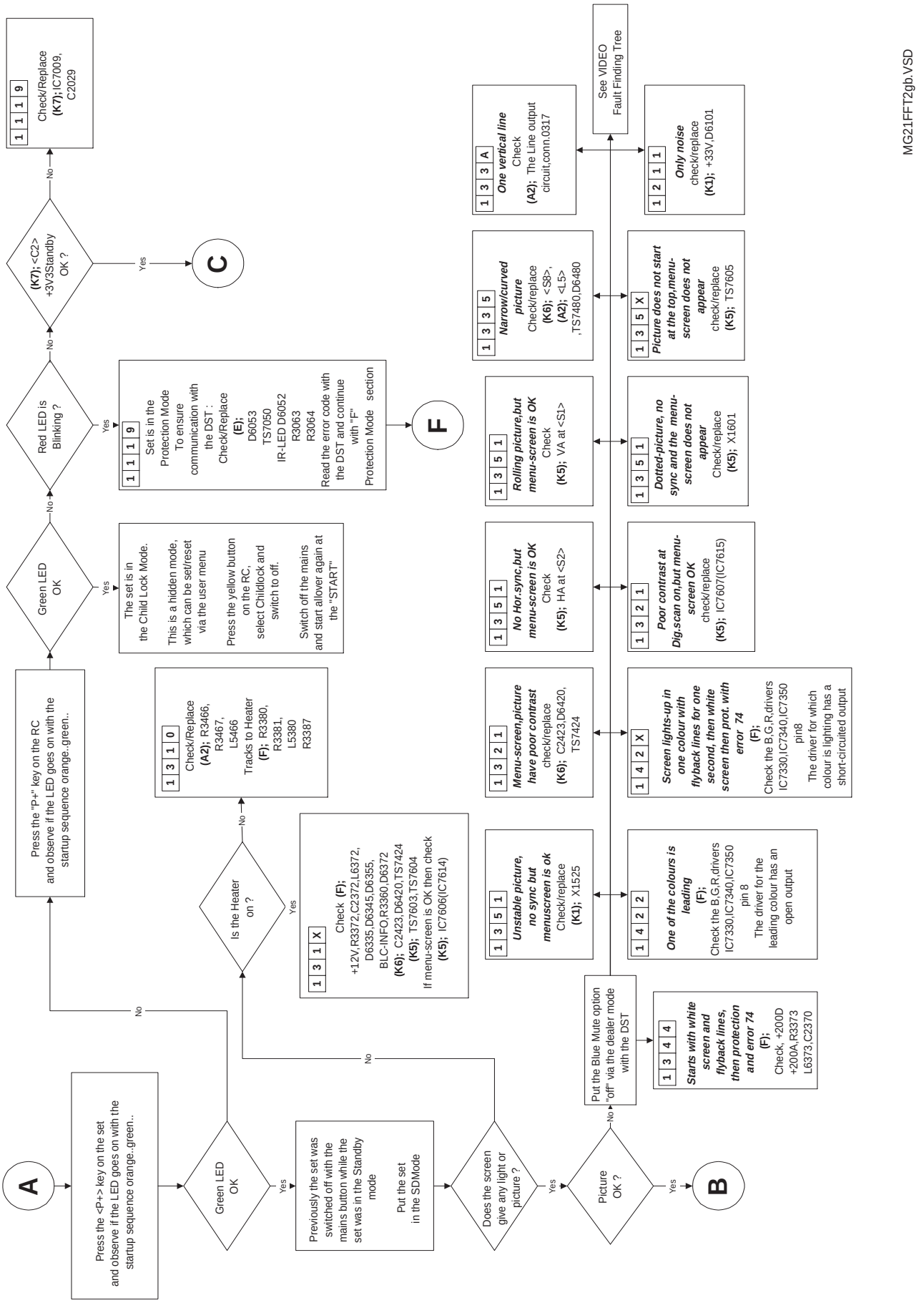
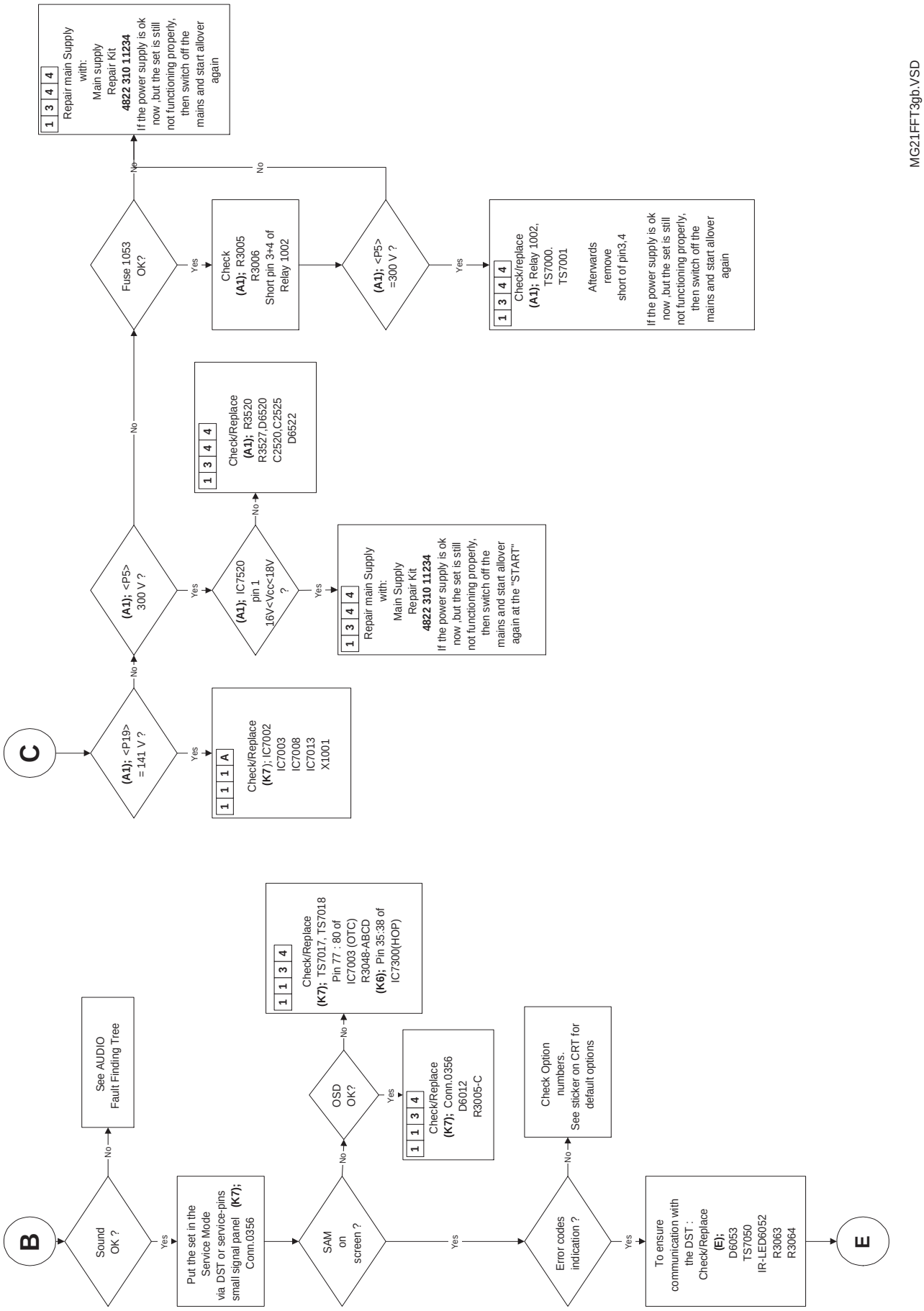

START
Connect a pattern generator to the aerial input.
Set Patt.gen. to 475,25 MHz, colourbar, stereosound, PAL B/G (for France SECAM L).
Put Mainsswitch : on
In normal conditions the set will start with the sequence :
red LED.., orange LED..,green LED.
Then after few seconds sound and picture will appear
Does the red LED light ?
Yes
No
Does the LED remain red ?
Yes
No
If the LED goes on with the startup sequence orange..green then the set may seem OK, however there are also errors, which do not result in a protection state. At this point it is adviceable to read out the error buffer via the DST to determine how to continue with the faultfinding. So, read out the error buffer with the DST
Read Error buffer with Dealer Service Tool (DST)
Are there Errors indicated ?
Yes
No
A
See Table with error messages in chapter 5 of this manual, which device is causing the error. Make a note of the error messages. Hereafter reset the error buffer.
A
(A1); +5VSTANDBY on <P4> OK ?
Yes
No
(K7); RESET pulse on <C1> OK ?
Yes
No
1 7 1 2
Check/Replace
(K7) TS7006,TS7007, TS7016
Note : If reset remains low, then the set can function normally. If reset remains high, then the set will not function
(K7); 6MHz on <C3> OK ?
Yes
No
1 7 1 3
Check/Replace
(K7); X1001
(K7); Anode of D6037 0 V ?
Yes
No
1 7 1 0
Check/Replace
(K7); IC7003
1 1 3 2
Check/Replace
(K7); D6073
TS7012
R3059
(E); LED6051
(A1); <P1> OK ?
Yes
No
1 1 1 A
Repair STANDBY Supply with:
STANDBY supply repair kit
4822 310 11235
If the STANDBY Supply is OK now, but the set is still not functioning properly, then switch off the mains and start all over again
1 1 1 1
Check/Replace
Mains input circuit:
Mains switch,
Fuse 1052
Note 1:
IRIS SYMPTOM CODE
1 1 1 A
1 1 1 A
Condition code
Main symptom code
Extended symptom code
Note 2:
(K1) means Drawing K1
<F11> means Test point F11
MG21FFT1.VSD

Figure 5-11



MG21FFT2gb.VSD

Figure 5-12



MG21FFT3gb.VSD

Figure 5-13

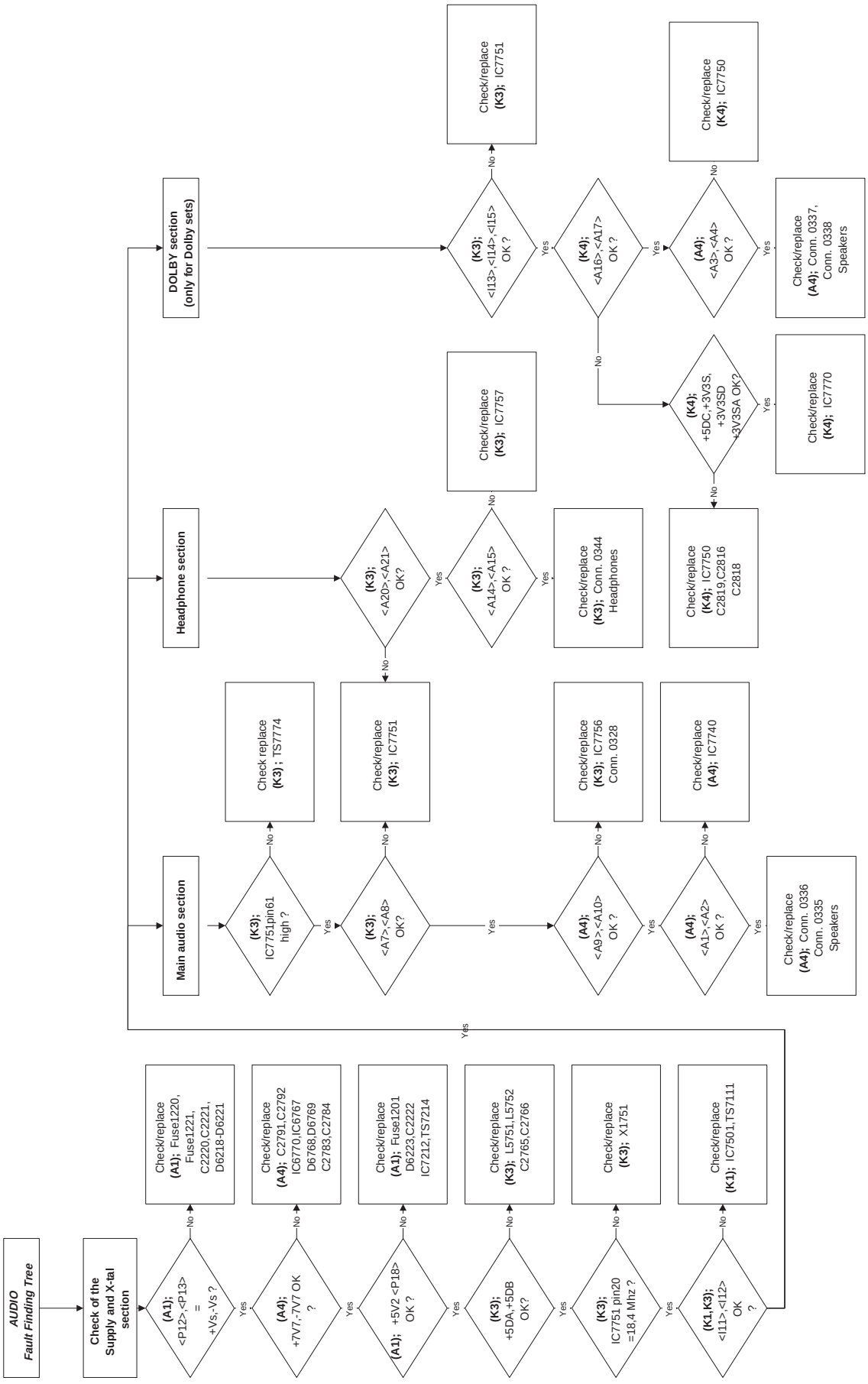

AUDIO
Fault Finding Tree
Check of the
Supply and X-tal
section
(A1);
<P12>,<P13>
=
+Vs,-Vs ?
No
Yes
Check/replace
(A1); Fuse1220,
Fuse1221,
C2220,C2221,
D6218-D6221
(A4);
+7V7,-7V7 OK
?
No
Yes
Check/replace
(A4); C2791,C2792
IC6770,IC6767
D6768,D6769
C2783,C2784
(A1); +5V2 <P18>
OK ?
No
Yes
Check/replace
(A1); Fuse1201
D6223,C2222
IC7212,TS7214
(K3);
+5DA,+5DB
OK?
No
Yes
Check/replace
(K3); L5751,L5752
C2765,C2766
(K3);
IC7751 pin20
=18,4 Mhz ?
No
Yes
Check/replace
(K3); X1751
(K1,K3);
<I11>,<I12>
OK
?
No
Yes
Check/replace
(K1); IC7501,TS7111
Main audio section
(K3);
IC7751pin61
high ?
No
Yes
Check replace
(K3) ; TS7774
(K3);
<A7>,<A8>
OK?
No
Yes
Check/replace
(K3); IC7751
(A4);
<A9>,<A10>
OK ?
No
Yes
Check/replace
(K3); IC7756
Conn. 0328
(A4);
<A1>,<A2>
OK ?
No
Yes
Check/replace
(A4); IC7740
Check/replace
(A4); Conn. 0336
Conn. 0335
Speakers
Headphone section
(K3);
<A20>,<A21>
OK?
No
Yes
(K3);
<A14>,<A15>
OK ?
No
Yes
Check/replace
(K3); Conn. 0344
Headphones
Check/replace
(K4); IC7750
C2819,C2816
C2818
DOLBY section
(only for Dolby sets)
(K3);
<I13>,<I14>,<I15>
OK ?
No
Yes
Check/replace
(K3); IC7751
(K4);
<A16>,<A17>
OK ?
No
Yes
Check/replace
(K3); IC7757
(K4);
+5DC,+3V3S,
+3V3SD
+3V3SA OK?
No
Yes
Check/replace
(K4); IC7770
(A4);
<A3>,<A4>
OK ?
No
Yes
Check/replace
(K4); IC7750
Check/replace
(A4); Conn. 0337,
Conn. 0338
Speakers
Yes
MG21FFT4gb.VSD

Figure 5-14

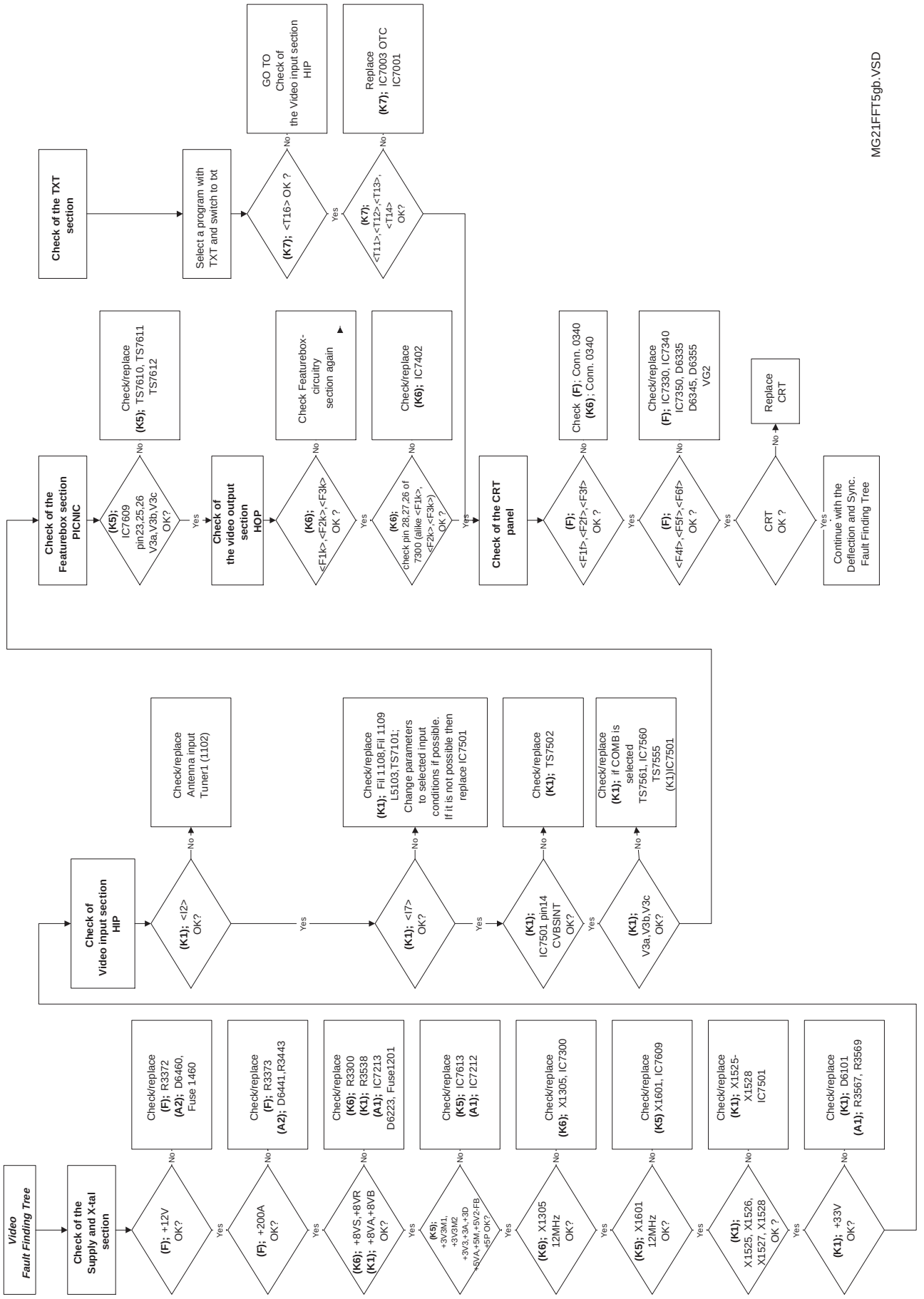

Video
Fault Finding Tree
Check of the Supply and X-tal section
(F); +12V OK?
Check/replace (F); R3372 (A2); D6460, Fuse 1460
(F); +200A OK?
Check/replace (F); R3373 (A2); D6441,R3443
(K6); +8VS,+8VR (K1); +8VA,+8VB OK?
Check/replace (K6); R3300 (K1); R3538 (A1); IC7213 D6223, Fuse1201
(K5); +3V3M1, +3V3M2 +3V3,+3A,+3D +5VA,+5M,+5V2-FB +5P OK?
Check/replace (K5); IC7613 (A1); IC7212
(K6); X1305 12MHz OK?
Check/replace (K6); X1305, IC7300
(K5); X1601 12MHz OK?
Check/replace (K5) X1601, IC7609
(K1); X1526, X1528, X1527, X1528 OK ?
Check/replace (K1); X1525-X1528 IC7501
(K1); +33V OK?
Check/replace (K1); D6101 (A1); R3567, R3569
Check of Video input section HIP
(K1); <I2> OK?
Check/replace Antenna input Tuner1 (1102)
(K1); <I7> OK?
Check/replace (K3); Fil 1108,Fil 1109 L5103,TS7101; Change parameters to selected input conditions if possible. If it is not possible then replace IC7501
(K1); IC7501 pin14 CVBSINT OK?
Check/replace (K1); TS7502
(K1); V3a,V3b,V3c OK?
Check/replace (K1); if COMB is selected TS7561, IC7560 TS7555 (K1)IC7501
Check of the Featurebox section PICNIC
(K5); IC7609 pin23,25,26 V3a,V3b,V3c OK?
Check/replace (K5); TS7610, TS7611 TS7612
Check of the video output section HOP
(K6); <F1k>,<F2k>,<F3k> OK ?
Check Featurebox-circuitry section again
(K6); check pin 28,27,26 of 7300 (alike <F1k>, <F2k> <F3k>) OK ?
Check/replace (K6); IC7402
Check of the CRT panel
(F); <F1f>,<F2f>,<F3f> OK ?
Check (F); Conn. 0340 (K6); Conn. 0340
(F); <F4f>,<F5f>,<F6f> OK ?
Check/replace (F); IC7330, IC7340 IC7350, D6335 D6345, D6355 VG2
CRT OK ?
Replace CRT
Continue with the Deflection and Sync. Fault Finding Tree
Check of the TXT section
Select a program with TXT and switch to txt
(K7); <T16> OK ?
GO TO Check of the Video input section HIP
(K7); <T11>,<T12>,<T13>, <T14> OK?
Replace (K7); IC7003 OTC IC7001
MG21FFT5gb.VSD
Yes
No

Figure 5-15

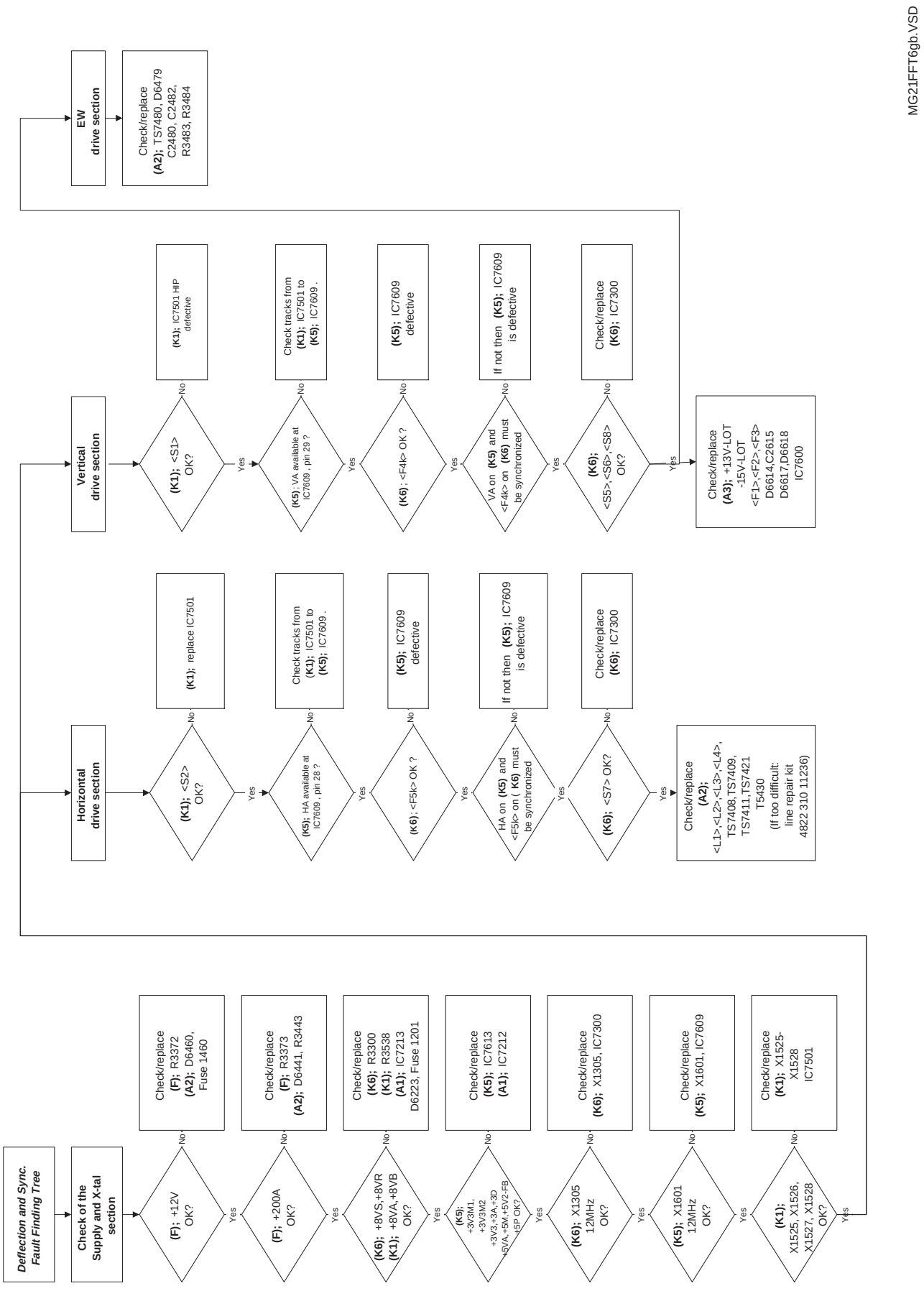
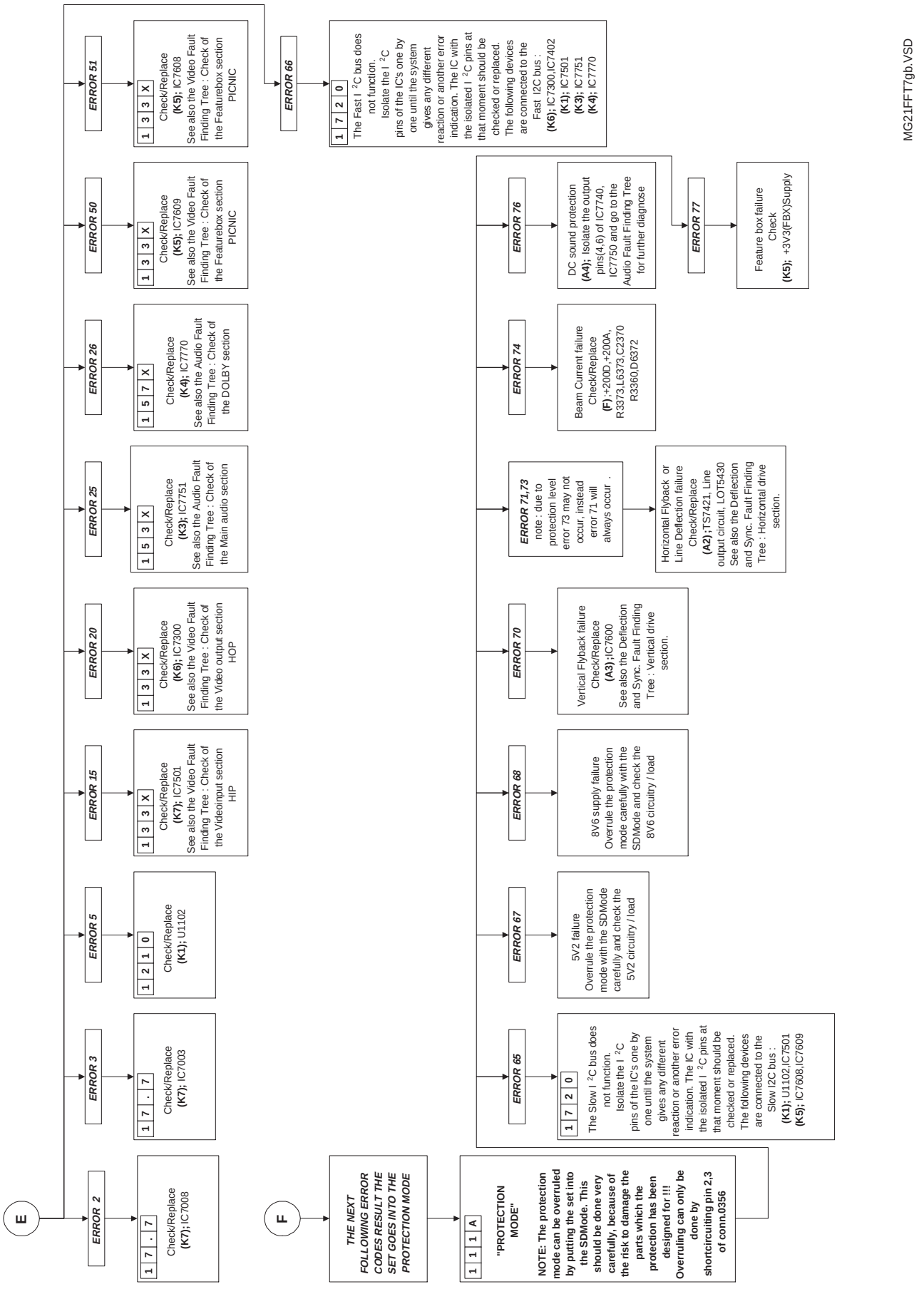

MG21FFT6gb.VSD
Deflection and Sync. Fault Finding Tree
Check of the Supply and X-tal section
(F); +12V OK?
Check/replace (F); R3372 (A2); D6460, Fuse 1460
(F); +200A OK?
Check/replace (F); R3373 (A2); D6441, R3443
(K6); +8VS,+8VR (K1); +8VA,+8VB OK?
Check/replace (K6); R3300 (K1); R3538 (A1); IC7213 D6223, Fuse 1201
(K5); +3V3M1, +3V3M2 +3V3,+3A,+3D +5VA,+5M,+5V2+FB +5P OK?
Check/replace (K5); IC7613 (A1); IC7212
(K6); X1305 12MHz OK?
Check/replace (K6); X1305, IC7300
(K5); X1601 12MHz OK?
Check/replace (K5); X1601, IC7609
(K1); X1525, X1526, X1527, X1528 OK?
Check/replace (K1); X1525-X1528 IC7501
Horizontal drive section
(K1); <S2> OK?
(K1); replace IC7501
(K5); HA available at IC7609 , pin 28 ?
Check tracks from (K1); IC7501 to (K5); IC7609 .
(K6); <F5k> OK ?
(K5); IC7609 defective
HA on (K5) and <F5k> on (K6) must be synchronized
If not then (K5); IC7609 is defective
(K6); <S7> OK?
Check/replace (K6); IC7300
Check/replace (A2); <L1>,<L2>,<L3>,<L4>, TS7408,TS7409, TS7411,TS7421 T5430 (If too difficult: line repair kit 4822 310 11236)
Vertical drive section
(K1); <S1> OK?
(K1); IC7501 HIP defective
(K5); VA available at IC7609 , pin 29 ?
Check tracks from (K1); IC7501 to (K5); IC7609 .
(K6); <F4k> OK ?
(K5); IC7609 defective
VA on (K5) and <F4k> on (K6) must be synchronized
If not then (K5); IC7609 is defective
(K6); <S5>,<S6>,<S8> OK?
Check/replace (K6); IC7300
Check/replace (A3); +13V-LOT -15V-LOT <F1>,<F2>,<F3> D6614,C2615 D6617,D6618 IC7600
EW drive section
Check/replace (A2); TS7480, D6479 C2480, C2482, R3483, R3484
No
Yes

Figure 5-16



MG21FFT7gb.VSD

Figure 5-17

8 Electrical alignments

8.1 General alignment conditions

All electrical alignments should be made under the following conditions:

- Power supply voltage: 220-240V ± 10%; 50-60 Hz ± 5%.
- Warm-up time >10 minutes.
- Voltages and oscillograms are measured in relation to tuner earth (with exception to the voltages on the primary side of the power supply). Never use the cooling fins/plates as ground.
- Test probe: Ri > 10 MOHM, Ci < 20 pF.

8.2 Alignments on the large signal panel (LSP)

8.2.1 +141V (VBAT) supply voltage

- Connect a voltmeter across C2569 (diagram A1, +VBAT).
- Switch on the set.
- Using potentiometer R3559 (diagram A1) adjust the VBAT supply voltage to +141V ± 0V5. (see Fig. 8.1)

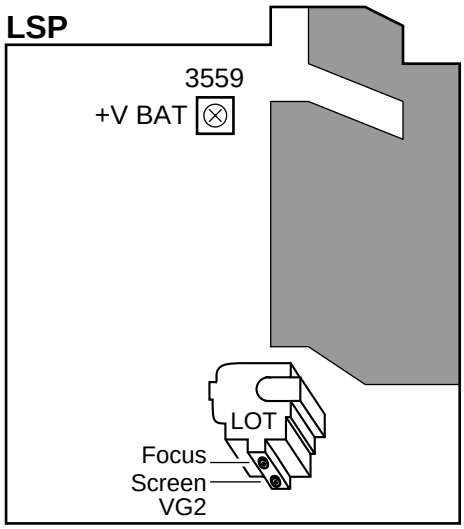


Figure 8-1

8.2.2 Focusing

- Tune the set to a cross hatch test-pattern.
- Adjust the focus potentiometer (diagram A1, upper knob on the LOT) for an overall optimum focusing of the picture.

8.2.3 Vg2 adjustment

Elucidation: In the frame blanking period of the R, G and B signals applied to the CRT, alternately per frame two measuring pulses with different DC levels are inserted by the "HOP" video processor IC7300. During the first frame flyback a pulse is inserted used as reference for the Vg2 adjustment and in the next frame flyback a second pulse is inserted used as reference for the internal white "D" adjustment. For the Vg2 adjustment the pulse with the highest DC-level is used.

- Put the set in the SDM mode (via the >-button on the DST, or via short circuiting the SDM pins 2 and 3 of connector 0356 on the SSP (diagram K7).
- Insert a black test-pattern signal (carrier 475.25 MHz) to the tuner input.
- Connect an oscilloscope (position 50V/Div DC and 2ms/Div) alternately to the CRT cathodes (red pin 8, green pin 6, blue pin 11) and measure for each cathode the DC level of the measuring pulse (see elucidation above and Fig. 8.2) and write down each value. Remark: Trigger the scope external via a CVBS signal (for instance via pin 19 of the scart1 connection).
- Adjust the Vg2 potentiometer (diagram A1, lower knob on the LOT) so that the measuring pulse with the highest noted level is on 160V level.

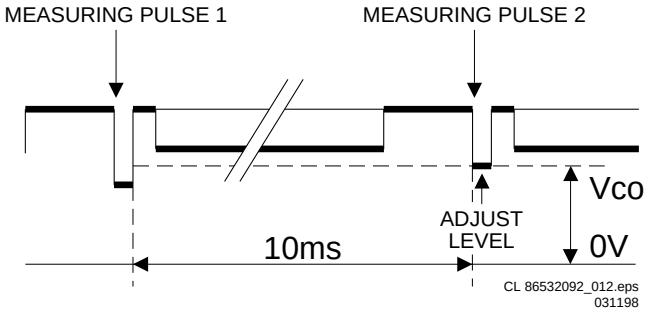


Figure 8-2

8.3 Alignments on the small signal panel (SSP)

8.3.1 40.4 MHz neighbour-channel sound trap

- Tune to a checker board test-pattern (system BG - and with a carrier frequency of 475.25 MHz).
- Connect an oscilloscope (trigger line frequent) to pin 19 (CVBS out) of the scart1 connection.
- Align the coil L5103 (diagram K1) completely downwards (see Fig. 8.3).
- Align the coil upwards till under- and overshoot arise at the black/white and white/black transitions in the video signal (Fig. 8.4).
- Align the coil downwards again till above mentioned under- and overshoot is just disappeared.

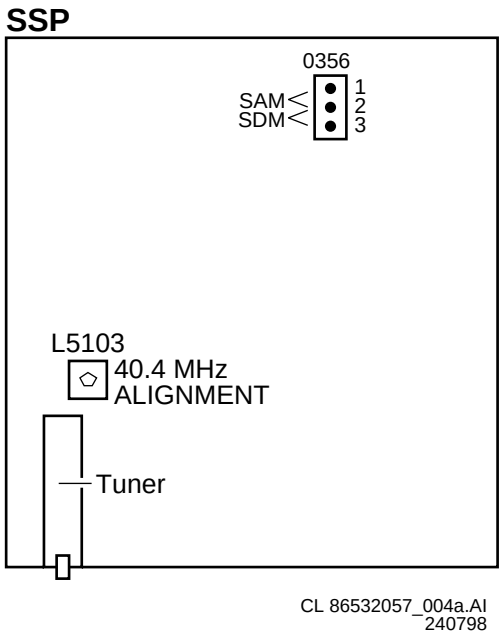
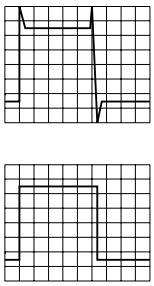


Figure 8-3



CL 86532057_006.AI
170798

Figure 8-4

8.4 Alignments needing SAM-mode + measuring equipment

(These alignments could be of interest when ICs (7501, TDA9320H), or the EAROM (7008, ST24E16) are exchanged on the SSP.)

8.4.1 'IF AFC' (navigation to this menu item via Alignment --> General--> IF AFC)

Supply via a Service generator (e.g. PM5518) a TV-signal, with a signal-strength of about 1 mV. Preferable this signal is a multiburst signal. Frequency 475.25 MHz. Use BG if possible, otherwise match the system of your generator with the received signal in the set. In this procedure Servicer will be asked to swap sometimes from Install-menu to Service Alignment Menu. Procedure how to check correct alignment:

- First set the frequency of the TV-set to 475 MHz in the 'search-line' of the Manual Installation Menu
- If the IF-frequency-value in the 'Fine Tune'-line is between 475.18 MHz and 475.31 MHz, you do not need to re-align the AFC-value as mentioned above (SAM-menu).
- If this is NOT the case, decrease the 'IF AFC'-value (in the SAM-menu) if the frequency on the 'Fine-tune'-line was lower than 475.18 MHz, or increase the 'IF AFC'-value if the frequency on the 'Fine-tune'-line was higher than 475.31 MHz (initially first an 'IF AFC'- alignment can be done, making the multiburst signal flat). This signal can be measured at pin 19 of SCART 1. This is, however, not accurate enough to optimise the 'IF AFC'.

Alignment procedure:

- Set 'IF AFC'-value in SAM.
- Store in SAM this setting.
- Go to manual install menu.
- Set frequency to 475 MHZ.
- Read in 'Fine tune'-line how set responds.
- If this value is between 475.18 MHz and 475.31 MHz then OK, otherwise proceed alignment by setting an other 'IF AFC'-setting.

Service-tip: If you do not trust the accuracy of the frequency of your Service-generator, first 'measure' with 'Fine tune'-line (manual install-menu) of a good set your Service generator.

8.4.2 'Tuner AGC'

Supply a TV-signal, with a frequency of 475.25 MHz and a signal-strength of about 2 mV.

Measure the DC-voltage on pin 1 of the Tuner (position 1102). With the 'Tuner AGC'-alignment in the SAM-menu, this voltage can be aligned. Alignment is correct when DC-voltage is just below 3.8 V

8.5 Alignments and settings in the Service Alignment Menu

8.5.1 General

Entering the SAM can be done in 2 ways:

- Briefly shorting the service pins 'SERVICE ALIGNMENT MODE' on the front side of the SSP (pins 1 and 2 of connector 0356) or:
- Pressing the > key on the Dealer Service Tool (DST) (RC7150), followed by keying in the password "3140" and then pressing the > key.

The Service Alignment Mode menu will now appear on the screen. The following information is now displayed:

1. The software date ('Date') and version ('ID.') of the ROM (Example: MG21E11.0_01501). (This software-code stands for MG21 (chassis), E for Europe, 1-language, 1.0 software version, xxxxx latest 5 digits of 12nc code software.)
2. The accumulated total of operation hours ('Operation Hours').
3. ('Errors') followed by maximal 10 errors. The most recent error is displayed at the upper left. For explanation errors see chapter 5 (table 5.1).
4. ('Defect. Module'). Here the module that generates the error is displayed. (If there are multiple errors in the buffer that have not all been generated by a single module, there is probably another defect. The message 'Unknown' will then be displayed here).
5. ('Reset Error Buffer'). The error buffer can be reset by pressing the > key.
6. ('Functional Test'). All devices are tested via the > key. Eventual errors are displayed in the error buffer. The error buffer is not erased, the contents return when the Functional Test is terminated.
7. ('Alignments'). This enables the Alignments sub-menu to be called up.

The following alignments can be selected:

'General':

- 'Drive'
- 'Peak White Limiter'
- 'Luminance Delays'
- 'EHT Compensation'
- 'Soft Clipper'
- 'Luma Gain'
- 'IF AFC'
- 'Tuner AGC'

'Normal Geometry':

- General geometry alignments.

'Super wide geometry': (only valid for widescreen sets)

- Geometry alignments for the 'Panorama' position in 16:9 sets (only valid for wide screen sets; alignments can be performed, however, it is better to set values as mentioned below).

'Options':

- Setting the initialisation codes in the set via text.

'Option number':

– All options together, expressed in two long numbers. The original factory setting for these numbers can be found on the picture tube sticker on the inside of the set.

'Store':

– Store all alignments.

The alignments are explained now in the sequence of the sub-menu:

8.5.2 General alignments in Service Alignment Menu:

- Once all alignments/settings have been completed the item 'Store' must be selected to record all the values in the permanent memory of the set.
- If the option codes have been changed and stored, the set has to be switched on and off using the mains switch to activate the new settings (when switching on and off via Standby, the option code settings are NOT read by the microprocessor).
- If an empty EAROM (permanent memory) is detected, all settings are set to pre-programmed default (standard) values.
- A built-in test pattern can be called up in various sub-menus. The test pattern generator can be switched on using the item 'Test pattern on/off'. The test pattern only appears AFTER the specific alignment has been selected. The test patterns are generated by the teletext-IC.

'Drive'
Tint-settings:

Set the white levels for the three tint-settings 'Normal' . 'Warm' and 'Cool' is calculated by the processor then ('Warm': R+4, B-7 and 'Cool': R-3, B+3) For 4:3 picture tubes (25" and 29") the next values must be entered:

	Cool	Normal	Warm
R	22	25	29
G	20	20	20
B	17	14	7

'Cathode':

This alignment must also be covered by a table with values for all picture-tube sizes. For 4:3 picture tubes (25" and 29") following value must be entered: 5

For wide screen picture tubes (24", 28" and 32") following value must be entered:2

'Peak White Limiter'
Dependent of the picture-tube size (25", 29", and 24"/28"/32" widescreen tubes) the next value of the table must be entered:

24"	10
25"	10
28"	10
29"	10
32"	10

'Luminance delays'
With the 'Luminance delays' alignment the luminance information is placed on the chrominance information (brightness is pushed onto the colour). Use a colour bar/grey scale pattern as test signal.

- Lum. Delay Pal: Apply a PAL colour bar/grey scale pattern as a test signal. Adjust 'Lum. Delay Pal' until the transients of the colour part and black and white part of the test pattern are at the same position.
- Lum. Delay Secam: Apply a SECAM colour bar/grey scale pattern as a test signal. Adjust 'Lum. Delay Pal' until the transients of the colour part and black and white part of the test pattern are at the same position.
- Lum. Delay Bypass: Apply a NTSC colour bar/grey scale pattern as a test signal. Adjust 'Lum. Delay Bypass' until the transients of the colour part and black and white part of the test pattern are at the same position.

'EHT compensation'
Fixed value: 0

'Soft clipper"
Fixed setting: 'Pwl+0%'

'Luma gain'
Fixed value: 1

'IF AFC'
See chapter 8.4.1. The SAM-mode is needed to make alignment, a test generator to make signal, an oscilloscope to measure at SCART-output and the Install-menu to check fine-tuning-value.

'Tuner AGC'
See chapter 8.4.2. The SAM-mode is needed to make alignment, a test generator to make signal, a DC-Voltmeter to measure at pin 1 of Tuner.

8.5.3 Geometry alignments 'Normal Geometry' in the Service Alignment Menu

Warning:

At this moment the INTERNAL test pattern of the set will lead to a misaligned geometry of the picture. Please do not use internal test pattern. When using a service generator with a geometry-pattern (e.g. a crosshatch-pattern), the set can be aligned without problems.

Vertical amplitude and centring
Select 'Test Pattern on' and set the begin conditions for 4:3 sets (25", 28" and 29"):

– Vertical S-correction value on 13 for 29"-set, and on 19 for the 25"- and 28"-sets.

The boundary-stripes of the test pattern should be positioned on the edge of the picture tube. Set the begin conditions for 16:9 sets (24", 28", 32"):

– Vertical S-correction value on 7 for 24"-set, on 8 for the 28" and on 7 for the 32"-set.

The boundary-stripes of the test pattern should be positioned on the edge of the picture tube.

1. Align 'V slope' (when aligning the below half of the picture is blanked). The middle line of the test pattern must be matched with the edge of this blanking/picture transient in the middle of the picture. Pushing > button again, gives you previous menu again. (This alignment is meant to align the zero-crossing of the frame-deflection to the mechanical middle of the picture tube.)
2. Align the vertical amplitude using 'V amplitude' so that the test pattern is fully visible.
3. Align the vertical centring using 'V shift' so that the test pattern is located vertically in the middle.
4. If necessary repeat the alignment of 'V amplitude', in order to get 'V shift' OK.

Vertical S correction
Select 'Test pattern on'. Align the vertical S correction using 'V S-correction' so that the vertical amplitude at the top of the picture is equal to the amplitude in the middle of the picture.

Horizontal centring and amplitude
Select 'Test pattern on'.

1. Using 'H amplitude' align the horizontal amplitude so that the entire test pattern is visible.
2. Use an external test signal, with a centre-reference from a service-generator. Use 'H shift' to align the picture horizontally in the middle.
3. Repeat the 'H amplitude' alignment if necessary.

East/west alignment
Select 'Test pattern on'.

1. Use 'East/West Parabola' to align the vertical lines until straight.
2. Use 'East/West Corner' to align the vertical lines in the corners until straight.
3. Use 'East/West Trapezium' to align for a rectangular.
4. Use 'Horizontal Parallelogram' to align for straight vertical lines if necessary.
5. If necessary select 'East/West Corner' and align as required.
6. Repeat steps 1 to 4 if necessary.

8.5.4 Geometry alignments 'Super wide geometry' in the Service Alignment Menu

Only applicable to 16:9 sets. The header of this paragraph and also the menu's are misleading. We only need to set the following values, if the normal geometry alignment has been performed correctly.

- Vertical S correction: enter value here of normal geometry.
- Horizontal amplitude: enter value here or normal geometry subtracted by 4.
- East/west parabola: enter value here or normal geometry.

8.6 Option menu

Introduction:

The microprocessor communicates with a large number of I^2C-ICs in the set. To ensure good communication and make digital diagnosis possible, the microprocessor has to know which ICs have to be addressed. The presence of specific ICs or functions is made known by means of the option codes.

All options codes can be manipulated using both the option numbers and/or the Option menu.

All hardware related options are incorporated under the heading 'Options' of the 'Alignments' sub-menu of the 'Service Alignment Mode'. All software related options that are incorporated under the heading 'Dealer Options' of the 'Service Alignment Mode'', can also be reached directly via the '>button of the DST.

8 Electrical alignments

8.7 Options in the Service Alignment Mode

Menu-item	Subjects	Options	Physically in the set
Teletext	TXT	Yes	Teletext present
		No	Teletext not present
Communication	Easylink	Yes	Easylink set
		No	Easylink not set
Picture tube	CRT Type	4:3	4:3 picture tube
		16:9	16:9 picture tube
	Picture Rotation (only for 16:9)	Yes	rame rotation circuitry present on LSP (IC7440 diagram A3)
		No	Frame rotation circuitry not present (IC7440 diagram A3)
Video Repro Options	Feature box type	100Hz	IC7606present on SSP (diagram K5)
		Digital Scan	IC7606 and IC7607present on SSP (diagram K5)
	Combfilter	Yes	IC7560 present on SSP (diagram K1)
		No	IC7560 not present on SSP (diagram K1)
	Picnic AGC	Yes	In normal operation: Yes
		No	During 'Drive' alignments: No
	TXT DualScreen	Yes	TXT DualScreen present (only valid for 16:9 sets)
		No	TXT DualScreen not present
	EPG DualScreen	Yes	IC7013 present on the SSP (diagram K7)
		No	IC7013 not present on the SSP (diagram K7)
Source Selection	External 3	Yes	3rd EURO connector present
		No	No 3rd EURO connector present
Audio Repro	Acoustic system	Normal	Applicable for sets without subwoofer
		Enhanced	Applicable for sets with subwoofer
Miscellaneous	NexTView	Yes	NexTView present
		No	NexTView not present
	Heatsink Present	Yes	Heatsinks present on CRT/Scavem panel (diagram F)
		No	Heatsinks not present on CRT/Scavem panel (diagram F)

8.8 Dealer Options in the Service Alignment Mode

Menu name	Subjects	Options	Physically in the set
Picture options	CTI	Yes	CTI enabled
		No	CTI disabled
	Digital Options	Digital Scan	Only 100Hz and Digital scan is possible
		Natural Motion	100Hz and Digital scan and Natural motion is possible
		Nat. Motion Demo	Demo mode; active areas are coloured in a black and white picture

		Split Screen	Demo mode; lower part is digital scan + natural motion / upper part is only digital scan
Personal	Blue Mute	Yes	Blue mute active in case no picture detected
		No	Noise in case of no picture detected
	Virgin Mode	Yes	TV starts up once with language selection menu after mains switch on for the first time (virgin mode)
		No	TV does not starts up once with language selection menu after mains switch on for the first time (virgin mode)
	Auto store mode	None	Autostore mode disabled (not in installation menu)
		PDC-VPS	Autostore mode via ATS (PDC/VPS) enabled
		TXT page	Autostore mode via ACI enabled
		PDC-VPS-TXT	Autostore mode via ACI or ATS enabled
	Demo Mode Enable	Yes	Demo mode enable
		No	Demo mode disable
Teletext	TXT Preference	TOP	Preference to TOP teletext
		FLOF	Preference to FLOF teletext
	East/West TXT	West	TXT characters for non -/58 sets
		East	TXT characters for -/58 sets

– After the option(s) have been changed, they must be stored via the STORE command.
– The new option is only active after the TV is switched off and then back on again using the mains switch (the EAROM is then read out again).

8.9 'Option number'

In case the EAROM has to be replaced, all the options will also require resetting. To be certain that the factory settings are reproduced exactly, both option numbers have to be set. These numbers can be found on a sticker on the picture tube.

Example: Option number 29pt8304/12 is

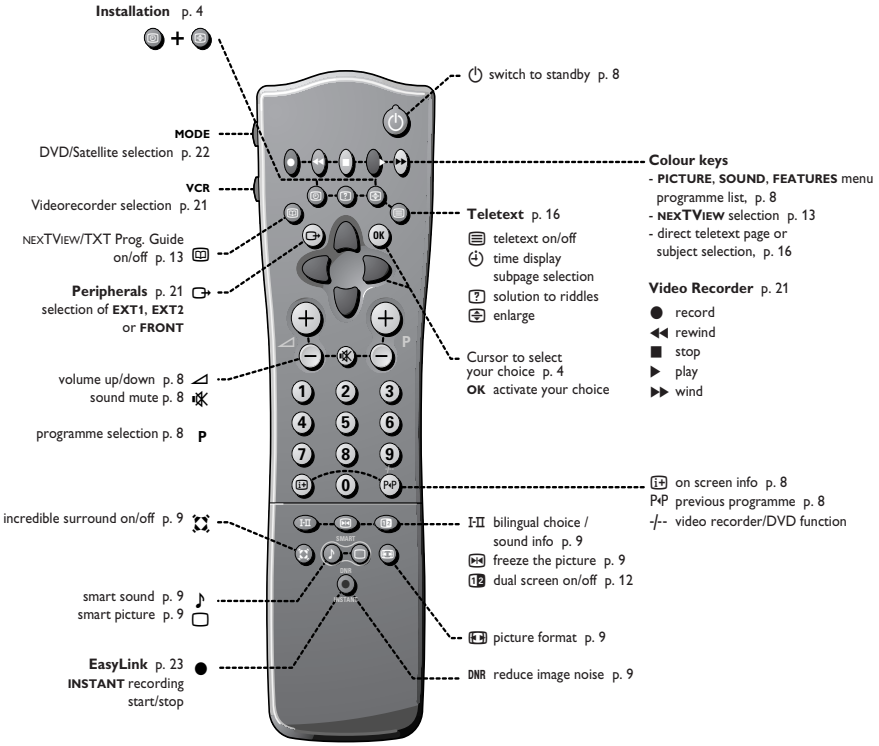
00512 04352 04096 00016

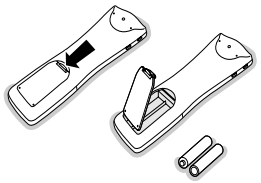
04134 00001 00000 00000

9 Circuit description

For the circuit description see the provisional Training Manual MG2.1E (4822 727 21619).

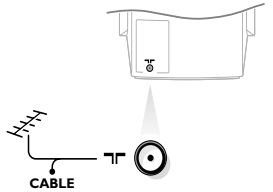
Your remote control





Preparation

1. **Place the TV on a solid surface**.
   For ventilation, leave at least 5 cm free all around the TV.
   To prevent any unsafe situations, do not place any objects on top of the TV.
2. **Insert the aerial plug** tightly into the aerial socket at the back of the TV.



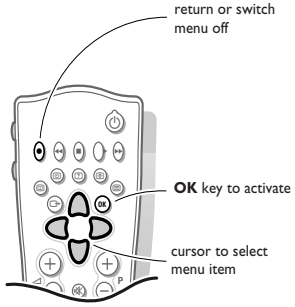
3. Insert the mains plug in the wall socket with a mains voltage of 220V-240V.
4. Remote control: Remove the cover of the battery compartment.
   Insert the 2 batteries supplied (Type R06-1,5V).

   The batteries supplied do not contain the heavy metals mercury and cadmium. Nevertheless in many countries exhausted batteries may not be disposed of with your household waste. Please ensure you dispose of exhausted batteries according to local regulations.

   Note: this remote control functions with TVs which use the RC6 signalling standard.

5. **Switch TV on**: Press the power switch on the front of your TV.
   A green indicator and the screen light up.
   If the indicator is red, press the **- P +** key on the remote control.

   The green lamp blinks every time you press a key on the remote control.
   *When you switch on your set **for the first time**, the menu **LANGUAGE** automatically appears on the screen. Alternatively the explanation appears in the different languages. Choose your own language and press the **OK** key on the remote control.*
   Go on to page 4.



easy LINK

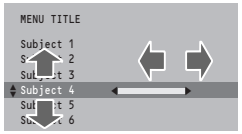
Installation

Select the INSTALLATION MENU :

- Press ⊡ and ⊕ at the same time.

To use the menus

1. Use the cursor in the up/down, left/right direction to select a menu item.
2. Press the **OK** key to activate.
3. Use the red ● key to return or to switch menu off.



Store TV channels

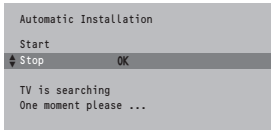
If the TV is connected to a video recorder with the EasyLink function, the TV automatically transfers the language and country selections to the video recorder. After the new or extra TV channel(s) ha(ve)s been stored, the TV automatically transfers that (those) TV channel(s) to the video recorder.
*The message **EasyLink : Downloading .....** appears on the screen.*
The programme list of the video recorder is now equal to the one of the TV.

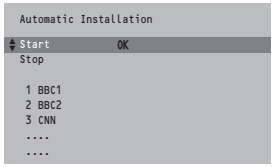
Select the menu language and country

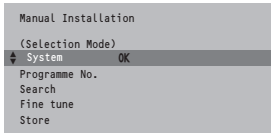
First, you have to select your language and your country.

1. Select the menu **Language** and press the **OK** key.
2. Select your language and press the **OK** key.
3. Select **Country** and press the **OK** key.
4. Select the country where you are now located and press the **OK** key.
   Select **Other** when none of the countries applies.

   You can now search for and store the TV channels in two different ways: using **automatic installation** or **manual installation** (tuning-in channel by channel).
   - Select your choice and press the **OK** key.







Automatic installation

In the Automatic Installation menu select **Start** and press the **OK** key to activate the searching. All TV channels are searched for and stored automatically.

If a cable system which broadcasts ACI (Automatic Channel Installation) or a TV channel transmitting a teletext page with the frequencies and programme names of all the TV channels which can be received, is detected, the search is stopped and a programme list appears.
The programme list is automatically filled with all the programme numbers and names of the TV channels transmitted.

*It is possible that the cable company or the TV channel displays a broadcast selection menu. Layout and items are defined by the cable company or the TV channel. Make your choice with the cursor and press the **OK** key.*

To exit from the menu

- Press the red ● key on the remote control.

Go on to page 6

Manual installation

Searching for and storing TV channels is done channel by channel.
You must go through every step of the Manual Installation menu.

Selection Mode is only present and lights up if the country you selected also offers the channel option (C-channels for aerial channels, S-channels for cable channels).
You can choose either channel or frequency mode.

1. **Select the TV system**
   - Select the country or part of the world from where you want to receive the TV channel.
     If you are connected to a cable system, select your country.
2. **Enter the programme number with the digit keys.**
3. **Search for a TV channel**
   - Press the cursor left/right. The frequency or the channel number increases until a TV channel is found.

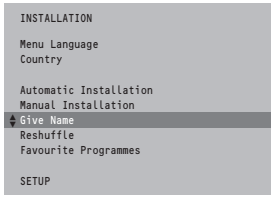
   Direct selection of a TV channel

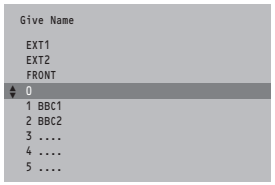
   If you know the frequency, or the C- or S-channel number, enter it directly with the digit keys 0 to 9.
   Ask for a list from your cable company or dealer, alternatively consult the Table of frequencies on the inside backcover of this handbook.
4. **Fine tune**
   In case of poor reception, you can improve the reception by adjusting the frequency with the cursor left/right.
5. **Store steps 1 till 4**
   - Select **Store** and press the **OK** key.

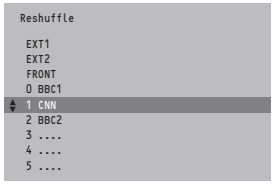
   Repeat every step to store another TV channel.

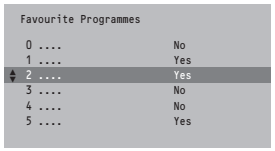
To exit from the menu :

- Press the red ● key on the remote control.









Give name

It is possible to change the name stored in the memory or to assign a name to a TV channel which has not yet been entered. A name with up to 5 letters or numbers can be given to the programme numbers 0 to 99. For example SUPER, BBC1,... Between 99 and 0 you can also name any peripherals that are connected.

1. Select **Give Name** in the **INSTALLATION** menu and press the **OK** key.
2. Select the programme number.
3. Press the **OK** key.
4. Select the character with the cursor up/down.
5. Select the following position with the cursor left/right.
6. Select the following character.
7. Press the **OK** key when finished.
8. Press the red ● key to return to the **INSTALLATION** menu.

A space, numbers or other special characters are located between Z and A.

Reshuffle the programme list

According to your preference you **can** change the order of the stored TV channels.

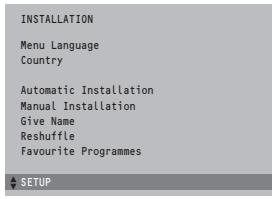
1. Select **Reshuffle** in the **INSTALLATION** menu and press the **OK** key.
2. Select the programme number you want to change.
3. Press the **OK** key.
4. Select the new number.
5. Press the **OK** key.
   Repeat the operation until all TV channels are allocated as you like.
6. Press the red ● key to return to the **INSTALLATION** menu.

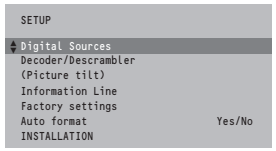
Select Favourite TV channels

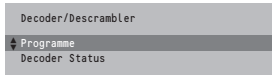
After leaving the installation you can browse through the TV channels by pressing the **- P +** key. Only those TV channels which are in the favourite list will be displayed. The non-favourite TV channels can still be selected with the digit keys.

1. Select **Favourite programmes** in the **INSTALLATION** menu and press the **OK** key.
2. Select your favourite programme number.
3. Select **Yes** or **No**.
4. Repeat for every TV channel you want to change into a favourite or a non-favourite TV channel.
5. Press the red ● key to return to the **INSTALLATION** menu.

*If the TV is connected to a video recorder with the EasyLink function, the TV automatically transfers the reshuffled or modified TV channels to the video recorder. The message **EasyLink : Downloading Presets ...** appears on the screen. The programme list of the video recorder is equal again to the one of the TV.*







Install TV Setup

1. Use the cursor in the up/down, left/right direction to select the menu item.
2. Use the **OK** key to activate.
3. Use the red ● key to return or switch menu off.

Digital sources

See Connect Peripheral Equipment, p. 20 to connect your digital equipment, like a DVD, satellite tuner or a similar digital device.

Define Decoder/Descrambler programme numbers

If you have connected a decoder or a descrambler, see p. 19, you can define one or more programme numbers as decoder programme numbers.

- Press the cursor left/right to select **Off**, **EXT1** or **EXT2**, the euroconnector where you connected your decoder.
- Select **Off** if you do not want the selected programme number being activated as a decoder programme number.

*Select **EXT2** when the decoder is connected to your EasyLink video recorder. When selecting the decoder, the message **EasyLink: Downloading Presets....** appears on the screen.*

Picture Tilt *(only for 32" or 82 cm sets)*

- Select **Picture Tilt** with the cursor up/down.
- Keep the cursor left/right pressed to adjust the rotation of the picture.

Information Line

After the selection of a TV programme or after pressing the i+ key on the remote control, a TV channel which broadcasts teletext may transmit the name of the TV channel or the programme name or another message which appears briefly in the information line on the screen.
When selected **Off**, the information line will only appear after pressing the i+ key, and not after the selection of a TV channel.

Factory settings

Select **Factory settings** and press the **OK** key to restore picture and sound settings, predefined in the factory.

Auto format

Selecting **Auto format Yes**, the screen will automatically be filled as much as possible with the picture when TV programmes are not carrying special signals detecting the correct screen format. With the ↔ key on the remote control you can still select other picture formats (see p. 9).

Installation

Select **Installation** and press the **OK** key to return immediately to the **INSTALLATION** menu.

To exit from the menu

4. Press the red ● key on the remote control.

Use of the remote control

● **PICTURE** menu
◀◀ **SOUND** menu
■ **FEATURES** menu
▶ **Programmes**
Select the desired TV channel and press the **OK** key.

NEXTVIEW/TXT Prog. guide on/off see p. 13

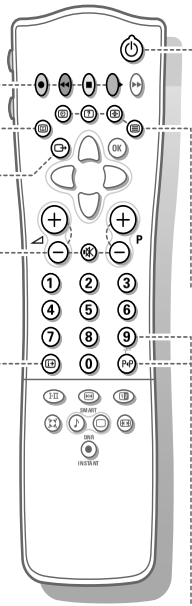
Select peripherals
Press this key repeatedly to select **EXT1**, **EXT2** or **FRONT**, according to where you connected your peripherals (see p. 21).

Volume
Press + or - to adjust the volume.

Mute key
Temporarily interrupt the sound or restore it.

P Programme selection
To browse through the TV channels activated in the Favourite Programme menu. See p. 6.

Screen information
Press for 5 seconds to activate/de-activate the extended or reduced display of TV channel and programme information on the screen.
This function is not available when continuous subtitles have been switched on.
Press briefly to display information about the selected TV channel and programme, the sound reception, the selected DNR setting and the remaining time set with the sleeptimer.



Standby
The set is switched off and the red indicator (orange in the case of NEXTVIEW info acquisition) lights up.
To switch the TV on again, press **- P +** or the digit keys.
If your EasyLink video recorder has the system standby function and you press the standby key for 3 seconds, both the TV and video recorder are switched to standby.
Your TV consumes energy in the standby mode. Energy consumption contributes to air and water pollution. We advise to switch off your TV overnight instead of leaving it on standby. You save energy.

Teletext on/off see p. 16.

Time display
The time, downloaded from the TV channel (with teletext) stored on programme number 1 or under the lowest favourite programme number, is displayed on the screen.
This function is not available when continuous subtitles have been switched on.

Reveal (in teletext mode)
Press to reveal/conceal the hidden information, such as solutions to riddles and puzzles.

Enlarge (in teletext mode)
Press repeatedly to display the upper part, the lower part and then to return to the normal page size.

0/9 Digit keys
To select a TV channel.
For a two digit programme number, enter the second digit within 2 seconds.

P◂P Previous programme
The previously selected TV channel is displayed.
The -/-- indication has a video recorder/DVD function.

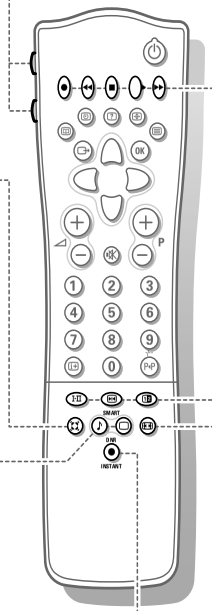
Video recorder, DVD or Satellite operation
Press one of this keys to use the remote control directly in the video recorder, DVD or satellite mode. See p. 21 and 22.

Incredible Surround
In **MONO** sound mode, this feature, when switched on, enables you to hear a spatial effect of sound.
In **STEREO** sound mode, when **Incredible Surround On** is selected, it seems as though the loudspeakers are spread further apart from one another

Smart Keys
To select predefined picture and sound settings.

Smart Sound
Each time it is pressed, a different sound setting is selected, corresponding with a specific factory setting of Treble or Bass.
Personal refers to the personal preference setting of picture and sound.

Smart Picture
Each time it is pressed, a different picture setting is selected, corresponding with a specific factory setting of Contrast, Colour, Sharpness and Dyn. Contrast.



DNR Dyn. Noise Reduction
To reduce the image noise and improve picture quality when receiving weak signals.
Press this key to select **Off** or **Automatic.**
When **Automatic** is selected, the image noise reduction is set automatically.

● Instant record/stop
If your video recorder has the EasyLink function the **INSTANT** ● key for record can be operated in the TV mode.
Press again to stop.

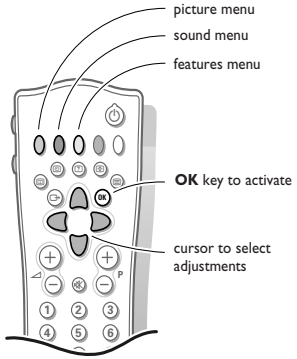
● ◀◀ ■ ▶ ▶▶ **Video recorder** see p. 21.

I-II Bilingual choice and sound mode selection
Press this key
- to switch from **Stereo** to **Mono** sound, in case of stereo transmission, or from **Digital Sound** to **Digital Sound available**, in case of digital transmission;
- to choose between language I (Dual I)or language II (Dual II), in case of bilingual transmission. The setting is stored for each TV channel separately.

Freeze
To activate/de-activate the frozen picture.

Dual Screen see p. 12

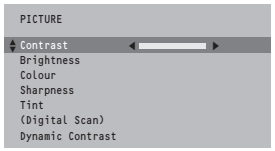
Picture format
Press this key repeatedly to select another picture format: 4:3, Movie Expand 14:9, Movie Expand 16:9 with or without subtitling, Wide Screen, Automatic (in case Auto format Yes has been selected in the **SETUP** menu) or Super Zoom.
When in Movie Expand 14:9 or 16:9 or Super Zoom picture format you can make subtitles visible with the cursor up/down.
Sometimes video recorders or TV programmes carry special signals which will automatically switch the TV to the correct screen format.
Selecting Auto format, the screen will be filled as much as possible with the picture when TV programmes are not carrying special signals detecting the correct screen format.
Auto format is disabled when in Dual Screen.



Use of the menus

1. Press the red, green or yellow colour key to display/cancel the **PICTURE**, **SOUND** or **FEATURES** menu.
2. Use the cursor in the up/down, left/right direction to select the menu item.
3. Use the **OK** key to activate.
4. Press the same colour key again to return or to switch menu off.

Picture menu



If a NTSC peripheral is connected to **EXTERNAL 2**, *the option Hue also appears.*

Sharpness

You can adjust the Sharpness for each TV channel separately.

Tint

- Select the colour temperature: **Normal**, **Warm** or **Cool**.

Digital Scan (Line Flicker Reduction) (if provided)

In Movie Expand picture format, digital scan is always active.
The menu item is not available.
In certain circumstances while watching TV programmes it may be preferred to switch off the digital scan line flicker reduction.

- Press the cursor left/right to select **On** of **Off**.

Dynamic Contrast

To make the contrast between darker and brighter picture parts more noticeable, select the **Med** setting.
In certain circumstances it may be preferred to select **Min** or **Off**.

- The modified adjustments for Contrast, Brightness, Colour, Tint, Digital Scan (if provided) and Dynamic Contrast are automatically stored for all TV channels.
Select **Factory settings** in the Setup menu to restore the predefined factory settings, see p. 7.

Sound menu

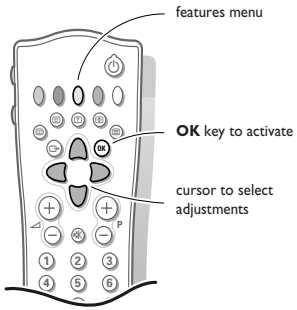
Headphone

See Connect Peripheral Equipment, p. 20 for the connection of the headphone.
Select **Dual** to choose between the dubbed or original language when the TV channel broadcasts in two languages.

The modified adjustments for Volume, Balance, Treble and Bass are automatically stored for all TV channels.
Select **Factory settings** in the Setup menu to restore the predefined factory settings, see p. 7.

To exit from the menus

- Press the corresponding red, green or yellow colour key.



Features menu

1. Press the yellow colour key to display/cancel the **FEATURES** menu.
2. Use the cursor in the up/down, left/right direction to select the menu item.
3. Use the **OK** key to activate.

Sleeptimer

With the sleeptimer you can set a time period after which the TV should switch itself off to standby.
The counter runs from **Off** up to **180 min.** or from **180 min**. down to **Off**.
One minute before the TV is set to go to standby, the remaining seconds appear on screen. You can always switch off your set earlier or change the set time.

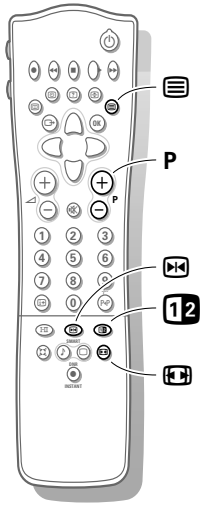
Child Lock

If the child lock is on, the TV can only be switched on with the remote control. The P - and + keys on top of the TV cannot be used to select a TV channel. In this way you can prevent unauthorised use of your TV.
If the message **Child Lock On** appears, the child lock must be switched off before you can use the P - and + keys on top of the TV to select a TV channel.

Subtitle

TV channels with teletext often transmit certain programmes with subtitling. See Teletext, Continuous Subtitles, p. 18 how to select the proper subtitle page from the teletext index.
Select **Subtitle On** or **Off**.
The subtitle symbol appears when subtitles are stored for the selected TV channel.
The subtitle symbol does NOT appear as long as the subtitles for the selected TV channel are not stored.

Note: subtitling is not available when in Dual Screen mode with teletext.



Dual Screen

1. Press the 1 2 key to switch on Dual Screen.
   The TV screen is divided into 2 parts:
   - the left side for the normal main picture,
   - the right side for teletext broadcast by the selected TV channel.

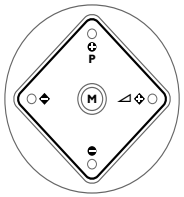
   To operate teletext, see p. 16.

   If Dual Screen is **Off**, the picture or teletext is displayed full screen.
2. Press the key to select a vertical squeezed or a non vertical squeezed picture size.
3. Press **+ P -** to run through the teletext pages.
4. Press the key to return to a full picture screen and to select another TV channel with the + P - or with the digit keys.

Select still picture

- Press the key to freeze the pictures.
  The information in the teletext page is not being updated by the teletext broadcaster.

The keys on top of the TV



Should your remote control be lost or broken you can still change some of the basic picture and sound settings with the keys on top of the TV.

- Press the **M** key repeatedly to select **Volume**, **Brightness**, **Colour**, **Contrast**, **Treble** or **Bass**.
- Press the **P** - or + key to regulate the selected adjustment.
  When the menu adjustment is not displayed, the **P-** or **+** keys enable you to select the TV channels, the ◿ - or + keys to adjust the volume.

The selected adjustment automatically switches off when after 10 sec. no action has been executed.

NEXTVIEW / Teletext Programme Guide

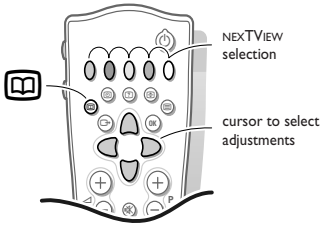
Today, most broadcasters in Europe, are offering teletext pages containing their programme schedule of today. These pages can be requested by switching the TV to **Teletext Programme Guide**.

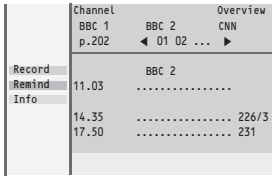
An increasing number of broadcasters are offering an extended programme guide service called **NEXTVIEW.** NEXTVIEW is a new way of presenting programme schedules and offers more features than common teletext. With NEXTVIEW it is possible to show for instance all the movies coming tonight.

Both facilities are integrated in this TV: NEXTVIEW and Teletext Programme Guide. If a TV channel supports NEXTVIEW then the TV will automatically present the NEXTVIEW programme schedule. If the TV channel supports just teletext, then the TV will switch automatically to Teletext Programme Guide. Both facilities are offering the same functions: record, remind and info. However in case of Teletext Programme Guide the broadcaster is responsible if these functions are possible.

You can search for the programmes you want to watch 24 hours per day. It is also possible to search for a programme by theme, e.g. sport, movie, etc. Once a programme has been selected it can be tagged, to remind you, or to record on the video recorder automatically (provided the video recorder is equipped with NEXTVIEWLink), once, daily, weekly or series.
Teletext Programme Guide / NEXTVIEW also allows direct access to detailed information about programmes if provided by the broadcaster.

The broadcaster is responsible for the contents of the information.
The TV is responsible for the capture of that information and for the presentation to the user.





Teletext channel guide

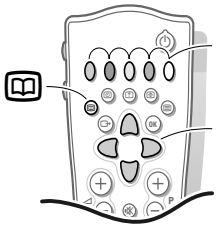
TV channels which broadcast teletext also transmit a page with the programme guide of the day. For each selected TV channel the programme guide page can be selected with the key:
- automatically if the selected TV channel supports services like PDC (Programme Delivery Control) or MIP (Magazine Inventory Page).
- if automatic preselection is not possible then the index page is displayed and the proper programme guide pagenumber of the selected TV channel has to be entered with the digit keys.

The programme guide page will be stored automatically.

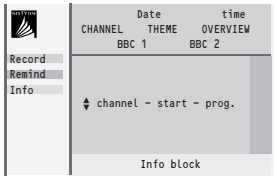
Every time you press the key, the programme guide page of the selected TV channel will be available if the TV channel does not support NEXTVIEW.
Press the cursor down to select the displayed main index programme guide pagenumber.
Press the cursor left/right to run through the subpages.

The function items record, remind or info, corresponding with the coloured keys, become highlighted if the displayed programme page satisfies the Video Programming via Teletext (VPT) requirements. Select a programme item and press one of the function keys, e.g. Record or Remind. See Basic functions further on.
The Info item is enabled if the selected programme contains a page number with an optional subcode referring to a page with more info about the programme.

Use of the Teletext Programme Guide / NEXTVIEW menus



1. Press the key on the remote control to display/cancel the Teletext Programme Guide / NEXTVIEW menu.
2. Use the cursor in the up/down, left/right direction to select the date, **CHANNEL** for the channel guide, **THEME** for the theme guide, **OVERVIEW** for an overview of all the programmes which are marked as reminders or for recording, the programme guide page number or to enter the programme list.
3. Enter the proper programme guide pagenumber with the digit keys or with the - P + key.
4. Press the cursor left/right to run through the subpages.
5. Press one of the colour keys to select one of the basic functions, record, remind, info. See Basic functions further on.
6. Press the **OK** key to return to the header area again.



The NEXTVIEW offers 3 modes to sort and represent information

Channel

The channel guide provides an overview of all programmes that are broadcasted by a single channel during one day.
Already passed programmes can be made visible via cursor up.
With cursor left/right another favourite channel can be selected, also if the cursor selection is located in the programme list area.

In case of Teletext Programme Guide, then the first time after installation that a channel is selected, you are requested to enter the page number of the programme guide page.

Theme

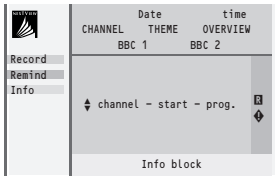
The theme guide displays a list of all programmes at the selected date, that matches with the selected category (news, sport, culture, movies, ...).
The default starting item will be the current or next programme on the current TV channel.
When another date is selected the list of programmes displayed will start with the earliest programme.
The **THEME** selection possibility is only present if programmes in the TV guide, have defined themes.

Overview

The Overview list provides a list of all reminders and recordings of the selected day.
When more than one of the same items start at the same time or have an overlap in time, these will be marked by a red colour and a message.

After the programme has been broadcast, all items set for once will be deleted from the list.
This menu can be used to change a reminder or recorder.

Note: short info is not possible when the overview list is displayed.



Basic functions

The functions can be activated with the corresponding colour keys.
If the function is not available, then the text is downlighted.

When **Record** R or **Remind** ◆ are activated a small menu pops up in which you can choose the interval: once or daily. The default interval is set to Once.
The colour of the tag refers to the interval.
Programming of a record or a remind is closed by pressing any key except cursor left/right. Storing appears to indicate the tuner of the video recorder is programmed.
When watching, a message will appear on the screen the moment the tagged programme with ◆ starts.
When the TV is in standby, the TV switches on the moment the tagged programme with ◆ starts.

If a programme is an episode of a series, the options **daily** and **weekly** are replaced by the option **series**. In this case the system identifies when the next episode of the series will be broadcast.

Note:
- Recording via NEXTVIEW is possible with any video recorder with the NEXTVIEWLink function and connected to EXT2.
*Only if both conditions are satisfied **RECORD** is highlighted and enabled.*

When **Info** is activated, information relating to the selected programme or advertisements are displayed.
In some cases the complete information does not fit on the screen.
Use the cursor up/down to browse through the complete info.

Acquisition of NEXTVIEW information

Acquisition takes place if the TV is switched on, and in standby if reminders are active.

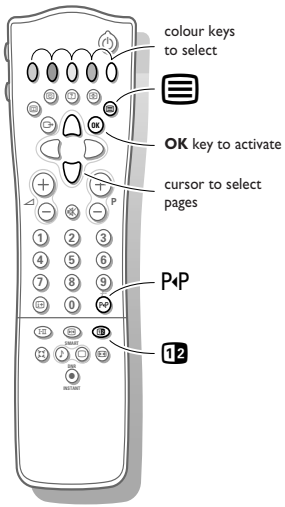
If the TV has just been switched to the current TV channel, it will take up to 10 seconds before the first 5 programmes will be shown. It may take 35 seconds before the complete list of programmes for today and tomorrow for the selected TV channel is filled.
As long as the list is not completely filled, the message **Please, wait** appears at the bottom of the screen.
If the channel switching has been occurred more than 40 seconds ago, then the programme list has been already stored. In that case the list will be instantly displayed.

Video recorder restrictions with NEXTVIEW

The daily, weekly or series options, the number of recordings set and the way overlapping recordings are managed, depend on the type of video recorder type you have. The moment all video recorder timers are used, the item **Record** in the menu will be removed.

Upload video recorder overview.
When the TV is switched on, the programmed record blocks are uploaded to the TV to check whether any manual addition or deletions have been done. This is shown in the overview.
The video recorder manages and removes timer recordings when performed.

Some NEXTVIEWLink video recorders do not allow a daily programming of recording to start on a Saturday or Sunday. In this case the item **daily** will be removed from the menu on those days.



Teletext

Most TV channels broadcast information via teletext. Each channel which broadcasts teletext transmits a page with information on how to use its teletext system. Look for the teletext page with the main index (usually p. 100).

Depending on the TV channel, teletext is transmitted in different systems. The colours used in the options line correspond with the colour keys of your remote control.

About the Easy Text system

The Easy Text system considerably reduces the waiting time (on condition the teletext broadcast of the particular TV channel is switched on for at least half a minute) by :

- a **direct selection** of previous and following pages which are in transmission and of the pages referred to in the options line
- a **habit watcher list**: frequently used pages are put in a list of preferred pages, so that they are immediately available afterwards
- the **precapturing of the page numbers** referred to in the displayed page
- the **precapturing of all the subpages**.

Switch Teletext on and off

- Press ☰ to switch on or off the teletext.
  The main index page appears on the screen together with two information lines at the top and one option line at the bottom of the screen.

Select a Teletext page

With the digit keys

- Enter the desired page number with the digit keys.
  The page counter seeks the page or the page appears immediately when the page number has been stored in the memory.
  A message appears when you have entered a non existent or an incorrect page number. Page numbers beginning with 0 or 9 do not exist. Choose another number.

With the option line

- Select with the colour keys, corresponding to the coloured options at the bottom of the screen, the desired subject.

Select Picture/Teletext

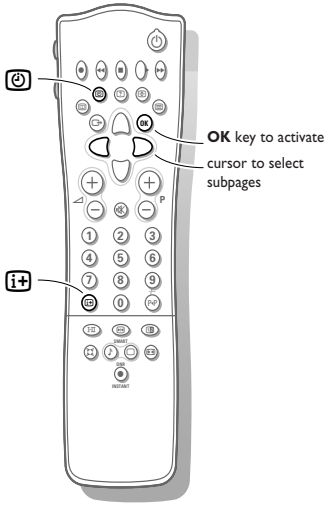
- Select a TV channel which broadcasts teletext.
- Press the 12 key.
  The screen is divided into two parts: the left side for the normal main picture, the right side for teletext broadcast by the selected TV channel.
- Press the ☰ key to return to a full screen picture.

Quickly run through the teletext pages

- Press the cursor up/down or the - P + key to run through the previous or the following pages.

Select the previously selected txt page

- Press the P↯P key.



Select the index teletext page

- Press the white colour key to display the main index (usually p.100).

Only for T.O.P. teletext broadcasts :

T.O.P. orders the pages in categories and adds other possibilities of enhancing ease of use.

- Press i+. A T.O.P. overview of the teletext subjects available appears.
  Not all TV channels broadcast T.O.P. teletext. When the teletext system is not T.O.P. teletext, a message appears at the top of the screen.
  A T.O.P. overview is not available when in Dual Screen mode.
- Select with the cursor up/down, left/right the desired subject and press the **OK** key.

Select subpages

When a selected teletext page consists of different subpages, one of the subpages appears on the screen.
The coloured number in the first information line refers to the displayed subpage.
The other subpages can be selected in 2 ways :

1. With the cursor left/right.

The other subpage numbers appear in white as soon as the transmission has found them. They are stored in the memory so that they are available while the teletext page is on screen.

- Select with the cursor left/right the previous or the following subpage.

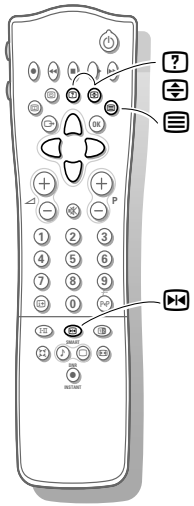
2. With the ⏲ key.

- Enter the subpage number yourself.
  Press ⏲. Enter the desired subpage with the digit keys : e.g. 3 for the third page of seven subpages.
  The TV searches for the selected subpage.

Automatically rotating subpages:

- Press ⏲ again to cancel the entered digit key for the subpage.
  Now the subpages rotate automatically.

- Press ⏲ again to select the subpages with the cursor left/right again.



Special teletext functions

Hold

- Press ⏭ to stop the page counter from seeking when you have entered a wrong page number or when the page is not available.
- Enter another page number.
  Not possible when in dual screen teletext mode.

Enlarge

- Press ⇕ repeatedly to display the upper part, the lower part and then to return to the normal page size. When enlarge is activated, you can scroll the text line per line by using the cursor up/down.

Reveal

- Press ? to reveal/conceal the hidden informations, such as solutions to riddles and puzzles.

Select Continuous Subtitles

TV channels with teletext often transmit certain programmes with subtitling. For each TV channel you can store a subtitle page which will be displayed continuously if the programme being broadcast is transmitted with subtitles.

- Switch on teletext and select the proper subtitle page from the index.
- Switch off teletext.
  The message Subtitle stored appears.
  Every time a programme of the selected TV channel is subtitled, the subtitling will be available for that TV channel.
- Select Subtitle On or Off in the Features menu, see p. 11.
  The subtitle symbol appears when subtitles are stored for the selected TV channel.
  The subtitle symbol does NOT appear as long as the subtitles for the selected TV channel are not stored.

Note: subtitling is not available when in Dual Screen mode with teletext.

Connect Peripheral Equipment

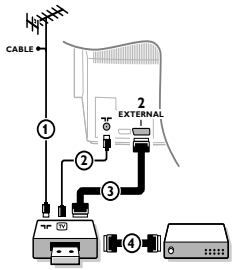
There is a wide range of audio and video equipment that can be connected to your TV. The following connection diagrams show you how to connect it.

Video recorder

- Connect the aerial cables ①, ② and, to obtain a better picture quality, eurocable ③ as shown opposite.

If your video recorder is provided with the EasyLink function, the eurocable supplied with it, should be connected to ***EXTERNAL 2*** *to benefit from the EasyLink functionality.*

easy LINK



You have to do the following if you do not connect the eurocable ③,

Search for and store the test signal of the video recorder

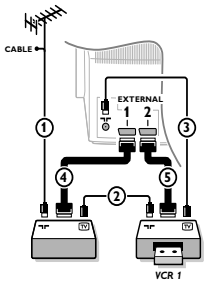
- Unplug the aerial cable ① from the aerial socket of your video recorder.
- Switch on your TV and put the video recorder on the test signal. (See the handbook for your video recorder.)
- Search for the test signal of your video recorder in the same way as you searched for and stored the TV signals. See Installation, Searching for and storing TV channels, Manual Installation, p. 5.
- Store the test signal under a programme number.
- Replace the aerial cable in the aerial socket of your video recorder after you have stored the test signal.

Decoder and video recorder

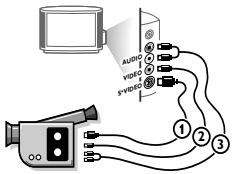
- Connect a eurocable ④ to your decoder and to the special euroconnector of your video recorder. See also the video recorder handbook.
  See Define Decoder/Descrambler prog. numbers, p. 7.
  You can also connect your decoder directly to **EXTERNAL 1** or **2** with a eurocable.

Video recorder and other peripherals (except Digital Sources)

- Connect the aerial cables ①, ② and ③ as shown opposite. Better picture quality can be obtained if you also connect eurocable ⑤ to **EXTERNAL 2** and a eurocable ④ to **EXTERNAL 1**.
- Look for the test signal of your peripheral in the same way as you do for a video recorder.



When a video recorder is connected to **EXTERNAL 1** you can only record a programme from your TV.
Only when a video recorder is connected to **EXTERNAL 2** it is possible to record a programme from your TV as well as from other connected equipment. See Record with your video recorder, p. 23.

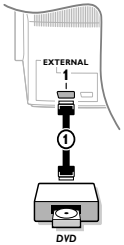


Camera and camcorder

- Connect your camera or camcorder at the right side of your TV.
- Connect the equipment to **VIDEO** (2) and **AUDIO L** (3) for mono equipment.
- Press the I-II key repeatedly to select the sound coming from one or both loudspeakers of your TV.
- For stereo equipment also connect **AUDIO R** (3) .
  S-VHS quality with a S-VHS camcorder is obtained by connecting the S-VHS cables with the **S-VIDEO** input (1) and **AUDIO** inputs (3).

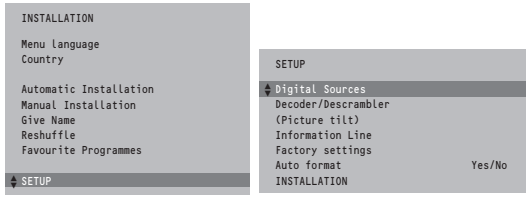
Other equipments

Connect the eurocable (1) to **EXTERNAL 1** as shown opposite.

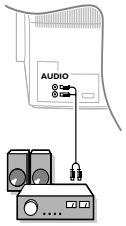


Only for Digital Sources :

- Press ⓘ and ☰ at the same time.



- Select **Present** in the Setup menu of the **INSTALLATION** menu.
  This offers you optimum picture quality for your digital equipment, like a DVD, a digital satellite tuner or a similar digital device.
- Press the red ● key to switch off all menus.



Audio equipment / Amplifier

- Connect the audio cables to the audio input of your audio equipment and to **AUDIO L** and **R** at the back of your TV.
  You can listen to your TV sound via your audio equipment.

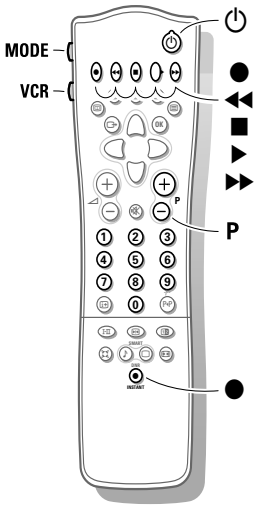
Headphone

- Insert the plug into the headphone socket 🎧 at the right side of the TV.
- Press 🔇 on the remote control to switch off the internal loudspeakers of the TV.
  The headphone impedance must be between 8 and 4000 Ohm. The headphone socket has a 3.5 mm jack.

In the **SOUND** menu select **Headphone** to adjust the headphone volume and to select dubbed or original language (when the TV channel broadcasts in two languages) for your headphone sound. See p. 10.

If you want to connect more equipment to your TV, consult your dealer.

easy LINK



easy LINK

To select connected equipment

If the TV is connected to a video recorder with the EasyLink function, in some cases the TV will be switched on, even when the TV was in standby. (E.g. playback tape,...) This is not possible when Child Lock On is selected.

Equipment connected with an aerial cable only :

- Select the programme number under which you have stored the test signal with the digit keys.

Equipment connected to a euroconnector or to the right side of the TV

- Press the ⮕ key repeatedly to select **EXT1**, **EXT2** or **FRONT**, according to where you connected your equipment at the back or the right side of your TV.

Remark : Most equipment (decoder, video recorder, satellite receiver) carries out the switching itself.

Do you want to watch TV channels again ?

- Enter the programme number of the TV channel which you want to watch with the digit keys or press the ⮕ key repeatedly to select **TV**.

Video recorder, DVD and satellite keys

Most of the audio and video equipment from our range of products can be operated with the remote control of your TV.

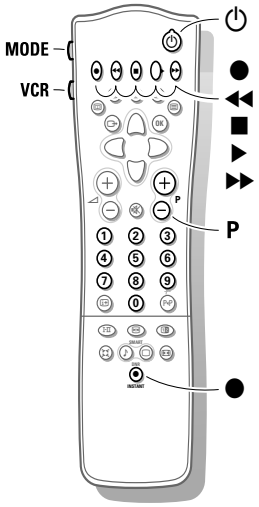
Video recorder

Keep the **VCR** key on the left side of the remote control pressed and simultaneously press:

- ● for record,
- ◀◀ for rewind,
- ■ for stop,
- ▶ for play,
- ▶▶ for fast forward,
- -/-- for selecting 1- or 2-digit programme numbers from the video recorder or DVD tuner,
- **- P +** for fast programme selection from the video recorder tuner,
- **0** to **9** to select a programme number from your video recorder tuner,
- ⏻ to switch the video recorder to standby

These keys function with equipment which use the RC5 signalling standard.

If your video recorder has the EasyLink function, the key **INSTANT** ● *for record and stop can be operated in the TV mode.*
If your EasyLink videorecorder has the system standby function and when you press the ⏻ key for 3 seconds, both TV and the video recorder are switched to standby.



Satellite receiver

Press the **MODE** key on the left side of the remote control.
Press the **OK** key simultaneously with the digit key 1.
Now you can operate your satellite receiver with the remote control of your TV.

Keep the **MODE** key on the left side of the remote control pressed and simultaneously press:

- to switch the **SAT** menu on or off
- -/-- to select a one or two digit programme number from the satellite receiver.

These keys function with equipment which use the RC5 signalling standard.

DVD player

Press the **MODE** key on the left side of the remote control.
Press the **OK** simultaneously with the digit key 2.
Now you can operate your DVD player with the remote control of your TV.

Keep the **MODE** key on the left side of the remote control pressed and simultaneously press:

- to switch the DVD menu on or off
- to select a DVD title
- P↤P to select a DVD chapter
- I-II to select your choice of audio language
- ◀◀ for rewind
- ■ for stop
- ▶ for play
- ▶▶ for fast forward
- 0-9 to select a programme number from your DVD
- ●, ⏻, ?, ⇳, ⮕ have no function

Note: after replacing the batteries the default operational equipment is the satellite receiver.

These keys function with equipment which use the RC6 signalling standard.

Record with your video recorder without EasyLink

To record S-VHS quality, connect a S-VHS peripheral directly to the video recorder.

1. **Record a TV programme**

- Select the programme number on your video recorder.
- Set your video recorder to record.
  (See the handbook for your video recorder.)

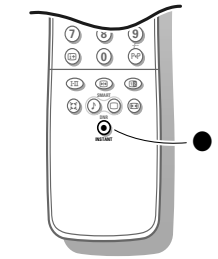
Switching programme numbers on your TV does not disturb recording !

2. **Record a programme on your video recorder connected to EXTERNAL 2 from Audio/Video equipment connected to EXTERNAL 1 or to the right side**

- Switch on the equipment.
- Select the right external on your video recorder.
- Set your video recorder to record.
  You record what you are watching on the screen.

Do not switch programme numbers or do not switch off your TV when you are recording !

Record with a video recorder with EasyLink



If you have connected a S-VHS video recorder provided with the EasyLink function, you can record S-VHS-quality from a S-VHS peripheral connected to the right side of the TV. (E.g. from a S-VHS camcorder.)

In TV mode, it is possible to start a direct recording of the programme which is being displayed on the TV screen.

- *Press the* **INSTANT** *record key ● of the TV or of the video recorder or the record key on the video recorder.*
  The video recorder switches on when it was in standby and a message of what is being recorded appears on the screen.
  The video recorder starts recording the programme you are watching.
- *Press the* **INSTANT** *● key again to stop the recording.*

When recording a programme from a peripheral connected to EXTERNAL 1 or FRONT, you can not select another TV programme on the screen.
To watch TV programmes again, press the programme number you want to select. twice. Then the recording is stopped and your video recorder switches to standby.

If you switch to standby during recording of a programme from a peripheral connected to EXTERNAL 1 or FRONT, the blinking lamp on the front of your TV indicates that you are still recording. The blinking stops after the recording is finished.

Record with a video recorder with NEXTVIEWLink

If your video recorder is equipped with NEXTVIEWLink, and you tagged one or more programmes to be recorded automatically in the NEXTVIEW mode, it is not necessary that the TV is in the standby mode or switched on for the recording to start.

11 List of Abbreviations

16:9-ARFRONT	16:9 aspect ratio input from side I/O
AGC	Automatic Gain Control
AM-SOUND	Amplitude modulated sound signal
AUDIO-C	Audio centre
AUDIO-L	Audio left
AUDIO-L-PROC	Audio left processed
AUDIO-R	Audio right
AUDIO-R-PROC	Audio right processed
AUDIO-SL	Audio surround left
AUDIO-SR	Audio surround right
AUDIO-SW	Audio sub-woofer
AUX-SUPPLY	Auxiliary supply
BC-PROT	Beam current protection
B-SC1-IN	Blue scart1 in
B-SC2-IN	Blue scart2 in
B-TXT	Blue teletext
BG	System B and G
C/16/9	Chrominance input
CENTER	Amplifier output centre
C-7-OUT	Chrominance on pin 7 scart (variant)
CRT	Cathode ray tube
CVBS	Colour Video Blanking Sync
CVBS-PIP-DS	CVBS-PIP-dual screen
CVBS-SC1-IN	CVBS scart1 in
CVBS-SC2 OUT	CVBS scart2 out
CVBS-SC2-IN	CVBS scart2 in
CVBS-SC3-IN	CVBS scart3 in
CVBS-TER	CVBS terrestrial
CVBS-TXT-DS-OUT	CVBS teletext dual screen out
CVBS-TXT-OUT	CVBS teletext out
CVBS-Y-FRONT	CVBS luminance front input
DAC-HOP	Digital analogue converter HOP IC
DC-PROT	DC protection
DETECT	Detect signal side I/O input
DST	Dealer Service Tool
DYN-FASE-COR	Dynamic phase correction
EHT-INFO	Extra high tension information
EW-DRIVE	East-west drive signal
FBCSO	Fixed beam current switch off
FBL-SC1-IN	Fast blanking signal for scart1 in
FBL-SC2-IN	Fast blanking signal for scart2 in
FILAMENT	Filament of CRT
FLASH	Flash memory
FRAME ROTATION	Frame rotation
FRAME-ROT +	Frame rotation +
FRONT-C	Front input chrominance (SVHS)
FRONT-DETECT	Front input detection
FRONT-Y_CVBS	Front input luminance or CVBS (SVHS)
GHOST-IN	Signal Ghost cancellation in
G-SC1-IN	Green scart1 in
G-SC2-IN	Green scart2 in
G-TXT	Green teletext
HA	Horizontal Acquisition
HD	Horizontal drive coming from PICNIC
Hdefl-1	Horizontal deflection signal needed for DC-shift circuitry
HFB	Horizontal fly back
HFB+13V	Non rectified output 13V-winding LOT
HP	Headphone
I2S-CL	I2S bus clock
I2S-DSP-IN	I2S digital signal processor in
I2S-DSP-OUT	I2S digital signal processor out
I2S-WS	I2S bus word stroke
IN-C_IN-R-SC2	Either Chrominance-in scart2 or Red-in scart pin 15
IN-FRONT-SNDL	Sound left front in
IN-FRONT-SNDR	Sound right front in
IN-SC1-B	In scart1 blue
IN-SC1-G	In scart1 green
IN-SC1-R	In scart1 red
IN-SC1-SNDL	In scart1 sound left
IN-SC1-SNDR	In scart1 sound right
IN-SC2-B	In scart2 blue
IN-SC2-CVBS_Y	In scart2 CVBS or luminance (SVHS)
IN-SC2-FBL	In scart2 fast blanking
IN-SC2-G	In scart2 green
IO-BUS	In/out bus
IR-LED	Drive signal for the service Infra red LED
LDP	A2,K6 Line deflection protection
LED	K7 Control signal for ON and STANDBY LED's
LIGHT SENSOR	Light sensor
LINE-DRIVE	Line drive signal
LMN	System L,M,N
LNA	Low noise adapter
LSP	Large signal panel
LV-	Frame coil sink signal to the N/S correction circuitry
LV+	Frame coil drive signal from the frame output stage
MSP-CLOCK	Clock signal multi-standard sound processor
N52502	CAD-naming referring to other sub-schedule
NC	Not Connected
NVM	Non Volatile Memory
ON/OFF LED	On/off control signal for the LED
OSD	On Screen Display
PCB	Printed Circuit board
PIP	Picture In Picture
RAM	Random Access Memory
RC5	RC5 signal from the remote control receiver
RESET	Reset signal
RESET-AUDIO	Reset signal for audio IC MSP3410
RESET-AUDIO-INV	Reset signal for audio IC MSP3410 inverted
RESET-FLASH	Reset signal flash memory
ROM	Read Only Memory
R-SC1-IN	Red scart1 in
R-TXT	Red teletext
SC2-B-IN	Scart2 blue in
SC2-C-IN	Scart2 chrominance in
SC2FH_IFH	Sand-castle 1FH/2FH
SC2-G-IN	Scart2 green in
SC2-R-IN C-IN	Red in scart2 or chrominance in
SCL-F	Clock line of the I2C-bus fast (for TXT)
SCL-S	Clock line of the I2C-bus slow
SDA-F	Data line of the I2C-bus fast (for TXT)
SDA-S	Data line of the I2C-bus slow
SDM	Service Default Mode
SELECT TO EXT2	Selection of Extern 2 input
SELECT-AUDIO CINCH1	Selection of audio via cinch input 1
SELECT-AUDIO-CINCH2	Selection of audio via cinch input 2
SELECT-AUDIO-LR	Selection of audio left and right
SERVICE-DEFAULT	Service pin to activate SDM
SERVICE-MODE	Service pin to activate SAM
SIF	Sound Intermediate frequency
SIFM	Sound intermediate frequency for M system
SNDL-CL_VL-OUT	Sound left constant level -variable level out
SNDL-FRONT-IN	Sound left front in
SNDL-HEADPH-OUT	Sound left headphone out
SNDL-SC1-IN	Sound left scart1 in
SNDL-SC1-OUT	Sound left scart1 out
SNDL-SC2-IN	Sound left scart2 in
SNDL-SC2-OUT	Sound left scart2 out
SNDL-SC3-IN	Sound left scart3 in
SNDL-SC4-IN	Sound left scart4 in
SNDR-FRONT-IN	Sound right front in
SNDR-HEADPH-OUT	Sound right headphone out
SNDR-SC1-IN	Sound right scart1 in
SNDR-SC1-OUT	Sound right scart1 out
SNDR-SC2-IN	Sound right scart2 out
SNDR-SC2-OUT	Sound right scart2 out
SNDR-SC3-IN	Sound right scart3 in
SNDR-SC4-IN	Sound right scart4 in
SNDS-VL-OUT	Surround sound left variable level out

11 List of Abbreviations

SNDS-VR-OUT	Surround sound right variable level out
SOUND L-HEADPHONE-OUT	Sound left headphone out
SOUND R-HEADPHONE-OUT	Sound right headphone out
SOUND-ENABLE	Sound enable
SSP	Small Signal Panel
STANDBY	Standby
STATUS1/2/3	Status signal from Euro-connector 1 or 2 or 3 to the µP, signal (1.29-3.31V is 16:9 signal, 3.32-5.0V is 4:3 signal)
STBY	Standby
SW	Subwoofer
U-DEC	U-dec (input signal for PICNIC)
U-FEAT	U-feature-box (output signal from PICNIC)
U-OUT	U-signal to HOP IC
	Microprocessor
V-DEC	V-dec (input signal for PICNIC)
VD	Vertical Drive signal
VDEFL-2	Vertical deflection connection 2
VDEFL-1	Vertical deflection connection 1
VDNEG	Negative vertical drive signal
VDPOS	Positive vertical drive signal
V-FEAT	V-feature-box (output signal from PICNIC)
VFB	Vertical fly-back pulse
V-OUT	V-signal to HOP-IC
VA	Vertical Acquisition
VD	Vertical Drive coming from PICNIC
VREG	Opto-coupler feedback signal
Y_CVBS-SC2-IN	Luminance or CVBS scart2 in
Y-DEC	Luminance dec (input signal for PICNIC)
Y-FEAT	Luminance -feature-box (output signal from PICNIC)
Y-out	Luminance out

Large Signal Panel [A1] [A2] [A3] [A4] [E]

Various

	4822 310 11234	Supply repair kit
	4822 310 11235	Standby supply repair kit
	4822 310 11236	Line repair kit
0125	4822 695 00005	Insulating plate
0050	4822 492 70789	Spring fix transistor
0057	4822 492 63524	Spring fix transistor
0059Δ	4822 492 62076	Spring fix transistor
0060	4822 492 70871	Spring fix transistor
0149Δ	4822 265 11253	Holder for fuse
0151Δ	4822 256 91766	Led holder
0201	4822 265 11236	2P male
0202Δ	4822 267 10775	2P male black
0241	4822 267 10962	11P male v
0245	4822 267 10963	3P male v
0303Δ	4822 267 10774	2P male red
0310	4822 267 10964	9P male v red
0311	4822 265 41113	7P v dipmate
0315	4822 267 10965	9P v dipmate
0317	4822 267 10966	4P2 male v
0324	4822 265 30735	5P v dipmate
0325	4822 267 10967	3P male v
0328	4822 267 10968	11P v dipmate
0335	4822 267 10969	3P male v red
0393	4822 267 10971	5P male v
0411	4822 323 10451	Wire 7P 340mm
0415	4822 323 10452	Wire 9P 280mm dip
0424	4822 323 10453	Wire 5P 400mm dip
0428	4822 323 10454	Wire 11P 340mm dip
1002Δ	4822 280 10375	Relay 1P 5V 10A
1010Δ	4822 280 10375	Relay 1P 5V 10A
1050	4822 130 91478	IR receiver TSOP1736KD1
1051Δ	4822 276 14024	Mains switch 2P 4/ 128A
1052Δ	4822 253 30467	Fuse 6,3A
1053Δ	4822 070 33152	Fuse 3.15A
1201	4822 252 11169	Fuse 4A
1220Δ	4822 071 55002	Fuse 5A
1221Δ	4822 071 54002	Fuse 4A
1460Δ	4822 252 51186	Fuse 2A
1501	4822 252 60151	Surge protection

⊣⊢

2007Δ	4822 122 33177	10nF 20% 50V
2009Δ	4822 122 33177	10nF 20% 50V
2010Δ	4822 124 40196	220µF 20% 16V
2012	4822 124 81151	22µF 50V
2013	4822 126 13296	100nF 10% 16V
2051	4822 124 41584	100µF 20% 10V
2053Δ	4822 126 13589	470nF 275V
2100	4822 124 12295	4,7µF 20% 450V
2101	4822 122 33531	2,2nF 10% 50V
2102	5322 121 42498	680nF 5% 63V
2104	4822 123 14025	16V 2200µF 20%
2105	4822 122 33175	2,2nF 20% 50V
2201	4822 122 31177	470pF 10% 500V
2202	4822 122 31177	470pF 10% 500V
2203	4822 122 31177	470pF 10% 500V
2220	4822 124 12296	2200µF 20% 25V
2221	4822 124 12296	2200µF 20% 25V
2222	4822 124 11908	2200µF 20% 25V
2223	4822 123 14026	35V 470µF 20%
2224	4822 124 40242	1µF 20% 63V
2225	4822 121 41857	10nF 5% 250V
2226	5322 121 42386	100nF 5% 63V
2227	4822 122 31177	470pF 10% 500V
2228	4822 124 81151	22µF 50V
2229	5322 122 32331	1nF 10% 100V
2232Δ	4822 122 33177	10nF 20% 50V
2233Δ	4822 122 33177	10nF 20% 50V
2234	4822 123 14026	35V 470µF 20%
2400	4822 124 11575	47µF 20% 160V
2410Δ	5322 122 32261	4,7nF 10% 100V
2411Δ	4822 122 33177	10nF 20% 50V
2412	4822 126 12105	33nF 5% 63V
2413	4822 124 80068	22µF 20% 100V
2414	4822 126 12105	33nF 5% 63V
2416	4822 126 13296	100nF 10% 16V
2417	4822 126 13296	100nF 10% 16V
2418Δ	4822 126 14078	220pF 10% 2kV
2419Δ	5322 121 44151	33nF 10% 400V
2420	4822 121 70594	1nF 5% 2kV
2422	4822 121 10805	1,2µF 5% 250V
2425	4822 121 70398	11nF 5% 2kV
2426	4822 121 10551	27nF 5% 630V.
2430	4822 122 31175	1nF 10% 500V
2431	4822 122 31175	1nF 10% 500V
2433Δ	4822 121 40479	390nF 10% 250V
2436	4822 124 81029	100µF 20% 25V
2437	4822 124 81089	2,2µF 20% 160V
2438	4822 126 12105	33nF 5% 63V
2440	4822 126 11501	1,5nF 10% 500V
2442	4822 124 12297	4,7µF 20% 350V
2448Δ	5322 122 32654	22nF 10% 63V
2450Δ	4822 121 40518	100nF 10% 250V
2454	4822 126 13296	100nF 10% 16V
2457	4822 126 13296	100nF 10% 16V
2460	4822 126 11501	1,5nF 10% 500V
2461	4822 124 11909	25V 470µF 20%
2462	4822 123 14023	25V 3300µF 20%
2463	4822 126 11501	1,5nF 10% 500V
2465	4822 126 11501	1,5nF 10% 500V
2466	4822 124 11909	25V 470µF 20%
2480	4822 124 40763	2,2µF 100 V
2481	5322 122 32311	470pF 10% 100V
2482	4822 124 22466	1µF 20% 50V
2484Δ	4822 124 40246	4,7µF 20% 63V
2487Δ	4822 124 41579	10µF 20% 50V
2504Δ	4822 121 10711	100nF 20% 275V
2505Δ	4822 124 42029	150µF 20% 385V
2506Δ	4822 121 10711	100nF 20% 275V
2508	4822 124 11913	22nF 20% 275V
2511	4822 126 14153	2,2nF 10%B 1kV
2512	4822 126 14153	2,2nF 10%B 1kV
2521	5322 121 42386	100nF 5% 63V
2522	5322 122 32331	1nF 10% 100V
2524	5322 121 42386	100nF 5% 63V
2525	4822 124 22263	220µF 20% 25V
2526	5322 122 32311	470pF 10% 100V
2527	4822 122 31175	1nF 10% 500V
2531	4822 121 43066	1nF 1% 400V
2532	4822 122 31237	82pF 2% 100V
2533	4822 124 81151	22µF 50V
2535	4822 126 12451	820pF 10% 50V
2538	4822 122 33531	2,2nF 10% 50V
2540Δ	4822 126 14078	220pF 10% 2kV
2541	4822 122 31177	470pF 10% 500V
2542Δ	4822 126 14078	220pF 10% 2kV
2543Δ	4822 126 13451	2,2nF 10% 2kV
2544	4822 121 70584	1,8nF 5% 2kV
2545	4822 126 11824	100pF 10% 1kV
2550Δ	4822 126 14504	3,3nF 20% 250V
2557	4822 121 43145	33nF 10% 50V
2568Δ	4822 126 14237	470pF 10% 2kV
2569	4822 124 81042	47µF 50-20% 200V
2580	4822 126 13296	100nF 10% 16V
2612	5322 122 34099	470pF 10% 63V
2613	5322 122 34099	470pF 10% 63V
2615	4822 124 40255	100µF 20% 63V
2616Δ	4822 126 10002	100nF 20% 25V
2617	4822 121 42408	220nF 5% 63V
2618Δ	4822 126 13838	100nF 50V 20%
2620	4822 124 81166	10µF 20% 100V
2700Δ	5322 126 10223	4,7nF 10% 63V
2702Δ	5322 126 10223	4,7nF 10% 63V
2710	4822 126 12105	33nF 5% 63V
2711	4822 121 42408	220nF 5% 63V
2712Δ	4822 126 10002	100nF 20% 25V
2713Δ	4822 126 10002	100nF 20% 25V
2715	4822 121 42408	220nF 5% 63V
2716	4822 126 13751	47nF 10% 63V
2720	4822 126 12105	33nF 5% 63V
2721	4822 121 42408	220nF 5% 63V
2722	4822 121 42408	220nF 5% 63V
2723	4822 126 13751	47nF 10% 63V
2730	4822 121 51319	1µF 10% 63V
2731	5322 122 31865	1,5nF 10% 63V
2732	4822 121 51319	1µF 10% 63V
2733	5322 122 31865	1,5nF 10% 63V
2753	4822 126 13061	220nF 20% 25V
2754	4822 126 13061	220nF 20% 25V
2755	4822 126 13061	220nF 20% 25V
2756	4822 126 13061	220nF 20% 25V
2757	4822 126 13061	220nF 20% 25V
2758	4822 124 40242	1µF 20% 63V
2760	4822 124 80408	4,7µF 20% 50V
2761Δ	4822 124 41579	10µF 20% 50V
2780Δ	4822 126 10002	100nF 20% 25V
2781Δ	4822 126 10002	100nF 20% 25V
2782	4822 126 13061	220nF 20% 25V
2783Δ	4822 124 41579	10µF 20% 50V
2784Δ	4822 124 41579	10µF 20% 50V
2791	4822 124 22263	220µF 20% 25V
2792	4822 124 22263	220µF 20% 25V

⊣▭⊢

3002	4822 117 12181	470Ω 20% 0,5W
3003	4822 117 11449	2k2 1% 0,1W
3005	4822 117 12074	7W 1Ω5 10%
3007Δ	4822 051 20472	4k7 5% 0,1W
3008	4822 116 52256	2k2 5% 0,5W
3009	4822 117 10833	10k 1% 0,1W
3010	4822 051 20224	220k 5% 0,1W
3011	4822 117 10833	10k 1% 0,1W
3012	4822 051 10102	1k 2% 0,25W
3013	4822 051 10102	1k 2% 0,25W
3014	4822 051 10102	1k 2% 0,25W
3015Δ	4822 051 20101	100Ω 5% 0,1W
3016Δ	4822 051 20101	100Ω 5% 0,1W
3017	4822 051 20479	47Ω 5% 0,1W
3018	4822 117 11449	2k2 1% 0,1W
3050	4822 051 20331	330Ω 5% 0,1W
3051Δ	4822 051 20471	470Ω 5% 0,1W
3054	4822 051 20561	560Ω 5% 0,1W
3055Δ	4822 051 20008	0Ω jumper (0805)
3056Δ	4822 116 10065	1M A/495V MAX 850V
3057Δ	4822 053 21335	3M3 5% 0,5W
3058	4822 051 20474	470k 5% 0,1W
3059	4822 117 11507	6k8 1% 0,1W
3061Δ	4822 051 20332	3k3 5% 0,1W
3063Δ	4822 052 10478	4Ω7 5% 0,33W
3064Δ	4822 052 10478	4Ω7 5% 0,33W
3066Δ	4822 053 21335	3M3 5% 0,5W
3076	4822 117 11507	6k8 1% 0,1W
3077	4822 117 10833	10k 1% 0,1W
3080	4822 117 10833	10k 1% 0,1W
3101	4822 053 20106	10M 5% 0,25W
3102	4822 050 11002	1k 1% 0,4W
3103	4822 116 83864	10k 5% 0,5W
3104	4822 116 52234	100k 5% 0,5W
3106	4822 116 52234	100k 5% 0,5W
3107	4822 116 52234	100k 5% 0,5W
3108	4822 116 52182	15Ω 5% 0,5W
3109	4822 116 83864	10k 5% 0,5W
3110Δ	4822 052 10109	10Ω 5% 0,33W
3111	4822 116 52283	4k7 5% 0,5W
3113Δ	4822 051 20471	470Ω 5% 0,1W
3115	4822 117 11139	1k5 1% 0,1W
3117	4822 116 52175	100Ω 5% 0,5W
3118	4822 116 52182	15Ω 5% 0,5W
3222	4822 116 52249	1k8 5% 0,5W
3223	4822 116 52249	1k8 5% 0,5W
3224	4822 116 52249	1k8 5% 0,5W
3225Δ	4822 117 11744	0Ω22 5% 1W
3226Δ	4822 050 21002	1k 1% 0,6W
3227Δ	4822 050 23302	3k3 1% 0,6W
3228	4822 116 52234	100k 5% 0,5W
3231Δ	4822 052 10109	10Ω 5% 0,33W
3234	4822 116 52219	330Ω 5% 0,5W
3240	4822 116 52226	560Ω 5% 0,5W
3241	4822 116 52226	560Ω 5% 0,5W
3245	4822 116 83874	220k 5% 0,5W
3404	4822 116 83883	470Ω 5% 0,5W
3406	4822 117 10834	47k 1% 0,1W
3407	4822 117 10833	10k 1% 0,1W
3411	4822 116 52195	47Ω 5% 0,5W
3413	4822 116 83883	470Ω 5% 0,5W
3414Δ	4822 051 20101	100Ω 5% 0,1W
3415	4822 117 13518	18Ω 5% 2,5W
3417	4822 116 52176	10Ω 5% 0,5W
3420Δ	4822 052 11479	47Ω 5% 0,5W
3423	4822 053 10688	6Ω8 5% 1W
3425	4822 116 52176	10Ω 5% 0,5W
3426	4822 116 52176	10Ω 5% 0,5W
3428	4822 116 52245	150k 5% 0,5W
3429	4822 116 83884	47k 5% 0,5W
3430	4822 050 11002	1k 1% 0,4W
3431	4822 050 11002	1k 1% 0,4W
3432	4822 116 83884	47k 5% 0,5W
3436Δ	4822 051 20332	3k3 5% 0,1W
3437	4822 116 52245	150k 5% 0,5W
3438	4822 051 20333	33k 5% 0,1W
3443Δ	4822 052 11688	6Ω8 5% 0,5W
3448	4822 051 20104	100k 5% 0,1W
3449	4822 117 10834	47k 1% 0,1W
3450	4822 116 83884	47k 5% 0,5W
3451	4822 116 52264	27k 5% 0,5W
3452	4822 116 52257	22k 5% 0,5W
3454	4822 117 10834	47k 1% 0,1W
3455	4822 116 83874	220k 5% 0,5W
3457	4822 051 20564	560k 5% 0,1W
3458	4822 051 20104	100k 5% 0,1W
3459Δ	4822 051 20471	470Ω 5% 0,1W
3462Δ	4822 052 11108	1Ω 5% 0,5W
3463Δ	4822 052 11108	1Ω 5% 0,5W
3464	4822 116 52283	4k7 5% 0,5W
3466Δ	4822 052 10108	1Ω 5% 0,33W
3468Δ	4822 052 10151	150Ω 5% 0,33W
3478	4822 116 83872	220Ω 5% 0,5W
3480	4822 051 20104	100k 5% 0,1W
3481Δ	4822 052 10102	1k 5% 0,33W
3482	4822 116 83884	47k 5% 0,5W
3483Δ	4822 052 10478	4Ω7 5% 0,33W
3484Δ	4822 052 10109	10Ω 5% 0,33W
3485	4822 050 25605	5M6 1% 0,6W
3486	4822 051 20104	100k 5% 0,1W
3488	4822 051 10102	1k 2% 0,25W
3489	4822 116 52191	33Ω 5% 0,5W
3490	4822 051 20224	220k 5% 0,1W
3491	4822 116 83874	220k 5% 0,5W
3492	4822 051 20333	33k 5% 0,1W
3493	4822 051 10102	1k 2% 0,25W
3498Δ	4822 052 10221	220Ω 5% 0,33W
3506Δ	4822 117 12027	18Ω-3k 25%
3507Δ	4822 117 12027	18Ω-3k 25%
3512	4822 050 11002	1k 1% 0,4W
3517	4822 053 10104	100k 5% 1W
3518	4822 116 52195	47Ω 5% 0,5W
3519	4822 116 52256	2k2 5% 0,5W
3520	4822 117 11743	27k 5% 3W
3521	4822 116 52304	82k 5% 0,5W
3522	4822 116 52228	680Ω 5% 0,5W
3523	4822 116 52244	15k 5% 0,5W
3524Δ	4822 052 10109	10Ω 5% 0,33W
3525	4822 116 83874	220k 5% 0,5W
3526	4822 116 52175	100Ω 5% 0,5W
3527	4822 116 52191	33Ω 5% 0,5W
3529	4822 053 20105	1M 5% 0,25W
3530Δ	4822 052 10108	1Ω 5% 0,33W
3531	4822 116 52207	1k2 5% 0,5W
3532	4822 116 83868	150Ω 5% 0,5W
3533	4822 116 52238	12k 5% 0,5W
3535	4822 116 52244	15k 5% 0,5W
3536	4822 116 52257	22k 5% 0,5W
3537	4822 116 83864	10k 5% 0,5W
3538	4822 050 11002	1k 1% 0,4W
3539	4822 116 83864	10k 5% 0,5W
3540Δ	4822 050 24708	4Ω7 1% 0,6W
3541	4822 050 11002	1k 1% 0,4W
3544	4822 117 11488	33k 5% 3W
3545	4822 117 12235	680 Ω 5% 4,8W.
3546	4822 117 11745	0Ω39 5% 1W
3547	4822 117 11745	0Ω39 5% 1W
3548	4822 116 52195	47Ω 5% 0,5W
3552	4822 116 52175	100Ω 5% 0,5W
3553	4822 116 52283	4k7 5% 0,5W
3555	4822 050 21604	160k 1% 0,6W
3556	4822 116 52175	100Ω 5% 0,5W
3557	4822 116 52271	33k 5% 0,5W
3558Δ	4822 050 22702	2k7 1% 0,6W
3559	4822 101 11186	470Ω 30%LIN 0.1W
3566	4822 053 10683	68k 5% 1W
3567	4822 116 52257	22k 5% 0,5W
3568Δ	4822 053 12153	15k 5% 3W
3569	4822 116 52257	22k 5% 0,5W
3579	4822 116 80176	1Ω 5% 0,5W
3580	4822 116 52175	100Ω 5% 0,5W
3581Δ	4822 051 20101	100Ω 5% 0,1W
3582	4822 051 10102	1k 2% 0,25W
3601	4822 116 80676	1Ω5 5% 0,5W
3602	4822 116 80676	1Ω5 5% 0,5W
3603	4822 117 11777	1Ω8 5%
3609	4822 052 10332	3k3 5% 0,33W
3610	4822 051 10102	1k 2% 0,25W
3611	4822 050 28201	820Ω 1% 0,6W
3612	4822 050 28201	820Ω 1% 0,6W
3613	4822 051 10102	1k 2% 0,25W
3614	4822 051 10102	1k 2% 0,25W
3617Δ	4822 052 10158	1Ω5 5% 0,33W
3618	4822 116 83872	220Ω 5% 0,5W
3619	4822 116 83872	220Ω 5% 0,5W
3620	4822 116 83864	10k 5% 0,5W
3700	4822 051 10102	1k 2% 0,25W
3701	4822 117 11448	180Ω 1% 0,1W
3702	4822 051 10102	1k 2% 0,25W
3703	4822 117 11448	180Ω 1% 0,1W
3710	4822 051 20104	100k 5% 0,1W
3711	4822 117 10833	10k 1% 0,1W
3712	4822 051 20822	8k2 5% 0,1W
3713	4822 117 11149	82k 1% 0,1W
3714	4822 051 20562	5k6 5% 0,1W 0805
3720	4822 051 20104	100k 5% 0,1W
3721	4822 117 10833	10k 1% 0,1W
3722	4822 051 20822	8k2 5% 0,1W
3723	4822 117 11149	82k 1% 0,1W
3724	4822 051 20562	5k6 5% 0,1W 0805
3730Δ	4822 051 20471	470Ω 5% 0,1W
3731	4822 117 11507	6k8 1% 0,1W
3732Δ	4822 051 20471	470Ω 5% 0,1W
3733	4822 117 11507	6k8 1% 0,1W
3749Δ	4822 051 20332	3k3 5% 0,1W
3750	4822 116 52263	2k7 5% 0,5W
3751	4822 117 10833	10k 1% 0,1W
3752	4822 117 11449	2k2 1% 0,1W
3757	4822 117 11507	6k8 1% 0,1W
3762	4822 051 20828	8Ω2 5% 0,1W
3763	4822 051 20104	100k 5% 0,1W
3764	4822 051 20104	100k 5% 0,1W
3765	4822 051 20104	100k 5% 0,1W
3766	4822 051 20104	100k 5% 0,1W
3767	4822 117 10834	47k 1% 0,1W
3768	4822 117 10834	47k 1% 0,1W
3769	4822 116 83883	470Ω 5% 0,5W
3770	4822 116 52207	1k2 5% 0,5W
3786	4822 051 20104	100k 5% 0,1W
3788	4822 051 20104	100k 5% 0,1W
3789	4822 051 20828	8Ω2 5% 0,1W
4xxx	4822 051 10008	0Ω jumper (1206)
4xxx	4822 051 20008	0Ω jumper (0805)

⌐~⌐

5003	4822 157 11769	Mains filter DMF3530HB60
5101Δ	4822 146 11065	Stand-by transf. CE165T
5102	4822 157 70436	8,2µH 10%
5205	4822 152 20678	33µH 5%
5220	4822 157 11771	Bead 200MHz
5221	4822 157 11771	Bead 200MHz
5222	4822 157 71453	27µH 10%
5223	4822 157 71453	27µH 10%
5224	4822 157 71453	27µH 10%
5225	4822 157 11772	Bridge coil
5226	4822 157 11411	Bead 100MHz
5227	4822 157 11771	Bead 200MHz
5230	4822 157 11411	Bead 100MHz
5231	4822 157 11771	Bead 200MHz
5400	4822 157 71467	39µH 10%
5410	4822 146 11066	Line driver transf.
5421	4822 157 11182	Linearity corr.

12 Spare parts list

5422	4822 157 71829	Bridge coil
5423	4822 157 71097	0.56µH
5425	4822 157 11411	Bead 100MHz
5430Δ	4822 140 10559	L.O.T.
5460	4822 157 71466	2,2µH 20%
5462	4822 157 71466	2,2µH 20%
5466	4822 157 71452	18µH 10%
5468	4822 157 71452	18µH 10%
5480	4822 157 63253	Choke
5525Δ	4822 157 50963	2,2µH
5542	4822 157 11411	Bead 100MHz
5544	4822 157 11771	Bead 200MHz
5545	4822 157 11411	Bead 100MHz
5550Δ	4822 146 11067	FFS transformer
5567	4822 157 11411	Bead 100MHz
5573	4822 157 71453	27µH 10%
5617	4822 157 11771	Bead 200MHz

6006	4822 130 11397	BAS316
6008	4822 130 11397	BAS316
6010	4822 130 11397	BAS316
6011	4822 130 11397	BAS316
6012	4822 130 11397	BAS316
6014	4822 130 11397	BAS316
6015	4822 130 11397	BAS316
6051	4822 209 72895	TLUV5320
6052	4822 130 11409	TSIL6403
6053	4822 130 11411	BZX284-C3V3
6101	4822 130 83147	DF06M
6103	4822 130 42488	BYD33D
6104Δ	4822 130 34499	BZX79-B20
6105	4822 130 34281	BZX79-B15
6107	5322 130 31938	BYV27-200
6108Δ	4822 130 30621	1N4148
6213Δ	4822 130 30621	1N4148
6218Δ	4822 130 80791	BYV28-200/20
6219Δ	4822 130 80791	BYV28-200/20
6222	5322 130 32677	1N5822
6223	4822 130 11045	PBYR10100
6407	4822 130 42488	BYD33D
6408	4822 130 42488	BYD33D
6409	4822 130 11397	BAS316
6420	4822 130 83801	PBYR745F
6421	4822 130 10753	BY359X-1500
6422	4822 130 10754	BY229X-600
6437	4822 130 11397	BAS316
6441	4822 130 42488	BYD33D
6451	4822 130 11413	PDZ10B
6452	4822 130 11397	BAS316
6453	4822 130 11414	BZX284-C27
6454	4822 130 30842	BAV21
6460	5322 130 31938	BYV27-200
6462	5322 130 31938	BYV27-200
6463	5322 130 31938	BYV27-200
6464	4822 130 34174	BZX79-B4V7
6465Δ	4822 130 34173	BZX79-B5V6
6480Δ	4822 130 61219	BZX79-B10
6483	4822 130 30842	BAV21
6484	4822 130 11397	BAS316
6485	4822 130 11397	BAS316
6486	4822 130 11397	BAS316
6514	4822 130 11185	GBU4J
6521	4822 130 42488	BYD33D
6524	4822 130 32245	BYV10-40
6525	4822 130 42488	BYD33D
6542	4822 130 42606	BYD33J
6545	4822 130 11415	BYV28-400/20
6567	4822 130 10218	BY229X-800
6570Δ	4822 130 30621	1N4148
6571Δ	4822 130 30621	1N4148
6572	4822 130 32904	BZV85-C5V6
6580	4822 130 11416	PDZ6.8B
6581	4822 130 11031	BZX284-C12
6608	4822 130 10648	BZX284-C5V6
6609	4822 130 10654	BAT254
6614	5322 130 31938	BYV27-200
6617	4822 130 42488	BYD33D
6618	5322 130 33635	BZV85-C8V2
6620	4822 130 42488	BYD33D
6700	4822 130 11397	BAS316
6701	4822 130 11397	BAS316
6710	4822 130 11397	BAS316
6711	4822 130 11397	BAS316
6767Δ	4822 209 80817	L7805CV
6768	4822 130 82714	BZX79-B2V7
6769	4822 130 82714	BZX79-B2V7
6770	4822 209 11079	MC79M05CT

7000Δ	4822 130 40981	BC337-25
7001	4822 130 60511	BC847B
7011	4822 130 60511	BC847B
7012	4822 130 60511	BC847B
7013	5322 130 60508	BC857B
7014	4822 130 60511	BC847B
7020Δ	4822 130 40981	BC337-25
7050	4822 130 41246	BC327-25
7100	4822 130 44568	BC557B
7101	4822 130 40959	BC547B
7102	4822 130 11417	STP3NB60FP
7103	4822 130 40959	BC547B
7104Δ	4822 130 11418	TCDT1102G
7212	4822 209 60059	NJM2360D
7213	4822 209 90281	L78M08CP
7409	4822 130 40959	BC547B
7411	5322 130 44349	BC635
7421Δ	4822 130 63666	BU2520DF
7437	5322 130 60508	BC857B
7480	4822 130 63726	MTP3055EFI
7484	4822 209 70672	LM358N SEL.
7520Δ	4822 209 90025	MC44603P
7540	4822 130 11419	STW8NA60
7555	4822 209 81397	TL431CLPST
7556Δ	4822 130 11418	TCDT1102G
7580	4822 130 11421	BT151X-500R
7600	4822 209 90009	TDA8177
7710Δ	4822 209 83163	LM833N
7740	4822 209 32641	TDA2616Q
7761	4822 130 60511	BC847B
7762	5322 130 60508	BC857B
7790	4822 130 60511	BC847B
7796	4822 130 60511	BC847B

Picture tube + SCAVEM panel [F]

Various

0041	4822 492 70788	Spring fix IC
0224	4822 267 10972	5P male v
0298	4822 255 10415	CRT socket DAF 32"
0299Δ	4822 267 10922	CRT socket 24"/25"/28"/29"
0334	4822 267 10973	1P male v
0340	4822 267 10974	9P male v
0383	4822 267 10967	3P male v
1030	3104 328 00320	PTP 6101, polyg
1030	3104 328 00340	PTP+SVM 6101, polyg
1030	3104 328 00360	PTP+SVM 6101, DAF
1030	3104 328 00380	PTP+SVM 6111, polyg
1030	3104 328 00400	PTP+SVM 6111, DAF

2325Δ	4822 124 41579	10µF 20% 50V
2330	4822 126 13486	15pF 2% 63V
2331	5322 126 10343	1,8pF 5% 63V
2332Δ	5322 126 10223	4,7nF 10% 63V
2333	4822 122 32535	680pF 10% 63V
2336	4822 126 12105	33nF 5% 63V
2337	4822 121 40411	33nF 10% 400V
2338	5322 126 10184	680P 5% 50V.
2340	4822 126 13486	15pF 2% 63V
2341	5322 126 10343	1,8pF 5% 63V
2342Δ	5322 126 10223	4,7nF 10% 63V
2343	4822 122 32535	680pF 10% 63V
2346	4822 126 12105	33nF 5% 63V
2347	4822 121 40411	33nF 10% 400V
2348	4822 126 13461	680pF 10% 50V
2350	4822 126 13486	15pF 2% 63V
2351	5322 122 31873	2,7pF +-0,5 100V
2352Δ	5322 126 10223	4,7nF 10% 63V
2353	4822 122 32535	680pF 10% 63V
2356	4822 126 12105	33nF 5% 63V
2357	4822 121 40411	33nF 10% 400V
2358	4822 126 13461	680pF 10% 50V
2370	4822 124 11565	10µF 20% 250V
2371Δ	5322 122 32654	22nF 10% 63V
2372	4822 124 81029	100µF 20% 25V
2374Δ	5322 122 32654	22nF 10% 63V
2376Δ	4822 124 41579	10µF 20% 50V
2381	4822 122 31175	1nF 10% 500V
2393Δ	5322 122 34123	1nF 10% 50V
2397Δ	4822 126 13862	1,5nF 10% 2kV
2398	4822 126 14505	4,7nF 10% 2kV
2400	4822 124 81029	100µF 20% 25V
2401	4822 126 13486	15pF 2% 63V
2402	4822 126 13689	18pF 1% 63V
2403	5322 122 32658	22pF 5% 50V
2404Δ	4822 124 40433	47µF 20% 25V
2405	5322 122 32286	3,3pF 5% 50V
2406	5322 121 42386	100nF 5% 63V
2407	5322 122 31863	330pF 5% 50V
2409	4822 121 70619	22nF 10% 50V
2410Δ	5322 122 32654	22nF 10% 63V
2411	4822 124 40764	22µF 100V
2420	4822 121 41856	22nF 5% 250V
2422	4822 126 13693	56pF 1% 63V

3324	4822 117 10833	10k 1% 0,1W
3325	4822 051 20182	1k8 5% 0,1W
3327	4822 051 20104	100k 5% 0,1W
3329	4822 116 83864	10k 5% 0,5W
3330	4822 117 11449	2k2 1% 0,1W
3331	4822 050 21204	120k 1% 0,6W
3332	4822 117 12955	2k7 1% 0,1W 0805
3333	4822 117 11448	180Ω 1% 0,1W
3334	4822 116 52175	100Ω 5% 0,5W
3335	4822 117 12516	680Ω 2%0,5W
3336	4822 051 20391	390Ω 5% 0,1W
3338	4822 051 10102	1k 2% 0,25W
3339	4822 050 11002	1k 1% 0,4W
3340	4822 117 11449	2k2 1% 0,1W
3341	4822 050 21204	120k 1% 0,6W
3342	4822 117 12955	2k7 1% 0,1W 0805
3343	4822 117 11448	180Ω 1% 0,1W
3344	4822 116 52175	100Ω 5% 0,5W
3345	4822 117 12516	680Ω 2%0,5W
3346	4822 051 20391	390Ω 5% 0,1W
3348	4822 051 10102	1k 2% 0,25W
3349	4822 050 11002	1k 1% 0,4W
3350	4822 117 11449	2k2 1% 0,1W
3351	4822 050 21204	120k 1% 0,6W
3352	4822 117 12955	2k7 1% 0,1W 0805
3353	4822 117 11448	180Ω 1% 0,1W
3354	4822 116 52175	100Ω 5% 0,5W
3355	4822 117 12516	680Ω 2%0,5W
3356	4822 116 83881	390Ω 5% 0,5W
3358	4822 050 11002	1k 1% 0,4W
3359	4822 050 11002	1k 1% 0,4W
3360	4822 116 52195	47Ω 5% 0,5W
3363Δ	4822 051 20008	0Ω jumper . (0805)
3364Δ	4822 051 20008	0Ω jumper . (0805)
3369	4822 051 20184	180k 5% 0,1W
3370	4822 051 20154	150k 5% 0,1W
3371	4822 050 11002	1k 1% 0,4W
3372Δ	4822 052 10688	6Ω8 5% 0,33W
3373Δ	4822 052 10331	330Ω 5% 0,33W
3374	4822 051 20224	220k 5% 0,1W
3375	4822 051 20104	100k 5% 0,1W
3376	4822 051 20104	100k 5% 0,1W
3377	4822 051 20104	100k 5% 0,1W
3378	4822 117 11719	180k
3379	4822 051 20562	5k6 5% 0,1W 0805
3382	4822 116 52191	33Ω 5% 0,5W
3383	4822 117 13016	1M A/50V MAX 115V
3385	4822 117 13016	1M A/50V MAX 115V
3386	4822 116 52191	33Ω 5% 0,5W
3396Δ	4822 051 20101	100Ω 5% 0,1W
3397	4822 117 11896	1k5 20% 0,5W
3400Δ	4822 052 10109	10Ω 5% 0,33W
3401Δ	4822 051 20332	3k3 5% 0,1W
3402	4822 117 12955	2k7 1% 0,1W 0805
3403	4822 117 11449	2k2 1% 0,1W
3404	4822 117 11448	180Ω 1% 0,1W
3405	4822 117 10965	18k 1% 0,1W
3406	4822 117 11449	2k2 1% 0,1W
3407	4822 116 52219	330Ω 5% 0,5W
3408	4822 051 20479	47Ω 5% 0,1W
3409	4822 051 20478	4Ω7 5% 0,1W
3410	4822 051 10102	1k 2% 0,25W
3411	4822 117 11148	56k 1% 0,1W
3412	4822 117 11148	56k 1% 0,1W
3413	4822 051 10102	1k 2% 0,25W
3414	4822 053 12472	4k7 5% 3W
3415Δ	4822 051 20109	10Ω 5% 0,1W
3416	4822 051 20182	1k8 5% 0,1W
3417Δ	4822 051 20109	10Ω 5% 0,1W
3418	4822 051 20331	330Ω 5% 0,1W
3419	4822 116 52219	330Ω 5% 0,5W
3421	4822 051 10102	1k 2% 0,25W
3999	4822 051 20331	330Ω 5% 0,1W
3999	4822 117 10353	150Ω 1% 0,1W
3999	4822 117 11448	180Ω 1% 0,1W
3999	4822 117 11503	220Ω 1% 0.1W
3999	4822 117 11504	270Ω 1% 0.1W
4xxx	4822 051 10008	0Ω jumper (1206)
4xxx	4822 051 20008	0Ω jumper (0805)

5372	4822 157 51216	5,6µH 10%
5373	4822 157 51216	5,6µH 10%
5400	4822 157 51216	5,6µH 10%
5404	4822 157 71304	1µH 10%
5414Δ	4822 050 24701	470Ω 1% 0,6W

6324Δ	4822 130 30621	1N4148
6325	5322 130 31504	BZX79-B3V3
6335	4822 130 30842	BAV21
6345	4822 130 30842	BAV21
6355	4822 130 30842	BAV21
6370	4822 130 34281	BZX79-B15
6371Δ	4822 130 30621	1N4148
6409Δ	4822 130 30621	1N4148
6410Δ	4822 130 30621	1N4148

7324	5322 130 60508	BC857B
7330	4822 209 91143	TDA6101Q/N3
7338	5322 130 60508	BC857B
7340	4822 209 91143	TDA6101Q/N3
7348	5322 130 60508	BC857B
7350	4822 209 91143	TDA6101Q/N3
7358	5322 130 60508	BC857B
7374	4822 130 41646	BF423
7377	4822 130 60511	BC847B
7400	4822 130 44154	BF199
7405	4822 130 42589	BF370
7414	5322 130 41888	BD140-16
7415	5322 130 41886	BD139-16
8383	4822 320 12525	Cable 3P 340mm

DC-shift panel [G]

Various

0393	4822 267 10976	5P female h
1500	3104 328 00750	DC-shift panel

2030	4822 122 31177	470pF 10% 500V
2031	4822 124 81029	100µF 20% 25V
2032	4822 124 81029	100µF 20% 25V
2033	4822 122 31177	470pF 10% 500V

3030Δ	4822 053 11689	68Ω 5% 2W
3031Δ	4822 052 10108	1Ω 5% 0,33W
3032Δ	4822 052 10108	1Ω 5% 0,33W

5030Δ	4822 157 70006	DC-shift coil

6030	4822 130 42488	BYD33D
6033	4822 130 42488	BYD33D

Small Signal Panel K[1 7]

Various

0002	4822 267 10977	IC socket 42P
0008Δ	5322 255 40958	IC socket 8P
0310	4822 267 10964	9p male v red
0311	4822 267 10978	7P male v black
0315	4822 267 10979	9P male v black
0328	4822 267 10981	11P male v black
0333	4822 267 10962	11P male v
0340	4822 267 10974	9P male v
0341	4822 267 10962	11P male v
0344	4822 267 10963	3P male v
0356	4822 267 10963	3P male v
1001	4822 242 10972	Crystal 6MHz
1020	3104 328 00510	SSP EU dig.sc. 2 scarts
1020	3104 328 00650	SSP EU 2fh 100Hz eco
1020	3104 328 03270	SSP FR dig.sc. 2 scarts
1020	3104 328 03280	SSP FR 2fh 100Hz eco
1102	4822 210 10841	UV1316/A I-2
1105	4822 242 10688	Filter OFWK9456M
1107	4822 242 72211	Filter 5,5MHz
1109	4822 242 81436	Filter OFWK3953M
1200	4822 267 10982	Socket 2xcinch
1201	4822 267 60385	Socket SCART black
1202	4822 267 60385	Socket SCART black
1305	5322 242 73686	Filter 12,00MHz
1525	4822 242 10692	Crystal 4,433 619MHz
1528	4822 242 10697	Crystal 3,579 545 MHz
1601	4822 242 10685	Crystal 12MHz
1751	4822 242 10434	Crystal 18,432MHz
1850	4822 212 11931	SECAM correction panel

2001	4822 126 13296	100nF 10% 16V
2002	4822 126 14305	100nF 10% 16V
2003	4822 126 14305	100nF 10% 16V
2005	4822 126 14305	100nF 10% 16V
2006	4822 126 14305	100nF 10% 16V
2007	4822 126 14305	100nF 10% 16V

12 Spare parts list

2008	4822 126 14305	100nF 10% 16V
2009	4822 126 14305	100nF 10% 16V
2010	4822 126 14305	100nF 10% 16V
2011	4822 126 14305	100nF 10% 16V
2012	4822 126 14305	100nF 10% 16V
2013	4822 126 13061	220nF 20% 25V
2014	4822 126 11669	27pF
2015	4822 126 13296	100nF 10% 16V
2016	5322 122 32659	33pF 5% 50V
2017	4822 126 14506	270pF 5% 50V
2018Δ	4822 124 41579	10µF 20% 50V
2019	4822 126 14305	100nF 10% 16V
2020	5322 122 32658	22pF 5% 50V
2021	4822 126 13296	100nF 10% 16V
2022	4822 126 13061	220nF 20% 25V
2023	4822 126 14305	100nF 10% 16V
2024	5322 126 11578	1nF 10% 50V
2025	4822 126 14305	100nF 10% 16V
2026	4822 126 14305	100nF 10% 16V
2027	4822 126 14305	100nF 10% 16V
2028	4822 126 14305	100nF 10% 16V
2029Δ	4822 124 40433	47µF 20% 25V
2030Δ	4822 124 40433	47µF 20% 25V
2031	4822 126 14305	100nF 10% 16V
2032	4822 126 14305	100nF 10% 16V
2037	4822 126 13296	100nF 10% 16V
2038	4822 126 13296	100nF 10% 16V
2039	4822 126 13883	220pF 5% 50V
2040Δ	4822 122 33177	10nF 20% 50V
2042	4822 122 33777	47pF 5% 63V
2043	4822 122 33777	47pF 5% 63V
2044	4822 122 33777	47pF 5% 63V
2045	4822 124 41584	100µF 20% 10V
2046	4822 126 13296	100nF 10% 16V
2047	4822 122 33761	22pF 5% 50V
2101Δ	4822 124 40196	220µF 20% 16V
2102	4822 126 13473	220nF 80-20% 50V
2103Δ	4822 124 41579	10µF 20% 50V
2104Δ	4822 122 33177	10nF 20% 50V
2105Δ	4822 122 33177	10nF 20% 50V
2106	4822 122 33575	220pF 5% 50V
2107	4822 126 13694	68pF 1% 63V
2108	5322 122 31873	2.7pF +-0.5 100V
2109	4822 124 41576	2.2µF 20% 50V
2110	4822 124 40242	1µF 20% 63V
2111	4822 126 13296	100nF 10% 16V
2112	4822 122 33891	3.3nF 10% 63V
2116	4822 124 41584	100µF 20% 10V
2117	4822 126 13482	470nF 80/20% 16V
2118	5322 122 33244	8.2pF 5% 50V
2119	5322 122 31863	330pF 5% 50V
2120	4822 126 13061	220nF 20% 25V
2121	4822 124 41584	100µF 20% 10V
2125Δ	4822 122 33177	10nF 20% 50V
2202	5322 122 31863	330pF 5% 50V
2203	5322 122 31863	330pF 5% 50V
2204	4822 126 14305	100nF 10% 16V
2205Δ	4822 124 41579	10µF 20% 50V
2206	5322 122 32531	100pF 5% 50V
2209	5322 122 31863	330pF 5% 50V
2210	5322 122 32531	100pF 5% 50V
2212Δ	4822 124 41579	10µF 20% 50V
2213	4822 126 14305	100nF 10% 16V
2215	5322 122 31863	330pF 5% 50V
2216	5322 122 31863	330pF 5% 50V
2217	5322 122 32531	100pF 5% 50V
2219	5322 122 31863	330pF 5% 50V
2220	5322 122 32531	100pF 5% 50V
2221	4822 126 13061	220nF 20% 25V
2222	4822 124 81286	47µF 20% 16V
2228	5322 122 31863	330pF 5% 50V
2229	5322 122 31863	330pF 5% 50V
2300Δ	4822 124 40196	220µF 20% 16V
2301Δ	4822 126 10002	100nF 20% 25V
2302Δ	4822 126 10002	100nF 20% 25V
2303	4822 124 41576	2.2µF 20% 50V
2304	4822 126 14305	100nF 10% 16V
2307	4822 122 33741	10pF 10% 50V
2308	4822 122 33741	10pF 10% 50V
2311Δ	4822 124 40196	220µF 20% 16V
2312	4822 126 14305	100nF 10% 16V
2313	4822 126 13694	68pF 1% 63V
2315	4822 122 33808	10nF 20% 50V
2321	4822 126 14509	470pF 10% 50V
2322	4822 126 14509	470pF 10% 50V
2323	5322 121 42386	100nF 5% 63V
2331	5322 126 11583	10nF 10% 50V
2340	4822 126 14509	470pF 10% 50V
2343	5322 122 32448	10pF 5% 50V
2344	4822 126 14305	100nF 10% 16V
2351	4822 126 13849	220nF 10% 16V
2403	4822 126 14305	100nF 10% 16V
2404	4822 126 14305	100nF 10% 16V
2405	4822 126 14305	100nF 10% 16V
2406	4822 126 14305	100nF 10% 16V
2407	4822 126 14305	100nF 10% 16V
2408	4822 126 14305	100nF 10% 16V
2422	4822 124 41576	2.2µF 20% 50V
2423	4822 124 41631	1.5µF 50V
2425	4822 122 33761	22pF 5% 50V
2428	4822 126 13956	68pF 5% 63V CASE
2429	4822 126 13956	68pF 5% 63V CASE
2430	5322 122 32269	6.8pF 5% 50V
2501	4822 126 14305	100nF 10% 16V
2502	4822 126 14305	100nF 10% 16V
2503	4822 126 14305	100nF 10% 16V
2504	4822 126 14305	100nF 10% 16V
2505	4822 126 14305	100nF 10% 16V
2506	4822 126 14305	100nF 10% 16V
2507	4822 126 14305	100nF 10% 16V
2508	4822 126 14305	100nF 10% 16V
2509	4822 126 14305	100nF 10% 16V
2510	4822 126 14305	100nF 10% 16V
2511	4822 126 14305	100nF 10% 16V
2512	4822 126 14305	100nF 10% 16V
2520	4822 126 14305	100nF 10% 16V
2521	4822 126 14305	100nF 10% 16V
2522	5322 126 11579	3.3nF 10% 63V
2525	4822 126 14507	18pF 5% 50V
2528	4822 122 33752	15pF 5% 50V
2532	4822 126 13836	1µF 16V
2534Δ	5322 126 10223	4.7nF 10% 63V
2536	4822 126 13296	100nF 10% 16V
2537	4822 126 13296	100nF 10% 16V
2538Δ	4822 124 40433	47µF 20% 25V
2539	4822 126 14305	100nF 10% 16V
2540Δ	4822 124 40433	47µF 20% 25V
2541Δ	5322 122 32654	22nF 10% 63V
2545	4822 126 14305	100nF 10% 16V
2565	4822 122 33753	150pF 5% 50V
2566	4822 122 33785	68pF 5% 50V
2568	4822 126 11759	100pF 50V
2601	4822 126 14305	100nF 10% 16V
2602	4822 124 81151	22µF 50V
2603	4822 126 13296	100nF 10% 16V
2604	4822 124 41584	100µF 20% 10V
2605	4822 126 13296	100nF 10% 16V
2606	4822 124 22263	220µF 20% 25V
2607	4822 126 13296	100nF 10% 16V
2608	4822 124 81151	22µF 50V
2609	4822 126 13296	100nF 10% 16V
2610	4822 124 81151	22µF 50V
2611	4822 126 14305	100nF 10% 16V
2612Δ	4822 124 41579	10µF 20% 50V
2613	4822 126 13296	100nF 10% 16V
2615	4822 126 13692	47pF 1% 63V
2616	4822 126 13692	47pF 1% 63V
2617	4822 126 14218	3.9pF 50V
2618	4822 126 11669	27pF
2619	4822 126 13882	12pF 5% 50V
2620	4822 126 14218	3.9pF 50V
2621	4822 126 11669	27pF
2623	4822 126 13882	12pF 5% 50V
2624	4822 126 14218	3.9pF 50V
2625	4822 126 11669	27pF
2626	4822 126 13882	12pF 5% 50V
2627	4822 126 11759	100pF 50V
2628	4822 126 13296	100nF 10% 16V
2629	4822 126 14225	56pF 5% 50V
2630	4822 126 14494	22nF 10% 25V
2631	4822 126 11759	100pF 50V
2632	4822 126 14507	18pF 5% 50V
2633	4822 126 14494	22nF 10% 25V
2634	4822 122 33752	15pF 5% 50V
2635	4822 122 33777	47pF 5% 63V
2636	4822 126 14508	180pF 5% 50V
2637	4822 126 14507	18pF 5% 50V
2638	4822 126 14494	22nF 10% 25V
2639	4822 122 33752	15pF 5% 50V
2640	4822 122 33777	47pF 5% 63V
2641	4822 126 14508	180pF 5% 50V
2642	4822 126 14507	18pF 5% 50V
2643	4822 126 14494	22nF 10% 25V
2644	4822 122 33752	15pF 5% 50V
2645	4822 122 33777	47pF 5% 63V
2646	4822 126 14508	180pF 5% 50V
2647	4822 126 14507	18pF 5% 50V
2648	4822 126 14507	18pF 5% 50V
2649	5322 122 32531	100pF 5% 50V
2650	5322 122 32531	100pF 5% 50V
2651	4822 124 12095	100µF 20% 16V
2652	4822 126 13296	100nF 10% 16V
2655	4822 126 14305	100nF 10% 16V
2656	4822 126 14305	100nF 10% 16V
2657Δ	4822 124 41579	10µF 20% 50V
2658	4822 126 13296	100nF 10% 16V
2659	4822 126 13296	100nF 10% 16V
2660	4822 126 13296	100nF 10% 16V
2661	4822 126 13296	100nF 10% 16V
2662	4822 126 13296	100nF 10% 16V
2663	4822 126 13296	100nF 10% 16V
2664	4822 126 13296	100nF 10% 16V
2665	4822 126 13296	100nF 10% 16V
2666	4822 126 13296	100nF 10% 16V
2667	4822 126 13296	100nF 10% 16V
2670	4822 126 13296	100nF 10% 16V
2751	4822 122 33761	22pF 5% 50V
2752	4822 126 13692	47pF 1% 63V
2753	4822 122 32927	220nF 20% 50V
2754	5322 122 32268	470pF 10% 50V
2755	5322 122 32268	470pF 10% 50V
2756	5322 122 32268	470pF 10% 50V
2757	5322 122 32268	470pF 10% 50V
2758	5322 122 32268	470pF 10% 50V
2759	5322 122 32268	470pF 10% 50V
2760	5322 122 32268	470pF 10% 50V
2761	4822 122 32927	220nF 20% 50V
2762	4822 122 32927	220nF 20% 50V
2763	5322 122 32268	470pF 10% 50V
2764	5322 122 32268	470pF 10% 50V
2765	4822 124 12095	100µF 20% 16V
2766	4822 124 12095	100µF 20% 16V
2767	5322 122 32286	3.3pF 5% 50V
2768	5322 122 32286	3.3pF 5% 50V
2769	4822 126 13482	470nF 80/20% 16V
2770	5322 126 11583	10nF 10% 50V
2771Δ	4822 122 33177	10nF 20% 50V
2772	4822 122 33761	22pF 5% 50V
2773Δ	5322 122 34123	1nF 10% 50V
2774Δ	5322 122 34123	1nF 10% 50V
2775	4822 126 13482	470nF 80/20% 16V
2776	4822 122 33761	22pF 5% 50V
2777	5322 124 41979	10µF 10% 16V
2778	5322 124 41979	10µF 10% 16V
2779Δ	4822 126 10002	100nF 20% 25V
2780	5322 124 41979	10µF 10% 16V
2781Δ	4822 126 10002	100nF 20% 25V
2782	5322 124 41979	10µF 10% 16V
2783	4822 126 13482	470nF 80/20% 16V
2784	4822 126 13482	470nF 80/20% 16V
2785Δ	5322 122 34123	1nF 10% 50V
2786Δ	5322 122 34123	1nF 10% 50V
2790	5322 122 32658	22pF 5% 50V
2791	5322 122 32658	22pF 5% 50V
2792Δ	4822 122 33177	10nF 20% 50V
2793Δ	4822 122 33177	10nF 20% 50V
2797Δ	4822 122 33177	10nF 20% 50V
2798Δ	4822 122 33177	10nF 20% 50V
2799	5322 122 32658	22pF 5% 50V
2800	5322 122 32658	22pF 5% 50V
2801	4822 122 33761	22pF 5% 50V
2802	4822 122 32927	220nF 20% 50V
2803	4822 122 32927	220nF 20% 50V
2804	4822 122 32927	220nF 20% 50V
2805	4822 122 32927	220nF 20% 50V
2808	5322 124 41979	10µF 10% 16V
2809	5322 126 10511	1nF 5% 50V
2810	4822 122 33175	2.2nF 20% 50V
2811	5322 126 10511	1nF 5% 50V
2846	5322 124 41979	10µF 10% 16V
2847	5322 124 41979	10µF 10% 16V
2848	5322 124 41979	10µF 10% 16V
2849	5322 124 41979	10µF 10% 16V
2890	4822 126 13061	220nF 20% 25V
2891Δ	4822 126 10002	100nF 20% 25V

3003	4822 117 13521	470Ω 5% 0.63W
3004	4822 117 13521	470Ω 5% 0.63W
3005	4822 117 13521	470Ω 5% 0.63W
3006	4822 051 30103	10k 5% 0.062W
3007	4822 051 30103	10k 5% 0.062W
3009	4822 117 13521	470Ω 5% 0.63W
3010	4822 051 30103	10k 5% 0.062W
3011	4822 051 30472	4k7 5% 0.062W
3013	4822 051 30102	1k 5% 0.062W
3014	4822 051 30473	47k 5% 0.062W
3015	4822 051 30473	47k 5% 0.062W
3016	4822 051 30102	1k 5% 0.062W
3017	4822 051 30102	1k 5% 0.062W
3018	4822 051 30221	220Ω 5% 0.062W
3019	4822 051 30681	680Ω 5% 0.062W
3020	4822 051 30221	220Ω 5% 0.062W
3021	4822 051 30221	220Ω 5% 0.062W
3022	4822 051 10102	1k 2% 0.25W
3023	4822 117 13521	470Ω 5% 0.63W
3024	4822 051 30471	470Ω 5% 0.062W
3027	4822 117 13521	470Ω 5% 0.63W
3028	4822 117 13521	470Ω 5% 0.63W
3029	4822 051 30471	470Ω 5% 0.062W
3030	4822 117 13522	100Ω 5% 0.63W
3031	4822 051 20331	330Ω 5% 0.1W
3032	4822 051 30471	470Ω 5% 0.062W
3033	4822 117 13523	220Ω 5% 0.63W
3034	4822 051 30103	10k 5% 0.062W
3035	4822 051 30103	10k 5% 0.062W
3036	4822 117 13524	2.2k 5% 0.63W
3039	4822 051 30103	10k 5% 0.062W
3041	4822 117 10833	10k 1% 0.1W
3042	4822 051 20474	470k 5% 0.1W
3043	4822 051 30472	4k7 5% 0.062W
3047	4822 117 13525	24k 1% 0.62W
3048	4822 117 13526	150Ω 5% 0.63W
3059	4822 051 30681	680Ω 5% 0.062W
3066	4822 117 10833	10k 1% 0.1W
3067	4822 051 30472	4k7 5% 0.062W
3068	4822 051 30103	10k 5% 0.062W
3069	4822 051 30689	68Ω 5% 0.063W
3070	4822 051 30103	10k 5% 0.062W
3073Δ	4822 051 20472	4k7 5% 0.1W
3075	4822 051 30472	4k7 5% 0.062W
3076	4822 051 30472	4k7 5% 0.062W
3077	4822 051 30102	1k 5% 0.062W
3078	4822 051 30102	1k 5% 0.062W
3102	4822 117 10833	10k 1% 0.1W
3103Δ	4822 051 20101	100Ω 5% 0.1W
3104Δ	4822 051 20101	100Ω 5% 0.1W
3106	4822 051 20479	47Ω 5% 0.1W
3110	4822 117 11449	2k2 1% 0.1W
3111	4822 117 11449	2k2 1% 0.1W
3112Δ	4822 051 20472	4k7 5% 0.1W
3114Δ	4822 051 20472	4k7 5% 0.1W
3118	4822 051 20391	390Ω 5% 0.1W
3119	4822 051 20479	47Ω 5% 0.1W
3124	4822 051 30101	100Ω 5% 0.062W
3133	4822 117 12955	2k7 1% 0.1W
3135Δ	4822 051 20472	4k7 5% 0.1W
3136	4822 117 11503	220Ω 1% 0.1W
3137	4822 051 10102	1k 2% 0.25W
3138	4822 117 11504	270Ω 1% 0.1W
3139	4822 117 11139	1k5 1% 0.1W
3140Δ	4822 051 20153	15k 5% 0.1W
3141	4822 051 30333	33k 5% 0.062W
3142	4822 051 30102	1k 5% 0.062W
3143	4822 051 30102	1k 5% 0.062W
3145	4822 051 30101	100Ω 5% 0.062W
3146	4822 051 20223	22k 5% 0.1W
3200	4822 117 13579	220k 1% 0.1W
3201	4822 117 13579	220k 1% 0.1W
3202	4822 117 10353	150Ω 1% 0.1W
3203	4822 117 10353	150Ω 1% 0.1W
3204Δ	4822 052 10688	6Ω8 5% 0.33W
3205Δ	4822 051 20471	470Ω 5% 0.1W
3206	4822 051 20689	68Ω 5% 0.1W
3207	4822 051 20561	560Ω 5% 0.1W
3209	4822 051 20759	75Ω 5% 0.1W
3210	4822 051 20759	75Ω 5% 0.1W
3211	4822 051 20759	75Ω 5% 0.1W
3213	4822 051 20759	75Ω 5% 0.1W
3215	4822 051 20759	75Ω 5% 0.1W
3216	4822 051 20822	8k2 5% 0.1W
3218	4822 051 20392	3k9 5% 0.1W
3219	4822 051 10102	1k 2% 0.25W
3220	4822 051 10102	1k 2% 0.25W
3221	4822 117 13579	220k 1% 0.1W
3222	4822 117 13579	220k 1% 0.1W
3223	4822 117 10353	150Ω 1% 0.1W
3224	4822 117 10353	150Ω 1% 0.1W
3225Δ	4822 052 10688	6Ω8 5% 0.33W
3228	4822 051 30101	100Ω 5% 0.062W
3229	4822 051 30103	10k 5% 0.062W
3230	4822 051 20561	560Ω 5% 0.1W
3232	4822 051 20689	68Ω 5% 0.1W
3235	4822 051 20759	75Ω 5% 0.1W
3236	4822 051 20759	75Ω 5% 0.1W
3240	4822 051 20759	75Ω 5% 0.1W
3241	4822 117 10353	150Ω 1% 0.1W
3242	4822 051 20822	8k2 5% 0.1W
3243	4822 117 10353	150Ω 1% 0.1W
3244	4822 051 10102	1k 2% 0.25W
3245	4822 051 20392	3k9 5% 0.1W
3246	4822 051 10102	1k 2% 0.25W
3248	4822 051 20331	330Ω 5% 0.1W
3249	4822 117 12955	2k7 1% 0.1W
3250Δ	4822 051 20101	100Ω 5% 0.1W
3252	4822 051 20339	33Ω 5% 0.1W
3253	4822 051 20391	390Ω 5% 0.1W
3257	4822 117 10353	150Ω 1% 0.1W
3258	4822 117 10353	150Ω 1% 0.1W
3259	4822 051 30273	27k 5% 0.062W
3262	4822 051 30473	47k 5% 0.062W
3263	4822 051 30221	220Ω 5% 0.062W
3266	4822 117 10833	10k 1% 0.1W
3300Δ	4822 052 10688	6Ω8 5% 0.33W
3302	4822 051 30101	100Ω 5% 0.062W
3303	4822 051 30101	100Ω 5% 0.062W
3304	4822 051 30101	100Ω 5% 0.062W
3307	4822 051 30102	1k 5% 0.062W
3308	4822 051 30102	1k 5% 0.062W
3309	4822 051 30104	100k 5% 0.062W
3310Δ	4822 051 20332	3k3 5% 0.1W
3311	4822 051 30102	1k 5% 0.062W
3315	4822 051 20182	1k8 5% 0.1W
3316	4822 051 10102	1k 2% 0.25W
3317	4822 051 30102	1k 5% 0.062W
3318	4822 051 30102	1k 5% 0.062W
3320	4822 051 30102	1k 5% 0.062W
3321	4822 051 30102	1k 5% 0.062W
3322	4822 051 30102	1k 5% 0.062W
3323	4822 051 20393	39k 5% 0.1W
3325	4822 051 30102	1k 5% 0.062W
3326	4822 051 30221	220Ω 5% 0.062W
3330	4822 051 30684	680k 5% 0.062W
3331	4822 051 30473	47k 5% 0.062W
3332	4822 051 30183	18k 5% 0.062W
3340	4822 051 30123	12k 5% 0.062W
3341	4822 051 10102	1k 2% 0.25W
3342	4822 051 30103	10k 5% 0.062W
3343	4822 051 20104	100k 5% 0.1W
3344	4822 051 30103	10k 5% 0.062W
3350	4822 051 30474	470k 5% 0.062W
3351	4822 051 30224	220k 5% 0.062W
3352	4822 051 30332	3k3 5% 0.062W
3353	4822 051 30182	1k8 5% 0.062W
3369	4822 051 30103	10k 5% 0.062W
3370	4822 051 30103	10k 5% 0.062W
3400	4822 117 11454	820Ω 1% 0.1W
3401	4822 117 11454	820Ω 1% 0.1W
3402	4822 117 11454	820Ω 1% 0.1W
3404	4822 051 20479	47Ω 5% 0.1W
3405	4822 051 20479	47Ω 5% 0.1W
3406	4822 051 20479	47Ω 5% 0.1W
3407	4822 051 20681	680Ω 5% 0.1W
3408	4822 051 20681	680Ω 5% 0.1W

12 Spare parts list

3409	4822 051 20681	680Ω 5% 0.1W
3420	4822 051 30473	47k 5% 0.062W
3422	4822 117 11449	2k2 1% 0.1W
3423Δ	4822 051 20108	1Ω 5% 0.1W
3425	4822 051 30474	470k 5% 0.062W
3426	4822 051 30333	33k 5% 0.062W
3427	4822 051 30224	220k 5% 0.062W
3428	4822 051 30222	2k2 5% 0.062W
3429	4822 117 12968	820Ω 5% 0.62W
3430	4822 051 30181	180Ω 5% 0.062W
3439	4822 117 10833	10k 1% 0.1W
3440	4822 051 20333	33k 5% 0.1W
3441	4822 051 20223	22k 5% 0.1W
3521	4822 051 30104	100k 5% 0.062W
3529	4822 117 13522	100Ω 5% 0.63W
3530	4822 051 30101	100Ω 5% 0.062W
3531	4822 051 30101	100Ω 5% 0.062W
3532Δ	4822 051 20153	15k 5% 0.1W
3538Δ	4822 052 10478	4Ω7 5% 0.33W
3545	4822 051 30471	470Ω 5% 0.062W
3546	4822 051 30471	470Ω 5% 0.062W
3565	4822 051 30101	100Ω 5% 0.062W
3566	4822 051 30101	100Ω 5% 0.062W
3567Δ	4822 051 20101	100Ω 5% 0.1W
3568Δ	4822 051 20471	470Ω 5% 0.1W
3569	4822 051 30479	47Ω 5% 0.062W
3570	4822 117 13522	100Ω 5% 0.63W
3573Δ	4822 051 20109	10Ω 5% 0.1W
3574Δ	4822 051 20008	0Ω jumper 0805
3602	4822 117 12139	22Ω 5% 0.062W
3603	4822 051 30101	100Ω 5% 0.062W
3605	4822 051 30101	100Ω 5% 0.062W
3606	4822 051 30109	10Ω 5% 0.062W
3607	4822 051 30392	3k9 5% 0.063W
3608	4822 051 30272	2k7 5% 0.062W
3609	4822 117 13527	1Ω 5% 0.62W
3610	4822 051 30391	390Ω 5% 0.062W
3611	4822 051 30102	1k 5% 0.062W
3612	4822 051 30391	390Ω 5% 0.062W
3613	4822 051 30391	390Ω 5% 0.062W
3614	4822 051 30479	47Ω 5% 0.062W
3615	4822 051 30471	470Ω 5% 0.062W
3616	4822 051 30472	4k7 5% 0.062W
3617	4822 051 30472	4k7 5% 0.062W
3618	4822 051 30221	220Ω 5% 0.062W
3619	4822 051 30472	4k7 5% 0.062W
3620	4822 051 30472	4k7 5% 0.062W
3621	4822 051 30101	100Ω 5% 0.062W
3623	4822 051 30101	100Ω 5% 0.062W
3625	4822 051 30105	1M 5% 0.062W
3626	4822 051 30101	100Ω 5% 0.062W
3628	4822 051 30101	100Ω 5% 0.062W
3629	4822 051 30332	3k3 5% 0.062W
3630Δ	4822 051 20101	100Ω 5% 0.1W
3631Δ	4822 051 20101	100Ω 5% 0.1W
3632	4822 051 10102	1k 2% 0.25W
3633	4822 051 30101	100Ω 5% 0.062W
3634	4822 051 30332	3k3 5% 0.062W
3635	4822 051 20681	680Ω 5% 0.1W
3636	4822 051 20681	680Ω 5% 0.1W
3637	4822 051 20681	680Ω 5% 0.1W
3639	4822 051 30101	100Ω 5% 0.062W
3640	4822 117 13527	1Ω 5% 0.62W
3641	4822 051 30102	1k 5% 0.062W
3644	4822 051 30102	1k 5% 0.062W
3645	4822 051 30102	1k 5% 0.062W
3646Δ	4822 051 20472	4k7 5% 0.1W
3647	4822 051 30689	68Ω 5% 0.063W
3648	4822 051 30689	68Ω 5% 0.063W
3649	4822 051 30689	68Ω 5% 0.063W
3650	4822 051 30121	120Ω 5% 0.062W
3651	4822 051 30121	120Ω 5% 0.062W
3652	4822 051 30121	120Ω 5% 0.062W
3653	4822 051 30689	68Ω 5% 0.063W
3654	4822 051 30689	68Ω 5% 0.063W
3655	4822 051 30101	100Ω 5% 0.062W
3657	4822 051 30101	100Ω 5% 0.062W
3659	4822 051 30101	100Ω 5% 0.062W
3751	4822 051 30223	22k 5% 0.062W
3752	4822 051 30223	22k 5% 0.062W
3753	4822 051 30682	6k8 5% 0.062W
3754	4822 051 30682	6k8 5% 0.062W
3755	4822 051 30101	100Ω 5% 0.062W
3756	4822 051 30101	100Ω 5% 0.062W
3758	4822 051 30683	68k 5% 0.062W
3760	4822 051 30683	68k 5% 0.062W
3761	4822 051 30682	6k8 5% 0.062W
3765	4822 051 20683	68k 5% 0.1W
3766	4822 117 10833	10k 1% 0.1W
3767	4822 051 20683	68k 5% 0.1W
3768	4822 117 10833	10k 1% 0.1W
3769Δ	4822 051 20332	3k3 5% 0.1W
3770Δ	4822 051 20332	3k3 5% 0.1W
3771	4822 117 11507	6k8 1% 0.1W
3772	4822 117 11507	6k8 1% 0.1W
3773Δ	4822 051 20472	4k7 5% 0.1W
3776	4822 051 20562	5k6 5% 0.1W
3777	4822 117 10833	10k 1% 0.1W
3778	4822 051 20562	5k6 5% 0.1W
3779	4822 117 10833	10k 1% 0.1W
3780	4822 051 30682	6k8 5% 0.062W
3781	4822 051 30561	560Ω 5% 0.062W
3783Δ	4822 051 20101	100Ω 5% 0.1W
3784	4822 051 30682	6k8 5% 0.062W
3785	4822 051 30682	6k8 5% 0.062W
3786	4822 051 30223	22k 5% 0.062W
3787	4822 051 30223	22k 5% 0.062W
3788	4822 051 30682	6k8 5% 0.062W
3789	4822 051 30682	6k8 5% 0.062W
3790	4822 051 30223	22k 5% 0.062W
3791	4822 051 30223	22k 5% 0.062W
3796Δ	4822 051 20121	120Ω 5% 0.1W
3797Δ	4822 051 20121	120Ω 5% 0.1W
3798	4822 051 20223	22k 5% 0.1W
3799	4822 051 30223	22k 5% 0.062W
3830Δ	4822 051 20121	120Ω 5% 0.1W
3831Δ	4822 051 20121	120Ω 5% 0.1W
3832	4822 051 10102	1k 2% 0.25W
3833	4822 051 30103	10k 5% 0.062W
3840	4822 051 30103	10k 5% 0.062W
3844	4822 051 30473	47k 5% 0.062W
3845	4822 051 30473	47k 5% 0.062W
3846	4822 051 30473	47k 5% 0.062W
3847	4822 051 30473	47k 5% 0.062W
3890Δ	4822 051 20008	0Ω jumper 0805
3892Δ	4822 051 20008	0Ω jumper 0805
3895	4822 051 30103	10k 5% 0.062W
3897	4822 051 30472	4k7 5% 0.062W
3898	4822 051 30101	100Ω 5% 0.062W
4xxx	4822 051 10008	0Ω 5% 0.25W 1206
4xxx	4822 051 20008	0Ω 5% 0.25W 0805

5001	4822 157 71304	1µH
5002	4822 157 11775	6.8µH 5%
5101	4822 157 11775	6.8µH 5%
5102	4822 157 71303	0,39µH 10%
5103	4822 157 11776	Coil var. 40,4MHz
5106	4822 157 10977	4.7µH 10%
5108	4822 157 11534	Coil var. 78MHz
5301	4822 157 11777	6.8µH 10%
5302	4822 157 11777	6.8µH 10%
5305	4822 157 11778	5.6µH 10%
5306	4822 157 11778	5.6µH 10%
5307	4822 157 11778	5.6µH 10%
5501	4822 157 11775	6.8µH 5%
5502	4822 157 11775	6.8µH 5%
5540	4822 157 71304	1µH 10%
5601	4822 157 11775	6.8µH 5%
5602	4822 157 11779	Bead 100MHz 30Ω
5603	4822 157 11775	6.8µH 5%
5604	4822 157 11775	6.8µH 5%
5605	4822 157 11779	Bead 100MHz 30Ω
5606	4822 157 11775	6.8µH 5%
5608	4822 157 11778	5.6µH 10%
5609	4822 157 11778	5.6µH 10%
5610	4822 157 11778	5.6µH 10%
5611	4822 157 11781	Bead 100MHz 600Ω
5613	4822 157 11781	Bead 100MHz 600Ω
5615	4822 157 11778	5.6µH 10%
5616	4822 157 11778	5.6µH 10%
5617	4822 157 11778	5.6µH 10%
5620	4822 157 11775	6.8µH 5%
5621	4822 157 11782	100µH 10%
5751	4822 157 11775	6.8µH 5%
5752	4822 157 11775	6.8µH 5%
5753	4822 157 11775	6.8µH 5%

6001	4822 130 11422	PLVA2650A
6002	4822 130 11422	PLVA2650A
6003	4822 130 11422	PLVA2650A
6004	4822 130 11422	PLVA2650A
6006	4822 130 11422	PLVA2650A
6008	4822 130 11422	PLVA2650A
6009	4822 130 11422	PLVA2650A
6012	4822 130 11422	PLVA2650A
6013	4822 130 11422	PLVA2650A
6017	4822 130 11422	PLVA2650A
6019	4822 130 11422	PLVA2650A
6021	4822 130 11422	PLVA2650A
6023	4822 130 11422	PLVA2650A
6025	4822 130 11423	PLVA2656A
6026	4822 130 11423	PLVA2656A
6037	4822 130 11366	BZX284-C3V9
6101	4822 130 11027	BZX284-C33
6103	4822 130 10414	BA792
6104	4822 130 10414	BA792
6106	4822 130 11397	BAS316
6107	4822 130 11397	BAS316
6200	4822 130 11413	PDZ10B
6201	4822 130 11413	PDZ10B
6202	4822 130 11413	PDZ10B
6203	4822 130 11413	PDZ10B
6204	4822 130 11416	PDZ6.8B
6205	4822 130 11413	PDZ10B
6206	4822 130 11413	PDZ10B
6207	4822 130 11416	PDZ6.8B
6208	4822 130 11413	PDZ10B
6209	4822 130 11413	PDZ10B
6210	4822 130 11416	PDZ6.8B
6211	4822 130 11416	PDZ6.8B
6212	4822 130 11416	PDZ6.8B
6213	4822 130 11416	PDZ6.8B
6214	4822 130 11413	PDZ10B
6215	4822 130 11413	PDZ10B
6216	4822 130 11413	PDZ10B
6217	4822 130 11413	PDZ10B
6218	4822 130 11416	PDZ6.8B
6219	4822 130 11416	PDZ6.8B
6220	4822 130 11413	PDZ10B
6221	4822 130 11413	PDZ10B
6222	4822 130 11416	PDZ6.8B
6223	4822 130 11413	PDZ10B
6224	4822 130 11413	PDZ10B
6225	4822 130 11416	PDZ6.8B
6226	4822 130 11416	PDZ6.8B
6227	4822 130 11416	PDZ6.8B
6228	4822 130 11416	PDZ6.8B
6234	4822 130 11413	PDZ10B
6235	4822 130 11413	PDZ10B
6236	4822 130 11413	PDZ10B
6237	4822 130 11413	PDZ10B
6238	4822 130 10654	BAT254
6250	4822 130 10654	BAT254
6340	4822 130 11397	BAS316
6341	4822 130 11424	BZX284-C39
6344	4822 130 11397	BAS316
6350	4822 130 11414	BZX284-C27
6420	4822 130 11416	PDZ6.8B
6422	4822 130 11397	BAS316
6424	4822 130 11397	BAS316
6429	4822 130 10648	BZX284-C5V6
6430	4822 130 11397	BAS316
6431	4822 130 11397	BAS316
6751	4822 130 11413	PDZ10B
6752	4822 130 11413	PDZ10B
6753	4822 130 11413	PDZ10B
6754	4822 130 11413	PDZ10B
6755	4822 130 11413	PDZ10B
6756	4822 130 11413	PDZ10B
6757	4822 130 11397	BAS316

7001	4822 209 16974	MSM54V16258B-45JS
7002	4822 900 11275	MG21E11.0_01561
7003	4822 209 16976	SAA5800H/11
7004	4822 130 60511	BC847B
7005	5322 130 60508	BC857B
7006	5322 130 60508	BC857B
7007	4822 130 60511	BC847B
7008	4822 209 16977	M24C32-WBN6
7009	4822 209 16978	LF33CV
7010Δ	4822 209 73852	PMBT2369
7011	4822 130 11155	PDTC114ET
7012	5322 130 60508	BC857B
7016	4822 130 60511	BC847B
7017Δ	4822 209 73852	PMBT2369
7018Δ	4822 209 73852	PMBT2369
7103	4822 130 60511	BC847B
7104	4822 130 60511	BC847B
7107	5322 130 60508	BC857B
7111	4822 130 60511	BC847B
7200	4822 130 40959	BC547B
7201	4822 130 40959	BC547B
7203	4822 130 44568	BC557B
7204	4822 130 60511	BC847B
7205	4822 130 60511	BC847B
7216	4822 130 60511	BC847B
7300	4822 209 16979	TDA9330H/N1
7341	5322 130 60508	BC857B
7351	5322 130 60508	BC857B
7418	5322 130 60508	BC857B
7419	5322 130 60508	BC857B
7420	5322 130 60508	BC857B
7424	5322 130 60508	BC857B
7438	4822 130 10255	MMUN2213
7501	4822 209 16981	TDA9320H/N1
7502	4822 130 60511	BC847B
7561	4822 130 60511	BC847B
7601	5322 130 60508	BC857B
7602	4822 130 60511	BC847B
7603	5322 130 60508	BC857B
7604Δ	4822 209 73852	PMBT2369
7605Δ	4822 209 73852	PMBT2369
7608	4822 209 90034	SAA4990H/V0
7609	4822 209 16983	SAA4978H/V1
7610	5322 130 60508	BC857B
7611	5322 130 60508	BC857B
7612	5322 130 60508	BC857B
7613	4822 209 15882	MC33269D
7616	4822 900 11276	FBX software V_01450
7751	4822 209 16803	MSP3410D-PS-B4
7752	5322 209 11102	HEF4052BT
7756	4822 209 30095	LM833D
7757	4822 209 31378	NJM4556MB
7758	4822 209 30095	LM833D
7774	4822 130 60511	BC847B

Side I/O panel [O]

Various

0326	4822 267 10975	Socket 3xCINCH
0327	4822 267 31014	Socket headph. 3,5mm
0328	4822 265 11337	Socket SVHS
0333	4822 267 10962	11P male v
0344	4822 267 10963	3P male v
1047	3104 328 00420	Side I/O panel

2804	5322 122 32531	100pF 5% 50V
2805	5322 122 32531	100pF 5% 50V
2807	4822 126 13061	220nF 20% 25V
2810	4822 126 12105	33nF 5% 63V
2811	4822 124 81029	100µF 20% 25V
2813	4822 124 41576	2,2µF 20% 50V
2832Δ	4822 122 33177	10nF 20% 50V
2834Δ	4822 122 33177	10nF 20% 50V

3801	4822 116 52201	75Ω 5% 0,5W
3802	4822 116 52201	75Ω 5% 0,5W
3803	4822 050 11002	1k 1% 0,4W
3804	4822 050 11002	1k 1% 0,4W
3805	4822 116 52271	33k 5% 0,5W
3806	4822 116 52271	33k 5% 0,5W
3808Δ	4822 051 20008	0Ω jumper . (0805)
3809Δ	4822 051 20008	0Ω jumper . (0805)
3810	4822 051 20684	680k 5% 0,1W
3811	4822 051 20393	39k 5% 0,1W
3812	4822 051 20154	150k 5% 0,1W
3813	4822 051 20392	3k9 5% 0,1W
3814	4822 117 11449	2k2 1% 0,1W
3816Δ	4822 051 20008	0Ω jumper . (0805)
3826	4822 116 52206	120Ω 5% 0,5W
3827	4822 116 52206	120Ω 5% 0,5W
3828	4822 116 52206	120Ω 5% 0,5W
3829	4822 116 52206	120Ω 5% 0,5W
3830	4822 116 83864	10k 5% 0,5W
3842	4822 116 83864	10k 5% 0,5W
3845	4822 116 52283	4k7 5% 0,5W
3846	4822 116 83864	10k 5% 0,5W
3847	4822 117 10833	10k 1% 0,1W
3848	4822 051 20562	5k6 5% 0,1W 0805
3849Δ	4822 051 20332	3k3 5% 0,1W
3999	4822 117 10353	150Ω 1% 0,1W

5800	4822 157 11228	100µH 5%

6801	4822 130 10852	BZX284-C6V8
6802	4822 130 10852	BZX284-C6V8
6803	4822 130 10794	BZX284-C10
6804	4822 130 10794	BZX284-C10
6805	4822 130 10794	BZX284-C10
6806	4822 130 10794	BZX284-C10
6807	4822 130 10852	BZX284-C6V8
6808	4822 130 10852	BZX284-C6V8

7811	5322 130 60508	BC857B
7812	5322 130 60508	BC857B
7813	4822 130 60511	BC847B

Top control panel [P]

Various

0345	4822 267 10748	3P male h
1049	3104 328 00160	Top control panel
1701	4822 276 13775	Tact switch
1702	4822 276 13775	Tact switch
1703	4822 276 13775	Tact switch
1704	4822 276 13775	Tact switch
1705	4822 276 13775	Tact switch

3701	4822 051 20391	390Ω 5% 0,1W
3702	4822 117 13528	200Ω 1% 0,125W
3703	4822 117 10845	620Ω 1% 0.1W
3704	4822 117 11534	1k1 1% 0,1W
3705	4822 117 11951	2k 1% 0,1W