

# Funkcijske

No function, after being switched on Fault 1: The last position has been stored after switch off. Faults that can occur: The appliance has been switched off with the remote control and afterwards the mains plug has been pulled out of the socket. Now the TV can only be switched on with the remote control (or it goes to standby). the appliance goes to stand-by.

No function, the power supply gurgles and whistles.

Fault 1 The audio module has a short, therefore the power supply is intermittent.

No function.

Fault 1: Capacitor 2609 (8200pF/1500V) is defective.

Fault 2: Power supply goes to protection mode. Check if power supply or loading is defective. Replace loading with a 220V (100W) lamp. If power supply ok then change C2609.

Fault 3: Check if service no. starts with AG01. Appliance is set to protective mode. Check fuse T1638.

Fault 4: Check if 300V present. If no 140V then check R3681 (6K8).

Fault 5: + 140V is not present. Replace TS7687 (BUT12A; 4822 130 43919).

Also replace TS7674 (BC337; 4822 130 40855), TS7685 (BC547; 4822 130 44257), TS7686 (BC369; 5322 130 44593). Standby LED and Crispening LED both flash.

Fault 6: Capacitor 2612 (360nF/250V) S/C. Fault 7: Line BU is defective.

Fault 8: Check circuits 7200 and 7210 (TDA1514) if R3200 and R3201 on audio module are warm.

Note: With the old 3A chassis line time base does not start if sound module has been removed. With some models video switches off if sound module has been removed.

Fault 9 : Replace IC (TDA1514) on audio module.

Occasionally does not start up. Fault 1 Replace diodes 6616, 6677 and 6672.

When the appliance is set to stand-by after playing for about 3 hours, it switches on and off continuously and the red and green LED's also.

Fault 1 Check T7731, T7743 and T7742.

The appliance automatically switches to EXT2.

Fault 1: C2835 (4.7nF) is defective. The capacitor is positioned on the front operation board in the TV.

The appliance is in safety mode.

Fault 1: C2610 (180nf) has a short circuit, amplifier TDA1514.

At start up the appliance goes into safety mode.

Fault 1: D2609 has a short circuit (8.2nf) and D6609 is leaky.

No sound. No picture. Blocked commands. May be intermittent.

Fault 1: Check the power supply of the IC and F1642.

The TV works intermittently.

Fault 1: Resolder connector P05 on the display board/control board (module 1008).

Poor locking in audio search.

Fault 1: Remove module 1012. Change IC7038.

Spontaneous operation (after a few weeks) in the wrong option mode (white picture, no teletext, no VHS).

Fault 1: Replace zener diodes 6933 and 6934 on the SSP module.

Appliance sometimes does not start, often only starts the second time around. Everything is fine from stand-by.

Fault 1: Check resistors R3658 and 3659.

After operating normally for a short time the TV goes from "Reception" to "Search".

Fault 1: Check the IF module.

Starts up after minimum 30 secs of the CRT lighting up.

Fault 1: Check C2638 (10mf) that filters the 200V coming from the FBT. If ok, tube is defective. Short circuit coil 5465 or 5466.

The appliance does not start up. On the variac increases to 100V and as soon as the EHT starts up it fails. No apparent s/c.

Fault 1: If the power supply is in safety mode replace the load by a 100W lamp and check 1609/8200pf and 1612/360uf. If there is no 140V, check R3681 (6.8k), if ok with 100w lamp, no s/c, check C2618, C2609, C2610, D6609 and D6610. If by removing the load, the appliance still does not function, the line transformer is defective.

Shows a sort of stabilization of AFC a number of times a day. Some channels worse than others.

Fault 1: [Replaced tuner]. Channels with offset may readjust occasionally. Replace  $\mu$ P IC7831 by a new type with order no: 4822 209 11609 then reprogram appliance.

Does not function well.

Fault 1: Without 100 Hz and UV 816: Replace IC 7830 (MAB 8461P/W131; 4822 209 11608) and IC 7831 (MAB 8461P/W147; 4822 209 73359)

Fault 2: With 100 Hz and UV 816 replace IC 7830 (MAB 8461P/W164; 4822 209 73585) and IC 7831 (PCF84C81.1/030; 4822 209 73586)

Important: do not mistake one  $\mu$ P for the other.

Set blocks.

+5 V on Pin 28 IC 7830, 7831 present

Replace IC 7830 (MAB 8461P/W131; 4822 209 11611)

IC 7831 (MAB 8461P/W147; 4822 209 73359).

Set starts up but with no sound or picture.

All voltages from power supply and line o/p stage OK. Check reset line to  $\mu$ Pc panel. This voltage should be approx 1.5 volts. If the voltage is low, check the POR area but also check the reset transistor - T7841, BC548 on the micro panel.

Teletext faults. Characters are wrong.

Fault 1: Replace U 1007 (TXT-Decoder)

CCT Europe: 4822 212 22512

CCT Scandinavia: 4822 212 22565

CCT FLOF: 4822 212 22791

CCT PIP FLOF: 4822 212 23105

CCT PIP FLOF 33": 4822 212 23112

Fault 2: Replace U 1018 (IF module Europe:4822 212 22439)

(IF module France:4822 210 10295).

No start up from stand by, particularly when cold. Restarts when LF module unplugged (sound ok). TDA8420 OK.

Fault 1: Unsolder +27V and -27V. If ok, check 7200 and 7210. If not ok, check 12V on 7180, on pin 4 12V, on pin 2 12V, on pin 27 6.5V or unsolder pin 14 for clock and pin 13 for data.

Cannot switch to SECAM, all channels stay in PAL.

Fault 1: Check for 4V on pin 22 of IC7250 (TDA4555) in Secam. If ok, change TDA4555, if not check C2283, C2284, L5284.

Control does not function well.

A. for sets with 50 Hz and UV 816

Replace IC 7830 (MAB 8461P/W131; 4822 209 11608)

IC 7831 (MAB 8461P/W147; 4822 209 73359)

B. for sets with 100 Hz and UV 816

Replace IC 7830 (MAB 8461P/W164; 4822 209 73585)

IC 7831 (PCF84C81.1/030; 4822 209 73586).

Control does not function (+5 V on pin 28 IC 7830, 7831 present).

Replace IC 7830 (MAB 8461P/W131; 4822 209 11611) IC 7831 (MAB 8461P/W147; 4822 209 73359).

Set cannot be switched from Stand-by.  
Voltage 7,5 volt from SOPS is too high.  
C2681 (22 uF/35 volt 4822 124 21932 on the primary side).

No start up when first switched on (directly out of the box).  
Fault 1: Add resistors to the CRT-panels; 3501-3502-3503/3601-3602-3603/3701-3702-3703: fitted since code.-8848  
Fault 2:- Change 2477 to 2.2µF/63V (4822 124 40244)  
- Change 5699 to 39UH (4822 157 52287): fitted since code.-8904

Hum in standby with HiFi models.  
Fault 1: Change R3741 on the mono-carrier from 680R to 820R.  
- Cut print track on 3-L06. Connect 3-L06 with the positive leg of C2201.  
-Remove C2211 and C2212 (1n5). These may have been added to the track side between pin 5 and 8 of IC7200 or IC7210.  
-Connect wire bridge 9180 with the earth tag midway underneath IC7180.

Poor subtitles on channel 2.  
Fault 1: With some cable networks it is possible that the subtitles are poor on channel 2. Change C2532 (150pF) to 270pF, and R3539 (6K8) to 12K.

Memory loss Earom X2404.  
Fault 1: Because of interference on the IIC bus, the stored memory may be lost. Fit a zener diode (BZX79C5V6 4822 130 34173) between pin 5 IC7900 and earth and between pin 6 IC7900 and earth (anode to earth).

Backup IC fails at switch off.  
Fault 1: Connect a 5V6 zener diode from pin 5 (clock) and pin 6 (data) of backup IC to the earth. Ensure anodes of these zeners are earthed. Disconnect cable wiring tree (?) running along the picture tube and push left as far as possible. If necessary, reset option code.

Intermittently skips to preselection 1.  
Fault 1: Replace fuse 1642 (T800mA) in 7V line power supply.  
Desc. Part no.  
Fuse 1642 4822 253 10057.

Blocked on EXT4 and cannot go into standby or adjustment mode with RC. If pressing EXT key picture reappears then disappears immediately.  
Fault 1: Check for 5V on pin 4 of 7830. If missing, replace C2833 and check EXT1 SK1 switching on pin 24 via 3960.

Programs are lost every 24 hours, option 12 must be readjusted every day.  
Fault 1: Check for 5V on pin 8 of IC7900 (4822 209 71848). Mount two protection diodes (BZX79C5V6) between pins 5 and 6 of IC7900 and ground; anode to ground.

Picture slow to appear. 2 mins to start up.  
Fault 1: On tube board fit a 1N4148 in series with D6492. On raster circuit change C2555. Increase G2 by 50V.

LED flashes. No sound or picture. 140V and 27V ok.  
Fault 1: Check 7618, 2618, 2609, 2610. If ok, suspect FBT.

No function. Standby LED and crispening LED flash.  
Fault 1: Replace C2618 (1.5nF; 4822 126 12274).

No OSD in scart. Goes into standby then into service mode. Changes channels with RC in CTV tuner and PAL.  
Fault 1: Check state of EEPROM 7103 (X2404P) and check MAB8461.

# Slika

The picture jumps intermittently after pre-selection.

Fault 1 Fuse 1642 in the 7V line power supply (1642 T800mA) must be replaced.

No picture, no text but the sound is present.

Fault 1: The high voltage is ok. Check the picture tube adjustment and the raster circuit. Use the oscilloscope on pin 11 of IC7531 (TDA 2579). The signal must be constant else IC7531 is defective (4822 209 83118 TDA2579).

Note: Replace IC7531

(4822 209 83118 TDA2579)

All the VHF channels show interference in the picture.

Fault 1: Press lightly on the compartment lid to see if the picture improves. Solder the earthing spring on the lid.

Fault 2: The picture changes at full volume. Check if +140V are always present. Replace R3697/56K.

The picture distorts, rolls (can be corrected through the service mode) no teletext, or the picture oscillates when the video recorder scart is connected, as if the colour TV was not made to accommodate a video.

Fault 1 IC7900 (memory IC X2404M) is defective.

The picture disappears, a red line appears.

Fault 1: The power supply is +/-100V instead of 141V. T7742 and D6742 are defective.

The picture is distorted.

Fault 1: The following faults may occur: No colour - E/W incorrect. No TX- no Vhf channels.

Geometry fault. This could be due to a loss of memory. Make the following modification: Replace IC7900 and at pins 5 and 6 and to the ground fit two zener diodes from model BZX79/C5V6, anode to the ground.

No sound or vision. Eht is present and a raster can be seen for a second at switch-off.

Fault 1 Versions with NICAM and PIP can suffer from spurious failure of the Wickman fuse 1624. Change it from an 800mA type to one rated at 1.25AT, part number 4822 253 10075.

Blue, red or green glows with flyback lines.

Fault 1 Blue: R3403 (180k) is defective.

Red: R3443 (180k) is defective.

Green: R3423 (180k) is defective.

After some time the picture tears and appliance whistles.

Fault 1: The +140 voltage only has an amplitude of 135V. T7731 in the 5V stand-by circuit is defective.

When the appliance is hot, there is no video any longer, but only snow on the screen.

Fault 1: Check the frequency from the 256 tuner divider which does not reach the IC SAB 3035. Also check the T7022, 7023 transistor.

When warm, inverted picture. Correct sound.

Fault 1: Check D6533 and D6534 (1N41480 cuts out occasionally) and set outputs 2 and 3 of IC7532 to 0.

No sound or picture. Blocked commands. May be intermittent.

Fault 1: Check the power supply of the ICs and F1642.

Takes a long time to warm up ie picture appears after a long time.

Fault 1: Replace diode D6492 (1N4148) on tube base by a serial connection of 2 diodes. This solution will show a change of colour when old picture tubes are warming up.

Fault 2: Check +200V. If low, replace electrolytic 2638 (3.3 $\mu$ F). Part no: 4822 124 42182.

After the TV has been switched on snowy screen. Also after being tuned onto one channel picture is completely wrong (AGC).

Fault 1: Check the MF circuit, especially the AGC circuit. MF = 4822.212.22439 (original Philips).

Brief loss of picture and sound (especially of offset channels). HT OK.

Fault 1: [Repaired loose connections on print]. Replace uP IC7831 (MAB8461W147), part no.: 4822 209 73359.

Sometimes no sound, no picture.

Fault 1: Check soldering points of SOPS-transformer and line-transformer Voltage +13 V on Pin 27 U 1018 present, picture and sound OK via SCART. Replace U 1018 (IF module Europe:4822 212 22439) (IF module France:4822 210 10295).

No picture, no sound.

Note: Voltage +140V present.

Fault 1: Replace U1018 (IF module Europe:4822 212 22439) (IF module France:4822 210 10295)

Fault 2: Replace IC7900 (X2404M; 4822 209 71848)

Also mount 2 protection diodes BZX79C5V6 (4822 130 34173)

between pin 5 and 6 of IC7900 to earth. (anode to earth)

Fault 3: Replace TS7618 (2SD1577PH); 4822 130 43921)

Fault 4: Replace U1015 (UV616/256; 4822 210 40339).

No picture, sound OK.

Fault 1: Picture is ok via scart. Replace U1018 (IF module Europe:4822 212 22439) (IF module France:4822 210 10295)

Fault 2: +26V present on pin 9 IC7552; signal on pin 5 IC7552 not present.

Replace IC7552 (TDA3654Q; 4822 209 73308).

Fault 3: Signal on pin 15, 17, 18 IC 7355 OK; output signal pin 1, 3, 5 not present. Replace IC7355 (TDA4580; 4822 209 70018).

Lines flashing on picture and on text.

Lines confirming a video output fault. Extremely intermittent. Solder dry joints on CRT base PCB, replace CRT base socket and clean CRT pins.

No picture and sound especially when cold.

Fault 1: Checks on reset line revealed this voltage was not coming up to its correct level - approx 1.7V. 7V take over from line output transformer not taking place. Check and replace fuse holder for 800mA Wickman fuse 1642.

On most channels wavy picture vertically. Looks like the channel is not tuned in properly. Possible arcing of the high voltage.

Fault 1: Replace IF module.

Picture takes a long time to appear.

Fault 1: Check G2 shaft pot 3472 at 573V.

Fault 2: Check 200V smoothing C2638 (10 $\mu$ F) recovered on the line transformer. If ok, tube is defective. Short coil 5465 or 5466.

Wavy picture on all channels but on program 1 the disturbance disappears after about 3 minutes.

Fault 1: Replace the IF module.

Picture shakes according to content.

Fault 1: Check via scart. If the same, check video signal on 7531 pin 5, 11: 2.5Vpp, 12: 7Vpp and 17: 9.5Vpp.

Wavy picture on all channels but on program 1 the disturbance disappears after about 3 minutes.

Fault 1: Replace the IF module.

Picture shakes according to content.

Fault 1: Check via scart. If the same, check video signal on 7531 pin 5, 11: 2.5Vpp, 12: 7Vpp and 17: 9.5Vpp.

No picture, no sound, line transformer does not function,  
140V OK, 7V SOPS missing.

Fault 1: Check 2726, 3727, 3703 and 6703. Check signal on 3727.1.

No picture nor sound, power supply whistles.

Fault 1: In pin 2 of transformer 5620 resistors 2.7 Ohm broken (not mentioned in the Service Manual).

Black line at the bottom or no raster.

Fault 1: Replace electrolytic 2555 near the raster-IC.

Picture shifts in frequency, randomly returns then disappears again without any logic after 15 mins.  
33V zener stable.

Fault 1: Suspect VIF module pack 1018.

Dark picture varies with content, better when hot.

Fault 1: Distorted video signal in IF unit output. Capacitors C2150, C2151, 2152 and 2153 have dried up.

No picture. Sound ok. Goes into safety mode after a few secs.

Fault 1: [FBT replaced]. Check on 7618 B: 11Vpp, C:1200Vpp. Suspect 2618, 6610 and 6609.

No picture, no sound or picture jumps. Power quits with approx. ca. 60V (via regulator transformer).

Fault 1: D6610 (BYW95C) is defective. Replace R3601 3.9R.

Delay between colour and "Y" signal is visible when receiving some channels.

Fault 1: When receiving some channels the delay is visible. Add a 18K resistor on the MSD-panel between point 15 of IC7310 and ground.

Intermittent red flashes in the picture.

Fault 1: Check the output amplifier on the picture tube print (7418/7479).

Picture lights up once per day. Sound fails, picture is fine afterwards. After switching off the appliance the sound is good again.

Fault 1: Check the booster capacitor.

Fault 2: Check the line transformer for poor soldering.

Fault 3: Replace sound module.

Horizontal lines, especially on UHF. Looks like moire.

Fault 1: Clean the screening plates on the inside of the channel selector (earth contact).

Picture changes depending on the volume. The +140V is unstable.

Fault 1: Replace resistor R3697 (62K-MR25) 4822 116 51265.

Picture and sound disappear after a cold start. Both return after a while, then remain.

Fault 1: Check +5V power supply of the TXT module. To check decouple the TXT-module when starting from cold.

Fault 2: Check the connections of the line transformer and the sops transformer.

Fault 3: Replace flyback-capacitor with a blue type.

No picture. No sound. Operating LED lights up and LED for the stereo sound effect flashes slowly.

Fault 1: Replace IC7830 (control-IC).

After a few mins black smudges in picture, after 5 mins whole picture is dark.

Fault 1: [Note: After IC7200 cools, picture ok again. IC7200 already replaced without results]. Check raster IC and/or D6107/D6106.

No picture in the first 5 minutes, only sound. Picture tube lights, EHS-raster functions. The RGB-signals from IC7355 points 1-3-5 are missing.

Fault 1: [Note: Module has been replaced with no results]. Possibly too little emission on the picture tube or a defect on picture tube panel. With any discrepancy in emission of more than 30% the picture tube goes dark.

Blank raster, no picture and no sound.

Note: After removing the plug of the chroma unit, sound and picture are fine (TXT-module).

Fault 1: Check power supply voltages to TXT module +5V and +12V.

No picture. After on for a long time sometimes the picture appears again.

Fault 1: Test picture tube with picture tube tester. Still no result, approx. 0.8. IC7355 mute because beam current info is too low, 2V instead of 5V.

Replace picture tube.

No picture only TXT.

Fault 1: When turning up G2, momentary weak blue picture. Resistor R3620 is open circuit.

No picture, will appear via OSD EXT1 or TV.

Fault 1: Slide register IC7169 on the source select panel does receive data and clock signal but no pulse. Capacitor C2875 on the control and display panel creates a 22nF short.

Playback of CDV via RGB causes picture shift.

Fault 1: Connect a diode and a resistor in series between C7835 of control display panel U1008 and 14-IC7531 of the mono carrier print.

R = 56k, D = 1N4148.

Black horizontal bars in the picture.

Fault 1: Measure whether V-tune of pin 11 of the tuner U1017 is stable.

When V-tune is unstable replace IC7848 (MEA2901) (4822 209 72127 MEA2901).

Flag waving at high volume.

Fault 1: Fit two capacitors (100nF/50V) (4822 121 41875) to PAS unit (1003) between pins 6 and 8 of IC7200 both 7210.

Picture remains dark for a moment at switch on.

Fault 1: 3A appliances mute the picture until emission of the three cathodes are about the same, only then is picture released. Most probably one of the guns produces a later emission. Note: mute time may be longer in appliances with an old picture tube.

White picture with flyback lines then switches to protection mode.

Fault 1: Fuse 1638 (160mA) is defective due to loose connection in HT unit.

At start up normal sound. Picture appears after 4 mins. Normal picture.

Fault 1: Check smoothing capacitor C2638 (10UF) 200V recuperated on the line transformer. If ok, tube is defective. Short the coil 5465 or 5466.

Long time for the picture to come up. Sound is ok.

Fault 1: If tube is low video does not set up correctly, lift one end of D6492 on the CRT base and fit a 1N4148 diode in series.

Video fault especially when cold. Chroma present, picture saturated without contrast.

Fault 1: Check on 7905 pin 13, 19: 12V. If ok, check the voltage variation on pin 23. If ok, suspect 3925.

No picture and focus pot unstable. Little brightness on screen, if G2 is increased and focus set to max. Orange indicator on front panel flashes on and off.

Fault 1: 145V, 13V, 26V, 7V, 200V are all correct. On CRT board fit a 1N4148 in series with D6492 (1N4148). Check C2646 (1000µF), C2621, FBT, C2555 (100µF) and IC7531 (TDA2579). Check for 12V on pin 4 of IC7180 on sound amplifier module.

No picture.

Fault 1: TDA4580 (PIN 10 S/C to chassis).

Takes a long time to warm up. White line on screen.

Fault 1: C2555 (100µF/25V) reduces in capacity.

Half picture and bright white flyback lines during warm up. Normal picture shows 2 light blue flyback lines, followed by 2 red and 2 green ones.

Fault 1: Check TDA2579.

Intermittent no picture or sound.

Fault 1: Replace opto coupler 7668.

Black screen via scart 1. Ok via scart 2.

Fault 1: Check solder joints on scart 1 socket or on socket 1. If ok, check T7154 (BC548B). If ok, check 13V on R3521 (15R), T7522 and T7521 and C2521. Suspect HEF4052.

Picture is not very bright and colour smears.

Fault 1: Check G2 voltage. If defective, check FBT or check via scart. If ok, suspect HFIF.

No picture. FBT ok. Two green LEDs flash on and off on front panel.

Fault 1: Increase G2 to check if field scanning is ok. If not ok, suspect 7571 (TDA8432).

Dark picture, colour smears, looks 1

Fault 1: Check/replace C2845, C2838. Check G2 voltage. Suspect FBT.

No luminance.

Fault 1: Check C2618. If ok, check G2 voltage. If defective suspect FBT. If ok, check 13V at R3496 and 200V at R3400 on CRT board.

No picture. No sound. Raster appears for 1 sec at switch off.

Fault 1: High voltage present. Replace Wickman fuse 1624 on appliances with NICAM and PIP. Replace 800mA-T by a 1.25A-T.



# USEFUL INFO.

Power supply unit repair.

Fault 1 Disconnect R3684. Connect the appliance with the control transformer at max. 50V (main plug). The set now operates without fuse and other controls.

Rating of fuse 1642.

The following production change has been introduced in versions of the 3A chassis which include both NICAM sound and picture-in-picture (PIP). The value of the fuse 1642 has been increased from T800mA to T1.25A code no. 4822 071 51252. Reason: To avoid spurious blowing of the fuse.

Chassis 3A adjustments.

Fault 1: Geometric adjustments are made with the remote control (technical manual page 3D2). Pay attention to the menu setting (setting no 12 = 01), if it is incorrect you may have problems eg. norme setting impossible or the channel number displayed does not correspond to the channel transmitter.

Adjustments with the service function.

Fault 1: When working, transmitter RC5375 (see documentation châssis A) is replaced by RC5991 (4822 218 20831). To make the adjustments press "mono" and "print control (4)" at the same time on the transmitter.

Micro processor 3A monitor /WO47/WO64.

Note: IC7830 MAB8461P/WO47 is replaced with MAB8461P/WO64 (4822 209 71734).

Recoding C2609.

Note: C2609 (8N2 1500V) becomes 4822 121 40249.

Change to Video Mute Circuit.

It may be found that on some sets using the 3A chassis, the picture takes several minutes to appear when the set is switched on from cold.

This effect is caused by the Video Mute circuit waiting until the three CRT guns have reached the same emission levels.

In cases of specific complaint the following circuit change can be made.

Add a 1N4148 Diode in the series with D6492 on the Tube Base panel.

Part number 4822 130 30621.

When IF-module (4822 212 22439) is defective it's not always necessary to replace the module, replacing the TDA4429 is often enough.

Because the TDA4429 (pos. 7135) of this IF-module is no longer available, TDA4439 is supplied (4822 209 71973). However a number of modifications must still be carried out.

Perform the modifications in the following sequence:

- Change position R3131 of jumper in 1kohm (4822 051 10102)
- Open circuit the copper track between position R3131 and pin 2 of IC7135.
- Add transistor BC548C.
- Remove R3161.
- Change position C2161 from 4.7 $\mu$ F to 2.2 $\mu$ F.
- Change position R3135 from 470ohm to jumper.
- Change position R3134 from 1kohm to 4.7kohm.
- remove wire bridge 9162.
- Open circuit the copper track between pin 13 of IC7135 and the base of T7164.
- Add a capacitor of 100nF between pin 13 IC7135 and earth.
- Connect pin 16 of IC7135 with earth.

Connection of a loop system to the TV.

Note: A problem usually occurs when connecting a loop system to a modern TV. A solution is available from the hearing aid suppliers in the form of a specific loop system amplifier which is supplied from the mains and which functions with a scart or phono plug signal. On the advice of a specialist a large part of the cost is usually covered by insurance.

Spare part information, keyboard assy.

For the keyboard assys 4822 212 23132 and 4822 212 22765 only the foil is delivered, without the plastic housing (see service information HE92-06 dd 11-05-92). The separate plastic housing is now also available again and can be ordered with code number 4822 404 31276.

Note: When only the foil is broken please re-use the old plastic housing.

Spare part information.

The picture tube of the 17" 3A sets (A41EAM00X03) is now available with service code number 4822 131 20552.

EEPROM in CHASSIS 3A (4822 209 71848).

Recently code number 4822 209 71848 (preprogrammed X2404) has been replaced by code number 4822 900 10419 (preprogrammed X24C04). In some cases this replacement does not function 100% in all versions of CHASSIS 3A. Please check your local stocks and remove all 4822 900 10419. PCS stock is adapted from today onwards.

Selection of programme sound.

NICAM digital stereo test transmissions are currently being radiated from some TV transmitters. During these test transmissions the sound broadcast by NICAM will not necessarily be related to the TV picture, in which case the user will have to de-select NICAM in order to hear the normal programme sound via the FM analog route. To de-select NICAM, press the button marked I-II on the remote control handset. To return to NICAM sound press this button again. The receiver takes about 1.5 seconds to respond to this particular handset command. The receiver will "remember" the last selection made with the I-II handset button, even after the mains supply has been switched off and then on again. There is a second button, also marked I-II, on the TV's front control panel. This is NOT intended to duplicate the operation of the I-II handset button, but is a language selection control for headphone listening. It has no effect on the sound of present broadcasts.

Recoding picture tube A78EBK02X03.

Note: The picture tube A78EBK02X03 (4822 131 20265) is no longer available. Replacement A80EBK221X11, code no. 4822 131 20541. An adaptor cable is needed with this for the deflection yoke, code no. 4822 321 62091.

How to switch this appliance to service mode and adjust the picture and with which buttons are these adjustments stored in the memory?

Note: Press service-mode + "print key" on remote control and mono-button on the appliance. Store adjustments with green button, quit using standby.

Microprocessor IC7830/7831 3A receiver.

Note: The documentation shows an overview of microprocessors and possible replacements for the chassis 3A receiver. (4822 727 16338)

Note 2: The microprocessor (IC7830) MAB 8461P/W...can always be replaced with higher mask number types.

:MAB 8461P/W050 4822 209 70957 replacement for /W040

:MAB 8461P/W091 4822 209 73339 replacement for /W040/W050/W060

:MAB 8461P/W131 4822 209 11608 replacement for /W040/W050/W06/W091/W102.

Stand-by kit.

Note: A stand-by kit is available consisting of: cables and assembly instructions. (4822 212 23273)

CRT A78EBK02X03 no longer available.

Note: The picture tube A78EBK02X03 (4822 131 20265) is no longer available. The A78EBK03X01 is supplied. The below items must be changed on the picture tube panel to accommodate this:

-R3474 should be 1M8 (4822 053 21185)

-R3473 should be 1M3 (4822 053 20135)

Memory IC's code numbers.

Note:

:X2404 not preprogrammed for the receiver 4822 209 71521

:X2404 preprogrammed for the receiver 4822 209 71848

:PCD8572P not preprogrammed for the monitor 5322 209 51263.

Documentation IV-H-16 (3A 100HZ) discrepancy.

Note: In the system documentation on page IV-H-16 the IC7900 (X2404) code number is noted incorrectly. The correct code number is: 4822 209 71848. If IC7900 is replaced the correct option-code must be used.

Code numbers C2610.

Note: The capacitor pos. 2610 is not in the documentation.

Below is an overview.

:17" receiver 15nF

4822 121 40341

:21",24",27" receiver 22nF

4822 121 40488

:21" monitor 18nF

4322 121 42532.

Safety test after repair.

Note: Due to defective components in an appliance (capacitors etc.) parts of the appliance can become charged. This cannot be established when an appliance is tested on an isoformer. For safety reasons the appliance must also be connected to a non separated socket and then checked that touchable parts (aerial, external connections etc.) are not charged.

Code number of speaker filter left and right.

Note: Chassis 3A/3D hifi-models are supplied with both left and right speaker filters rather than different fittings for each:

:Left filter: 4822 212 22732

:Right filter: 4822 212 23048

Code number for locking HT- and focus cable.

Note:

-locking for HT-kabel (red)

4822 417 50225

-locking for focus cable (blue)

4822 417 50226

Code number picture tube print AG100/AG01 and AG02

Note: with the introduction of TDA4580/V2 on the multi-standard decoder the picture tube prints have also changed. Below is an overview of code numbers for picture tube prints:

-picture tube AG100/AG01

-17" 4822 212 22572

-21",24",27" 4822 212 22509

-AG02 and higher.

-4822 212 22942

-4822 212 22944.

Modified U1003 / U1008 (AG00/AG01)

:With AG00 U1003 P.A.S. 4822 212 22508

U1008 C.D.P. 4822 212 22511

:With AG01 U1003 P.A.S. 4822 212 22857

U1008 C.D.P. 4822 212 22858.

Replacing IC7900 (X2404).

Note: IC7900 (X2404) in the 3A chassis, from which the serial number of the KTVs begin with AG00, should be replaced with code number 4822 209 71848.

New memory IC.

NOTE: Preprogrammed X2404: 4822 900 10419 can only be used with 3A. Monitor PCD8572P: 5322 209 51263.

Spare part information: frequent deterioration of ICs TDA1514.

These circuits are in position 7200 and 7210 on PAS board. Deterioration is due to electrostatic discharge (ESD). From week 8817 diodes have been fitted during manufacture on the PAS board in position 6228 and 6229.

For appliances manufactured before week 8817 and to avoid frequently replacing TDA1514, add a D6229 diode (P4KE30C700, ref. 4822 20973095) in parallel on C2229 and another on C2228.

General info.

. Appliance manufactured in 1987.

## DEFLECT

No raster, the output voltage on pin 20 of IC7571 is too high.

Fault 1 Replace IC7571 (TDA8432).

The line frequency is unstable or the vertical lines are broken depending on the channels.

Fault 1: Check +13V of IC531 (TDA2579) and C2548 (100uF).

No synchronization.

Fault 1: Replace U 1018 (IF module Europe:4822 212 22439)

(IF module France:4822 210 10295).

Vertical jitter.

Fault 1: Check capacitor 2583 (470nF) on pin 23 of IC7571 (TDA8432).

Line jitter (flashes). Not in Teletext.

Fault 1: Fault can also be measured at C2534, when a scart plug is connected. Measure CVBS signal on pin 4-IC7532 with scope. Check DC level and video signal. Replace C2534 if there are deviations.

Unstable line frequency or vertical lines broken up on some channels.

Fault 1: Check +13V on IC531 (TDA2579) and C2548 (100uF).

Field collapse.

Fault 1: [TDA3654 fails after several days]. Check D6646, C2646 and C2571.

Vertical linearity fault, cramp at bottom of picture.

Fault 1: IR receiver is defective.

Part no.: 212 22622.

FBT defective after 1 min. Picture ok. Same after replacing FBT. Contacts ok.

Fault 1: [1.5nF replaced]. Check 6608, 6610, 2621, 2638 and 2610. Replace with original parts.

## COLOUR

Spots on purity.

Fault 1: The demagnetisation loop is defective.

Convergence problems in the middle of the screen.

Fault 1: Check TS7418/7438/7458 and around TS BF485.

The television does not receive in VHF. No colour or audio.

Fault 1: Check the various "out" of IC7905 (SAB3037). If all the voltages are present, check the memory of the IC7902 (X2404P).

No colour.

Fault 1: The probable cause is memory loss.

Do the following modification: Replace IC7900 and add two BZX79/C5V6 zener diodes on pin 5 and 6 and the earth with the anode to earth.

One dominant colour, flyback lines.

Fault 1: Check R3402, R3423 or R3443 (depending on the colour) for 180K value.

Predominance of green on grey scale. KV.CRT= 68V, KR.CRT=86V, KB.CRT=87V. Adjustment pots KV and KR work. G2=560V, white band on test picture is slightly pink.

Fault 1: Suspect 3492 (should be 2k2).

Colour impurity.

Fault 1: Degaussing coils of some appliances were incorrectly connected during production. Follow reels to the right. Connection block must have a black wire first followed by a red one. If this is not the case, change connection on plug to drive.

Coloured spots on flat square picture tubes.

Fault 1: Check local dooming, defective picture tube, malfunctioning of demagnetization or presence of magnetic fields. Too often fault is ascribed to local dooming. Use a pattern generator to check other components.

Visible delay between colour and "Y" signal.

Fault 1: Add an 18K resistor to MSD panel between pin 15 of IC7310 and the earth.

Picture is not very bright and colour smears.

Fault 1: Check G2 voltage. If defective, suspect FBT or check via scart. If ok, suspect HF IF.

No RGB on cathode of tube, line part ok.

Fault 1: [IC TDA4555 replaced]. No chroma on output pin 15 of TDA4555 and abnormal sandcastle but ok on other circuits. Check on video module processor 1010 pin 4M21: CVBS (video), pin 8M21: data, pin 7M21: clock, 10M20: sandcastle. If ok check on PTP T7489, D6491 and D6492. If ok, check video amplifiers.

Dark picture, colour smears, looks like there is no luminance.

Fault 1: Check/replace C2845, C2838. Check G2 voltage. Suspect FBT.

# AUDIO

No sound or picture. EHT is present and a raster can be seen for a second at switch-off.

Fault 1 Versions with NICAM and PIP can suffer from spurious failure of the Wickman fuse 1624. Change it from an 800mA type to one rated at 1.25A, part number 4822 253 10075.

No sound or picture. Commands are blocked. May be intermittent.

Fault 1: Check the power supply of the ICs and F1642.

Correct sound in the earphones but weak in the speakers.

Fault 1: Check T7185 on audio module 1003.

The television does not receive in VHF. No colour and audio.

Fault 1: Check the various "out" of IC7905 (SAB3037). If all the voltages are present, check the memory of the IC7902 (X2404P).

Brief loss of picture and sound (especially of offset channels). HT OK.

Fault 1: [Repaired loose connections on print]. Replace uP IC7831 (MAB8461W147), part no.: 4822 209 73359.

No sound, picture OK.

Fault 1: Sound OK via headphones. Replace IC 7200, IC 7210 (TDA 1514/N4; 4822 209 70938). Also mount 2 diodes P4KE30C700 (4822 209 73095) in parallel to C 2228 and C 2229. (Polarity is not important).

Hum in loudspeakers.

Fault 1: Mount filter WPG 4200 (4822 218 20491) in antenna-cable.

No sound. Possible fault on A/V panel.

Fault 1: Fault could also be due to micro sending wrong information to A/V switching ICs. Replace EEPROM IC7900 (4822 209 71848).

Note: It may be wise on these chassis to note all settings of the EEPROM before a replacement is fitted.

Fault 2: Check if both channels work. Check end stages IC7200 or IC7210. Replace end stage according to channel and place diodes parallel to C2228 and C2229, polarity of diodes is not important.

No sound.

Fault 1: [TDA8405 replaced]. LF on pin 16 of TDA8405. Nothing on pin 19, 20, 21, 22. Pin 10 and 18 =12V. Check DATA and CLOCK on pins 13 and 14 of 8405 and mute circuit on pin 10. Check mute 0V and 12V operation at collector of 7130.

No picture, no sound, line transformer does not function, 140V OK, 7V SOPS missing.

Fault 1: Check 2726, 3727, 3703 and 6703. Check signal on 3727.1.

Low distorted sound.

This fault was found to be caused by IC 7180 (TDA 8420; 4822 209 70935 or TDA 8421; 4822 209 73325)

This device provides audio pre amplification. REMARKS: To aid fault finding, use a 1KHZ test tone.

No NICAM sound.

7201 defective (4822 209 61114).

No sound when cold and/or picture and sound flashing on and off every second.  
Fault 1: Check electrolytic capacitors by substitution in the FE644 tuner/if mode.

Sound sometimes crackles.

Note: Sound is good via sound channel 2. Via scart connection both channels are good.

Fault 1: Replace sound output stage ICs.

Modification:

- 1) Add a capacitor (1N5) between 5 and 8 of IC7200 and IC7210.
- 2) Change C2228 and C2229 to 2N2.
- 3) Fit a P4KE3C700 (4822 209 73095) diode parallel with C2228 and C2229 polarity is unimportant.

Sound output stage is defective due to ESD.

Fault 1:

- Add capacitor (1N5) between 5 and 8 of IC7200 and IC7210.
- Change C2228 and C2229 to 2N2.
- Add parallel with C2228 and C2229 a P4KE30C700 diode (4822 209 73095). Polarity is unimportant.

No picture. No sound.

Fault 1: HT present. Raster shows for approx 1 sec during switching off. Appliances with NICAM and PIP may have problems with Wickman fuse 1624. Change 800mA T type to 1.25A T type.

Power on LED lit and spatial LED flashes slowly, no picture or sound.

Fault 1: Replace operating IC IC7830.

No sound from speaker or headphone.

Fault 1: Check for 12 volts on pin 18 of IC7125 (TDA8405). Find this on the same panel as the scart sockets. If missing the 10R fuse that feeds it, is O/C. Sound comes out of this IC on pins 19 and 20, goes in on 6 and 8.

Note: This resistor can be blown up when servicing as the scart panel can wobble around and short to the tuner. This is because it is pulled by all the leads and various panels that are hanging on it when the set is in a dismantled state.

No sound from speakers. Ok via headphones. Voltages ok, mute signal on pin 1 works.

Fault 1: [TDA1514 replaced]. Check 12V at pin 4 of 7180. If missing, check 27V at 3180; -27V at 2184, 27V at pin 6 of 7200; -27V at pin 4 and audio signal at pin 5. Suspect 2225.

## POWER

During stand-by mode the power supply hums.

Fault 1 The appliance functions normally. Change C2690 to 680 $\mu$ F (50V).

The appliance is dead. There is a faint noise from the power supply unit.

Fault 1 Check the resistor on the rectifier diode output in the power supply unit. There is a short across D6704 and C6707. One of the TDA1514 (audio output) components is in open circuit.

T7618 (BU) blows spontaneously after a few weeks.

Fault 1 Resolder transformer 5632.

Mains is set to protective circuit, but operates with a 100W lamp.

Fault 1 No short circuit. Check C2618, C2609, C2610, D6609 and D6610. Remove the load from the line transformer. If the appliance still will not work, then the line transformer is defective.

On switch off, the back-up IC blows.

Fault 1 Fit a zener diode (5V6) on pin 5 (clock) and 6 (data) of the backup IC to ground. The anodes of the diodes must be grounded also. Loosen the cable tree and move as far as possible to the left. If necessary, readjust the Opt.-code.

Appliance functions very seldom. 140V = 60V. 140V is present when line stage is decoupled.  
Fault 1: Line transformer is defective.

Dead.

Fault 1: Line BU is defective.

Fault 2: Capacitor C2609 in line output stage.

Fault 3: R3638 and R3639 O/C.

(Kevin Eley, Electronic Services, Derby, UK).

Fault 4: Check fuse 1601 (315mA).

BUT 12 blows up.

Fault 1: Open circuits in the tracks to the power supply transformer and in BUT12. Scrape the tracks near the dry joints to smooth them out.

Complete failure.

Fault 1: If R3200 and R3201 on the audio module are warm, check circuits 7200 and 7210 (TDA1514).

NB: On old 3A chassis if the audio module is removed, the time line base cannot start up. On some models when the audio module is removed the video cuts out.

Dead. Only squeaks.

Fault 1: Replace resistor R3638 + R3639 in +200V circuit (likewise replace C2609).

Power supply is defective. No adjustment after repairing power supply.

Fault 1: C2712 S/C (power supply optocoupler).

The TV does not switch on.

Fault 1: The recovery capacitor C2618 (1nF/2kV) on the collector of BUT11/A is defective.

Over-voltage circuit active.

Disconnect audio end stage (PAS) U1003, +140 Volt present. Replace IC7200, IC7210 (TDA1514/N4; 4822 209 70938). Also mount 2 diodes P4KE30C700; 4822 209 73095) in parallel to C2228 and C2229. (polarity is not important). Remove connector M17 and mount bulb to + 140 Volt. Bulb burns.

Replace TS7618 (2SD1577PH; 4822 130 43921).

Protection circuit active.

Fault 1: + 140 Volt switches off. Check soldering contacts of SOPS transformer and line-transformer.

Hum in standby.

Fault 1: Built in modification 4822 212 23273 (Mounting-instructions are included).

PSU in safety mode.

Fault 1: Capacitor 2618 next to line BU gets too hot.

PSU squeaks. Scanning BU heats up, 5V on pin 16 of TDA2579.

Fault 1: [Tuning capacitor, BU and TDA2579 replaced]. Check 8.9V on pin 16 of IC7531. Check VREF on (TR) 7720, 6720, 3721. Check signal on pin 11 of TDA 2579 and check +140V voltage.

No picture, no sound, line transformer does not function,  
140V OK, 7V SOPS missing.

Fault 1: Check 2726, 3727, 3703 and 6703. Check signal on 3727.1.



Dead or lines in the upper part of the screen.

Replace fuse 1642 (1 A) with 1,25 A (order code 4822 253 10075) in 33" sets that has NICAM and PIP.

No 140 V.

Fault 1: Remove audio output stage (PAS) U1003, +140 Volt is present.

Replace IC7200, IC7210 (TDA1514/N4; 4822 209 70938). Also mount 2 diodes P4KE30C700 (4822 209 73095) in parallel to C2228 and C2229 (polarity is not important).

Fault 2: Replace TS7687 (BUT12A; 4822 130 43919). Also exchange TS7674 (BC337; 4822 130 40855) TS7685 (BC547; 4822 130 44257) TS7686 (BC369; 5322 130 44593) Remove connector M17 and mount lamp (220V/100 Watt) to + 140 Volt. Lamp is on. Replace TS7618 (2SD1577PH; 4822 130 43921).

Dead. Weak noise from PSU.

Fault 1: Check resistor at output of rectifier diode in PSU. S/C via D6704 and C6707. One of the TDA1514 (audio output chip) O/C.

When connecting a 3A-chassis to an audio amplifier, a humming sound is audible in the amp if the 3A-chassis is in "stand-by".

Fault 1: Make a connection between the earth of C2201 on the PAS-module and the mounting clip of the high tension cable (heat sink, raster output).

When switching to standby the BUT11 goes defective.

Fault 1: Check TS7743, TS7742.

No function. 140V present when line transistor is disconnected and can be charged with 100W.

Power voltage is reduced to 0V as soon as transistor is reconnected.

Fault 1: [Replaced transistor and line transformer, no result]. Check secondary circuits for S/C: Check power voltage for sound.

Fault 2: Line output stage charges power supply either primary or secondary. Check line drive and capacitors 2618 and 2609. If necessary, disconnect secondary connections.

Fault 3: Check diodes 6609 and 6610. Also check fuse 1601.

Fault 4: Remove sound output stage module and try to start up appliance. If successful, replace both output stage ICs.

After replacing the line transistor 2SD1577PH with a BU508 these go defective again after a while.

Fault 1: Only a 2SD1577PH should be used.

Power supply runs high and is uncontrollable.

Fault 1: [Replace with 3715 opto coupler, TR7717, 7719, 7225, 7685, 7686 and R3666, D6690 already replaced]. Check zener diode 6715. Load the +140V with a 100W light bulb and adjust the DC voltage at capacitor 2701 to max. 140V with a regulating transformer. Check voltage at the various components.

In 33" appliances fuse 1642 is defective.

Fault 1: In 33" appliances it is possible that after a while the fuse 1642 (800mA) of the 7V-line will blow. Replace fuse 1642 with 1200mA.

No start up. The +300V is present.

Fault 1: Replace R3681 - 6K8 (4822 116 52296).

SOPS transformer rattles in standby mode.

Fault 1: SOPS transformer rattles in standby in drive 2B/3A due to low burst frequency of SOPS power. Increase frequency by changing C2690 to 680nF.

Fuse 1638 (160mA) is defective.

Fault 1: If fuse defective without any obvious reason, make following changes: Change R3638 (13R) to 6R8 and remove resistor R3498 (1M2). Appliance with serial numbers starting with AG01 may have this problem.

High beep at switch on. No further function.

Fault 1: [No control on pin 11 of TDA2579. Control possible when pin 17 of line transformer is disconnected]. Remove sound unit. If power supply starts up, then one of the two ICs is defective.

No function. 140V present, but disappears when line transistor connected.

Fault 1: R3639 (6R8) and R3638 (18R) O/C in auxiliary power from line transformer.

No start up. 140V at 30V. 140V present if line BU collector disconnected.

Fault 1: Change line transformer.

Transistor destroyed instantly at power up after replacing FBT.

Fault 1: Check base drive and make line power function in low tension. Check 2618, 2610, 2603. Suspect FBT.

Appliance is dead and PSU makes high pitched whistle.

Fault 1: Check resistors (2.7ohm) on pin 2 of transformer 5620.

HT is low.

Fault 1: Replace opto-coupler 7668.

No power and rail voltage 19V only.

Fault 1: Check video IF DET module.

No 9V.

Fault 1: Replace 7900 (memory IC).

FBT starts up but then stops with PSU whistling. Functions correctly after several start ups.

Fault 1: [Secondary capacitor changed]. Check C2681. Check soldering on connector FO5 on control display panel board, module 1008. Check power supply of uP and fuse 1642.

Appliance is dead, power supply squealing.

Fault 1: [200V missing to D6638]. Check R3638 and R3639 for open circuit.

BUT12A chopper transformers short circuit.

Fault 1: Check pins 2 and 11 of the transformer for cracks.

Power supply ia shut down but ok as it works with dummy load.

Fault 1: Check fuse F1601 (315mA) for open circuit.

Goes into standby/protection.

Fault 1: Check transistor 7731 (BC566) for E/C short circuit (4822 130 40989).

Standby LED and crispening LED both flash.

Fault 1: Replace C2618 (1.5nF)(4822 126 12274).

Dead.

Fault 1: [Protection thyristor operates]. Check F1601 (315mA) for O/C.

## TUNING/MEMORY

The appliance jumps from higher channels back to program 1.

Fault 1 The fuse (+5V) is defective (high resistive), power supply sometimes missing.

No reception of the TV in VHF. No colour or sound.

Fault 1: Check the various "out" of IC7905 (SAB3037). If all the voltages are present, check the memory of the IC7902 (X2404P).

No reception on UHF and VHF, only snow. All voltages on selector are fine. Picture appears after switching the system, then UHF and VHF are fine. After changing channels, goes defective again.

Fault 1: IC in IF-module is defective (type TDA4429T).

No VHF channels.

Fault 1: The probable cause is memory loss.

Do the following modification: Replace IC7900 and add two BZX79/C5V6 zener diodes on pin 5 and 6 and the earth with the anode to earth.

Tuning unstable.

Replace U1018 (IF module Europe:4822 212 22439)

(IF module France:4822 210 10295).

Contents of memory lost.

Fault 1: +5 V on Pin 8 IC 7900 present. Replace IC 7900 (X2404M; 4822 209 71848). Also mount 2 protection diodes BZX 79C5V6 (4822 130 34173) between pins 5 + 6 of IC 7900 and ground. (Anode to ground).

In VHF frequencies only noise.

Fault 1: Defective channel selector.

No or poor tuning with some channels.

Fault 1: On offset channels the tuning is not optimal or colour disappears briefly. Replace microprocessor IC7831 (MAB8461) on the control-display panel. Part no.: 4822 209 11609.

Cannot tune VHF channels. Colour and sound missing.

Fault 1: Replace X2404 memory-IC.

Fault 2: EPROM X2401 is defective.

Will not tune on some channels.

Fault 1: Will not tune, drifts, colour disappears or interference on a certain channel. (e.g. channel 5 and 59).

The cause is a poor earth connection of the screening plate of the channel selector. Solder down the screening plate.

Interference on channel 5.

Fault 1: Harmonics are transferred via the screening of the aerial cable to the core due to poor connection box, poor aerial cable or poor connection of HF cable at some location in the system. Fit aerial cable with HF suppressors.

:4822 321 61224 aerial cable 1M long

:4822 321 61225 aerial cable 2M long.

Intermittently changes channel.

Fault 1: Resolder joints in PSU and line circuit. Check earth belt. Check uP and memory.

No channels stored via automatic channel search from channel 60 upwards.

Fault 1: [Manual setting of channels 61 or 63, respectively RTL4 and RTL+, is OK. No manual tuning higher than channel 63]. Tuner is defective. Check earthing tabs of lid for poor contact.

# GEOMETRY

During service east/west cannot be controlled.

Fault 1 The storage IC7900 (X2400M) is defective.

Geometry faults.

Fault 1: The probable cause is memory loss.

Do the following modification: Replace IC7900 and add two BZX79/C5V6 zener diodes on pin 5 and 6 and the earth with the anode to earth.

East/west defective.

Fault 1: Replace IC 7900 (X2404M; 4822 209 71848). Also mount 2 protection-diodes BZX 79C5V6 (4822 130 34173) between pin 5 + 6 IC 7900 and earth (Anode to earth). Replace D 6610 (BYW 95C; 4822 130 41602).

Fault 2: The fault may be in the E/W circuit. Check pulse 38, fuse 1601. Another possibility is that the memory setting is incorrect. Adjust via geometry-adjustment option 8 and 9.

Cushion distortion cannot be adjusted (East-West).

Usually adjustment values have disappeared from memory, change memory IC7900 (4822 209 71848). Diode 6610 leaks (4822 130 41602).

Cramping on sides, at top and bottom. No reception via tuner and scart. Snow on screen.

Fault 1: Check 2175, 2171 in E/W circuit. Check for 13V on 6179.

E/W is defective, no picture width adjustment.

Fault 1: Replace T7602 (BC547).

E/W correction cuts out intermittently. Adjustment can be made normally in service mode.

Fault 1: Check 2699, 7602 and 7599. Suspect 3603, 6600 and 1601.

Geometry settings change after approx 3 weeks. New nos are stored in memory. Resetting works but same problem occurs after 3 weeks.

Fault 1: Replace X2402 which is defective.

Fault 2: Replace EAROM. Fit diode 1N4148 between +5 and pin 8, C2900 remains on pin 8. EAROM IC7900, X2404P.

Barrel shaped effect. After adjusting with RC same problem reoccurs 3 to 4 weeks later.

Fault 1: Check zener 6600 and C2599. Suspect 3601 and 1601.

Insufficient width.

Fault 1: Check signals on point 7 of IC7552: 7VPP, 3: 2VPP and 8: 20V of reference 0. Check 5: 45V. Check power supply on point 9, check 6553 and 2255. If ok, check IC7571.

Low horizontal amplitude after prot. disabled by open circuit 6560.

Fault 1: Remove sound amplifier board. Check ICs for S/C 7225 and 7224.

# OTHER

The remote control does not function.

Fault 1 The oscilloscope shows an intermittent signal when testing the released signal. The blue crystal is loose, defective or the foot is broken.

Humming in the loudspeaker during "stand-by".

Fault 1 R3741 on the MXP board must be replaced with 820E.

Fault 2 Interrupt the ground side of C2211 on the wire track, on the PAS board. Connect 3L6 to 4L7. Connect bridge wire 9180 with the ground of IC7180.

Fault 3 Sops transformer hums during "stand-by". Check if the value of C2690, replace C2690 with 680nF.

The stand-by LED and Crisp LED are flashing.

Fault 1 The power supply unit is OK, line and stage is OK. Remove the TXT module, the MAB-IC is defective.

Fault 2 24C02 (RAM-IC) is defective.

After replacement of X2404P (back-up-IC) the TXT does not work.

Fault 1 The TXT module is ok. Option in the memory is probably not set correctly.

Fault 2 Set the appliance to service mode, press option 12 and set to 32 or 40 (for CH000).

In teletext reception with the chassis 3A decoder board, the "E" becomes "#".

Fault 1: MAB8461 functions with different characters according to the country. With point 22 you can automatically select the character ROM. It must be earthed by means of a 1K Ohm resistor or link it through a R390 to the +5V.

Appliance hums in stand-by mode.

Fault 1: Check if C2690 has the correct value. Replace C2690 with 680nF.

Small wrinkle in top of the picture, Picture size varies with light and dark.

Fault 1: R2621 and C2621 have been replaced. Possibly poor power cable or line transformer. Beam current information also feeds back to power supply via 7499 and to JC7571.

Unacceptable heating time of older picture tubes.

Fault 1: Add a diode 1N4148 (4822 130 30621) in series with diode 6492. This will not affect the lifetime of the picture tube or the set. It prevents the video controller from muting the picture until the 3 guns are within the same range of emission.

Very powerful whistling in standby and with TV on but less powerful when warm.

Fault 1: Check electrolytic capacitor on power supply secondary.

Text, clock and OSD do not work.

Fault 1: If the memory has been changed be sure that the option is correct.

Display jumps from channel to channel.

Fault 1: Flat cable of keyboard unit is defective.

Power On LED lit. Spatial LED flashes slowly. No picture or no sound.

Fault 1: Replace control IC IC7830.

"ON" and "CRISP" LEDs flicker simultaneously.

Fault 1: [Resoldered transformers after failure of PSU. Replaced flyback capacitor]. Sound output stage is defective or fitted incorrectly.

Red standby light and green LED flash when switching from standby to ON with RC in cold conditions. Everything functions OK when switched on with mains switch. No problems when appliance is warm.

Fault 1: Replace IC behind display.

Fault 2: Voltage on primary side of power supply is too low. 4.44V instead of 7.8V on pin 5 of optocoupler. In PB 5V instead of 8.6V at cathode D6666 Electrolytic 2681 (22 $\mu$ F) in SOPS power supply has a loss of capacity.

Two flashing LEDs when switched to standby and back to play with RC. Normal start up when switched off and on with mains switch.

Fault 1: Electrolytic 2681 (22 $\mu$ F) has a loss of capacity.