

Useful info

1. A production change:

A production change has been introduced adding a shield to the main control micro processor to prevent the processor being influenced by external fields. In future, replacements will be supplied as a kit comprising the processor shield and fitting instruction. The shield will also be available separately.

:Old mask No.	Code No.	*****	*****			
:CP90/110 TMP47C432P		:8188	209 72038	:8189	209 73665	
:New mask No.	Kit code No.	*****	*****			
:8188	310 31849	:8188	310 31849	:8189	310 31851	
:Shield only.	*****					
:Chassis	Processor					
:CP90	TMP47C432P					

2. There are two types of micro used on this chassis.

Fault 1 Fast text use part number 20987305, non fast text use part number 20911391.

3. U743 tuner replacement.

The U743 UHF tuner has been replaced by the U943. In all applications it is a direct replacement. Where the substitution was made during production some components, being no longer required, were deleted at the same time. This means that in some chassis the tuners are not reverse compatible ie. a U743 cannot be fitted in place of a U943 without first refitting components concerned with the +12V supply to pin 10 of the U743 tuner. The list of changes are as follows:

:Old Tuner	New Tuner	Deleted
:U743-600	U943-600	None
:4822 210 50118	4822 210 10394.	

5. Euroconnector code number.

Note: The code number for the euroconnector mentioned in the documentation is incorrect. The correct code number is: 4822 267 60243. Please change this in your documentation.

6. Picture tube panel adjustments.

Note: In the chassis documentation, chapter B; electrical instructions, picture tube adjustments, appears in line 6: "black level on the picture tube base on 1304". 1304 should be 130V. Add connection 7-IC7260 and remove earth.

7. 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.

8. Microprocessor screening plate.

Note: Connect the screening plate with the side of R3726 which is pointing towards the front of the chassis.

9. Replacing control IC7840.

Fault 1: When replacing the control IC (IC7840) it is essential to ensure that the correct type is fitted. Type: TMP47C432AP-8187, TMP47C432AP-8188, standard teletext 4822 209 72038 or remote control only. TMP47C432AP-8189, FLOF (Fasttext) or remote control only, 4822 209 87305

HA11484, CP90 Non remote 4822 209 83199. Note: FLOF (Full Level One Features) is a term frequently used in the service manual to describe a decoder equipped to handle Fasttext commands.

A supplement CT88-11 giving information on the FLOF decoder, is available under service code no. 4822 727 16185.

10. New type stands. During production of CP90 and CP110 receivers the type of stand supplied was changed. In some cases this involved a new housing due to the need for different stand fixing centres. The models are listed and individual sets affected can be identified by the factory code on the type no. label.

Model

21CE1250/05B, 21CE1558/05B, 21CE1251/05B, 21CE1557/05B, 21CE1557/05Z,
52KE1510/05M, 52KE1512/05M, 52KE1585/05M, 24CE3271/05B, 24CE3588/05B
59KE3785/05M, 59KE3702/05M, 59KE3775/05M, 68KE3985/05M, 27CE3598/05B

Note: These stands are supplied as a complete kit only. Individual parts will not be available.

11. Alternative 21" picture tubes. During production of 21" CP90 receivers, three different types of picture tube were used. In some cases this involved circuit changes. It is essential therefore that replacements should be of the same type. The various tube types together with component difference are listed on the following pages. This and other information are also contained in Service information supplements CT87-38 and CT88-22.

CRT A51EAM32X16	131 27119	or A51JAR30X01M2	131 20225					
MAIN PANEL C2504	68nF	121 42688	C2596	82nF	121 41754	C2610	8n2nF	121 42523
C2611	470nF	121 42917	R3496	56K	111 30772	R3594	100K	111 30685
R3595	100K	111 42679						

CRT BASE (9 pin CRT SKT)	212 22606	A51EAL30X05	131 27116					
Not fitted	47nF	121 41791	11nF	121 43058	560nF	121 43057	200K	116 52255

Link wire 240K 116 52262 BUT12A 130 43919 (12 pin CRT SKT) 212 22812

SERVICE INFORMATION CT87 - 38 727 15953 CT88 - 22 727 16269

12. Page header suppression. Since the BBC changed the CEEFAX format, receivers with fasttext will display the page header continuously when the set is in subtitle mode (page 888). The problem is only observed on BBC recorded programmes with subtitles (subtitles on live programmes, and on independent television are not affected). The BBC have agreed to suppress the header on future recorded subtitled programmes. However, many programmes are already "in the can" and could be transmitted at any time with the page header not suppressed. To accommodate this, the teletext microcomputer MAB8461P/W107 has been reprogrammed to suppress

the page header when subtitles are being received. The new version (MAB8461P/W196) is available from service under code no. 4822 209 62479. In cases of specific complaint the new version may be fitted as a drop-in replacement.

13. Control micro processors. A production change has been introduced adding a shield to the control micro processor to prevent the processor being influenced by external fields. In future replacements will be supplied as a kit comprising the processor, shield and fitting instruction. The shield will also be available separately.

Old mask no.	Code no.	CP90/110 TMP47C432P	8187	-
8188	4822 209 72038	8189	4822 209 73665	

New mask no.	Kit code no.
--------------	--------------

8188	4822 310 31849
------	----------------

8189	4822 310 31851
------	----------------

14. 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.

15. Multiple defects of the BUT11AF.

Fault 1: To remedy this it is advisable to replace diode 6674 with a BYD33J, code number 4822 130 42606.

16. Picture tube A51EAM32X16

Note: Picture tube A51EAM32X16 (9301 206 10142) is used for 21" appliances from production code PM04 or BA04 onwards. Fixing bracket for demagnetization coil must be used with this picture tube (4822 404 30945).

Introduction of picture tube brings along changed to tube base PCB. Part no. picture tube base PCB 4822 116 23121. On this tube base PCB R3409, R3429 and R3449 have changed to 620R (4822 116 52227).

Picture tube A51EAM32X16 : 9301 206 10142

17. Code numbers for locking HT- and focus cable. Note: :Locking for HT-cable (red) 4822 417 50225

:Locking for focus cable (blue) 4822 417 50226

18. Service note. It is worthwhile replacing the flyback tuning capacitor C2619 (1kV/1.5nF) with the 2kV type whenever one of these sets is serviced. Part no.: 4822 122 32501.

19. uP + screening. Note: TMP47C432AP with screening:

-8188: 4822 310 31849 replaces 8187, standard TXT (provided decoder is present).

-8189: 4822 310 31851, TOP/FLOF TXT (Fastext) (provided decoder is present).

Connect screen to bridging wire 9732.

20. Testing the power supply.

Note 1: Remove connector M6 and connect a 60W light bulb across C2696 and monitor the DC voltage. Apply Mains via a variac, the bulb should light when the DC voltage is about 70V and it should stabilise at 95V. If the voltage does not stabilise then check the components around the optocoupler CNX62 and set the HT control to 95V.

21. When checking for dry joints. Look in the IF/sync can, especially around the TDA2579 chip.

DEFLECT

1. The line transistor BU11AF always breaks down after a few seconds. Fault 1: C2610 has leaked (8.2nF/2KV).

2. Top of raster folds together. Fault 1: Replace C2572 (1.5µF).

3. Horizontal deflection is defective, only a line in the picture. Fault 1: C2610 is open circuit and should be replaced.

4. No synchronization. Fault 1: Replace U 1040 (4822 212 22739).

5. No vertical deflection.

Fault 1: Replace R 3623 (8.2 Ohm) (4822 111 30506). Replace TS7571 and TS7573 (BD939F; 4822 130 42681).

6. Field collapse. Fault 1: Check voltage on R3571 (18K 2 watt just to the front of the frame transistors - the resistor is also used by the RGB o/p stage and is in the line output 163V stage). If no voltage fuseable R3623 8R is O/C. Find R3623 right beside the LOPT from pin 1.

Fault 2: Check the print by R3275. Fault 3: Check R3581 for break to pin 1 of sync/IF panel.

7. Only half inch field scan in center of screen. Fault 1: Check r 3582 3.3ohm o/c.

8. Field scan reduced to half an inch in the centre of the screen.

Fault 1: Scan current chassis return resistor R3582 (3.3ohm) was o/c.

9. Partial frame collapse. Fault 1: R3623

10. Partial fram collapse, very bright screen. Fault 1: R3623. This is an 8R2 fuse feeding 165 volts to the frame. Find it beside and to the left of the LOPT next to a Wickman fuse. I suspect it may fail due to dries on the frame transistors.

11. Horizontal BUT is defective. The new one blows again straight away. Fault 1: Check C 2610, loss of capacity.

12. Field collapse with a small amount of scan below it, no 95V supply to the field output stage.

Fault 1: Check for crack in print by R3275.

13. Low field. Fault 1: Check R3582 (3.3ohm).

14. Frame collapse. Fault 1: R3623 (8.2ohm) is O/C.

15. Rolling. Fault 1: Check TDA2579 on IF/sync panel.

16. Field bounce. Fault 1: Replace timebase generator chip TDA2579.

17. Poor line linearity at centre of screen. Fault 1: Check D6609 and D6610 in EW modulator circuit.

18. Line folding in middle, when cold. OK after 2 mins. Possibly destroys line output transistor every few days.

Fault 1: Check C2523 (6.8nF/63V) at 12V rail to line drive

19. . Field jitter and line pulling. Fault 1: Check C2075 (10uF).

20. Very low 1/2" field scan. Fault 1: Check R3582 (3R3).

COLOUR

1. Optimal values are not stored any more. After switching on only picture without colour, no sound. With the remote control the saturation and volumes can be adjusted.

Fault 1: Select program site 38 and press "Store" and program "+" at the same time (switch off hotel mode). Perhaps processor TMP47C432 is defective. Also solder in the screening plate.

2. No colour when replacing IC7261 TDA3565/N4 by version /N6. Fault 1: Restriction: Non start

Add a ceramic plate capacitor of 56pF (4822 122 31772) in series with 1261. Connect the capacitor between 1261 and earth.

Fault 2: Replace 56pF by a trimmer of 22pF (4822 125 50045) and adjust. In some sets combination of 3265 and 3266 is present as a 10K potmeter. Check adjustment of that potmeter, approx 6.8V on slider is normal.

3. Colour spots in flat square picture tubes. Fault 1: Colour spots may have several causes: local dooming, defective picture tube, malfunctioning of demagnetization or presence of magnetic fields. Too often local dooming is said to cause the problem. Check other possible causes with a pattern generator.

4. No colour. Fault 1: Check decoupling capacitor C2278 (22nF) for leaks.

PICTURE

1. The picture shows lines. Fault 1 R3623 is defective.

2. The picture has been shifted and the width control does not work. Fault 1 C2260 is defective.

3. The picture is too small and contrast cannot be controlled.

Fault 1 There is no contact on base _7 of the line transformer capacitor 2405 (33µF/100V) has a short circuit.

4. Picture rolling. Fault 1 IF/sync panel (TDA2579).

5. The picture is wobbly. Fault 1 Change the sops transformer (foil type).

6. Sometimes the picture jitters. Fault 1 Stops-transformer in the power supply unit must be checked.

7. No picture and display, the voltage is present. Fault 1 Replace fuse 3623 (630mA).

8. In TXT the picture is black and sometimes coloured lines. TV picture is ok.

Fault 1: Change SAA5241 on the TXT module.

9. No picture. Fault 1: T7619 (BuT11D), TR5620 (line output).

Fault 2: Failure of the first anode supply due to an internal defect in the line output transformer.

Fault 3: No sync pulse on point 3 of the IF/sync unit. IC7038 in the IF/Sync unit is defective (TDA2541).

Fault 4: [Tr7619 continuously fails]. Check C2619 (1nF) and C2610.

10. No display, no functions, snow in picture. Fault 1: Fuse 630mA by the line transformer is defective, position 3623.

11. Vertical line (V-lock). Fault 1: IC TDA2579 on the synchronisation module is defective.

12. No picture, no sound. Power supply is ok.

Fault 1: Check if there is a signal on Pin 18 of the MF-module, and no longer on Pin 16. TDA2541 in MF-module is defective

13. Sometimes no sound, no picture. Fault 1: Voltage +95 V present. Replace U 1040 (4822 212 22739).

14. No picture, no sound. Fault 1: Voltage +95V present. Replace S5620 (line transformer; 4822 140 10306).

Fault 2: Voltage +95V present. Replace U1040 (4822 212 22739). Fault 3: Is high voltage present ? Check +95V. Also check +22V.

Replace fuse 1690 and if necessary D6690, IC7101, C 2101, C2102 and C2691.

:4822 253 10064 T400mA (fuse 1690) :4822 209 70872 TDA8190 (D6690)

Fault 4: Check +12V. If it is missing check the oscillogram on point 2 of T 5620. Check and replace R3638, R3639 and D6638.

:4822 111 30448 1ohm (R3638 and R3639) :4822 130 42489 BYD33G (D6638)

Fault 5: No 11.5V supply at cathode of thyristor 6726. Check D6733 (BAV19) and replace if necessary.

Fault 6: Power supply is ok. Check if there is a signal on pin 18 of the MF-module, and no longer on pin 16. TDA2541 in MF-module is defective (part no 132180). Fault 7: Replace fuse 3623 (630mA).

Fault 8: [Power supply ok and tube heaters glow, microcontroller chip's 6V supply missing]. Check D6733 (BAV19) for open circuit.

Fault 9: Check line output transistor T7677 for dry joints.

Fault 10: Check R3623 (8R2) for H/R, fuse 1640 stays ok but D6667 (1N4148) goes O/C. This gives roughly half of 95V and 163V and the set is in standby mode.

15. No picture, sound OK. Fault 1: Replace U 1040 (4822 212 22739).

Fault 2: No synchronisation pulse on pin 3 of the IF/Sync.-Unit. IC7038 on the IF/Sync. Unit is defective (TDA2541).

Fault 3: The supply of the first anode has collapsed due to a defect of the line output transformer.

Fault 4: Check T7619 (BUT11D), TR5620 (line output).

Fault 5: Check sandcastle-pulse. If it is ok, replace TDA2579 in the IF.

16. Brightness level change in A/V mode. Fault 1: It is possible that some video equipment will provide a CVBS signal slightly in excess of the 1 volt peak-to-peak level required. This will cause a change in brightness level when switching between external A/V mode and the RF signal which some viewers may find objectionable. The phenomena can be reduced by attenuating the CVBS input as follows : Replace link 9506 with an 18R resistor Change R3525 from 75R to 56R.

Note: This change will not be introduced into production but may be applied in cases of specific complaint only.

17. White screen with flyback lines. Fault 1: Check IC (TDA3561).

18. Patterning on RF. After checking around the power supply it was found that +19V rail was incorrect and replacing C2691 (330uF) rectified the fault.

19. Picture is very dark. Fault 1: Check if C2495 (33nF) is defective and upsetting the beam limiter action. A clue could be the low contrast control voltage at the colour decoder chip.

20. The picture lacks contrast. Fault 1: Preset R3944 (5k Ω) is broken.
Fault 2: Check solder joint on C2495 (33 μ F), filtering of the beam limiter (pin 7 plug).
21. Intermittent white raster. Fault 1: Dry joint at earth connection of focus module.
22. Intermittent E/W distortion. Only snow. No response to RC and operating unit.
Fault 1: Resolder dry joints on line transformer, transformer coil and surrounding area.
23. Bright white picture. No sound. Channel search system keeps searching and does not stop.
Fault 1: [Problem arises after scart cable is plugged in at back of appliance]. Check whether pin 17 of IF APH (1040-2A) is low. Pin 16 of 1040 must have CVBS. If not, check transistor 7871. Pin 13 of IC7840 (control IC) must have 4V.
24. No picture and just traces of sound. Fault 1: Check for hairline crack in print between pin 7 of the line output transformer and the junction off R3495/C2594. As a result there is no 15V at the earthed end of the EHT circuit, affecting the beam limiter circuit.
25. Blacked out screen. Fault 1: Check if sandcastle pulse at pin 8 of TDA3561A or pin 7 of the TDA3562.
26. Blank raster, no sound. Fault 1: Check if the 11.5V supply is missing and if D6733 (BAV19) o/c.
27. Brightness level varies. Fault 1: Check A1 control mounted on line O/P transformer.
28. Focus fluctuates. Fault 1: Check TR5763
29. Variable brightness level. Fault 1: Check A1 control on line output transformer for dry joint.
30. Contrast is low after flashover. Fault 1: [No voltage on pin 7 of TDA3561A]. Check C2495 (33nF) in beam limiting circuit for S/C.
31. Raster is blank, video signal is missing. Fault 1: Check BC546 (link 9259 on circuit).
32. Dot pattern. Fault 1: Check C2703 (330 μ F) and C2691 (330 μ F).
White picture with flyback lines, every few hours picture returns to normal.
Fault 1: Check line output transformer for dry joints.
33. Very bright line across screen. Fault 1: Check safety resistor R3623 (8R2) in 163V supply for open circuit.
34. Dot pattern visible in grey areas of picture. Fault 1: Check C2691 (330 μ F).
35. Intermittent tripping with patterning on screen. Fault 1: Check C2691 (330 μ F/25V) in power supply.
36. Herringbone pattern on picture from cold. Fault 1: Check C2691 (330 μ F/25V).
37. Intermittently goes brighter with flyback lines. Fault 1: Earth connection pin of the line output transformer is dry jointed.
38. Picture ringing plus herringbone pattern and no teletext. Fault 1: Replace coil L5082.
39. After a while small black dots appear which then turn into rectangles and picture finally goes dark. Fault 1: Replace text processor chip SAA5243P/E.
40. Picture flutters. Fault 1: Check reservoir capacitor C2638 (470 μ F/16V).
41. Intermittent picture and sound. Fault 1: Check in IF/Sync can for dry joints.
42. Picture patterns on RF; OK on scart input. Fault 1: Replace all electrolytic capacitors inside IF can.
43. Picture takes approx 5 mins to appear. Fault 1: Check C2265 (0.1 μ F) at pin 24 of IC7260 (TDA3561A).
44. Dark raster. Fault 1: Check C2495 (33nF).
45. Intermittent video. Fault 1: Check for dry joints in IF can.

AUDIO

1. The sound fails regularly. Fault 1 The voltage and TDA 8190 are ok. Replace C2104 (ceramic 10nF).
2. Low buzz on sound. Fault 1 Fit mod kit to replace 6MHz filter PN310 27563.
3. Intermittent crackling on sound. Fault 1 Replace C2124.
4. No picture, no sound. Power supply is o.k. Fault 1: Check if there is a signal on Pin 18 of the MF-module, and no longer on Pin 16. TDA2541 in MF-module is defective (article No. 132180).
5. Appliance can only be switched on once every 10 times. Otherwise loud pulsating can be heard in the speaker. If it runs then picture and sound are perfect. Fault 1: Check 5V on Pin 42 or the processor (min. 5.0-5.1V).
Fault 2: Processor ok. 5V ok. Thyristor 7626 (SF2D41) was defective.
6. No sound, picture OK. Fault 1: Replace bus BU 5 (4822 267 60188). Replace U 1040 (4822 212 22739). Replace IC 7101 (TDA 8190; 4822 209 70872).
7. Sometimes no sound. Fault 1: Replace bus BU 5 (4822 267 60188).
8. Poor sound. Fault 1: Intercarrier audible in sound. Check with pattern generator. Replace ceramic filter position 1103 by print with filter.
9. Bright white picture, no sound. Channel search system keeps searching and does not stop. Fault 1: [Problem arises after scart cable is plugged in at back of appliance]. Check if pin 17 of IF APH (1040-2A) is low. Pin 16 of 1040 must have CVBS. If not, check transistor 7871. Check that pin 13 of IC7840 (control IC) has 4V.
10. Channel drift, volume increases. F1 on display. Fault 1: Replace IC7840 (TMP47C432).
11. No picture and no sound. Fault 1: Check presence of HT. Check +95V and +22V.
Replace fuse 1690 and if necessary D6690, IC7101, C2101, C2102 and C2691.
Ref Part no. T400MA 4822 253 10064 TDA8190 4822 209 70872
Fault 2: Check +12V. If not present, check oscillogram on pin 2 T5620. Check R3638, R3639 and D6638. Replace all three components. Fault 3: Check/replace D6733 (BAV19). Part no:4822 130 30967 BAV19
Fault 4: Power supply OK. Check pin 18 of IF module for signal and pin 16 for absence of signal. TDA2541 in IF module is defective (article no. 132180).
12. No sound or vision. Fault 1: Voltage +95V present. Replace S5620 (line transformer; 4822 140 10306).
Fault 2: Voltage +95V present. Replace U1040 (4822 212 22739). Fault 3: Is high voltage present ? Check +95V. Also check +22V. Replace fuse 1690 and if necessary D6690, IC7101, C 2101, C2102 and C2691.
:4822 253 10064 T400mA (fuse 1690) :4822 209 70872 TDA8190 (D6690)
Fault 4: Check +12V. If it is missing check the oscillogram on point 2 of T 5620. Check and replace R3638, R3639 and D6638.

:4822 111 30448 1ohm (R3638 and R3639)

:4822 130 42489 BYD33G (D6638)

Fault 5: No 11.5V supply at cathode of thyristor 6726. Check D6733 (BAV19) and replace if necessary.

Fault 6: Power supply is ok. Check if there is a signal on pin 18 of the MF-module, and no longer on pin 16. TDA2541 in MF-module is defective (part no 132180). Fault 7: Replace fuse 3623 (630mA).

Fault 8: [Power supply ok and tube heaters glow, microcontroller chip's 6V supply missing]. Check D6733 (BAV19) for open circuit.

Fault 9: Check line output transistor T7677 for dry joints. Fault 10: Check R3623 (8R2) for H/R, fuse 1640 stays ok but D6667 (1N4148) goes O/C. This gives roughly half of 95V and 163V and the set is in standby mode.

13. Low garbled sound. Fault 1: Check the earphone socket.

14. Loud buzz in the standby mode. Fault 1: Replace the standby thyristor D6726.

15. Buzz on quiet sound passages. Fault 1: Replace ceramic filter 1103 with 310-275-63

16. No sound. Fault 1: C2046 - located inside the sync module - is leaky.

17. No sound - blank raster. Fault 1: D6733 (BAV19) O/C.

18. After approximately 5 minutes the sound fades. Fault 1: Check C2113 (470µF).

19. Sound becomes distorted after 10 minutes. Fault 1: [Possibly blows F1690]. Check C2213 (470uF) and F1690 (400mA).

20. Buzz on sound. Fault 1: This is a modification. Replace a 6MHz filter with a new/different type.

6MHz Filter Kit P.No. 310 27563

21. Intermittent picture and sound. Fault 1: Check in IF/Sync can for dry joints.

POWER

1. The appliance does not start up or after operating for sometime the power supply squeaks. Fault 1 +95V is too low when the appliance starts up. C2696 is open circuit.

2. When the appliance is set to stand-by the power supply unit chirps. +6V is only 2V when the TV is switched on. Fault 1: Replace the capacitor C2410 (2K2) by a 470pF type.

3. The power supply unit clicks, BUT12A blows continuously. Fault 1 Check control stage, current limit and resistor in the base circuit. Check BUT12 and shut off moment of BUT12.

4. 2A fuse blown. Fault 1: Check BUT11A and 100µF/380V cap.

5. Intermittent failure of T7677 BUT11AF. Fault 1 Change D6074 to BYD33J.

6. Main microprocessor IC7720 (TMP74C434N) is defective. Fault 1: Fit screening part no. 466 82781.

7. Dead. Fault 1: Check 280V and +95V. Replace C2675 (4822 121 41156 68nF). Fault 2: Line output transistor is s/c due to a poor connection on the connector of the deflection coil. Replace the plug and the socket. Fault 3: The optocoupler is leaky. A new CNX62 will solve the problem. Fault 4: The start up voltage is being lost at the junction of R3661 and R3673 because T7673 is conducting due to a leak between pins 4 and 5 of the CNX62 optocoupler. Fault 5: [Over voltage protection has tripped] R3668 (15ohm) is o/c. Fault 6: [No voltage from the PSU, s/c on the 95V line] C2695 (2.2nF) is s/c. Positioned parallel to the rectifier diode D6695. Fault 7: [No voltage from the PSU] Check that there are no s/cs in the outputs. If they are ok you should check whether the start up voltage is present at the collector of T7673; normal 2.5V. If it is not present then optocoupler must be replaced. Fault 8: [Whistling sound] Transistor 7701 (BC548) has a b/e s/c.

Fault 9: [No Standby LED or nothing on display]. Check oscillations on pin 31 and 32 of the TMP47C432 ICs. If no oscillations can be measured, C2934 and C2935 (both 27pF) should both be replaced because they may be leaky.

Fault 10: [The number 3 is shown in the display, after a few seconds F1 appears in the display]. Check D6695 (BYW95B) and F1690 (400mA) Wickman fuse. Fault 11: C2695 (2.2nF) S/C. Fault 12: D6609 and D6610 are leaky or S/C.

Fault 13: Check line O/P transistor. Fault 14: F1690 (400mA) O/C - no apparent cause.

Fault 15: Audio O/P I.C. could be faulty. Fault 16: R3623 (8.2ohms) is high and D6667 (1N4148) O/C.

Fault 17: [19V rail supply is missing, F1690 is open circuit]. Check IC7101 (TDA8190).

Fault 18: [Line is missing, PSU ok]. Check D6610 for short circuit and R3600 for open circuit located in line timebase.

Fault 19: [Chopper transistor Tr7677 continuously fails]. Change D6674 to BYD33J and check chopper transistor for dry joints. Fault

20: Check D6733 for O/C. Fault 21: [The power supply does not start up]. The memory battery is defective.

Fault 22: [The power supply does not start up]. Check if 280V and +95V.

Fault 23: [The power supply does not start up]. Check if 280V is present, if it is not check TS7677 for a short (BUT11AF) replace TS7677 and D6674 (BAX 14) with BYD33J.

Fault 24: [The power supply does not start up]. Replace C2696 with 47µF (200V).

Fault 25: Check if thyristor 6696 s/c if so replace but check zeners 6700, 6697, 98, 99. The ht volts will be there if collector of line o/p disconnected and 60w lamp connected across c96. Fault 26: [No start up volts at junction of R3661/R3673]. CNX62 (optocoupler) is leaky.

Fault 27: [Power supply pulsing]. D6072 (BZX79-F6V2) is leaky. Fault 28: [Low HT at 50V]. Check D6610 and line O/P transformer. Fault 29: Check D6665 (1N4148). Fault 30: Check D6733 for open circuit.

Fault 31: Replace microcontroller chip.

Fault 32: [95V HT supply present]. Check C2691 (330uF/25V) and check TDA2579 in IF can.

Fault 33: Check C2679 (1nF). Replace D6679 with BYD33. Check C2695 (2.2nF), R3623 (8R2) and D6667 (1N4148).

Fault 34: [HT increases, dies immediately]. Check R3365, D6665 (4R7) and 1N4148.

Fault 35: [Power supply OK. No 6V on micro IC]. Check D6733 for O/C.

Fault 36: [PSU OK. No 5V after shorting thyristor]. Check C2691 (330uF), TDA2579 or micro.

Fault 37: [Supply decreases to 20V. Pin 14 of micro IC low]. Intermittently set starts if pin 33 of micro shorted to earth. Replace micro. Causes set to switch to standby. Fault 38: Check Tr7702.

8. PSU does not function. 280V ok on collector. 7673 0V on Optocoupler point 5 2V. T7673 and 7674 new. BUT OK. R3661 ok. Fault 1: Replace optocoupler. Check C2679 and C2675. Resistors which are less than 1 Kohm should be checked.

9. 95 volts varying with contrast level. Fault 1: Replace D6665 - 1N4148 (4822 130 33939) and resistor R3665 - 4.7 Ohm safety (4822 111 30499). Components in primary side of power supply unit.
10. Motorboating in the power supply. Fault 1: Replace D6694 - BAX14V or BYD331 (4822 130 42606), Fault 2: D6701 - 1N4148 (4822 130 33939), Fault 3: zener D6702 - 6.2V (4822 130 34167).
11. Repeated failure of line output transistor (T7619). Fault 1: Replace TDA2579 (4822 209 72363) line oscillator, replace T7630 line driver - BF483 (4822 130 42607).
12. Over-voltage circuit active. Fault 1: Remove connector M6, +95 Volt present. Replace TS7619 (BUT11AF; 4822 130 42679), D6609 (BDY33G; 4822 130 42489) and replace D6610 (BDY33M; 4822 130 32896). Remove connector M6, +95 Volt present, TS7619 OK (checked with Ohmmeter). Replace S5620 (line transformer; 4822 140 10306).
13. Power supply will not start up when set is warm. D6670 (1N4148) was found to be defective when warm. After replacing this Diode normal operation was restored.
14. Low HT with noise from power supply. Fault 1: Line output transformer turns S/C.
15. No function, power supply works. Fault 1: Sync-IC in IF/sync-unit 1040 has blown. Control signal on line stage is therefore weak. IC = TDA2570 (209 72363).
16. Power supply switches off. Fault 1: Replace D6697 (BZV56V36).
17. Main uP IC7720 (TMP74C434N) is defective. Fault 1: Fit screening can.
18. Dead power supply. Fault 1: A leaky CNX62 optocoupler may remove the start up voltage because transistor 7673 becomes conductive. A s/c reading across the 95V line could mean that the ht rectifier's parallel protection capacitor C2695 (2.2nF) is s/c.
19. No results with a pulsing power supply. Fault 1: Check if the BZX79-F6V2 zener diode 6702 in the voltage comparator stage is leaky.
20. Intermittent dead set. Fault 1: Can be caused by a faulty microcontroller chip giving a false standby output. Fault 2: Check C2703 (330µF).
21. BUT11 is s/c. Fault 1: Change D6674 to BYD33J.
22. BUT11AF chopper S/C. Fault 1: If no other fault found change the CNX62 optocoupler.
23. If set switches off when hot then switched on again it sometimes stays in the standby mode. Fault 1: Check D6670 (1N4148) even if it reads ok.
24. BUT11AF line output transistor blows every few days, if preceded by line tearing. Fault 1: Change line output transformer.
25. Dead. Power supply pulsing. Fault 1: D6072 (BZX79-F6V2) is leaky.
26. Dead. Stuck in standby. Fault 1: D6670 (1N4148) is O/C Fault 2: Check TR7702 (BC548B). Fault 3: Replace diode D6934.
27. Failure of line output transistor. Fault 1: C2619 (1.5nF), C2610 (8.2nF).
28. Intermittently appliance goes dead, standby LED not lit. Fault 1: [Pin 14 of IC7840 reads low]. Check IC7840 (TMP47C432).
29. BUT12A S/C. Fault 1: Replace BUT12A (SGS) with a Philips BUT12A (PH).
30. Failure of BUT11A. Fault 1: Change D6675 to a BUD33D, D6679 to a BYD33G and C2679 1nF/2kV. Also check TR7673 (BC547). TR7674 (BC328 and diodes D6676/D6677 (1N4148).
31. No start up. Fault 1: Check TY6696 and associated zener diodes.
32. Dead with PSU whistle. Fault 1: Check T7701 (BC548) in the line timebase. Fault 2: Check C2700 (4.7uF) near BT151. Fault 3: Check C2703 (330uF) at pin 10 of chopper transformer T5763.
33. Appliance is dead; number 3 shows then changes to F1. Fault 1: [95V and 22V outputs are missing]. Check D6695 for open circuit and check wickman fuse F1690 (400mA).
34. Intermittent tripping with patterning on screen. Fault 1: Check C2691 (330uF/25V) in power supply.
35. PSU and line output stage work OK but after two secs TV switches off and goes into stand by. Fault 1: Replace 3665 (4R7) and D6665 (1N4148).
36. No line drive, power supply OK. Fault 1: Check reservoir capacitor C2691 (330uF/35V).
37. Failure of BUT11AF (7619). Fault 1: Check C2619 (1n5), C2610 (8n2) in the line output.
38. No line oscillator function. Fault 1: [19V supply low]. Check C2691 (330uF).
39. Chopper BUT11AF S/C. Fuse blown. Fault 1: Dry joints on chopper transformer. Resolder all joints around PSU including input choke. Line output stage usually has cracked joints not only on transformer but all components around line output transistor (BUT11AF) including two diodes and all capacitors. Check also line driver transformer connections and frame output transistor joints. Check for 2.4V on backup battery and fit screening cover over micro IC.
40. Power supply buzzing. Fault 1: Rail (95V) low, replace 2703.
41. Blown mains fuse. Fault 1: Check degaussing resistor and check surge limiter resistor R3657 (4.7R) and check BUT11AF chopper transistor (Tr7677), for cracks in plastic casing.
42. Dead. PSU tripping. Fault 1: [No voltage at junction of R3661 and R3673]. Check CNX62, D6610 for S/C, R3600 for O/C and zener D6072 (6.2V) for S/C.
43. Dead. No standby LED or channel indicators. Fault 1: [No oscillation at pins 31 and 32 of micro IC7840]. Check C2934 (27pF) and C2935 (27pF).
44. Intermittently no start-up from cold. Fault 1: Check C2703 (330uF/25V).

FUNKIJSKE

1. Header line missing. Fault 1 IC7700 (SAA5241) must be checked.
2. The lines in TXT are missing. Fault 1 The separator 2802 must be readjusted.
3. If the set is switched off when warm it won't come on again until it has cooled down. By using the remote control unit it switches off but not to standby, only a slight whistle being heard. Fault 1 A likely cause of this fault is failure of the 680KR resistor R3661. Replace it and check carefully for dry joints in the power supply section, particularly on the pins of the chopper transformer T5763.
4. No text. Fault 1 Check IC7785 (SAA5231).
5. Low cvbs output. Fault 1 Change R3517 from 6K2 to 1KR.

6. No TXT, skip is empty continuously. Fault 1 No 2V/0V on pin 17 of IC7770. IC7770 is defective.
7. Shuts off on play, all operation functions are blocked, loss of memory. Fault 1 Backup is ok. Replace IC7840 and screen with a shield. Earth to the anode of D6731.
8. No function, the power supply unit is ok. Fault 1 The sync. IC in the IF-syncro unit 1040 is defective. The line stage control signal is very weak. IC = TDA2570.
9. Teletext is not selected, however it comes through the signal; Black picture when TXT is switched on. Fault 1: IC 7770 on TXT decoder is defective.
Fault 2: SAA5230 and SAA5241 are defective.
10. No display, no functions, snow in picture. Fault 1: Fuse 630mA by the line transformer is defective, position 3623.
11. Appliance can only be switched on once every 10 times. Otherwise loud pulsating can be heard in the speaker. If it runs then picture and sound are perfect. Fault 1: Check 5V on Pin 42 or the processor (min. 5.0-5.1V).
Fault 2: Processor ok. 5V ok. Thyristor 7626 (SF2D41) was defective.
12. Teletext problem with Photo-CD. Note: TV aperture with CP90 or CP110 chassis with photo-CD player CDF190/200 connected via full SCART. If the Photo-CD player is off the teletext is out of sync.
Fault 1: Open circuit the print track on the TV chassis between SCART pt. 16 and bridging wire 9498 (The side of 9498 which is in the middle under the IF/sync unit). Bridge this open circuit with a 1N4148 diode, anode to SCART pt.16.
13. Set does not come out of standby. Fault 1: Audible noise, whistle or motorboating whilst set in standby. Check/replace R3670 - 22 Ohm, D6670 - 1N4148.
14. Dead. Fault 1: Voltage +95 V not present. Replace TS 7677 (BUT 11 AF; 4822 130 42679), TS 7673 (BC 547) and TS 7674 (BC 328), D 6674 by BYD33J (4822 130 42606), U 1040 (4822 212 22739), TS 7727 (BC 556; 4822 130 40989).
Fault 2: F1690 (400mA) which supplies 22V is O/C. Fault 3: Remove connector M6, +95 Volt present.
Check/replace TS7619 (BUT11AF; 4822 130 42679) and check/replace D6609 (BDY33G; 4822 130 42489) and check/replace D6610 (BDY33M; 4822 130 32896). Fault 4: C2102 (470µF/25V) is S/C.
15. Function knobs on CTV fail. Fault 1: + 4.9V on pin 42 of IC7840. Oscillogram on pin 31, 32 present. Replace IC7840 (TMP47C432P-8188; 4822 310 31849). Important: mount metal screening with earth to bridge 9732 (TMP47C432P-8189; 4822 310 31851).
16. If switched off when warm then switched on again, it sometimes stays in standby. Fault 1: D6670 (1N4148)
17. Problems with FLOF TXT (Fastext). Cannot find page 811 while in spite of this page is broadcast. TXT header remains on subtitles.
Fault 1: Replace IC7800 (MAB8461P/W107) by new model (MAB8461P/W196). Part no: MAB8461P/W196 4822 209 62479.
18. Led stays on after switching off with the mains out of standby. Fault 1: Change C2661 (33nF) to 100nF (on the mono carrier) :4822 121 41689 100nF/250V.
19. Intermittently no switch on with mains switch. Fault 1: Replace C2696 (47µF/200V) by Philips type.
Part no: 4822 124 20856
20. Looks like a defective tuner. Fault 1: Check for volts on pin 5 of the tuner - if zero measure for s/c = C2079 in IF unit (22µF at 35V).
21. Starts with difficulty when the appliance is cold. Fault 1: Replace C2703 (330µF) in the power supply.
22. Non remote channel selector not working, LED not alight and no tuning on signals. Fault 1: Check R3941 (10R) for O/C if so change HA11484 chip.
23. Fault 1: Check R3941 (10R) for O/C if so change HA11484 chip. Fault 1: A check shows that the microcontroller chip's 6V supply is missing. The cause of this is D6733 (BAV19) which is O/C.
24. Goes off intermittently. Fault 1: Check for dry joints on line output transformer.
25. Intermittent failure to switch on from cold. Fault 1: Check C2703 (330uf)25V.
26. Set stuck in standby. Fault 1: Check D6934 for being leaky.
27. Intermittent failure to come on. Fault 1: Replace D6670 (1N4148).
28. No sound, no picture. Tube heaters on. Fault 1: Replace D6733 (BAV19).
29. Corruption of TXT header line. Fault 1: Check IC7785
Fault 2: Check IC7770 (SAA5243P/E) FLOF text decoder.
30. Front controls inoperative. Fault 1: IC7840 (TMP47C432).

TUNING/MEMORY

1. No signals or display. Fault 1 D6934 is leaky, 1934 (4MHZ) (remote).
2. Not tuning. Fault 1 IC7840 (TMP47C432).
3. The stations go off, the sound goes loud and F1 shows in the display. Fault 1 IC7840 (TMP47C432) must be replaced.
4. Tuning unstable. Fault 1: 33 V on D 6010 unstable. Replace D 6010 (ZTK 33B; 4822 130 30959). Replace U 1040 (4822 212 22739).
5. Optimal values are not stored any more. After switching on only picture without colour, no sound. With the remote control the saturation and volumes can be adjusted. Fault 1: Select program site 38 and press "Store" and program "+" at the same time (switch off hotel mode). Perhaps processor TMP47C432 is defective. Also solder in the screening plate.
6. Loss of programmes from memory. Fault 1: Disconnect pin 34 of IC7840 (uP) from +6V and fit diode (1N4148) (4822 130 30621) between P34 of IC7840 and +6V, cathode to P34. Fit a resistor (10K) (4822 116 52233) between +6V and the earth and fit electrolytic (1000µF/10V) (4822 124 40184) in series, - electrolytic to earth. Fit diode (1N4148) between 10K connection, + electrolytic and pin 34 of IC7840, cathode to pin 34 of IC7840.
7. 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.

8. Channel selector does not work. Fault 1: Check IC7865.
9. When switching channels quickly, memory switches from 11 to 01. Fault 1: Replace microprocessor TMP47C432/AP/8187 by TMP47C432/AP/8188 (4822 209 72038).
10. Intermittent tuning drift. Sometimes takes a few seconds to lock-in after the appliance is first switched on. Fault 1: Change zener diode D3837 (33V) to ZTK33B.
11. Loss of memory. Fault 1: Replace Nicad battery and TDA2579.
12. Width flutters in and out. Fault 1: Replace C2619 (1.5nF/2kV) in line output stage.
13. Channel display showing 3 then F1. Fault 1: Check D6695 for O/C and F1690 (400mA) for O/C.
14. Dead. No standby LED or channel indicators. Fault 1: [No oscillation at pins 31 and 32 of micro IC7840]. Check C2934 (27pF) and C2935 (27pF).

GEOMETRY

1. The picture image is too small or shows lines. Fault 1 The contacts are loose under T7571, T7573 and/or R3753/R357V. The fuse +95 is defective.
2. East/west is defective. Fault 1 R3599 is defective.
3. East/west variation. Fault 1 T7600 on the picture tube board is defective.
4. Lack of height. Fault 1 Check value R3582 (3R3).
5. Intermittent E/W pincushion. Only snow. No response to RC and operating unit. Fault 1: uP IC7840 or quartz 1934 causes fault. If display remains lit, check +6V power supply and +12V from line transformer.
6. Reduced width. Fault 1: Dry joints on D6609, R3600 (8.2ohm) is O/
7. Height is reduced to 1 inch at the centre. Fault 1: Check if R3623 (8.2ohm) is open circuit.
8. During bright scenes picture pulls in. Fault 1: [Power supply regulation is poor]. Check C2638 (470µF).
9. When brightness control is adjusted the width alters. Fault 1: Check R3665 (4R7) and D6665 (1N4148).

other

1. The display shows F3. Fault 1: IC7240 must be checked. Fault 2: Replace microprocessor with screening plate.
2. The remote control does not work, operating the appliance manually does function. Fault 1 U1003 IR receiver is defective Fault 2 Check D6960 and IC7960.
3. The display shows FO. Fault 1 IC7770, C2763, U1750 and IC7840 must be checked.
4. The display shows F1. Fault 1 Check IC7840 for +12V.
5. The display shows F2. Fault 1 Check IC7840.
6. During switch-off there is a bang and the sound crackles. The standby light remains lit up. Fault 1 Change C3661 (33nF) to 100nF.
7. Display flickers quickly, as if the power supply hiccups. Fault 1: Replace fuse 3623 (630mA), has resistance.
8. TV cannot be put in standby using the remote. Fault 1: Measure pin 4 of IC7840
0V = standby 5V = on
9. Remote control fails. Fault 1: RC5-signal on pin 9 IC 7960 not present, +4,9 V on pin 8 IC 7960 present. Replace IC 7960 (TDA 3047; 4822 209 72364) and replace D 6960 (BPW 50; 4822 130 32376).
10. Audible hum in standby mode. Fault 1: A production change has been introduced increasing the value of C2661 from 33nF to 100nF (code no. 4822 121 41689). This has been done to prevent an audible hum when the set is in standby mode.
Note: May be applied as a service solution in cases of specific complaint.
11. Does not start by using remote control. Fault 1: Transistor 7730.
Fault 2: Better memory battery 1901, 2,4 V- Code 4822 138 10313.
12. Back up battery fails regularly. Fault 1: Replace back up battery (1.2V) (part no. 4822 138 10138) by improved model.
13. The remote control range is very poor. Fault 1: Check the TDA3047 RC receiver chip.
14. High buzzing sound in standby. Note: C2700 and C2696 and BT151 have been replaced already.
Fault 1: Replace Sops transformer. Fault 2: Replace standby thyristor D6726.
15. Intermittently RCU does not work. Fault 1: Check TMP47-8189.
16. No display. Fault 1: Fuse 1640 (500mA) is O/C. Comes from pin 3 of the connector.
17. Humming noise in operation when appliance was switched off at mains switch from standby and then switched on again from standby. Fault 1: The circuit around 7727 was changed after Series no PM03 and BA03. Removing the circuit, in accordance with later specifications, removes the problem. Change R3727 from 180 to 120R, replace zener diode 3229 by BX29F4, replace 820R resistor in series, cathode of zener diode on T7727.
18. Corrupted display. Fault 1: Check IC7840 (TMP47C432AP8188).