Picture

Raster is empty, jumps to protective circuit.
Fault 1 Electrolytic 2433 (470µF) is s/c. Position: on the CRT board.

The picture is white and shows flyback lines. The appliance goes to protective circuit.
Fault 1 D6410 on the picture tube board is defective, therefore power supply resistor R3400 (+200V) is defective, and probably also R3639 next to the line transformer.

When changing the bands, ie from band 1, 4 or 5 to 3 or interband S1-10 there is sometimes no picture.
Fault 1: Remove the tuner from the chassis. Lift off the cover (board side). Attention; Unsolder the soldering tag. Solder +/- 2cm bare wire to grounding tags (the ends of 2 contact springs). Refit the cover and pull the bare wires through the opening of the springs. Do not forget to resolder the tag.

There is no picture or a bad picture with certain programmes.
Fault 1 The appliance does not adjust the off-set channels correctly. Check if the serial No. starts with AG01 or AG02. Replace micro processor IC7830 and fit a resistor between P9 and P8 of plug K4 (1K) and diode 1N4148 between P13 and P9 and anode of IC7830 on pin 13. If the serial No.starts with AG 04 then only fit a resistor on plug K4.

Interference in the picture.Fault 1 Interference in the picture on one of the VHS channels. Press on the compartment lid to see if the picture improves. Solder the earthing spring on the lid. Fault 2 During high volume the picture changes. Check if +140V remains. Change R3697/56K.

The picture is frayed. Fault 1 Check the control TS7618 and R3633. Fault 2 Check capacitor 2496, C2544/ C2545 and R3544 (synchr.module). Fault 3 Check the video signal. If the line pulse is poorly, then change the MF-unit.

All stations show a wavy picture.
Fault 1 Replace the earthing connection between the plate and the channel selector with wire.

Contrast cannot be controlled. Fault 1: 3V at pin 19 of IC7300. Diodes 6486 and 6490 have been measured and seem ok, however they must be replaced. Fault 2: Check if control voltage at pin 12 of IC7300 changes when you move the contrast regulator. If voltage varies replace D6490 (BAV21; part no. 4822 130 34189).

When the volume is loud the picture is wavy vertically in rhythm with the sound.
Fault 1: Check if the PSU stabilises at 140V (loosen diode 6705 and check resistor 3697).

The picture does not stand still, looks as if its laying next to a station.
Fault 1 Check the soldering joints on the synchro. board 7550.

Picture collapse depending on volume. Fault 1: Check T7225 and C2153 (15µF).

Poor picture because the appliance keeps searching for channels. A good synch. pulse is not present on Pin 28 of the tuner.
Fault 1: Replace electrolytics of 0.47 MF, 1.5MF and 47MF in MF section of tuner.

Picture varies at high volume. Fault 1: Check if the +140V remains stable, replace R3697 (56K-MR25) 4822 116 51264.

White stripes in picture for 2-3 minutes. Fault 1: Loss of capacity in C2571 100µF.

Dark screen. No sound. EHT present. 140V,13V ok. All voltages ok.
Fault 1: [U1830 has been changed]. If picture takes a long time to appear check C2571 (synchronisation IC). Change D6570.
Fault 2: Check T7480 (BC423), T7438 (BF485), R3399 and R3400 on the CRT.

Slow build up of top part of picture. Fault 1: Replace electrolytic 2571 (raster circuit).

It takes a long time for picture to warm up and appear. Fault 1: Replace diode D6492 (1N4148) on picture tube panel by a series connection of 2 diodes. Note that this solution will cause colour changes during the warming up of old picture tubes.
Fault 2: Check +200. If low, replace electrolytic 2638 (3.3µF), part no. 4822 124 42182.

No picture, no sound. Displays E4. EHT is normal. Fault 1: No raster oscillation. Replace TDA8370

Little contrast, picture size is a little too small. Fault 1: R3496 is defective, then 10V at BAV21 is not present.

After switching on sound is ok. Picture only appears after 5 mins. No loose contact. Fault 1: The cause could be in the vertical deflection. Check if the small electrolytics in the middle of the chassis react to the cold. When cooling picture should then be blanked out. Fault 2: Check CRT for emissions.

No raster when cold. Fault 1: Check C2571 in the secondary.

On some 2B chassis the picture appears after 5 to 10 mins then stays normal after that. Voltage is correct.
Fault 1: Weak CRT. Solder a 0.47µF capacitor or 0.1µF/250V film capacitor on the filament.

Sound but no picture, horizontal bar 2cm from the top of the tube. The picture appears after working for a few mins.
Fault 1: Check the following when warm and when cold: the signal in the synchronisation circuit of the 12C BUS on transistor 7629 (BC548C). Check filterings eg: 2545 (4.7pf) and AUX PANEL circuit which produces 12V and 13V.

Sometimes no picture for 20 minutes. Sometimes no sound. Sometimes there is a picture but with interruptions, possibly lines swaying. Fault 1: C2582 1500µF is loose on the print.

Black picture after switching to teletext. When switching back the picture slowly comes back.
Fault 1: Replace diode pos. 6490 BAV21 (don't use a substitute).

It takes at least 3 minutes before the picture appears. Colour contrast on TDA4580, Y signal is present, still no RGB.
Fault 1: Possibly insufficient emission at the picture tube or the G2 voltage is too low. There is no picture when the beam current is too low.

Red, green or blue fly-back lines through the picture. Fault 1: R3446, R3447, R3425, R3427, R3406 or R3407 may be defective.

Weak picture. Looks like bad picture tube. TXT ok. Power supply ok. Contrast is adjustable but cannot be set properly.
Fault 1: [TDA4580, TDA4510, TDA4565 have been replaced]. Check beam current.

Sometimes no sound, no picture.
Fault 1: Voltage +140 V switches off. Check soldering points of SOPS-transformer (T5663) and line-transformer (T5620).

Picture and sound sometimes disappear. Fault 1: Restriction: only for sets with prod.id. AG04 and higher. Replace IC 7830 (MAB8461P/W155; 4822 209 73465) See service information CT88-34.

Picture disappears sometimes.
Fault 1: Restriction: only for PAL sets. Picture OK via SCART. Replace front end U 1015 (FE 616SQ; 4822 210 10325).

Picture brightness too high.
Fault 1: Contrast not adjustable (Voltage Pin 19 IC 7300 > 8 V). Replace D 6490 (BAV 21; 4822 130 34189).

No picture, no sound. Fault 1: Voltage +140 V present. Check soldering points of line-transformer.

No picture, sound OK. Fault 1: Voltage on pin 14 of IC 7550 smaller then 2V. Replace IC 7550 (TDA 8370/V2; 4822 209 70178) and replace IC 7570 (TDA 3654Q; 4822 209 83351). Signal pin 15, 17, 18 IC 7300 OK, Burst-key pin 10 IC 7300 OK. Replace IC 7300 (TDA 4580; 4822 209 70018).
Fault 2: Replace resistors 3646 + 3647 (111 30494). +26V missing.
Fault 3: Check if the high voltage is present. Check if the contrast adjustment works on pin 9 of IC7300. Replace C2496 22nF.

Picture has very bad distortion (notches on the sides). Noises in the sound. In the line end stage all secondary voltages are approx 10% too low.
Fault 1: Check if the 140V has a power supply frequency hum. Filter electrolytic on the secondary is dead.

Purple picture after loose connection of brown wire to picture tube base and aquadag coating. Colour changes to white with intermittent flyback lines. Picture contents in background but distorted then they disappear.
Fault 1: TDA4580 is defective. TDA4510 (red absent but with a little green) is defective.

Black screen (blocked tube).
Fault 1: Check if R3406, 3407, 3426, 3427, 3446, 3447 (33K) O/C or if they have changed value.

When switchng on from cold the top part of the picture appears completely black or else with a dark band 6-8 cm high. Defect disappears when the appliance warms up.
Fault 1: Capacitor C2571 (100uF/25V), in the vertical deflection stage is defective.

Tube blocks at the dark level.
Fault 1: Check if diode 6462 on the RGB board is leaky as a result of BF423 and BF485 s/c.

Dark screen with slightly lit horizontal zone at top of picture. Spot in middle of screen at switch off. Sound ok.
Fault 1: [TDA4580 and TDA4555 replaced but to no avail]. Replace capacitor C2571 (100uF) in time base. Fit a diode (1N4148) in series with diode 6492 on CRT board. Fit a capacitor (0.1µF) parallel to 3P13 and 5P15 on CRT connector. Failure is caused by CRT drift. Fault 2: Check raster circuit 7570 pin 9: 27V. If missing, check 6646 and 2646. If ok, check signal on pin 3: 2Vpp, on pin 5: 40Vpp. If incorrect suspect 2571 and 7570.

Black bar at bottom, or no raster. Fault 1: Replace electrolytic 2571.

Distorted picture when cold in top third of screen. Picture gradually returns to normal after 10 mins.
Fault 1: [TDA3654, C2575 and C2571 replaced]. Check 27V on pin 9 of 7570, 13V on pin 22 of 7550. Suspect 2536, 2646.

White picture with flyback lines. Fault 1: 3.9V missing on the picture tube print. C2433 (470µF) defective.

Gray picture when contrast and brightness are at max. No sound or picture via scart. Power supply OK.
Fault 1: Check whether +13V or +13D is present.
Fault 2: If no display or error indication then no +5V or µP 7836 or CITAC 7900 is defective.

Black bar in top of picture - disappears slowly. Fault 1: Replace C2571 (raster).

Picture changes depending on the volume. +140V is unstable. Fault 1: Replace resistor 3697, 56K

Loss of picture when switching to certain programmes. Fault 1: Check if serial no. starts with AG06. No reception on band 3 when switching from UHF to VHF. Solder spring contacts of tuner top to earth pins of tuner print.

When picture is dark, it begins to tremble as does the sound.
Fault 1: Check the 13V on 6644, if not suspect 2299;2291;2644;20V on 6704; check 2705 if ok check 2537 and 6537.

No picture, blue screen, no sound. Fault 1: Check IC7550, TDA8370.

Picture pumps/flashes, buzz in sound.
Fault 1: [IF capacitor replaced without effect]. Check T7225 and C2153 (15uF). Check +140V and R3697.

Display does not switch off, snow, sound cuts out. Fault 1: Check tuner.
Necessary equipment: oscilloscope.

Screen saturated in green (looks like defective tube). Fault 1: R3426 on CRT board is O/C.

No picture sync when changing channel (chassis index AG07) with aerial signal higher than 10mV.
Fault 1: Mount a transistor to reduce tuner gain when communicating and in channel search.

Picture flashes according to volume. Fault 1: Check T7225 and C2153 (15µF).

Picture varies when volume high. Fault 1: Check if +140V is stable. Replace R3697.

Picture cuts out intermittenly. Fault 1: Check fuse 1642.

No brightness or picture. Fault 1: Check T7438 (BF485), T7480 (BC423), R399 and R3400 on CRT board.

Dark screen, CAD functions, the channels are towards 80. No memorization. Fault 1: Check SAB3035 on the main board.

Convergence problem in middle of screen. Fault 1: Check according to colour touched T7418, T7438 or T7458.

Video and display cut out. Only green light stays on. Fault 1: Replace IR receiver (4822 218 20293).

Picture fades and sound hums. 12V ia at 5V. Fault 1: Check on 6644 5V. Suspect 2290 and 2644.

No picture, no sound. Appliance whistles (chirps) and emits smoke.
Fault 1: Replace capacitors on the right beside the high voltage transformer (a round blue one and a rectangular yellow one).

No contrast adjustment.
Fault 1: Frequently contrast adjustment does not work in chassis 2B eco (model 3). This is caused by diode 6490 being replaced by a different type. Replace diode 6490 by BAV21 (part no. 4822 130 34189).

Poor contrast and pale picture. Fault 1: Check +200V. If low, replace electrolytic 2638 (3.3µF).

Picture takes a very long time until it becomes bright, sound ok.
Fault 1: Irradiation from the picture tube is poor. Control circuit blanks the picture tube. Connect in series a diode 1N4148 to D6492 on the picture tube board.

Picture only appears after 1-2 mins. Fault 1: Picture tube is poor around one cathode. To make picture appear more quickly, on picture tube board fit same diode in series to diode pos. 6492.

No picture, no sound. After 5 mins picture with line sync problem and no sound. After 10 mins colour appears on picture but still no sound. Fault 1: Check 5V on pin 28 of 7830, 12V on pin 22 of 7550, 26V on 6646.

Sometimes picture is blanked out at beginning of operation.
Fault 1: Replace electrolytic C2571 (100µF) which is temperature sensitive.

Picture shrinks and controls no longer adjust sufficiently when warm. Functions correctly for 15 mins when cold. Line transistor overheats and sparks.
Fault 1: [FBT, 3619, 3620, 2SD1577 replaced]. Check or replace 2617, 2609, 2610. If ok, suspect 2599, 6603, 2509 and 2597.

No picture or sound. Goes to safety mode. Whistling. Line transformer ok.
Fault 1: Check 13V on 3664. If low, suspect 2644, 2290. If no power supply check 7668, 2681 and 2690.

Dark picture. Fault 1: R2400 on picture tube connecting board O/C. Therefore UG2 has dropped to 40V. Due to this O/C pin 19 of the contrast IC IC7300 (TDA4480) does not receive the necessary 3V. T7488 and zener diode 6480 are defective.

No picture, no sound but there is high voltage.
Fault 1: No 12V at tuner/IF module. Safety resistor 6R5 is defective without any obvious reason.

Picture and sound hum for 10 mins. Power BU blows one time out of ten.
Fault 1: Check on 7618 base: 11Vpp, collector: 1200Vpp. If ok, check 13V on 2644.

With brightness at max., raster cramps. Fault 1: Replace zener diode 6668 (30V).

Wavy picture and hum in sound. Crackling in PSU. Fault 1: Check C2646, C2644, C2705, C2708 (all 1000µF) and C2290 (470µF).

Picture takes a while to appear. Fault 1: CRT is flat. Load CRT.

Picture is blanked. Fault 1: [Incorrect pulses from the field output stage]. Check C2571 in teh field flyback boost circuit (note that the value is 68µF with 90 degree sets).

Zigzags in picture and hum in sound. Fault 1: Change T7225. Change C2153 to 15µF.

Black screen. FBT ok. After 5 mins white line on lowest third of CRT.
Fault 1: [TDA8370 and TDA3654 replaced]. 180V on CRT cathodes. Via SCART composite signal present at pin 5 of TDA8370 but not on pin 3. SDA and SCL present. Change C2571.
Fault 2: Use oscilloscope to check 13V on D6644, 200V on 2638 and 26V on 2646. Suspect 5V on 7735.

Cramped frame horizontally and vertically. Fault 1: Fuse 1601 (125mA) has burnt out.

Picture blanked by incorrect pulses from the field output stage. Picture begins to appear if left on for a long time, about two inches from the bottom of the screen. Fault 1: C2571 (100uF/25) in the field flyback boost circuit.

Screen switched off at start up. Picture appears after 2 mins. Sound ok. Time base ok.
Fault 1: Check 2617. If ok check 11Vpp on base of 7618, 1200Vpp on collector. Suspect G2 voltage.

No picture or sound, set whistles. Fault 1: [No 140V]. Remove connector M17, +140V present. Reconnect M17, remove R3535. If +140V and audio present (no picture), replace IC7550 (TDA8370); part 4822 209 70178 with 4822 209 73309.

Black screen when cold. Picture appears at the bottom then moves gradually over rest of screen.
Fault 1: Check capacitor 2571 (100µF/25V) in front of vertical IC7570.

White picture and no sound. Ok via scart.
Fault 1: [IF tuner, RGB IC8370 replaced]. Check safety resistor outside module and decoupling capacitor inside.

Flickering picture. Fault 1: Adjust with small pot on IF board and power supply.

Sound OK. Blank screen with flyback lines. Stops after few seconds. R3400 is damaged. After replacing, R3400 is damaged again. Trans.7480 (BF423)

Function

After operating for sometime, the appliance switches off. D6490 is open circuit.
Fault 1 The contrast is set to maximum and cannot be adjusted. D6490 is defective.

There is radiation on the channel selector.

Fault 1 Tighten the earthing contacts (6X) with wire to the cover (lid).

Appliance fails when it has warmed up.
Fault 1: The tuning capacitor of the line transistor in the line stage is defective (8.2µF/1600V).

Sometimes the appliance does not switch on.
Fault 1: When using the mains plug the power supply sometimes does not work. Change C2670 (68µF).

The brightness, contrast, colour and sound commands do not function.
Fault 1: Check C6922 and IC7900.
The display, the contrast, colour and sound controls do not function.
Fault 1 Check the +5V power supply at U1830 and the power supply of IC7830.

Occasionally the appliance switches off or does not function at all. The power unit hums.
Note: The power supply unit runs when the BU horizontal collector is disconnected. U1 drops to approximately 70V when the fault appears. The power supply hums.
Fault 1: Capacitor C2609 (8.2nF/1500V) in the horizontal scanning circuit is defective.

The stand-by LED on the remote control often flickers without function. The sound increases and the display shows F1 or F2.
Fault 1 Replace memory IC X2402.

TXT does not function correctly. (Possibly perforated TXT head).
Fault 1 TXT segments and lines disappear completely. Replace the bridging wire 9704 with a 200R resistor. Fit a 680R resistor between junction 9704 and R789 to ground. If present, then change C2791 to 100µF, R3790 to 3,9K and R3792 to 5,6K.
Fault 2 Change the storage IC7770 and 7771 on the TXT module.

After some time the appliance goes into standby. During channel search the numbers run through the display very quickly and the appliance remains in stand by.
Fault 1: Check memory IC or replace.

TXT stops on page 100.
Fault 1: If only page 100 is in the top left hand side of the picture then check IC7780 on the TXT decoder.

Either commands are blocked intermittently, IC7830 starts up, or occasionally small interruptions in the sound and picture or the PSU pumps now and again.
Fault 1: Disconnect the IR sensor. If everything is ok, replace it by 4822 218 20293 and remove the holder of the old sensor. It may happen occasionally that a loading program (Bootstrap) is produced in the collective pick up of the picture tube holder.
Fault 2: Check the overload protection on the tube board.
Fault 3: Check F1642 (800mA T).

The commands are blocked intermittently or IC7830 boots or occasionally there are micro breaks in sound and picture or the power supply pulsates intermittently.
Fault 1: Disconnect the IR sensor. If everything is ok replace it by 4822 218 20293 and remove the holder of the old sensor. It may happen occasionally that the spark gap in the socket of the CRT occasionally produces arcovers. F1642 may also be the cause of these problems.

No analog functions. Audio balancing LED (25CE4570) is lit.
Fault 1: Replace the buffer battery.

Appliance had dry joints on the line transformer. BU508 AF had s/c. After replacing transistor it cut out again when switching on, although the dry joints, which must have been the cause were removed.
Fault 1: Check C2609, line oscillator IC 7550.

Dead. E4 displayed.
Fault 1: [EHT ok]. Add IC 7550 to the table in the documentation which only mentions U1830 and IC7830 for E4.

No function.
Fault 1: [Voltage +140V absent]. Check soldering points of SOPS transformer and line transformer.
Fault 2: [Voltage +140V absent]. Replace TS7687 by 2SC3973B (4822 130 60851), change R3671 to 22R/5W (4822 113 41152) and change TS7685 (BC547 4822 130 44257), TS7686 (BC369 5322 130 44593) and D6690 (BZV85/C5V1 4822 130 31456).
Fault 3: BUT12 in power supply S/C.
Note: Resolder converter transformer and check optocoupler CNX62.

Does not function well. Programme numbers change spontaneously, switches to stand-by etc
Fault 1: Restriction: only for 27CE4691/10R. Connect brass axis of the flap of the operation knobs to earth.

Option changed, only UHF tuning.
Fault 1: Restriction: only for sets with prod.id. from AG06. Remove flat-cable between connector K4 and M4 of picture-tube, replace IC 7925 by ST24C02CP (4822 209 62098) and connect a zener diode (BZX79/C5V6) from both pin 5 and pin 6 of IC s7925 to earth. (anodes to earth).

Teletext faults. Does not function.
Fault 1: Voltage +13V present on connector 6T8. Replace U 1750 (TXT-decoder):
general 4822 212 22346
Scandinavia 4822 212 22396
flof and Spain 4822 212 22828.

Teletext faults. Characters wrong.
Fault 1: Voltage +13V present on connector 6T8. Replace U 1750 (TXT-decoder):
general 4822 212 22346
Scandinavia 4822 212 22396
flof and Spain 4822 212 22828.

RF radiation affecting band 2.
Fault 1: Service experience has shown that in areas with relatively poor reception of FM radio on band 2, interference can be picked up from the NICAM decoder of a nearby 2B television receiver. The following modification to the NICAM decoder panel (1110) can be applied in cases of specific complaint. 1) Insulate the length of print between pin 40 of IC7450 and 9454. Disconnect the tubular 47pF capacitor from the print side of the panel and discard. 2) Remove 10µH choke from position 9454 and reconnect between pin 40 IC7450 and 9454 (in place of the insulated print). Keep the lead between the choke and pin 40 as short as possible. 3) Solder a link wire in position 9454. 4) Solder a 47pF chip capacitor (code no. 4822 122 31772) between pins 2 and 3 of edge connector S10. Do not reuse the discarded 47pF capacitor (small physical size is essential in this application).

Poor reproduction of copy protected VHS tapes.
Some instances have occurred where VCR reproduction of copy protected VHS tapes has been adversely affected by the anti copy signals recorded in the sync period. In cases of specific complaint the following modification can be applied:
1. Change C2544 (47nF) to 22nF. (4822 122 30103)
2. Change C2545 (4.7uF) to 8uF (3.3uF 4822 124 23109) in parallel with the 4.7uF on the print side).
3. Change R3544 (1.8K) to 3.6K (4822 050 13602).
Note: Depending on the VCR in use it may be necessary to select a value for C2544 slightly higher or lower than 22nF to achieve optimum results.

No function. Power supply OK.
Fault 1: TDA 8370 is defective. Line output stage is not driven.

No switching to standby with RC (RC OK).
Fault 1: Check if pin 7 of IC7830 becomes high/low at on/standby respectively. If so, check D6734 and transistor 7731.
Fault 2: Check pin 12 of line transformer for loose contact.

Starts up but control remains in standby.
Fault 1: Replace memory IC.

Memory contents (X2402) change at random.
Fault 1: Fit a diode (1N4048) in the +5V power supply of memory X2402, cathode at pin 8, and fit a capacitor (220nF) between pin 8 of X2402 and the earth. Bend band cable between control panel and the drive, away from picture tube. Replace X2402 by ST24C02CP (4822 209 62098).

No tuning in switching from UHF/VHF.
Fault 1: It occurs frequently on chassis 2B (AG06 or higher with FE616SQ) that band III cannot be tuned to some channels when switching from UHF to VHF. This is caused by radiation of oscillator to prescaler as a result of a poor earth connection of the tuner top. Solder spring connections of tuner top.

TXT interference.
Fault 1: TXT faults may occur when aerial signal is deviating, causing loss of characters/lines in text. Replace bridging wire (position 9704) by resistor R3798 (220R). Add resistor R3797 (680R) between connection 9704/R789 and the earth. If peak filter present, change C2791 to 100µF, R3790 to 3K9 and R3792 to 5K6.

"E3" in display and line BU heats up (140V falls).
Fault 1: Change line transformer.

No picture or sound. Goes to safety mode. Whistling. Line transformer ok.
Fault 1: Check 13V on 3664. If low, suspect 2644, 2290. If no power supply check 7668, 2681 and 2690.

TXT is not correct.

Fault 1: Incorrect display, TXT and lines disappear. On TXT decoder, replace wire of bridge 9704 by a resistor (220R). Add a resistor (680R) between intersection point 9704 and R789 to the ground. Replace C2791 by 100µF, R3790 by 3K9 and R3792 by 5K6.

This Nicam set stuck in standby and the power supply is tripping.
Fault 1: Check the EEPROM X2402 chip, which has to be programmed for the correct option code 26 for a Nicam set and 18 for a non Nicam set.

Stuck in standby.
Fault 1: Only works when thyristor 6727 disconected, check d6729.
Fault 2: Check EAROM X2402.
Fault 3: Remove D6734 to disable standby command. Replace EEPROM and set with default info (26 for NICAM and 18 for non NICAM).
Fault 4: Check memory battery. Then check standby thyristor TY6727. Check zener ZD6734 (4.7V) and diode D6729. Note: if the appliance does not have a memory battery, suspect EEPROM memory IC (X2402).

Occasionally no start up or only after an extended switching on period.
Fault 1: C2670 (68nF) in the base track of the PSU is defective. R3684 (150R) is high resistive.

Set goes into standby when switched on.
Fault 1: Check X2402.

Green picture with flyback. Front controls do not function, no reception.
Fault 1: Check 13V on 6644 with oscilloscope. If weak, check 2290, 3643, 3644, 3290, 3935 and 2935.

Wavy picture and no switching into standby.
Fault 1: Check pins 12 and 13 on the mains switch transformer.
Also check capacitor 2733 and transistors 7742, 7736 and 7908.

No switching to standby. Red LED on. Lines cave in. Appliance hums. Picture present. Can be switched on again with the RC and runs ok.
Fault 1: Resolder mains transformer. Check transistors for the 5V and/or change. Change 7742, 7908, 7735, 7738 and capacitor 2733 (82pF).

Set turns to standby periodically and will not turn back on.
Fault 1: Check and replace memory IC24X02 (4822 209 62098).

Power

Fuse 1657 is defective and no picture.
Fault 1: BUT12A is defective.

The appliance does not function, the transformer whistles slightly.
Fault 1: Fuse F1601 is defective.
Fault 2: The power supply is set in the safety mode (it peeps). Check to see if the fault lies in the power supply or in the loading, the loading is replaced with a 220V 100W lamp. Replace C2609 if the power supply is in order.
Fault 3 Replace capacitor C2617 2KV.

The appliance does not function, it whistles.
Fault 1: Change C2609 (8,2/1600V).
Fault 2: The power supply goes to protective mode. Check if the power supply or the loading is defective. Replace the loading with a 220V (100W) lamp. If the power supply is ok, then change C2659.
Fault 3: Check the power supply voltage TS7687 is defective. Replace TS7687 (BUT12A) with 2SC3973B and R3671 with 22R.
Fault 4: The power supply starts up with difficulties. Check the +140V. Replace C2670 (68µF).

The power supply fuse and transistor BUT12A are defective about once a week.
Fault 1: Occasionally the PTC resistor has a short. Therefore, the fuse blows and the energy in the magnetising coils is only channelled via BUT12, and the BUT12A fails.
Fault 2: Replace BUT with 6SC3973 and resistor R3671 with 22ohm/5W.
:BUT 4822 130 60851
:Resistor 4822 113 41152.

The power voltage increases, cannot be controlled with pot R3715.
Fault 1 Zener diode 6690 (5,1V) has a short circuit.

The power supply does not start up at 210V but at 230V.
Fault 1 R3606 (680K) has changed its values.

No function, the power supply "hums".
Fault 1: The sub-power supply is missing in the line output stage. The raster IC has a short.

Knocking on the chassis is causing a short. The chassis has been resoldered completely.
Fault 1: Resolder the Sops-transformer, if necessary bridge the solder joints and the PCB with wire. The same applies to the line transformer.

High voltage BUT11 blows after about 5 minutes.
Fault 1 Possible causes: pitting coil 5634, drive transformer 5634 (loose contacts), replace BUT11 with BUT12A, line transformer drive IC, C2609 (9.1nF/1600V). Replace capacitor C2609 always first.

Repeated failure of the line output transistor (7618), and or triggering of the thyristor (6698).
Check C2609.

Repeated failure of T7687 (BUT12A).
Fault 1: Fit 2SC3973B in place of BUT12A and change R3671 from 15R to 22R 5W.
Fault 2: Replace the coil in the drive.
Fault 3: Replace the load current diode in the collector circuit.

BU508 is always breaking down.
Fault 1: Replace capacitor 2609 with a 1500pF/2KV (blue type).
Fault 2: Sync. IC is defective.
Fault 3: Change C2609, C2617, D6609 and D6610. If BU keeps failing, also replace line transformer.

FBT BU (7618) is defective.
Fault 1: Check solder joints, TDA8370s and diodes: 6670, 6671, 6672 and C2670.

At first BUT12 and T7686 defective. After replacing, 290V on collector of BU but no voltage at base.
Fault 1: [CNX62 replaced]. Check R3659 (150K), R3699 (120K), R3686 (680K), T7686 (BC369), T7685 (BC547). Suspect power transformer.

T7687 (BUT12A) fails constantly.
Fault 1: Fit a 2SC3973B in place of BUT12A and change R3671 (15R) to 22R/ 5W.

Line output transistor is defective and thyristor 6698 goes into safety mode.
Fault 1: Check C2609.

BUT 12A is defective.
Fault 1 There is an open circuit on the track to the power supply transformer. Resolder this connection.

Random start up of the power supply.
Fault 1: Shunt R3670 with a 47nF. If the power supply starts up, the value of R3670 has changed.

"E3" is displayed and 140V power supply is low.
Fault 1: After disconnecting point 13 of the power supply transformer, if 140V returns to normal, check T6727, T7731 and the associated components. If the 140V remains low remove R3740. If the 140V is still low check the power supply. If the 140V is correct check T7742 and T7743.

"E3" on display and the line BU heats up (140V gets lower).
Fault 1: Change line transformer.

The power supply is low.
Fault 1: Remove M17 low voltage line and fit a 220V 150W bulb. If the 140V is low, check low frequency or if there is a leak on 140V or on power supply control (D6688). If 140V is correct check the low voltage line and the line transformer secondary.

The commands are blocked intermittently or IC7830 starts up or occasionally there are micro breaks in sound and picture or the power supply pulsates intermittently.
Fault 1: Disconnect the IR sensor. If everything is ok replace it by 4822 218 20293 and remove the holder of the old sensor. It may happen occasionally that the spark gap in the socket of the CRT occasionally produces arcovers. F1642 may also be the cause of these problems.

Occasionally BUT12A blows.
Fault 1: The solder joint tracks of the power supply transformer are o/c. Scrape the varnish off the tracks in order to expand the solder joints.

Raster IC TDA3653AQ constantly goes defective (sometimes after a week, sometimes 3 weeks). Voltages are correct.
Raster IC TDA3653AQ constantly goes defective (sometimes after a week, sometimes 3 weeks). Voltages are correct.

When switching on the PSU whistles and in the high voltage unit R3620 blows.
Fault 1 C2609, D6609 and D6610 were replaced unsuccessfully. The line transformer is defective. Only use original part. Also replace the line oscillator IC which is positioned in front of the line transformer. Check the line end transistor BU508.

The line end transistor SD1577 short circuits at once when the appliance is switched on. Resistors 3620 and 3619 (56R) blow. C2609 has been replaced. No dry joints.
Fault 1: Unsolder the base of the deflector. 100W lamp on the collector. Test the drive. If ok the diode split transformer is defective.

The power supply stops when the appliance has been switched on. Fuse 1601 has been checked. Secondary has been unplugged in the same way.
Fault 1: Check IC7668 (CNX62), T7687 (BUT12A), T6698 (BT151). Check or change the transistors above and below the CNX. Check 1N4148 and BYD33D which are short circuited when switched on. Lift the 140 to the level of L5697 and connect a power supply input variac (mains) and increase the input voltage while keeping an eye on the 140V (stable and non-variable voltage). In the event of collapse recheck all the semi conductors.

Dead. Power supply is in safety mode.
Fault 1: Disconnect connector M17. If 140V is normal replace C2617 between the collector and the earth of the line transistor. Capacitor is o/c.

When the voltage becomes more than 140V, the BUT explodes.
Fault 1: When the CE track of the BUT is defective, replace the optocoupler. When there is a short, then replace the following on the primary side: all transistors (4 pieces), the optocoupler, D6617, R3615 and R3619.

Fuse 1651 and BUT12A (Ref:7687) are defective.
Fault 1: [Note: After replacement the fuse continues to blow. The positor has also been changed.] Check all the power supplies. Change the following:
: 7687 (BUT 12A) 7717 (BC548C)
: 7686 (BC369) 7225 (BC548C)
: 7685 (BC547) 7668 (CNX62)
: 7719 (BC558C) 6690 (zener 5.1V)
: 6671, 6670, 6689, 6667 (1N4148).
Check the following:
: 3679 (2.2K), 3678 (2.7K)
: 3691 (3.9 ohm), 3686 (680K).
Plug in the TV on a variac and increase the mains voltage. Check the +140V (should be stabilised). If this is not the case check the power supply for a diode which have a short circuit on switch on. Also check for resistors which may be in open circuit or have values which are different to the original ones.

After replacing defective BUT12 power supply sings for a short time. If you pull out the deflection plug the fault is still there. If you measure for 140V only 13.5V are present. Horizontal power transistor has already been replaced.
Fault 1: Remove deflection transistor. Load 140V lead with 100W lamp. Disconnect secondary voltages (except 140V). If the lamp is burnt PSU is ok, if not the PSU is defective.
Fault 2: If the PSU runs with the lamp check the parallel "C's" of the BU (8.2 and 1:5nF). Otherwise replace drive-IC TDA8370.
Fault 3: Change C 8.2nF/1600V in the line end stage.
Fault 4: 2.2nF capacitor in the PSU beside the BU is defective.

R3620 and R3616 are burnt. Resistors are in the RC-section 140V to the line transformer, collector 2SD1577. Transistor is ok, no s/c can be measured.
Fault 1: Line transformer is defective. C1500 (2kV) is defective.

All voltages on the secondary side are too low. U instead of +140V only 80V.
Fault 1: Secondary control circuit TS7717; 7719; D6715; Optocoupler. 7668. Load at +-20V.

Standby light appears for a sec then nothing. The CTV has no sound or picture. Battery is ok. Voltage on the collector of the transistor is ok.
Fault 1: In the power supply change CNX82 T7685, T7686, D6690, thyristor 6727.

BUT18AF blows even when power transformer replaced.
Fault 1: 7687 (BUT12A). Check 2681, 2690 and 7668.

140V goes up to 300V. Line output transformer immediately goes defective.
Fault 1: F1711 + D6711 (BAV21) open circuit.

Line output stage does not function. The resistors R3619+3620 burn out spontaneously.
Fault 1: Line transformer is defective when these resistors burn out.

Stuck in standby, Power Supply Part tripping. Tries to start up if prog button held in but LED corrupted.
Restriction: From AG06 onwards.
Fault 1: Tries to start up if prog button held in but LED corrupted. Disconnect D7634 and see if set starts up. If it does, check pulse train on SDA and SCL lines. If these lines are stuck or are showing spurious operation, replace I7925 EEPROM - X2402 type (4822 209 62098).

Set hiccups.
Fault 1: Replace C2609 (8.2 nF; 4822 121 40249).

Protection circuit active (set hiccups).
Fault 1: Remove connector M17, +140 V present. Replace C 2609 (8.2 nF; 4822 121 40249).

Supply overloaded (set peeps).
Fault 1: Remove connector M17, +140 V present. Replace TS 7618 (2SD1577PH; 4822 130 43921) and replace D 6609 (BY 228/20; 4822 130 41275) and replace D 6610 (BYW 95C/20; 4822 130 41602).
Fault 2: Only for sets with prod. ident. AG04 and higher. Disconnect pin 5 + 7 of IC 7220 (sound-endstage) +140 V present. Replace IC 7220 (TDA 1521Q/N2; 4822 209 73311). Also check soldering points SOPS-transformer.

PSU does not work correctly. Voltage runs out of control to approx 170V and then PSU pulsates. F3 appears in the display before the pulsating.
Fault 1: D6690ES is defective.

U140 ok with mains 160V, with 220V mains control range U140 is 145V and more.
Fault 1: Replace zener diode D6690 (5.1V).
Fault 2: Appliance is on the French standard. In the service menu (see service manual) reprogramme the yellow service pages

. Set whistles (no 140 V).
Remove connector M17, +140 V present
Replace TS 7618 (2SD1577PH; 4822 130 43921) and
replace D 6609 (BY 228/20; 4822 130 41275) and
replace D 6610 (BYW 95C/20; 4822 130 41602).

+ 140 V not present.
Check soldering points of SOPS-transformer (T5663) and line transformer (T5620)
Replace TS7687 by 2SC3973B (4822 130 60851),
change R3671 into 22 Ohm/5watt (4822 113 41152) and
replace TS7685 BC547 (4822 130 44257) and
replace TS7686 BC369 (5322 130 44593) and
replace D6690 BZV85/C5V1 (4822 130 31456).

Squeaking line transformer power supply and no HT. When diode 6644 is disconnected (+13 and +13a), HT OK. S/C in +13 circuit.
Fault 1: Sync IC S/C.

R3638 and 3639 fail.
Fault 1: Check BF485, BF423 on the RGB board.

No function. R3619 and R3620 fail.
Fault 1: Capacitor 2609 (1.5nF/3kV) is defective.
Fault 2: [C2609, C2617, T76218 in the PSU are ok]. Line transformer is s/c.
Fault 3: Coil 5619 is o/c and check C2619.

Squeaking power supply .Ticking sound from power supply when lamp is used for load.
Fault 1: Transistor 7736 (BC558) is leaky.

Squeaking, no picture and no sound. Fuse 1601 is defective. When replaced, fuse blows immediately.
Fault 1: Check coil 5611 and T7599 and T7598 in E/W circuit.

No +140V HT supply and whistling from power supply.
Fault 1: Check resistors 3346 and 3347. If defective, replace resistors as well as diode 6646 (RGP10G) of the +26.
Part no: RGP10G (4822 130 31201).

HT is too high (no raster).
Fault 1: Replace IC7550 (TDA8370).

SOPS transformer vibrates in standby mode.
Fault 1: Caused by low burst frequency of SOPS power supply. Increase burst frequency by changing C2690 to 680nF.

Power supply can only be controlled between 145V and 160V.
Fault 1: Check control circuit.
-CNX 62
-zener 6690 (5V1)
-zener 6715 (6V2)
-zener 6668 (30V).

Fuse 2A blows, BUT12A OK.
Fault 1: Usually BUT12A becomes defective when fuse blows. Check 4 rectifier diodes (replace by BY255). Check R3654. Check
C2664 (2n2/1000V) above BUT for defective drop. Leaky or cracked. Test with multimeter.

2SD1577 fails after approx 20 secs. Distorted picture at switch on. Power supply OK with 75W lightbulb.
Fault 1: [Replaced line transformer, driver transformer and TDA8370]. Check HT cable for S/C.

BUT in PSU makes a S/C if chassis is tapped.
Fault 1: [Chassis has already been completely resoldered]. Resolder SOPS transformer again, perhaps connect solder points with wire bridges to the print. Same thing for line transformer.

No function, PSU sings, protective circuit.
Fault 1: Replace capacitor C2617 in horizontal control.

140V only reaches 77V. With a power supply voltage of 180-250V only 77V. When disconnecting deflection lead approx 85V are set without a load. No voltage on pin 1 of optocoupler.
Fault 1: Disconnect optocoupler from pin 1. Increase variable-ratio transformer from 0V. If +140V can be set with the variable-ratio transformer, fault is in the secondary range, if not, it is in the primary range.

Dead. Line BU heats and blows. At power up slight whistle in FBT.
Fault 1: Check if C2617 is split and leaking.

No function. After switching on protective circuit responds. Appliance beeps quietly.
Fault 1: Fuse 1601 (315mA) and C2609 are defective. Resistors R3620 and R3619 are possibly blown.

R3486 and D6486 burn at switch on.
Fault 1: Replace line transformer.

Power supply stuck in the standby mode.
Fault 1: Check D6729 for being leaky.
Fault 2: Check crystal X1867 (6MHz).

Set dead BUT12 chopper transistor S/C.
Fault 1: Usually caused by dry joints on the chopper transformer. Philips recommend changing BUT12 to 2SC3973B and R3671 to (22R)5W if repeated failure. Sometimes when BUT12 goes S/C collector to base it can cause, T7686, T7685, D6686, D6672, D6671, D6670, D6690, R3687, R3670 and C2690 to fail.

Set dead, 140V low at 122V and no channel display. 20V and -20V supplies read only 10 or -10V to chassis.
Fault 1: Check the audio output chip TDA1521 for S/C.

140V supply normal with a 60W dummy load but low with a bright picture.
Fault 1: Check transistor 7685 (BC547 for being leaky.

Does not start.
Fault 1: [NB: due to insufficient bias at base of chopper transistor set refuses to start]. Bias is provided by R3656, R3657, C2658, R3686, R3687. If ok check C2670 (68nF).

In safety mode. In low tension arcing then line BU blows.
Fault 1: Change TDA8370 even if in low voltage all the commands are ok.

Failure of the line output transistor 76 and 18. and triggering of the thyristor (6698).
Fault 1: Check C2609.

Dead (140V supply low).

Fault 1: Check if TDA1521 S/C and C2670 (68nF).
Fault 2: Suspect transistor (BC547) 7685.

Random tripping.
Fault 1: Check C567 for dry joints.

Sparks from crowbar protection.
Fault 1: Check pin 1 of line output transistor for o/c.

PSU shuts down.
Fault 1: Check D6729 for leak.

Stuck in standby, PSU tripping (NICAM SET).
Fault 1: Check for noise from the faulty EEPROM X2402.

BUT12 S/C at start up. Changed as well as line transformer, CNX62. No start up of HT.
Fault 1: Check if 140V ok. If low, check T6727, T7731, R3740, T7742, T7743, D6668. If 140V ok, check if there is no 13V on pin 16 and 22 of IC7900 then check D6644, D3644, R3645. If ok, check IC7900.

No high voltage.
Fault 1: [Line transformer already replaced. +140V ok. Drive present.] Check C2609, C2611, C2612 and C2617.
Fault 2: Audio output stage IC is defective.

Dead. 140V at 122V. No channel display, 20V and -20V read 10ohm to deck.
Fault 1: TDA1521 audio IC is S/C.

Dead.

Fault 1: C2670 (68nF) reads correct with no leakage. Replace C2670.
(Kevin Eley, Electronic Services, Derby, UK).
Fault 2: Check the degaussing thermistor and the chopper transformer for dry joints.

Appliance is dead, chopper transistor BUT12 has failed.
Fault 1: Check chopper transformer for dry joints.

Appliance is dead. Voltage at base of chopper transistor is lowered.
Fault 1: Check C2670.

No picture ans no sound, PSU works with approx 1kHz.
Fault 1: [Fault does not occur immediately]. Check transformer connections (mains- and horizontal transformer). Check C2609 (8.2nF) part no.: 5322 121 42532 and C2617 (1.5nF) part no.: 4822 122 33467.
Fault 2: [Fault occurs immediately]. Fuse 1601, S/C in the line end stage.

At input 10kV instead of 7kV. EHT 28kV. 140V and other voltages ok. Signal at collector of line BU ok (1200V). EHT secondary voltage ok. Voltage on base of tripler (C2496) 30V. Focus pot burnt.
Fault 1: [Line transformer and C2496 changed]. Check 200V on D6638 and 13V on 6644. Replace line transformer by original part. If ok, suspect tube support.

Fizzing and smoke.
Fault 1: Capacitor (1.5nF/2kV 110 version) across the line output transistor, has split. Replace capacitor. However if there is field collapse, carry out some meter checks around the TDA8370 timebase generator chip IC7550. No 12V supply at pin 22, which means that the chip is running on its start up supply. R3535 (10) is O/C as C2536 (100uF/25V) is S/C. Replace the two items should return everything to normal.

Ht high, will turn down to 159V but no further.
Fault 1: Replace R3714 (3K) with 3K9.

Appliance is dead, faint squealing from power supply.
Fault 1: [R3620, R3619, R3486 and D6486 are burnt]. Replace line output transistor, R3520, R3619, R3486 and D6486.

Screaming sound from power.
Fault 1: By disconnecting thyristor 6698 there is a CA 115V on cathode of D6700/D6701. A microscopical breakage in the print track coming from pin 1 on the line transformer 5563. Fuse 1601 may blow, but not necessarily.

Smokes and makes a hissing noise.

Fault 1: Defective capacitor in the horizontal ouput stage.

Incorrect regulation of voltage on +140V line.
Fault 1: Check transistor TR7685 (BC547) for O/C or leaks.

Dead.
- R3670 33R

USEFUL INFO.

Character generator SAA5243P/E.
Note: With the chassis 2B/AG06 and higher a new character generator IC7760 (SAA5243P/E) has been added to the teletext print. Code number is 4822 209 72353.

Bracket under line transformer.
:4822 404 60379 Bracket under line transformer
:4822 502 30479 Matching screws.

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.

2B AG06 changes.
Note: Make the following changes to models of 17-08-1988:
Part no. of memory IC X2402 must be 4822 209 73313.
Part no. of channel selector FE616SQ/256 must be 4822 210 10325. Correct version 31-10-1988 is supplied under part no. 4822 727 16366.

Rebuild for Pal/Secam (not for France).

Note: Replace Pal decoder with Pal/secam.
: Upto and including: 4822 212 22676
: Since AG05: 4822 212 22827

Checking the power supply.
1. Remove connector M17
2. Connect a bulb 75 W across C2701
3. Switch on set
4. Bulb lights, +140 V present
This means power supply is OK.

Page header suppression.
Since the BBC changed the CEEFAX format, receivers with fastext 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.

Option adjustment.
In appliances whose serial no. begins with AG 06 or higher, a new uP (MAB8461/W155), a new memory IC (X2402) and for appliances with hyperband a new tuner (UV616S) or a new front end (FE616SQ) are used. The new uP (MAB8461/W155) can be fitted in appliances, whose serial no. begins with AG04 or higher. With this processor the required option is no longer selected with wire bridges and/or diodes, but must be programmed. Procedure:
Switch off appliance.
With keys "Open memory" and "Colour +" pressed in, switch on appliance.
In the display a 2 digit figure appears which represents the adjusted
option code.
With the "C/P+" or C/P-" keys set the required option code:

Tuner/Front-end	Code
FE616SQ	01
FE618Q	02
FE616Q	03

UV616S 09
FE616SQ/NICAM 09
UV618Q 10
FE618Q/NICAM 10
UV616 11
FE616Q/NICAM 11
FE644 18
FE644/NICAM 26
Press "Store" key, now the appliance stores the option code and starts in the usual way.
The new memory IC can only be used in connection with the new uP (this memory IC is an EAROM, therefore the buffer battery fails). The new tuner (front-end) can also be used in appliances with the uP MAB8461/W132; in this case though option diode 6866 must be removed.

Audio control IC TDA8421.
In appliances whose serial no. begins with AG07 and higher, a new audio control IC (TDA8421) was added as a replacement for TDA8420. This IC has the advantage that the control steps in the lower part of the control range are less, whereby an agreeable control occurs.
Note: IC TDA8421 can only be fitted in connection with uP MAB8421/W155 in appliances AG06 or higher.

The teletext microcomputer chip is changed to type MAB8461P/W196 code No 4822-209-62479. This also applies to CP90,CP110,G90 and G110.
Fault 1: This was to prevent continious page header display under certain conditions in the subtitle mode.

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.

Part nos for HT- and focus cable locking.
Desc. Part no:
Locking for HT cable (red) 4822 417 50225
Locking for focus cable (blue) 4822 417 50226.

VIP TXT decoder with SAA5230 or SAA5231.
Note: There are two TXT decoders for the 2B chassis, one with video processor IC7780 (SAA5230) and one with (SAA5231). Furthermore SOV codes the SAA5230 to SAA5231. When SAA5230 is replaced by SAA5231 the following components on TXT decoder must be changed: R3772 (1K2), R3800 (68K), R3780 (470R) and C2780 (1OµF).

Change of Pal/Secam for Middle East and Morocco.
Note: Remove 2A wire connections positions 9257, 9274 and 9275 from chassis. Remove Cs positions 2273 and 2257 from chassis. Fit C position 2256 (33pF). Fit Secam/Pal transcoder (4822 212 22367) position 1310 in connectors M10 and M11. Remove 2B chroma decoder Pal position 1300 and replace by chroma decoder Pal/Secam, part no. 4822 212 22352.

Pal/Secam chroma decoder.
Note: On request and for a fee, chassis 2A and 2B can be transformed to Pal/Secam B-G (not for France). Replace Pal chroma decoder by Pal/Secam chroma decoder, part no.4822 212 22352.

Button for on/off switch.
Note: Orginal button for mains switch, code no: 4822 410 24878 is no longer available. The following can be used: 4822 410 24972.

Refs of transistors beside the power supply BUT 12.
T7686=BC369, T7685=BC547.

Voltage and type of memory battery.
1.2V 110MA battery, part no. 482213810138.

To improve PB of copy protected videos.
Change C2544 to 22nF, add 3.3µF across C2545, change R3544 to 3.6kohm.
For optimum results < or > C2544 may be required.

DEFLECT

Only one horizontal stripe.
Fault 1: Check the +26V. If this does not work then replace TDA3654 and possibly TDA8370.

Fault 2: [Occurs after replacing a defective horizontal output stage capacitor.] Check IC7550 (TDA8370) as it could be operating with the start up tension, without having full working tension (+12V at terminal 22 of CI7550). This could be caused by R3535 (10R) O/C due to C2536 (100µ/25VCC) S/C.

No vertical synchronization in cold conditions (approx 10 seconds). IC7550 (TDA8370) is not defective.
Fault 1: It is possible that there is a fault in the IF amplifier. Defective electrolytics. Cool down with freezer if fault then occurs. There were once defective electrolytics in the IF.
Fault 2: Defective tuner/IF. C2538 is defective.

Vertical linearity fault. Line transformer has already been replaced.
Fault 1: C2509 on the left beside the LOPT reacts thermically. Check T7502, T7503, R3508 - 3511, R3515, R3523, R3529, C2509 and C2506.

Bad synchronisation.
Fault 1: Check C2144 (47uF; 4822 124 20699).

No raster, green line in center. Power supply ok.
Fault 1: [Raster amplifier replaced]. On 7570 check on pin 9: 26V, on pin 8: 14V, on pin 6: 25V. If ok, check in signal on pin 3, out signal on pin 5. If ok, suspect 2571, 2851, 3578 and 3579.

No raster sync.
Fault 1: Check C2548 and 26 of IC7550 (TDA8370).

Linearity and vertical centering are defective.
Fault 1: Replace C2575 (10µF).

Line output stage transistor blows immediately at switch on.
Fault 1: R3619 and R3620 (56R) are also burnt. Line transformer is defective. Replace by HR6140. Replace line output transistor by S2000AF. Replace C2609.
Fault 2: Replace C2617 and TDA8370.

Failure of line output stage.
Fault 1: A repair kit is available which consists of:
- Pos.No 6610 = BYW95C
- Pos.No 2617 = 1500pF - 9100pF 2KV
- Pos.No 6609 = BY228
- Pos.No 7618 = BU508V

Vertical deflection only occurs after a while.
Fault 1: [Deflection pulse present at deflection unit]. Measure voltage at pin 6 and 8, replace C2571 (100uF). A defective C2571 can also lead to failure of the vertical IC.

No deflection adjustment. Falls from max to min.
Fault 1: Replace adjustment pot.

Line drive is missing.
Fault 1: Check D6637, R3639 and C2539.

Max line amplitude, max E/W correction, no adjustment possible.
Fault 1: [C2609, C2610, L5601, T7599, T7598, C2590, D6603, D6604 changed but fault persists]. Check C2599, C2597, C2590:2Vpp. Suspecte 3595:-29V and 26V.

Linearity fault. Approx 10cm of the picture is missing below.
Fault 1: IC (TDA3654) is defective.

Picture does not synchronise correctly horizontally. No sound. If appliance runs for approx 2 mins, synchonisation appears slowly but still no sound.
Fault 1: IC (TDA8370) is defective.
Fault 2: Check C2726, C2290 and C2644

COLOUR

The picture has a blue glow.
Fault 1 R3403 (180R) is defective. Positioned on the tube board with a different colour: Red = R3452 Green = R3432

Flyback lines in a certain colour. Blurred picture.
Fault 1: R3403, R3423 or R3443 (180K) O/C. Replace with a 0.25W type.

Green picture with flyback lines.
Fault 1: Replace focus pot (33K) and check resistors 3M3 and 1M3.

Convergence problem in the middle of the screen.
Fault 1: Check T7418, T7438 or T7458 according to the colour affected.

After plugging in a defective scart cable there is still only a bluish shimmering picture. IC4850 has already been replaced.
Fault 1 R3407 (33k) on the CRT board is high resistive.
Note: Fault has no connection with the defective scart cable.

Occasionally colour saturation.
Fault 1: Check the sandcastle on pin 9 of IC7550 (TDA8370). Check the 26V beam limiter: 10V on R3496 then 3.5V on pin 12 of IC7550 (TDA8370), R, G, B pin 1, 3, 5, of IC7300 (TDA4580). Check the 3.5V black level on pin 26 of IC7300 (TDA4580) from the tube board. Check the value of R3492 (2.2K) on the tube board.

Picture takes approx 3 mins to appear.
Fault 1: [Colour contrast on TDA4580, Y signal is present, still no RGB].
Check for insufficient emission at the picture tube or the G2 voltage is too low. There is no picture when the beam current is too low.

No colour, screen is pink.
Fault 1: Replace picture tube board.
Fault 2: Check C2297 and IC7300.

Colour saturation too low in 2B + CTI.
Fault 1: In 2B chassis with CTI circuit, colour saturation is lower. Change R3261 to 2M7.

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

Screen is slightly red with red flyback lines. Appliance ran for 2 weeks then green screen.
Fault 1: [Red transistors on the CRT board previously replaced]. Replace complete board. Original Part no.: 48222122254.

Purity fault.
Fault 1: Decrease contrast and store. Check R3492 = 2K2.

Loss of one colour.
Fault 1: Check depending which colour is missing, r3407/3406. 3427/3426. 3447/3446. All 33k. All on crt base.

Colour is missing.
Fault 1: Appliance is set to the wrong standard. Open the memory and press colour + at the same time. Switch on appliance. Choose option 01 and close memory.
Note: The fault can be caused under certain circumstances by interference in the data line. Route the data line away from the picture tube.

Occasionally no colour.
Fault 1: Replace colour subcarrier quartz.
Note: Black and white tint is neutral.

Green picture with flyback. Front controls do not function, no reception.
Fault 1: Check 13V on 6644 with oscilloscope. If weak, check 2290, 3643, 3644, 3290, 3935 and 2935.

Brief loss of colour during first ten minutes. Picture occasionally jumps when fault occurs.
Fault 1: Check vertical sync and sandcastle pulse for burst sync. Also check line transformer

AUDIO

The sound is bad and crackles.
Fault 1: C2134 is defective.
Note: No voltage on pin 11 of IC7125 (TDA3803A).

On switch on, the speaker rattles and no other function. When the speaker switch is pushed, the set functions ok.
Fault 1 The audio endstage is defective which occurs with direct current through the speakers.

No sound, display flashes.
Fault 1: Changing MAB846, SAB, TDA8020 and sound IC will not help. Check storage-IC X2402 and replace. Remove TXT decoder and check.

No sound, no picture. High voltage and LED from scart is present.
Fault 1 Fuse 1642 (800mA) is defective

Distorted sound left channel.
Check relay 1224.

No sound on both channels, only via scart.
Fault 1: Measure on stereo decoder IC 7170 pin 2 - must be 12V. If the voltage is much lower, or not present, replace electrolytic No sound, picture 2179 330µF.

No sound. Stations seem to run away. 33V voltage is ok. Varicap voltage oscillates by approx 0.6V in all ranges.
Fault 1: Check capacitor 2538 in the video signal path and check the tuner. Improve earth connection in the tuner.

No sound, picture OK.
Fault 1: Restriction: only for sets with prod.id. AG04 and higher. Voltage on pin 5, 7 IC 7220 present. Replace IC 7220 (TDA 1521Q/N2; 4822 209 73311). Also check soldering-points of SOPS-transformer.
Fault 2: Sound OK via SCART. Replace IC 7103 (TDA 8405; 4822 209 70934).
Fault 3: +20V and -20V on point 5 and 7 of IC7220 must be checked. Check to see if solder point 19 and 22 of T5663 are secure. Solder the points on T5663.
Fault 4: IC7104 defective on module 1100, stereo decoder.

Sometimes no sound, no picture.
Fault 1: Restriction: only for sets with prod.id. AG04 and higher. Voltage pin 5, 7 IC 7220 present. Replace IC 7220 (TDA 1521Q/N2; 4822 209 73311) and loudspeaker(s). Also check soldering points of SOPS-transformer (T5663)

Picture has very bad distortion (notches on the sides). Noises in the sound. In the line end stage all secondary voltages are approx 10% too low.
Fault 1: Check if the 140V has a power supply frequency hum. Filter electrolytic on the secondary is dead.

Bass control is insufficient.
Fault 1: After replacing stereo decoder panel by part no. 4822 212 22349, check if bass control is insufficient. Replace R3174 by a resistor (10K).

No sound.
Fault 1: Check pin 28 of TDA8370, if there are 12V then the IC is defective.
Fault 2: C2179 on Print 1100 is defective.
Fault 3: Suspect EEPROM X2402.
Fault 4: Turn TV off. Push and hold open diamond. Turn on. Open memo colour and change no. to 18 using up and down buttons then store.
Fault 5: [Amplifier ok, IC on stereo module replaced]. Check via scart. If same problem, check mute: check signal on pin 9 and 1 of 7220 <IN>, 6 and 4: <OUT> or check audio signal on pin 11 of 1017, power pin 27: 13V, check 3030, 2030.
Fault 6: Speaker is s/c. Redo solder joints on power supply transformer (earth solder joint of the 27V).
Necessary test appliance: voltmeter.

Hum in right speaker when in standby.
Fault 1: If mechanical hum, check C2690 for value (1µF/50V) (part no: 4822 124 41282).

No sound with reception of mono transmitters.
Fault 1: Replace IC7102 (U2830B) on the stereo decoder. Code number 4822 209 73756.
Note: only appliances with serial number > AG04.

With 2B ECO, IIC clock audible at min. volume.
Fault 1: Disconnect print path to pin 15 of IC7103, pin 12 of IC7104 and pin 16 of IC7104 on U1100 as close as possible to these pins. Reconnect them to each other using an assembly wire. Disconnect print path to 1M7 and 2M7 on mono carrier.

Connect 5K4 on U1900 to R3127 on U1100 using a 2-AD screened cable. Connect screened cable to pin 14 of IC7830 on U1900 and pin 15 of IC7103 on U1100.

In AM sound slight nasal sound and buzz.
Fault 1: Replace 100uF at pin 3 and 10uF at pin 14 of TDA2542 in IF module.

When picture is dark, it begins to tremble as does the sound.
Fault 1: Check the 13V on 6644, if not suspect 2299;2291;2644;20V on 6704; check 2705 if ok check 2537 and 6537.

No picture, blue screen, no sound.
Fault 1: Check IC7550, TDA8370.

Crackling from speaker at switch on. Picture rolls vertically.
Fault 1: Earth speaker grills.

Sometimes no function or micro cuts in picture/sound.
Fault 1: If symptom disappears after unplugging IR sensor replace it after removing holder.
Fault 2: Check spark gap on CRT.
Fault 3: Check fuse 1642 (800mAT).

Picture fades and sound hums. 12V is at 5V.
Fault 1: Check on 6644 5V. Suspect 2290 and 2644.

No Fault 1: Check 13V on 3664. If low, suspect 2644, 2290. If no power supply check 7668, 2681 and 2690.
picture or sound. Goes to safety mode. Whistling. Line transformer ok.

No Nicam sound. All other fm sound ok.
Fault 1: Check IC7925 memory IC and replace.

Nasal sound - ok via scart.
Fault 1: Check IF module.
Module ref. 482221010295.

Poor sound.
Fault 1: [Replaced U2830, TDA8405, and TDA8420 but no result]. Check pin 2 of IC7170 for 12V. If lower, replace IC2179 (330µF).

Sound and picture buzz for 10 mins. Power BU blows one time out of ten.
Fault 1: Check on 7618 base: 11Vpp, collector: 1200Vpp. If ok, check 13V on 2644.

Volume changes with the picture content. Sound distorted.
Fault 1: Stereo decoder IC IC7102 (U2830B) is defective.

Wavy picture and hum in sound. Crackling in PSU..
Fault 1: Check C2646, C2644, C2705, C2708 (all 1000µF) and C2290 (470µF).

Hum in HF sound. Ok in scart.
Fault 1: Change IF capacitors and clean pot.

The sound is broken up by scart or by the tuner.
Fault 1: Check the power supply of the LF stage and its filtering and the electrolytics in the audio IF module.

Fault 1: Check the power supply of the LF stage and its filtering and the electrolytics in the audio IF module.
Fault 1: Check and replace if necessary C2179 (330uF/16V).

No picture or sound, set whistles.
Fault 1: [No 140V]. Remove connector M17, +140V present. Reconnect M17, remove R3535. If +140V and audio present (no picture), replace IC7550 (TDA8370); part 4822 209 70178 with 4822 209 73309.

High audible tone.
Fault 1: [SMPS and line output transformer with line output transistor Ok]. Replace TDA8370 (sync processor).

Hum in sound. Sound only comes through quite quietly. (with Chassis 2B version 3).
Fault 1: Replace IC7102 (U2830B) with new type U2829B.

No picture. No sound. 140V operating voltge fails.
Fault 1: IC7550 (TDA8370) is defective.

No sound in PAL.
Fault 1: Check FM audio signal on pin 9 of IF. If ok, check pin 4 of IC7102. If ok, check on pin 6 and 8 of IC7103. Suspect IC7103 if nothing on pins 21 and 22. Check 12V on pin 18 of IC7103.

White picture and no sound. Ok in scart.
Fault 1: [IF tuner, RGB IC8370 replaced]. Check safety resistor outside module and decoupling capacitor inside.

Sound level increases strongly intermittently. Appliance switches to Programme 1. LED on TV is flashing.
Fault 1: Check HT and power supply.
Fault 2: Check if IR receiver oscillates. Check if IR receiver supplies pulses while LED is flashing.

Loss of sound.
Fault 1: Check on print 1100 IC (TDA1524A) and C2

Crackling from speakers, especially after switch on.
Fault 1: Ground speaker grids. If no results, replace HT transformer.
(part no. 4822 140 10294

No sound and no detection of Stereo/Dual
. Fault 1: Check for presence of AF (left and right) signals on IC7102 (U2830/U2829) on audio module. If missing, replace IC. Power supply voltage on pin 6 = 12V.

No sound via tuner. OK via SCART.
Fault 1: Option code is set incorrectly, e.g. to 8.

TUNING/MEMORY

No tuning possible.
Fault 1: The quartz 1921 (4MHz) is defective.

Can only be programmed between the channels 21 and 69.
Fault 1 Reset the storage as follows: - switch off the appliance, - then push storage and colour at the same time, - switch on the appliance and go to 1 with C/P and close the storage.

On certain stations,a different channel can be seen, blue and yellow waves appear on the picture.
Fault 1 Resolder the ground connections of the channel selector lid.

Only UHF functions.
Fault 1: Turn off the appliance. Open the store and press "colour" at the same time. Set the code to 01 and close the store.
Fault 2: Replace memory IC X2402 and input options. Finally move the connection cable from the control panel to the main print as far as possible from the picture tube.

VHF channels cannot be selected, jumps from UHF channel 69 to channel 21.
Fault 1: The option is not set correctly. Press "Store open" and "Colour plus". Set the correct option with "CP" and then press on "Store execute". Move away the wiring of the control panel from the degaussing coil. The option is dependent on the tuner: FE616SQ = Option 01, FE618Q = Option 02, FE616Q = Option 03. The option number is visible in the display.

Begins on channel 21.
Fault 1: Adjust option for the microprocessor. Press "store open" and "increase colour" button at the same time and the appliance switches on. The option appears in the display, change this with the CP button (dependent on the tuner = FE616SQ =. Option 1. FE618Q = Option 2. FE616Q = Option 3.) If the option is set correctly, position the wiring to the control panel as far as possible from the de-magnetizing reel since pick-up from this is often the cause of the fault. After the option has been selected, the "store execute" button must be pressed again.

Channel 52 is indicated on all stations although the correct channel has been entered.
Fault 1 Replace the memory IC. Replace wire bridge 6925 with IC2402 and diode 1N4145.

Memory is erased.
Fault 1 After the appliance has stopped for two hours, measure the 1925 battery. If the voltage is less than 1.1V replace the battery.
Fault 2 Check CRT holder.

Memory does not store brightness, contrast, colour and sound.
Fault 1: Replace IC7926 = PCF8571P and back up battery.

No channel input possible. The display does not switch over to channel. Microprocessor for the control panel and back up battery have already been replaced.
Fault 1: Check PCF8570 and 8571.
Fault 2: When changing the battery a very thin pattern near the battery solder lug is o/c (= supply for the PCF-memory-IC). Please check.

No sound. Stations seem to run away. 33V voltage is ok. Varicap voltage oscillates by approx 0.6V in all ranges.
Fault 1: Check capacitor 2538 in the video signal path and check the tuner. Improve earth connection in the tuner.

Automatic channel search begins at channel 21 to 70. Lower bands are therefore not available.
Fault 1: Replace memory. Adjust options.

Stereo signal disappears. (189,25MHz) only with reception on channel 7.
Fault 1: Replace entire stereo module.

Tuning unstable.
Fault 1: Tuning voltage of pin 11 U 1015 stable. Replace U 1015 (FE 616SQ; 4822 210 10325).

Contents of memory lost.
Fault 1: Restriction: only for sets with prod.id. A600-A605. The failure occurs when the set is switched off by the power switch. Replace battery 1925 (4822 138 10313) IC 7925, IC 7926 (PCD 8571P; 4822 209 83571).

No VHF reception. Channels start at 21.
Fault 1: Set option for uP and place wiring to control unit as far away from demagnetization as possible. To set option for uP: Press Store Open and Colour Plus simultaneously and switch on. Display shows option. Change option using Colour Plus keys, depending on the tuner: FE616SQ; option 01. FE618Q; option 02. FE616Q; option 03. Once option has been set properly, place wiring to control unit as far away from the demagnetisation coil as possible. Radiation from coil causes the fault. After setting the option, press Store Execute key.

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 selecter. Solder down the screening plate.

No or poor tuning of offset channels. Loss of colour.
Fault 1: 2B-ECO (AG04): Replace uP IC7830 by new model, add resistor (1K) between 9K4 and 8K4.
: 2B: replace uP IC7830 by /W156 model, fit resistor (1K0) between pin 9 (4K) and pin 8 (4K), fit diode (1N4148) between pin 13 of IC7830 (A) and pin 19 of IC7830, disconnect R3839 at pin 9 of IC7830 and reconnect to pin 1 of IC7830.
2B ECO (AG04) uP part no. 4822 209 11611
2B uP /W156 part no. 4822 209 51459

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 selecter. Solder down the screening plate.

No or poor tuning of offset channels. Loss of colour.
Fault 1: 2B-ECO (AG04): Replace uP IC7830 by new model, add resistor (1K) between 9K4 and 8K4.
: 2B: replace uP IC7830 by /W156 model, fit resistor (1K0) between pin 9 (4K) and pin 8 (4K), fit diode (1N4148) between pin 13 of IC7830 (A) and pin 19 of IC7830, disconnect R3839 at pin 9 of IC7830 and reconnect to pin 1 of IC7830.
2B ECO (AG04) uP part no. 4822 209 11611
2B uP /W156 part no. 4822 209 51459

Dark screen, CAD functions, the channels are towards 80. No memorization.
Fault 1: Check SAB3035 on the main board.
Necessary test equipment: ocsilloscope.

Does not tune on channel. Channels can be recognised, but appliance continues to search.
Fault 1: [Replaced tuner and SAB3035]. Replace coil 5555 in IF unit.
Located on TDA8370.

When switching over to another channel, station disappears for a short time. Possibly pulsating.
Fault 1: Most of the time the 3 electrolytics in the tuner are defective. Measure the tuning voltage at ZTK33. Replace SAB.

No tuning from Band 1 and 3.
Fault 1: Option loss in the memory IC.
Option adjustment:

First switch off appliance. Press buttons "Colour +" and "Open memory" at the same time while the mains switch is pressed. (Press buttons for a moment longer).
Use the "channel + -" rocker arm to put indication in the display on 01.
Press button "Close memory".

No VHF channels.
Fault 1: Check the option code of the tuner: simultaneously press the keys on the TV "store open" and "saturation", then switch on the set. On the display you will see the option code and this can be changed with the "C/P+" or "C/P-" key. Store with the "store execute" key.

Tuner	Option Code
FE6165SQ	01
FE681Q	02
FE616Q	03
UV616	11
UV616S	09
UV618Q	10

If the memory IC is defective, replace with ST24C02CB1; part 4822 209 62098. Memory loss can be prevented with the following changes:- Add a diode (1N4148) in series with the +5V and pin 8 of the memory IC. Connect cathode with pin 8. Also add a capacitor of 22nF between pin 8 and earth. Also the flat cable from the control panel to the chassis must be bent away from the picture tube.

GEOMETRY

The picture is not straight (vertically).
Fault 1: The control for east/west correction is missing. Replace R3591 with a 2.2K potentiometer. Adjust with potiometer east/west to its optimum.

The picture is horizontally unstable.
Fault 1: The picture is fringy. Check control TS7610. If necessary check the signal on collector TS7630. Should be stable, if not, check R3633.

Maximum picture width, cannot be regulated, fuse 1601 is defective.
Fault 1 Coil 5611 on the main board must be replaced.

The picture is too wide and cannot be controlled. After about 5 min. BU508 blows.
Fault 1 The transistor in the E/W unit causes too wide a picture. Check T7599 and T7598.

E/W correction does not function until maximum picture width is set.
Fault 1: Replace diode 6603 and 6604.

No East/West control.
Fault 1: Replace BD234.

No East/West pincushion correction.
Fault 1: Check fuses 1601, T7599, T7598 and C2590.

E/W correction problem.
Fault 1: Change diodes 6603 and 6604. Check T7599, T7598 and C2590.
Fault 2: Check C2617.

E/W bowing and picture width is too wide. Knock sensitive.
Fault 1: Dry joints at coil 5611.

OTHER

The display blinks.
Fault 1 Check IC7830 (U1830).

The display shows E6.
Fault 1 IC7104 must be checked.

Commands of the remote control do not function but operating the appliance manually is ok.
Fault 1 Check U1840, U1830, TS7856 and IC7830.

The display shows E3.
Fault 1 Check U1830 and IC7830.

The display shows E5.
Fault 1: Check IC7103 (TDA8405) then IC7104 (TDA8420).
Fault 2: Check if the SDA and DCL signals are present and the power supply voltages on the stereo decoder.

The display shows E0.
Fault 1 Check IC7925, IC7926 and IC7900.

The display shows E1.
Fault 1 Check IC7830, U1840, U1830 and TS7856.
Fault 2 The teletext decoder is defective.

The display does not function.
Fault 1 Check the voltage on pin 12 of T5663. If it varies then change C2726 (1500µF).

The stand-by LED on the remote control often flickers without function. The sound increases and the display shows F1 or F2.
Fault 1 Replace IC X2402.

The speakers are defective.
Fault 1 Resolder the solder joints on the power supply line transformer.

E3 is displayed and the 140V power supply is low.
Fault 1: If the 140V is correct check T7742 and T7743. If the 140V is low, check the power supply. Unplug point 13 of the power supply transformer. If the 140V returns to normal check standby thyristor T6727, T7731 and the associated components. If the 140V remains low then unsolder R3740.

"E3" on display and the line BU heats up (140V gets lower).
Fault 1: Change line transformer.

E3 on display. Power supply and high tension are correct.
Fault 1: Check the +13V circuit on pins 16 and 22 of IC7900. If there is no 13V check D6644, D3644, R3645, otherwise replace IC7900.

"E4" on display.
Fault 1: Check the scart earth.
Fault 2: Check U1830 and IC7830.

Teletext shakes vertically. When switching channels the top of the screen momentarily moves horizontally.
Fault 1: Replace overvoltage protection diode (take original!) and replace C2959 as well as C2958.

F3 in display.
Fault 1: Replace R3644 and R3645 of +13V. Possibly the raster as well.

TXT has swaying (S shape).
Fault 1: Replace IC7780 (SAA5231 = SDA5231).

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

Hum during switching.
Fault 1: Remove C 2199 (1.5 uF) on stereo decoder.

Hum on standby.
Note: audible in stand-by, but not in normal operation.
Fault 1: Replace D 6690 (BZV 85/C5V1; 4822 130 31456).
Fault 2: During production an incorrect value was provided for C2690. The correct value for C2690 is 1µF/50V (4822 124 41282).

Back up battery fails regularly.
Fault 1: Replace back up battery (1.2V) (part no. 4822 138 10138) by improved model.
Part no. 4822 138 10313.

In standby noise emitted by the HT power supply transformer, 30V in this position, standby voltage ok. Another transformer has been tried and TV functions.
Fault 1: Replace 7668. Check in standby function on 6996 40V, 6711: 3V, 6704: 5V. Check command on base 7685: -4VPP on the base of 6686: -3.5VPP.

E3 appears on screen (140V fail).
Fault 1: Change line transformer.

Whistles.
Fault 1: After replacing repair kit E-W coil begins to heat up. E-W IC (TDA 4610), fuse 1601 is defective.

Crackling "tick" in first half hour. No display during tick then display switches to channel 1.
Fault 1: [Power supply and LF output stage OK]. Clean spark bridge.

After replacing line transistor appliance begins to whistle. Line transistor fails again immediately.
Fault 1: After replacing line transistor disconnect the 13V. If the line output stage then runs, IC (TDA8370) is defective.

Begins to whistle after approx 2hrs. If switched off then on again, it runs again for 2hrs.
Fault 1: Check solder joints in IF. Check C2609 and chip capacitor in the line unit.