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Service tips for CHASSIS

ICC 9

TCE

SABA

BRANDT

THOMSON

FERGUSON

NORDMENDE

TELEFUNKEN

1.

Usefull info

Microprocessor software version and teletext board compatibility.

The technical help line engineers have reported several cases where different fault conditions have arisen after the replacement of the microprocessor or the text board, these have been either no teletext operation, no remote control functions, the television will not come out of the standby mode or even a description of a tripping type fault.

In most cases it has been found that the cause of the problem is due to incompatibility between the microprocessor's software version and the teletext board. If you find it necessary to replace either the microprocessor or the teletext board, the following table will enable you to avoid any of the above-mentioned problems arising after replacing the retrospective devices.

Micro software version type: C9-20 Main chassis sub code: ICC9 280 Teletext PCB type no: DVT 9002

Micro software version type: C9-20 Main chassis sub code: ICC9 777 Teletext PCB type no: DVT 9002

Micro software version type: C9-20 Main chassis sub code: ICC9 270 Teletext PCB type no: DVT 9002

Micro software version type: C9F-25 Main chassis sub code: All Chassis Types Teletext PCB type no: DVT 9003

Identification of the microprocessor software version is via the last four digits after the part number of the IC, i.e. 10177300-C9-20

The teletext board type number is printed on a white label, stuck generally on the component side of the PCB.

The main chassis identification number is silk screen printed on the component side along the front edge of the PCB ie. to the left of the chopper power supply circuit.

Teletext access time - alternative memory device.

1: A problem which affects the access time and the data acquisition cycle for both fasttext links and index pages on earlier versions of the Teletext PCBs can be overcome by removing the memory device used at location IT03 and fitting an alternative device at location IT02. After removing IT03, check the copper tracks for s/cs. Fit new memory device IT02, check the copper track for s/cs.

The alternative memory device (HY53C464LS-80/LH2464-10) is available under part no. 46157900.

Note: Whilst handling the teletext PCB and the new memory device, ensure that the workplace is correctly protected against static discharge and the equipment used conforms to the latest Health and Safety at Work Regulation.

Access to service mode

1. Switch TV on using on/off switch on set.

2. Switch to standby using handset.

3. Switch TV off using on/off switch on set.

4. Press blue text key on handset whilst switching TV on using on/off switch.

5. Enter service menu by pressing blue key. Menus: SETUP = TV settings

VIDEO = video adjustments GEOMETRY = Geometry adjustments

RESTORE--- This will retrieve the previous hex value in NVM if this has been altered during adjustment. It will not return values if they have been stored.

ROM---- This will return NVM to default settings.

VOLT--- This must not be adjusted using +/- keys on handset but using +/- buttons on TV

VOLT Usys. Cathode DP61 154V=33" 29" 25" (4/3)

145V= 21" (110°)

121V= 21" (90°)

165V = 32" (16/9)

UHF/VHF head.

Two types of head have been used on this appliance: MTP MM-2014/01 (code 503TX0491) and MTP-4015F (code 503TX0491). The latter version has a grounding point between pins 3 and 4.

Production changes - Power supply circuit. Following components have been removed during production :

Diode DP58 (ZPD 30V)

Diode DP59 (LS4148)

On non-modified appliances, a loss at DP58 level may cause appliance to switch off at random.

Production changes - Control panel. On these appliances two types of control panel have been used:

Type one: Membrane control panel (part no.: 103TX1130) combined with following elements: board FCB9016 (part no.: 596TX3476); intermediate 10 key panel (part no.: 103TX1736); panel holder (part no.: 103TX2238).

Type two: Contactor control panel (part no.: 103TX3036) combined with following elements: board FCB9054 (part no.: 596TX4074); 8 way ribbon connector.

Method to be applied to check power supply is in low voltage.

Unsolder pin 3 from line transformer and check power supply secondary. Suspect DATA and CLOCK on IR01 pin 1 and 2:5Vpp.

Contents of power supply repair kit.

Part number: 35029320.

DESCRIPTION	CIRC REF NO	QTY
2.2nF/1K	CP13	1

2.

BA157 (BY201) DP23 1
1A6AT fuse FP01 1
TEA2261 IP01 1
BUV48CFI (ON4915) TP10 1
Contents of surface mounted transistor kit.
Part number: 35029260.

DESCRIPTION	QTY	PART NO
BC848B	10	35036730
BC848C	10	35036130
BC857B	10	35036740
BC858C	10	35036760
BC858C	10	35036780

Contents of TV fusible safety resistor kit No 2.
Part number: 35029150.

DESCRIPTION	QTY	PART NO
0R1/0.40W 10%	10	35038230
0R33/0.40W 10%	10	35038240
0R39/0.50W 5%	10	35038250
1R/0.40W 5%	10	35038260
1R5/0.50W 5%	10	35038270
3R3/0/35W 5%	10	35038340
8R2/0.50W 5%	10	35038350
10R/0.25W 5%	10	35038280
15R/0.50W 5%	10	35038290
22R/0.25W 5%	10	35038320
27R/0.30W 5%	10	35038330
180R/0.30W 5%	5	35038300
1K/0.50W 5%	5	35038310

General information.

. Year of manufacture of appliance : 1997-1998

After PSU was checked according to the info, protective circuits can be switched off (see below) Warning: various vertical ICs <--> Cs.

If pin 19 of IV01 (STV 2160) is unsoldered, protective circuit (no. 3?) is put out of operation. If you bridge base and emitter of TP69, protective circuit no. 2 is put out of order.

Working in safety mode.

IV01 communicates with IR01 via the data leads that a fault is present. Then the operating voltages pin 13: 24.5V, pin 33: 38.5V are present but crystal does not oscillate. Switch off protective circuit, unsolder pin 19 IV01. In the PSU LP44 can be unsoldered then PSU works in pulse mode as in stand by. Then U_{sys} is approx 127V.

Modifications - chroma circuit IV01.

In this position, two types of video processors were used successively:

Type 1: STV2160-AF or AG, CG (part no. 276TX4609) with a specific value of CV46(*): chip capacitor (10nF) (pin 20 of IV01).

Type 2: STV2160-AK or DA, BK, CK, DK (part no. 276TX4848) with specific value of CV46(*): chip capacitor 33nF (pin 20 of IV01).

(*) An incorrect value of CV46 causes vertical instability of the picture. NB: The position of CV46 indicated in the technical documentation ICC9 is the wrong way round.

Power supply circuit. Reliability of TP10.

This is improved due to replacement of transistor BUH713TH (part no. 270TX2463) with a new type BUV48CFI/TH (part no. 270TX2757).

NB: Appliances manufactured now contain these modifications.

3.

Power

Mains transistor TP10 fails repeatedly.

1: It is possible that CP13 has a loss of capacity or dry joints.

Change TP10 from BUH713 to BUV46CFI (10274170).

Power supply repair set 10268050.

Appliance does not start from standby, but pumps once.

1: IA01 (TDA2616, audio output stage) is defective.

Line output transistor TL19 failure.

1: Random failure of line output transistor TL19 for no detectable fault condition, could possibly be attributed to intermittent failure of a diode at location DL61 type 1N4001. It has been found in production that this device can suffer mechanical stress, problems which can arise are intermittent O/C or high forward junction resistance of diode.

In the event of either of these fault conditions occurring, the results are that the supply rail to the line driver stage will be incorrect and as a result, the drive waveform to the base of line output transistor TL19 will be incorrect.

Detection of this fault condition is somewhat difficult so it is recommended that this diode be replaced as a matter of safety and reliability of the line output device.

2: Replace DL64, DL65, DL66, DL67, DL68, DL69, DL70 CL63 and RL60..

3: Check IC (TDA8172).

CRT video drive IC failure.

1: to improve the reliability of the video driver integrated circuit IB01, type number TEA 5101A, further static protection has been introduced in production by the addition of three BAV21 diodes allocated reference numbers of DB32, DB52 and DB72 respectively. These devices are available from Ferguson under part no: 16007470.

It is recommended that this safety measure is incorporated after replacement of IB01, mounting of these diodes must be carried out on the copper side of the PCB. Insulation must also be provided for both diodes and associated circuitry to prevent accidental short circuits taking place in reassembly.

Also associated with this is Technical Bulletin T0008 (Static Protection for Video Processor IV01) please read and also, if necessary, carry out this additional static flashover protection for IV01.

Power supply functions but does not start up.

1: Replace RV06 (680R 207TX3459). Remove DP58 and DP59. Check DP84 (1N5817 273TX2493), CP84 (220nF).

Pumps three times then goes into safety mode, red LED lights up.

1: [Line transformer, IV01, IF01, DP72, DP35 have been changed]. Check DL21, RL45 and TL40. Suspect DF32 or check power supply. Unsolder line BU.

Appliance does not start up. System voltage collapses at 80V as soon as the aerial is connected or the menu is displayed on the screen and appliance goes into safety mode. Normal scanning without aerial.

1: Change CL23 (8.2nF).

Primary goes into safety mode at start up.

1: The voltage at pin 16 of the TEA2261 is higher than 15.7V at start up. Change DP35 (1N4148).

At start up the appliance will not come on.

1: CP72 (4.7 μ F) is dry.

Occasionally appliance goes into safety mode.

1: Check TP66, TP67 and TP69.

Occasionally appliance goes into safety mode or trips.

1: Change DV001 (1N4001).

TL19 blows after 5 secs.

1: [Line transformer has been replaced. Driver, tuning capacitors, etc have been checked but nothing found]. Replace BUH157 TH by original part.

Ref. 270TX2515.

4.

No 13V at start up.

1: Check 13V on DL13. If not, check CL14. Replace DP84 by IN5817, CP84 (220 μ F). Check RV08 (680R) between the base and collector of TV06.

Power supply functions but voltage is reduced. 26V goes to 13V and 151V to 120V. 10V STBY 5V ok. Standby light still remains on and starts up occasionally.

1: [IP01, STV2160, TV06, TR80, DP82, CP82, DV01, RV01 checked]. Remove audio module. If the same, unsolder pin 11 from IF module or unsolder pin 2 from line transformer. Suspect IF01 and line transformer.

Power supply blips when switched on.

1: Check pin 5 of IF01 (TDA8172) for s/c.

Pumps two or three times then dead. Red LED off. Functions if 8V connected to CP72. DP72 ok.

1: [CP72 replaced]. Unsolder line BU. Check DP03:20V, DP61: U SYS, DP82:26V. Check raster circuit and audio module.

Appliance comes on for a second.

1: Replace TDA8172 chip.

Power supply blocks at start up.

1: Check if scanning BUH517 is S/C. DL61 O/C. To determine the fault, fit transistor TL65 S/C E.C, otherwise BUH blows again instantly.

Remains in standby. 128V, 9V and 5V ok. No start up of line BU.

1: Replace RV06 by another 680R (ref. 207TX3459). Remove DP58 and DP59.

IC (TEA5101) fails repeatedly.

1: Fit two diodes between ground (anode side) and pins 5 and 7 of IC (TEA5101) (cathode side).

Power supply blows. Standby LED flashes red each second. No oscillation on line BU. No horizontal drive on pin 32 of IV01 (STV2160). 0V at the spot of the line pulses.

1: Replace coil LL10 and diode DL61.

Standby LED flashes red/green every second. Appliance pulses three times. Line transformer starts up then cuts out. Pulses on line BU correct.

1: Pin 19 of IV01 at 0V. Protection circuit is defective. Check if transistor TP66 (BC858) O/C or if TP69 (BC848) leaky.

Standby LED lights up red then goes off. U system only increases to 100V before tripping. Pulses on line BU increase to 800V before going into safety mode.

1: Replace recovery diode DL21 which is leaky.

FBT tries to start up but power supply does not increase enough and does not regulate.

1: Power supply regulation circuit TP52 (BC848) is defective. Regulation transformer LP44 O/C.

Power supply goes into safety mode. No apparent S/C on the power supply.

1: Poor regulation on primary circuit. Diode DP31 (LL4148) is leaky.

No FBT. Red standby LED lit. No 8V on pin 13 of IV01. Circuit breathing active (0V at pin 19 of IV01).

1: Check if TP66 (BC858) and TP69 (BC848) S/C.

"Beep" from power supply at switch on then goes into safety mode.

1: Check if diode DP31 (LL4148) is defective or if line BU transistor is resistive. If line BU is defective, replace diode DL61. No apparent S/C on secondary.

BU and line transformer blow again.

1: DL61 (1N4001) O/C. Also check CL21 and CL22. Track O/C on 7.5V.

Poor start up, PC and bus after repalcing uP.

1: uP versions vary according to product references and are incompatible. Check TX code of uP according to appliance reference.

No HT. No reception via RC. Standby light lit red. Clock ok.

1: No data. Remove sound board. If TV functions correctly, check audio board and replace TDA.

5.

Weak drive to line output transistor.

1: Check diodes (1N4002) in line driver circuit, starting from DL61 then DL64-DL70.

Constant tripping.

1: Replace RL65 (BC327-40) in line drive circuit.

Dead. Flyback lines at start up.

1: Check TDA8172.

Line output transistor S/C; replacement gets very hot.

1: Replace TL61 (2SC2655) in line driver circuit.

At switch on high voltage builds up for a short time. Then pulse at collector of BUH517 fails.

1: [Additional parts in deflection circuit already checked]. Make following modifications:

Replace DP58, DP59 (is also no longer mounted). Replace DP84 by 1N5822 (Schottky) and change RV06 to 680R.

Diode DL61 also fails. Then too little base current for line BU.

Fault in safety mode.

1: If appliance is switched on again by unsoldering pin 19 IV01, solder on pin 19 again. Safety circuit can be activated from the PSU: TP69, TP67, TP66. Short C-E of TP69, if appliance switches on then remove S/C and short C-E of TP67 and unsolder TP66. Switch on again. If ok, then cancel one of the two modifications.

Occasionally switches off for a short time then starts again straight away.

1: [Line transformer, horizontal end stage BUH517, diodes in horizontal drive already replaced.] Check diode for standby voltage production - may be a thermal fault. Standby voltage drops from 5V to 3.5V.

No start up. EHT increases then cuts out. LED flashes green/red.

1: [TP69, TP66, TP67 and STV2160 changed.] Check CL22 O/C. If ok, remove audio module. If the same, unsolder IF module pin 11. Suspect IF01 and line transformer.

Deflect

Does not synchronize.

1: Change transistor TX07 (BC848C). FBAS-signal is not perfect. Lower part was distorted.

TL19 line output transistor fails.

1: DL61 (1N4001) gets contact resistance under load. Replace together with transistor TL19.

Vertical jitter.

1: Change CV46 to 10nF or 33nF.

Horizontal instability. Ok when cold then fails after a few secs.

1: Replace bridge JV56 on pin 39 of IV01 by 4K7. Check the signal on pin 6 of IF: 2.5Vpp. If not ok, check via the scart. If ok, suspect the IF module.

Vertical deflection has failed, only a horizontal line is visible.

1: The contacts of the coil at the edge of the chassis are burnt.

Unlocked picture, looks like no sync. Blows TL19 line output transistor.

1: Line oscillator off frequency. Set up in service menu. No signal conditions. Connect frequency counter to TL63 collector and adjust H-VCO in GEOM menu to nearest value to 15625 kHz using +/- keys on handset. After adjustment store by pressing store +. See useful information.

Vertical instability after changing IV01 (STV2160).

1: Change CV46 to 10nF (for the STV2160-AF or AG, CG (code 276TX4609)) or to 33nF (for the STV2160-AK or BK, CK, DA, DK (code 276TX4848)).

Horizontal picture foldover. Sound only every 2 secs. Picture and sound via AV ok.

1: Check the signal from the tuner. Check -H and V- Sync at pin 3 IC IX01 behind the IF on transistor TH01. Check FBAS at pin 4 IC IX01.

6.

Loss of horizontal sync with weak signals.

1: TH01 is defective. Transistor may sometimes show other faults such as low contrast or loss of some TXT characters.

At switch on the line end stage fails immediately.

1: CL22 O/C.

BU in line output stage fails again immediately after switch on.

1: [Line output transformer and driver transistor are new]. Check all capacitors in output stage. Supply output stage externally with 30V and measure pulses (B/C). Ascertain if drive is poor or if pulse capacitor has a loss of capacity.

Vertical line jitter when warm.

1: Check if IP03 behind line output transformer is warm or hot. If hot, replace DL601 behind line output transformer and TL64 (BC858; SMD) on solder side.

Sawtooth effect on edge of picture like horizontal instability. Line BU blows after 15 mins.

1: Check CP61 (151V) on oscilloscope. If ok, check signal on TL63 base (0.8Vpp), C: 6Vpp, TL62 E: 10Vpp. If ok, check base of TL19 (13Vpp). If defective, suspect 1N4001, DL64, DL66 to DL70, CL21. Check secondary of line transformer.

Color

Greenish picture when switched on. Blue screen after a few secs with no picture and with fine white lines.

1: [CRT has been changed]. Check IV01 STV2160.

Green screen, Y is o.K, no TT visible.

1: Measure the RGB signals on IC IV01, pins 35, 36, 37, approx 3Vpp, approx 2.4V dc. On pins 35 and 37 no signal. Cause: IC IV01 is defective.

Green is fairly weak.

1: SMD-transistor TV76 is defective.

Picture has too much colour, possibly with flyback lines.

1: Chroma end stage IC is defective.

Warning: you must fit a repair kit from TCE.

Order no: 103.283.80

Green screen for 2 secs at start up, no display, white window in its place.

1: Remove RV02, CV02 in the base of TV01.

One colour produces flyback lines, also sporadically.

1: Replace TV 71,76,81 (SMD) at the output of IV 01 according to the colour.

Colour is lost in SECAM.

1: Replace IC01 by a new circuit STV2151 (276TX5493) and change RC07 to 4K3 (207TX2433).

Blue flashes varying with the picture content.

1: Change CV26 to a 4K7 resistor.

No red.

1: TV71 is defective.

Variation of blue or green every five secs and poor red.

1: [IB01, TEA5101A changed unsuccessfully]. Replace CV26 by a 4K7 resistor. Then check STV2160.

Picture flashes and pulsates and has a very red tint.

1: RB24 (39K/1W).

Loss of one colour.

1: Check TV71 (red), TV76 (green) or TV81 (blue).

Blue picture which improves gradually becoming acceptable after a quarter of an hour.

1: Check on IB01 pin 1:3Vpp. If ok, check on RB71 118Vpp. If defective, check DB66, CB66 and RB68 (390K) at pins 14:3.9V, 13 and 15:137.8V.

7.

Intermittently screen turns red then switches to standby.

1: Check transistor TV71 (BC858B) for intermittent O/C.

Green screen. Sound and TXT ok.

1: Check without TXT module. Suspect module.

2: Voltage at emitter of transistor TC01 too low. Replace IC01 (STV2151) and TC01 (BC337).

NB: TC01 is wrongly given in the circuit diagram as BC388. Please correct.

Chroma output stage IC (TEA5101) fails again immediately after replacing.

1: Use TCE modification kit of the newest model including conversion instructions. Clean aux board on both sides with white spirit or similar and clean remains of solder. Circuit is very high resistive.

Desc.	Part no.
Old Modification kit	10227350
New " "	10328380

No green in scart or HF, same with a test pattern.

1: [Entire tube base board changed]. Check green signal on IV01 pin 36 then IB01 pin 3. Check TV76, VB41, TB41, TB42, TB43 (3.5VPP).

Picture

TV starts up but no picture, no sound. No command functions. EHT present. Power supply correct.

1: Check on IR01 pin 28 and 29: 4.4V in AV and TV 0V. Check the raster circuit IF01 1: 1.4Vpp and 5: 50Vpp. If ok, check TX14. Check the RGB on IV01 pin 35, 36, 37. Suspect the control panel (membrane).

Screen darkens after 10 mins. Standby LED is still lit up green and no sound.

1: [Microprocessor has been changed]. Replace RV06 by 680R 270TX3459. Remove DP58, DP59.

No Y signal. Colour is ok.

1: Y signal present at PIN 12 IC02 TDA4671. Does not arrive at pin 2 IV01 STV2160.

Emitter voltage of TC02 approx. 5 Volt. At base only approx.3.5 Volt. Tear in the foil at collector TC03, resolder step.

Picture is present without luminance, only presence of chroma.

1: Check via scart. If ok via scart, check the IF module.

2: Check the luminance signal on pin 20 of the IC01. If ok, check on pin 16 of the IC02. If ok, check on pin 12. If ok, suspect TC02, TC03 and TC04.

No contrast. Picture, colour, brightness ok. Picture tube voltage ok.

1: PV58 O/C.

Picture flickers or is noisy via tuner.

1: [ok via Scart inputs AV1 or AV2.] Fault is at component tolerances of brightness clamping circuit IV01 (STV2160) of tuner. Increase coupling capacitor CV51 (100nF) to 680nF.

Ref. Desc.	Part no.
CV51 Capacitor 680nF	10140560

No sound or picture. Normal display of the functions on the screen, channel, frequency, sound, etc. In AV only the sound and no picture. RCU functions.

1: Check the video signal IC01 pin 24, pin 10: sandcastle. If ok, check IV01 pin 22 and 23, data and clock, 36, 37, 35 RGB. 5V on DL12. If ok, suspect module TL51 and RL50.

Dark picture. No sound. Teletext and channel display ok. Picture is ok in scart.

1: Transistor TX16 (BC558, SMD) is defective. Follow the signal path. Scart switchover from pin 6 of the IF to transistor TX07.

Possibly also replace IC IX01. (Spare part type 309368217 MC1 4052BCP).

Colour spot at the top of the screen for several months. Does not degauss.

1: Check the speaker and the degaussing coil. Suspect the tube.

No brightness values, stripes in the picture, also via scart. Y signal is missing.

1: Transistor TC 02 (TC 03 +TC 04) is defective..

8.

Negative picture.

- 1: Standard switch over does not work. RX 82 (10K) is defective. Check also if TR 20 and TR 22 on control panel processor are defective.
- 2: TX16 and TX17 are defective

Dark picture, picture disappears intermittently.

- 1: Check TC02, TC03 and TC04.

Blurred picture in HF.

- 1: Change TH05.

Poor picture and no sync when going to AV1 then returning to channels. Sometimes returns by itself.

- 1: Check TX11 and IX01. If ok, check video signal on TH05 2.5Vpp and on TX09. For sync suspect IX01.

Occasionally no picture and no sound. OSD ok.

- 1: The signal stops on TX16 (beside the scart switching IC). Replace TX09 (ok on the tester).

Black screen at start up. Menu displayed. In HF no picture and no sound. In video no picture but sound.

- 1: [IV01 has already been changed]. Check IR01 pin 28 and 29:AV 4.5V, TV:0V.
- 2: Check scart switching part IX01 pin 10:AV 12V, tuner:0V. If defective, check TX14, TX15, RX84 and RX83.

Dark screen, menu appears, intermittent picture.

- 1: TX14 is defective.

No picture; screen is completely dark.

- 1: TB18 is defective.
- 2: Check RV32 (4K75) in centre of panel.
- 3: Check TX16 (BC858S), mount and fit IX01 (HEF4052B).

Flashovers on picture, visible as vertical stripes at switch on.

- 1: Diode DF31 is defective.

Picture tends to the negative or continuous flashovers on picture.

- 1: Transistor TC02 is defective.

After a short time, line output transistor fails or black bands appear on screen as if appliance out of horizontal phase.

- 1: Diode DV01 opens, supplying cathode with a voltage of 8.5V instead of 14V.

Contrast is low. Txt ok.

- 1: TC03 is defective.

On some particularly dark pictures, bright band in top part.

- 1: Replace IC (STV2151).

Screen is completely white with flyback line.

- 1: RL09 O/C.

When warm, screen goes dark; EHT still present.

- 1: When voltage turned up at pin 38 of IV01 picture appears but with strong E/W distortion. CV46 is defective.

Colour varies on the picture.

- 1: TB18 on picture tube terminal board is defective.

Low contrast.

- 1: TH01 is defective.

Weak luminance.

- 1: RC20 (10ohms) fuseable resistor.

No sound or picture; comes out of standby, powers up 3 times then returns to standby.

- 1: Check TL63 (BC848B) along horizontal drive output, for o/c.

9.

No picture, sound ok. OSD band illegible.

1: [IX01 replaced unsuccessfully]. Check video signal on RX24. If ok check on IX01 pin 2. If not, check TX17, TX03, TX05 and TX11.

Picture flashes and pulsates and has a very red tint.

1: RB24 (39K/1W).

Picture flashes and luminance varies.

1: Replace:

TX07 part no. 45061785 BC848b

TX09 " 16006330 BC858b (these are all surface)

TX16 16006330 BC858b (mounted devices under main PCB)

If this does not clear up the faults also replace

IX01 " 46035300 MC14052bc

These part numbers refer to model D59N devices may differ on other ICC9 chassis.

No luminance via tuner. Luminance ok in AV.

1: [Tuner changed]. Check video signal on IF module pin 6 2.5Vpp. If low suspect IF2133.

Occasionally picture wavers intermittently.

1: Check CV21 near IV02.

Dark screen. Green light on. Line transformer and raster ok.

1: uP blocked. No DATA at pins 5 and 6 of memory. Check pulses L and T at pins 25 and 26. If incorrect, check TR42 (BC848) to right of uP.

Variations of brightness and contrast. LED flashes red/green.

1: Fit a capacitor (1uF) at pin 27 of IR01.

No picture and no sound. FBT ok. No OSD and no RC. TR01 blocked in TXT mode at pin 17. Bus hurries permanently. Reset ok, TR01 ok, TR02 ok.

1: Check presence of ICUT data at pin 39 IV01 (STV2160). If no data, check TB18 (BC558) on CRT board.

Dark screen. No FCT and no RC. No OSD. Line transformer ok. Raster ok when G2 pushed.

1: Bus data/clock blocked. Disconnect sound decoding board (for the stereo model). If picture returns normal, check sound board.

Note: TV blows with picture sync when sound board disconnected. If no aerial, no blowing.

Picture lacks contrast. OSD ok. No signal at pin 2 of STV2160 (<1Vpp).

1: TC02 (BC848) and TC03 (BC858) near IV01 on solder side.

Bright white screen.

1: Check safety resistors RB06 (10R) and RB07 (10R) on CRT base panel.

Dark at start up then correct picture after 5 mins.

1: Replace RV06 (680R; 207TX3459). Remove power supply circuit and check DP58 and DP59.

Three black vertical lines in middle of picture. Voltages fail. Power supply chirps loudly. Appliance runs with a lower beam current.

1: [Power supply checked. IV01 already replaced, SMPS signal arrives.] Capacitor CL23 is defective.

No Y signal. Occasionally no sound and jitter in picture.

1: Replace all SMD transistors (BC858/848) in Y output of chroma ICs on base board.

Loss of sound and picture after approx 10 mins.

1: Replace TX09 (BC858B).

Intermittent picture.

1: Check crystal (27MHz) on TXT board.

Picture shimmers.

1: Check IP03 for 9V.

10.

No sound, no picture. When turning pot G2 several times, TV starts up but dark picture.

1: [Line transformer ok. IV01, TB18 replaced.] Check video signal of IF module pin 6. If ok, check IV01 pin 9. If defective, check TH05, RH04 and LH02 or check via scart. If the same, suspect IX01.

Green screen with black snowy points.

1: [Channel display ok, sound ok.] Check via scart. If ok, suspect IF module or check video signal of IF module pin 6. If ok, test TH05, RH64, RH07. Power supply (12V).

Picture too wide.

1: Check CZ19 and RZ14.

Picture and sound disappear, leaving only blank raster on screen, graphics O.K.

1: Check or replace TX09 (BC858B).

Wavy picture over all the picture after operating for 5-10 mins, normal when cold.

1: Check 13V on oscilloscope on DL13. If defective, suspect CL14. If ok, suspect IF.

No picture or far picture in scart on a Nintendo game. Ok in video.

1: Check IX01 pin 16 (12V). If not, suspect TX11, TX14 and IX01.

Sound

Audio noise when appliance is started up (standby or mains).

1: No audio mute on pin 2 of IA01. This is caused by TA02 (BC848) which is defective.

TV starts up but no picture, no sound. No command functions. EHT present. Power supply correct.

1: Check on IR01 pin 28 and 29: 4.4V in AV and TV 0V. Check the raster circuit IF01 1: 1.4Vpp and 5: 50Vpp. If ok, check TX14. Check the RGB on IV01 pin 35, 36, 37. Suspect the control panel (membrane).

No sound.

1: CP87 is defective.

2: TA20 is saturated. Mute is on. Voltage on RA20 is between -2V and -4V instead of 12V. TR81 is s/c between its base and emitter.

Appliance whistles once for a short time.

1: Defective BU. After replacing, no drive. Voltage operation ok, at TL63 ok (pumps). O/C on the print below the retaining peg of the line output transformer.

Occasionally no sound.

1: Check mute circuit TA02 and TA20.

Horizontal picture foldover. Sound only every 2 secs. Picture and sound via AV ok.

1: Check the signal from the tuner. Check -H and V- Sync at pin 3 IC IX01 behind the IF on transistor TH01. Check FBAS at pin 4 IC IX01.

Sound is present but very low; bass is intensified.

1: Transistor TS90 on audio AM/FM 9315 module is defective.

Occasionally a rustling is heard in the audio.

1: This problem only occurs on sets of the last generation. Check the audio IC positioned on the relative module: if the IC is marked MPS3410, replace it by another which has the marking MPS3400. (MPS3410 audio decoder with a Nicam system; MPS3400 audio decoder without Nicam).

Distorted audio.

1: The fault disappears when you disconnect pin 2 from the end stage TDA2616. A very high ripple is found on the collector of TA20. The cause is diode DP20.

No sound or picture; comes out of standby, powers up 3 times then returns to standby.

1: Check TL63 (BC848B) along horizontal drive output, for o/c.

11.

No sound. Standby light comes on then goes off. 150V on line BU. No FBT. 26V power supply at 10V.

1: Check if raster IC IF01 (TDA8172) S/C.

No picture and no sound. FBT ok. No OSD and no RC. TR01 blocked in TXT mode at pin 17. Bus hurries permanently. Reset ok, TR01 ok, TR02 ok.

1: Check presence of ICUT data at pin 39 IV01 (STV2160). If no data, check TB18 (BC558) on CRT board.

Dark screen and no sound. No RC or standby. Green light lit ok. Line transformer ok.

1: uP is blocked. Remove AM/FM audio board. If ok, check TB18 on CRT board and TR42 (line and raster pulse) for uP. Otherwise, check I2C BU.

No or intermittent sound.

1: Check socket BA05 at back of main panel for dry joints or cracks in print.

2: [Chassis with manufacturing code AJ6 and AJ7]. Broken pins of regulator TS060 MC33164P-5 on AMFM board. Change regulator (code 10277030).

Sound problem after changing uP.

1: Two versions of sound module have been used, occasionally under same commercial reference. Software type used depends on sound module on chassis:

Software 25 (276TX4663) is used with analogic sound modules (AM/FM 9415, AM/FM 9615) whereas software 28 (276TX5103) is used with numerical sound modules (AM/FM 9101).

If no sound when software changed, check compatibility between software and AM/FM.

Loss of sound and picture after approx 10 mins.

1: Replace TX09 (BC858B).

Sound ok except on second channel which has just gone into stereo on the relay. Picture ok.

1: Check second channel with fine tuning. If the same, aerial ok, check audio signal of IA01 pin 1 and 9. If ok, check TA02, TA20, DA09 and TA01.

No sound, no picture. When turning pot G2 several times, TV starts up but dark picture.

1: [Line transformer ok. IV01, TB18 replaced.] Check video signal of IF module pin 6. If ok, check IV01 pin 9. If defective, check TH05, RH04 and LH02 or check via scart. If the same, suspect IX01.

Sound and picture disappear, leaving only blank raster on screen, graphics O.K.

1: Check or replace TX09 (BC858B).

Function

Blocks in PAL.

1: Check the change of state at pin 12 of IR01; LL'=0, BG=1 if ok, check on pin 4 of the IF module. If missing check TR22 (BC848B).

No function, display flashes.

1: Replace memory IC X24C04.

No TT, RCU does not function and stuck in standby.

1: [After replacing microprocessor on TT board]. Microprocessor software version and the TT board are incompatible.

Use the following combinations:

Software version: C9-20 Chassis code: ICC9 280 TT PCB type no: DVT 9002

Software version: C9-20 Chassis code: ICC9 777 TT PCB: DVT 9002

Software version: C9-20 Chassis code: ICC9 270 TT PCB: DVT 9002

Software version: C9F-25 Chassis code: all TT PCBs: DVT 9003

Identification of the microprocessor software version is via the last four digits after the reference of the IC, eg. 10177300-C9-20

The type of the TT board is printed on a white label generally stuck on the component side of the board.

The main chassis identification number is silk screen printed on the component side along the front edge of the PCB ie. to the left of the chopper power supply circuit.

12.

Blocked in standby.

- 1: [Secondary voltage suppressed]. Unsolder line BU. Check: if ok, suspect TL19 and line transformer or check PIP board.
- 2: [No line transformer pulses, VCC1 = 1V, 10V stb ok, 5V ok. IR01, IR02, IV01, TV06, RV06 (680), QR01 have been changed. Reset ok. Power monitor 5V, no info in the BUS, Usyst=128V, nothing on pin 32 of IV01]. Check CV01, RV01 and CV06. Check IV01 pin 15: 8.4V. If ok, check TV06: base: 8.5V, collector: 13V or 10V.
- 3: Replace DP84 (1N4001) by a 1N5817, code 273TX2493. Change CP84 (100nF) to 220nF, RV06 (1K2) to 680R 5% 0.25W, code 273TX3459. If diodes DP58 (ZPD 30V) and DP59 (LS 4148) are present, remove them.
- 4: Change QR01 (22MHz) which does not oscillate. Halt is permanent.
- 5: TR81 on monitor power line is defective.
- 6: Bus is blocked (remains in high level) and change STV2160.
- 7: Reset to 1V. Replace TR80/85/87 and TR90.
- 8: Check TV06, DV01, RV01, CV01. If ok, check driver signal on pin 32 of IV01: 0.8Vpp. If ok, check TL63, TL62, TL19. Replace DP84 by 1N5817, CP84 (220nF), RV06 (680R).
- 9: [Standby LED not lit]. Change RV06 from 1K2 to 680K (part no. 15008970). Change DP84 to 1N5817 (part no. 16008270). Change CP84 to 220nF (part no. 40432850) and remove DP58 and DP59.
- 10: Check for dry joint on pin 30 of micro.
- 11: IR02 (24C04) is defective.
- 12: Check TP66 (BC858B).

Random start up. Power supply voltages ok but no line pulse.

- 1: Replace RV06 by 680R 207TX3459. Suspect DP58 and DP59.

Stuck in standby, weak or no line drive, TL19 line output transistor quickly overheats and goes S/C.

- 1: Check for hairline crack from plastic rivet near pin 1 of line output transformer past TL64 and under DL62. This may be becoming common.

No function, only Stand-by LED lights up for a short time.

- 1: Appliance in safety mode, unsolder pin 19 from IV01. Check +10Vstby. DP83 (LL4148) and TL65 (BC327-40) are defective.

No start up.

- 1: Check ground solder joints on RP22 (on emitter of power supply BU).
- 2: [QR01, IR01, IR02, IV01, IC01 and IC02 have been changed]. PSU ok. Check RV06 (680R), CP84 (220µF), DP84 (1N5817).

Characters are lost in Teletext reception.

- 1: Replace the DVT9001 or DVT9003 board by module 596TX3839.

Goes into safety mode at start up.

- 1: [TEA2261, TP10 and DP61 have been changed]. Check DP72, CP72. Suspect TP66.

At switch on diode LED flashes continuously (red). The secondary voltages are very low and vary continually.

- 1: Diode DP34 O/C.

Some characters are missing in Teletext.

- 1: TH01 is defective.

Occasionally no switch on (occurs rarely). Standby LED then comes on for a short time.

- 1: Replace electrolytic (2200uF/16V) of the standby voltage.

Dark screen, no sound. Line transformer ok.

- 1: Check on TR80 E:5V. If not, check TR80, IP03 and DP56. If ok suspect mylar front panel.

Standby light comes on then goes off.

- 1: Disconnect zener DP72. If ok check if RP866 (120K) is O/C. Also check TP76 and TP77.

Poor start up, PC and bus after repalcing uP.

- 1: uP versions vary according to product references and are incompatible. Check TX code of uP according to appliance reference.

No switch on. Red LED flashes continuously.

- 1: Foil keyboard has a high resistive S/C.

13.

No switch on. Standby LED lights up.

1: If positive voltage at collector of TP69, check TP66 and TP69.

Intermittently screen turns red then switches to standby.

1: Check transistor TV71 (BC858B) for intermittent O/C.

Stops when trying to start up (noise for a short time). Standby U OK.

1: Check CP04.

Switches to standby for a short time then goes off again. Standby LED lights up. PSU ok.

1: No drive of IV01. Operating voltage on IR01 ok. If standby 10V not fully present, replace following components:

Diode DP84 with 1N5817

Resistor RV06 with 680R

Capacitor CP84 with 220nF

Remove diodes DP58 and DP59.

2: Check +5V at pin 33 of IR01. Check TR90, TR81, TR85 and TR87.

No function, no BU.

1: [Power supply ok, EHT ok, scanning ok. Tuner, IF, AM/FM, IC01, IC02, IV01, control panel membrane disconnected but fault persists (5V).] Check if ok via scart. Suspect IF module. Check DATA and CLOCK signals on IR02 pin 5 and 6. If defective, check power supply on TR80 (5V). Reset by TR90. Suspect IP03.

Going into standby functions randomly.

1: Check or replace TV06, CV01, CV06, DV01, DP84 (220nF). RV06 (680R) between B and C of TV06.

Geometry

Width is reduced.

1: Check TL40 (BD681) and RL45 (3.3ohm).

After a storm, displaced picture and trapezium fault. Impossible to take up in service mode.

1: Check the G2 voltage, 5V on TL51. Check on IV01 pin 25: 1Vpp. If ok, suspect IV01 and the zoom board. Check 25V on DP82.

Picture displaced to the bottom. IC TDA8172 ok.

1: Check on IF01 pin 1: 1.4Vpp, 5: 50Vpp. If ok, check RF25, RF20, RF11, RF23 and DF11. If ok, check the adjustment.

After operating for 1 min the horizontal amplitude decreases and the verticals distort. The line BUH517 heats up and is destroyed.

1: Change DL61 (1N4001) O/C.

E/W amplitude is too small.

1: CL42 (4.7μF/160V) is defective.

Geometry is OK. Frame shifted to top of screen.

1: IC (STV2160) is defective.

Note: Remember to change capacity of CV46 if a different type of IC is used.

Defective E/W.

1: CL42 O/C.

2: RL45 (3R3) O/C.

Other

No function, display flashes.

1: Replace memory IC X24C04.

14.

IB01 fails.

1: Carry out the following modification for additional protection against static discharge: Add diodes DB32, DB52, DB72 (BAV21) to copper side from pin 7, pin 10, pin 13 respectively to pin 2 (13V) - anodes to pin 2.

IV01 fails.

1: [Fault is due to CRT flashover]. Remove jumper JV56 (SMD) and replace with 4.7kohm resistor, (part no. 60079900).

Standby LED does not light up.

1: Change CP84 from 100 μ F to 220 μ F.

Video scanning processor is defective.

1: Remove bridge IV59 and fit resistor 4K7.

Video playback performance - designated VCR channel numbers.

The playback of pre-recorded video films, notably those which have been protected by Marcovision anti-copying signals, can cause problems with line synchronisation, this can lead to picture disturbances at the top of the screen.

On the ICC9 chassis, VCR status has been assigned to channels 9, 19, 29, 39, 49, AV1 and AV2, on these channels, a fast time constant is automatically set to ensure optimum performance with playback video recorder signals.

Should this problem be encountered, the simple solution is to retune the VCR to one of the above-mentioned channels and designate this as the VCR channel or interconnect the VCR and TV by means of a scart lead.

Line BUH517 fails.

1: Check CL21 and CL22.

2: Open circuit tracks on 7.5V line which supplies the push pull (TL61 and TL62).

Production changes - Power supply circuit.

Following components have been removed during production :

Diode DP58 (ZPD 30V)

Diode DP59 (LS4148)

On non-modified appliances, a loss at DP58 level may cause appliance to switch off at random.

Counts three times then red LED trips three times and appliance goes into standby. Still nothing when the line BU is unsoldered, counter and red LED lit.

1: [Line transformer, IV01, line BU, TL40, IF01, DP35, DP75, DL21, TP69, TP66, TP67 have been changed]. Check DP84 (1N4001), CP84 (220nF) and RV06 (680R). Remove DP58 and DP59.

LED blinks. Could be in child lock.

1: Press and hold standby button for 7 secs.

Sound menu display permanent. Runs through continuously. A few secs later if TV button pressed, display reappears.

1: Check condition of mylar control panel. Check TR80:5V. If low, check TR80 and TR87. Suspect IR01 and TXT board.

No picture and no sound. FBT ok. No OSD and no RC. TR01 blocked in TXT mode at pin 17. Bus hurries permanently.

Reset ok, TR01 ok, TR02 ok.

1: Check presence of ICUT data at pin 39 IV01 (STV2160). If no data, check TB18 (BC558) on CRT board.

Poor start up, PC and bus after repalcing uP.

1: uP versions vary according to product references and are incompatible. Check TX code of uP according to appliance reference.

Dark screen. No FCT and no RC. No OSD. Line transformer ok. Raster ok when G2 pushed.

1: Bus data/clock blocked. Disconnect sound decoding board (for the stereo model). If picture returns normal, check sound board.

Note: TV blows with picture sync when sound board disconnected. If no aerial, no blowing.

No FBT. No reception via RC. Standby light lit red. Clock ok.

1: No data. Remove sound board. If TV functions correctly, check audio board and replace TDA.

Dark screen and no sound. No RC or standby. Green light lit ok. Line transformer ok.

1: uP is blocked. Remove AM/FM audio board. If ok, check TB18 on CRT board and TR42 (line and raster pulse) for uP. Otherwise, check I2C BU.