

SERVICE MANUAL

**NOT FOR
PUBLIC RELEASE**

▲BUSH

1433 1434 1435
1473T 1474T 1435 GTV

ALBA

CTV 3409 CTV3459

Goodmans

GTV 147 GTV 148T

ALBA

▲BUSH

harvard

HiNARI

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DO NOT CHANGE ANY MODULE UNLESS THE SET IS SWITCH OFF.

The mains supply side of the switch mode power supply transformer is live.

Use an isolating transformer.

The receivers fulfill completely the safety requirements.

Safety precautions

Servicing of this TV should only be carried out by a qualified person.

- Components marked with the warning symbol on the circuit diagram are critical for safety and must only be replaced with an identical component.
- Power resistor and fusible resistors must be mounted in an identical manner to the original component.
- When servicing this TV, check that the EHT does not exceed 26 KV.

TV set switched off:

Make short-circuit between HV-CRT clip and CRT ground layer.

Short C808 (150µF) before changing IC801 or other components in primary side of SMPS.

Measurements

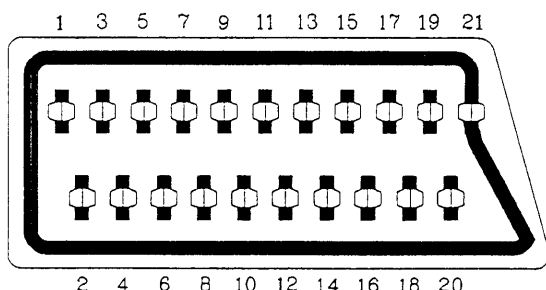
Voltage readings and oscilloscope traces are measured under following conditions.

Antenna Signal 60 dBuV from colorbar generator. (100% white, 75% color saturation)

Brightness, contrast, color set for a normal picture

Mains supply, 220V AC, 50 Hz.

PERI-TV SOCKET



| | | |
|----|-----------------------|----------------|
| 1 | AF right output | 0.5Vrms / 1K |
| 2 | AF right input | 0.5Vrms / 10K |
| 3 | AF left output | 0.5Vrms / 1K |
| 4 | Ground AF | |
| 5 | Ground blue | |
| 6 | AF left input | 0.5Vrms / 1K |
| 7 | Blue input | 0.7Vpp / 75 |
| 8 | AV switching input | 9.5-12Vdc / 10 |
| 9 | Ground green | |
| 10 | | |
| 11 | Green input | 0.7Vpp / 75 |
| 12 | | |
| 13 | Ground red | |
| 14 | Ground blanking | |
| 15 | Red input | 0.7Vpp / 75 |
| 16 | Blanking input | 1.3Vpp / 75 |
| 17 | Ground CVS output | |
| 18 | Ground blanking input | |
| 19 | CVS output | 1Vpp / 75 |
| 20 | CVS input | 1Vpp / 75 |
| 21 | Ground | |

1. INTRODUCTION

11AK08 is a 90 degree chassis capable of driving 14 and 15 inch tubes at appropriate beam currents. The chassis is capable of working in PAL. The sound system is capable of giving 1.5watts RMS output into a load of 16ohms.

One page simple TELETEXT is provided. The chassis is equipped with 21-pin scart connectors can accept via scart the SVHS format from VCRs so equipped.

2. SMALL SIGNAL PART WITH TDA8362A :

The TDA8362A combines all small signal functions required for a colour TV receiver, except tuning.

2.1. Vision IF amplifier, video demodulator and identification circuit :

The vision IF amplifier consists of three AC-coupled differential stages. The gain control per stage is more than 20dB, which results in a total gain control of 64dB min. The IF amplifier inputs can be coupled directly to the SAW filter output. The input impedance is 2 Kohm in parallel with 3pF. The input sensitivity for on-set of AGC is 70 μ V (typ.), for IF frequencies between 38.9MHz and 58.75MHz. The reference carrier for the video demodulator is obtained via passive regeneration of the picture carrier. The reference tuned circuit is connected between pin 2 and 3. The IC can handle positive and negative modulated signals, the polarity of the modulation can be switched at pin 1. A transmitter identification circuit operates independently of the synchronization circuit, to allow separate use of the front-end section and the display section of the TDA8362A. The output voltage at pin4 will be high with transmitter identification and low without identification (sound muted).

2.2. AGC , tuner AGC and AFC :

The AGC detector operates at top-synch level for signals with negative modulation and at peak-white level for positive modulated signals. For positive modulated signals the AGC time constant is long to avoid visible variations of the video output signal. To obtain an acceptable AGC speed with positive modulation an extra circuit checks whether the AGC detector is activated every frame period. The speed will be increased if this circuit detects that the video output signal has not reached 80% of peak white level for approximately 100ms. Externally a diode (D201) takes care that the tuner AGC voltage can be reduced rather quickly, which is only required if positive modulated signals have to be processed. The tuner AGC take-over point can be set by adjusting the DC voltage at pin 49, with a potentiometer of 10Kohm (VR402). The tuner AGC (pin 47) is an open collector output stage with an output swing of 2mA min. The voltage swing, required by the tuner, can be obtained with an external resistive network, connected at pin 47. Pin 47 may rise 2V above the actual supply voltage, without damaging the IC. This feature is provided because most tuners require a 9V AGC voltage level for min gain. The AFC circuit is driven by the same reference signal as the video demodulator. A sample and hold circuit avoids video break-through from the video demodulator to the AFC voltage. The AFC output voltage range is from 0 to Vcc.

2.3. Sound circuit :

The sound carrier which is present at the video output pin 7 is fed via the sound bandpass to the sound input at pin 5. This pin has a double function; sound IF input (AC) and volume control (DC). The filtered intercarrier signal is fed to an amplifier / limiter circuit and is demodulated by a PLL demodulator. This PLL demodulator tunes automatically to the incoming frequency, hence no alignment is required. The AF signal (pin 50) has an amplitude of 350 mV_{rms} at maximum volume control setting. The volume control setting is between 0 and 5V, volume control is logarithmic. The deemphasis capacitor (C401) is connected externally at pin 1. The non-controlled audio signal (Peri-television) is also obtained from pin 1 via an amplifier stage (Q406). Audio input signal from an external source (SCART) with an amplitude up to 350m V_{rms} (+/- 6dB) can be fed to pin6. The audio switch is controlled via the chroma input pin 16, as described in Chapter 8. The volume control operates upon the external audio input signal, when the TDA8362A is switched to the external mode.

2.4. Horizontal and vertical synchronization :

The incoming video signal, pin 13 for the internal signal and pin 15 for an external CVBS signal, is fed to the synchronization separator circuit. Internally the black level and the top synch level are detected, next the synchronization pulses are amplified to a fixed level and sliced at 50% of that level. The separated synchronization pulses are fed to the first phase detector circuit and to the coincidence detector. The components which determine the loop gain of the first phase detector are connected at pin 40 (C422, C423 and R438). The coincidence detector is only used to detect whether the line oscillator is synchronised. When the IC is operating in internal mode, this information is fed to the ident pin as transmitter identification. The line oscillator is running at twice the line frequency and is derived from the X-tal oscillator frequency of the colour decoder, consequently no adjustment is required. The second phase detector generates the pulses for the horizontal driver stage (pin 37). The loop filter capacitor (C424) is connected at (pin 39). Horizontal shift can be obtained by a potentiometer (VR401), a series resistor (R440) and a pull-up resistor (R429) connected at pin 39.

The TDA8362A has a separate start-up circuit for the horizontal oscillator (pin 36). The vertical drive pulses (pin 44) are generated by a divider circuit. The vertical ramp generator components are connected at pin 43. AC and DC feedback voltage from the vertical deflection stage must be connected at pin 42.

2.5. Integrated video filters :

The TDA8362A has an alignment-free internal chroma bandpass and trap circuit. These filters are realised by means of gyrator circuit and they are tuned by tracking to the frequency of the X'tal controlled oscillator. The luminance delay is also realised by gyrator circuits. For SECAM an extra delay is built-in to adjust for the correct delay of the luminance signal.

2.6. Colour decoder :

The colour decoder contains an alignment-free X-tal oscillator, a dual killer circuit and the colour difference signals demodulators. The decoder adapts automatically for PAL and NTSC signals. Two X-tal pins are present so no external switching is required. With the SECAM add-on decoder TDA8395 an alignment free multi-standard decoder with automatic selection is built. The burst phase detector locks the X-tal oscillator with the burst signal.

2.7. RGB controller :

The colour difference signals are matrixed with the luminance signal to obtain RGB output signals (pin 18, 19 and 20). External RGB signals (pin 22, 23 and 24) coming from the Peri-television connector are interfaced by linear amplifiers. The contrast and brightness control and the peak white limiter operate on internal and external signals as well as RGB signals. The data insertion pin 21 has a second detection level at 4V. Above this level the RGB outputs are blanked. In this way OSD signals can be supplied directly to the inputs of the video output stages without any interaction to the RGB outputs of the colour decoder part of the TDA8362A. The output signal has an amplitude of about $2 V_{BL-WH}$ at nominal input signals and nominal control settings. The black current stabilisation is realized by means of a feedback from the video output amplifiers to the RGB output circuit. The black current of the three guns of the picture tube is internally measured and stabilised. The leakage current is measured during the first line and the following 3 lines, the 3 guns are adjusted to the required level. Maximum acceptable leakage current is $\pm 100\mu A$. The nominal value of the black current is $10\mu A$. The maximum current that can be supplied to the measuring input (pin 14) is $250\mu A$. The currents flowing into this pin will be higher during scan. For this reason, it is necessary that the excessive current is by-passed by means of an external clamping circuit. A resistor in series (R473) and a capacitor (C410) are connected to pin 14. The black current stabilisation circuit is not activated when the TV receiver is switched on and the RGB outputs are blanked; contrast, brightness control pins are short circuited. Only during the measuring lines, the output will supply a voltage of 5 V to the video output stage so that it can be detected whether the picture tube is warming up. When the current supplied to the measuring input (pin 14) exceeds $190\mu A$, the stabilisation circuit is activated and the contrast and brightness control pins are released. The switch-on behaviour of the picture is determined by the external time constant of the contrast control network.

2.8. Switches for external audio, CVBS and S-VHS signals :

The audio and CVBS switches are controlled via the chroma input pin 16, according to the following table :

| Level pin 16 | Int.CVBS | Ext.CVBS | Chroma | Chr.trap | Audio |
|---------------|----------|----------|--------|----------|-------|
| DCV (INT.) | on | off | off | on | int. |
| 3V S-VHS | off | on(Y) | on | off | ext. |
| DC7.5V (EXT.) | off | on(CVBS) | off | on | ext. |

3. TUNER

Either a UHF-only TFK 3011 or a UHF/VHF 2000 KHC is used as tuner. The frequency range is

| SYSTEM | C.C.I.R | |
|------------|------------------|-----------|
| | off-air | cable |
| VHF - LOW | 51MHz to 65MHz | S1 to S6 |
| VHF - HIGT | 178MHz to 227MHz | S7 to S41 |
| UHF | 474MHz to 858MHz | - |

The tuner has a voltage gain of approximately 40dB with a gain reduction capability of typically 40dB for band 1 and 3 and a minimum AGC of 30dB for band 4 and 5. It has a noise figure of typically 7dB for band 1 and 3, 8dB for band 4 and 9dB for band 5.

4. SECAM DECODER TDA8395 (FOR MODELS WITH SECAM SYSTEM ONLY)

The SECAM decoder TDA8395 which is used in conjunction with the TDA8362A includes the Cloche filter, demodulator and identification circuit. The resonance frequency of the Cloche filter is controlled during the calibration period and offset during scan for the right resonance frequency. The required reference frequency for calibration is connected at pin 1 and is obtained from the TDA8362A (pin 32). The two-level sandcastle pulse has to be connected at pin 15 (TDA8362A pin38) and is used for generation of the blanking periods and provides clock information for the identification circuit.

The chroma signal at pin 16 connected to pin 27 of the TDA8362A, is demodulated by a PLL demodulator, which uses the reference frequency and a band gap reference to force the PLL to the desired demodulation characteristic.

5. BASEBAND DELAY LINE TDA4661

The TDA4661 are integrated base band delay lines of 64 μ S for colour TV receivers. It is connected to the TDA8362A and TDA8395 without the need of switches and alignments. The TDA4661 consists of two main blocks:

- Two comb filters with a delay time of 64 μ S.
- Internal clock generation of 3MHz, line locked via the sandcastle pulse.

The TDA4661 operates according to the mode demanded by the colour transmission standard. In the PAL mode it operates as a geometric adder to satisfy the requirements of PAL demodulation and in the SECAM mode the delay line repeats the colour difference signal on consecutive horizontal scan lines.

6. VERTICAL OUTPUT STAGE WITH TDA3653B

The TDA3653B is a vertical deflection output circuit for drive of various deflection systems with currents up to 1.5A_{p-p}. The output pin is pin 5. The output power transistors are protected by the cooperation of thermal protection circuit, the current-voltage detector, the short-circuit protection and the special measures in the internal circuit layout. Pin 1 is the input for the driver of the output stage. The signal at pin 1 is also applied via external resistors to pin 3 which is the input of a switching circuit. When the flyback starts, this switching circuit rapidly turns off the lower output stage and so limits the turn-off dissipation. The amplitude of the flyback voltage which is present at pin 8 is determined by the value of the external resistor at pin 8. When there is no deflection current and the flyback generator is not activated, the voltage at pin 8 reduces to less than 1.8V. The guard circuit will then produce a DC voltage at pin 7, which can be used to blank the picture tube and thus prevent screen damage. The internal voltage stabilizer provides a stabilized supply of 6V to drive the output stage, which prevents the drive current of the output stage being affected by supply voltage variations.

7. HORIZONTAL DEFLECTION STAGE

The horizontal drive pulses, from pin 37 of the TDA8362A, are connected to base of driver transformer Q601 via resistor R439. The base current of the driver transistor is supplied via R601 (pin 37 is an open-collector output). The driver transformer (TR601) drives the BU506D deflection transistor (Q602). TR602 is the EHT transformer. The 112V supply voltage for the transformer is connected at pin 3. TR602 generates the EHT-, focus- and G2- voltage, required by the picture tube. Furthermore the 200V supply and heater voltages are derived from this transformer. The beam current information from pin 7 of TR602 is used for reducing the contrast at too high beam currents, for stabilizing the voltages derived from the power supply and for stabilization of the vertical amplitude. The flyback voltage is AC-coupled and clipped between +8V and ground by diodes D601 and D602 to obtain a well-shaped flyback pulse for feedback to the TDA8362A (pin 38).

8. SOUND OUTPUT STAGE TDA2822M

TDA2822M is used as the AF output amplifier. It is supplied by +12V coming from a separate winding in the SMPS transformer. Pin 50 of the TDA8362 is AC-coupled to the input pin 7 of the TDA2822M via a resistor divider. Maximum audio output power for 1 KHz signal with 30% modulation is 1.5W.

9. MICROCONTROLLER (CTV322S, CTV422M)

A. CTV322S is a TV receiver control system using all the functions of a PCA84C641 microcontroller. The system has Voltage Synthesis Tuning (VST). Sound and picture are controlled by the five DACs of the PCA84C641. The system is independent of the TV transmission standards. Control of a four-page teletext decoder is an option in the basic system. A 2K memory which allows 90 programmes to be stored is used (IC1002).

CTV322S has the following features:

- Voltage synthesis tuning via a 14-bit DAC
- On-screen display
- Control of two transmission standards
- Direct control of four-page teletext decoder
- Full peri-TV switching

B. CTV422M is a TV receiver control system using all the functions of a PCA84C841 microcontroller. The system has Voltage Synthesis Tuning (VST). Sound and picture are controlled by the five DACs of the PCA84C841. The system is independent of the TV transmission standards. Control of a four-page teletext decoder is an option in the basic system. A 2K memory which allows 90 programmes to be stored is used (IC502).

CTV422M has the following features:

- Voltage synthesis tuning via a 14-bit DAC
- On-screen display
- Control of two transmission standards
- Direct control of four-page teletext decoder
- Full peri-TV switching

10. POWER SUPPLY (SMPS)

The DC voltages required at various parts of the chassis are provided by an SMPS transformer controlled by the IC TDA4605-2 which is designed for driving, controlling and protecting the switching transistor BUZ77B of SMPS. This transformer produces 115V for FBT input, 33V for tuning circuitry of microcontroller, 26V for vertical output (field scan) and for tuner and some other ICs and transistors. This 12V is also used to obtain 8V by means of the regulator LM7808 for TDA8362A and some other ICs and transistors and 5V is obtained from 12V out for controller.

11. CRT BASEBOARD

When RGB signals enter the input of the video amplifier stage (CRT baseboard), they are amplified by means of three symmetrical class-B type video amplifier stages. For this purpose, three BF869S high-voltage, video output power transistors are used. So, high gain-bandwidth product is achieved. Furthermore, voltage changes at the outputs of amplifiers caused by temperature variations are compensated by means of an additional circuitry. Black current information (BCI) is sent to TDA8362A (Refer to TDA8362A RGB).

12. TELETEXT BOARD

There is only one teletext options:

- Simple text (1 page) using SAA5254P/T

13. SECAM L/L' BOARD

SECAM L/L' system is one where the vision carrier is positive modulated, i.e. peak carrier is peak white. In negative modulation peak carrier is the synchronization level. SECAM L' also has the vision and sound carriers reversed on band 1. They are the same as other systems on band 3 and on UHF. This makes necessary the use of a frequency inverter which only operates on band 1 and this is done by the mixer part of the TDA5030. In case of SECAM L' also the AFC information has to be inverted. This is realised by an inverter circuit. The AM modulated sound signal is demodulated by TDA3843 and fed to the external audio input of TDA8362 and scart audio output. The required switching is done by HEF4053.

SPECIFICATIONS

POWER SUPPLIES

Nominal : 220-240V AC 50Hz. The chassis is fully mains isolated and is stabilized across mains voltage range from 175V to 265V for less than 0.75 % change in picture size. No mains input adjustment is required.

POWER CONSUMPTION

Typically : 50 W, Maximum : 70 W (for 14" and 15" models)

FREQUENCY COVERAGE

Hyperband (VHF CH 2 to UHF CH 69 including CATV) : 47-862 MHz

UHF (CH 21-69) : 471-862 MHz

SENSITIVITY

34 dBmV or less for any channel with a locked colour picture

MAXIMUM SIGNAL INPUT

95 dBmV or more for any channel

| IF FREQUENCIES | (in MHz) | VISION | SOUND |
|----------------|----------|--------|-------|
| B/G (EUROPE) : | 38.9 | | 33.4 |
| I (UK) : | 39.5 | | 33.5 |
| L' (FRANCE) : | 32.7 | | 39.2 |
| L (FRANCE) : | 39.2 | | 32.7 |
| D/K (RUSSIA) | 38.0 | | 31.5 |

AUDIO OUTPUT

Maximum : 1.5W RMS for 14" and 15" models

(At less than 10 % THD for 1 KHz, 30 % modulation factor)

BEAM CURRENT LIMITING

750 mA for 14" and 15" models

EHT

Maximum: 26 KV for 14" and 15" models

SERVICING ADJUSTMENTS AND ALIGNMENTS

The following preset adjustment procedures are not required during installation and should be made, if necessary, after servicing.

WARNING

EHT SHOCK HAZARD : The EHT must be safely discharged before attempting to disconnect the EHT lead from the tube anode.

Clip one end of a convenient lead, such as a meter lead, to the tube earthing strap on the tube body, fold back the suction cap and discharge the EHT through the lead. Press in one side of the spring clip which protects into the tube cavity to ease removal of the EHT connector.

IMPORTANT

Do not disturb the tube neck adjustments as these have been set for optimum performance during the tube manufacture.

Before attempting the following adjustments, the receiver should be tuned with the brightness, contrast and colour controls adjusted for the best picture and all measurements are to be made after a warm-up period of approximately 5 minutes, unless stated otherwise.

- 60 dBmV signal at any channel frequency
- Color bar pattern and 1KHz sound signal
- Mains 220-240V AC, 50Hz

The adjustments should be carried out in the following order for convenience.

SMPS SYSTEM VOLTAGE

- 1) Set the BCS (Brightness, Contrast, Saturation) and VOL (Volume) to minimum.
- 2) Check the voltage at the shorted pins of socket PL602 (TP1)
- 3) If necessary, adjust VR801 $112 \pm 0.5V_{DC}$ (14" and 15" models)
- 4) Set the BCS and VOL to normal picture and sound

VISION DEMODULATOR AND AFC

- 1) Set the pattern generator for 10mV, 38.9 MHz (B/G models) or 39.5 MHz (for I models) or 38.0 MHz (for D/K models) RF output
- 2) Connect the RF output of the pattern generator to any one input of SAW filter and connect the other input of SAW filter to ground through 10 nF capacitor (No antenna input applied)
- 3) Check the voltage at the base of Q201 (TP2)
- 4) Adjust VL401 for $3.5 \pm 0.1 V_{DC}$

2) PICTURE GEOMETRY AND FOCUS

- 1) Set the pattern generator for centre-cross, circle and cross-hatch composite pattern.
- 2) Adjust VR702 for vertical size, VR701 for vertical linearity, VR401 for horizontal centering and focus potentiometer (on EHT transformer) for optimum focusing.

TUNER AGC

- 1) Check the voltage at pin 1 of TUNER (TP4)
- 2) Adjust VR402 for 1V less than maximum.

SCREEN VOLTAGE

- 1) Set the pattern generator for grey scale.
- 2) Set the BCS (Brightness, Contrast, Saturation) to minimum.
- 3) Measure cathode voltages on the CRT base board by using a 1/1000 probe.
- 4) Adjust screen pot of FBT for $175 \pm 2V$ reading on maximum cathode voltage.

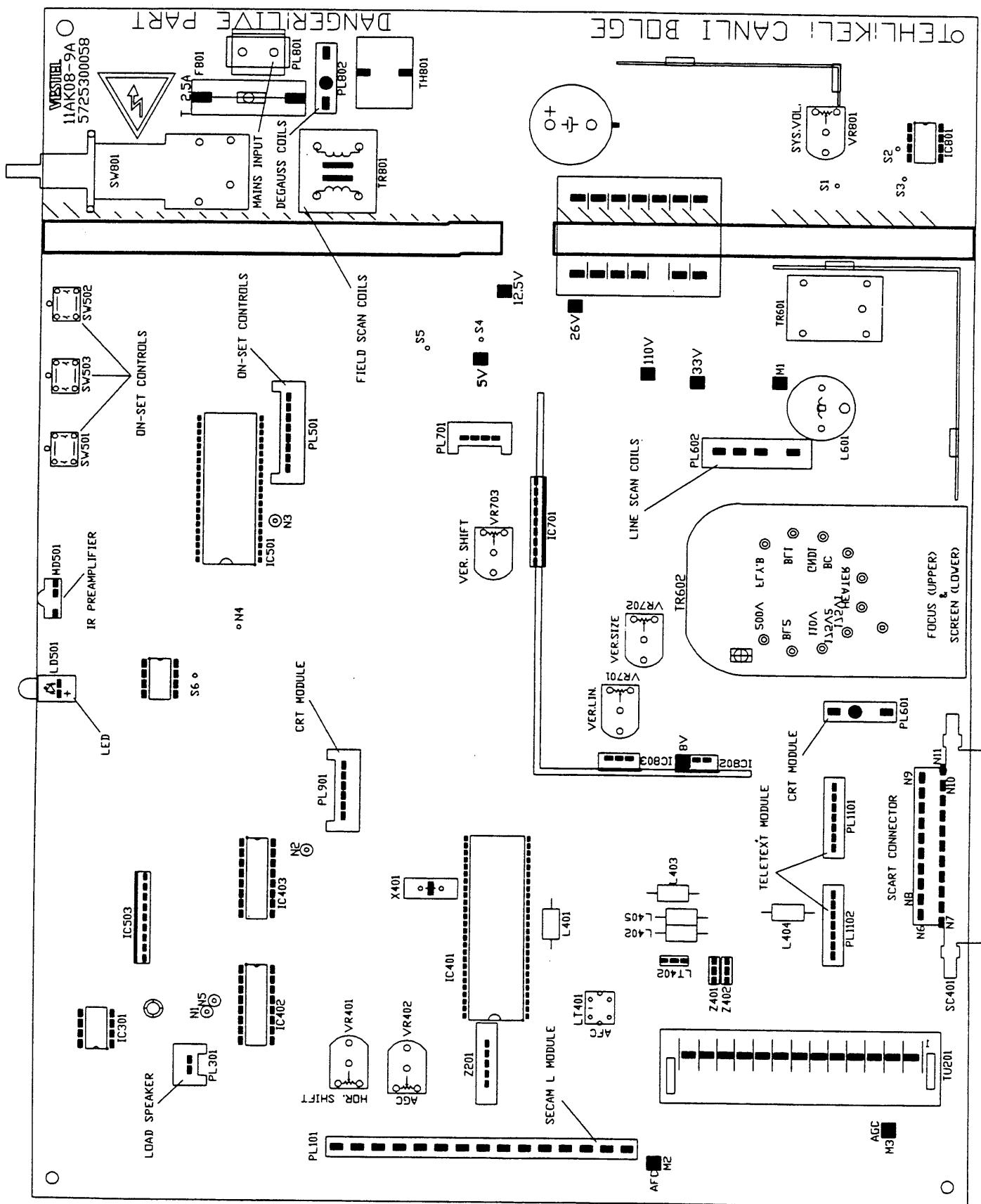
CRT BASEBOARD : CUT-OFF VOLTAGES AND WHITE BALANCE

- 1) Set the pattern generator for grey scale.
- 2) Set the BCS (Brightness, Contrast, Saturation) to minimum.

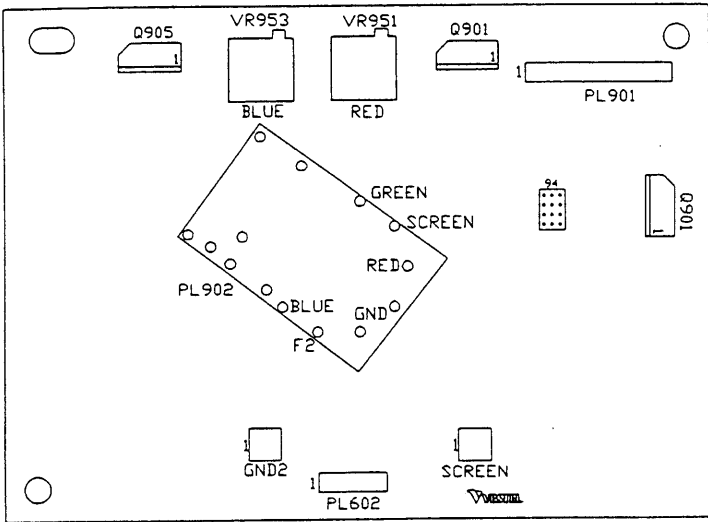
SECAM L MODULE (L/L' AND B/G) OR (L/L' AND K1) (11SL02)

- 1) Set the pattern generator for the colour bar pattern at system PAL B/G and at frequency of 63.75MHz.
- 2) Tune the receiver for the best picture.
- 3) Switch pattern generator to system SECAM L and the receiver to SYS2 mode.
- 4) Connect the frequency counter to pin 13 of IC101.
- 5) Adjust VL101 for 72.3MHz reading and VR101 for no interference on the screen.

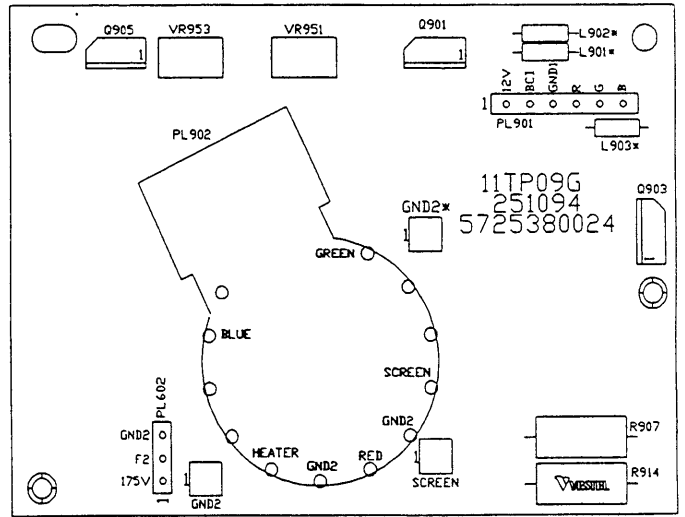
MAIN CHASSIS PLUG IDENTIFICATION, SETTING AND MEASUREMENT POINT



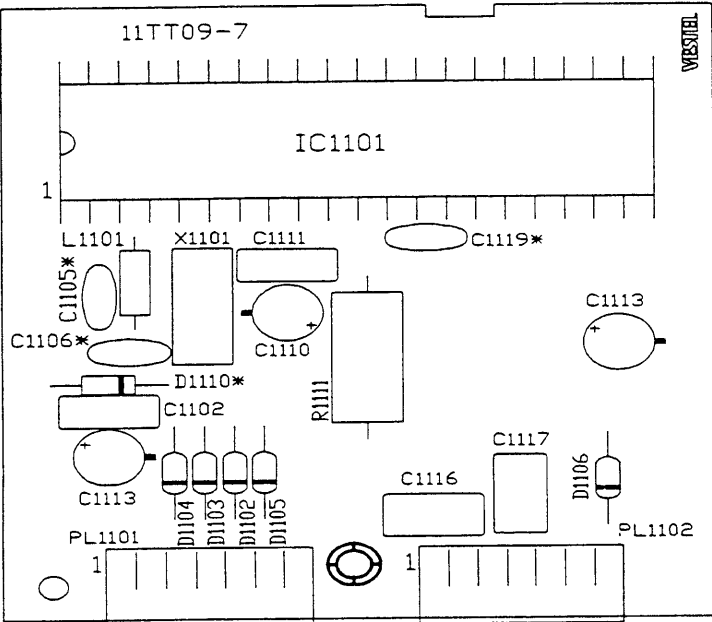
SETTING AND MEASUREMENT POINT FOR MODULES



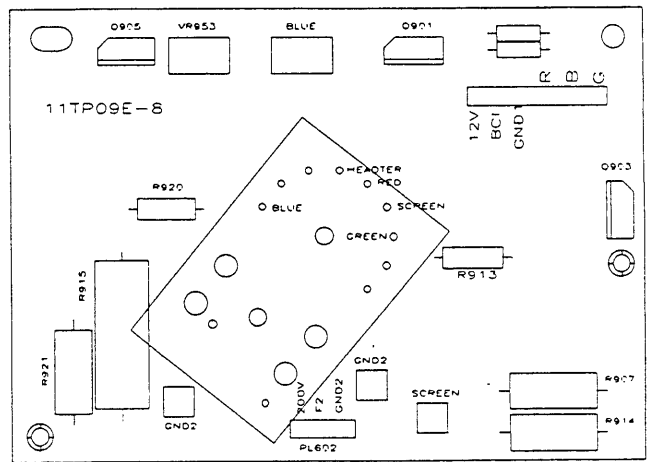
11TP09D2 CRT MODULE



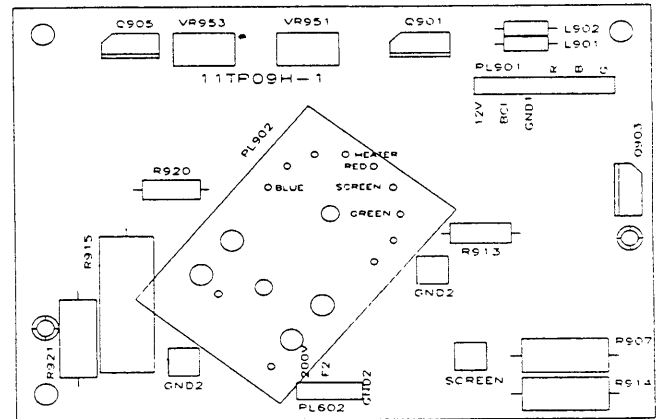
11TP09G CRT MODULE



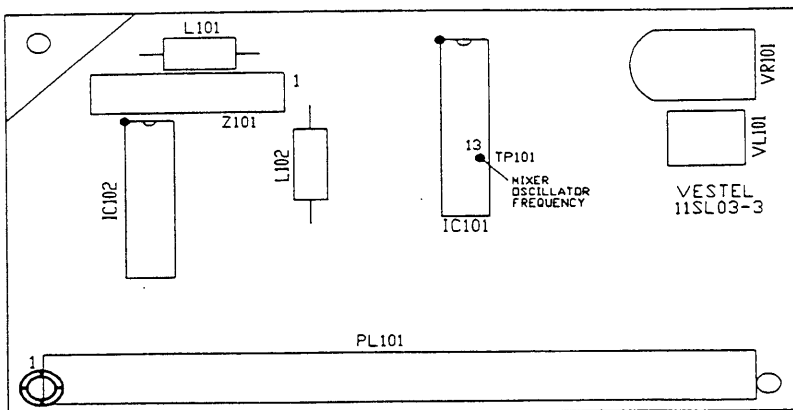
11TT09-7 SIMPLETEXT MODULE



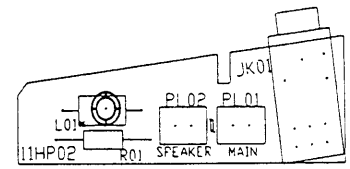
11TP09E-8 CRT MODULE



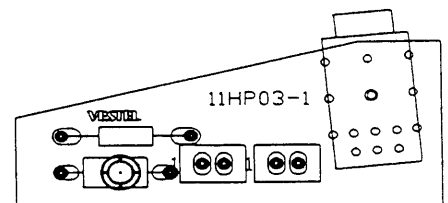
11TP09H CRT MODULE



11SL03 SECAM MODULE



11HP02 HEADPHONE MODULE



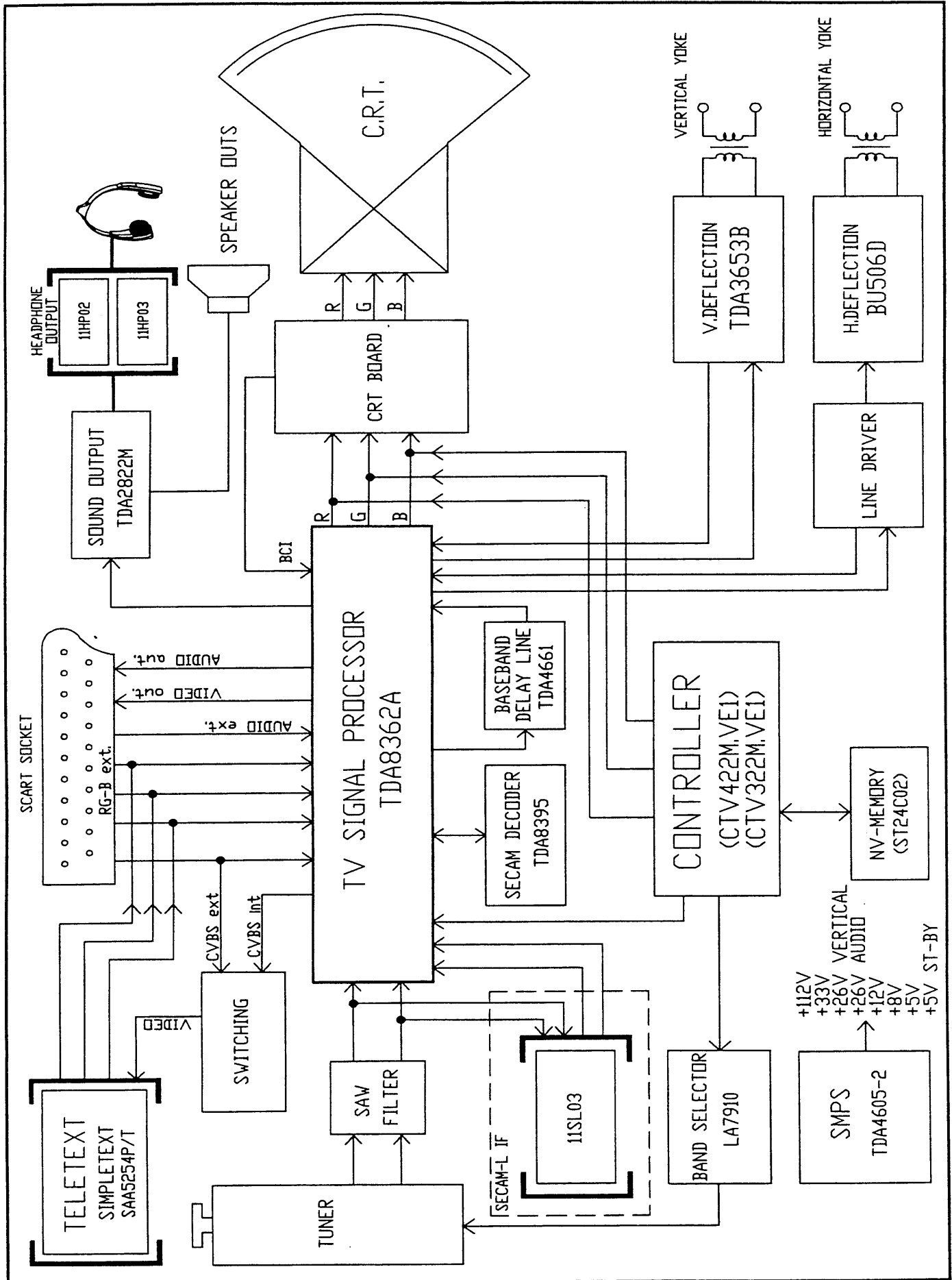
11HP03-1 HEADPHONE MODULE

MAIN PCB FAULT FINDING GUIDE

AT FIRST CHECK ALL THE SUPPLY VOLTAGES, THEN CHECK FOLLOWING RELEVANT POINTS FOR TROUBLE SHOOTING. TROUBLES SHOULD BE THE SAME AT ALL CHANNELS.

| TROUBLE | CHECK POINTS |
|-------------------------------|---|
| NO PICTURE, NO SOUND | TUNER VOLTAGES, INPUT/OUTPUT SIGNALS OK Q401, IC401 |
| NO PICTURE, SOUND OK | INT CVBS IN, IC401, SCREEN VOLTAGE |
| NO COLOUR | IC401, IC402, IC403, X401 |
| NO VERTICAL DEFLECTION | 26V, R711, PL701, IC701 |
| VERTICAL LINEARITY | C705, VR701 |
| VERTICAL SIZE | R704, VR702 |
| VERTICAL SHIFT | VR703 |
| VERTICAL FOLD | 26V, R711 |
| HORIZONTAL LINEARITY | L601, C606 |
| HORIZONTAL SIZE | C603, SYSTEM VOLTAGE (112V) |
| HORIZONTAL FOLD | SYSTEM VOLTAGE (112V) |
| FLUE PICTURE | TR602, G3 (FOCUS), EHT, FLAMENT VOLTAGE |
| DARK PICTURE | TR602 G2 (FOCUS), BRIGNES, CONTRAST VOLTAGE |
| NOISY PICTURE | AGC VOLTAGE, RF SIGNAL |
| VERTICAL/HORIZONTAL SYNC. | IC401 |
| INTERFERENCE | TUNER (TU201), Z201 |
| NO SOUND | R303, IC401, (PIN5), IC301 |
| LOW SOUND | IC401 (PIN5, SOUND CONTROL VOLTAGE), R303, IC301 |
| SOUND DISTORTION | R303, IC301, 26V |
| POP NOISE | Q301, C307 |
| CONTRAST | IC401 (PIN25) |
| BRIGHTNESS | IC401 (PIN17) |
| COLOUR | IC401 (PIN26) |
| AUTO TUNING | Q501 |
| MEMORY | IC502 |
| BAND SELECT | IC503 |
| NO VIDEO AT SCART | SET AV MODE, CHECK IC401 (PIN5), (PIN6) |
| NO SOUND AT SCART | IC401 (PIN6) |
| MISSING CHARACTER AT TELETEXT | SIGNAL AT PIN8 OF IC101 |
| REMOTE CONTROLLER | BATTERY, IR DIODE, CURRENT PATH OF IR DIODE |

GENERAL BLOCK DIAGRAM OF CHASSIS 11AK08



IC DESCRIPTIONS AND INTERNAL BLOCK DIAGRAM

| MAIN BOARD | PAGE NO |
|-------------------------------|----------------|
| ● TDA8362A | 14-15 |
| ● TDA4661 | 16 |
| ● TDA8395 | 17 |
| ● TDA3653B | 18 |
| ● TDA4605-2 | 19 |
| ● PCA84C841 | 20-22 |
| ● ST24C02 | 23 |
| ● LA7910 | 24 |
| ● TDA2822M | 25 |
| | |
| SECAM BOARD | |
| ● TD5030A | 26 |
| ● TDA9830 | 27 |
| | |
| TELETEXT BOARD | |
| ● SAA5254P/T | 28-29 |
| ● PCA84C641 / PCA84C444 | 30-32 |

TDA8362A

MONOLYTHIC INTEGRATED PAL / NTSC TV PROCESSOR

GENERAL DESCRIPTION : The TDA8362A is nearly identical to the TDA8362. The main difference between the 2 devices is that the TDA8362A contains a black-current stabilisation circuit. Because of the required input pin for the black-current stabilisation circuit the luminance peaking function has been omitted in the TDA8362A. All other functions of the 2 IC's are identical.

FEATURES :

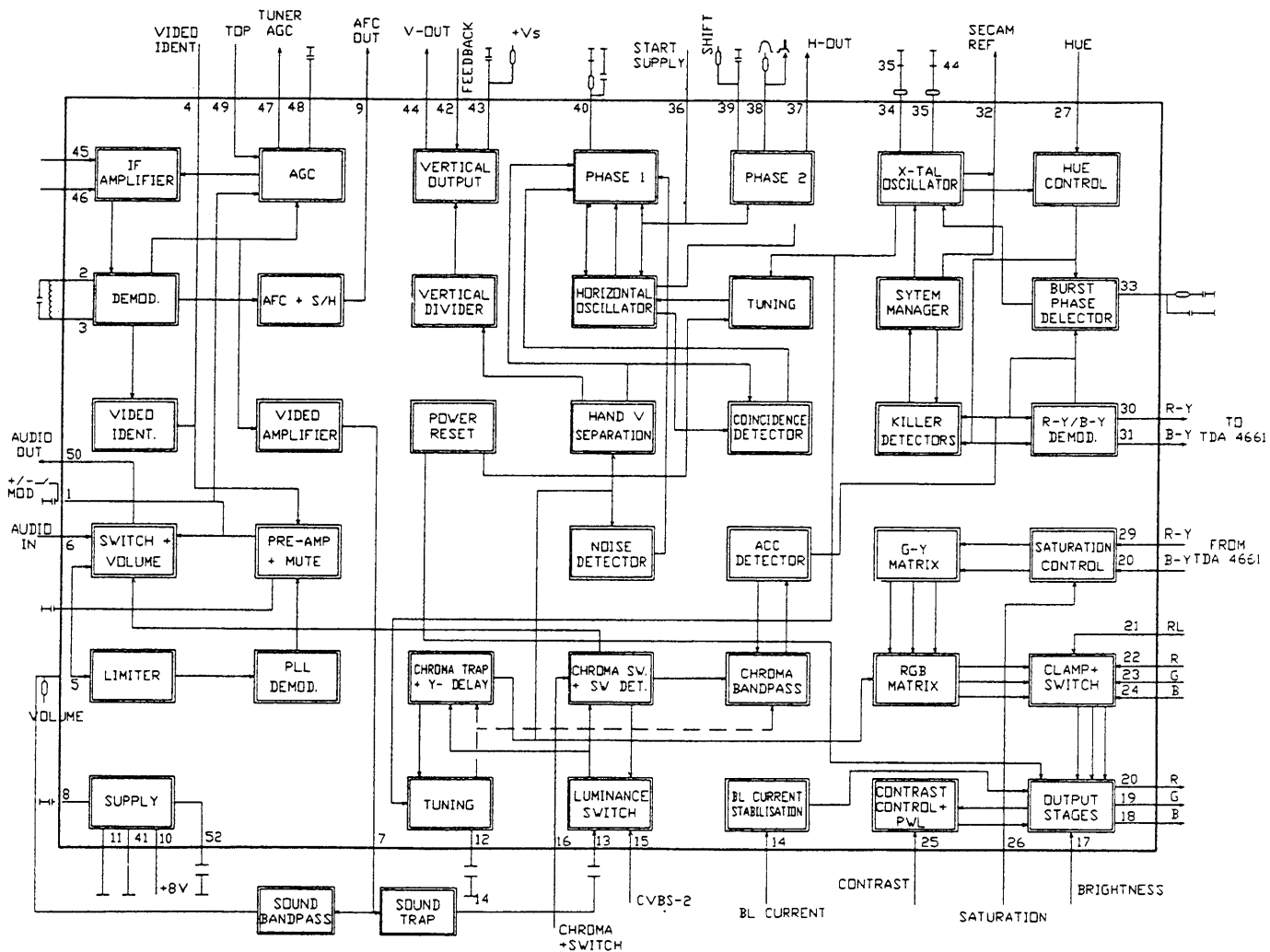
- Multi-standard vision IF amplifier suitable for negative and positive modulation.
- Multi-standard FM sound demodulator (4.5MHz to 6.5MHz).
- Source selection for external A/V inputs (seperate Y/C signals can also be applied).
- Integrated chroma trap and bandpass filters (autocalibrated).
- Luminance delay line integrated.
- Alignment-free PAL/NTSC decoder with automatic search system.
- Easy interfacing with the TDA8395 (SECAM decoder) for multi-standard applications.
- RGB-control circuit with linear RGB inputs and fast blanking.
- Black-current stabilisation circuit.
- Horizontal synchronisation with two control loops and alignment-free horizontal oscillator without external components.
- Vertical count-down circuit (50/60Hz) and vertical pre-amplifier.
- Low dissipation (only 700mW).
- Only one adjustment (vision IF demodulator).

PINNING

PIN VOLTAGE

| | |
|---|-------------------------|
| 1- Audio deemphasis and +/- mod. switch | 3V |
| 2- IF-demodulator tuned circuit..... | 6V |
| 3- IF-demodulator tuned circuit..... | 6V |
| 4- Video indentification output | 5V |
| 5- Sound IF plus volume control..... | 0.5V - 4V |
| 6- External audio input | 4V |
| 7- IF video output..... | 3.25V |
| 8- Decoupling digital supply | 1.8V |
| 9- AFC output | - |
| 10- Positive supply (8V) | 8V |
| 11- Ground | - |
| 12- Decoupling filter tuning..... | 3.25V |
| 13- Internal CVBS input | 4.25V |
| 14- Black-current input..... | 4V |
| 15- External CVBS input | 3.5V |
| 16- Chroma + A/V switch input | 0V (TV) - 8V (AV) |
| 17- Brightness control input | 1V - 3.5V |
| 18- B-output | 2.5V - 3.5V |
| 19- G-output..... | 2.5V - 3.5V |
| 20- R-output..... | 2.5V - 3.5V |
| 21- RGB-insertion and blanking | - |
| 22- R-input for insertion | 3.3V |
| 23- G-input for insertion | 3.3V |
| 24- B-input for insertion..... | 3.3V |
| 25- Contrast control input..... | 0V - 3V |
| 26- Saturation control input..... | 0V - 3V |
| 27- Hue control input (or chroma out) | 6V |
| 28- B-Y input signal | 4V |
| 29- R-Y input signal..... | 4V |
| 30- R-Y output signal | 1.5V |
| 31- B-Y output signal..... | 1.5V |
| 32- 4.43MHz output for TDA8395..... | 1.6V (PAL) 4.5V (SECAM) |
| 33- Loop filter burst phase detector..... | 4.5V |
| 34- 3.58MHz X-tal connrection..... | 3V |

| | |
|---|------------------|
| 35- 4.43MHz X-tal connection | 2V |
| 36- Start horizontal oscillator | 8V |
| 37- Horizontal output | 0.6Vp-p 15.6 KHz |
| 38- Flyback input / sandcastle output | - |
| 39- G2 loop filter | 3V |
| 40- G1 loop filter | 3.75V |
| 41- Ground | - |
| 42- Vertical feedback input | 2.5V |
| 43- Vertical ramp generator | 2.5V |
| 44- Vertical output | 2.5V |
| 45- IF-input | 4V |
| 46- IF-input | 4V |
| 47- Tuner AGC output | - |
| 48- AGC decoupling capacitor | 4V |
| 49- Tuner take-over adjustment | - |
| 50- Audio output | 3.4V |
| 51- Decoupling sound demodulator | 4.5V |
| 52- Decoupling bandgap supply | 6.5V |



BLOCK DIAGRAM OF TDA8362A

TDA8395

SECAM DECODER

GENERAL DESCRIPTION: The TDA8395 is a self-calibrating, fully integrated SECAM decoder. It should preferably be applied in combination with the PAL/NTSC decoder TDA8362 or TDA8366 and with the switched capacitor baseband delay TDA4661. It includes HF- and HF-filters, demodulator and identification. Luminance is not processed in this circuit. It needs no adjustments and very few external components. It needs very highly accurate reference frequency for calibration and a two-level sand-castle for blanking and burstgating.

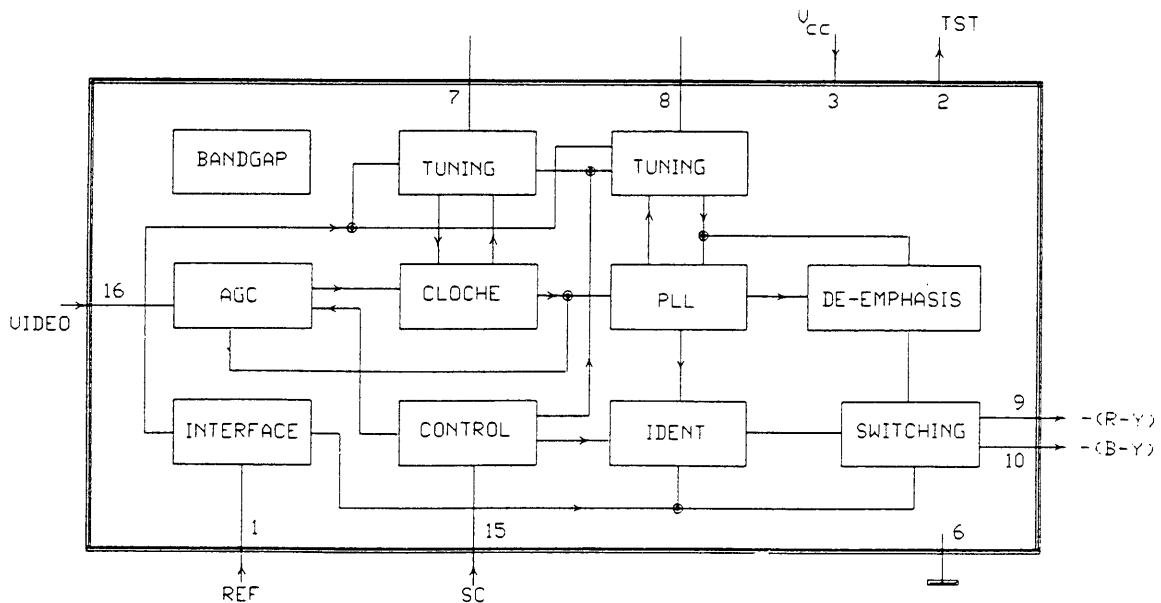
FEATURES :

- Fully integrated filters
- Alignment free
- For use with baseband delay

PINNING

PIN VOLTAGE

| | |
|--|---------------------------|
| 1- Frequency reference | : 1.6V (PAL) 4.5V (SECAM) |
| 2- TEST | : - |
| 3- Supply Voltage | : 8V |
| 4- NC | : - |
| 5- NC | : - |
| 6- Ground | : - |
| 7- Cloche Reference | : 3.25V |
| 8- PLL Reference | : 4.25V |
| 9- Colour Difference Signal (R-Y) | : 1.5V |
| 10- Colour Difference Signal (B-Y) | : 1.5V |
| 11- NC | : - |
| 12- NC | : - |
| 13- NC | : - |
| 14- NC | : - |
| 15- Sandcastle | : - |
| 16- Video input | : 5.5V |



BLOCK DIAGRAM OF TDA8395

TDA3653B

VERTICAL DEFLECTION AND GUARD CIRCUIT

GENERAL DESCRIPTION: The TDA 3653B is a vertical deflection output circuit for drive of various deflection systems with currents up to 1.5 A peak-to-peak.

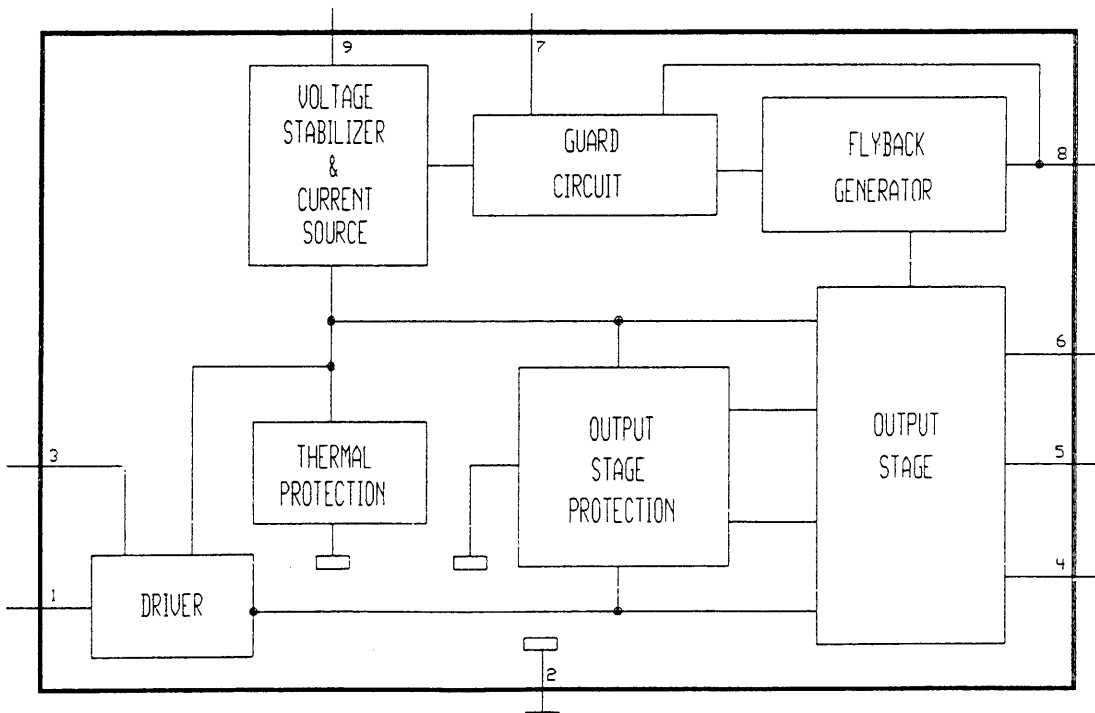
FEATURES:

- Driver
- Output stage
- Thermal protection and output stage protection
- Flyback generator
- Voltage stabilizer
- Guard circuit

PINNING

PIN VOLTAGE

| | |
|---|--------|
| 1. Output Stage Driver Input | : 1.2V |
| 2. Ground | : - |
| 3. Switching Circuit Input | : 1.2V |
| 4. Output Stage Ground | : - |
| 5. Output Voltage | : 13V |
| 6. Supply Voltage for the Output Stage | : 26V |
| 7. DC Voltage produced by the Guard Circuit | : - |
| 8. Flyback Generator Output | : 8V |
| 9. Supply Voltage | : 26V |



BLOCK DIAGRAM OF TDA3653B

TDA4605-2

SWITCH MODE POWER SUPPLY CONTROLLER

GENERAL DESCRIPTION: The TDA4605-2 is an integrated circuit designed to regulate and control the power mosfet of a a switching power supply. Because of its wide operational range and high voltage stability even at high load changes, this IC can be used not only in TV receivers and video recorders but also in power supplies. HI-FI set and active speakers.

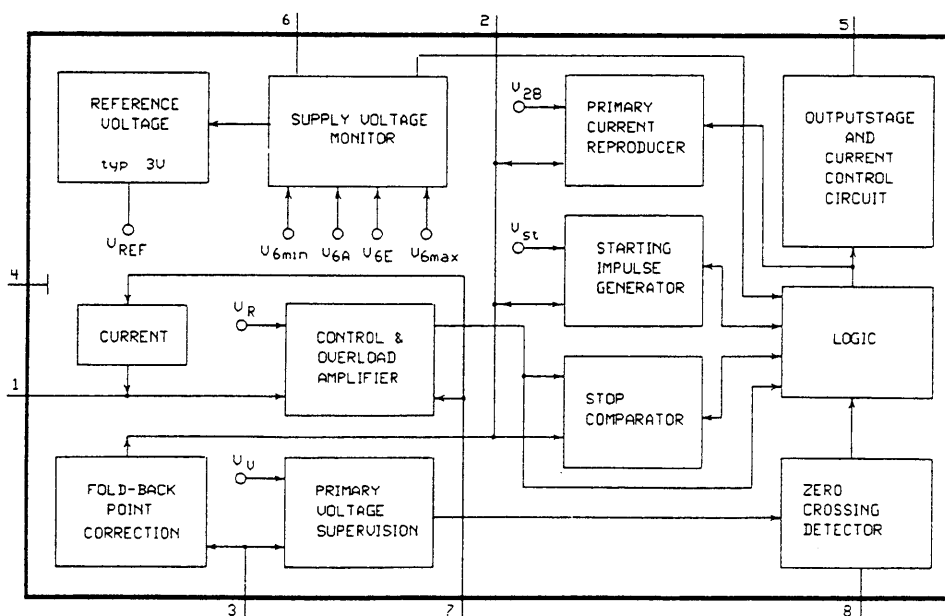
FEATURES:

- Fold-back characteristics provides overload protection for external components.
- Burst operation under secondary short-circuit condition implemented.
- Protection against open or a short of the control loop.
- Switch-off line voltage is too low (undervoltage switch-off).
- Line voltage depending compensation of foldback point.
- Soft-start for quite start-up without noise generated by the trasformer.
- Chip over-temperature protection (thermal shutdown).
- On-chip ringing suppression circuit against parasitic oscillations of the transformer.

PINNING

PIN VOLTAGE

| | ST-BY | NORM. |
|--|-------|-------|
| 1. Information Input Concerning Secondary Voltage | 0.4 | 0.4 |
| 2. Information Input Regarding the Primary Current | 1 | 1.2 |
| 3. Input for Primary Voltage Monitor | 2.1 | 2 |
| 4. Ground..... | 0 | 0 |
| 5. Output..... | 0.8 | 8 |
| 6. Supply voltage Input | 12 | 12.8 |
| 7. Input for Soft-Start and Integrator Circuit | 1.1 | 1.9 |
| 8. Input for the Feedback of the Oscillatore | 0.3 | 0.4 |



BLOCK DIAGRAM OF TDA4605-2

PCA84C841

MICROCONTROLLERS FOR CTV 422M

GENERAL DESCRIPTION: CTV422M is a low cost television receiver control system, based on the PCA84C841 microcontroller. It is a voltage synthesis tuning (VST) system.

The control functions of the system are displayed via the on-screen display circuitry of the microcontroller. Herewith two independent lines of 16 characters with 4 different sizes and in 7 different colour can be displayed. Sound and picture are controlled by the 5 on-chip digital to analogue converters. This system is colour standard independent.

The PCA84C841 is a member of the MAB8400/PCF84C microcontroller family. It is a one-chip microcontroller with an 8-bit CPU, 8K ROM, 192 bytes RAM, 8-bit timer/event counter and single level, 3-source interrupt structure. It is mounted in a 42 pin shrunk DIL package. Manufactured in CMOS technology and operating from a single supply voltage between 3.5V and 5.5V, it runs at a 10MHz oscillation frequency and contains about 80 single and double byte and cycle instruction. Up to 19 general purpose bidirectional I/O lines and 9 I/O lines with a combined function are available. One 8-bit I/O port can sink up to 10mA and can therefore be used to drive directly a LED display.

FEATURES :

TUNING;

- Voltage synthesis tuning system via 14 bits digital to analogue convertor.
- Automatic search tuning based on analogue AFC signal and on IDENT (Video recognition) signal.
- Tuning in up to 4 different bands.
- Manual search tuning.
- Direct program number entry.
- One and two program number entry.
- Step program up and down.
- Silent tuning.
- Dark program switching.
- Automatic following per program.

CONTROL;

- Up to 28 local control commands.
- Remote control according the RC-5 world standart.

DISPLAY;

Off-screen LED display of stand-by mode.

On-screen display of :

- Menu operations.
- Remote control command reception.
- Two digit program number entry.
- Selected tuner band VHF-1, VHF-3, UHF and VHF-Hyper.
- Analogue tuning bar in search mode and manual/fine tuning.
- Selected external source.
- Store program mode.
- VRT time constand status.
- Selected colour standard mode.
- Sound mute.
- Analogue control mode: volume, brightness, saturation, contrast, and hue.
- Analogue control status bars.
- Selected sleep timer.
- Preduction Service Mode.

SOUND ;

- Volume control in 64 steps (8 steps/second).
- Mono only configuration.
- Mute control function.
- Automatic sound muting during tuning or program switching.

VIDEO ;

- Control of brightness, saturation, contrast and hue in 64 steps (8 steps/second).
- Colour standard control of two different standards.
- VTR time constant control.
- Additional three button control possibility for all analogue colour and sound controls.

PERI-TV ;

- Peripheral source selection via program up/down commands.
- Full peripheral TV plug signal switching: CVBS out, CVBS/RGB in, sound in and out.

MEMORY ;

- Automatic storage of preferred analogue picture and sound control setting.
- Storage of 40 or 90 preferred programs.
- Storage of 14 bit tuning DAC value, band select, system standard, following enable and VTR time constant control bits for each program.
- Storage VTR time constant system selection for peripheral audio/video source.

OPTIONS ;

- Three band, four band or UHF-only tuner.
- Different tuner and AFC characteristics.
- Peripheral audio/video TV plug control.
- Signal/Dual system standard control.
- VTR time constant control.
- 40 or 90 pre-programmed preferred channels, requiring 128 bytes or 256 bytes of NV = memory.
- AC mains supply control via solenoid on mains switch.
- Analogue control of hue.
- On Screen Display in symbols or text strings with or without background.

POWER-ON ;

- Main switch sense input to check whether TV has to be switched-on or to standby mode.
- The program provides a fixed delay of 1.2 seconds and screen blanking about 100 msec to allow to switch-mode power-supply to stabilize.
- After power-on reset of the microcontroller and first time switching-on of the set, the system tunes to program 1 and recalls analogue picture and sound control presets from non-volatile memory.

STANDBY ;

- Sleep timer selection of 15, 30, 45, up to 120 minutes.
- Automatic switching to standby mode when the system is in front-end mode and during the last five minutes no valid input signal is received or no valid remote or local control command is detected. (All complete received commands with system address 00, except the "RC-5 enlarged" commands, will restart the 5 minutes timer. All these commands will also result in an OSD message).
- With additional hardware it is possible to switch off the mains supply voltage completely, e.g. via a solenoid

PRODUCTION SERVICE MODE :

- CTV422M VE1 has been provided with a special production Service Mode which disables the automatic switch off after 5 minutes if mode IDENT is available. This mode can be activated using RC-5 command O with system address 7. Program numbers and peripheral audio/video source designators will appear in green instead of yellow. This mode is implemented particularly for factory burn-in tests..

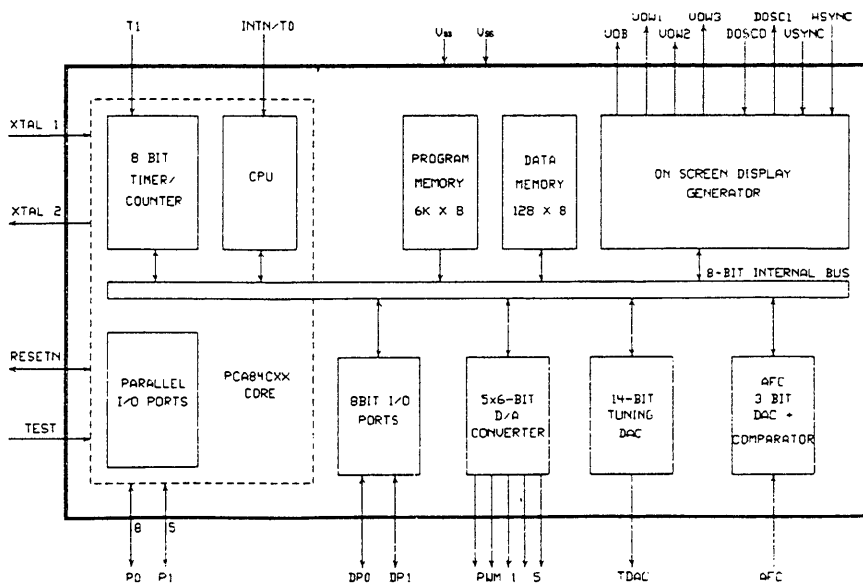
TELETEXT (These functions only for CTV422M) :

- Either : a 1 page teletext control system by means of SAA5254. All normal teletext functions are available. A special signal for de-interlace purposes is available on a single output pin.
- Or : a 4 page teletext control system with SAA5246. All normal teletext functions are available. Also here a special signal for de-interlace purposes is available on a single output pin.

PINNING

| | |
|--|--------------------------------------|
| 1- Tuning voltage control output..... | : 5V(Front of band) 0V (End of band) |
| 2- Volume control output..... | : 0 - 5V |
| 3- Brightness control output..... | : 0 - 5V |
| 4- Colour control output..... | : 0 - 5V |
| 5- Contrast or hue control output..... | : 0 - 5V |
| 6- Tone, balance or hue control output..... | : - |
| 7- Band-switch 0 output..... | : - |
| 8- Band-switch 1 output..... | : - |
| 9- Analogue AFC sense input..... | : 2-4V |
| 10- Dual/Non Dual language sound input..... | : - |
| 11- VTR time constand control output..... | : - |
| 12- Ext./int. audio/video source control output..... | : 5V (TV) - 0V (AV) |
| 13- Keyboard scan line input/output..... | : - |
| 14- Keyboard scan line input/output..... | : - |
| 15- Keyboard scan line input/output..... | : - |
| 16- Keyboard scan line input/output..... | : - |
| 17- Keyboard scan line input/output..... | : - |
| 18- Keyboard scan line input/output..... | : - |
| 19- Keyboard scan line input/output..... | : - |
| 20- System mode strobe output..... | : 5V |
| 21- Ground supply input..... | : - |
| 22- OSD red output..... | : - |
| 23- OSD green output..... | : - |
| 24- OSD blue output..... | : - |
| 25- OSD fast blanking output..... | : - |
| 26- Horizontal synchronization input..... | : - |
| 27- Vertical synchronization input..... | : - |
| 28- LC oscillator input for OSD..... | : 5V |
| 29- LC oscillator output for OSD..... | : 5V |
| 30- Test input; connected to ground..... | : - |
| 31- Oscillator input; 10MHz crystal..... | : - |
| 32- Oscillator output..... | : 2V |
| 33- Power-on reset input/output..... | : 5V |
| 34- Horizontal coincidence input..... | : 4.5V |
| 35- RC-5 remote control input..... | : 4V |
| 36- Mono/Stereo or language 1/2 output..... | : - |
| 37- Sound effect control output..... | : - |
| 38- System select output..... | : - |
| 39- I ² C-bus clock signal output..... | : 5V |
| 40- I ² C-bus data signal output..... | : 5V |
| 41- Standby/On control input/output..... | : 0V (ST-BY) - 5V (OPEN) |
| 42- +5V supply voltage input..... | : 5V |

PIN VOLTAGE



BLOCK DIAGRAM OF PCA84C841

ST24C02

2K CMOS Serial Electrically Erasable PROM

GENERAL DESCRIPTION: The 24LC02B is 2K bit Electrically Erasable PROM. The device is organized as a single block of 128x8-bit or 256x3-bit memory with a two wire serial interface. Low voltage desing permits operation down to 2.5 volts with a standby and active currents of only 5mA and 1mA respectively. The 24LC02B also has page-write capability for up to 8 bytes of data.

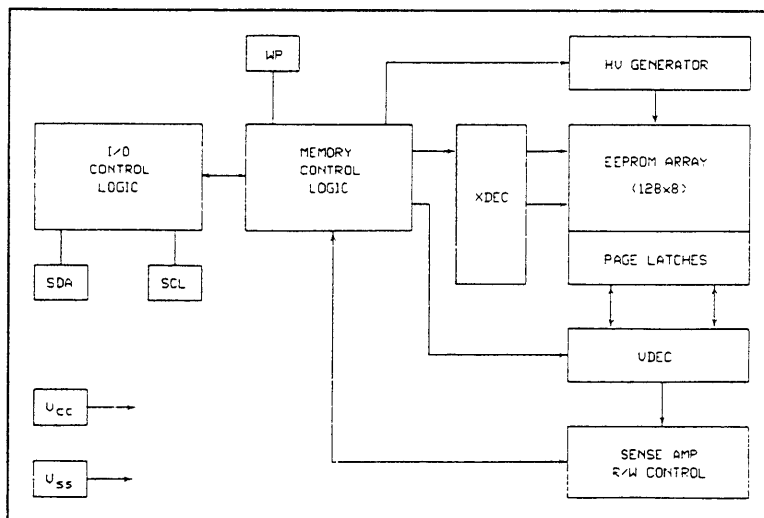
FEATURES :

- Single supply with operation down to 2.5 volts
- Low power CMOS technology
 - 1mA active current typical
 - 10mA standby current typical at 5.5V
 - 5mA standby current typical at 3.0V
- Organized as a single block of 128 bytes (128x8) or 256 bytes (256x8)
- Two wire serial interface bus
- 100KHz and 400KHz compatiblity
- Self-timed write cycle (including auto-erase)
- Page-write buffer for up to 8 bytes
- 2ms typical write cycle time for page-write
- Hardware write protect for entire memory
- Can be operated as a serial ROM
- Factory programming (OTP) available
- ESD protection > 4.000V
- 1.000.000 ERASE/WRITE cycles (typical)
- Data retention > 40 years
- 8-pin DIP or SOIC package
- Available for extended temperature ranges
 - Commercial : 0°C to + 70°C
 - Industrial : -40°C to + 85°C

PINNING

- | | |
|------------------------------------|------|
| 1. 90 Program | : 5V |
| 2. No Connection..... | : 0V |
| 3. No Connection..... | : 0V |
| 4. Ground..... | : 0V |
| 5. Serial Address/Data I/O | : 5V |
| 6. Serial Clock..... | : 5V |
| 7. Write protect input..... | : 5V |
| 8. +2,5V to 5.5V Power supply..... | : 5V |

PIN VOLTAGE



BLOCK DIAGRAM OF ST24LC2B

LA7910

TV TUNER BAND SELECTOR

GENERAL DESCRIPTION: The LA7910 is an IC for tuner band selection of electronic tuning type television set. This IC is used for producing the VHF channel "L" band power supply, VHF channel "H" band power supply, UHF channel power supply for tuner and the CAPT power supply according to the band select signal of 2 inputs.

FUNCTIONS :

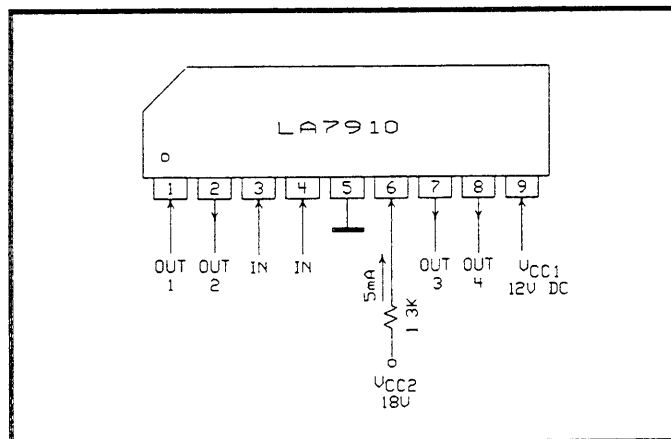
- VHF "L" band power supply output
- VHF "H" band power supply output
- UHF power supply output
- CATV power supply output

FEATURES

- 2 inputs and 4 outputs
- Low output saturation voltage : 0.25V typ., $I_O = 60\text{mA}$
- Compact 9-pin single-end package

PINNING

| | PIN VOLTAGE | | | |
|----------------------------------|-------------|-------|------|------|
| | WHF-L | VHF-H | UHF | CATV |
| 1- Output | 12 | 0 | 0 | 0 |
| 2- Output | 0 | 12 | 0 | 0 |
| 3- Input | 0 | 1 | 0 | 0 |
| 4- Input | 0 | 0 | 1 | 1 |
| 5- Ground | - | - | - | - |
| 6- Supply voltage (18V) | 13.5 | 13.5 | 13.5 | 13.5 |
| 7- Output | 0 | 0 | 12 | 0 |
| 8- Output | 0 | 0 | 0 | 12 |
| 9- Supply voltage (12V DC) | 12 | 12 | 12 | 12 |



BLOCK DIAGRAM OF LA7910

TDA2822M

DUAL POWER AMPLIFIER

GENERAL DESCRIPTION: The TDA2822M is a monolithic integrated circuit in 8 lead Minidip package. It is intended for use as dual audio power amplifier in portable cassette players and radios.

FEATURES :

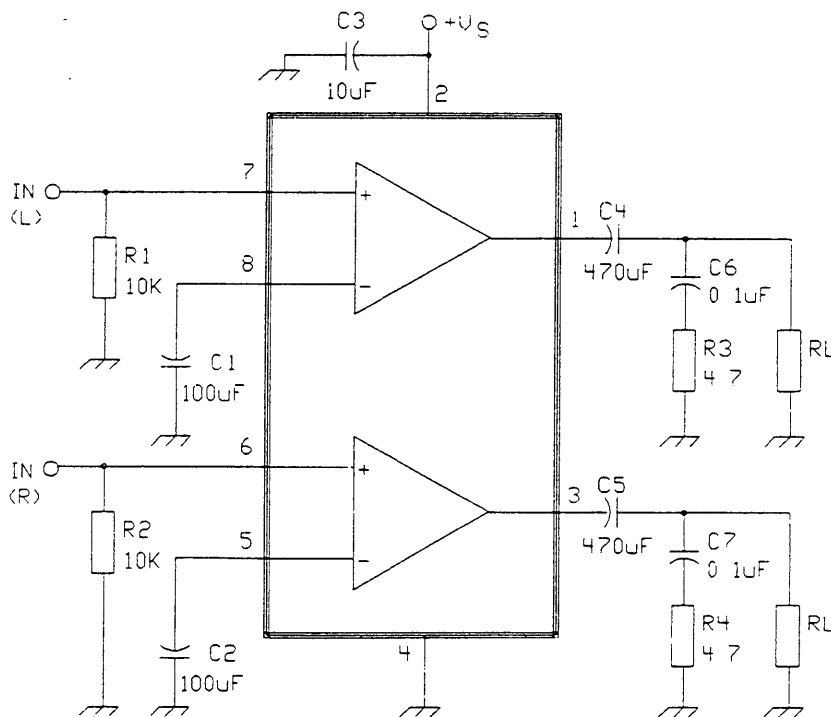
- Supply voltage down to 1.8V.
- Low crossover distortion.
- Low quiescent current.
- Bridge or stereo configuration.

PINNING

| | |
|-------------------------|--------|
| 1. OUTPUT (1) | : 4V |
| 2. SUPPLY VOLTAGE | : 8.6V |
| 3. OUTPUT (2) | : 4V |
| 4. GROUND | : 0V |
| 5. INPUT - (2) | : 0.4V |
| 6. INPUT + (2) | : 0V |
| 7. INPUT + (1) | : 0V |
| 8. INPUT - (1) | : 0.4V |

PIN VOLTAGE

| | SOUND MAX. | SOUND MIN. |
|-------------------------|------------|------------|
| 1. OUTPUT (1) | : 4V | : 5.6V |
| 2. SUPPLY VOLTAGE | : 8.6V | : 12V |
| 3. OUTPUT (2) | : 4V | : 5.6V |
| 4. GROUND | : 0V | : 0V |
| 5. INPUT - (2) | : 0.4V | : 0.45V |
| 6. INPUT + (2) | : 0V | : 0V |
| 7. INPUT + (1) | : 0V | : 0V |
| 8. INPUT - (1) | : 0.4V | : 0.46V |



BLOCK DIAGRAM OF TDA2822M

TDA5030A

TV VHF MIXER/OSCILLATOR/UHF PREAMPLIFIER

GENERAL DESCRIPTION: The TDA 5030A provides VHF local oscillator, VHF mixer and UHF IF preamplifier functions for VHF/UHF television receivers. It includes a buffered output from the VHF local oscillator, a VHF/UHF switching circuit and an IF amplifier stage for an external SAW filter.

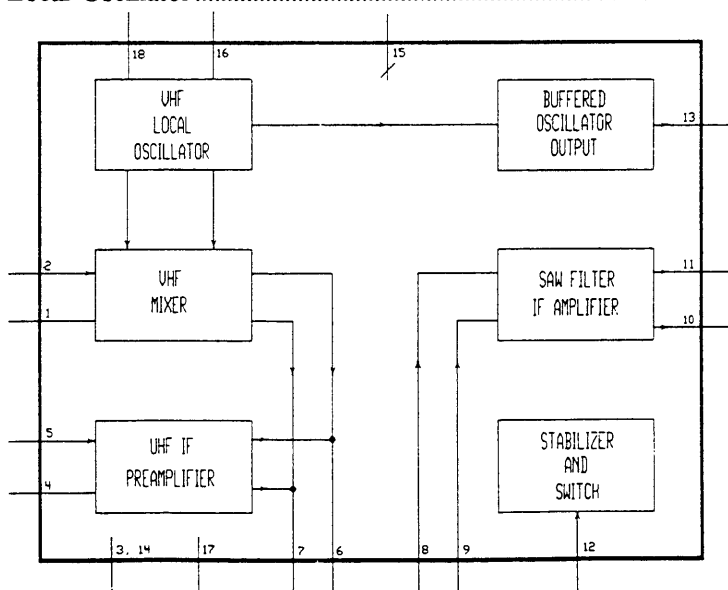
FEATURES:

- Balanced VHF mixer
- Voltage controlled VHF local oscillator
- IF amplifier for SAW filter
- UHF IF preamplifier
- Local oscillator buffer output for external prescaler
- Voltage stabilizer
- UHF/VHF switching circuit
- Electrostatic discharge protection diodes at pins 10, 11, 12 and 13

PINNING

PIN VOLTAGE

| | |
|---|--------|
| 1. VHF Mixer Input | 2.5V |
| 2. VHF Mixer Input | 2.5V |
| 3. Ground..... | 0V |
| 4. UHF IF Preamplifier Input..... | 6.30V |
| 5. UHF IF Preamplifier Input..... | 6.30V |
| 6. VHF Mixer Output | 7.80V |
| 7. VHF Mixer Output | 7.80V |
| 8. SAW Filter IF Amplifier Input..... | 3.50V |
| 9. SAW Filter IF Amplifier Input..... | 3.50V |
| 10. SAW Filter IF Amplifier Output..... | 5.40V |
| 11. SAW Filter IF Amplifier Output..... | 5.40V |
| 12. UHF/VHF Switch..... | 0V |
| 13. Local Oscillator Output | 1.256V |
| 14. Ground..... | 0V |
| 15. Supply Voltage | 12V |
| 16. VHF Local Oscillator | 1.5V |
| 17. Mixer Balancing..... | 6V |
| 18. VHF Local Oscillator | 2V |



BLOCK DIAGRAM OF TDA5030A

TDA9830

AM DEMODULATOR

GENERAL DESCRIPTION:

The TDA9830, a monolithic integrated circuit, is designed for AM-sound demodulation used in L and L' standard. The IC provides an audio source selector and a mute switch.

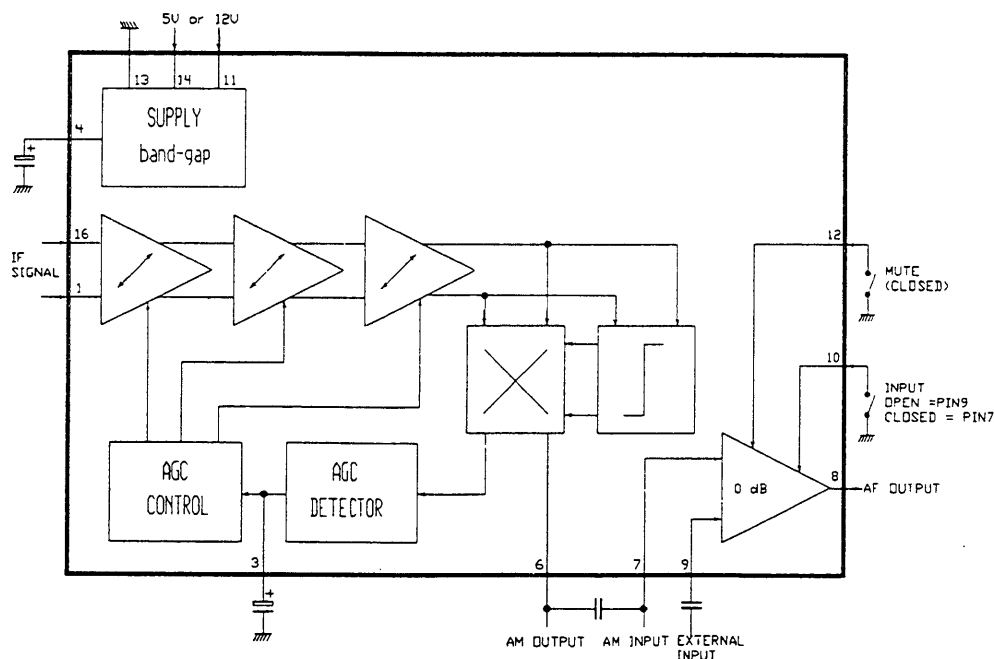
FEATURES

- Adjustment free wideband synchronous AM demodulator.
- Audio source-mute switch (Low noise).
- Audio level according EN50049.
- 5 to 8V power supply or 12V alternative.
- Low power consumption.

PINNING

PIN VOLTAGE

| | SECAM L | PAL B/G |
|---|---------|---------|
| 1. Sound IF differential input signal | 1.75V | 1.7V |
| 2. NC..... | 0V | 0V |
| 3. AGC capacitor | 1.9V | 2V |
| 4. REF Voltage filtering capacitor | 4.35 | 4.35 |
| 5. NC..... | 0V | 0V |
| 6. AM demodulator output | 2.2V | 2.2V |
| 7. Input signal (from AM) to audio switch | 2.2V | 2.2V |
| 8. Output signal from audio switch | 2.2V | 2.2V |
| 9. Input signal (from external) to audio switch | 2.2V | 2.2V |
| 10. Switch input select control | 0.12V | 7.7V |
| 11. Supply Voltage +12V (alternative)..... | 7.3V | 7.32V |
| 12. Mute control..... | 7.86V | 7.86V |
| 13. Ground | 0V | 0V |
| 14. Supply Voltage +5V to +8V..... | 7.86V | 7.86V |
| 15. NC | 0V | 0V |
| 16. Sound IF differential input signal..... | 1.75V | 1.7V |



BLOCK DIAGRAM OF TDA9830

SAA5254P/T

INTEGRATED VIP AND TELETEX (IVT1.1X)

GENERAL DESCRIPTION: This complete single page teletext decoder is a derivative from the SAA5244A, it overcomes the one weakness of this device by incorporating automatic packet 26 processing for language extension. The SAA5244A was restricted to the main West European languages since it could only handle 7-bit data, the inclusion of the automatic X/26 processing increases the range of countries to include all those currently transmitting World System Teletext.

FEATURES

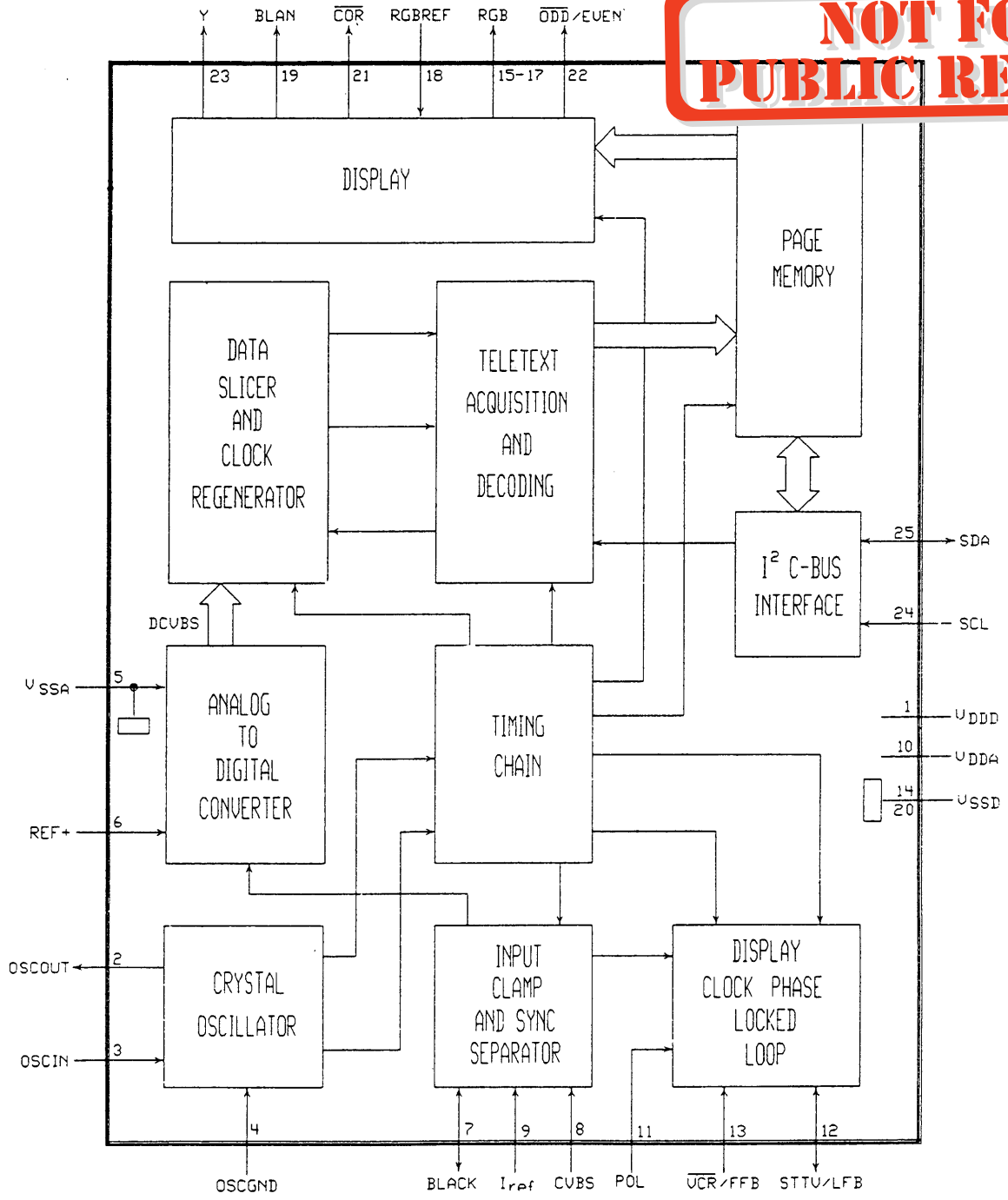
- Completed teletext decoder including page memory and FASTEXT links in a single 40-pin DIL package
 - Automatic processing of extension packet 26 for widest possible language decoding.
 - 100% hardware-compatible with the SAA5244 - plug-in replacement and extra market.
 - 100% software compatible with the SAA5244 - except if the special OSD symbols were used with the SAA5244A.
 - Low software overhead for the control microprocessor.
 - Wide range of language options will be available :
 - /E West European
 - /H East European
 - /T Euro-Turkish
- Contact IPM for the latest available options.
- Hardware and software compatible to the SAA5249 "Instant" access teletext decoder.

PINNING

PIN VOLTAGE

| | TV | TEXT |
|--|-------|-------|
| 1. VDD +5V digital supply voltage..... | 5V | 5V |
| 2. OSCOUT, 27 MHz crystal oscillator output..... | 2V | 2V |
| 3. OSCIN, 27 MHz oscillator input..... | 3.50V | 3.50V |
| 4. OSCGND, crystal oscillator ground..... | 0V | 0V |
| 5. VSS(A), analog ground | 0V | 0V |
| 6. REF+, Positive reference voltage for the ADC. | 5V | 5V |
| 7. BLACK, Video black level storage..... | 2.2V | 2.2V |
| 8. CVBS, Composite video input | 2.5V | 2.5V |
| 9. IREF, Reference current input..... | 2.5V | 2.5V |
| 10. VDD(A), +5V analog supply voltage | 5V | 5V |
| 11. POL, STTV/LFB/FFB polarity select..... | 5V | 5V |
| 12. STTV/LFB, Sync to TV output pin/line flyback input | 1.6V | 1.9V |
| 13. VCR/FFB, PLL time constant switch/field flyback input..... | 5V | 5V |
| 14. VSS(D), Connected to VSS(D) for normal operation | 0V | 0V |
| 15. R, Dot rate character output of the RED colour information..... | 0V | 0.7V |
| 16. G, Dot rate character output of the GREEN colour information | 0V | 0.7V |
| 17. B, Dot rate character output of the BLUE colour information | 0V | 0.7V |
| 18. RGBREF, Input dc voltage to define the output high level on the RGB pins | 5V | 5V |
| 19. BLAN, Dot rate fast blanking output..... | 0V | 3V |
| 20. VSS(D), digital ground..... | 0V | 0V |
| 21. COR, Programmable output to provide contrast reduction of the TV picture for mixed text and picture displays or when viewing newsflash/subtitle pages. Open drain circuit..... | 4V | 0V |
| 22. ODD/EVEN, 25Hz output synchronized with the CVBS input's field sync pulses to produce a non-interlaced display by adjustment of the vertical deflection currents | 0V | 2.5V |
| 23. Y, Dot rate character output of teletext foreground color information.... | 0V | 0V |
| 24. SCL, Serial clock input for I2C-bus | 5V | 3V |
| 25. SDA, Serial data port for the I2C-bus | 5V | 2.5V |
| 26-40. i.c., Internally connected. Must be left open circuit in application..... | 5V | 5V |

NOT FOR PUBLIC RELEASE



BLOCK DIAGRAM OF SAA5254P/T

PCA84C641 / PCA84C444

MICROCONTROLLERS FOR CTV 322S (CTV 222S)

GENERAL DESCRIPTION: CTV322S (CTV222S) is a low cost television receiver control system, based on the PCA84C641 (PCA84C444) mikrocontroller. It is a voltage synthesis tuning (VST) system. The control functions of the system are displayed via the on-screen display circuitry of the mikrocontroller. Herewith two independent lines of 16 characters with 4 different sizes and in 7 different colour can be displayed. Sound and picture are controlled by the 5 on-chip digital to analogue converters. This system is colour standard independent.

The PCA84C641-VST is a member of the PCA84CXX CMOS mikrocontroller family. It includes the PCA84C processor core, 6142 bytes of mark-programmable program ROM, 128 bytes of RAM, a multimaster 1 C bus interface, 2 directly testable lines, 17 general purpose bi-directional I/O lines plus 11 function-combined I/O lines, one 14-bit PWM "analog" control, an AFC input (3-bit DAC + comparator) for voltage synthesized tuning (VST), five 6-bit PWM "analog" control outputs, and a display-on-screen (DOS) facility for two lines of 16 characters (max. 64 character types).

The PCA84C444 is a member of the MAB8400/PCF84C mikrocontroller family. It is a one-chip mikrocontroller with an 8-bit CPU, 4K ROM, 128 bytes RAM, 8-bit timer/event counter and single level, 3-source interrupt structure. It is mounted in a 42 pin shrunk DIL package. Manufactured in CMOS technology and operating from a single supply voltage between 3.5V and 5.5V, it runs at a 10MHz oscillation frequency and contains about 80 single and double byte and cycle instruction. Up to 17 general purpose bidirectional I/O lines and 11 I/O lines with a combined function are available. One 8-bit I/O port can sink up to 10mA and can the refore be used to drive directly a LED display.

FEATURES :

TUNING;

- Voltage synthesis tuning system via 14 bits digital to analogue convertor.
- Automatic search tuning based on analogue AFC signal and on IDENT (Video recognition) signal.
- Tuning in up to 4 different bands.
- Manual search tuning.
- Direct program number entry.
- One and two program nubber entry.
- Step program up and down.
- Last-tuned program registrationand swap function.
- Silent tuning.
- Dark program switching.
- Automatic following per program.

CONTROL;

- Up to 28 local control commands.
- Remote control according the RC-5 world standart.

DISPLAY;

Off-screen LED display of stand-by mode.

On-screen display of :

- Remote control command reception.
- One or two digit program number entry.
- Program sound status line.
- Selected tuner band VHF-1, VHF-3, UHF and VHF-Hyper.
- Analogue tuning bar in search mode and manual/fine tuning.
- Selected external source.
- Store and clear program mode.
- VRT time constand status.
- Selected colour standard mode.
- Sound mute.
- Recall analogue control, store and clear (hard preset) mode.
- Analogue control mode: volume, brightness, colour, contrast, balance, tone, and/or hue.
- Analogue control status bars.
- Selected sleep timer.
- Preduction Service Mode.

SOUND ;

- Volume control in 64 steps (8 steps/second).
- Optional effect control.
- Mute control function.
- Automatic sound muting during tuning or program switching.

VIDEO ;

- Control of brightness, colour, contrast and hue in 64 steps (8 steps/second).
- Colour standart control of two different standards.
- VTR time constand control.
- Additional three button control possibility for all analogue colour and sound controls.

PERI-TV ;

- Full peripheral TV plug signal switching: CVBS out, CVBS/RGB in, sound in and out.

MEMORY ;

- Storage of preferred analogue picture and sound control setting.
- Storage of 40 or 90 preferred programs.
- Storage of 14 bit tuning DAC value, band select, system standard, dual language selection, following enable and VRT time constand control bits for each program.
- Storage VRT time constand system and dual language selection for peripheral audio/video source.

OPTIONS ;

- Three band, four band or UHF-only tuner.
- Different tuner and AFC characteristics.
- Stereo, dual language or mono sound control.
- Sound affect control.
- Peripheral audio/video TV plog control.
- Signal/Dual system standard control.
- VTR time constand control.
- 40 or 90 pre-programmed preferred channels, requiring 128 bytes or 256 bytes of NV = memory.
- AC mains supply control via solenoid on mains switch.
- Analogue control of hue, contrast, balance and/or tone.
- On Screen Display in symbols or text strings with or without background.
- Four or five anaologue controls.

POWER-ON ;

- Main switch sense input to check whether TV has to be switched-on or to standby mode.
- The program provides a fixed delay of 1.2 seconds and screen blanking about 100 msec to allow to switch-mode power-supply to stabilize.
- After power-on reset of the microcontroller and first time switching-on of the set, the system tunes to program 1 and recalls analogue picture and sound control presets from non-volatile memory. If program 1 is "cleared", the system tunes to the first "stored" program. If allprograms are "cleared" the program number is forced to 1.

STANDBY ;

- Sleep timer selection of 15, 30, 45, up to 120 minutes.
- Automatic switching to standby mode when the system is in front-end mode and during the last five munites no valid input signal is received or no valid remote or local control command is dedected. (All complete received commands with system address 00, except the "RC-5 enlarged" commands, will restrart the 5 minutes timer. All these commands will also result in an OSD message). With additional hardware it is possible to switch off the mains supply voltage completely, e.g. via a solenoid.

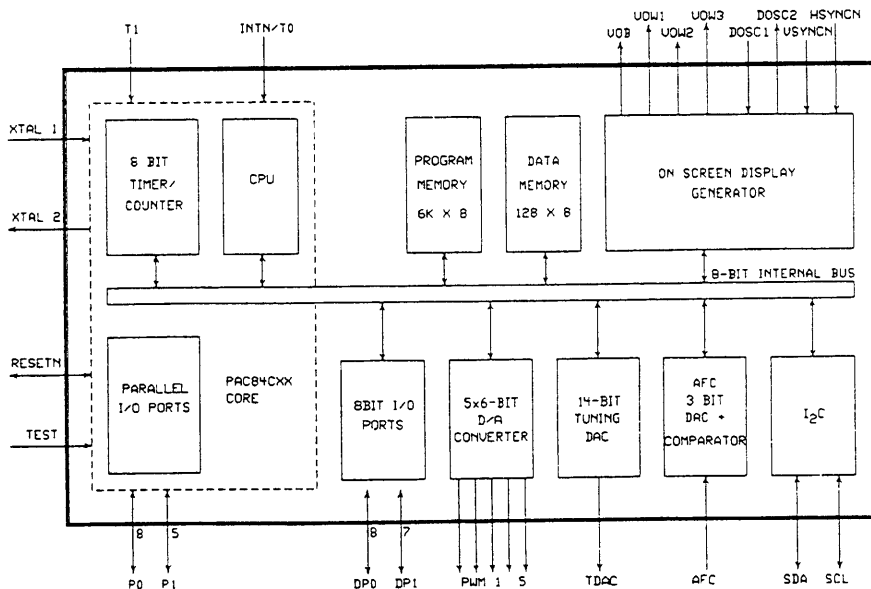
TELETEXT (These functions only for CTV322S) :

- Either : a page teletext control system by means of SAA5244. All normal teletext are available. A special signal for de-interlace purposes is available on a sigle output pin.
- Or : a 4 page teletext control system with SAA5246. All normal teletext functions are available. Also here a special signal for de-interlace purposes is available on a single output pin.
- Or : a 4 page teletext control system by means of the SAA5243 (EECT) + SAA5231 (VIP). All normal teletext functions are available. A special PON (Picture On) signal can be combined with an odd/even signal for de-interlace purposes.

PINNING

- 1- Tuning voltage control output : 5V(Front of band) 0V (End of band)
- 2- Volume control output..... : 0 - 5V
- 3- Brightness control output : 0 - 5V
- 4- Colour control output..... : 0 - 5V
- 5- Contrast or hue control output..... : 0 - 5V
- 6- Tone, balance or hue control output..... : -
- 7- Band-switch 0 output..... : -
- 8- Band-switch 1 output..... : -
- 9- Analogue AFC sense input..... : 5V
- 10- Dual/Non Dual language sound input..... : -
- 11- VTR time constand control output..... : -
- 12- Ext./int. audio/video source control output..... : 5V (TV) - 0V (AV)
- 13- Keyboard scan line input/output..... : -
- 14- Keyboard scan line input/output..... : -
- 15- Keyboard scan line input/output..... : -
- 16- Keyboard scan line input/output..... : -
- 17- Keyboard scan line input/output..... : -
- 18- Keyboard scan line input/output..... : -
- 19- Keyboard scan line input/output..... : -
- 20- System mode strobe output : 5V
- 21- Ground supply input : -
- 22- OSD red output : -
- 23- OSD green output : -
- 24- OSD blue output..... : -
- 25- OSD fast blanking output : -
- 26- Horizontal synchronization input..... : -
- 27- Vertical synchronization input..... : -
- 28- LC oscillator input for OSD..... : 5V
- 29- LC oscillator output for OSD..... : 5V
- 30- Test input; connected to ground..... : -
- 31- Oscillator input; 10MHz crystal..... : -
- 32- Oscillator output : 2V
- 33- Power-on reset input/output : 5V
- 34- Horizontal coincidence input..... : 4.5V
- 35- RC-5 remote control input : 4V
- 36- Mono/Stereo or language 1/2 output..... : -
- 37- Sound effect control output..... : -
- 38- System select output..... : -
- 39- I²C-bus clock signal output..... : 5V
- 40- I²C-bus data signal output : 5V
- 41- Standby/On control input/output : 0V (ST-BY) - 5V (OPEN)
- 42- +5V supply voltage input..... : 5V

PIN VOLTAGE



BLOCK DIAGRAM OF PCA84C641

ELECTRONIC COMPONENT PART LIST

POS.
LIST NO

VECODE DESCRIPTION

ASSEMBLIES

1007062100 ASSY. R/C TRANSMITTER UKV-621 (RC-206
1003000130 ASSY. TUBE (PHL) 14P A34EAC01*06 / 150U
1005022040 ASSY.MAIN CHASSIS 08-14P PBGSL
20380009170 ASSY.CRT BOARD 09D-2 14
2046301600 ASSY.TELETEXT BOARD
2042101400 ASSY. SOUND BOARD SL03-3

CAPACITORS

C100 3084700056 CAP EL 47UF 6.3V M (4*7MM)
C101 3084790356 CAP EL 4.7UF 16C M
C102 3084790356 CAP EL 4.7UF 16C M
C103 3012241036 CAP MKT 220NF 6.3V J
C104 3012241036 CAP MKT 220NF 6.3V J
C105 3012241036 CAP MKT 220NF 6.3V J
C108 3061020142 CAP SER 1NF 50V K B
C109 3061020142 CAP SER 1NF 50V K B
C110 3061020142 CAP SER 1NF 50V K B
C111 3061020142 CAP SER 1NF 50V K B
C112 3061020142 CAP SER 1NF 50V K B
C113 3061020142 CAP SER 1NF 50V K B
C114 3052700132 CAP SER 27PF 50V J CH
C115 3052700132 CAP SER 27PF 50V J CH
C116 3061020142 CAP SER 1NF 50V K B
C117 3061020142 CAP SER 1NF 50V K B
C118 3061020142 CAP SER 1NF 50V K B
C120 3061020142 CAP SER 1NF 50V K B
C201 3081010356 CAP EL 100UF 16V M
C202 3081010356 CAP EL 100UF 16V M
C203 3061030392 CAP SER 10NF 50V Z F
C204 3061030392 CAP SER 10NF 50V Z F
C205 3061030392 CAP SER 10NF 50V Z F
C206 3211040846 CAP MY 100NF 50V K
C207 3064720142 CAP SER 4.7NF 50V K B
C208 3081000856 CAP EL 10UF 50V M
C209 3081000856 CAP EL 10UF 50V M
C210 3081000856 CAP EL 10UF 50V M
C301 3081000856 CAP EL 10UF 50V M
C302 3211040846 CAP MY 100NF 50V K
C303 3082290356 CAP EL 2.2UF 16V M
C304 3061030392 CAP SER 10NF 50V Z F
C305 3084710356 CAP EL 470UF 16V M
C306 3061030392 CAP SER 10NF 50V Z F
C307 3081000856 CAP EL 10UF 50V M
C308 3051010832 CAP SER 100PF 50V J SL
C330 3211040846 CAP MY 100NF 50V K
C401 3063920142 CAP SER 3.9NF 50V K B
C402 3054790116 CAP SER 4.7PF 50V C CH
C403 3082290356 CAP EL 2.2UF 16V M
C404 3211040846 CAP MY 100NF 50V K
C405 3062230392 CAP SER 22NF 50V Z F
C406 3081000856 CAP EL 10UF 50V M
C407 3064730396 CAP SER 47NF 50V Z F
C408 3064730396 CAP SER 47NF 50V Z F
C409 3211040846 CAP MY 100NF 50V K
C410 3082200356 CAP EL 22UF 16V M
C411 3061020142 CAP SER 1NF 50V K B
C412 3064720142 CAP SER 4.7NF 50V K B
C414 3061040398 CAP SER 100NF 50V Z F
C415 3061040398 CAP SER 100NF 50V Z F
C416 3061020142 CAP SER 1NF 50V K B
C417 3061020142 CAP SER 1NF 50V K B
C418 3061040398 CAP SER 100NF 50V Z F
C419 3064720142 CAP SER 4.7NF 50V K B
C420 3051800832 CAP SER 18PF 50V J SL
C421 3062230392 CAP SER 22NF 50V Z F
C422 3081090856 CAP EL 1UF 50V M
C423 3064720142 CAP SER 4.7NF 50V K B
C424 3062220148 CAP SER 2.2NF 50V K B
C425 3064710142 CAP SER 470PF 50V K B
C427 3062230392 CAP SER 22NF 50V Z F
C428 3081090856 CAP EL 1UF 50V M
C429 3081000856 CAP EL 10UF 50V M
C430 3062230392 CAP SER 22NF 50V Z F
C431 3082290356 CAP EL 2.2UF 16V M
C433 3056800132 CAP SER 68PF 50V J CH
C434 3211040846 CAP MY 100NF 50V K
C435 3211040846 CAP MY 100NF 50V K
C436 3211040846 CAP MY 100NF 50V K
C437 3051010832 CAP SER 100PF 50V J SL
C438 3081000856 CAP EL 10UF 50V M
C441 3061040398 CAP SER 100NF 50V Z F
C442 3061040398 CAP SER 100NF 50V Z F
C443 3012241036 CAP MKT 220NF 63V J
C444 3081000856 CAP EL 10UF 50V M
C445 3061040398 CAP SER 100NF 50V Z F
C446 3061040398 CAP SER 100NF 50V Z F
C447 3082290356 CAP EL 2.2UF 16V M

C448 3061020142 CAP SER 1NF 50V K B
C450 3061020142 CAP SER 1NF 50V K B
C451 3081000856 CAP EL 10UF 50V M
C453 3023330036 CAP KP 33NF 63V J
C455 3032290356 CAP EL 2.2UF 16V M
C456 3081000856 CAP EL 10UF 50V M
C490 3051510836 CAP SER 150PF 50V J SL
C501 3051010832 CAP SER 100PF 50V J SL
C502 3212240836 CAP MY 220NF 50V J
C503 3211040846 CAP MY 100NF 50V K
C504 3061040398 CAP SER 100NF 50V Z F
C505 3081090856 CAP EL 1UF 50V M
C506 3084790356 CAP EL 4.7UF 16V M
C507 3081090856 CAP EL 1UF 50V M
C508 3084790356 CAP EL 4.7UF 16V M
C509 3062220148 CAP SER 2.2NF 50V K B
C510 3061040398 CAP SER 100NF 50V Z F
C511 3051800832 CAP SER 18PF 50V J SL
C512 3051800832 CAP SER 18PF 50V J SL
C513 3061040398 CAP SER 100NF 50V Z F
C514 3081000856 CAP EL 10UF 50V M
C515 3061040398 CAP SER 100NF 50V Z F
C601 3014721146 CAP MKT 4.7NF 100V K
C602 3214740846 CAP MY 470NF 50V K
C603 3036227038 CAP MKP 6.2NF 1.6KV J
C604 3011041548 CAP MKT 100NF 250V K
C605 3083391356 CAP EL 3.3UF 160V M
C606 3033344038 CAP MKP 330NF 400V J
C607 3083301356 CAP EL 33UF 160V M
C608 3081001456 CAP EL 10UF 250V M
C609 3032243058 CAP MKP 220NF 250V M
C610 3012231136 CAP MKT 22NF 100V J
C611 3212230836 CAPMY 22NF 50V J
C612 3216820486 CAP MY 6.8NF 50V K
C613 3062220148 CAP SER 2.2NF 50V K B
C614 3204094148 CAP SER 4PF 2KV K SL
C615 3051010832 CAP SER 100PF 50V J SL
C701 3064720142 CAP SER 4.7NF 50V K B
C702 3064720142 CAP SER 4.7NF 50V K B
C703 3064710142 CAP SER 470PF 50V K B
C704 3211040846 CAP MY 100NF 50V K
C705 3083390856 CAP EL 3.3UF 50V M
C706 3081020556 CAP EL 1000UF 35V M
C707 3081011056 CAP EL 100UF 63V M
C708 3082210656 CAP EL 220UF 40V M
C801 3031043058 CAP MKP 100NF 250V M AC
C802 3031043058 CAP MKP 100NF 250V M AC
C803 3031043058 CAP MKT 100NF 250V M AC
C804 3201021158 CAP SER 1NF 1KV M B
C805 3201021158 CAP SER 1NF 1KV M B
C806 3201021158 CAP SER 1NF 1KV M B
C807 3201021158 CAP SER 1NF 1KV M B
C808 3101010356 CAP EL 100UF 400V M
C809 3212240836 CAP MY 220NF 50V J
C810 3013321036 CAP MKT 3.3NF 63V J
C811 3064710142 CAP SER 470PF 50V K B
C812 3084700356 CAP EL 47UF 16V M
C813 3064720142 CAP SER 4.7NF 50V K B
C814 3023335048 CAP PP 33NF 630V K
C816 3032215046 CAP MPP 0.22NF 630V K
C817 3081090856 CAP EL 1UF 50V M
C818 3084701358 CAP EL 47UF 160V M (HR)
C819 3084710856 CAP EL 470UF 50V M (85°)
C820 3081000856 CAP EL 10UF 50V M
C821 3081020456 CAP EL 1000UF 25V M
C822 3081000856 CAP EL 10UF 50V M
C823 3082210356 CAP EL 220UF 16V M
C824 3202227458 CAP SER 2.2NF 4KV M
C825 3062240396 CAP SER 220NF 25V Z F
C826 3061040398 CAP SER 100NF 50V Z F
C827 3081010456 CAP EL 100UF 25V M
C828 3062714146 CAP SER 270PF 500V K B
C829 3201021158 CAP SER 1NF 1KV M B
C830 3201021158 CAP SER 1NF 1KV M B
C831 3061040398 CAP SER 100NF 50V Z F
C901 3054710030 CAP SMD 470PF 50V J
C902 3055610030 CAP SMD 560PF 50V J
C903 3053910030 CAP SER SMD 390PF 50V J
C904 3055610030 CAP SMD 560PF 50V J
C905 3055610832 CAP SER 560PF 50V J SL
C906 3055610030 CAP SMD 560PF 50V J
C907 3201021158 CAP SER 1NF 1KV M B
C909 3081010356 CAP EL 100UF 16V M
C910 3058210030 CAP SMD 820PF 50V J
C911 3058210030 CAP SMD 820PF 50V J
C912 3058210030 CAP SMD 820PF 50V J
C1101 3061040230 CAP SMD 100NF 50V K R

| POS. | VESCODE | DESCRIPTION |
|-------|------------|-----------------------|
| C1102 | 3012231136 | CAPMKT 22NF 100V J |
| C1103 | 3081000856 | CAP EL 10UF 50V M |
| C1104 | 3061040230 | CAP SMD 100NF 50V K R |
| C1105 | 3051030090 | CAP SR SMD 10PF 50V |
| C1106 | 3051530030 | CAP SMD 15PF 50V J |
| C1107 | 3061040230 | CAP SMD 100NF 50V K R |
| C1108 | 3061040230 | CAP SMD 100NF 50V K R |
| C1109 | 3061040230 | CAP SMD 100NF 50V K R |
| C1110 | 3081000856 | CAP EL 10UF 50V M |
| C1111 | 3012231136 | CAPMKT 22NF 100V J |
| C1112 | 3081000856 | CAP EL 10UF 50V M |
| C1113 | 3081010856 | CAP EL 100UF 16V M |
| C1116 | 3014741036 | CAP MKT 470NF 63V J |
| C1117 | 3014741036 | CAP MKT 470NF 63V J |

DIODES

| | VESCODE | DESCRIPTION |
|-------|------------|--------------------------|
| | 3515520800 | INRARED FOR R/C (D=5) |
| D101 | 3531941480 | DIODE 1N4148 |
| D102 | 3531941480 | DIODE 1N4148 |
| D103 | 3531941480 | DIODE 1N4148 |
| D104 | 3531941488 | DIODE 1N4148 SMD |
| D201 | 3531941480 | DIODE 1N4148 |
| D202 | 3531941480 | DIODE 1N4148 |
| D301 | 3551940070 | DIODE 1N4007 ITT |
| D402 | 3531941480 | DIODE 1N4148 |
| D501 | 3531941480 | DIODE 1N4148 |
| D502 | 3531941480 | DIODE 1N4148 |
| D503 | 3531941480 | DIODE 1N4148 |
| D504 | 3531941480 | DIODE 1N4148 |
| D505 | 3531941480 | DIODE 1N4148 |
| D506 | 3531941480 | DIODE 1N4148 |
| D507 | 3531941480 | DIODE 1N4148 |
| D508 | 3531941480 | DIODE 1N4148 |
| D509 | 3531941480 | DIODE 1N4148 |
| D510 | 3531941480 | DIODE 1N4148 |
| D511 | 3531941480 | DIODE 1N4148 |
| D512 | 3531941480 | DIODE 1N4148 |
| D513 | 3531941480 | DIODE 1N4148 |
| D514 | 3571903600 | DIODE ZENER 3.6V ZPD |
| D601 | 3531941480 | DIODE 1N4148 |
| D602 | 3531941480 | DIODE 1N4148 |
| D603 | 3551900330 | DIODE BYD33J ITT |
| D604 | 3551901570 | DIODE BA157 MIC |
| D701 | 3551900330 | DIODE BYD33J ITT |
| D801 | 3551940070 | DIODE 1N4007 |
| D802 | 3551940070 | DIODE 1N4007 |
| D803 | 3551940070 | DIODE 1N4007 |
| D804 | 3551940070 | DIODE 1N4007 |
| D806 | 3531941480 | DIODE 1N4148 |
| D807 | 3531941480 | DIODE 1N4148 |
| D808 | 3551901590 | DIODE BA159 |
| D809 | 3570006200 | DIODE ZENER 6.2V |
| D810 | 3550827200 | DIODE BYV27-200 |
| D811 | 3551500261 | DIODE BYM260 |
| D812 | 3550827200 | DIODE BYV27-200 |
| D813 | 3571933000 | DIODE ZENER 33B UZT 33B |
| D814 | 3571905100 | DIODE ZENER 5.1V ZPD |
| D815 | 3571909100 | DIODE ZENER 9V1 ZPD |
| D816 | 3570012000 | DIODE ZENER 12V |
| D901 | 3531941488 | DIODE 1N4148 SMD |
| D902 | 3551940030 | DIODE 1N4003 TA |
| D903 | 3551940030 | DIODE 1N4003 TA |
| D904 | 3551940030 | DIODE 1N4003 TA |
| D905 | 3531941488 | DIODE 1N4148 SMD |
| D1101 | 3571905108 | DIODE ZENER ZMM 5.1V SMD |
| D1102 | 3531941480 | DIODE 1N4148 |
| D1103 | 3531941480 | DIODE 1N4148 |
| D1104 | 3531941480 | DIODE 1N4148 |
| D1105 | 3531941480 | DIODE 1N4148 |
| D1106 | 3531941480 | DIODE 1N4148 |
| D1111 | 3531941488 | DIODE 1N4148 SMD |
| D1106 | 3531941480 | DIODE 1N4148 |
| D1106 | 3531941480 | DIODE 1N4148 |

INTEGRATED CIRCUITS

| | VESCODE | DESCRIPTION |
|--------|------------|--------------------|
| IC1 | 3621530100 | IC SAA3010P |
| IC101 | 3621550300 | IC TDA5030A |
| IC102 | 3621598300 | IC TDA9830 |
| IC301 | 3621628220 | IC TDA 2822M |
| IC401 | 3621583621 | IC TDA8362A/N1 |
| IC402 | 3621546611 | IC TDA 4661 V2B |
| IC403 | 3621583850 | IC TDA8395 |
| IC501 | 3621504220 | IC CTV422M.VE1 |
| IC502 | 3621624020 | IC ST24C02 |
| IC503 | 3620279100 | IC LA7910 |
| IC701 | 3621536532 | IC TDA 3653B/N2 |
| IC801 | 3621846050 | IC TDA4605-2 |
| IC802 | 3620978080 | IC LM7808 MOTOROLA |
| IC1101 | 3621552540 | IC TDA5254P/T |

COILS

| | VESCODE | DESCRIPTION |
|-------|------------|-------------------------------|
| L101 | 4011104512 | COIL FIXED 1UH Q45 M-A |
| L102 | 4011140011 | COIL FIXED 1.47UH |
| L401 | 4012106522 | COIL FIXED 10UH Q65 K-A |
| L402 | 4011680032 | COIL FIXED 6.8UH J AXI |
| L403 | 5913225000 | JUMPER WIRE 0.6MM |
| L404 | 5913225000 | JUMPER WIRE 0.6MM |
| L405 | 5913225000 | JUMPER WIRE 0.6MM |
| L406 | 4012106522 | COIL FIXED 10UH Q65 K-A |
| L501 | 4262125026 | COIL CHOKE PEAKING 12UH Q50 K |
| L601 | 4091411110 | COIL LINEARTY 14 224L |
| L602 | 5913225000 | JUMPER WIRE 0.6MM |
| L801 | 4013150017 | COIL CHOKE 150UH 0.82A |
| L901 | 3821120600 | JUMPER SMD 1206 |
| L902 | 3821120600 | JUMPER SMD 1206 |
| L903 | 3821120600 | JUMPER SMD 1206 |
| LT401 | 4020006031 | COIL VIF 38.9MHZ 0=60 |
| LT402 | 3780105500 | FILTER SER TRAP TPS 5.5MHZ |
| L1101 | 4011477022 | COIL FIXED 4.7UH Q70 K-A |

TRANSISTORS

| | VESCODE | DESCRIPTION |
|-------|------------|-------------------|
| Q101 | 3611908588 | TR BC858B SMD |
| Q102 | 3611905480 | TR BC548B ITT |
| Q103 | 3611905480 | TR BC548B ITT |
| Q104 | 3611905580 | TR BC558B ITT |
| Q106 | 3611908488 | TR BC848B SMD |
| Q107 | 3611908488 | TR BC848B SMD |
| Q108 | 3611908588 | TR BC858B SMD |
| Q109 | 3611908488 | TR BC848B SMD |
| Q110 | 3611908588 | TR BC858B SMD |
| Q201 | 3611905480 | TR BC548B ITT |
| Q301 | 3611905480 | TR BC548B ITT |
| Q401 | 3611905480 | TR BC548B ITT |
| Q402 | 3611905480 | TR BC548B ITT |
| Q403 | 3611905480 | TR BC548B ITT |
| Q404 | 3611905480 | TR BC548B ITT |
| Q405 | 3611905480 | TR BC548B ITT |
| Q406 | 3611905480 | TR BC548B ITT |
| Q501 | 3611502400 | TR BF240 PHILIPS |
| Q502 | 3611905580 | TR BC558B ITT |
| Q503 | 3611905580 | TR BC558B ITT |
| Q601 | 3611506390 | TR BC639 |
| Q602 | 3611505060 | TR BU506D PHILIPS |
| Q603 | 3611905480 | TR BC548B ITT |
| Q604 | 3611905480 | TR BC548B ITT |
| Q605 | 3611905480 | TR BC548B ITT |
| Q801 | 3611800771 | TR BUZ77B |
| Q802 | 3611502380 | TR BD238 |
| Q803 | 3611903270 | TR BC327 |
| Q901 | 3611508690 | TR BF869S |
| Q902 | 3611508218 | TR BF821 SMD |
| Q903 | 3611508690 | TR BF869S |
| Q904 | 3611508218 | TR BF821 SMD |
| Q905 | 3611508690 | TR BF869S |
| Q906 | 3611508218 | TR BF821 SMD |
| Q907 | 3611908588 | TR BC858B SMD |
| Q1101 | 3611908488 | TR BC848B SMD |
| Q1103 | 3611908488 | TR BC848B SMD |
| Q1104 | 3611908488 | TR BC848B SMD |
| Q1105 | 3611908488 | TR BC848B SMD |

RESISTORS

| | VESCODE | DESCRIPTION |
|------|------------|---------------------|
| R101 | 3312730830 | RES SMD 1/8W 27K J |
| R102 | 3312230830 | RES SMD 1/8W 22K J |
| R105 | 3314730457 | RES CF 1/4W 47K G |
| R109 | 3315630830 | RES SMD 1/8W 56K J |
| R110 | 3311030830 | RES SMD 1/8W 10K J |
| R111 | 3311020830 | RES SMD 1/8W 1K J |
| R115 | 3311510830 | RES SMD 1/8W 150R J |
| R117 | 3312710830 | RES SMD 1/8W 270R J |
| R118 | 3312710830 | RES SMD 1/8W 270R J |
| R119 | 3311800830 | RES SMD 1/8W 18R J |
| R120 | 3316820830 | RES SMD 1/8W 6.8K J |
| R121 | 3311230830 | RES SMD 1/8W 12K J |
| R122 | 3311040830 | RES SMD 1/8W 100K J |
| R123 | 3311030830 | RES SMD 1/8W 10K J |
| R125 | 3315630830 | RES SMD 1/8W 56K J |
| R130 | 3311040830 | RES SMD 1/8W 100K J |
| R131 | 3311030830 | RES SMD 1/8W 10K J |
| R132 | 3311530830 | RES SMD 1/8W 15K J |
| R133 | 3311020830 | RES SMD 1/8W 1K J |
| R134 | 3311040830 | RES SMD 1/8W 100K J |
| R135 | 3311040830 | RES SMD 1/8W 100K J |
| R137 | 3311030830 | RES SMD 1/8W 10K J |
| R138 | 3311020830 | RES SMD 1/8W 1K J |
| R140 | 3311030830 | RES SMD 1/8W 10K J |
| R141 | 3318230830 | RES SMD 1/8W 82K J |
| R303 | 3351002135 | RES MO 2W 10R J |
| R441 | 3321060456 | RES MF 1/4W 10M G |

| | | |
|-------|------------|-----------------------|
| R604 | 3356812135 | RES MO 2W 680R J |
| R606 | 3372240237 | RES MG 1/4W 220K J |
| R607 | 3352222137 | RES MO 2W 2.2K J |
| R706 | 3321890257 | RES MF 1/2W 1.8R G |
| R711 | 3364791137 | RES FUSE 1W 4.7R J |
| R716 | 3316810237 | RES CF 1/2W 680R J |
| R720 | 3351021137 | RES MO 1W 1K J |
| R801 | 3382295130 | RES WW 5W 2.2R J |
| R802 | 3357532137 | RES MO 2W 75K J |
| R803 | 3352721137 | RES MO 1W 2.7K J |
| R804 | 3318240237 | RES CF 1/2W 820K J |
| R805 | 3313341137 | RES CF 1W 330K J |
| R809 | 3364781137 | RES FUS 1W 0.47R J |
| R812 | 3356801137 | RES MO 1W 68R J |
| R813 | 3352211137 | RES MO 1W 220R J |
| R815 | 3353332137 | RES MO 2W 33K J |
| R816 | 3374750237 | RES MG 1/2W 4.7M J |
| R817 | 3362280237 | RES FUSE 1/2W 0.22R J |
| R818 | 3358222137 | RES MO 2W 8.2K J |
| R819 | 3362280237 | RES FUSE 1/2W 0.22R J |
| R820 | 3312210237 | RES CF 1/2W 220R J |
| R823 | 3312210237 | RES CF 1/2W 220R J |
| R825 | 3356812135 | RES MO 2W 680R J |
| R826 | 3374750237 | RES MG 1/2W 4.7M J |
| R828 | 3351531137 | RES MO 1W 15K J |
| R833 | 3313910457 | RES CF 1/4W 390R G |
| R843 | 3313320457 | RES CF 1/4W 3.3K G |
| R901 | 3311220830 | RES SMD 1/8W 1.2K J |
| R902 | 3311810830 | RES SMD 1/8W 180R J |
| R903 | 3821120600 | JUMPER SMD 1206 |
| R904 | 3316840830 | RES SMD 1/8W 680K J |
| R905 | 3311220830 | RES SMD 1/8W 1.2K J |
| R906 | 3311520237 | RES CF 1/2W 1.5K J |
| R907 | 3851531137 | RES MO 1W 15K J |
| R908 | 3311820830 | RES SMD 1/8W 1.8K J |
| R909 | 3311810830 | RES SMD 1/8W 180R J |
| R910 | 3821120600 | JUMPER SMD 1206 |
| R911 | 3316840830 | RES SMD 1/8W 680K J |
| R912 | 3311220830 | RES SMD 1/8W 1.2K J |
| R913 | 3311520237 | RES CF 1/2W 1.5K J |
| R914 | 3851531137 | RES MO 1W 15K J |
| R915 | 3851002135 | RES MO 2W 10R J |
| R916 | 3311810830 | RES SMD 1/8W 180R J |
| R917 | 3821120600 | JUMPER SMD 1206 |
| R918 | 3316840830 | RES SMD 1/8W 680K J |
| R919 | 3311220830 | RES SMD 1/8W 1.2K J |
| R920 | 3311520237 | RES CF 1/2W 1.5K J |
| R921 | 3851531137 | RES MO 1W 15K J |
| R922 | 3313310830 | RES SMD 1/8W 330R J |
| R923 | 3313320830 | RES SMD 1/8W 3.3K J |
| R925 | 3314740237 | RES CF 1/2W 470K J |
| R926 | 3311010830 | RES SMD 1/8W 100R J |
| R927 | 3319130830 | RES SMD 1/8W 91K J |
| R928 | 3311540830 | RES SMD 1/8W 150K J |
| R929 | 3311220830 | RES SMD 1/8W 1.2K J |
| R931 | 3811540237 | RES CF 1/2W 150K J |
| R932 | 3811540237 | RES CF 1/2W 150K J |
| R933 | 3811540237 | RES CF 1/2W 150K J |
| R952 | 3314710830 | RES SMD 1/8W 470R J |
| R1101 | 3313320830 | RES SMD 1/8W 3.3K J |
| R1102 | 3311000830 | RES SMD 1/8W 10R J |
| R1103 | 3312730830 | RES SMD 1/8W 27K J |
| R1104 | 3311030830 | RES SMD 1/8W 10K J |
| R1105 | 3311020830 | RES SMD 1/8W 1K J |
| R1106 | 3314720830 | RES SMD 1/8W 4.7K J |
| R1107 | 3314720830 | RES SMD 1/8W 4.7K J |
| R1108 | 3314720830 | RES SMD 1/8W 4.7K J |
| R1109 | 3311020830 | RES SMD 1/8W 1K J |
| R1110 | 3311020830 | RES SMD 1/8W 1K J |
| R1111 | 3352702135 | RES MO 2W 27R J |
| R1112 | 3313330830 | RES SMD 1/8W 33K J |
| R1113 | 3312230830 | RES SMD 1/8W 22K J |
| R1115 | 3311010830 | RES SMD 1/8W 100R J |
| R1116 | 3311010830 | RES SMD 1/8W 100R J |
| R1117 | 3311020830 | RES SMD 1/8W 1K J |
| R1118 | 3312230830 | RES SMD 1/8W 22K J |
| R1120 | 3314730830 | RES SMD 1/8W 47K J |
| R1121 | 3312230830 | RES SMD 1/8W 22K J |
| R1122 | 3312230830 | RES SMD 1/8W 22K J |
| R1123 | 3311040830 | RES SMD 1/8W 100K J |
| R1124 | 3311030830 | RES SMD 1/8W 10K J |
| R1125 | 3311030830 | RES SMD 1/8W 10K J |
| R1126 | 3312730830 | RES SMD 1/8W 27K J |
| R1127 | 3316220830 | RES SMD 1/8W 6.2K J |
| R1128 | 3311030830 | RES SMD 1/8W 10K J |
| R1133 | 3313330830 | RES SMD 1/8W 33K J |
| R1140 | 3311030830 | RES SMD 1/8W 10K J |
| R1142 | 3312220830 | RES SMD 1/8W 2.2K J |
| R1143 | 3312220830 | RES SMD 1/8W 2.2K J |
| R1144 | 3311020830 | RES SMD 1/8W 1K J |
| R1146 | 3311020830 | RES SMD 1/8W 1K J |
| R1148 | 3311020830 | RES SMD 1/8W 1K J |
| R1151 | 3311020830 | RES SMD 1/8W 1K J |
| R1152 | 3311020830 | RES SMD 1/8W 1K J |

WIREWOUNDS

| | | |
|-------|------------|---------------------|
| TR601 | 4050001901 | LINE DRIVER TRF 90' |
| TR602 | 4030001901 | TRF FBT 90' |
| TR801 | 4060001100 | LINE FILTER 2*27MH |
| TR802 | 4040403901 | TRF SMPS 14' ELDOR |

TRIMMOTS

| | | |
|-------|------------|--------------------------|
| VR101 | 3344721210 | RES ADJ 1/6W 4K7 K VER |
| VR401 | 3341031210 | RES ADJ 1/6W 10K K VER. |
| VR402 | 3341031210 | RES ADJ 1/6W 10K K VER. |
| VR701 | 3344721210 | RES ADJ 1/6W 4K7 K VER. |
| VR702 | 3341011210 | RES ADJ 1/6W 100R K VER. |
| VR703 | 3341031210 | RES ADJ 1/6W 10K K VER. |
| VR801 | 3344721210 | RES ADJ 1/6W 4K7 K VER. |
| VR951 | 3341021200 | RES ADJ 1/6W 1K J HOR. |
| VR953 | 3341021200 | RES ADJ 1/6W 1K J HOR. |

OTHERS

| | | |
|--------|------------|-------------------------------|
| | 3971600304 | SPEAKER.16R 3W (57*169) |
| | 4400103008 | RUBBER PAD TRP08 |
| | 4070090003 | DEGAUSS COIL. 14/15' VDE |
| MD501 | 3660923900 | PRE-AMP LTM 9239-36 |
| LD501 | 3511023100 | LED RED |
| F801 | 3807250050 | FUSE 2.5A 250V 5*20MM |
| PL1004 | 3861200800 | CONN.MALE 8P TUNIK (2008) |
| PL1007 | 3861200204 | CONN.MALE 2P GRI TUNIK (2052) |
| PL101 | 3864020500 | PIN F 5P/5MM |
| PL102 | 3864010900 | PIN F 9P 2.5MM |
| PL1101 | 3864010702 | PIN F 7P/2.5MM |
| PL1102 | 3864010702 | PIN F 7P/2.5MM |
| PL301 | 3861200201 | CONN.MALE 2P TUNIK (2002) |
| PL601 | 3861820304 | CONN.MALE 3P (EKINLER) |
| PL602 | 3861820404 | CONN.MALE 4P (EKINLER) |
| PL701 | 3861200400 | CONN.MALE 4P TUNIK (2004) |
| PL801 | 8073022504 | RIVED BR 2*5*4.5 |
| PL802 | 3864010301 | PIN 3P (TELESET) |
| PL901 | 3861200601 | CONN.MALE 6P TUNIK (2006) |
| PL902 | 3862021300 | SOCKET CRT MININECK METALLO |
| SC401 | 3862050004 | SOCKET SCART |
| SW801 | 4390199010 | SWITCH ON/OFF |
| SW501 | 4390415000 | SWITCH TACT |
| SW502 | 4390415000 | SWITCH TACT |
| SW503 | 4390415000 | SWITCH TACT |
| TH801 | 3391803000 | THERM.PTC DEGAUSS DUAL 250V |
| TH802 | 3395022500 | THERM.PTC |
| TU101 | 3924224301 | TUNER KHC2000 |
| X100 | 3840142900 | XTAL RES 429 KHZ |
| X1001 | 3840110020 | XTAL 10 MHZ |
| X1101 | 3840127020 | XTAL 27MHZ |
| X1102 | 3840198310 | XTAL 9.8304MHz |
| X401 | 3840144310 | XTAL 4.433619MHZ |
| X501 | 3840110020 | XTAL 10MHZ |
| Z101 | 3750293500 | FILTER SAW OFW9350 |
| Z201 | 3750219630 | FILTER SAW G1963 |
| Z401 | 3760105500 | FILTER CER 5.5MHZ SFE 5.5MB |
| VL101 | 4020344031 | COIL ADJ 340NH Q40 J |

**11TP09D-2 CRT MODULE
COMPONENT USED FOR
14-15" CRT MODELS**
PL902 SOCKET CRT (MININECK) - 3862021300

**COMPONENT DIFFERENCES
DEPENDING ON CRT TYPES**

**COMPONENTS USED WITH 14"
PHILIPS A34EAC01X06 CRTS**
C603 CAP MKP 6.2NF 1.6KV 3.5% - 3036227078
C606 CAP MKP 330NF 400V J - 3033344038
C615 SER 100PF 50V J - 3051010832
R456 RES CF 1.6K 0W25 J - 3311620437
R717 RES CF 1K 0W25 J - 3311020437
L601 LINEARTY COIL 224L/50uH - 4091411110
LOSS COIL 150uH - 4013150017

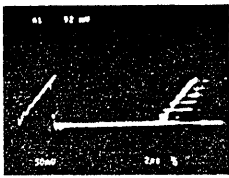
**COMPONENT USED WITH 14"
ORION A34JLL90X23 (W) CRTS**
C603 CAP MKP 7.8NF 1.6KV 3.5% - 3032827078
C606 CAP MKP 330NF 400V J - 3033344038
C615 CAP SER 47PF 50V J - 3054700836
R456 RES CF 1K2 0W25 J - 3311220437
R717 RES CF 1K 0W25 J - 3311020437
L601 LINEARITE COIL 224/50UH - 4091411110

**COMPONENT USED WITH 14"
GOLDSTAR A34KPU02XX46 CRTS**
C603 CAP MKP 7.5NF 1.6KV 3.5% - 3037527038
C606 CAP MKP 430NF 250V J - 3034341538
C615 CAP SER 100PF 50V J - 3051010832
R456 RES CF 1K2 0W25 J - 3311220437
R717 RES CF 1K 0W25 J - 3311020437
L601 LINEARTY COIL 50UH - 4090109000

**COMPONENT USED WITH 15"
ORION A36JSW90X01 CRTS**
C603 CAP MKP 6.2NF 1.6KV 3.5% - 3036227038
C606 CAP EL 330NF 400V J - 3033344038
C615 CAP SER 100PF 50V J - 3051010832
R456 RES CF 1.6K 0W25 J - 3311620437
R717 RES CF 560R 0W25 J - 3315610437
L601 LINEARITE COIL 15" LIN - 4091611100

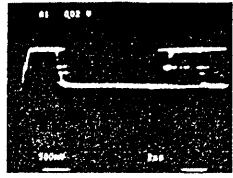
**11TP09G CRT MODULE
COMPONENT USED FOR
14" CRT MODEL**
PL902 SOCKET CRT (NARROWNECK) - 3862021010

**COMPONENT USED WITH 14"
CAIHONG 37SX11OY22-DC05 CRTS**
C603 CAP MKP 8.2NF 1.6KV 3.5% - 3038227038
C606 CAP EL 330NF 400V J - 3033344038
C615 CAP SER 47PF 50V J - 3054700836
C901 CAP SMD 680PF 50V J - 3056810030
C903 CAP SMD 560PF 50V J - 3055610030
C905 CAP SMD 1NF 50V J - 3051020030
C910 CAP SMD 1NF 50V J - 3051020030
C911 CAP SMD 1NF 50V J - 3051020030
C912 CAP SMD 1NF 50V J - 3051020030
C913 NOT CONNECTED
C914 NOT CONNECTED
C915 NOT CONNECTED
C916 CAP SMD 220PF 50V - 3052210030
C917 CAP SMD 220PF 50V - 3052210030
C918 CAP SMD 220PF 50V - 3052210030
R456 RES CF 1.2K 0W25 J - 3311220437
R717 RES CF 1K 0W25 J - 3311020437
R902 RES SMD 150R 1/8W J - 3311510830
R909 RES SMD 150R 1/8W J - 3311510830
R916 RES SMD 150R 1/8W J - 3311510830
R907 RES MO 10K 2W J - 3351032137
R914 RES MO 10K 2W J - 3351032137
R915 RES MO 3.9R 3W J - 3353993137
R921 RES MO 10K 2W J - 3351032137
R922 RES SMD 150R 1/8W J - 3311510830
R923 RES SMD 3K3 1/8W J - 3313320830
R926 RES SMD 33R 1/8W J - 3313300830
R931 NOT CONNECTED
R932 NOT CONNECTED
R933 NOT CONNECTED
L601 LINEARITE COIL 224/50UH - 4090109000
LOW FOCUS FBT - 4031001905



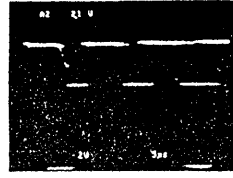
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WF 1



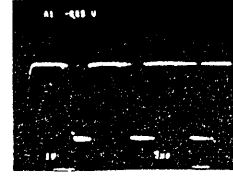
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WF 2



(X100)

WF 3



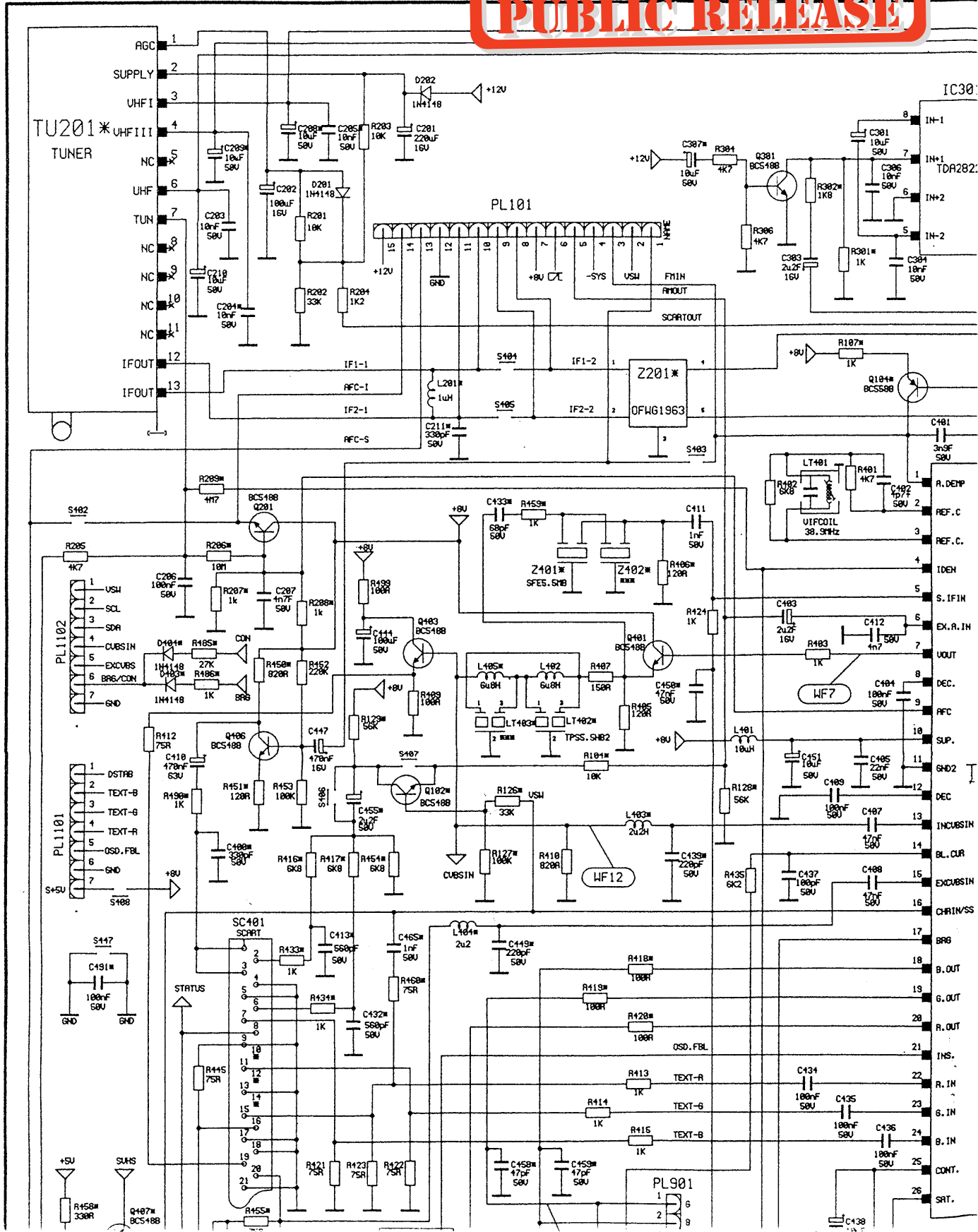
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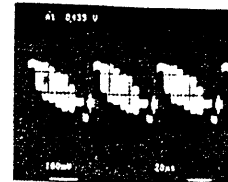
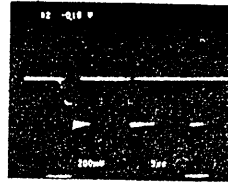
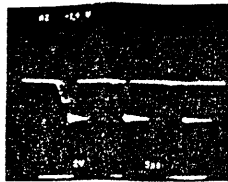
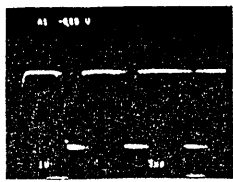
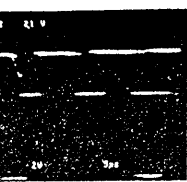
WF 4



(X100)

NOT FOR PUBLIC RELEASE





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WF 3

(X10)

WF 4

(X100)

WF 5

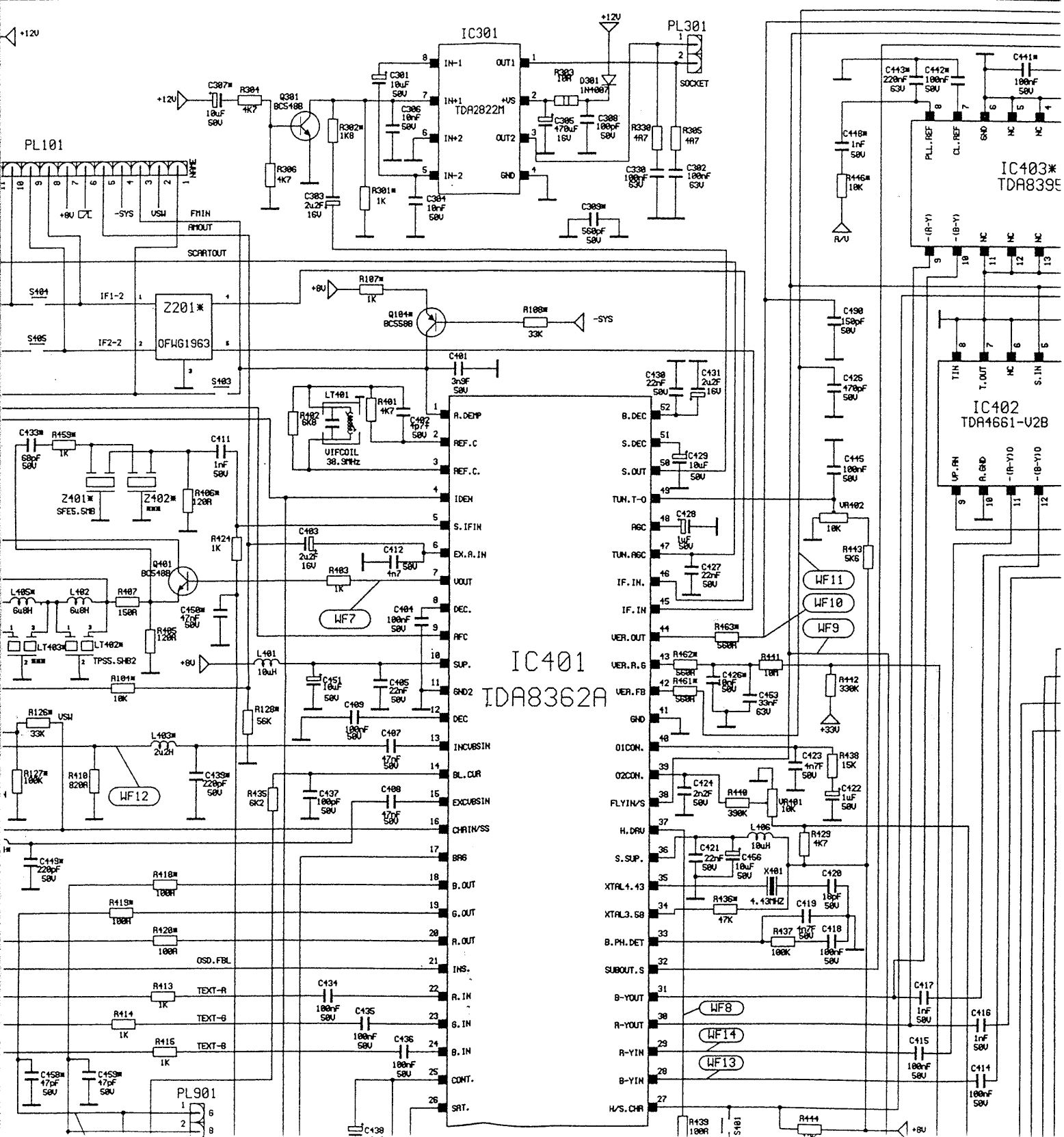
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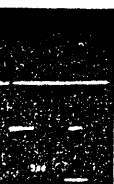
WF 6

(X10)

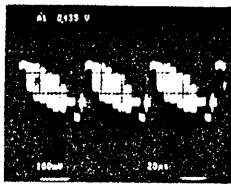
WF 7

NOT FOR
PUBLIC RELEASE

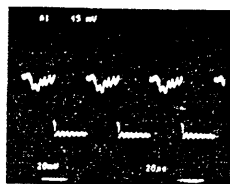




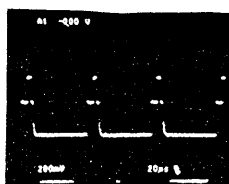
WF 6



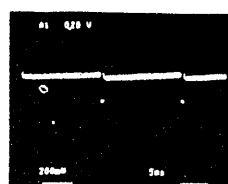
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(X10) WF 8



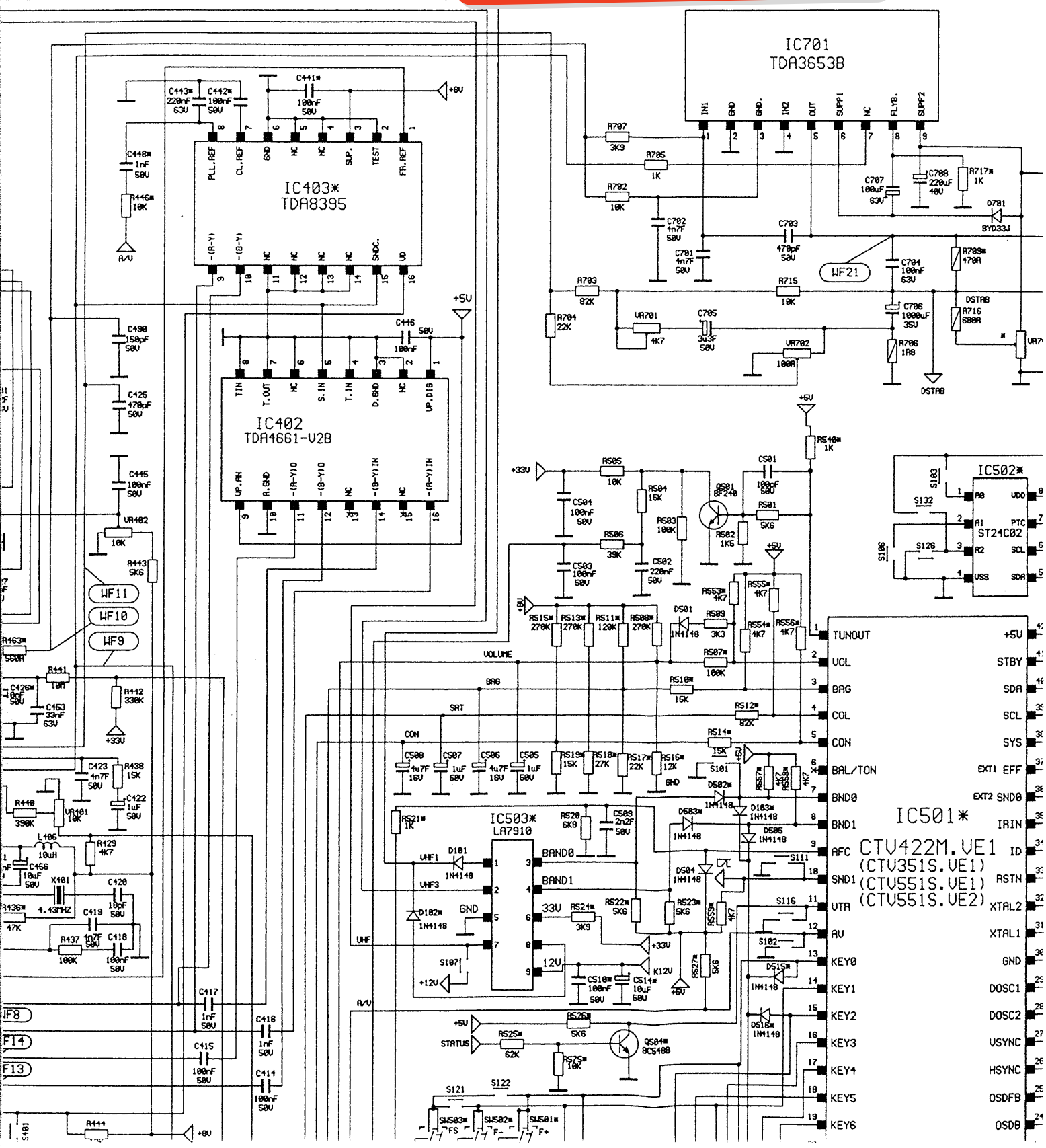
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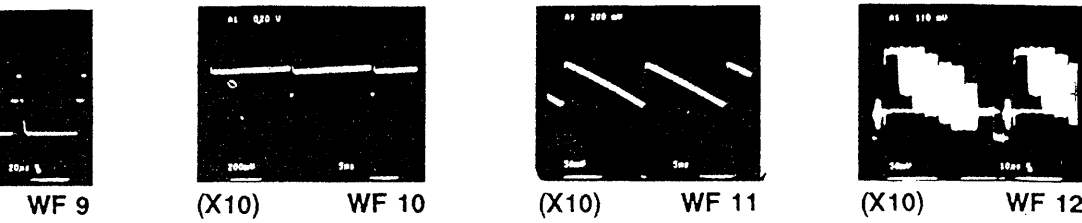


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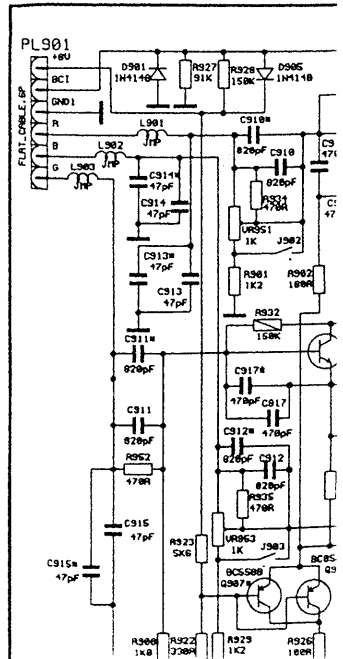
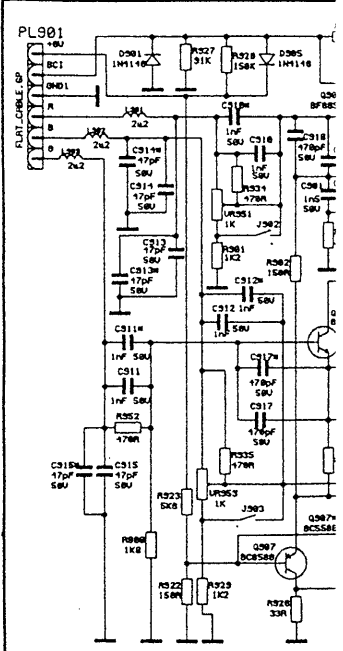
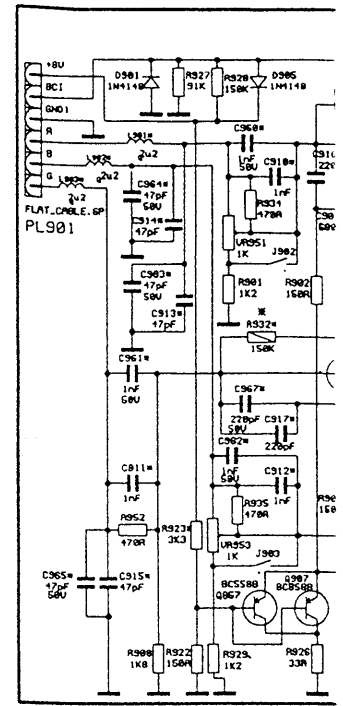
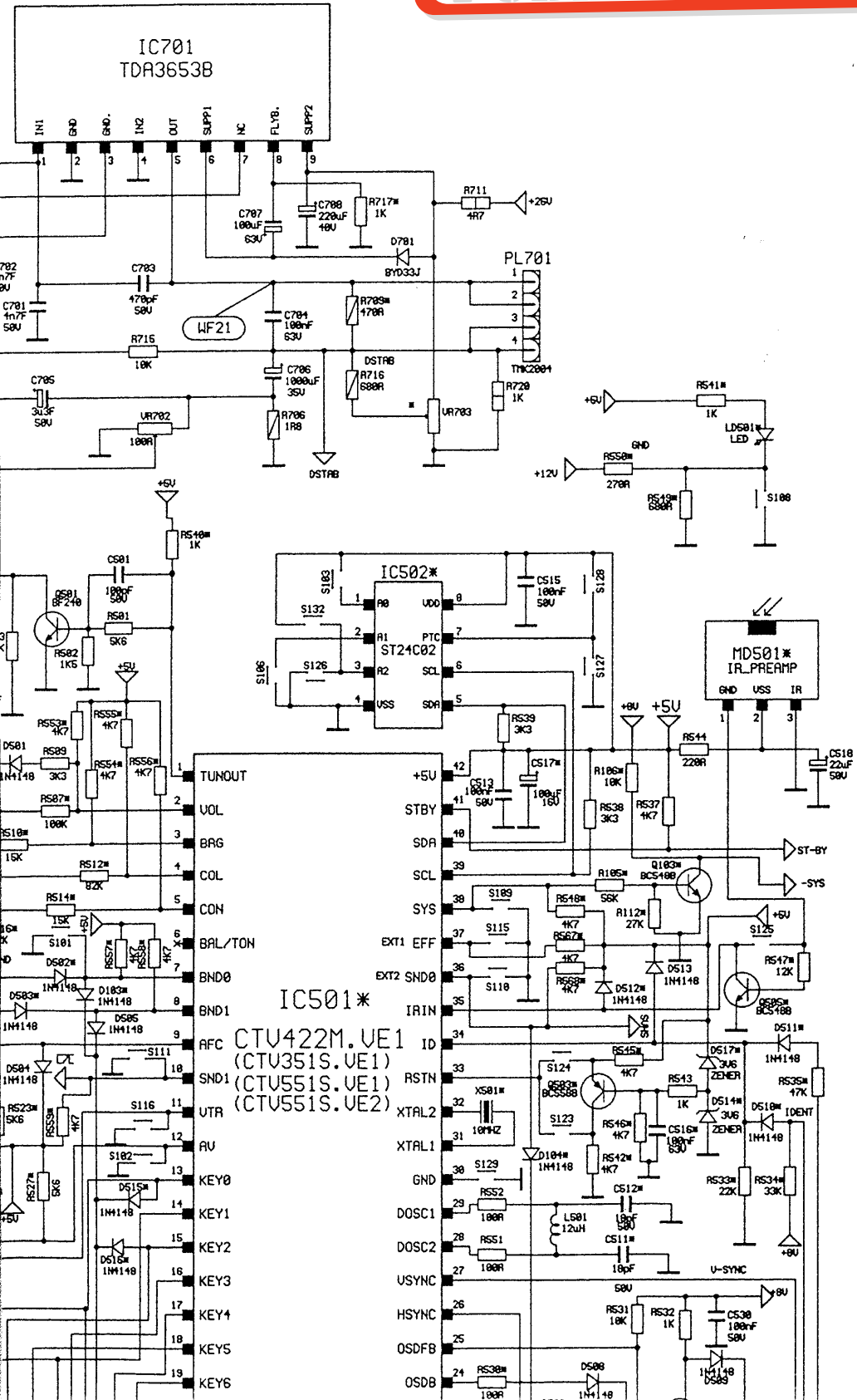
WF 10

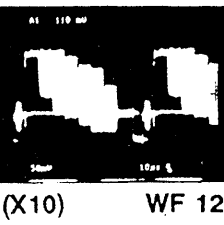
NOT FOR PUBLIC RELEASE





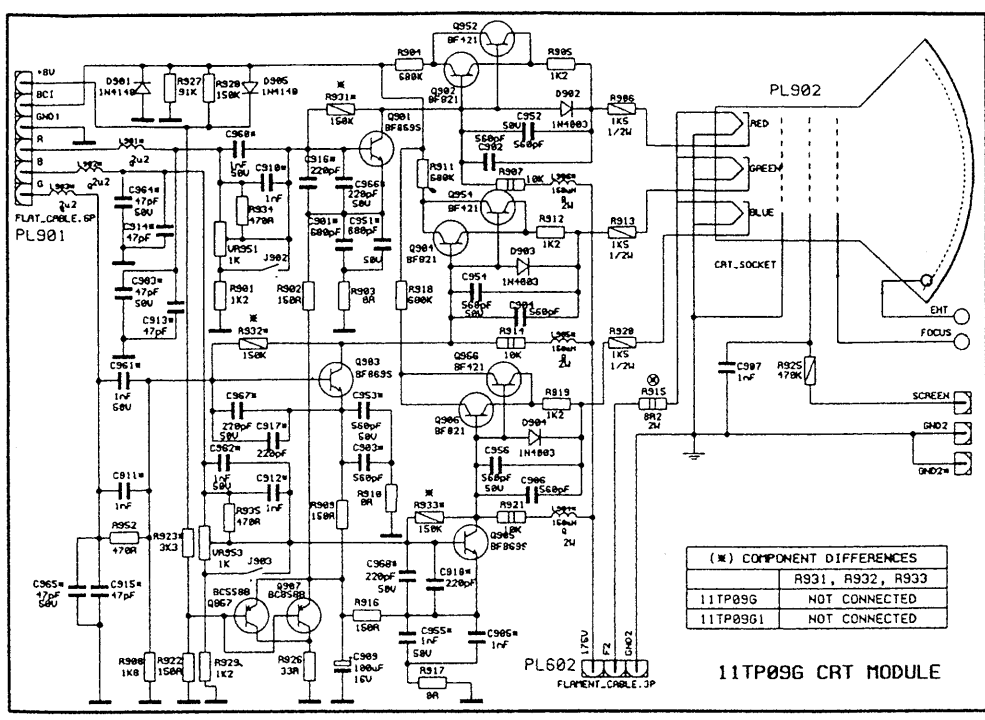
NOT FOR PUBLIC RELEASE





(X10) WF 12

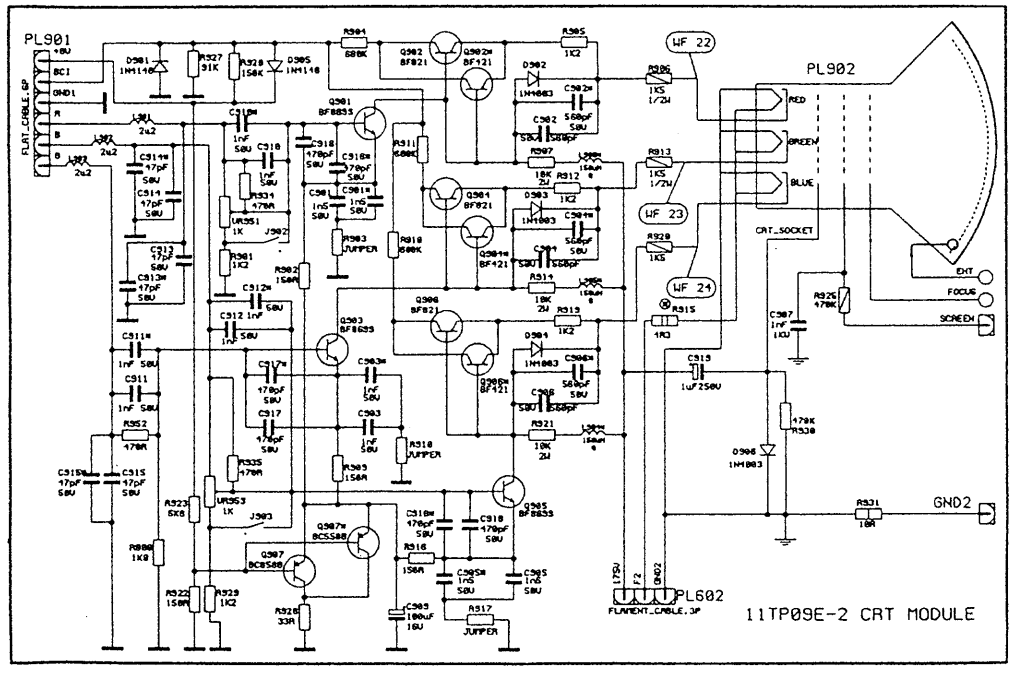
Service Manuals
 IRON SERVICES
 Free Road, Chinnor
 shire, OX9 4QY.
 (1844) 351694
 (1844) 352554
 @mauritron.co.uk



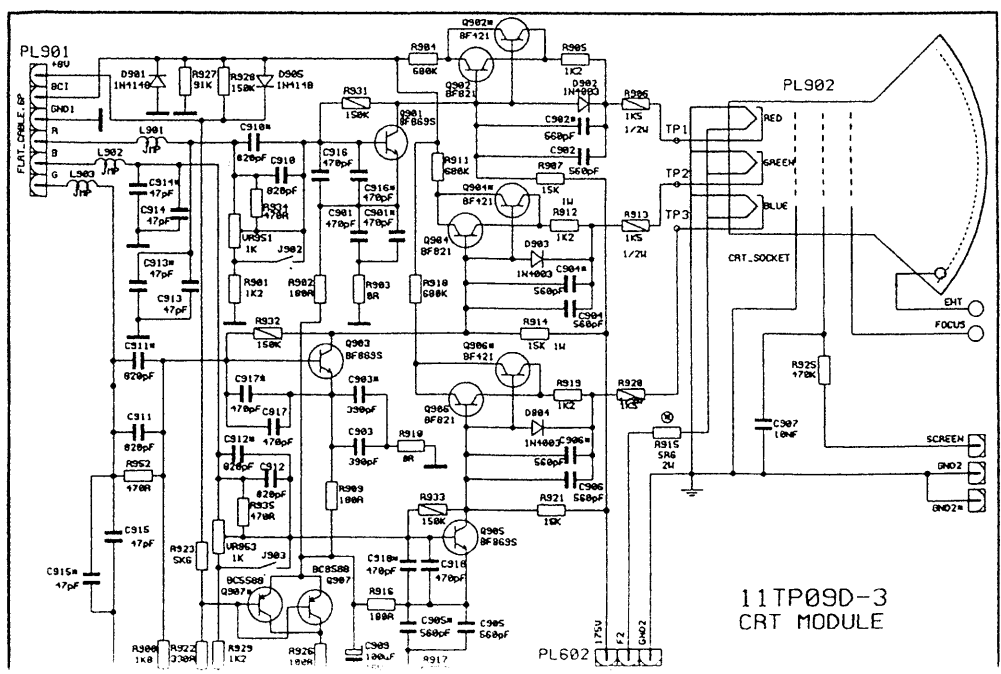
(*) COMPONENT DIFFERENCES

| | |
|----------|------------------|
| | R931, R932, R933 |
| 11TP09G | NOT CONNECTED |
| 11TP09G1 | NOT CONNECTED |

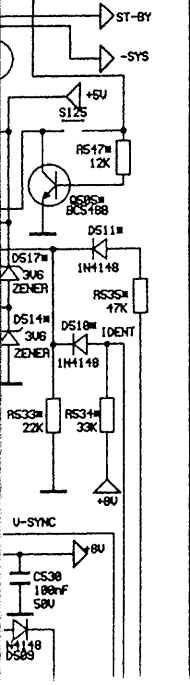
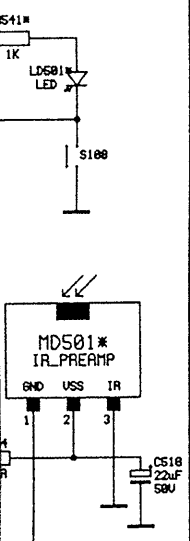
11TP09G CRT MODULE

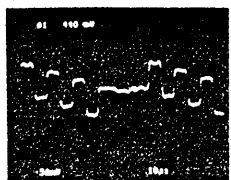
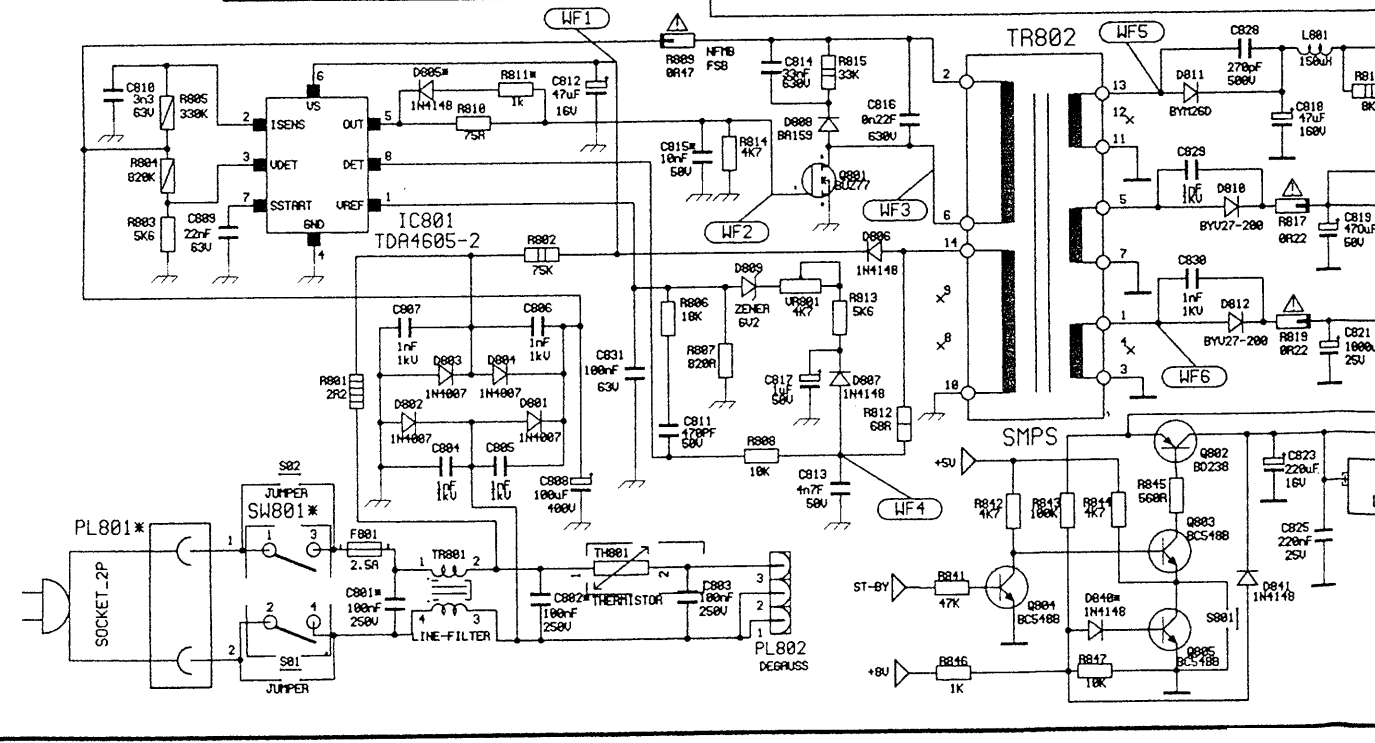
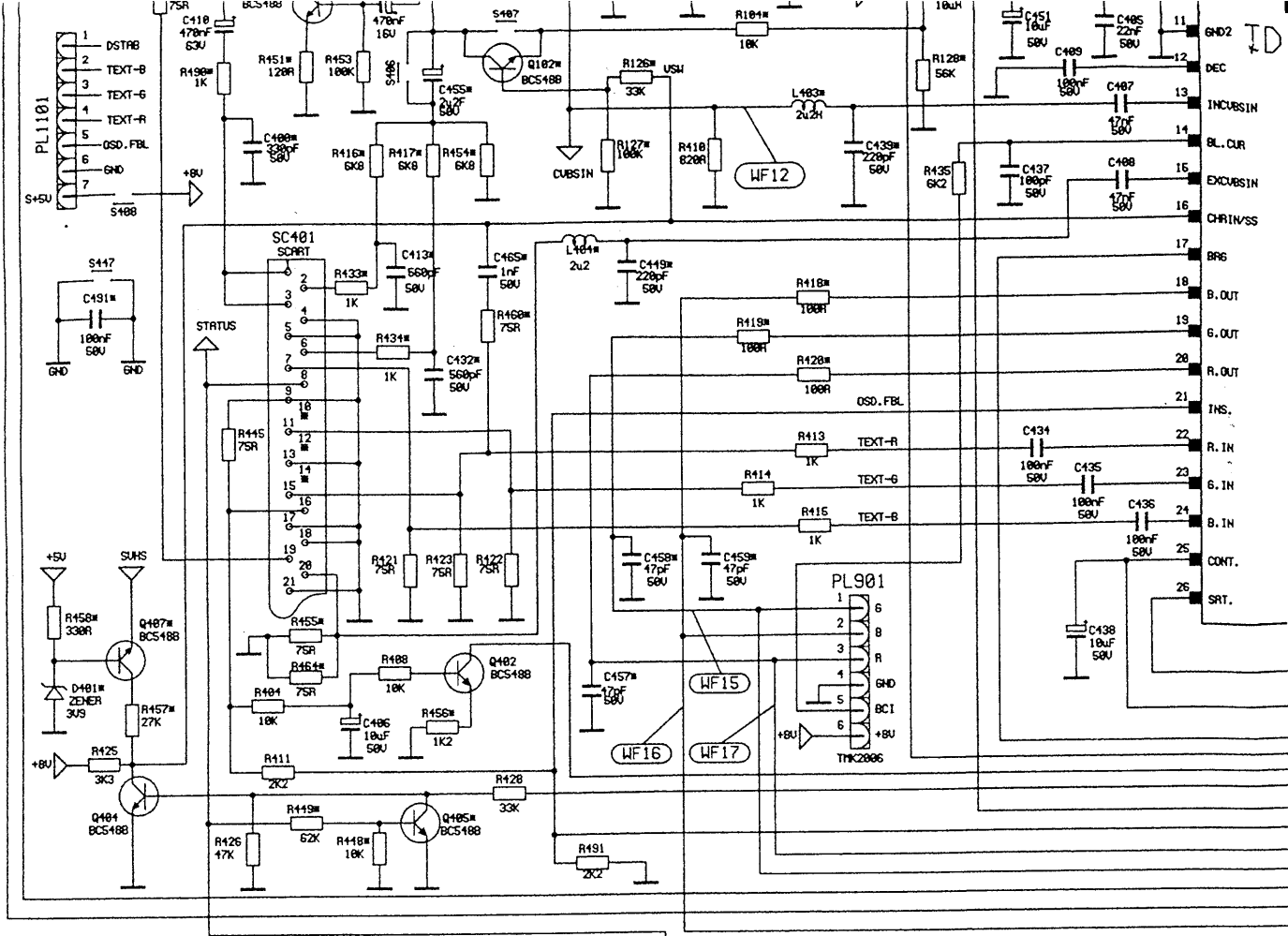


11TP09E-2 CRT MODULE

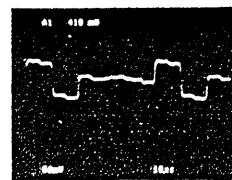


11TP09D-3 CRT MODULE

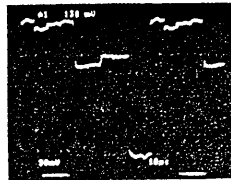




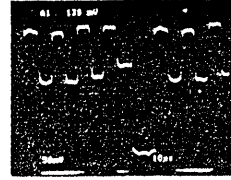
(X10) WF 13



(X10) WF 14



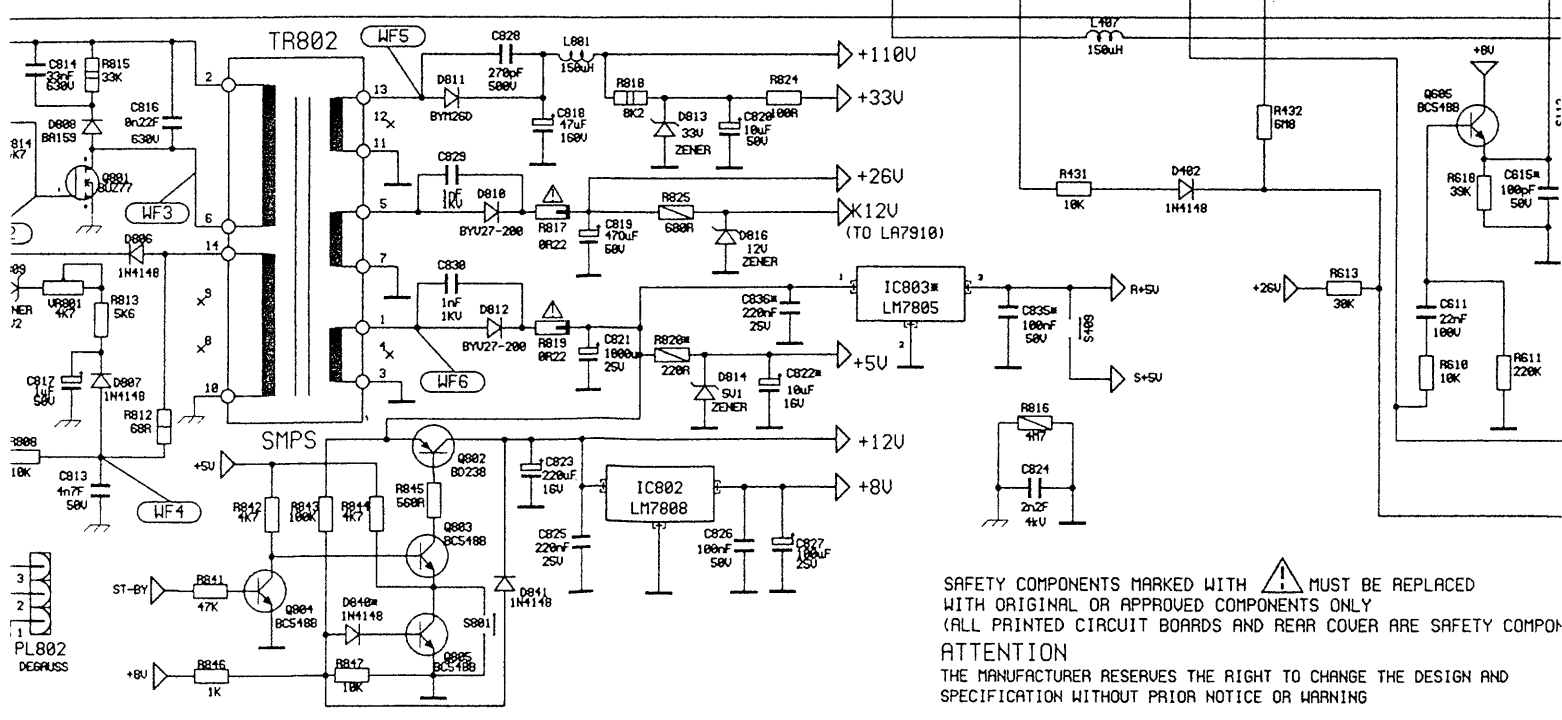
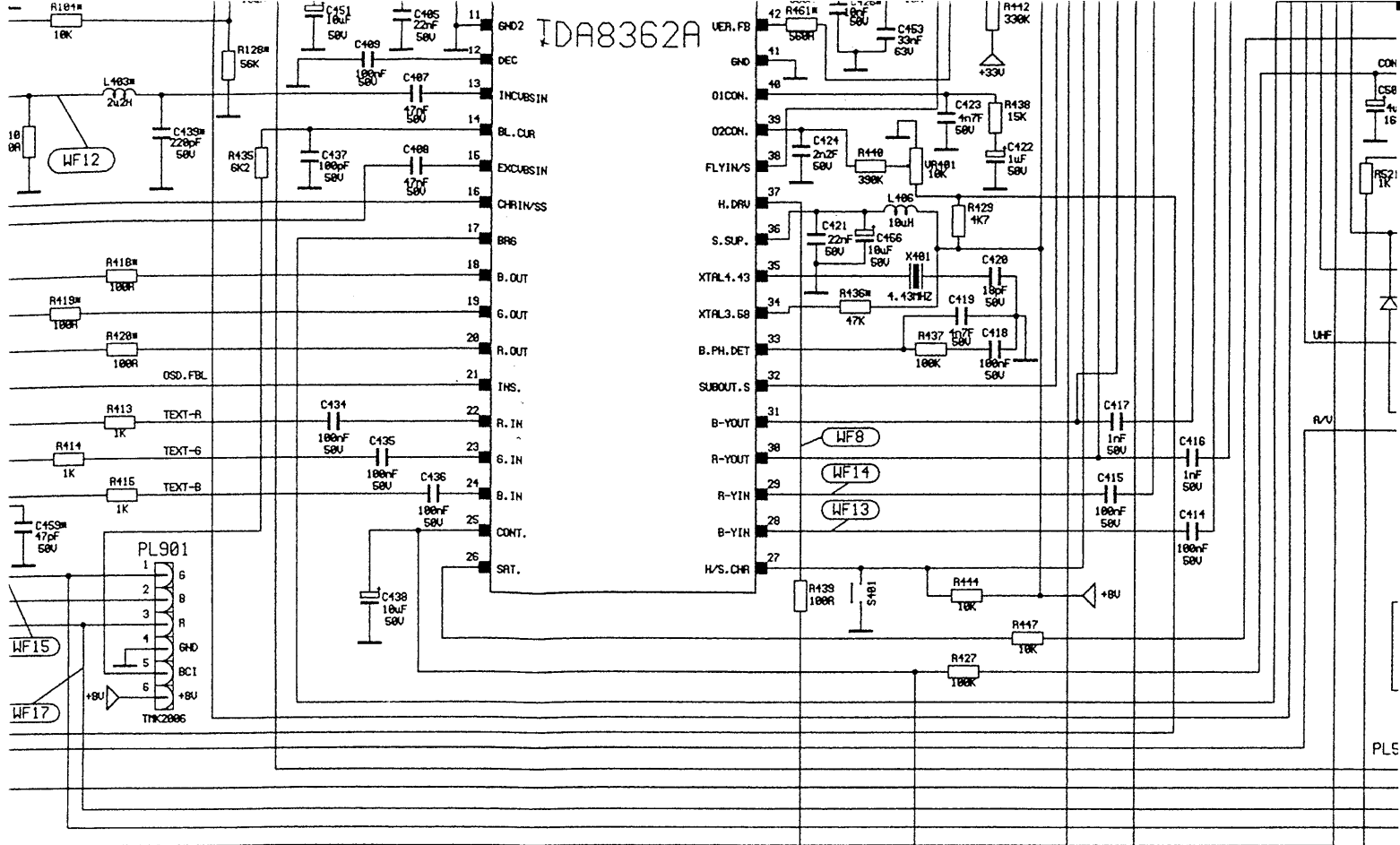
(X10) WF 15



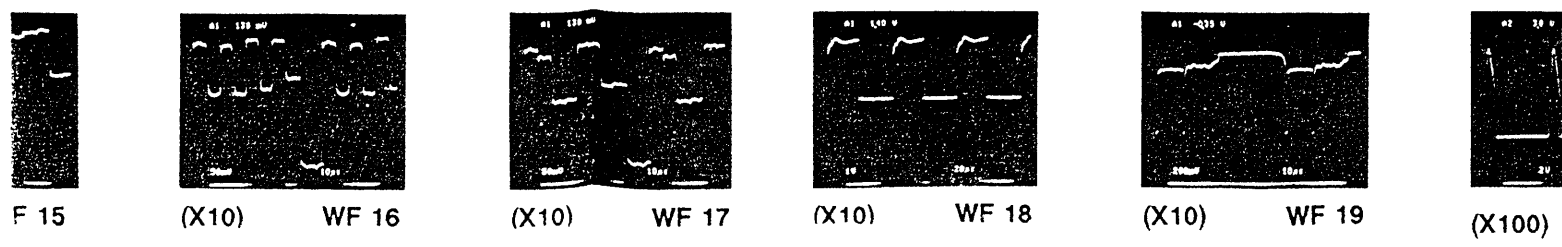
(X10) WF 16

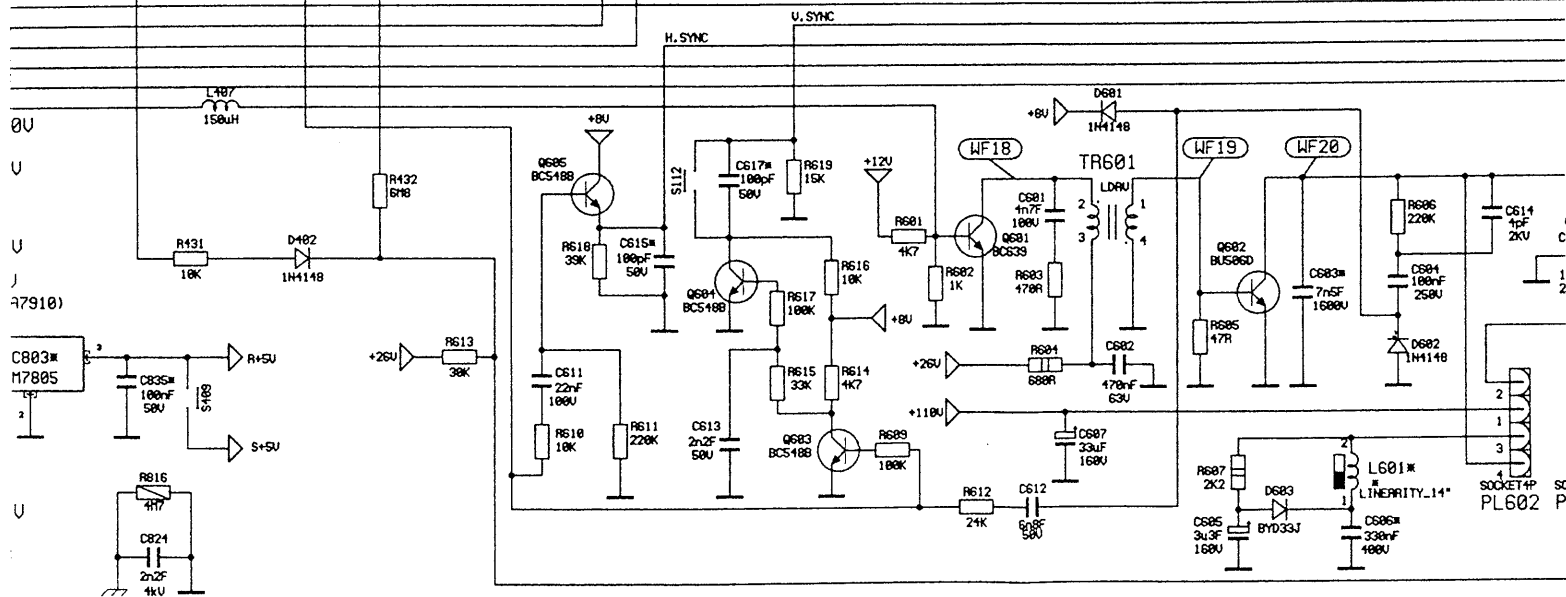
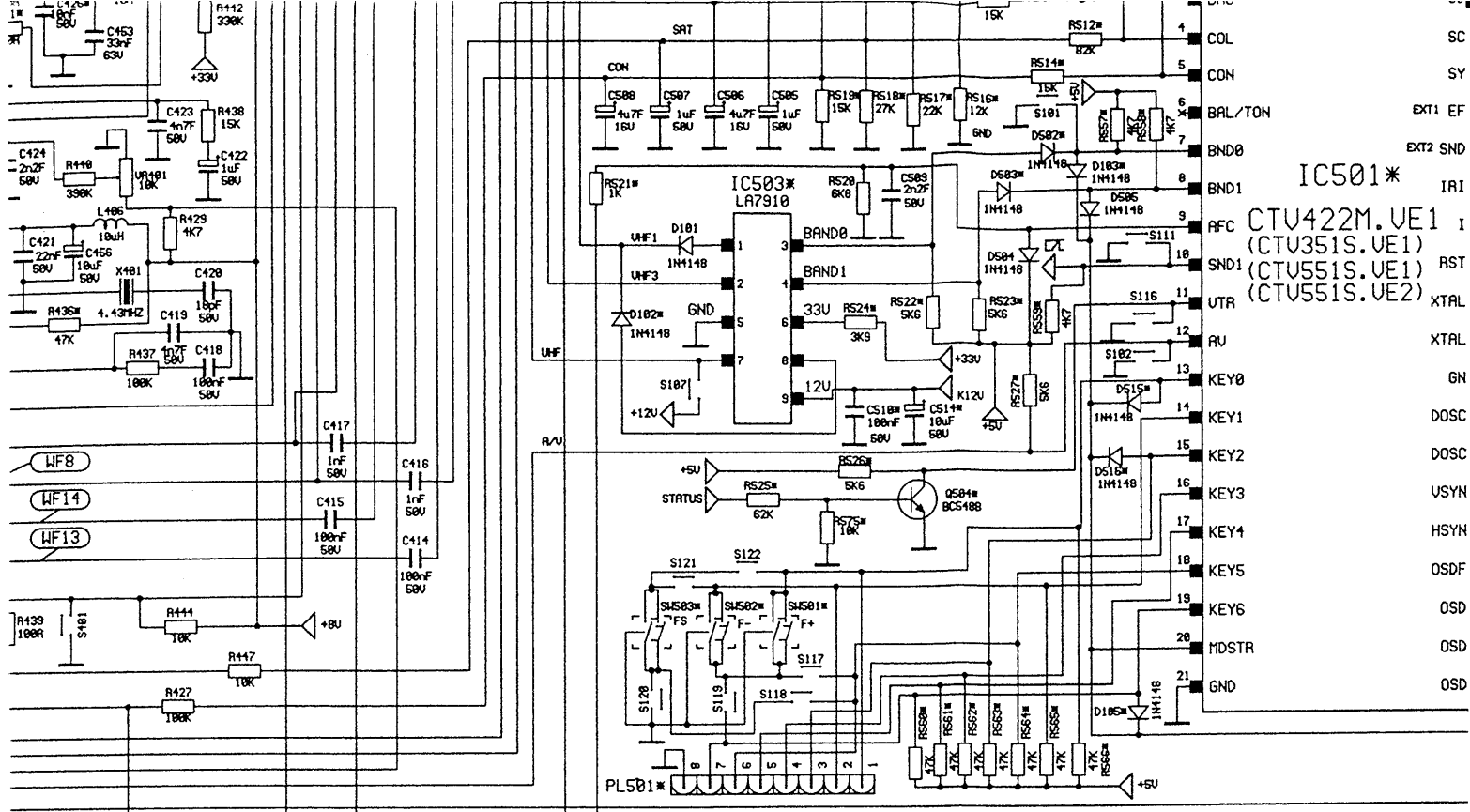


(X10) WF 17



BUSH 1433 1434 1435
 ALBA CTV3409 CTV3410
 GOODMAN'S GTV 147 GTV 148

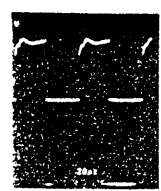




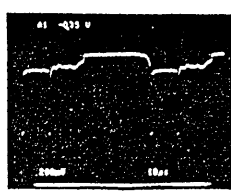
SAFETY COMPONENTS MARKED WITH MUST BE REPLACED WITH ORIGINAL OR APPROVED COMPONENTS ONLY (ALL PRINTED CIRCUIT BOARDS AND REAR COVER ARE SAFETY COMPONENTS)
 ATTENTION
 THE MANUFACTURER RESERVES THE RIGHT TO CHANGE THE DESIGN AND SPECIFICATION WITHOUT PRIOR NOTICE OR WARNING

11AK08 MAIN C

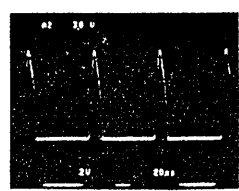
BUSH 1433 1434 1435 1473T 1474T 1435 GTV
 ALBA CTV3409 CTV3459
 GOODMANS GTV 147 GTV 148T



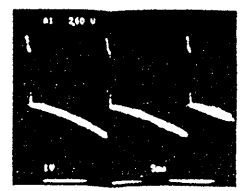
WF 18



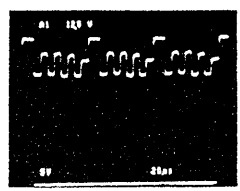
(X10) WF 19



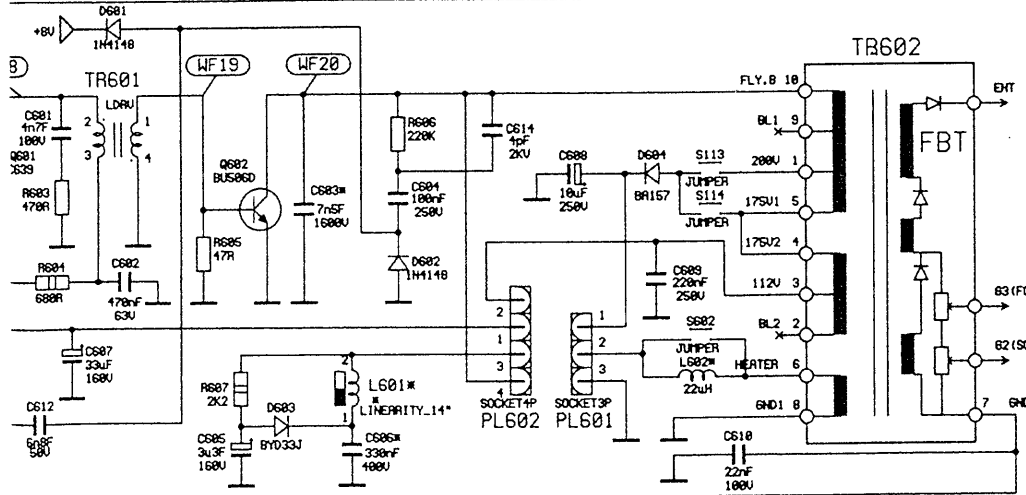
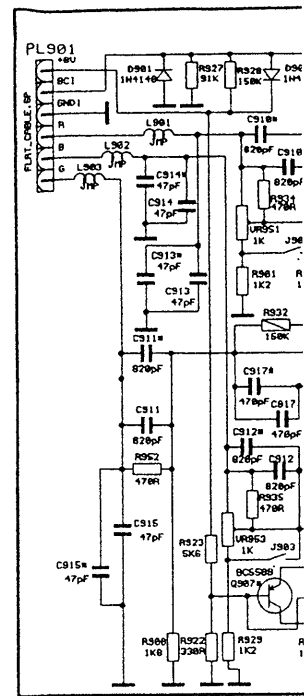
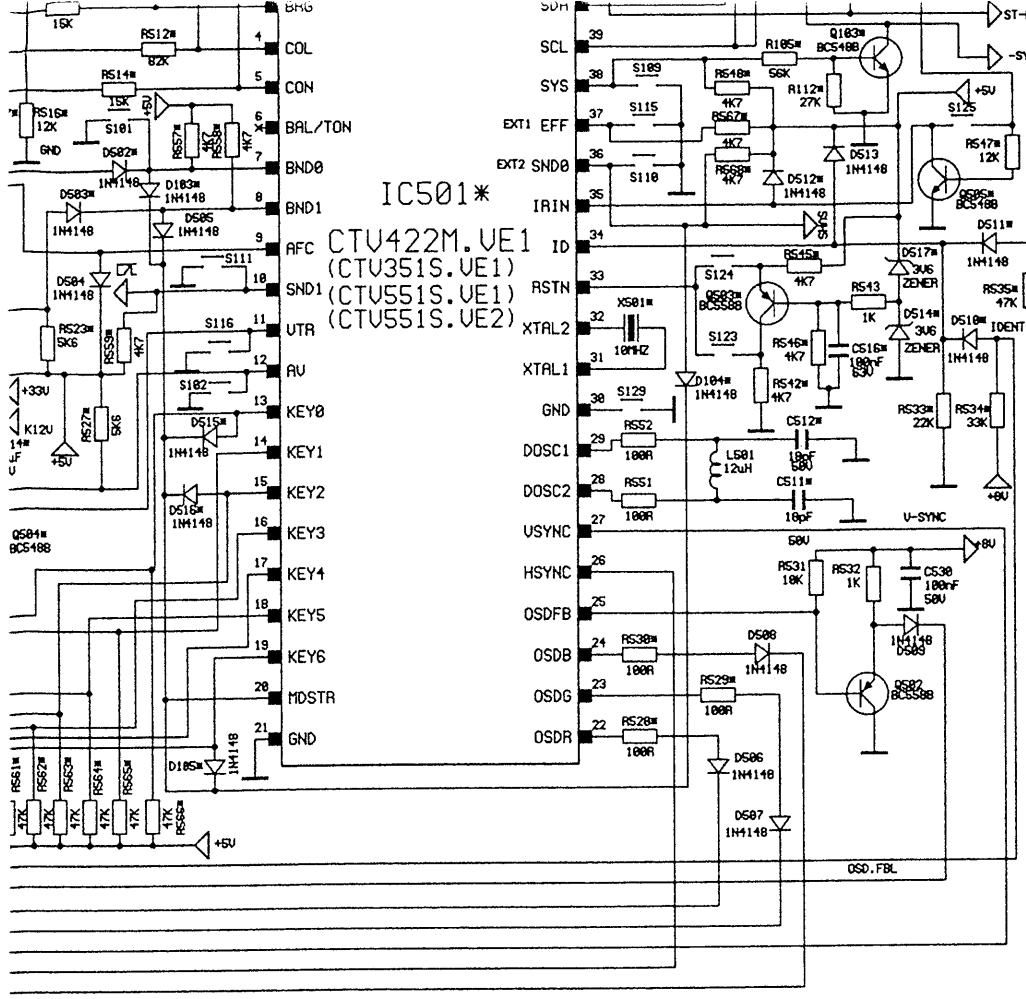
(X100) WF 20



(X10) WF 21



(X100) WF 22



| (*) COMPONENT | | | |
|--------------------|------------|---------|--------|
| SYSTEM | Z201 | Z401 | Z4 LT |
| PAL B/G | OFW 1964 | SFE 5.5 | N |
| PAL I | OFW J 1953 | SFE 6.0 | N |
| PAL SECAM B/G | OFW K 1964 | SFE 5.5 | N |
| SECAM D/K | OFW K 2954 | SFE 6.5 | N |
| PAL-SECAM B/G, D/K | OFW K 2954 | SFE 5.5 | SFE TE |
| PAL SECAM, B/G-L/L | OFW J 1953 | SFE 6.5 | N |
| SECAM L/L*-K1 | OFW J 2950 | SFE 6.5 | N |

(*) FOR FTZ MODELS OF W 6 1963 W1
 (N) FOR MODELS WITH SECAM L A 10UF

| (*) COMPONENT | | |
|---------------|-----------------|-------|
| CRT TYPE | CODE | CE 1E |
| PHILIPS | A34EAC1x06 | |
| ORION | A34JLL90x23 | |
| GOLDSTAR | A34KP02x46 | |
| CAIHONG | 37SX110Y22-0C05 | |
| ORION | A51EBV13x01 | |

| TEXT | J412, J418, |
|--------------|-------------|
| WITH TEXT | |
| WITHOUT TEXT | |

| (*) COMPONENT DIFFER | |
|----------------------|----------|
| AVAILABLE BANDS | TU201 |
| VHF I-III / UHF | 2000 KHC |
| ONLY UHF | TFK 3011 |
| VHF I-III-HYPER/UHF | 2000 KHC |

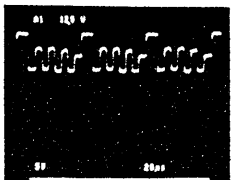
| (*) COMPONENT DIFFEREN | |
|------------------------|---------------|
| WITH FTZ | |
| Z201 | OFW G 1963 |
| C309 | SE 560pF L SL |
| C413 | SE 820pF 50V |
| C432 | SE 820pF 50V |
| C439, C449 | SE 220pF L SL |
| C457, C458, C459 | SE 47pF 50V |
| C491 | SE 100nF 50V |
| C801, C802 | MKT 100nF 250 |
| J443 | FIXED COIL 2. |
| J444, J445, J446 | CF 560R 1/4W |
| L201 | FIXED COIL 1u |
| L403 | FIXED COIL 2. |
| R418, R419, R420 | CF 270R 1/4W |
| R433, R434 | CF 1K 1/4W J |
| R490 | CF 1K 1/4W J |

1AK08 MAIN CHASSIS

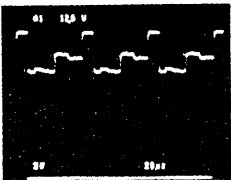
5701080049



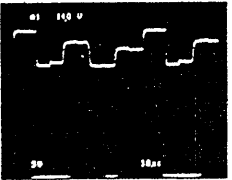
WF 21



(X100) WF 22

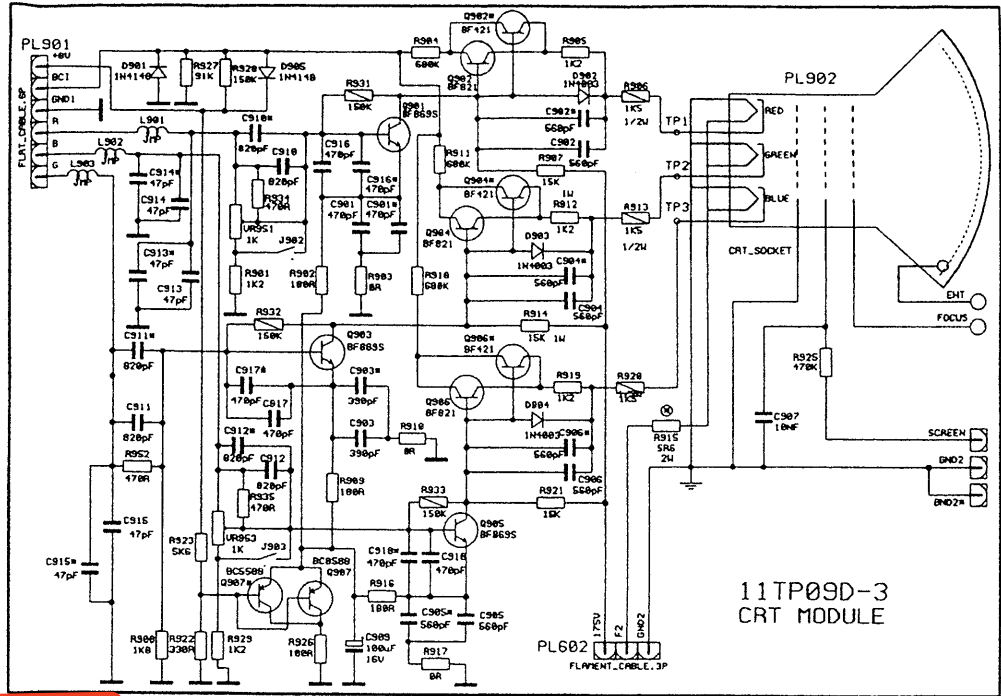
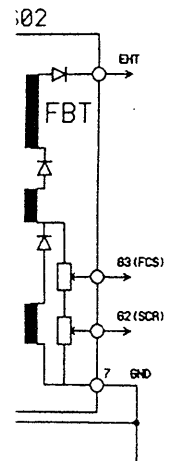
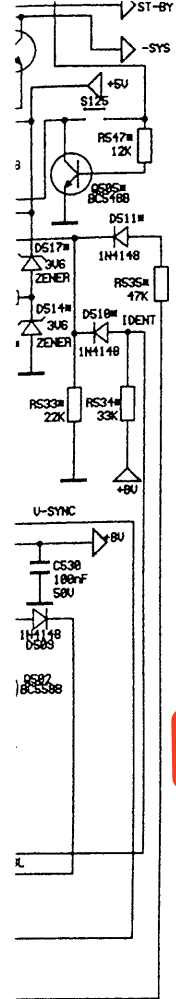


(X100) WF 23



(X100) WF 24

WF 24



NOT FOR PUBLIC RELEASE

(*) COMPONENT DIFFERENCES DEPENDING ON SYSTEM

| SYSTEM | Z201 | Z401 | Z404 LT403 | LT402 | L405 | S401 | Q102, Q103, Q104, R104, R105, R106 R107, R108, R112, R128, R129 | S109, S402, S403, S404 S405, S406, S407 |
|--------------------|------------|---------|--------------|-------|------------|------|---|---|
| PAL B/G | OFW 1964 | SFE 8.5 | N.C | T5.5 | JUMPER | CON. | NOT CONNECTED | CONNECTED |
| PAL I | OFW J 1953 | SFE 8.0 | N.C | T6.0 | JUMPER | CON. | NOT CONNECTED | CONNECTED |
| PAL SECAM B/G | OFW 1964 | SFE 5.5 | N.C | T5.5 | JUMPER | N.C | NOT CONNECTED | NOT CONNECTED |
| SECAM D/K | OFW K 2954 | SFE 6.5 | N.C | T6.5 | JUMPER | N.C | NOT CONNECTED | NOT CONNECTED |
| PAL-SECAM B/G, D/K | OFW K 2954 | SFE 5.5 | SFE 6.5 T6.5 | T5.5 | COIL 6.8uH | N.C | NOT CONNECTED | NOT CONNECTED |
| PAL SECAM, B/G-L/L | OFW 1963 | SFE 6.5 | N.C | T5.5 | JUMPER | N.C | CONNECTED | NOT CONNECTED |
| SECAM L/L*-K1 | OFW J 2950 | SFE 6.5 | N.C | T6.5 | JUMPER | N.C | CONNECTED | NOT CONNECTED |

(*) FOR FTZ MODELS OFW G 1963 WILL BE USED.
 (*) FOR MODELS WITH SECAM L A 1uF 16V CAPACITOR WILL BE CONNECTED IN PARALLEL WITH R1044.

(*) COMPONENT DIFFERENCES DEPENDING ON CRT

| CRT TYPE | CODE | C603 MKP 1600V/nF | C606 MKP 250V J | R456 CF 1/4W J | R717 CF 1/4W J | C615 SER 50V J | S113 S114 LINK/LINK | L601 L.COIL | LOSS COIL |
|----------|-----------------|-------------------|-----------------|----------------|----------------|----------------|---------------------|-------------|-----------|
| PHILIPS | A34EAC1x06 | 6.2nF | * | 1K6 | 1K | 100pF | LINK - | *224L/50uH | 150uH |
| ORION | A34JLL90x23 | 7.8nF | * | 1K2 | 1K | 47pF | LINK - | *224L/50uH | - |
| GOLDSTAR | A34KPU02x46 | 7.5nF | 430nF | 1K2 | 1K | 100pF | LINK - | 50uH | - |
| CAIHONG | 37SX110Y22-DC05 | 8.2nF | 330nF 400V | 1K2 | 560R | 47pF | - LINK | 224L | - |
| ORION | A51EBV13x01 | 6.2nF | 330nF 400V | 1K6 | 560R | 100pF | LINK - | 15" LIN | - |

| | | | |
|--------------|--|--------------|---|
| TEXT | J412, J418, J433, J436, J493, J549, J551 | SVHS | D104, Q401, Q407, C465 R457, R457, R460 |
| WITH TEXT | CONNECTED | WITH SVHS | CONNECTED |
| WITHOUT TEXT | NOT CONNECTED | WITHOUT SVHS | NOT CONNECTED |

(*) COMPONENT DIFFERENCES DEPENDING ON FEATURES

| AVAILABLE BANDS | TU201 | S101 S107 | D102 D103 | IC503, C204, C205, C208, C209, C510 R522, R523, R524, D503, D504 |
|---------------------|----------|-----------|-----------|--|
| VHF I-III / UHF | 2000 KHC | N.C. | N.C. | CONNECTED |
| ONLY UHF | TFK 3011 | CON. | N.C. | NOT CONNECTED |
| VHF I-III-HYPER/UHF | 2000 KHC | N.C. | CON. | CONNECTED |

(*) COMPONENT DIFFERENCES DEPENDING ON FTZ

| | WITH FTZ | WITHOUT FTZ |
|------------------|-------------------|-------------------|
| Z201 | OFW G 1963 | OFW G 1963 |
| C309 | SE 560pF L SL | NOT CONNECTED |
| C413 | SE 820pF 50V KB | NOT CONNECTED |
| C432 | SE 820pF 50V KB | NOT CONNECTED |
| C439, C449 | SE 220pF L SL | NOT CONNECTED |
| C457, C458, C459 | SE 47pF 50V J SL | NOT CONNECTED |
| C491 | SE 100nF 50V Z F | NOT CONNECTED |
| C801, C802 | MKT 100nF 250V AC | MKT 150nF 250V AC |
| J443 | FIXED COIL 2.2uH | JUMPER |
| J444, J445, J446 | CF 560R 1/4W J | JUMPER |
| L201 | FIXED COIL 1uH | NOT CONNECTED |
| L403 | FIXED COIL 2.2uH | JUMPER |
| R418, R419, R420 | CF 270R 1/4W J | CF 100R 1/4W J |
| R433, R434 | CF 1K 1/4W J | JUMPER |
| R490 | CF 1K 1/4W J | JUMPER |

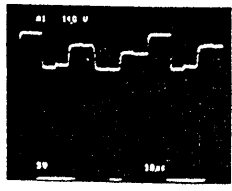
OTHERS

| | |
|---|--|
| C426, C452, C815, D105, D805, PL502, R206, R207, R208 | RB11, L602, R526, R527, R528, R529, R530 |
| NOT CONNECTED | JUMPER |

11K0B

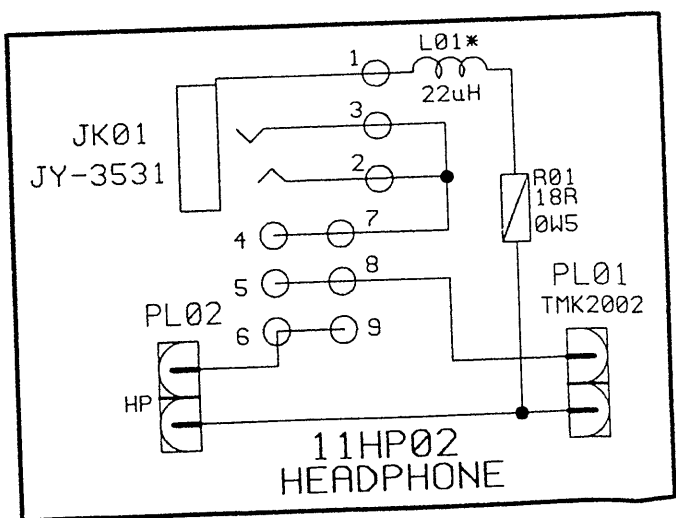
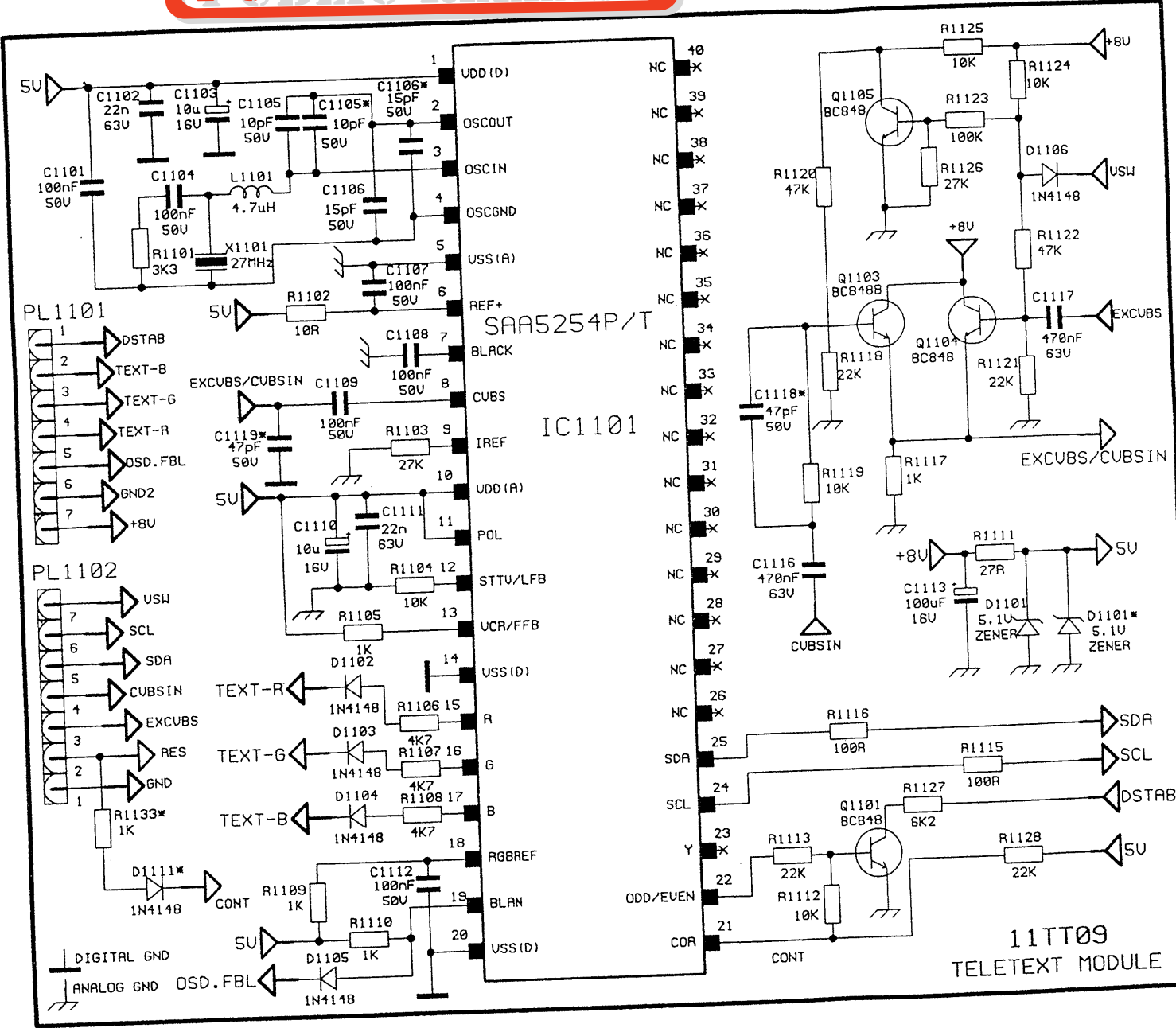
| | TDAB362A N1 | TDAB362A N2 |
|------|-------------|-------------|
| R510 | 15K | 12K |
| R511 | 120K | 27K |
| R517 | 22K | 18K |
| R513 | 270K | 470K |
| R518 | 27K | 47K |
| R436 | 47K | 8K2 |

5701080049

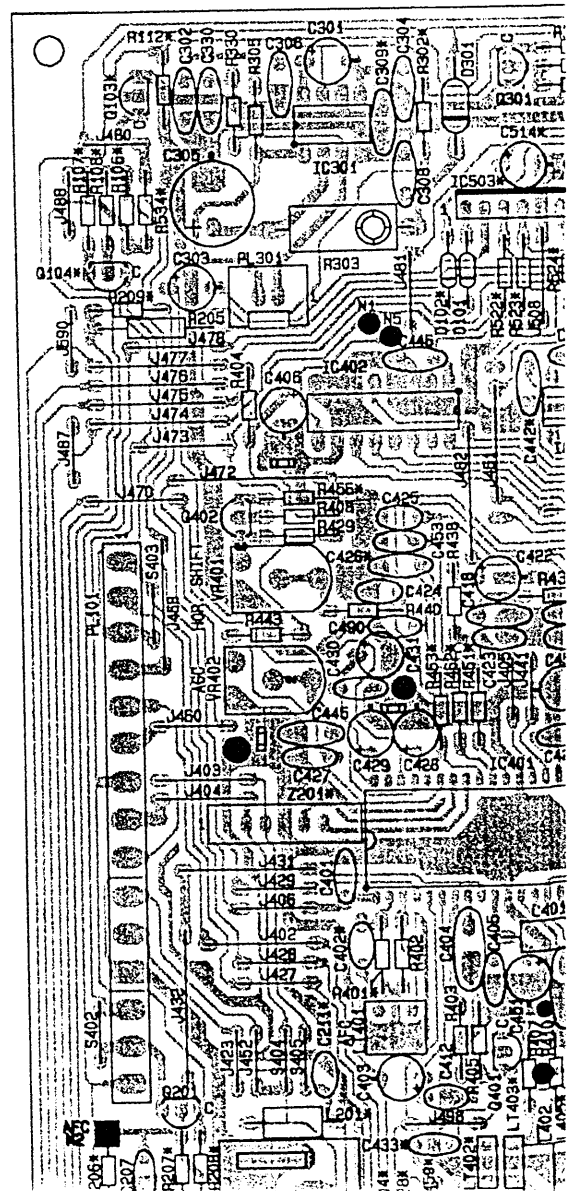
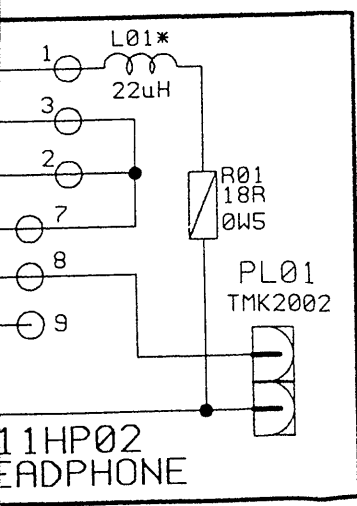
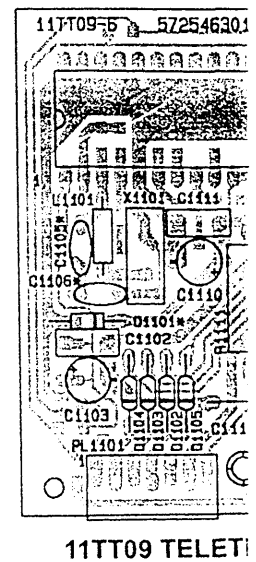
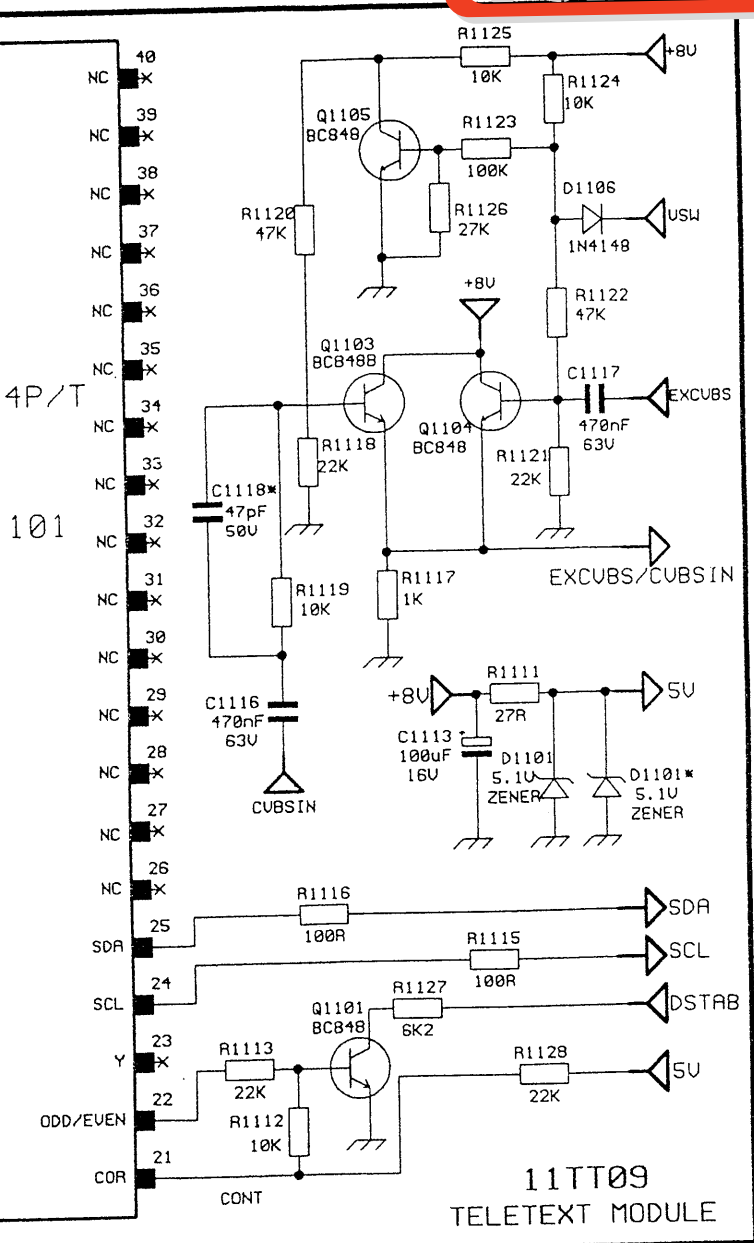


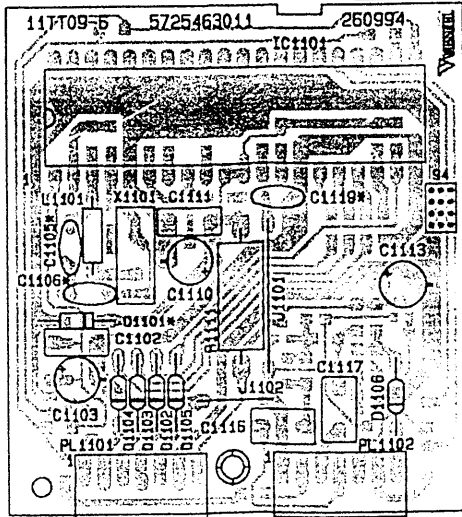
(X100) WF 24

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PUBLIC RELEASE

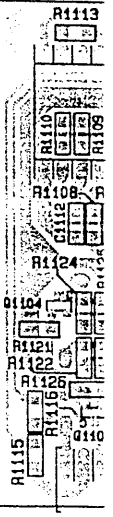


NOT FOR PUBLIC RELEASE

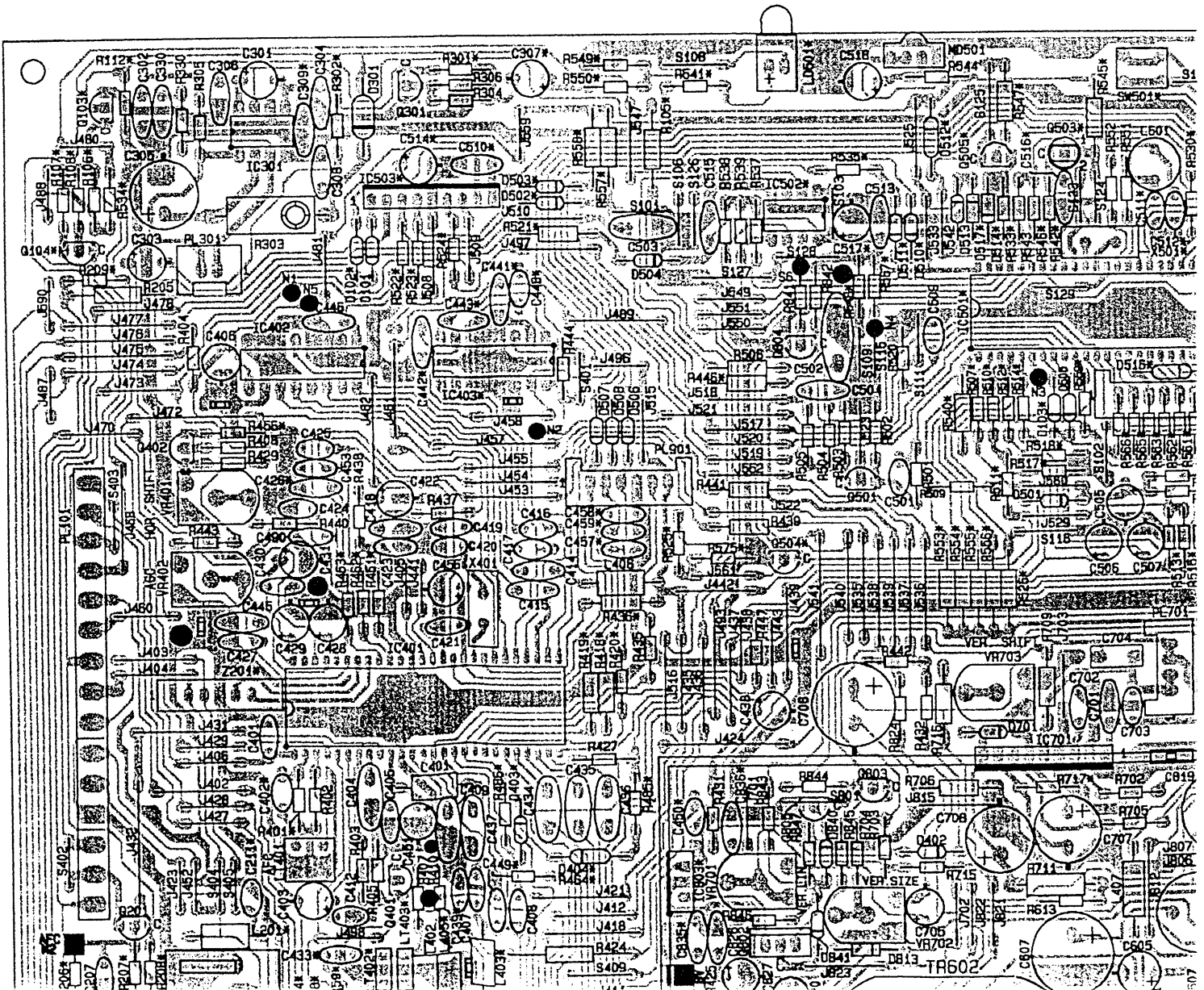




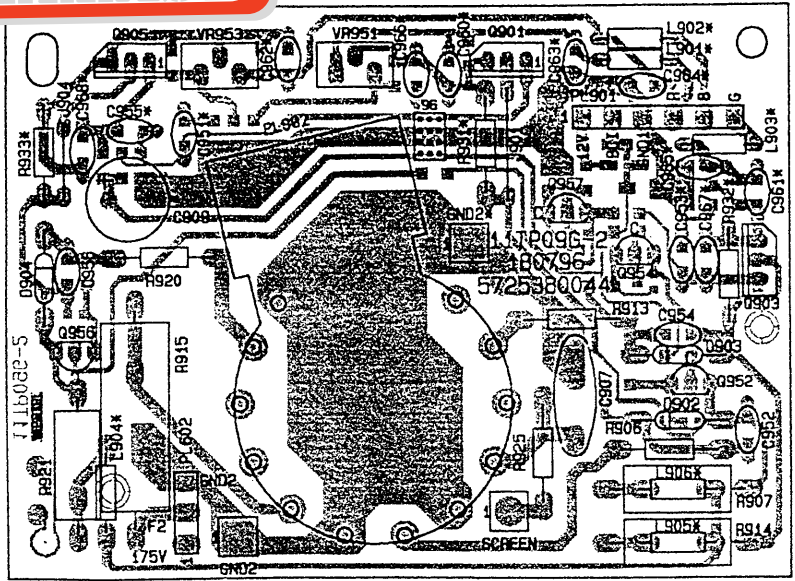
11TT09 TELETEXT MODULE



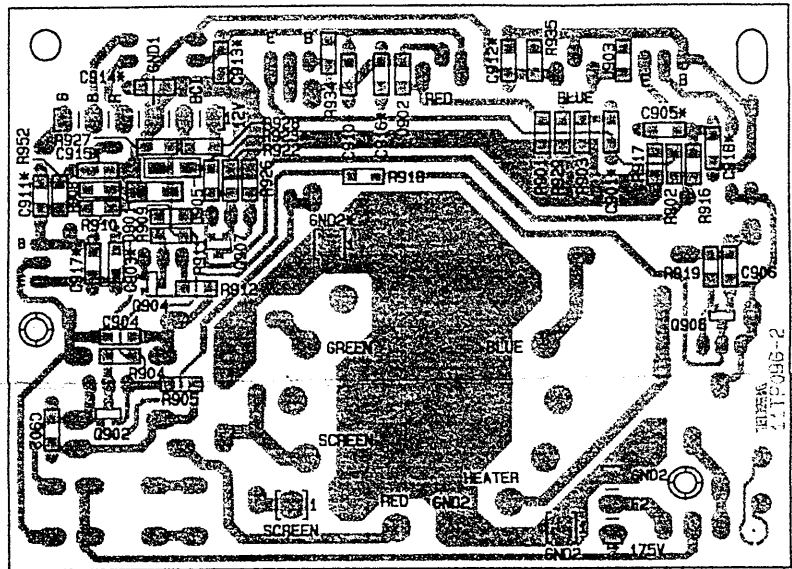
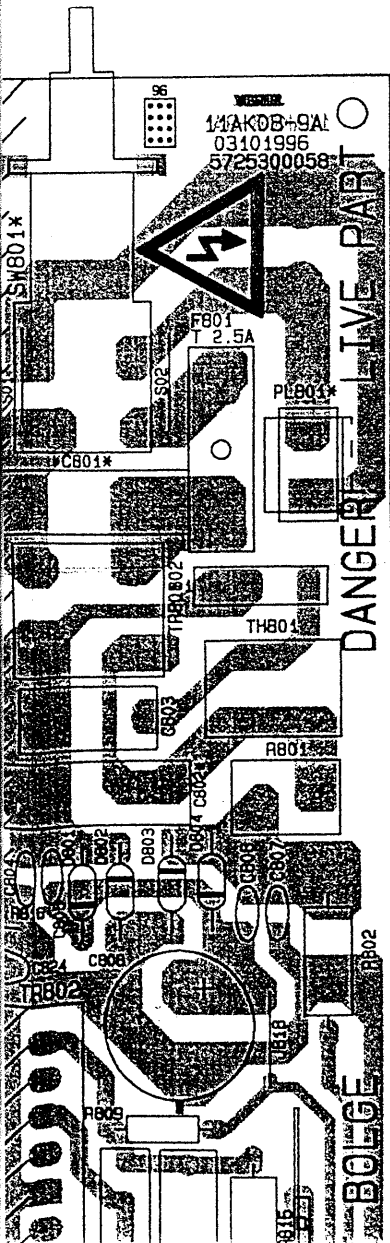
11TT09 TI



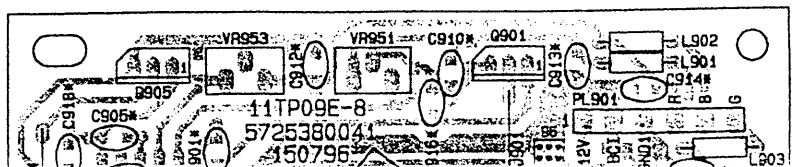
NOT FOR PUBLIC RELEASE

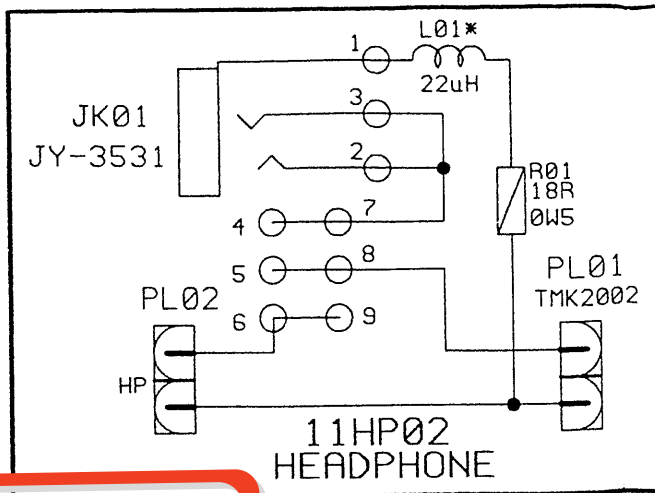


11TP09G CRT MODULE

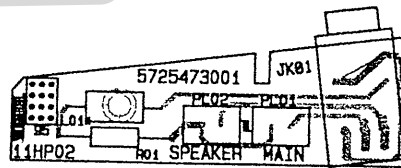


11TP09G CRT MODULE (SMD SIDE)

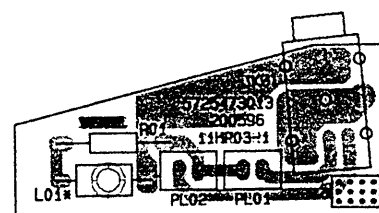
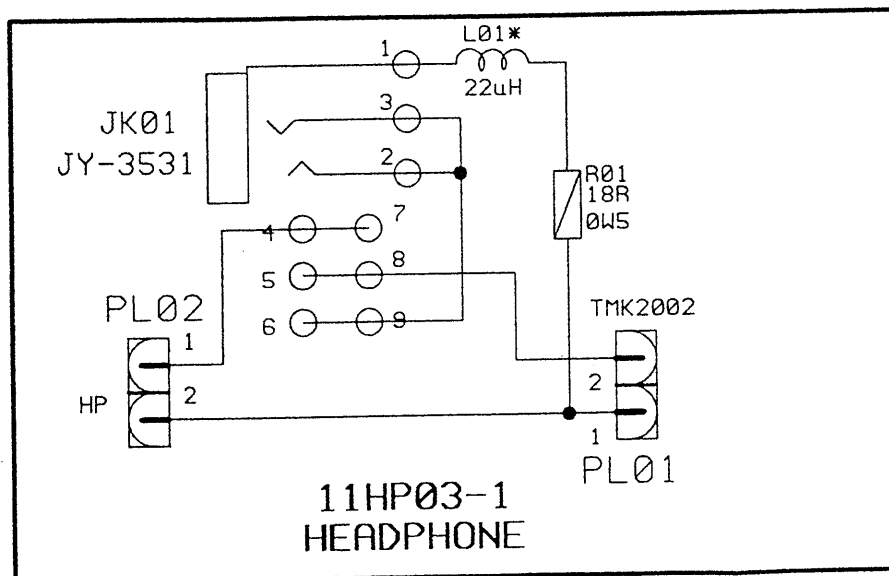




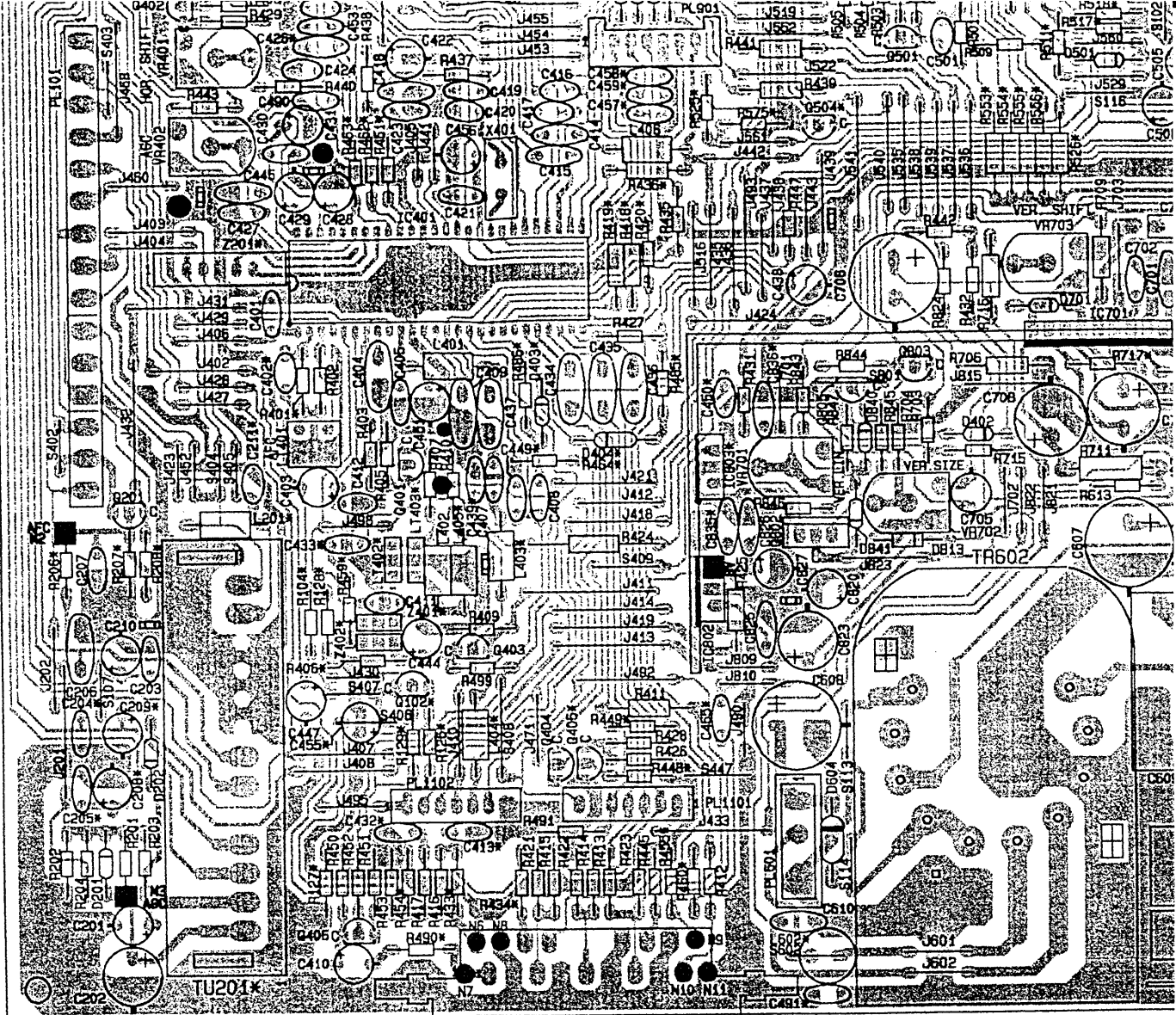
NOT FOR PUBLIC RELEASE



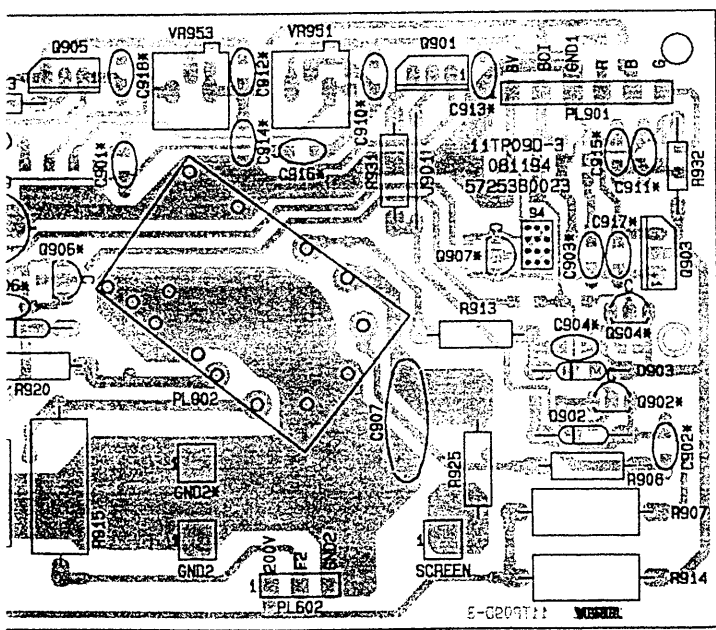
11HP02 HEADPHONE MODULE



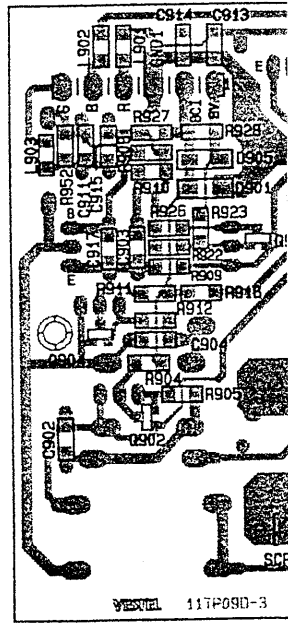
11HP03 HEADPHONE MODULE



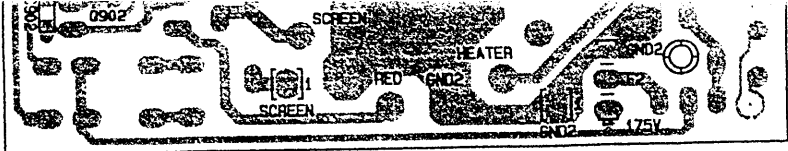
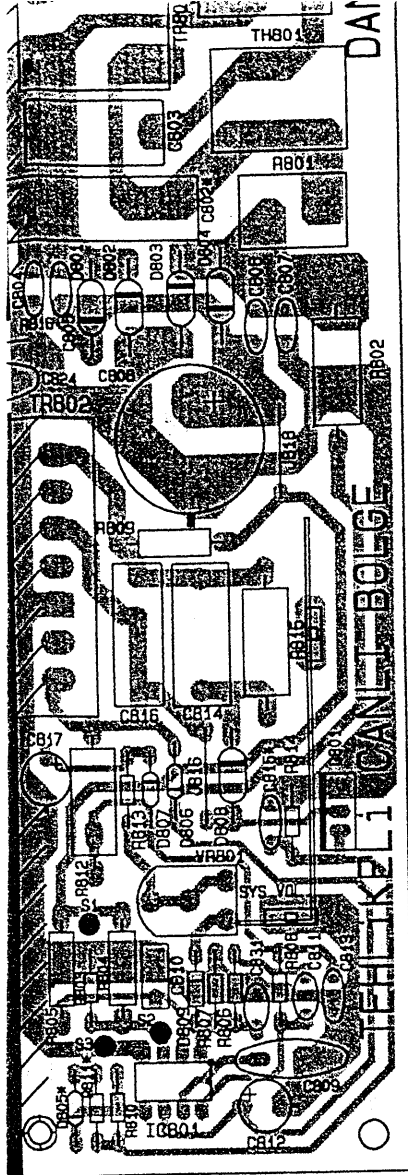
11AK08-9 MAIN BOARD



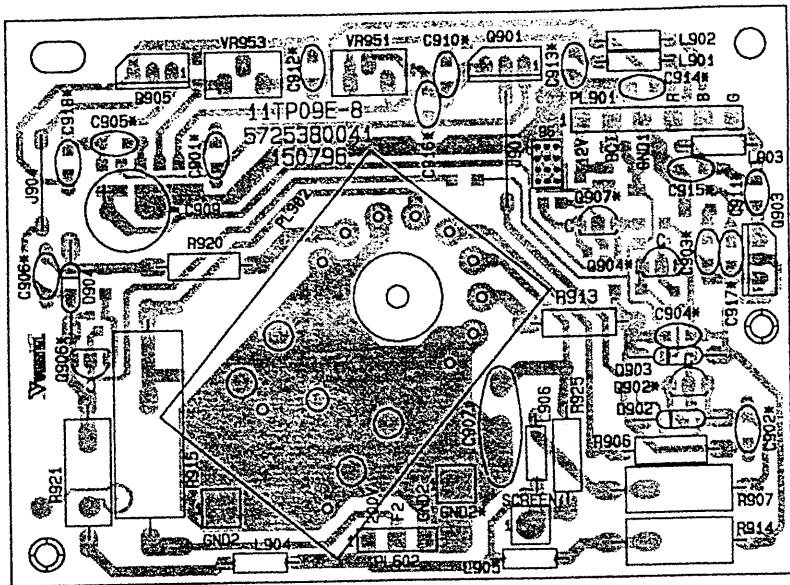
11TP09D CRT MODULE



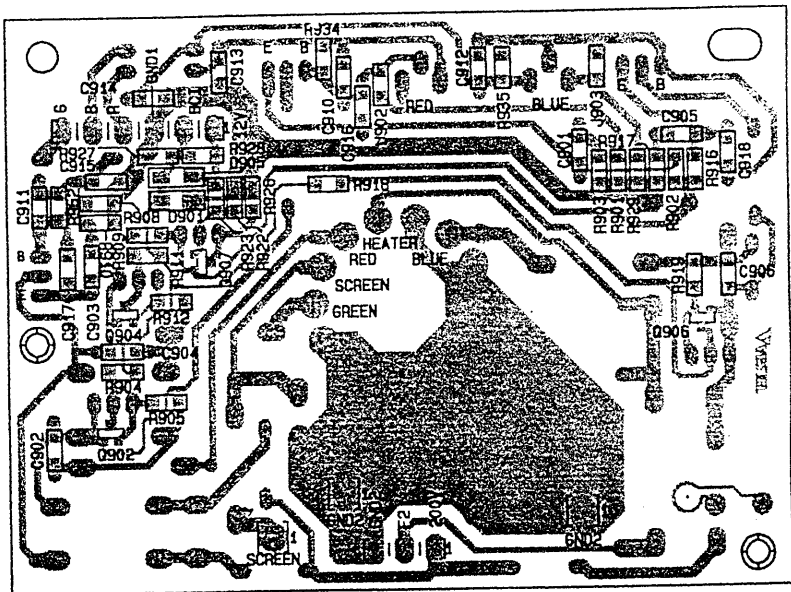
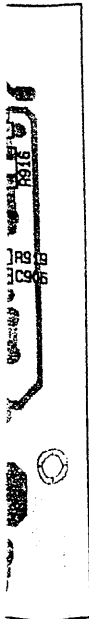
11TP09D CRT MODULE



11TP09G CRT MODULE (SMD SIDE)



11TP09E CRT MODULE



11TP09E CRT MODULE (SMD SIDE)