



GoldStar

COLOUR TV SERVICE MANUAL

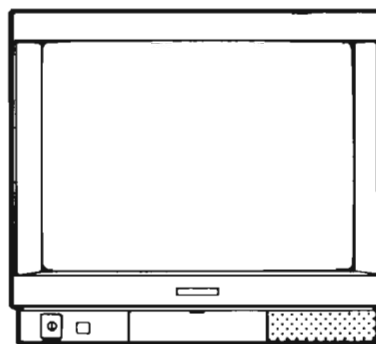
CAUTION

BEFORE SERVICING THE CHASSIS, READ THE "SAFETY PRECAUTIONS" IN THIS MANUAL.

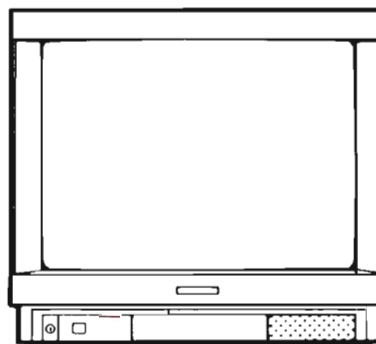
This service manual contains only the replacement parts information of the Model CKT-2190 and CKT-2191.

For the PC04A chassis common information, refer to the service manual of part No. 483-662Z.

CKT-2190X
CKT-2190



CKT-2191X
CKT-2191



CHASSIS: PC-04A

MODEL: CKT-2190/X
CKT-2191/X



GoldStar

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SPECIFICATIONS

Power Consumption	80W
Receiving TV System	CCIR Standard
Tuning	40 Voltage Synthesizer
Audio Output	3W
Antenna Input Impedance	75 ohm IEC Type
Picture Tube	A48KMX12XX 25N7KD
Dimension	492(W) × 465(D) × 458(H)
Weight	18.4 Kg

COLOUR RECEIVING SYSTEM		PAL/SECAM-B/G	PAL B/G- SECAM D/K	PAL-I	PAL-H
Intermediate Frequency	Picture	38.9 MHz	38.9 MHz	39.5 MHz	38.9 MHz
	Sound	33.4 MHz	32.4 MHz	33.5 MHz	33.4 MHz
	Colour	34.47 MHz	34.47 MHz	35.07 MHz	34.47 MHz
Receiving Channel	VHF Low	2-4 CH, S ₁	1-5 CH	NONE	0-5 CH
	VHF High	5-12 CH, S ₂ -S ₂₅	6-12 CH	NONE	5A-11 CH
	UHF	21-69 CH	21-69 CH	21-69 CH	21-69 CH
Power Source		220V/50Hz (SMPS)		240V/50Hz (SMPS)	

SAFETY PRECAUTIONS

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTIONS", "SAFETY INSTRUCTIONS" AND "PRODUCT SAFETY NOTICE" DESCRIBED BELOW.

X-RAY RADIATION PRECAUTIONS

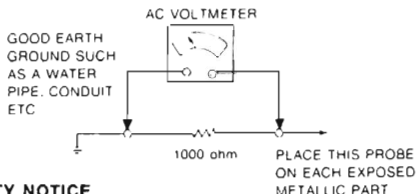
1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is 24 ± 1.5 kV at High beam current (maximum brightness) under specified power source. The high voltage must not, under any circumstances, exceed 27.5 kV. Each time a receiver requires servicing, the high voltage should be checked. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
3. Some parts in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

SAFETY INSTRUCTIONS

1. Potential as high as 25,000—27,000 volts is present when this receiver is operating. Operation of the receiver outside the cabinet or with the back cover removed involves a shock hazard from the receiver.
 - (1) Servicing should not be attempted by anyone who don't know the precautions necessary through and through when working on high-voltage equipment.
 - (2) Always discharge the picture tube anode to the CHASSIS GROUND to reduce the shock hazard before removing the anode cap.
 - (3) Perfectly discharge the high potential of the picture tube before handling.(WARNING: Risk of implosion. Handle with care.)
2. If any Fuse in this TV receiver is blown, replace it with the FUSE specified in the chassis parts list only.
3. When replacing parts or circuit boards, wind the lead wires around terminals before soldering.
4. When replacing a high wattage resistor (oxide metal film resistor) in circuit board, keep the resistor 10 mm. away from circuit board.
5. Keep wires away from high voltage or high temperature components.
6. Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts

of the cabinet, such as antennas, terminals, screwheads, metal overlays, control shafts, etc., to be sure the set is safe to operate without danger of electrical shock. Since this TV has AVC (Automatic Voltage Control) circuit, it may be operated nonadjustably within the voltage-area indicated in the label attached at back cover. (Do not use a line isolation transformer during this check.) Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner:

Connect a 1000 ohm resistor between a known good earth ground, (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of 1000 ohm resistor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed 1 volt RMS. This corresponds to 1 mA AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-RAY RADIATION protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified by Δ marks on the schematic diagram and the replacement parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create X-RAY RADIATION.

SERVICING PRECAUTIONS

CAUTION: Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the **SAFETY PRECAUTIONS** on page 3 of this publication.

NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. *Remember: Safety First.*

General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before:
 - a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
 - b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
 - c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.
- CAUTION:** A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
- d. Discharging the picture tube anode.
2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc.) equipped with a suitable high voltage probe. *Do not test high voltage by "drawing an arc".*
3. Discharge the picture tube anode only by (a) first connecting one end of an insulated clip lead to the degaussing or kine aquadag grounding system shield at the point where the picture tube socket ground lead is connected, and then (b) touch the other end of the insulated clip lead to the picture tube anode button, using an insulating handle to avoid personal contact with high voltage.
4. Do not spray chemicals on or near this receiver or any of its assemblies.
5. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable nonabrasive applicator: 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength).
- CAUTION:** This is a flammable mixture.
- Unless specified otherwise in this service manual, lubrication of contacts is not required.
6. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
7. Do not apply AC power to this receiver and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
8. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.
 - a. Always remove the test receiver ground lead last.
9. Use with this receiver only the test fixtures specified in this service manual.

CAUTION: Do not connect the test fixture ground strap to any heatsink in this receiver.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called *Electrostatically Sensitive (ES) Devices*. Examples of typical

ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a *grounded-tip* soldering iron to solder or unsolder ES devices.
4. Use only an *anti-static* type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material.)
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
- CAUTION:** Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range of 500°F to 600°F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a small wire-bristle (0.5 inch, or 1.25 cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
 - a. Allow the soldering iron tip to reach normal temperature (500°F to 600°F).
 - b. Heat the component lead until the solder melts.
 - c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
- CAUTION:** Work quickly to avoid overheating the circuit board printed foil.
6. Use the following soldering technique.
 - a. Allow the soldering iron tip to reach a normal temperature (500°F to 600°F).
 - b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.

- c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.

CAUTION: Work quickly to avoid overheating the circuit board printed foil.

- d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

IC Removal/Replacement

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas).

"Small-Signal" Discrete Transistor Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

Power Output Transistor Device Removal/Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heatsink mounting screw (if so equipped).
3. Carefully remove the transistor and heat sink from the circuit board.
4. Insert new transistor in circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heatsink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicularly to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and, if necessary, apply additional solder.

Fuse and Conventional Resistor Removal/Replacement

1. Clip each fuse or resistor lead at top of circuit board hollow stake.
2. Securely crimp leads of replacement component around notch at stake top.
3. Solder the connections.

CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board, to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board, causing the foil to separate from, or "lift-off", the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections

To repair defective copper pattern at IC connections, use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary.)
2. Carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the cut-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area, and clip off any excess jumper wire.

At Other Connections

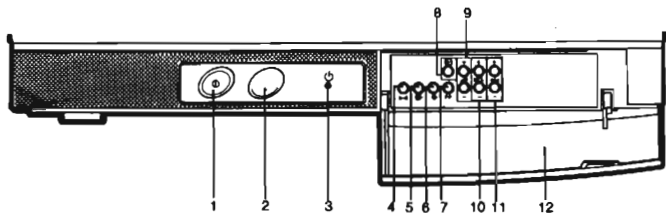
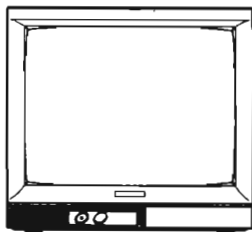
Use the following technique to repair defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side. Carefully crimp and solder the connections.

CAUTION: Be sure the insulated jumper wire is dressed so that it does not touch components or sharp edges.

CONTROLS LOCATION

FRONT



1. MAIN POWER SWITCH	7. PERSONAL PREFERENCE SETTING KEY
2. REMOTE CONTROL SENSOR	8. NORMAL KEY
3. STAND-BY LED	9. VOLUME UP (+) / DOWN (-) KEYS
4. SEARCH KEY	10. MANUAL SEARCH UP (+) / DOWN (-) KEYS
5. CLEAR KEY	11. PROGRAM UP (+) / DOWN (-) KEYS
6. STORE KEY	12. PANEL DOOR

DISASSEMBLY INSTRUCTIONS

BACK CABINET REMOVAL

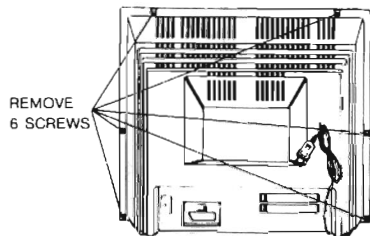
Remove 6 screws residing on the back cabinet and carefully separate the back cabinet from the front cabinet.

MAIN CHASSIS REMOVAL

Grasp both sides of the main chassis, pull it backward smoothly.

SPEAKER ASSY REMOVAL

1. Remove P602 connector between the speaker and the main chassis.
2. Remove 4 screws holding SPEAKER to the front cabinet.

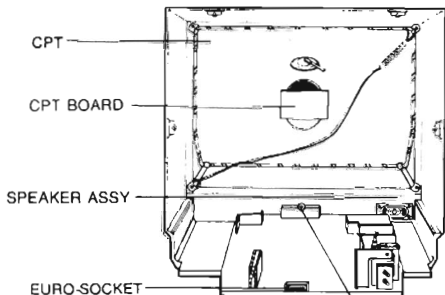


CPT REMOVAL

1. Pull out the CPT board from the CPT neck.
2. Place the front cabinet on soft material so as not to mar the front surface or damage control knobs.
3. Remove 4 nuts securing the picture tube mounting brackets to the front cabinet.
4. Carefully separate CPT from the front cabinet.

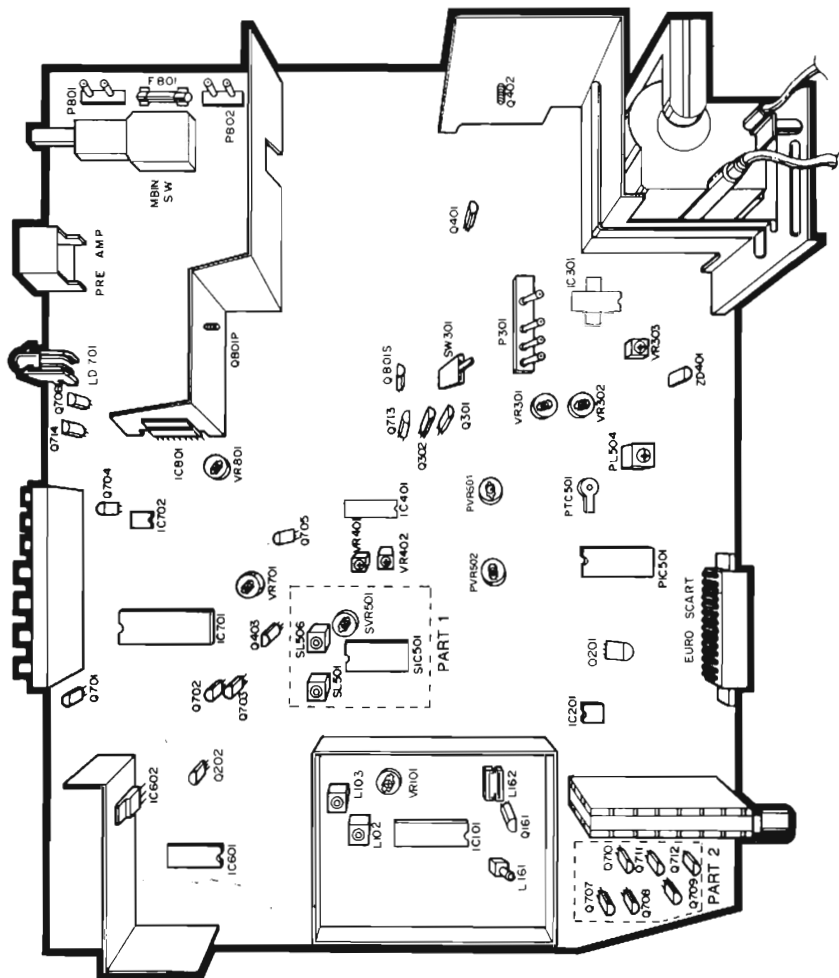
PICTURE TUBE HANDLING CAUTION

Due to high vacuum and large surface area of picture tube, great care must be exercised when handling picture tube. Always lift picture tube by grasping it firmly around faceplate. NEVER LIFT TUBE BY ITS NECK. The picture tube must not be scratched or subjected to excessive pressure as fracture of glass may result in an implosion of considerable violence which can cause personal injury or property damage.



Since this screw is holding the main chassis, remove it from the front cabinet

PARTS LOCATION OF MAIN CHASSIS



* NOTICE:

In case of the model without teletext, get rid of Q301, Q302.

In case of the model without SECAM system, get rid of PART 1.

In case of the model with PAL-4 system, get rid of PART 1, 2 and L161.

PC-04A ALIGNMENT INSTRUCTIONS

1. APPLIANCE

This instruction is applicable for all models using the PC04A CHASSIS.

2. SPECIFICATION

2-1 CIRCUMFERENCE CONDITION

If there is no particular guidance, adjust under the following condition.

- 1) Circumference Temperature: $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$
- 2) Relative Humidity: $65\% \pm 5\%$

2-2 NECESSARY INSTRUMENTS

- 1) DC Power Supplier (0-20V, 1A): 2EA
- 2) Sweep Generator and Marker unit of Each System
- 3) Alignment Scope
- 4) DC Voltmeter (High Impedance)
- 5) PAL/SECAM Colour Bar, Signal Generator
- 6) Frequency Counter

2-3 SIGNAL

Standard colour signal which is out from Goldstar standard digital signal Generator (PM5544).

2-4 POWER SOURCE (In Case of Receiver Operation)

AC 180V-270V, 50/60Hz.

3. ALIGNMENT

3-1 VIF ALIGNMENT

- 1) Connection Diagram of Equipments

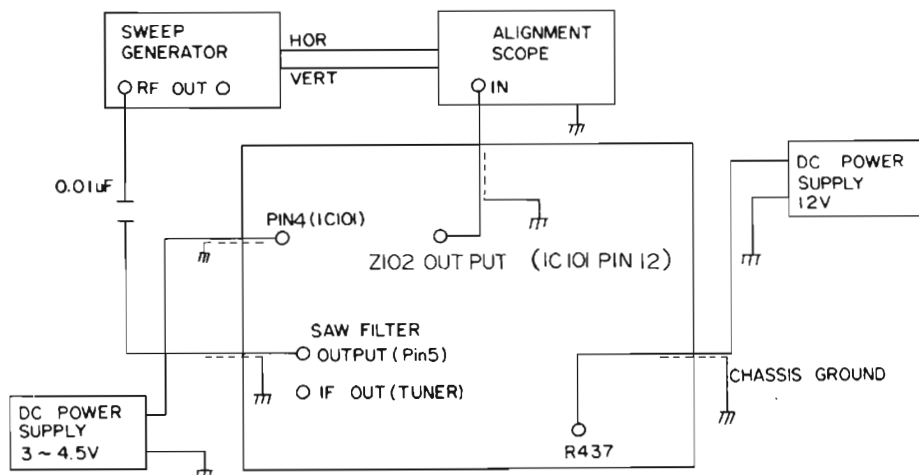


Figure 1

* Connect the ceramic condenser (0.01uF) between RF-OUT terminal of the SWEEP GENERATOR and SAW FILTER OUT terminal.

- 2) VIF Detection Coil Alignment

- a) Do the connection as shown in figure 1 and then DC power suppliers on.

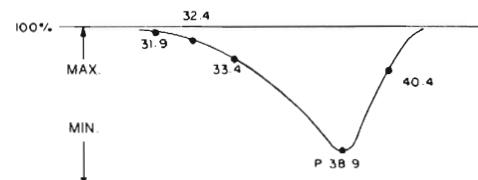


Figure 2

- b) Adjust L103 (Detection Special Quality Adjustment Coil) in order to minimize the PICTURE CARRIER MARK as shown in figure 2.
(For Mark Frequency of Each System, refer to the below note (*)).

* Each frequency carrier of system.

PAL B/G: 38.9 MHz
PAL I: 39.5 MHz
PAL IA: 39.5 MHz
PAL D/K: 38.9 MHz
PAL/SECAM B/G: 38.9 MHz
PAL/SECAM B/G, D/K: 38.9 MHz

- 3) ASC (40.4 MHz) Alignment (L161)
 - a) This alignment is only applicable to the model with ASC TRAP for FTZ.
 - b) The connection of alignment is the same as figure 1 but connect RF OUT of the SWEEP GENERATOR to TURNER IF OUTPUT terminal of Main PCB.
 - c) Turn L161 counterclockwise so that CORE may be appeared to maximum and then adjust it clockwise.
 - d) After setting output of SWEEP GENERATOR to maximum, increase IF AGC voltage of pin 4 (IC101) about 5V so that waveform may be distinguished the variation of L161 in the saturated state.
 - e) Adjust L161 so that 40.4MHz POINT may be maximum.

3-2 AFT ALIGNMENT (L102)

- NOTE** Cut the SLIT part of the C106(+) before adjusting
- 1) The connecting of equipments is the same procedure as that above b) item, but the connection position of Alignment Scope must be changed from output terminal of Z102 to pin 12 of IC101.
 - 2) Set VERTICAL GAIN of SCOPE to 1Vp-p/dIV and set the SWEEP GENERATOR output to a low state possibly.
 - 3) Adjust L102 so that it may be the same as shown in figure 3.

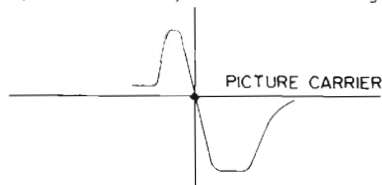


Figure 3 (AFT Alignment Waveform)

- 4) After finishing the adjustment, connect SLIT of the C106(+) .

3-3 MAIN B+ (112V or 118V DC) ALIGNMENT

- 1) Turn on the TV set.
- 2) Receive the standard colour signal. (digital pattern)
- 3) Set the portion of colour. Bright, Contrast to the maximum.
- 4) Adjust VR801 so that the voltage of J122(TP6) may be 112V for the model smaller than 21" and 118V for 21" model.

3-4 HORIZONTAL SYNCHRONIZATION ALIGNMENT

- 1) Receive the standard color signal on the TUNER ANTENNA.
- 2) Connect SYNC. SEPARATOR INPUT SIGNAL to the Ground.
(Connect pin 11 of IC401 to the GND... J110, J111, TP3 part)
- 3) Adjust VR401 so that the screen may be maintained the synchronization in a horizontal and vertical direction.
- 4) Remove the connection of pin 11 of IC401 from GROUND.

3-5 HORIZONTAL CENTER ALIGNMENT (HOR.SHIFT ALIGNMENT)

- 1) Receive the standard colour signal.
- 2) Adjust the VR402 so that the screen may be the Geometric center.

3-6 VERTICAL OSCILLATOR FREQUENCY ALIGNMENT

- 1) Adjust the set in no signal condition.
- 2) Connect the frequency COUNTER to the CONNECTOR part (R304) which is connected with vertical DY.

(Connect the (-) side of the connector to the heat sink of the chassis)

- 3) Adjust VR302 so that FREE-RUN frequency may be $46.00 \pm 0.5\text{Hz}$.

3-7 VERTICAL AMPLITUDE AND LINEARITY ALIGNMENT (VERT. HEIGHT AND LINEARITY ALIGNMENT)

- 1) When brightness of a screen is minimum as receiving the FuBK TEST PATTERN, adjust VR301 so that the outline signal of the upper and lower parts of the great circle on screen may be coincide with the edge of a effective screen.
- 2) After changing the signal to Digital, adjust VR303 so that the length of upper and lower of the great circle may be equal.

3-8 VERTICAL CENTER ALIGNMENT

Adjust SW301 (Vertical Center SVC.S/W) so that CENTER of PATTERN may coincide with the Geometric center of an effective CPT screen.

3-9 COLOUR SYNCHRONIZATION ALIGNMENT

- 1) Receive the standard colour signal.
- 2) Set the Contrast, Brightness, Colour VR to maximum.
- 3) Connect the COLOUR SATURATION terminal to 12V.
- 4) Short the INPUT pin 21 (B-Y), PIN 22 (R-Y) of the IC501.
- 5) Adjust the PTC501 (TRIMMER CAPACITOR) so that COLOUR BAR should not flow down.
- 6) After finishing adjustment, remove the connection of item 3) and 4).

3-10 PAL MATRIX ALIGNMENT

- 1) Set the Contrast, Brightness, Colour Control VR to the maximum.
- 2) Receive the DEM. PATTERN (Colourless Pattern)
- 3) Connect the SCOPE to the B-OUT (Pin 16 of PIC501).
- 4) Adjust PVR501 to obtain a minimum fluctuation (A straight line) in figure 4-1.

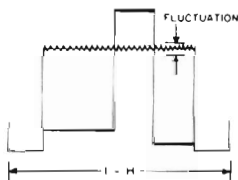


Figure 4-1. PVR501 Alignment

- 5) After changing the PATTERN into the PAL COLOUR BAR signal, adjust PL504 so that the fluctuation may be minimum and a straight line as shown in figure 4-2.



Figure 4-2. PL504 Alignment

- 6) Repeat the adjustment of the above items 4), 5) again by varying the pattern and then confirm.

3-11 RF AGC ALIGNMENT

- 1) Receive the standard colour signal ($60\text{dB} \pm 1\text{dB}$), but in case of PAL 4, receive $70\text{dB} \pm 1\text{dB}$.
- 2) Connect DIGITAL MULTIMETER to AGC terminal of the TUNER (J20, TP1).
- 3) Refer to below diagram and then adjust VR101.

Tuner System	B/G	I	B-H	D.K.
ALPS	$4.8 \pm 0.1\text{dc}$	$4.9 \pm 0.1\text{dc}$	$4.8 \pm 0.1\text{dc}$	$4.8 \pm 0.1\text{dc}$

- 4) Select the best point in accordance with the TUNER SYSTEM or per production LOT.

3-12 SCREEN AND WHITE BALANCE ALIGNMENT

- 1) Set the Colour, Brightness, Contrast alignment VR to the minimum.
- 2) Set the BIAS ALIGNMENT VR(VR901-903) and DRIVE ALIGNMENT VR(VR904-905) of CPT BOARD to the mechanical center position.
- 3) Tune in channel No. 05CH.
- 4) Vary SCREEN VR of FBT until the screen will be cut off.
- 5) As using Color Analyze White Balance checker, adjust it to be X equal to 281 ± 8 and Y equal to 288 ± 8 in the Low light(4-5ft.L) and High Light(40-50ft.L).

3-13 FOCUS ALIGNMENT

- 1) Receive the standard Digital signal and adjust the Contrast, Brightness, Colour to be maximum.
- 2) Adjust it so that HALO situation should not appear on the portions as follows. (Center, edges and logo portion)

4. SECAM ALIGNMENT

4-1 SECAM BELL FILTER ALIGNMENT

- 1) Receive the SECAM BAR PATTERN.
- 2) Connect the LOW CAPACITANCE PROBE to pin 4 of SIC501. (Using FET PROBE)
- 3) Adjust SL501 to maximize and flatten the waveform.
- 4) In case of not using FET PROBE, precede the above adjustments (1 to 3).

And then adjust the GS standard SECAM SIGNAL so that the COLOUR of 3.8MHz portion may be red and minimize the MAGENTA COLOUR of the COLOUR BAR and the shadows of the BLACK LEVEL BAR boundary.

- 5) In accordance with necessary, adjust the DIGITAL PATTERN signal with the naked scale.

4-2 SECAM REFERENCE COIL ALIGNMENT

- 1) Connect OSCILLOSCOPE PROBE to pin 24 of SIC501.
- 2) Ground pin 11 and pin 16 of SIC501. (Only SECAM MODE)
- 3) Turn out SVR501 clockwise to the maximum.
- 4) Adjust SL506 so that the DC LEVEL of the parts A,B (figure 6) may coincide.

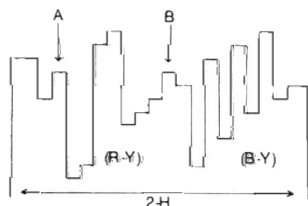


Figure 6. Pin 24 Waveform

- 5) Move the OSCILLOSCOPE PROBE to pin 10 of the SIC 501.
- 6) Adjust SVR501 so that the right and left LEVEL of R-Y and B-Y part may be equal and the waveform of part A may be coincide to be one.

To be equaled the whole size

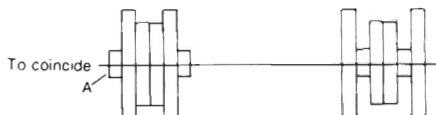


Figure 6. Pin 10 Waveform

- 7) If the field color differs from that of the pal signal, leaving SL506, adjust SVR501 in full detail.

5. OSD POSITION ALIGNMENT

- 1) Turn on the set and adjust it to be non-signal condition.
- 2) Push the SEARCH KEY.
- 3) Adjust VR701 so that the size of Analogue TUNING BAR may be coincide with the right and left side of the screen

PURITY AND CONVERGENCE ADJUSTMENT

CAUTION: Convergence and Purity have been factory aligned. Do not attempt to tamper with these alignments. However, the effects of adjacent receiver components, or replacement of picture tube or deflection yoke may require the need to readjust purity and convergence. Convergence magnet assembly and rubber wedges need mechanical positioning following the figure 8. Before attempting any convergence adjustments this receiver should be operated for at least fifteen minutes. If adjustment is required the adjustments should be made in the following sequence.

COLOUR PURITY ADJUSTMENT

1. Demagnetize the picture tube and cabinet using a degaussing coil.
2. Turn the CONTRAST and BRIGHTNESS controls to maximum.
3. Select the purity pattern consisted of green only on the pattern generator.
4. Loosen the clamp screw holding the yoke, and slide the yoke backward to provide vertical green belt (zone) in the picture screen.
5. Remove the Rubber Wedges.
6. Rotate and spread the tabs of the purity magnet (See figure 9) around the neck of the picture tube until the green belt is in the center of the screen. At the same time, center the raster vertically.
7. Move the yoke slowly forward or backward until a uniform green screen is obtained. Tighten the clamp screw of the yoke temporarily.
8. Check purity of the red and blue rasters by selecting the purity pattern of pattern generator.
9. Obtain a white raster, referring to 'WHITE BALANCE ADJUSTMENT'.
10. Proceed with convergence adjustment.

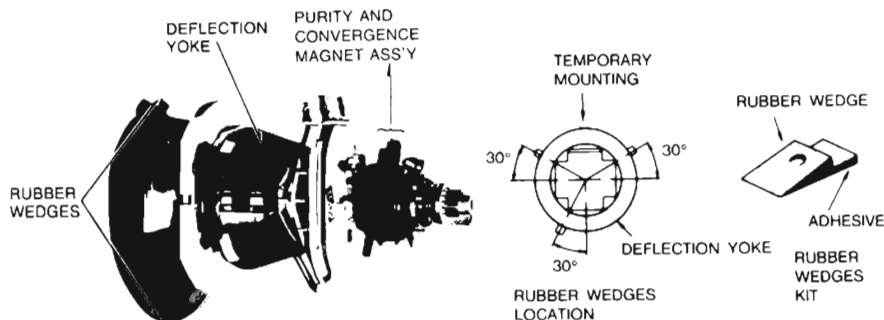


Figure 8

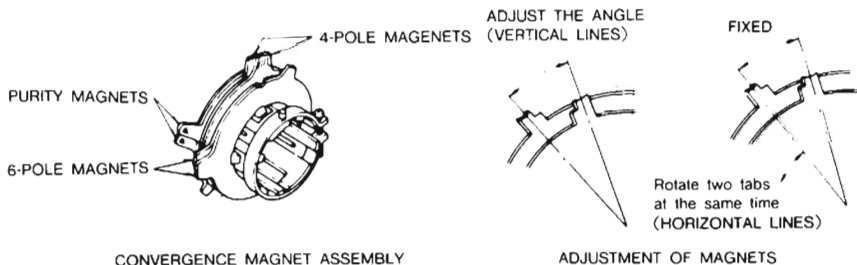


Figure 9

CENTER CONVERGENCE ADJUSTMENT

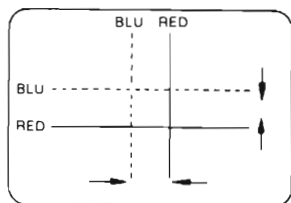
1. Receive crosshatch pattern with a colour bar signal generator.
2. Adjust the BRIGHTNESS and CONTRAST controls for well defined pattern.
3. Adjust two tabs of the 4-pole magnets to change the angle between them (See figure 9) and superimpose the red and blue vertical lines in the center area of the picture screen. (See figure 9.)
4. Turn both tabs at the same time keeping their angles constant to superimpose red and blue horizontal lines at the center of the screen. (See figure 10)
5. Adjust two tabs of 6-pole magnets to superimpose red/blue line with green one. Adjusting the angle affects the vertical

lines and rotating both magnets affects the horizontal lines.

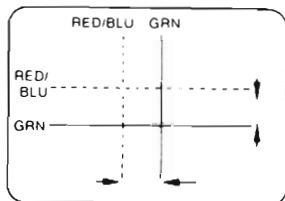
6. Repeat adjustments 1,2,3, keeping in mind red, green and blue movements, because 4-Pole magnets and 6-Pole magnets interact and make dot movement complex.

CIRCUMFERENCE CONVERGENCE ADJUSTMENT

1. Loosen the clamping screw of DY to allow the yoke to tilt.
2. Adjust DY to obtain a better convergence in the circumference by orbital movement of the front of the yoke, then secure the DY in appropriate position by placing the wedges as illustrates in figure 8. Tighten screw holding the DY. Stick 3 adhesive tapes on wedges as shown in figure 8.

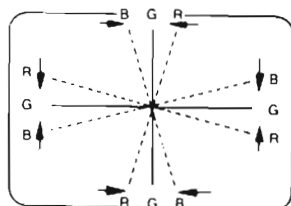


4-Pole Magnets Movement

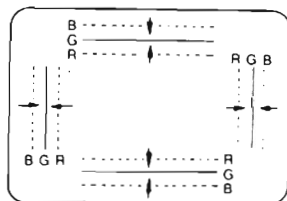


6-Pole Magnets Movement

Center Convergence by Convergence Magnets



Incline the Yoke up (or down)



Incline the Yoke right (or left)

Circumference convergence by Deflection Yoke

Figure 10 DOT MOVEMENT PATTERN

CIRCUIT DESCRIPTION

1. VIDEO IF AMPLIFIER CIRCUIT (IC101, μ 4439BG)

1-1 The Basic Construction

Video IF Amplifier Circuit contains three symmetric of IF AMP (Video IF Detector & AMP, AFT circuit & AMP and AGC circuit). All of above functions are performed in IC101 (4439BG).

The schematic diagram is same as figure 11.

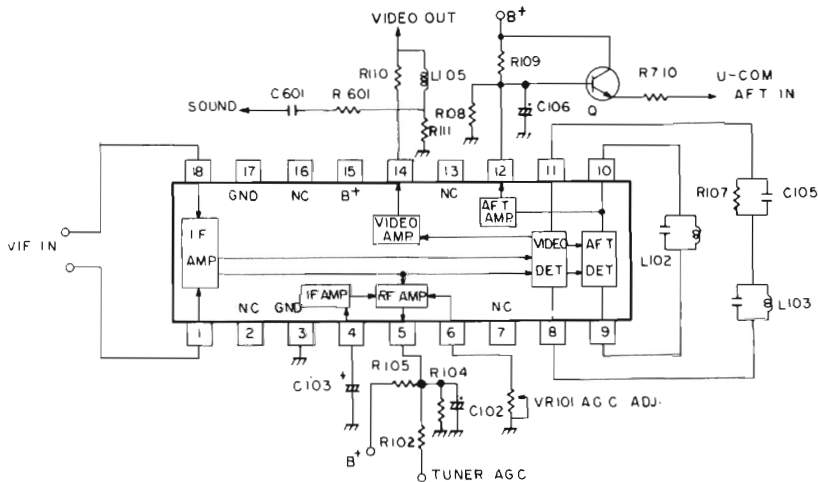


Figure 11. Schematic Diagram of IC101 (μ4439BG)

1-2 Pin Configuration of IC101

Pin No.	Description
1, 18	IF IN
2, 7, 16	NC
3, 17	Ground
4	IF AGC storage capacitor
5	The output terminal of RF out
6	RF AGC control terminal
8, 11	Video detector
9, 10	AFT detector
12	AFT output
14	Video output <ul style="list-style-type: none"> • Composite video output level: 3Vp-p • White level: 5.2V • Black clamping level: 1.9 V
15	Supply voltage terminal <ul style="list-style-type: none"> • voltage: about 12 V_{DC} • current: 75 mA

1-3 Operating Description of the Circuit

After the air signal is varied into the IF signal through the TUNER of the TV set, this signal which is passed via PRE-AMP and SAW FILTER input into pins 1, 18 of IC101 via. This IF signal passes into the three stage AMP. and then video signal is detected by the detector coil connected to pins8, 11. AFT signal is also detected by the dedctor coil connected to pins9, 10.

They are output each video signal in pin14, AFT signal in pin12 through the AMP.

Also, AGC voltage passes pin5 after adjusting VR101 (AGC adjustment variable resistor) connected pin6 and this voltage is connected to the AGC terminal of the TUNER, so that the AGC voltage is controlled.

2. SOUND IF AMPLIFIER CIRCUIT (IC601, TBA120T)

2-1 The Basic Construction

SIF AMP as FM IF AMP & Demodulator is composed of SIF AMP, SIF Detector, sound output, volume control and external audio in/out.

These circuits are operated within IC601.

The schematic diagram is same as figure 12.

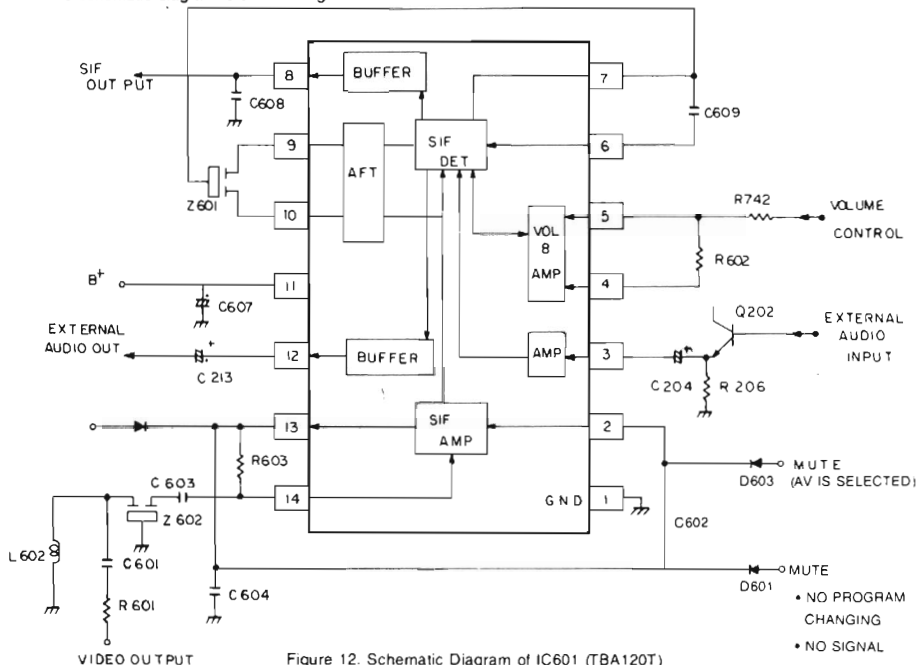


Figure 12. Schematic Diagram of IC601 (TBA120T)

2-2 Pin Configuration of IC601

Pin No.	Description
1	Ground
2, 13	Sound Amp. Negative feed back terminal
3	External audio input terminal
4	Volume control reference terminal Reference voltage: 4.8V
5	Volume control terminal
6, 7	SIF detector.
8	SIF output Output voltage: 4V
9, 10	FM detector
11	Supply voltage terminal; 12V
12	External audio output

2-3 Operating Description of the Circuit

Sound carrier is detected by the composite video signal gone through band pass filter (BPF), (which is composed of R601, C601, L601) and ceramic discriminator (Z602), and it is applied to SIF AMP. (pin13).

The amplified signal is applied to the SIF Detector Terminal.

And, after detection, this signal outputs into pin8 through the Buffer Circuit.

This output signal is controlled, by inputting to pin5 volume level which is controlled by the μ -com (IC701).

The detected Audio Signal outputs into pin12 through the Buffer Circuit and this signal is the Audio output signal. The Audio signal input from the external is input into pin3 and is detected through AMP and is output at pin8 through the Buffer Circuit.

3. HORIZONTAL DEFLECTION CIRCUIT (IC401, TDA1940)

3-1 The Basic Construction

Horizontal Deflection Circuit consists of Sync. Separator Circuit 01 & 02, Phase Comparator, Super Sandcastle(SSC) Pulse Generator, Horizontal Sync. output circuit, Vertical pulse Generator, burst gating Generator. Schematic Diagram of IC401 is same as figure 13.

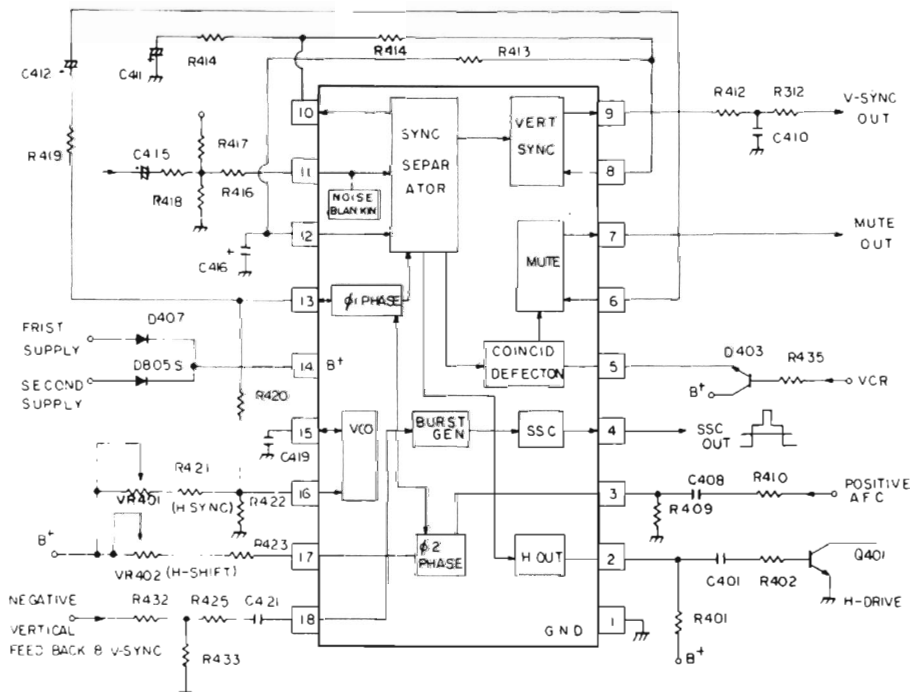


Figure 13. Schematic Diagram of IC401

3-2 Pin Configuration of IC401

Pin No.	Description
1	GND
2	Horizontal Sync output
3	Positive flyback pulse(AFC) input
4	Super sandcastle pulse(ssc) out
5	Output of coincidence detector : In case of the external VCR Mode, used as the auto time constant switching terminal.
6	Input time-constant switching stage
7	If there is the broadcast signal, as the muting circuit output stage, it is high. In case of non-signal condition, keeps the low condition.
8	The reference stage for the vertical sync pulse
9	Vertical sync pulse output
10	Horizontal pulse separator H/V clamping stage
11	Video signal input stage
12	Reference input stage for line pulse separation
13	<ul style="list-style-type: none"> • First phase comparator • Used as H-sync of ON-SCREEN.
14	<ul style="list-style-type: none"> • Supply voltage stage • Supply voltage: 12V • Supply current: 40mA
15	Horizontal oscillator frequency control is selected with the time constant of R422 and C419.
16	<ul style="list-style-type: none"> • Horizontal oscillation frequency control stage. • Controls horizontal sync. with VR401
17	Second phase comparator stage (0, phase DET.)
18	<ul style="list-style-type: none"> • Vertical flyback pulse feedback input stage • Requires the negative vertical pulse. • Used as V-sync. of ON-SCREEN.

3-3 Operating Description of the Circuit

3-3-1. START-UP

If the power switch is ON, the supply voltage (12V) of SMPS transformer is applied to pin14 through D407. At that time IC401 begins to oscillate with the starting voltage, and the horizontal sync. pulse outputs through pin2. And then the horizontal sync. pulse is applied to Q401 (Horizontal Drive Transistor) through C401 and C402 to drive Q401, which cause that the second supply voltage supplied from FBT is applied to pin14 through D805S by loading the horizontal output circuit.

3-3-2. HORIZONTAL OSCILLATION AND PHASE SHIFT

The oscillation signal controlled by R422, C419 and VR401 makes the horizontal synchronizing signal which is divided by pins10, 11 and 12. And then, by comparing with a part of compared-waveform vertical signal at the first phase and the second phase, the horizontal synchronizing signal makes the final output signal, and the phase shift is made by VR402.

3-3-3. SYNC. SEPARATOR

R417 and R418 connected to pin11 select the input level

which IC401 of the sync. separator circuit demands and the slicing level for the sync. separator. And it is the important factor of selecting the level which checks whether the broadcasting signal is or not.

3-3-4. SUPER SANDCASTLE PULSE

The super sandcastle pulse output from pin4 is composed of three levels, and it is applied to pin8 of PIC501 (PAL chroma IC) and pin23 of SIC501. (SECAM decoder IC).

3-3-5. VCR MODE SECTION

If the high voltage is supplied to pin5 of IC401 from tuning μ -com, the second phase detector is changed to the fast mode, this mode is selected to operate by the VCR or A/V signal which is input from the external.

3-3-6. VERTICAL SECTION

Video signal is received through pin11. The vertical sync. signal is output from 9. By dividing the vertical sync. signal at the vertical sync. signal separator circuit which is connected to pins8, 9.

4. VERTICAL DEFLECTION CIRCUIT (IC301, TDA1170N)

4-1 Basic Construction

The Vertical Deflection Circuit consists of the vertical Sync. Input terminal, Ramp Generator, Vertical Sync. Circuit, Flyback Generator (Vertical output stage) Power Amplifier Circuit, Preampifier Circuit.

The Schematic diagram of IC301 is same as figure 14.

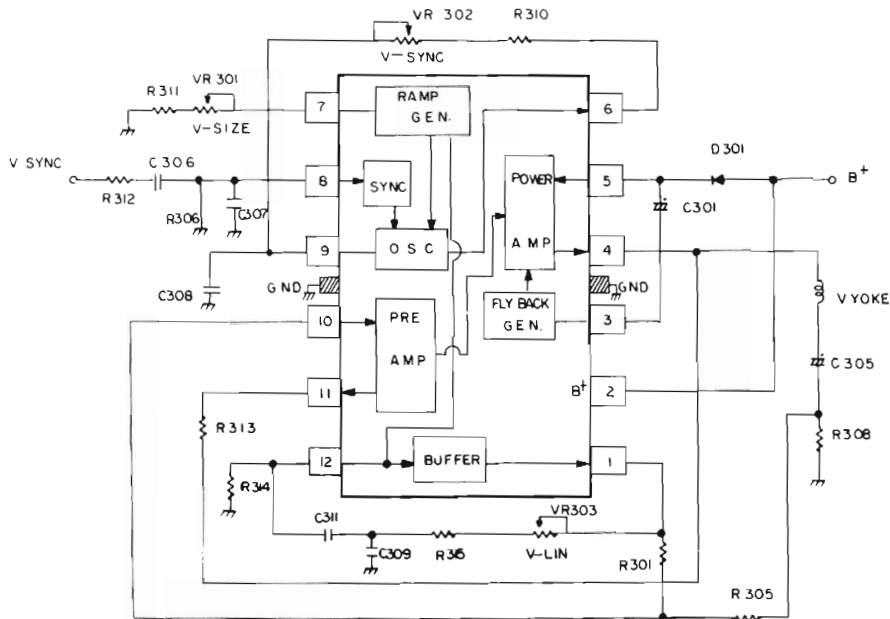


Figure 14. Schematic Diagram of IC301.

4-2 Pin Configuration of IC301

Pin No.	Description
1	Buffer stage
2	Voltage supply stage Supply voltage: 25V Supply current: 140mA
3	Flyback generator
4	Vertical output
5	The supply terminal of the vertical output circuit
6, 9	Vertical sync control stage. (Adjusts the frequency of V-sync. by VR302.)
7	• Ramp generator stage • Adjusts V-size by adjusting VR301.
8	Vertical sync. input & sync. amplifier
10, 11	Preampifier reference input and vertical feedback
12	Adjusts the vertical linearity by adjusting reference current of the Ramp Generator.

4-3 Operating Description of the Circuit

The vertical sync. signal output through pin9 of IC401 enters the vertical sync. input circuit and AMP. circuit and makes the saw-form signal by the time constant of C308 connected to pin9 and R310 connected to pin6.

And then VR302 controls the vertical sync.

Also, this signal controls the vertical size by being supplied to the Ramp Generator circuit connected to pin7. The signal phase generated from the oscillator and the Ramp Generator is compared with the phase of the vertical feedback signal, so that this signal may be obtained through the vertical amplifier, is output-through pin4 and supplied to the deflection yoke.

5. CHROMA & LUMINANCE CIRCUIT (PIC501, TDA3560A)

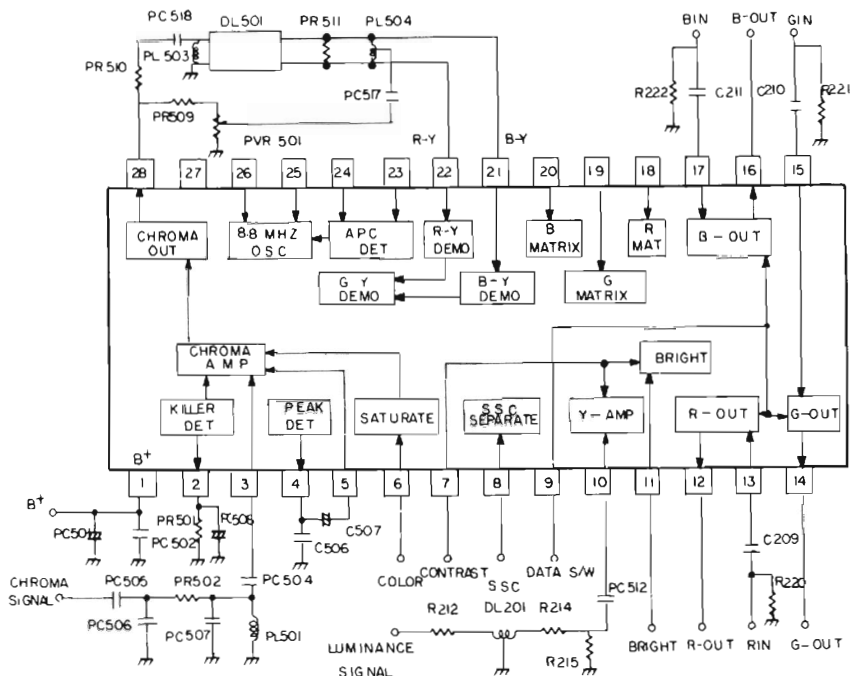


Figure 15. Schematic Diagram of PIC501 (TDA3560A)

5-1 Chroma Path

First, the chroma signal flows from B.P.F circuit into pin3 to be amplified, and then it flows into the second amplifier to be about 4Vp-p.

The amplifier signal output from pin28 is separated into two ways.

One flows through PR510, PC518 into 1H-Delay Line(DL501), the other flows through PR509, PVR501 and PC517 into mid-tap of PL504.

At PL504 two kinds of signal are vectored and adjusted, so that R-Y(u) signal is separated into B-Y(u) and B-Y(v). Each of the signals is demodulated inside pins21, 22, so that G-Y is generated by R-Y and B-Y.

In the course of demodulation, colour system is a carrier wave suppressed. Therefore pins25,26 oscillate to 8.86MHz to reconstitute a carrier wave.

The DC voltage the colour Burst of pins23,24 generates flows into oscillator for 8.86MHz and adjust the oscillating frequency and the false image so that they may coincide with original signal.

After 8.86MHz generated in this way decrease by half, R-Y and B-Y flow into G-Y demodulator in order to generate a complete demodulation.

On the other hand, pin2 discharges its duty of controlling the first amplifier of an outcome so that colour killer should not generate colour noise during receiving black and white signal or electric field less than 35dBm.

That is to say, pin4 detects the colour Burst and makes it generate DC voltage, which is supplied and controlled on pin2, and kills the DC voltage of pin2 less than 3V. Pin6 is a saturation control circuit.

5-2 Luminance Path

As much as chroma path needs to perform chroma signal, DL201 delays Luminance signal about 600ns, and then this flows into pin10 through PC512 and control contrast, brightness with pin7 and pin11 to be supplied for each of R.G.B matrix circuit luminance signal supplied on pin10 is commonly 0.5Vp-p.

5-3 R.G.B Data Input

When the DC voltage of pin9 is 1-3V, PIC501 is converted into it in data input and when each of R.G.B signals flows into pins 13,15,17 each signal is in output at pins 12,14,16. In case that DC voltage of pin9 remains less than 0.4V, normal state remains.

6. POWER SUPPLY (IC801, TDA4601)

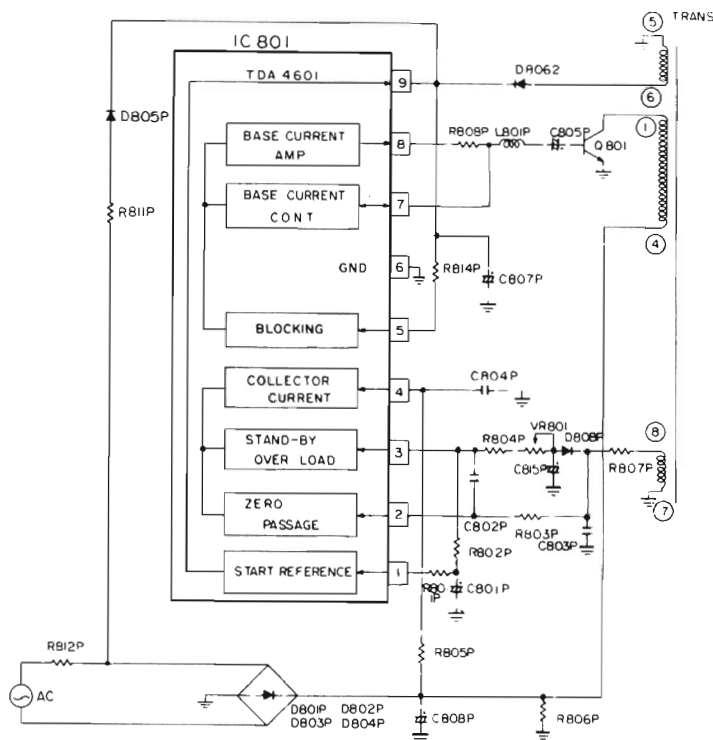


Figure 16. Schematic Diagram of IC801 (TDA4601)

6-1 Operating Description of the Circuit

START UP

If the power switch is ON, the voltage made by R811P, D805P and C807P, which is applied to pin9 of IC801.

If the voltage of pin9 is above 8.5V, IC801 begins the generation.

The voltage rectified by D801P, D802P, D803P, D804P and C808P, which is applied to pin4 of SMPS transformer (T801).

At this time, PWM signal outputs from pin7 of IC801 and drives Q801.

If Q801 is driven, the voltage generated at pins5,6 of SMPS TRANS is rectified at D806P and C807P, and supplied about 13V to pin9 of IC801 continually.

NORMAL OPERATION

The square wave output which make Q801 on and off flows out of pin8, and its extend is adjusted by pin7. Also the sources generated by the load variation are detected from the wire wound pins7,8 of T801.

The detected variation sources which is commuted with the D808P and C815P input the voltage to pin3.

Pin2 and pin3 have the function assisting the control operation.

And VR801 controls the secondary output voltage.

OVER LOAD OPERATION

The maximum collector current is decided by R805P and C804P connected to the pin4. When this identified value is exceed over load operation, fix R805P for 270K ohm and change the value of C804P to adjust the maximum over load.

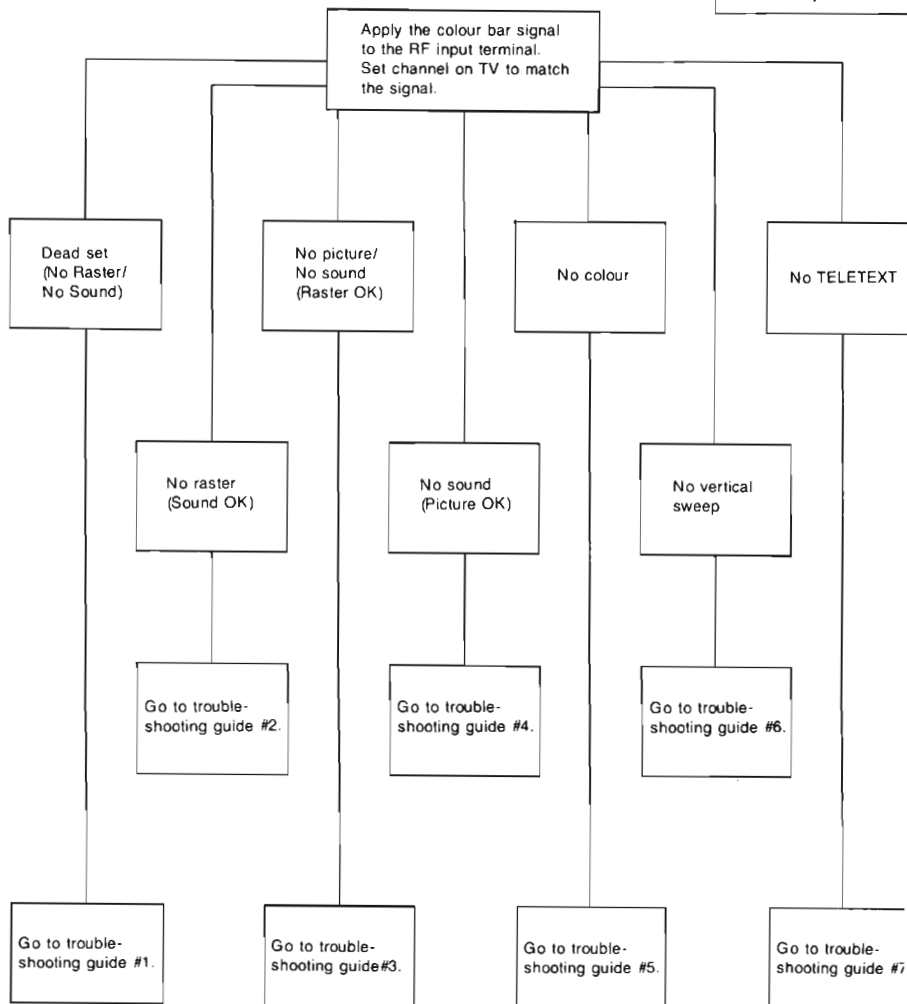
If you use a big capacitor of C804P, the maximum load electric power will increase.

HIGH VOLTAGE PROTECTION

This is decided by R814P connected at pin5 if the voltage of pin5 increase above the fixed voltage, the switching motion will stop.

TROUBLESHOOTING GUIDE

PRESET CONTROL
Brightness—Fully Up
Contrast—Fully Up
Colour—Fully Up
Volume—Mid range or
adjust as need



**#1. DEAD SET
(NO RASTER/NO SOUND)**

Check +B voltage at TP6. (J122)

130~140V

120V (Normal)

0V

Check stand-by 12V
of C804S(+).

Check/heater elements
of CRT are lighting or
not.

Check the rectified
voltage of main supply
power of C808P(+).

0V

Check/Replace
D801S, FR801.

No

Check/Replace
FR404.

0V

Check/Replace
D801P~D804P
F851, Q801.

12V

Check the voltage of
pin5 of IC201.

Check the voltage of
C429(+).

250~380V

Check the voltage of
pin9 of IC801.

4V~5V

Check/Replace
Q801S, Q704
IC701.

0V

Check/Replace
FR403, D403
R427.

Less than 8V

Check/Replace
R811P, D805P.

0V

Check the voltage
of SMPS 19V.

12V

Check the voltage of
pin5 of IC201.

8V~18V

Check/Replace
FR803S, D806P
D801S~803S
Check the secondary
voltages are short.

Abnormal

Check/Replace
FR802S, D802S.

0V

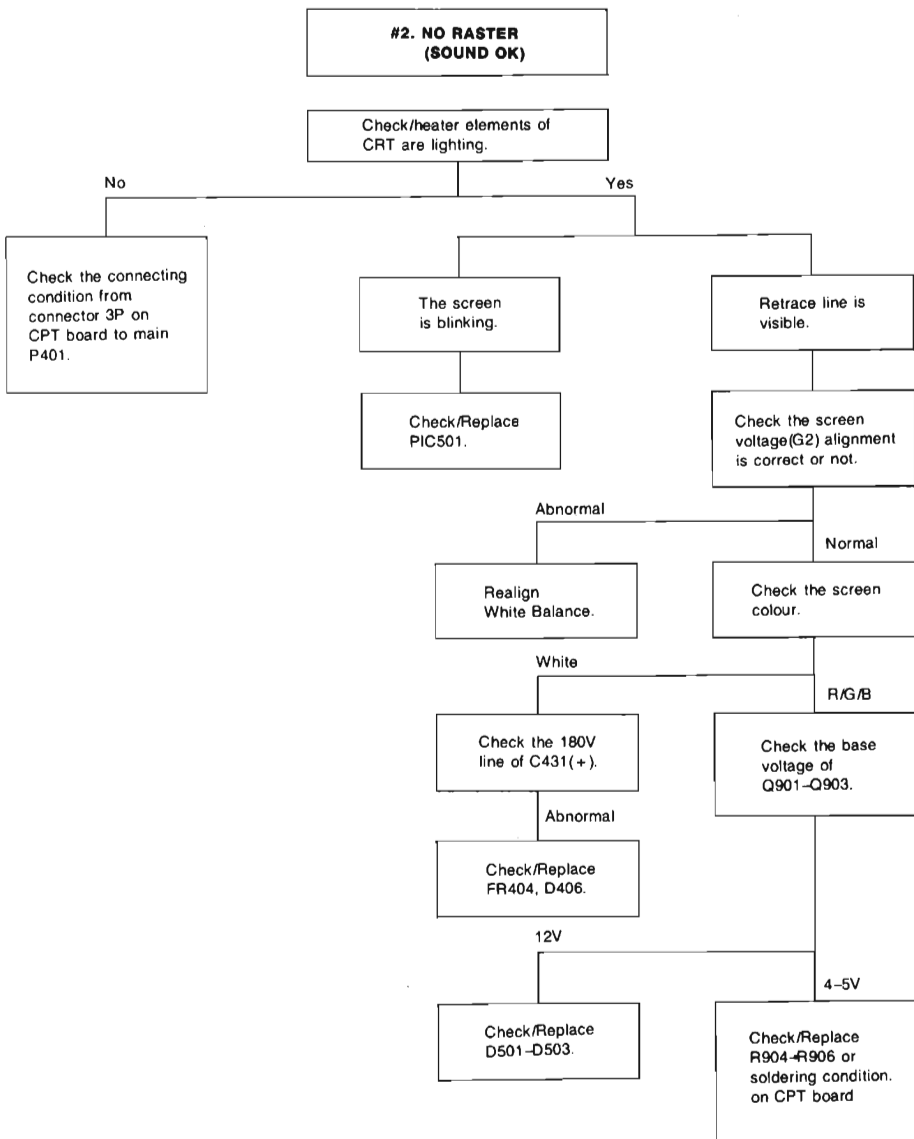
Check/Replace
IC201.

Normal

Check/Replace
Q401, Q402
D401, IC401.

10~12V

Check/Replace
Q801S, Q704.



**#3. NO PICTURE/NO SOUND
(RASTER OK)**

Check the voltage of
TUNER MB. (12V)

11.8-12.2V

Check/Replace
TUNER.

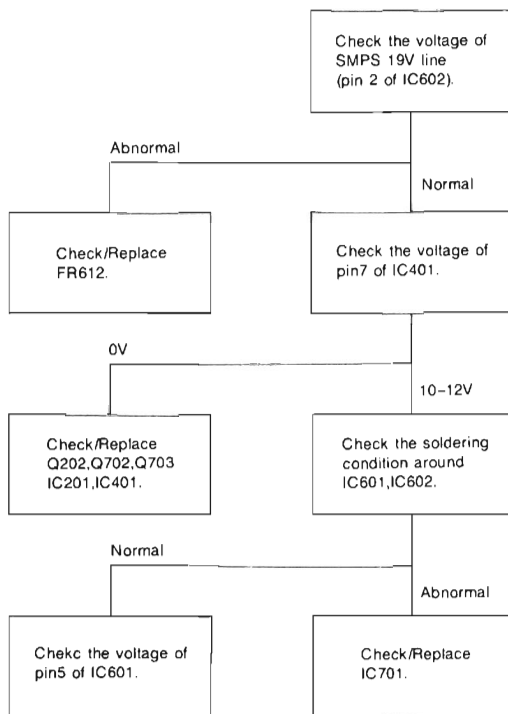
Check the tuning
condition

Check/Replace
Q161.

Check the 33V line
of C425(+).

Check/Replace
FR428, ZD401.
D405.

**#4. NO SOUND
(PICTURE OK)**



NOTE:

Sound is muted whenever the screen is noise condition, that is, broadcasting signal is not found.

#5. NO COLOUR

After shorting TP2 & TP4
check the colour.

Normal

No colour

Check the colour
saturation volage of
pin6 of PIC501.

Check/Replace
PX501,PTC501
PIC501.

Abnormal

Normal (0-10V swing)

Not good

Check/Replace
IC701.

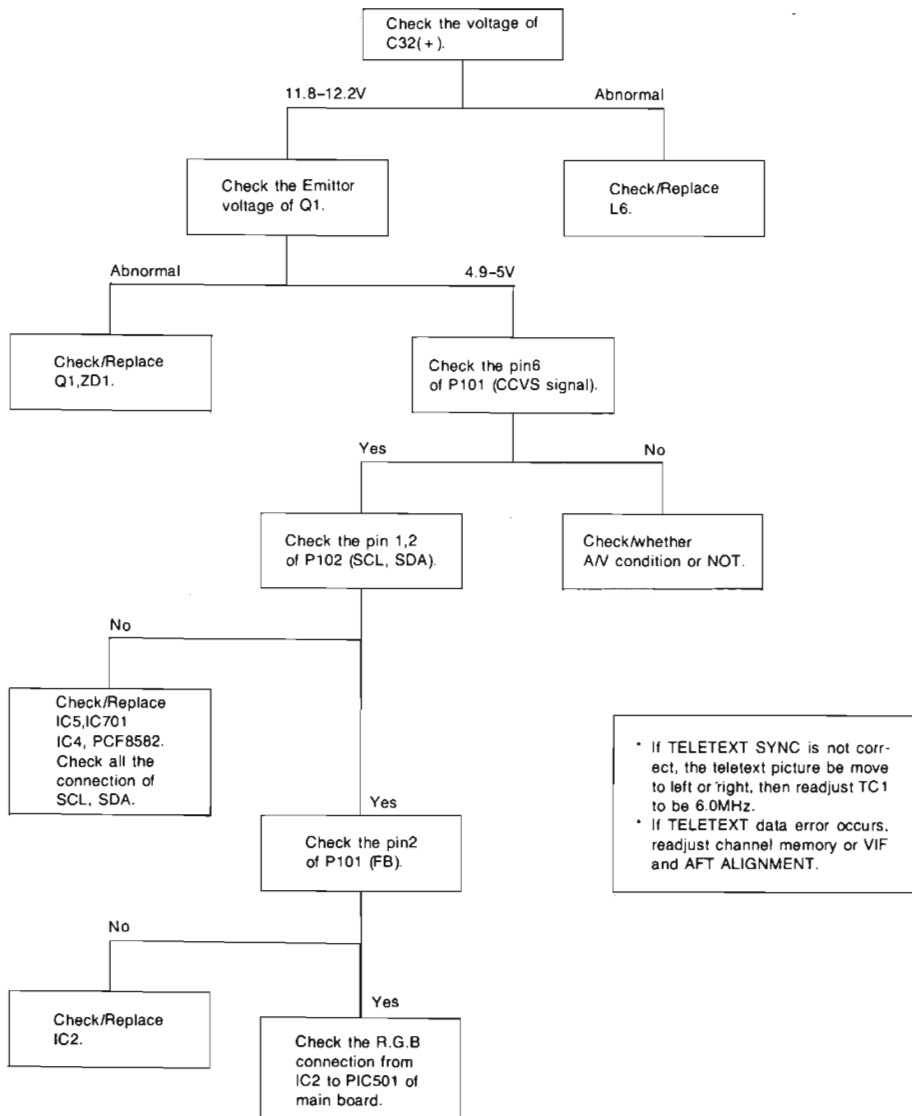
Check the colour
synchronization
alignment.

Adjust the H-center
volume VR402.

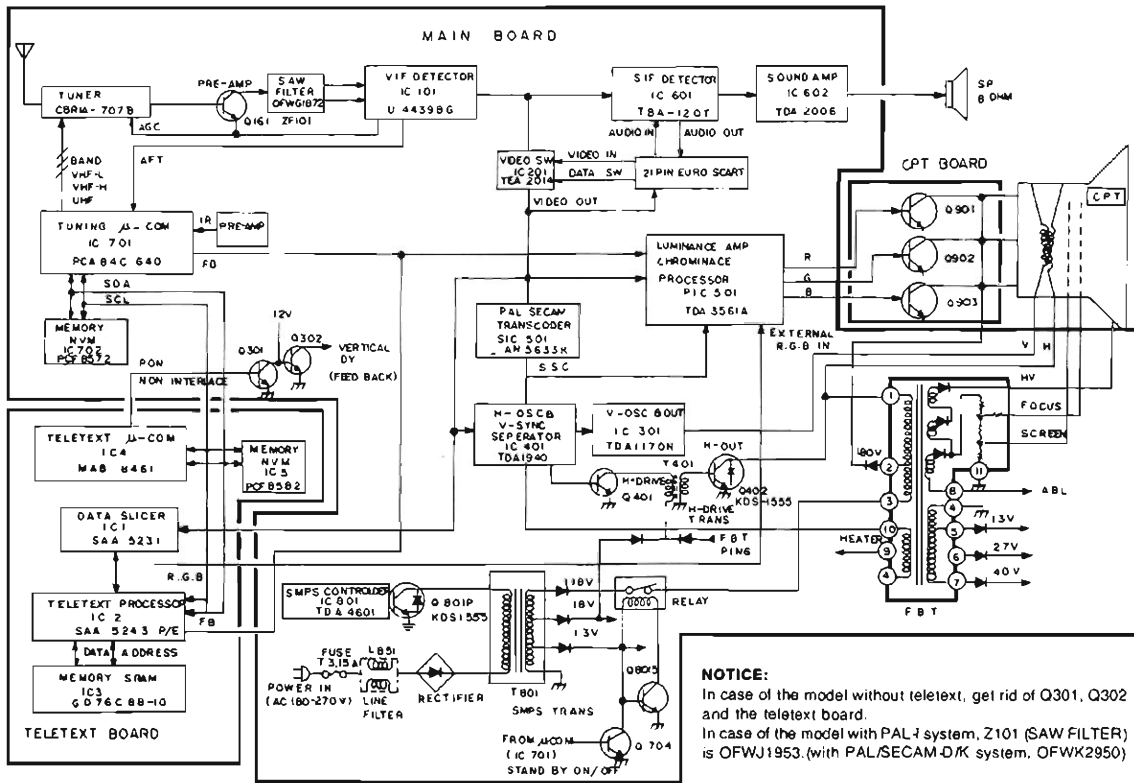
#6. NO VERTICAL SWEEP

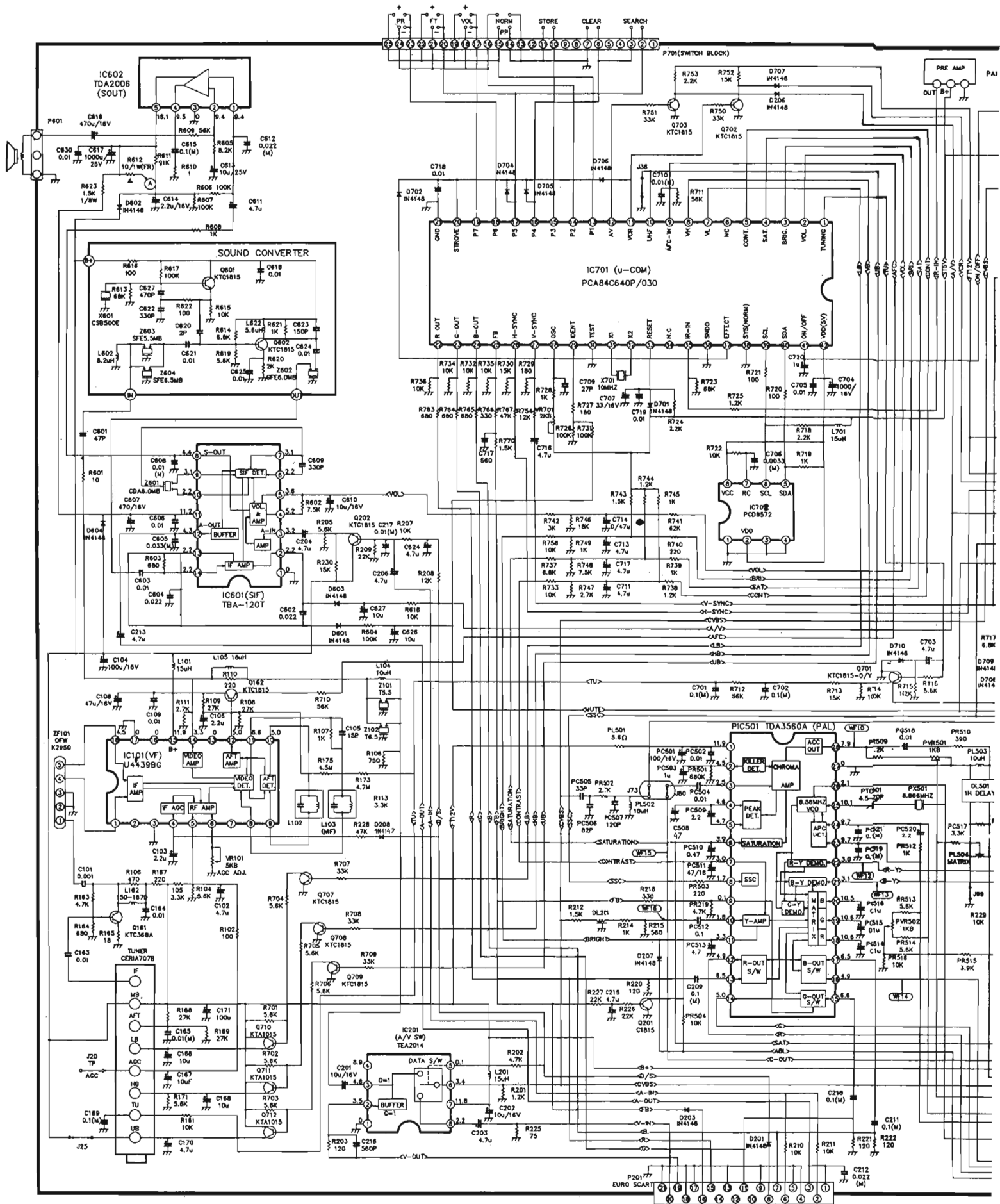
Check the around IC301
soldering condition
check/Replace
IC301.

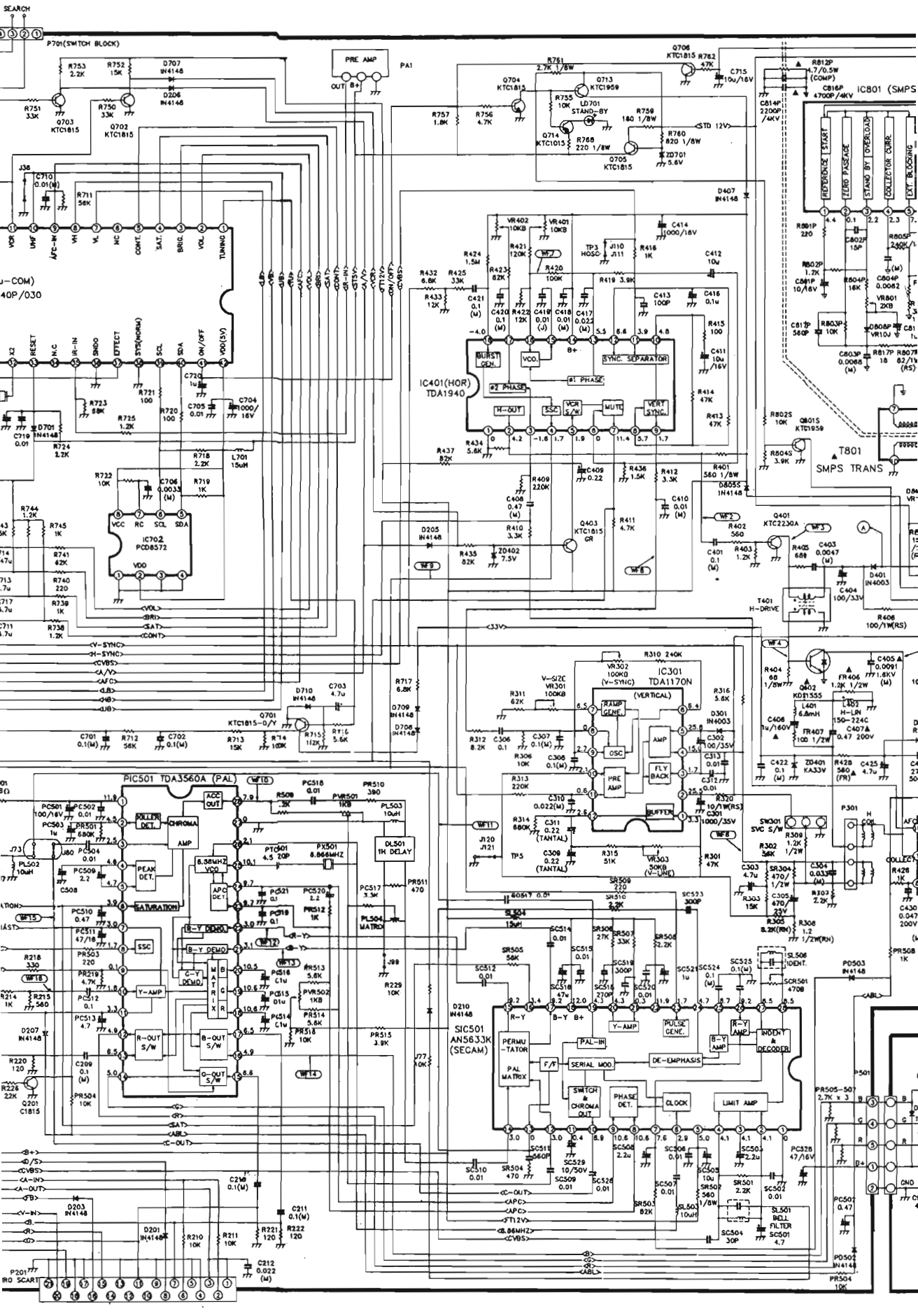
**#7. NO TELETEXT
(not in use)**

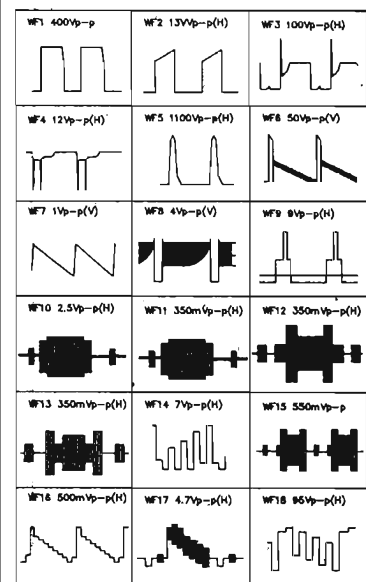
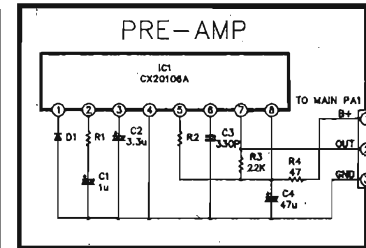
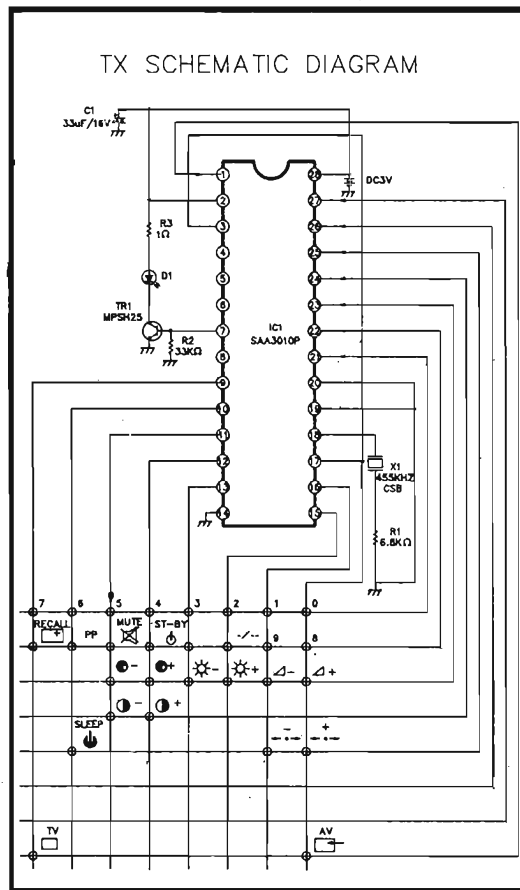
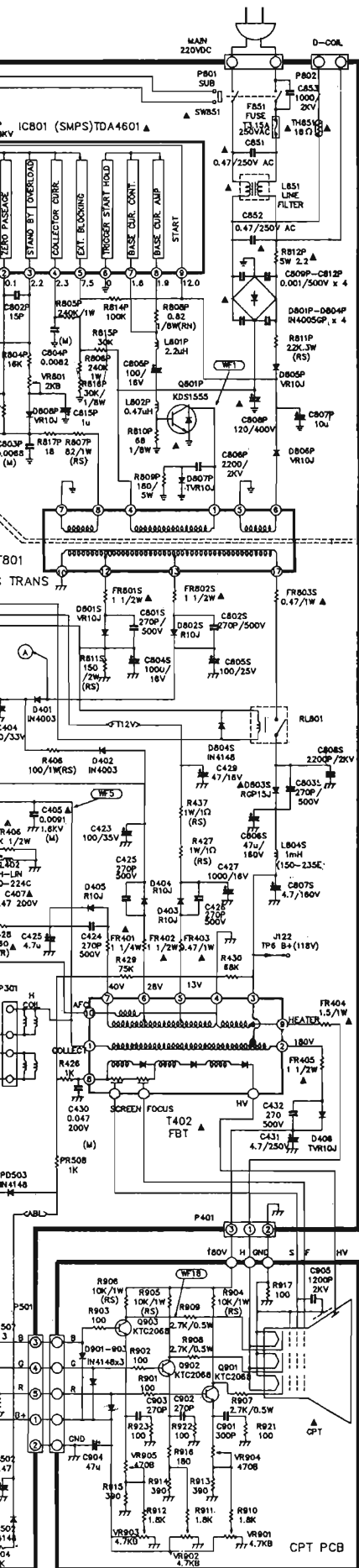


GOLDSTAR PC04A CHASSIS BLOK DIAGRAM

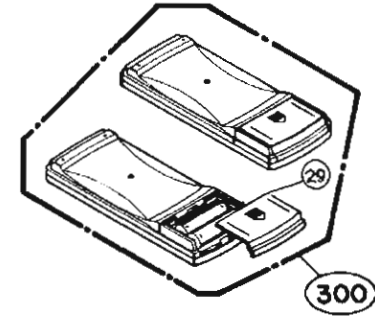
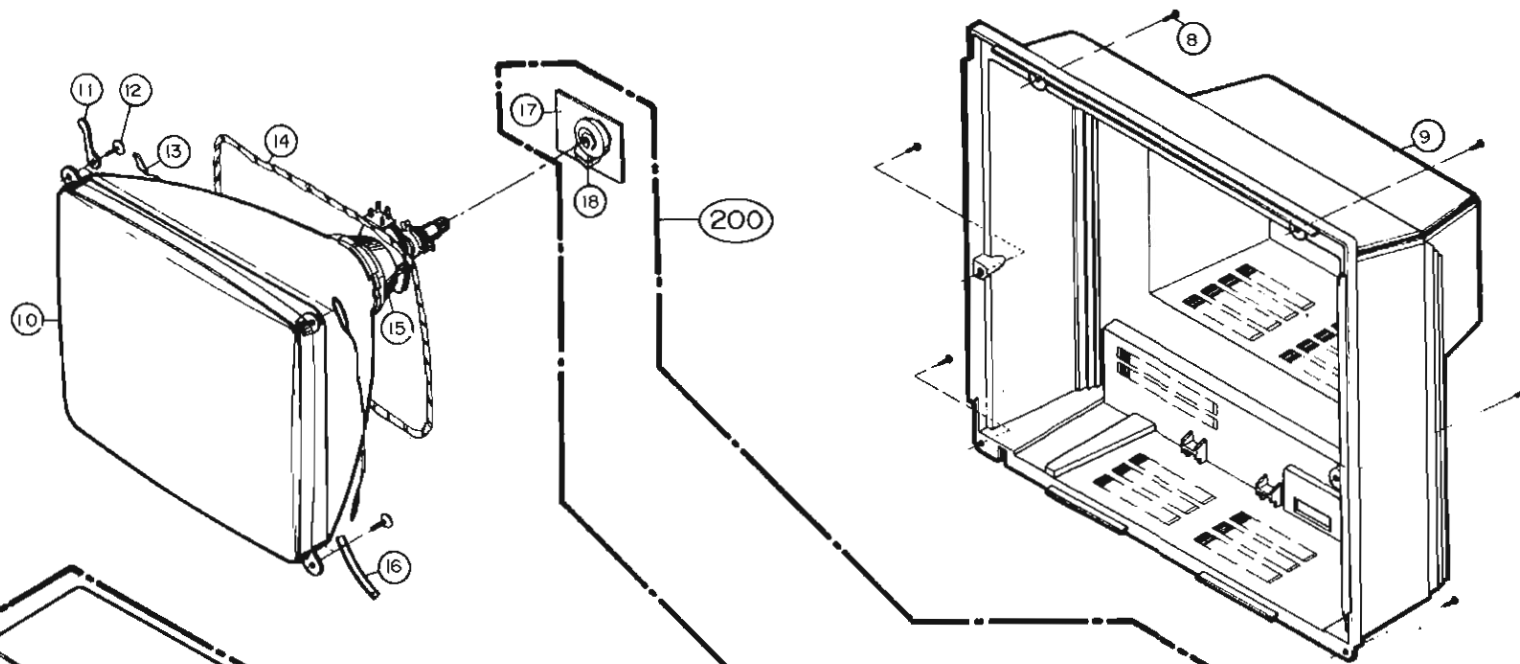








CIRCUIT NO.	14"	20"	21"	REMARK
R302	47KΩ	56KΩ	56KΩ	CARBON FILM RESISTOR
R311	91KΩ	91KΩ	82KΩ	"
R315	27KΩ	39KΩ	39KΩ	"
R427	1Ω 1W	1Ω 1W	1Ω 1W	METAL OXIDE FILM RESISTOR
R437	1Ω 1W	0.47Ω 1W	1Ω 1W	"
R429	10KΩ	56KΩ	75KΩ	CARBON FILM RESISTOR
FR404	1.2Ω	1.5Ω	1.5Ω	FUSIBLE RESISTOR
FR428	390Ω	390Ω	560Ω	"
C303	3.3μF	4.7μF	4.7μF	CE CAPACITOR
C405	0.0073/1.6KV	0.0091/1.6KV	0.0091/1.6KV	WPP CAPACITOR
C407	0.39/200V	0.39/200V	0.47/200V	"
L401	3.3μH	6.8μH	6.8μH	PEAKING COIL
L402	150-224L	150-224C	150-224C	LINEARITY SOIL
T402	154-084F	154-177J	154-194B	FBT

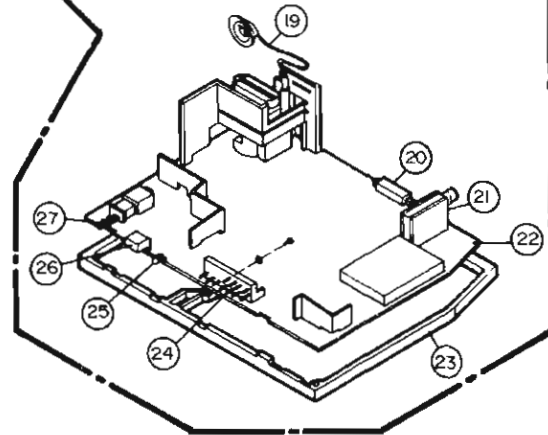
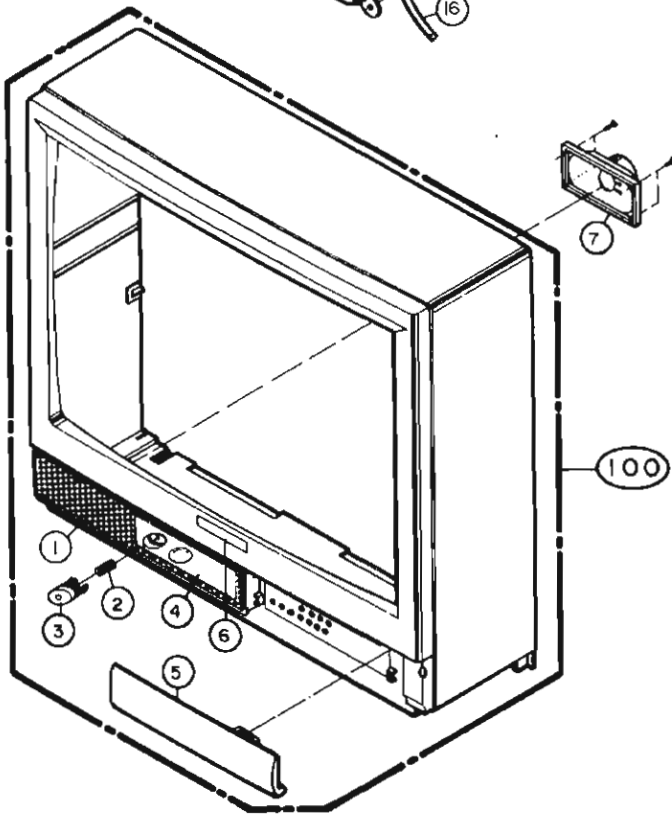


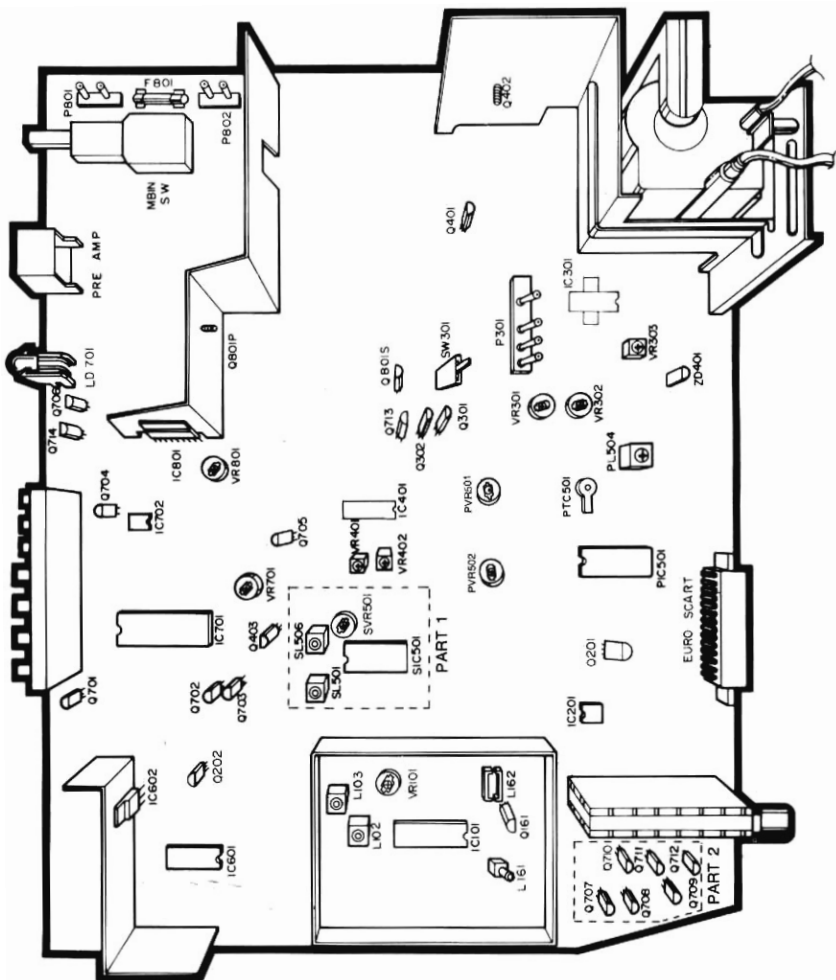
SP : Serviceable Parts
NSP : Not Serviceable Parts

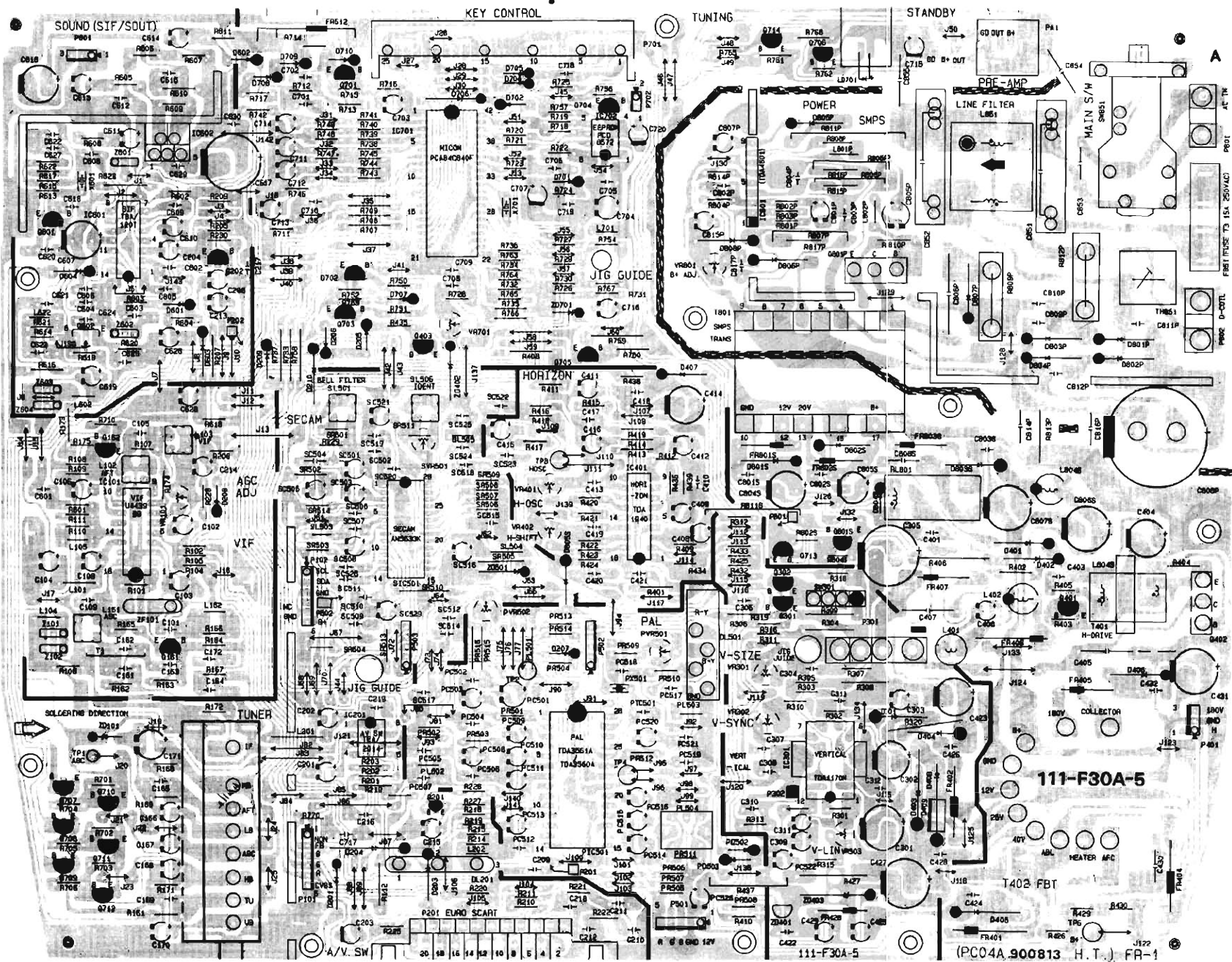
NO.	DESCRIPTIONS	PART NO.	REMARKS
1	GRILL, SPEAKER	314-198B	SP
2	SPRING, COIL	320-062H	SP
3	BUTTON, POWER	441-165B	SP
4	WINDOW, LED DISPLAY	316-262A	SP
5	DOOR, FRONT CONTROL	315-455B	SP
6	MARK, BRAND	410-552A	SP
7	SPEAKER	120-480A	SP
8	SCREW, D4x L18	1TTG0403118	NSP
9	COVER, BACK	303-D72S	SP
10	COLOUR PICTURE TUBE (WITH DY)	2055-V0083E	SP
11	HOLDER, METAL ASSY	341-335A	SP
12	SCREW, HEXAGON HEAD	332-235A	SP
13	LEAD SET, EARTH	170-799C	SP
14	COIL, DEGAUSSING	150-276M	SP
15	DEFLECTION YOKE	153-151D	SP
16	HOLDER, LEAD WIRE	341-408H	NSP
17	PRINTED CIRCUIT BOARD ASSEMBLY, CPT	110-A31P	SP
18	SOCKET, CPT	381-094C	SP
19	FLYBACK TRANSFORMER	154-177J	SP
20	PIN PERI-SOCKET	381-090A	SP
21	TUNER	113-105K	SP
22	PRINTED CIRCUIT BOARD ASSEMBLY, MAIN	110-M77M	SP
23	FRAME, MAIN CHASSIS ASSEMBLY	312-258A	SP
24	SWITCH, BLOCK	140-306A	SP
25	HOLDER, LED	341-596A	SP
26	PRE-AMP	106-042B	SP
27	SWITCH, MAIN	140-278C	SP
28	CORD, POWER	174-171L	NSP
29	COVER, BATTERY	303-E27A	SP

SUB ASSY

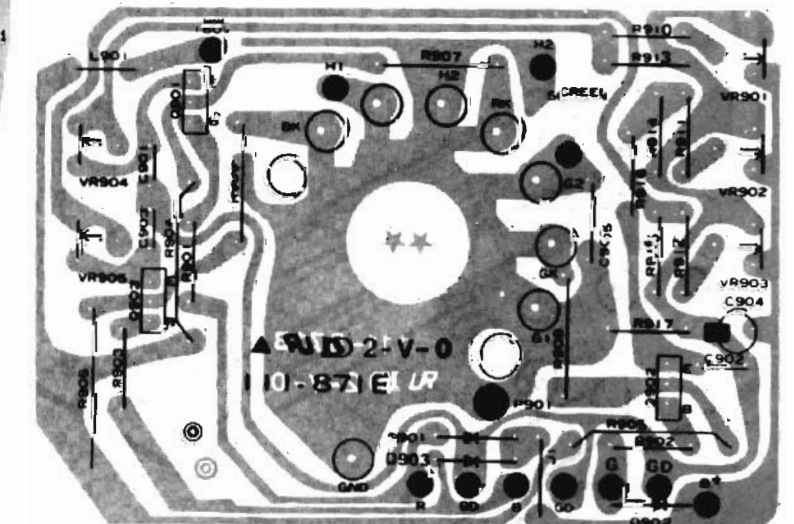
100	CABINET ASSEMBLY	300-875D	SP
200	CHASSIS ASSEMBLY, PC04A MAIN	300-829M	SP
300	REMOTE CONTROL ASSY	105-068A	SP



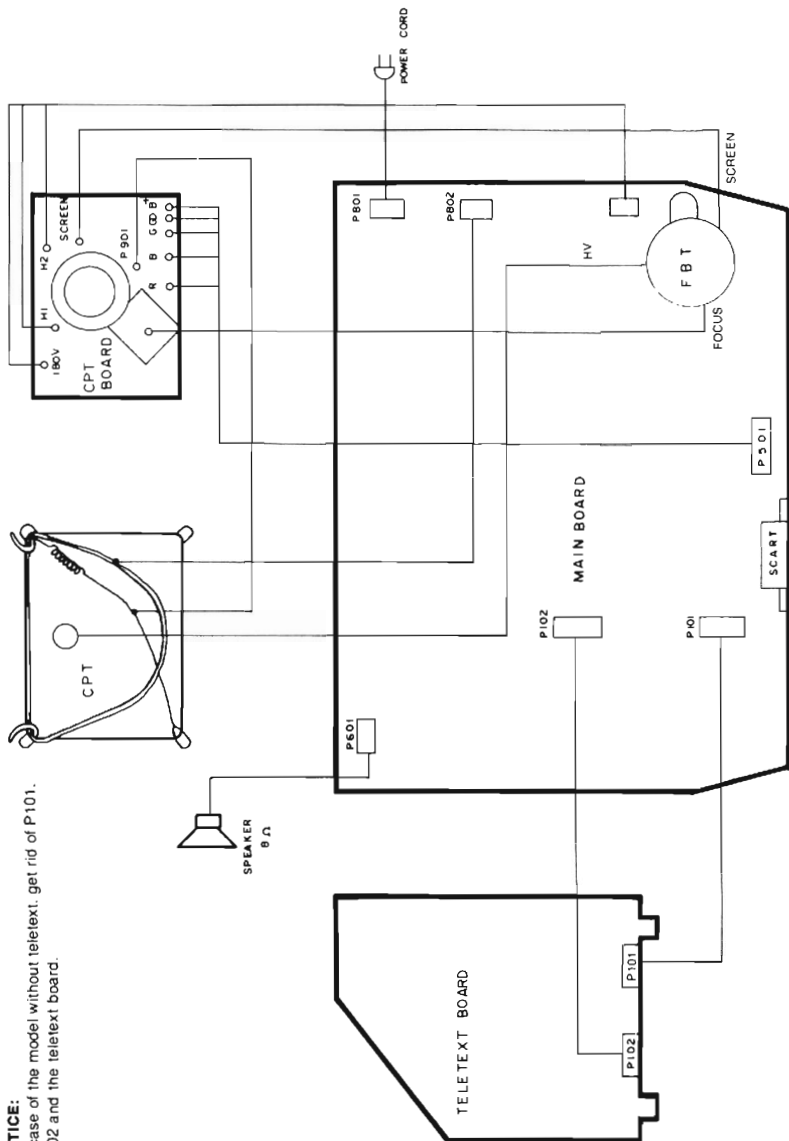




TXT P.C.BOARD (COMPONENT SIDE): (NOT IN USE)








WIRING DIAGRAM






NOTICE:
In case of the model without teletext, get rid of P101, P102 and the teletext board.

TERMINAL VIEW OF SEMICONDUCTOR

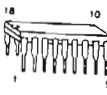


DIODE

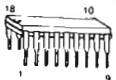
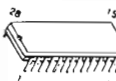

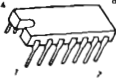


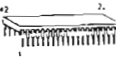
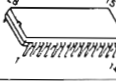

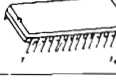

FIGURE	DESCRIPTION	REFERENCE NO.
	1N4148TA	D1-D8, D201, D203 D205, D206, D207 D208, D210, D601 D602, D603, D604 D701, D703 D704-D709 D901-D903, D804S PD502, 503, SD501
	1N4003TA	D301, D401, D402
	R10J	D404-D407, D801S D802S, D805S D805P-D808P
	RGP15J	D403, D408
	1N4005TA	D801P-D804P
	GU3C	D803S
	KA33V	ZD401
	HZ33T	
	Z5.6BM	ZD1, ZD701
	Z7.5BM	ZD402

TRANSISTOR

	2SD1555	Q402, Q801
	KTC1815-GR	Q403
	KTC1815-O/Y	Q201, Q202, Q301 Q302 Q701-Q709
	KTC388A	Q161
	KTA1015-O/Y	Q710, Q711, Q712 Q714
	KTC2230A	Q401
	KTC1959-Y	Q713, Q801S
	KTC2236A-O	Q1
	KTC2068	Q901-Q903

IC

	TDA4439 U4439BG	IC101
	TEA1014	IC201
	TDA1170N	IC301

	TDA1940	IC401
	GD76C88-10	IC3
	TDA-3560B GD76C88-15	PIC501
	TDA-3560A	IC601
	TDA4601	IC801
	SAA5243P/E	IC2
	PCF84C640/030	IC701
	AN5633K	SIC501
	PCF84C640/030 PCD8582	IC5
	PCD85C72 PCD8572	IC702
	MAB8461	IC4
	SAA5231-2 SAA5231	IC1

COMPONENT LOCATION GUIDE

(Refer to page 33)

R101	2A	R319	2D	R702	1A	R761	5D	PR502	2B
R102	3A	R320	1D	R703	1A	R762	5D	PR503	2B
R104	2A	R401	2C	R704	1A	R763	4C	PR504	2C
R105	3A	R402	3E	R705	1A	R764	4C	PR505	1C
R106	2A	R403	2E	R706	1A	R765	4C	PR506	1C
R107	3A	R404	3E	R707	4B	R766	4C	PR507	1C
R108	3A	R405	2E	R708	4B	R767	4C	PR508	1D
R109	3A	R406	2D	R709	4B	R768	5D	PR509	2C
R110	3A	R408	4C	R710	3A	R769	4C	PR510	2C
R111	3A	R409	3C	R711	4B	R770	1B	PR511	1C
R112	1B	R410	1D	R712	5B	R771	4C	PR512	2C
R161	1A	R411	3C	R713	5B	R801S	3D	PVR501	2C
R162	2A	R412	3C	R714	5B	R802S	3D		
R163	2A	R413	3C	R715	5B	R804S	3D	C101	2A
R164	2A	R414	3C	R716	5B	R811S	3D	C102	3A
R165	2A	R415	3C	R717	5B	R801P	4D	C103	2A
R166	2A	R416	3C	R718	5C	R802P	4D	C104	2A
R167	2A	R417	3C	R719	5C	R803P	4D	C105	3A
R168	1A	R418	3C	R720	5C	R804P	4C	C106	3A
R169	1A	R419	3C	R721	5C	R805P	4D	C108	2A
R171	1A	R420	3C	R722	5C	R806P	5D	C109	2A
R172	2A	R421	3C	R723	5C	R807P	4D	C161	2A
R201	1B	R422	3C	R724	4C	R808P	5D	C162	2A
R202	1B	R423	3C	R725	5C	R809P	4E	C163	2A
R203	1B	R424	3C	R726	4C	R810P	4D	C164	2A
R205	4A	R425	3C	R727	4C	R811P	5D	C165	1A
R207	4A	R426	1E	R728	4B	R812P	4E	C166	1A
R208	3A	R427	1D	R729	4C	R813P	3E	C167	1A
R209	4A	R429	1E	R729	4C	R814P	5C	C168	1A
R210	1C	R430	1E	R730	4C	VR101	3A	C169	1A
R211	1C	R432	3C	R731	4C	VR301	2C	C170	1A
R212	1B	R433	3C	R732	4C	VR302	2C	C171	2A
R214	1B	R434	2C	R733	4B	VR303	1D	C201	1B
R215	1B	R435	4B	R734	4C	VR401	3C	C202	2B
R218	1B	R436	3C	R735	4C	VR701	4B	C203	2B
R219	1B	R437	1D	R736	4C	VR801	4C	C204	4A
R220	1B	R601	3A	R737	4B	FR401	1D	C206	4A
R221	1C	R602	4A	R738	5B	FR402	1D	C209	1C
R222	1C	R603	4A	R739	5B	FR403	1D	C210	1C
R225	1B	R604	4A	R740	5B	FR404	1E	C211	1C
R226	1B	R605	5A	R741	5B	FR405	2E	C212	1C
R227	1B	R606	5A	R742	5B	FR406	2E	C213	4A
R229	3B	R607	5A	R743	5B	FR407	2D	C214	3A
R301	1D	R608	5A	R744	5B	FR428	1D	C215	1B
R302	2D	R609	5A	R745	5B	FR801S	3D	C301	1D
R303	2D	R610	5A	R746	4B	FR802S	3D	C302	2D
R304	2D	R611	5A	R747	5B	FR803S	3D	C303	2D
R305	2D	R612	5B	R748	5B	SR501	3B	C304	2D
R306	2C	R613	4A	R749	5B	SR502	3B	C305	3D
R307	2D	R614	4A	R750	4B	SR503	3B	C306	2D
R308	2D	R615	5A	R751	4B	SR504	2B	C307	2D
R309	2D	R616	4A	R752	4B	SR505	2C	C308	2D
R310	2D	R617	5A	R753	4B	SR506	3B	C309	1D
R311	2D	R618	3A	R754	4C	SR507	3B	C310	1D
R312	3C	R619	3A	R755	5C	SR508	3B	C311	1D
R313	1D	R620	3A	R756	5C	SR509	3B	C401	3E
R314	1D	R621	4A	R757	5C	SR510	2B	C403	3E
R315	1D	R622	5A	R758	4B	SR513	2B	C404	3E
R316	2D	R623	5A	R759	4C	SVR501	3B	C405	2E
R318	2D	R701	1A	R760	4C	PR501	3C	C406	2D

C407	2D	C705	4C	PC521	2C	D805P	5D	L102	3A
C408	3C	C706	5C	PC522	1D	D806P	4D	L103	3A
C409	3C	C707	4C	SC501	3B	D807P	4D	L104	2A
C410	3C	C708	4B	SC502	3B	D808P	4C	L105	3A
C411	3C	C709	4B	SC504	3B	D801S	3D	L161	2A
C412	3C	C710	4B	SC505	3B	D802S	3D	L162	2A
C413	3C	C711	5B	SC506	3B	D803S	3D	L201	2B
C414	3C	C712	5B	SC507	3B	D804S	3D	L401	2D
C415	3C	C713	4B	SC508	3B	D805S	2C	L402	2E
C416	3C	C714	5B	SC509	2B	SD501	2C	L602	3A
C417	3C	C715	5D	SC510	2B	PD502	1C	L622	4A
C418	3C	C716	4C	SC511	2B	PD503	1D	L701	4C
C419	3C	C717	1B	SC512	2B	ZD401	1D	L801P	5D
C420	2C	C801P	4D	SC513	2B	ZD701	4C	L804S	3E
C421	2C	C802P	4C	SC514	2B	ZD702	4C	L851	5E
C422	1D	C803P	4D	SC515	3B	LD701	5D	PL501	2C
C423	2D	C804P	4D	SC516	3B			PL502	1B
C424	1E	C805P	4D	SC517	2B	T401	2E	PL503	2C
C425	1D	C806P	4D	SC518	3B	T801	4C	PL504	1C
C426	2D	C807P	5C	SC519	3B			SL501	3B
C427	1D	C808P	3E	SC520	3B	Q161	2A	SL503	3B
C428	1D	C809P	4E	SC521	3B	Q201	1B	SL504	3C
C429	1D	C810P	4E	SC523	3C	Q202	4A	SL505	3B
C430	1E	C811P	4E	SC524	3B	Q301	2D	SL506	3B
C431	2E	C812P	3E	SC525	3B	Q302	2D	DL201	1B
C432	2E	C814P	3E	SC526	2B	Q402	2E		
C522	3C	C815P	4C	PTC501	2C	Q403	4B	PA1	5E
C528	1C	C816P	3E			Q601	4A	P101	1B
C601	3A	C801S	3D	D201	1B	Q602	4A	P102	3B
C602	4A	C802S	3D	D203	1B	Q701	5B	P201	1B
C603	4A	C803S	3D	D204	1B	Q702	4B	P301	2D
C604	4A	C804S	3D	D205	4B	Q703	4B	P401	2E
C605	4A	C805S	3D	D206	4B	Q704	5C	P501	1C
C606	4A	C806S	3E	D207	2C	Q705	4C	P601	5A
C607	4A	C807S	3E	D210	3B	Q706	5D	P701	5C
C608	5A	C851	4E	D301	2D	Q707	1A	P702	5C
C609	4A	C852	4D	D401	3D	Q708	1A	P801	5E
C610	4A	C853	4E	D402	2E	Q709	1A	P802	4E
C611	5A	C854	5E	D403	1D	Q710	1A	PX501	2C
C612	5A	C855	5D	D404	2D	Q711	1A	X501	5A
C613	5A	PC501	2C	D405	1E	Q712	1A	X701	4C
C614	5A	PC502	2B	D406	2E	Q713	3D	F851	4E
C615	5A	PC503	2B	D407	4C	Q714	5D	SW301	2D
C616	5A	PC504	2B	D601	4A	Q715	3C	SW851	5E
C617	5A	PC505	2B	D602	5A	Q801S	3D	Z101	2A
C618	4A	PC506	1B	D603	4A	D801P	4D	Z102	2A
C619	3A	PC507	1B	D604	4A			Z601	5A
C620	4A	PC508	2B	D701	5C	IC101	3A	Z602	4A
C621	4A	PC509	2C	D702	5C	IC201	2B	Z603	3A
C622	5A	PC510	2C	D703	5C	IC301	2D	Z604	3A
C623	4A	PC511	1C	D704	5C	IC401	3C	ZF101	2A
C624	4A	PC512	1C	D705	5C	IC601	4A	TH851	4E
C625	4A	PC513	1C	D706	5B	IC602	5A	RL801	3D
C626	4A	PC514	1C	D707	4B	IC701	5B	TP1	2A
C627	5A	PC515	1C	D708	5B	IC702	5C	TP2	2C
C628	3A	PC516	1C	D709	5B	IC801	4D	TP3	3C
C701	5B	PC517	2C	D801P	4E	SIC501	2B	TP4	2C
C702	5B	PC518	2C	D802P	4E	PIC501	1C	TP5	1C
C703	5B	PC519	2C	D803P	4E			TP6	1E
C704	4C	PC520	2C	D804P	4E	L101	2A		

[illegible]

ELECTRONIC PARTS LIST				PAGE 1	
MODEL: SCX19000 UPM802		BUYER NAME: ELECTRON		Run-Date: 19.01.2019	
ITEM	QTY	UNIT	DESCRIPTION	SPECIFICATION	REMARKS
C413	002810015		CAPACITOR CERAMIC(TEMP CODE)	100P 50V J MPD TS	
C414	001060416		CAPACITOR ELECTROLYTIC	10000 50V 16W H PMS TFS1	
C415	001040416		CAPACITOR ELECTROLYTIC	1000 50V 16W H PMS TFS	
C416	003202310509		CAPACITOR POLYESTERFILM	0.0220M 100V K POLY TP	
C418	001030045		CAPACITOR CERAMIC(CHENG DIELE)	0.010M 50V J F TS	
C419	181-009A		CAPACITOR	100 100V 0.01M TS	
C420	0010410045		CAPACITOR POLYESTERFILM	0.1M 100V L POLY TP	
C421	0010410045		CAPACITOR POLYESTERFILM	0.1M 100V L POLY TP	
C422	001050416		CAPACITOR ELECTROLYTIC	1000 50V 16W H PMS TFS	
C423	001070416		CAPACITOR ELECTROLYTIC	1000 50V 16W H PMS TFS	
C424	0002710045		CAPACITOR CERAMIC(CHENG DIELE)	270P 500V K TS	
C425	001060416		CAPACITOR ELECTROLYTIC	1000 50V 16W H PMS TFS	
C426	0002710045		CAPACITOR CERAMIC(CHENG DIELE)	270P 500V K TS	
C429	001060416		CAPACITOR ELECTROLYTIC	1000 50V 16W H PMS TFS	
C430	181-009A		CAPACITOR	PM 2000 0.007M TS	
C431	00475180418		CAPACITOR ELECTROLYTIC	4.7M 50V 250W TS	
C432	002710015		CAPACITOR CERAMIC(CHENG DIELE)	270P 500V K TS	
C433	0002700045		CAPACITOR CERAMIC(TEMP CODE)	270P 50V J MPD TS	
C434	00002310509		CAPACITOR POLYESTERFILM	0.00220M 100V K POLY TP	
C435	001030045		CAPACITOR CERAMIC(CHENG DIELE)	0.010M 50V J F TS	
C436	00022310509		CAPACITOR POLYESTERFILM	0.0220M 100V K POLY TP	
C437	001030045		CAPACITOR CERAMIC(CHENG DIELE)	0.010M 50V J F TS	
C438	00475180418		CAPACITOR ELECTROLYTIC	4.70M 50V 16W H PMS TFS	
C439	0010310509		CAPACITOR CERAMIC(CHENG DIELE)	0.010 100V L POLY TP	
C440	003300405		CAPACITOR CERAMIC(TEMP CODE)	330P 50V J SL TS	
C441	001040416		CAPACITOR ELECTROLYTIC	1000 50V 16W H PMS TFS	
C442	001040416		CAPACITOR ELECTROLYTIC	1000 50V 16W H PMS TFS	
C443	00022310509		CAPACITOR POLYESTERFILM	0.0220M 100V K POLY TP	
C444	001030045		CAPACITOR CERAMIC(CHENG DIELE)	0.010M 50V J F TS	
C445	0010410045		CAPACITOR POLYESTERFILM	0.1M 100V L POLY TP	
C446	00475180418		CAPACITOR ELECTROLYTIC	4.70M 50V 16W H PMS TFS	
C447	001030045		CAPACITOR CERAMIC(CHENG DIELE)	0.010M 50V J F TS	
C448	003300405		CAPACITOR CERAMIC(TEMP CODE)	330P 50V J SL TS	
C449	001030045		CAPACITOR CERAMIC(CHENG DIELE)	0.010M 50V J F TS	
C450	001030045		CAPACITOR CERAMIC(CHENG DIELE)	0.010M 50V J F TS	
C451	001030045		CAPACITOR CERAMIC(CHENG DIELE)	0.010M 50V J F TS	
C452	001030045		CAPACITOR CERAMIC(CHENG DIELE)	0.010M 50V J F TS	
C453	001030045		CAPACITOR CERAMIC(CHENG DIELE)	0.010M 50V J F TS	
C454	001030045		CAPACITOR CERAMIC(CHENG DIELE)	0.010M 50V J F TS	
C455	001030045		CAPACITOR CERAMIC(CHENG DIELE)	0.010M 50V J F TS	
C456	00475180418		CAPACITOR ELECTROLYTIC	4.70M 50V 16W H PMS TFS	
C457	0004710045		CAPACITOR CERAMIC(TEMP CODE)	470P 50V J SL TP	
C458	001060416		CAPACITOR ELECTROLYTIC	1000 50V 16W H PMS TFS	
C459	001030045		CAPACITOR CERAMIC(CHENG DIELE)	0.010M 50V J F TS	
C460	0010410045		CAPACITOR POLYESTERFILM	0.1M 100V L POLY TP	
C461	0010410045		CAPACITOR POLYESTERFILM	0.1M 100V L POLY TP	
C462	00022310509		CAPACITOR POLYESTERFILM	0.0220M 100V K POLY TP	

[illegible]

MEMORANDUM PARTS LIST					PAGE 6	
MODEL	SCHEMATIC	UPGRADE	BATCH NAME	ELECTRONICS	REV. DATE	REV. NO.
	1	2	3	4	5	6
QTY	DESCRIPTION	PART NUMBER	DESCRIPTION	SPECIFICATION		
C709	0003100405		CAPACITOR CERAMIC (HIGH OMEGA DIELECT)	0.01UF 50V 2 F IS		
C710	033504618		CAPACITOR ELECTROLYTIC	100UF 50V H FMS TFS		
C711	0027000415		CAPACITOR CERAMIC (TEMP COEFF)	27P 50V J WMS JTP		
C712	0001015059		CAPACITOR POLYESTERFILM	0.01UF 100V C POLY TFS		
C713	0475064818		CAPACITOR ELECTROLYTIC	47UF 50V H FMS TFS		
C714	0475064818		CAPACITOR ELECTROLYTIC	47UF 50V H FMS TFS		
C715	0475064818		CAPACITOR ELECTROLYTIC	47UF 50V H FMS TFS		
C716	0475064818		CAPACITOR ELECTROLYTIC	47UF 50V H FMS TFS		
C717	0054100515		CAPACITOR CERAMIC (HIGH OMEGA DIELECT)	500P 50V C B IS		
C718	0103000405		CAPACITOR CERAMIC (HIGH OMEGA DIELECT)	10UF 50V 2 F IS		
C719	0103000405		CAPACITOR CERAMIC (HIGH OMEGA DIELECT)	0.01UF 50V 2 F IS		
C720	0014064818		CAPACITOR ELECTROLYTIC	1.0UF 50V 50 H FMS TFS		
C721	0014064818		CAPACITOR ELECTROLYTIC	1.0UF 50V 50 H FMS TFS		
C8015	0027100515		CAPACITOR CERAMIC (HIGH OMEGA DIELECT)	27P 500V C B IS		
C8016	0027100515		CAPACITOR CERAMIC (HIGH OMEGA DIELECT)	27P 500V C B IS		
C8017	0027100515		CAPACITOR CERAMIC (HIGH OMEGA DIELECT)	27P 500V C B IS		
C8018	0027100515		CAPACITOR CERAMIC (HIGH OMEGA DIELECT)	27P 500V C B IS		
C8019	0027100515		CAPACITOR CERAMIC (HIGH OMEGA DIELECT)	27P 500V C B IS		
C8020	0004021059		CAPACITOR POLYESTERFILM	0.0004UF 100V C POLY TFS		
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C8162	0004021059		CAPACITOR POLYESTERFILM	0.0004UF 100V C POLY TFS		
C8163	0004021059		CAPACITOR POLYESTERFIL			

REPLACEMENT PARTS LIST				PAGE : 2
MODEL : SX107P2 (HMR2)		BUYER NAME : ELECTRONICS		DATE DATE : 9/01/2018
S/L	ALQ	QTY	PART NUMBER DESCRIPTION	SPECIFICATION
0005	0004140892B	0100E		(C51418) TA
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0012	0004053078B	0100E		3M40031A
0013	0004053078B	0100E		3M40031A
0014	0001500094B	0100E		WIP 15A, 17P, 3000V-GL
0015	0001500094B	0100E		R101 SYMBOL TP
0016	0001500094B	0100E		R101 SYMBOL TP
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0151	0001500094B	0100E		(C51418) TA
0152	0001500094B	0100E		(C51418) TA
0153	0001500094B	0100E		(C51418) TA
0154	0001500094B	0100E		(C51418) TA
0155	0001500094B	0100E		(C51418) TA
0156	0001500094B	0100E		(C51418) TA
0157	0001500094B	0100E		(C51418) TA
0158	0001500094B	0100E		(C51418) TA
0159	0001500094B	0100E		(C51418) TA
0160	0001500094B	0100E		(C51418) TA
0161	0001500094B	0100E		(C51418) TA
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0163	0001500094B	0100E		(C51418) TA
0164	0001500094B	0100E		(C51418) TA
0165	0001500094B	0100E		(C51418) TA
0166	0001500094B	0100E		(C51418) TA
0167	0001500094B	0100E		(C51418) TA
0168	0001500094B	0100E		(C51418) TA
0169	0001500094B	0100E		(C51418) TA
0170	0001500094B	0100E		(C51418) TA
0171	0001500094B	0100E		(C51418) TA
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0173	0001500094B	0100E		(C51418) TA
0174	0001500094B	0100E		(C51418) TA
0175	0001500094B	0100E		(C51418) TA
0176	0001500094B	0100E		(C51418) TA
0177	0001500094B	0100E		(C51418) TA
0178	0001500094B	0100E		(C51418) TA
0179	0001500094B	0100E		(C51418) TA
0180	0001500094B	0100E		(C51418) TA
0181	0001500094B	0100E		(C51418) TA
0182	0001500094B	0100E		(C51418) TA
0183	0001500094B	0100E		(C51418) TA
0184	0001500094B	0100E		(C51418) TA
0185	0001500094B	0100E		(C51418) TA
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0190	0001500094B	0100E		(C51418) TA
0191	0001500094B	0100E		(C51418) TA
0192	0001500094B	0100E		(C51418) TA
0193	0001500094B	0100E		(C51418) TA
0194	0001500094B	0100E		(C51418) TA
0195	0001500094B	0100E		(C51418) TA
0196	0001500094B	0100E		(C51418) TA
0197	0001500094B	0100E		(C51418) TA
0198	0001500094B	0100E		(C51418) TA
0199	0001500094B	0100E		(C51418) TA
0200	0001500094B	0100E		(C51418) TA
0201	0001500094B	0100E		(C51418) TA
0202	0001500094B	0100E		(C51418) TA
0203	0001500094B	0100E		(C51418) TA
0204	0001500094B	0100E		(C51418) TA
0205	0001500094B	0100E		(C51418) TA
0206	0001500094B	0100E		(C51418) TA
0207	0001500094B	0100E		(C51418) TA
0208	0001500094B	0100E		(C51418) TA
0209	0001500094B	0100E		(C51418) TA
0210	0001500094B	0100E		(C51418) TA
0211	0001500094B	0100E		(C51418) TA
0212	0001500094B	0100E		(C51418) TA
0213	0001500094B	0100E		(C51418) TA
0214	0001500094B	0100E		(C51418) TA
0215	0001500094B	0100E		(C51418) TA
0216	0001500094B	0100E		(C51418) TA
0217	0001500094B	0100E		(C51418) TA
0218	0001500094B	0100E		(C51418) TA
0219	0001500094B	0100E		(C51418) TA
0220	0001500094B	0100E		(C51418) TA
0221	0001500094B	0100E		(C51418) TA
0222	0001500094B	0100E		(C51418) TA
0223	0001500094B	0100E		(C5141

REPAIRMENT PARTS LIST				PAGE : 2
MODEL : SXCR1900 UPGRADE		SYSTEM NAME : ELECTRONICS		DATE DATE : 92-01-27
NO.	QTY	PART NAME	DESCRIPTION	SPECIFICATION
PC529	4	47KΩ472J2A	CAPACITOR-ELECTROLYTIC	0.47UF 50V 10% RHS 1P5
PC530	4	47KΩ472J1A	CAPACITOR-ELECTROLYTIC	0.47UF 50V 10% RHS 1P5
PC531	4	100Ω	RESISTOR-THIN FILM	100Ω 1/4W 5% 1P5
PC503	4	100Ω140R02	DIODE	100V140V 1P5
PC1501	1	1113560000	IC- TELEPHONE	100-360-811935
PC1502	1	0090416000	RESISTOR-FIRED CARBON FILM	5.1K 1/4W 5% 1A52
PC1503	4	0401021011	INDUCTOR ACTUAL LEAD	100MH 8 2.7-3.3-1P
PC1504	4	0401021011	INDUCTOR ACTUAL LEAD	100MH 8 2.7-3.3-1P
PC1505	4	150-140	DIODE	150V 140V 1P5
PC501	4	0000303600	RESISTOR-FIRED CARBON FILM	100K 1/4W 5% 1A52
PC502	4	0000303600	RESISTOR-FIRED CARBON FILM	2.7K 1/4W 5% 1A52
PC503	4	0000300400	RESISTOR-FIRED CARBON FILM	10K 1/4W 5% 1A52
PC504	4	0000300400	RESISTOR-FIRED CARBON FILM	10K 1/4W 5% 1A52
PC505	4	0000301600	RESISTOR-FIRED CARBON FILM	2.7K 1/4W 5% 1A52
PC506	4	0000301600	RESISTOR-FIRED CARBON FILM	2.7K 1/4W 5% 1A52
PC507	4	0000301600	RESISTOR-FIRED CARBON FILM	2.7K 1/4W 5% 1A52
PC508	4	0000301600	RESISTOR-FIRED CARBON FILM	2.7K 1/4W 5% 1A52
PC509	4	0000301600	RESISTOR-FIRED CARBON FILM	2.7K 1/4W 5% 1A52
PC510	4	0000300700	RESISTOR-FIRED CARBON FILM	390 1/4W 5% 1A52
PC511	4	0407000700	RESISTOR-FIRED CARBON FILM	470 1/4W 5% 1A52
PC512	4	0000301600	RESISTOR-FIRED CARBON FILM	1.0K 1/4W 5% 1A52
PC513	4	0000301600	RESISTOR-FIRED CARBON FILM	1.0K 1/4W 5% 1A52
PC514	4	0000301600	RESISTOR-FIRED CARBON FILM	5.0K 1/4W 5% 1A52
PC515	4	0000301600	RESISTOR-FIRED CARBON FILM	5.0K 1/4W 5% 1A52
PC516	4	0000301600	RESISTOR-FIRED CARBON FILM	5.0K 1/4W 5% 1A52
PC1501	1	181-1896	CAPACITOR	CAPACITOR THERMAL A SP-20P
PC501	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC502	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC503	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC504	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC505	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC506	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC507	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC508	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC509	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC510	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC511	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC512	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC513	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC514	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC515	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC516	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC517	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC518	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC519	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC520	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC521	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC522	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC523	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC524	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC525	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC526	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC527	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC528	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC529	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC530	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
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PC532	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
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PC534	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
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PC537	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
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PC540	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC541	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
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PC544	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC545	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
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PC552	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
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PC566	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC567	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC568	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC569	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
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PC571	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
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PC573	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC574	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC575	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC576	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC577	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC578	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC579	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
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PC583	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC584	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC585	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC586	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC587	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
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PC601	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC602	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
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PC604	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
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PC612	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC613	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC614	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC615	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC616	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC617	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC618	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC619	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC620	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC621	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC622	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC623	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC624	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC625	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC626	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC627	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC628	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC629	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC630	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC631	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
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PC633	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC634	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC635	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC636	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC637	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC638	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC639	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC640	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC641	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC642	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC643	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC644	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC645	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC646	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC647	1	180-4310	RESISTOR	180-4310 100Ω 1/4W 5% 1A52
PC648	1	180-4310		

[illegible][illegible]

