RGBTV-25F99
COLOUR TELEVISION

Service Manual

Features

- 64cm pure flat picture tube
- Auto search 218 programs presetting and memory
- Child Lock & On Screen Help Function
- 16:9 Mode

Haier group

Contents

I. TECHNICAL SPECIFICATION & SAFETY PRECAUTIONS

POWER SUPPLY: AC 150-250V, 50 Hz

* Tuning system: voltage synthesized type autosearch fine tuning system
* Power consumption: 120W
* Antenna input impedance: 75Ω
* Receiving system:
    a) Color system: PAL/SECAM/NTSC3.58MHZ/4.43MHZ
    b) Broadcast TV system: D/K, B/G, I, M
* Language displayed: English/Russian
* Video input: 1.0VPP (75Ω)
* Video output: 1.0VPP (75Ω)
* Audio input: 436m Vrms (40KΩ)
* Audio output: 436m Vrms (more than 600KΩ)

SAFETY PRECAUTIONS

INPORTANT SAFETY NOTICE

These parts are identified by many electrical and mechanical parts in this chassis have special safetyrelated characteristics. ! in the Schematic Diagram and Replacement Parts List.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent XRADIATION, Shock, Fire, or other Hazards.
Do not modify the original design without permission of the manufacturer.

General Guidance

An Isolation Transformer should always be used during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents that might result in personal injury caused by electrical shocks.
It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitry that might be inadvertently introduced during the service operation.
If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with a specified one.
When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1W), keep the resistor 10mm away from PCB.
Keep wires away from high voltage or high temperature parts.
Due to the high vacuum and large surface area of the picture tube, extreme care should be taken in handling the Picture Tube. Do not lift the Picture Tube by its Neck.

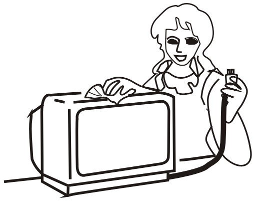
X-RAY Radiation

Warning:
The source of XRAY RADIATION in this TV receiver is the High Voltage Section and the Picture Tube.
For continued XRAY RADIATION protection, the replacement tube must be of the same type as specified in the Replacement Parts List.
Before returning the receiver to the customer
Always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to make sure that the set is safe to operate without any danger of electrical shock.

II SERVICEING PRECAUTIONS

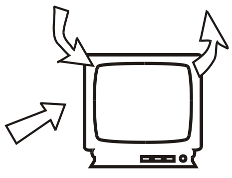
Warning and cautions

1. When you clean the TV set, please pull out the power plug from AC outlet. Don't clean the cabinet and the screen with benzene, petrol and other chemicals.

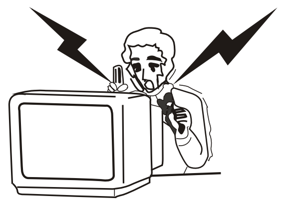


4. To prevent the TV set from firing and electric shock, don't make the TV set rain or moisture.

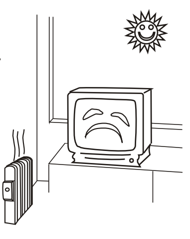
2. In order to prolong the using life of the TV set, please place it on a ventilated place.



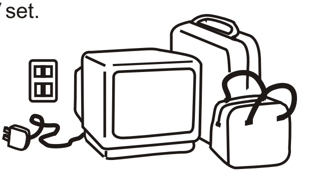
5. Don't open the back cover, otherwise it is possible to damage the components in the TV set and harm you.



3. Don't place the TV set in the sunshine or near heat source.



6. When the TV set isn't going to be used for long time or it is in thunder and lightening, please pull out the plug from AC outlet and the antenna plug from the cover of the TV set.



Explanation on the display tube

Generally, it is not needed to clean the tube surface. However, if necessary,its surface can be cleaned with a dry cotton cloth after cutting off the power.Don't use any cleanser. If using hard cloth, the tube surface will be damaged.

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

NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, 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 assembly of the receiver.
   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 substitution part or incorrect installation polarity 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 voltagemeasuring 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 receive 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, cottontipped 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 instrument and/or any of its electrical assemblies unless all solidstate 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.
   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 heat sink in this receiver.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components are usually 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 groundedtip soldering iron to solder or unsolder ES devices.
4. Use only an antistatic type folder removal device. Some solder removal devices not classified as "antistatic" can generate electrical charges sufficient to damage ES devices.
5. Do not use freonpropelled 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 even some normally harmless motions such as mutual brushing of your clothes' fabric or lifting of your foot from a carpeted floor might 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 oF to 600 oF.
2. Use an appropriate gauge of RMA resincore 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 mall wire bristle (0.5 inch, or 1.25cm) brush with a metal handle. Do not use freonpropelled spayon cleaners.
5. Use the following unsoldering technique
   a. Allow the soldering iron tip to reach normal temperature.(500 o F to 600o F)
   b. Heating the component lead until the solder melts.
   c. Quickly draw the melted solder with an antistatic, suctiontype solder removal device with solder braid.

   CAUTION: Work quickly to avoid overheating the circuit board printed foil.
6. Use the following unsoldering technique
   a. Allow the soldering iron tip to reach normal temperature.(500 o F to 600o 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 wirebristle brush.

Remove /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 of 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 .

Removal

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.

Draw away the melted solder with an antistatic suctiontype solder removal device (or with solder braid) before removing the IC.

Replacement

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

"SmallSignal" Discrete Transistor
Removal/Replacement

Remove the defective transistor by clipping its leads as close as possible to the component body.
Bend into a "U" shape the end of each of three leads remaining on the circuit board.
Bend into a "U" shape the replacement transistor leads.
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

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

Diode Removal/Replacement

Remove defective diode by clipping its leads as close as possible to diode body.
Bend the two remaining leads perpendicularly to the circuit board.
Observing diode polarity, wrap each lead of the new diode round the corresponding lead on the circuit board.
Securely crimp each connection and solder it.
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 the circuit board hollow stake.
2. Securely crimp the 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 foil to the circuit board causing the foil to separate from or "liftoff" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections

To repair a 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 outaway 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 the 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 insure 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 20gauge 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.

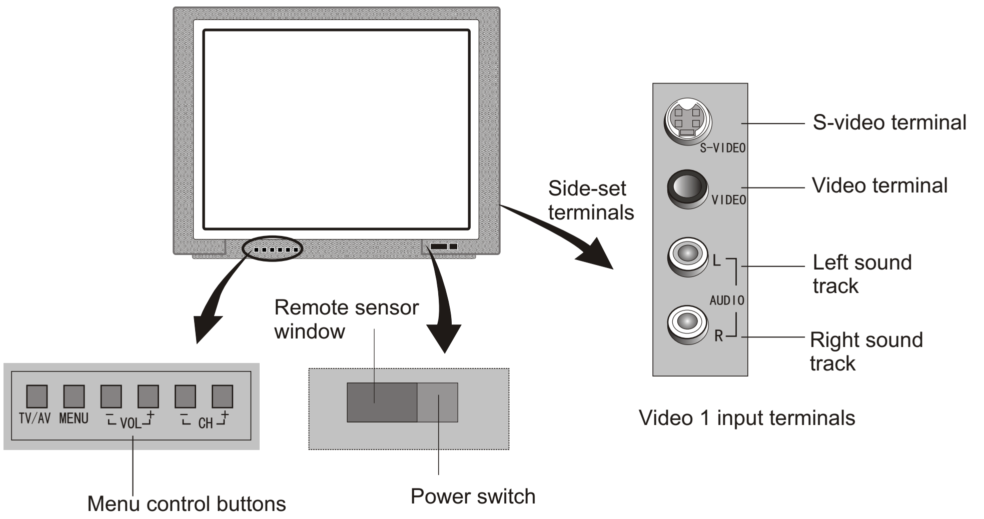
CAUTION: Be sure the insulated jumper wire is dressed so that it does not touch components or sharp edges.

III.FUNCTIONS & LOCATION OF CONTROLS

* Complete frequency range CATV (470MHz)
* Preset of 218 programs. Curtaindrawing type of display when powered up.
* Various kinds of picture modes and sound modes
* Screen display of menu in English/Russian
* Program scan
* Surrounding stereo
* I^2C bus control with digital technology
* Zooming of pictures

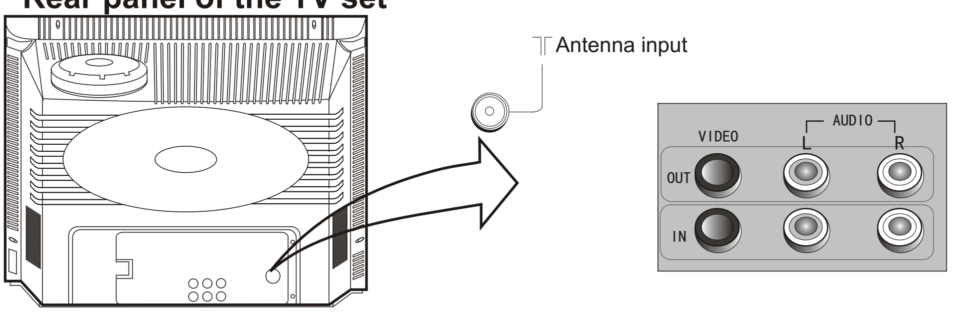
Location of controls

Front and side panel of the TV set



***When using S-video terminal, please pull out video 1 input terminal.**

Rear panel of the TV set

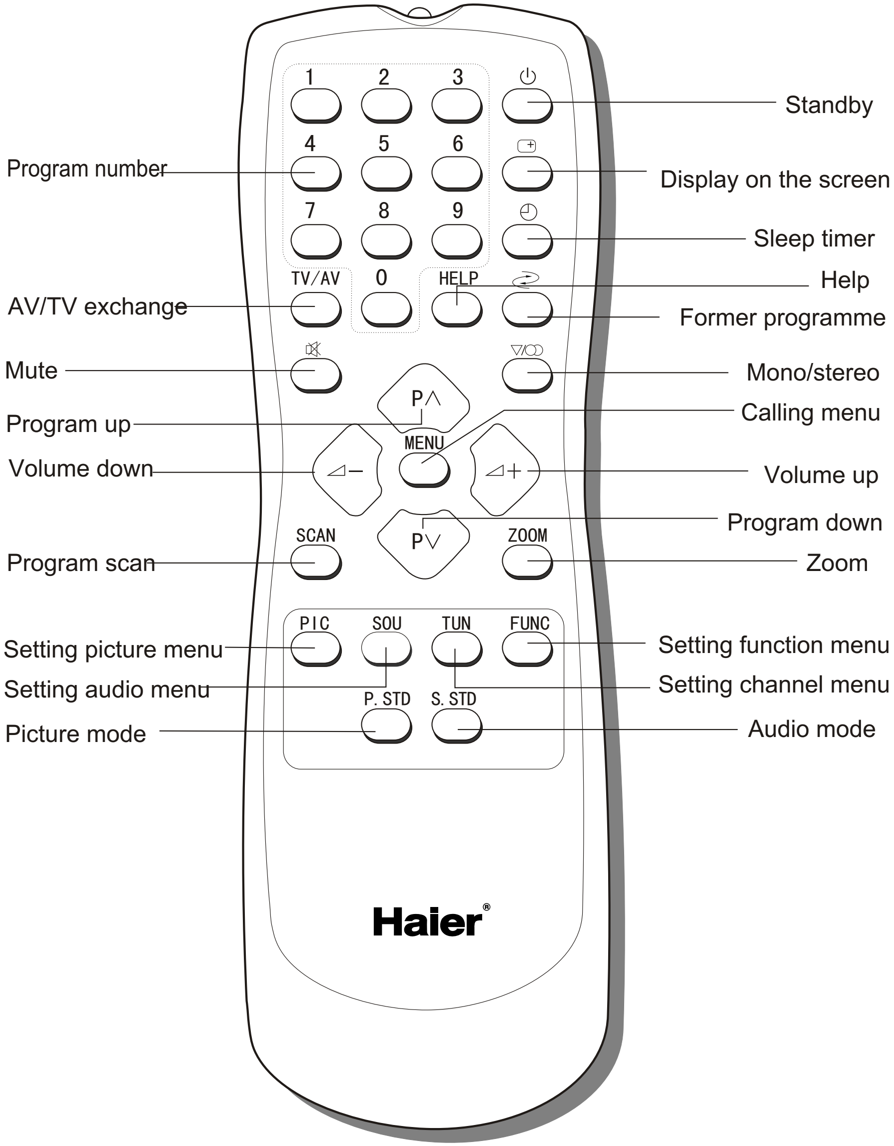


Video output terminals: VIDEO, AUDIO, L, R

Video 2 input terminals: VIDEO, AUDIO, L, R

Buttons on the remote controller

Remote control



IV. BRIEF OPERATION INSTRUCTIONS

Insert the power plug into the power line socket and insert the antenna plug into the antenna socket on the rear panel. Press down the power switch of the TV set. The red indicator light goes on. Follow the steps below.

A Program preset

1. Auto searching and storing program

Press MENU or TUN to enter the Search Menu. Press Program up/down buttons to select COLOR SYSTEM and SOUND SYSTEM. Press VOLUME buttons to select the system. Press Program up/down buttons to select AUTO SEARCH and press VOLUME buttons to search automatically. When the search finishes, all the programs will be stored automatically and the TV returns to normal status.

2. Manual search and fine tune

Press MENU or TUN repeatedly to enter the Search Menu. Press Program up/down buttons to select COLOR SYSTEM and SOUND SYSTEM. Press VOLUME buttons to select the system. Press Program up/down buttons to select FREQUENCY RANGE and PROGRAM NUMBER. Press VOLUME buttons to set and Program up/down buttons to select MANUAL CHANNEL SEARCHING. Press VOLUME buttons to search manually. When the search finishes, all the programs will be stored automatically and the TV returns to normal status. If the effect is not good, press Program up/down buttons to select FINE TUNE and press VOLUME buttons until the optimum effect is achieved.

3. Deleting channel number

Press MENU or TUN repeatedly to enter the Search Menu. Press Program up/down buttons to select SKIP. Press VOLUME buttons until the OFF item lights. Now the program number is deleted. Repeat the above steps, when the item lights, the deleted program number can be resumed.

B. Volume tuning

Press VOLUME buttons to increase or decrease the volume.

C. Personal preference setting

1. Picture effect

Press P.STD repeatedly to change among PERSONAL, STANDARD, DYNAMIC, SOFT and NATURAL.

2. Sound effect

Press S.STD repeatedly to change among PERSONAL, STANDARD, MUSIC, FILM and LANGUAGE

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V. DISASSEMBLY INSTRUCTIONS

A. Important note

This set is disconnected from the power supply through the converter transformer. An isolating transformer is necessary to service operations on the primary side of the converter transformer.

Back Cabinet Removal

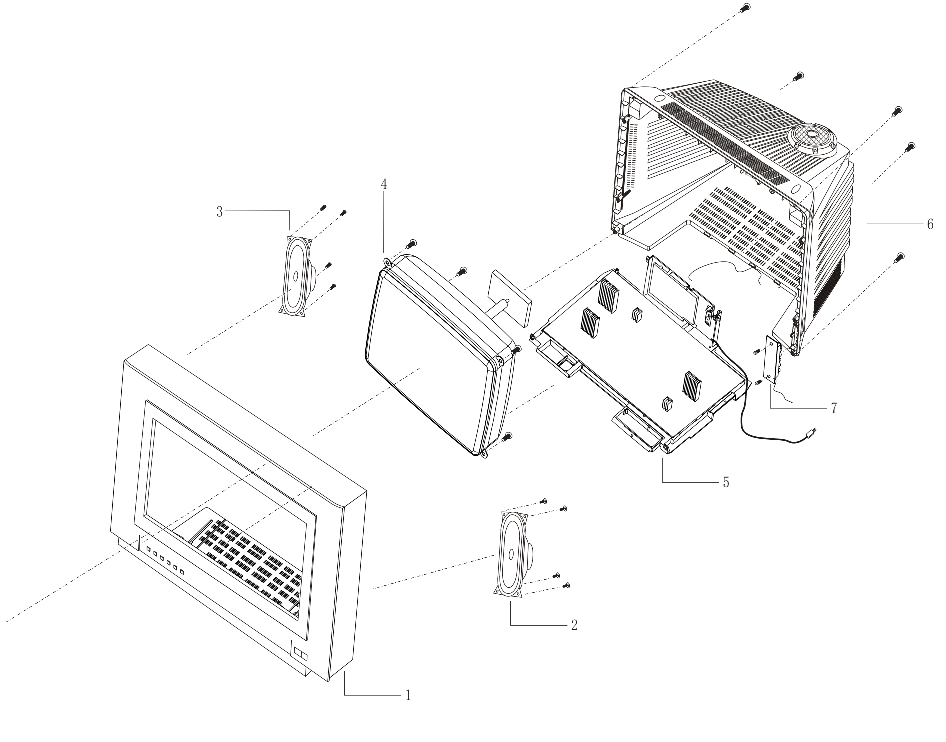
Remove the screw residing on the back cabinet and carefully separate the back cabinet from the front cabinet.

B. 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.

EXPLODED VIEW OF CABINET PARTS

Model: RGBTV-25F99



Exploded view parts list

Model: RGBTV-25F99

NO.	Name of part	Part specialized code	QTY.
1	Front frame	0090200120	1
2	Left speaker	0094000018	1
3	Right speaker	0094000018	1
4	Color picture tube	0094000927	1
5	Bracket	0090802087	1
6	Rear cover	0090801480	1
7	Flank AV	0094300018	1

VI.SPECIFIC INFORMATIONS

A. Principle integrated circuits

1. RGBTV25F99 color TV set composed of the following sections

(1) Microprocessor control: microprocessor N901 (WH2000) and memory N902 (KS24C08).
(2) Small signal processing: super monolithic integrated circuits N201 (TDA8844)
(3) Sound processing and power amplifying: integrated circuits N701 (TDA9859) and sound power amplifying integrated circuits N601 (TDA7297)
(4) Line and field scan output integrated circuits: field output integrated circuits N301 (TDA8350Q), line output tube V403 (2SD1887YD), line output transformer T444 (BSC285314F)
(5) Video amplifying: video amplifying integrated circuits N501 (TDA6107Q)
(6) Switch power supply: switch transformer T801 (BCK10002), power integrated circuits N801 (KA3S0680RFBYDTU), secondary power integrated circuits N804 (KA7630)

2. Main integrated circuits:

(1) WH2000	Microprocessor
(2) TDA8844	Picture IF/sound IF/video processing/line and field scan/color decoding
(3) TDA9859	Multifunction TV stereo sound processing integrated circuits
(4) TDA8350Q	Field output integrated circuits
(5) TDA6107Q	Video amplifying integrated circuits
(6) TDA7297	Sound power amplifying integrated circuits
(7) KA3S0680RFBYDTU	Power integrated circuits
(8) KA7630	Secondary power integrated circuits

3. Electrical circuit analysis

1. Microprocessor WH2000

Information introducing functions and testing data for maintenance is listed in Table 1. Test information is listed beneath VHFL, if a cylindrical color card is installed then a FLUKE 79 III meter is used.

Table 1

Step	Function	Working Voltage (V)	Ground Resistance (R) Positive (Ω)	Ground Resistance (R) Negative (Ω)
1	Tuning voltage control output	4.1	19.9K	19.9K
2	UHF channel selection control	0	3.7M	2.4M
3	VHF-H channel selection control	0	3.7M	2.4M
4	VHF-L channel selection control	5	3.7M	2.4M
5	B/G sound system selection control	0.3	3.7M	1.4M
6	D/K sound system selection control	5	3.7M	1.4M
7	I sound system selection control	5	3.7M	1.4M
8	M sound system selection control	4.1	3.6M	1.5M
9	Local control keyboard input	5	33K	26K
10	Local control keyboard input	5	33K	26K
11	Geomagnetic adjustment input, not selected	0	3.8M	2.4M
12	PAL/NTSC system selection	5	3.8M	2.4M
13	Grounding	0	0	0
14	Neutral point	0	~	2.3M
15	Neutral point	0.9	~	2.3M
16	Myopia prevention PVD input, not selected	5	9.9K	9.9K
17	Mute control output	0	33K	27K
18	Timer control output	0.2	30K	22.6K
19	Standby control output	0	30K	23K
20	Power signal output	4.9	5.6K	5.6K
21	Translucence background output, not selected	0	33K	26.9K
22	Screen display B signal output	0	1.4M	2.4M
23	Screen display G signal output	0	1.5M	2.5M
24	Screen display R signal output	0	1.5M	2.5M
25	Blanking signal output	0	3.7M	2.5M
26	Line return pulse signal input, character horizontal locating	4.5	33K	27K
27	Field return pulse signal input, character vertical locating	5.1	34K	27K
28	Character oscillation	2.2	3.4M	2.3M
29	Character oscillation	2.3	3.4M	2.3M
30	Grounding	0	0	0
31	7.3MHz crystal oscillation connection, master clock oscillation	2	3.7M	2.5M
32	7.3MHz crystal oscillation connection, master clock oscillation	2	3.7M	2.5M

33	Clearing recovery, low-level effective	4.3	3.7M	2.5M
34	+5V power supply	5	29K	21.8K
35	Neutral point	0	3.8M	2.4M
36	Remote control signal input	5	62K	38M
37	Grounding	0	0	0
38	Production control	5	33K	27K
39	Brightness and color segregation control	0	24K	23.9K
40	AV1, AV2 and SVHS switching control input	0	24K	23.8K
41	I^2C serial bus clock line	3.9	31K	24K
42	I^2C serial bus datum line	4.0	31K	24K

2. Decoding integrated circuits TDA8844

TDA8844 is super large integrated circuit decoder, containing intermediate image amplifying, intermediate sound amplifying, line and field scan, small signal processing, color decoding, color brightness segregation, hipressure tracing and overload protection, I^2C bus control, EW correction and automatic darkness adjustment.

Information introducing functions and testing data for TDA8844 maintenance is listed in Table 2. Test information is listed beneath VHFL, if a cylindrical color card is installed then a FLUKE 79 III meter is used.

Table 2

Step	Function	Working Voltage (V)	Ground Resistance (R)	
			Positive (Ω)	Negative (Ω)
1	Secondary sound IF input	0	1.4	1
2	External sound frequency signal input	3.7	6.2M	4.7M
3	Image IF PLL, not applied	0	~	~
4	Image IF PLL, not applied	0	~	~
5	RC filter connected for PLL circular wave	2.5	6.2M	4.2M
6	Video frequency output	3	4.3M	4.7M
7	I^2C serial bus clock line	3.9	31K	24.3K
8	I^2C serial bus datum line	4	31K	24.3K
9	Trap decoupling	6.7	6.0M	4.1M
10	S-VHS C signal input	1.1	88.1K	87.7K
11	S-VHS Y signal input, front AV video input	3.4	6.1M	4.5M
12	+8V power input	8	2.8K	2.8K

13	Internal video signal input	3.9	3.9M	3.6M
14	Grounding	0	0	0
15	Audio signal input	3	6.2M	4.7M
16	SECAM decoder decoupling	0	~	~
17	External video signal input	3.4	6.1M	4.4M
18	Dark current test input	5.1	4.4M	3.7M
19	B signal output	3.2	7.6K	7.6K
20	G signal output	3.1	7.5K	7.5K
21	R signal output	3.0	7.5K	7.6K
22	Beam current limit and field max. cut-out input	2.4	218.8K	239.0K
23	R signal input	3.3	6.1M	4.6M
24	G signal input	3.3	6.1M	4.6M
25	B signal input	3.3	6.1M	4.6M
26	Blanking signal input	0.3	1K	1K
27	Y signal input	2.7	5.9M	4.3M
28	Y signal output	2.7	5.9M	4.3M
29	B-Y signal output	2.3	5.8M	4.2M
30	R-Y signal output	2.3	5.8M	4.2M
31	B-Y signal input	2.3	5.8M	4.2M
32	R-Y signal input	2.3	5.8M	4.3M
33	Standard color sub-carrier wave output, not applied	4.3	6.1M	4.2M
34	3.58M crystal oscillator connection	2.5	6.2M	4.6M
35	4.43M crystal oscillator connection	2.5	6.2M	4.5M
36	Croma decoding filter connection	4.9	6.2M	4.5M
37	+8V power supply	8.0	2.8K	2.8K
38	CVBS output	2.6	4.6M	4.6M
39	Power supply decoupler filtering	5	6.0M	380.5K
40	Line pumping signal output	0.4	6.1K	6.1K
41	Line return pulse signal input and sand pulse output	0.4	6.1M	2.1M
42	PH-2 wave filter	3.2	6.1M	4.4M
43	PH-1 wave filter	4.0	6.1M	4.4M
44	Grounding	0	0	0
45	E-W correction output	0.7	62.5K	62.4K
46	Field pumping signal inversion output	2.3	70.4K	70.3K
47	Field pumping signal positive output	2.3	67.4K	67.3K
48	Intermediate image signal input	4.6	89.2K	89.5K
49	Intermediate image signal input	4.6	89.2K	89.5K

50	High pressure tracing and circuit breaker input	2.5	23.1K	22.8K
51	Capacitor connection from field tooth wave	3.8	6.2M	4.6M
52	Field reference current formation	3.9	39.0K	39K
53	AGC decoupling	4.3	6.2M	4.6K
54	RF AGC output	1.9	4.8K	4.8K
55	Audio frequency connection without aggregation	2.9	4.5M	4.6M
56	Sound demodulation and decoupling	2.3	6.2M	4.6M

3. Analysis of common path circuits

High frequency television signals, received via an antenna (or transmitted through a cable TV system) to the input terminal of the high frequency tuner TU101 (TECC7949), are processed for tuning and high frequency amplifying and mixing, then a 38MHz image intermediate frequency and 31.5MHz sound intermediate frequency signal will be released at the IF terminal of TU101 to (1) of the thickfilm circuits N101 (M9911A), where signals are amplified to compensate for the insertion losses of the sound surface wave filter. Single or dualended input is used for the sound surface wave filters SF101 (K6265K) of this appliance according to system properties. Single or dualended input is controlled by CPU N901 (12) through V101 (BC548C). D/K, B/G, I signals are for singleended input and M signals are for dualended input. The sound surface filter K6265K functions as a wide band wave filter, suitable for D/K, B/G and I sound signals, if the input is singleended. Dualended input is for a narrow wave filter, suitable for M sound signals. Intermediate frequency signals will be transmitted to (48) and (49) of N201 (TDA8844) after the sound carrier frequency is trapped by the sound surface wave filter. The AGC time constant is dependent on C243 (lu) connected to (53) of N201(TDA8844), and the AGC is controlled by I^2C busmastering and output through (54) of N201 (TDA8844) to determine the high frequency tuner increase.

4. Analysis of secondary sound intermediate wave filter and wave trap selection switch circuits.

Video combined television signals output from N201 (6) of (TDA8844) through the triode V203 and/or V204 is transmitted to the wave filter Z202Z205 and trap Z207Z210, respectively.

Some combined television signals through C212 are filtered through the diode. The diode positive voltage VD201VD204 is 4V, and the negative voltage is controlled by (5) (8) of CPU N901 sound system control terminal through a 1KΩ resistor. When one CPU base pin has a low electrical value, the corresponding diode is energized and the combined television signals form the secondary sound intermediate signals through a corresponding wave filter (Z202 or Z205) before being transmitted to (1) of N201 (TDA8844) through V202.

Some other combined television signals are connected via V205 and V206, which are band eliminating triodes functioning as switches. When the 12 base pin of CPU has a high electrical output level, V206 is connected using PAL system signals. When 12 base pin has a low electrical output level, V206 is disconnected and V205 is connected for NTSC3.58 system signals. Combined television signals will become video signals after the wave trapper, which will adjust to the correct range through R225 (430Ω) and R224 (470Ω) and is then transmitted to (13) of N201 (TDA8844) through C218 (474).

Post video signals are transmitted to (17) of N201 (TDA8844) and front video signals and Y signals from terminal S are transmitted to (11) of N201 (TDA8844) through C215 (474). C signals from terminal S are transmitted to (10) of N201 (TDA8844). Connection of front AV signals and signals from terminal S are controlled by the I^2C serial bus system in N201 (TDA8844).

5. Analysis of sound acoustic effect electrical circuits

Electrical circuits for sound acoustic effects processing are composed of integrated circuits N701 (TDA9859) and peripheral components. TDA9859 is an integrated circuit for HiFi multi audio signals from left and right tracks of terminal AV1 are added to (1) functional TV sound acoustic effect processing, including high and bass frequency division, stereo and surround sound. The audio signals from (55) of N201 are transmitted through V211, then divided into two groups after the decoupling capacitor C706 (224) and added to (3
s from (55) of N201 are transmitted through V211, then divided into two groups after the decoupling capacitor C706 (224) and added to (3
The left and right tracks of terminal AV2 are added to (28) and (30) of N701 (TDA9859). TV or AV audio signals are processed for acoustic effects in N701 (TDA9859), and the audio signals from left and right tracks of (18) and (15) are transmitted directly to (12) and (4) of the integrated circuit N601 (TDA7297) of the sound power amplifier. Capacitors C717 (562) and C714 (562) connected to (19) and (14) of N701 (TDA9859) control high frequency from the left and right tracks.

Information introducing functions and testing data for maintenance is listed in Table 3. Test information is listed beneath VHFL, if a cylindrical color card is installed then a FLUKE 79 III meter is used.

Table 3

Step	Function	Working Voltage (V)	Ground Resistance (R)	
			Positive (Ω)	Negative (Ω)
1	Front AV frequency left track input	4.0	4.6M	3.1M
2	Neutral point	0	6.9M	4.9M
3	Internal audio frequency input	4.0	4.7M	3.1M
4	Power decoupling wave filtering	7.9	9.1K	9.1K
5	Internal audio frequency input	4.0	4.6M	3.1M
6	8V power supply	8.0	2.8K	2.8K
7	AV frequency right track output	4.0	6.5M	4.3M

8	Grounding	0	0	0
9	Right track audio frequency output	4.0	10.8K	10.8K
10	Right track audio frequency input	4.0	4.6M	3.1M
11	Bass control capacitor connection	4.0	4.6M	3.1M
12	Bass control capacitor connection	4.0	4.7M	3.1M
13	Neutral point	0	~	~
14	High control capacitor connection	4.0	6.2M	4.2M
15	Audio frequency output and right track	4.0	8.8K	8.8K
16	I^2C bus clock line	4.4	19K	17.9K
17	I^2C bus datum line	4.5	19K	18.0K
18	Audio frequency output and left track	4.0	8.9K	8.9K
19	High control capacitor connection	4.0	6.2M	4.3M
20	Neutral point	0	~	~
21	Bass control capacitor connection	4.0	4.6M	3.2M
22	Bass control capacitor connection	4.0	4.6M	3.2M
23	Left track audio frequency input	4.0	4.6M	3.2M
24	Left track audio frequency output	4.0	10.8K	10.8K
25	Grounding	0	0	0
26	AV frequency left track output	4.0	6.5M	4.3M
27	Imitation stereo capacitor connection	4.0	4.6M	3.2M
28	Rear AV frequency left track input	4.0	4.6M	3.2M
29	Imitation stereo capacitor connection	4.0	4.6M	3.2M
30	Rear AV frequency right track input	4.0	4.6M	3.2M
31	Neutral point	0	6.9M	4.8M
32	Front AV frequency right track input	4.0	4.6M	3.2M

6. Analysis of sound and bass power amplifying circuits

Sound power amplifying circuits are composed of integrated circuits TDA7297 and peripheral components. TDA7297 is an integrated electrical circuit for muting and power for double track stereo sound power amplifying with an output power of 15+15W. The output of TDA7297 for sound is BTL and no decoupling capacitor is used in the output circuits. A wide band (6V~18V) power supply incorporates circuit breaking and overload protection. Sound signals from left and right tracks are transmitted from (18) and (15) of the integrated circuit N701 for sound acoustic effects processing adjustment through R604, R603/607 and R606, respectively, and coupled to (4) and (12) of the sound power amplifying integrated circuit N601 through C601 and C605, and then both positive and negative signals are transmitted through (1), (2), (14) and (15) after being amplified to directly activate the speaker.

Information introducing functions and testing data for TDA7297 maintenance is listed in Table 4. Test information is listed beneath VHFL, if a cylindrical color card is installed then a FLUKE 79 III meter is used.

Table 4

No.	Function	Working Voltage (V)	Grounding Resistance (R)	
			Positive (Ω)	Negative (Ω)
1	Right track sound output	8.0	12.8K	12.7K
2	Right track sound output	8.0	12.8K	12.8K
3	15V power supply	16.0	~	0.94M
4	Right track audio signal input	1.5	86.2K	86.6K
5	Neutral point	0	~	~
6	Mute signal input	3.8	108.8K	107.6K
7	Power signal input	4	5.6K	5.6K
8	Grounding	0	0	0
9	Grounding	0	0	0
10	Neutral point	0	~	~
11	Neutral point	0	~	~
12	Left track audio signal input	1.5	86.3K	86.5K
13	15V power supply	16.0	~	0.94M
14	Left track sound output	8.2	12.7K	12.7K
15	Left track sound output	8.2	12.7K	12.7K

7. Analysis of field sync and field scan output circuits

The field sync signals segregated from compound sync signals are used to activate the field frequency segregation system which commences when a set amount of field sync pulse signals are tested. Of the sync pulse frequencies obtained from segregation, some are transmitted to the field tooth wave generator. The field frequency tooth wave, after

geometric processing, is transmitted from (47) and (46) of N201 to (1) and (2) of field output circuit N301. The external resistor R258 (39KΩ) of N201 (52) provides a reference current to the field tooth wave generator. The external capacitor C233 (104) of (51) forms a capacitor for the field tooth wave. The field output integrated circuit N301 is a complete bridge current drive output circuit, the field deflection coil is installed in the center of the output amplifier. The positive and negative tooth wave signals from (47) and (46) of N201 are input to (1) and (2) of N301, and then output from (9) and (5) after shaping and amplifying in TDA8350Q. R301 (3 KΩ) transfers input current into voltage, which compares with the voltage generated by the field scan current flowing through R302 (1.5 Ω) and R303 (1.5Ω) total parallel resistance, and functions as the feedback voltage of TDA8350Q to alter the field output current by altering R301. Power supply for TDA8350Q is realized by dual power sources, and the forward and return power sources are +16.5V and +46V, obtained from the return pulse which is rectified, filtered and then transmitted by the line output transformer T444.
Information introducing functions and testing data for TDA8350Q maintenance is listed in Table 4. Test information is listed beneath VHFL, if a cylindrical color card is installed then a FLUKE 79 III meter is used.

Table 5

No.	Function	Working Voltage (V)	Grounding Resistance (R)	
			Positive (Ω)	Negative (Ω)
1	Field pumping signal positive input VDP	2.3	67.0K	67.3K
2	Field pumping signal negative input VDN	2.2	69.9K	70.3K
3	Feedback	8.3	5.9K	5.9K
4	Supply voltage	16.9	6.4M	2.4M
5	Output voltage B	8.2	6.4K	6.1K
6	Neutral point	0	~	~
7	Grounding	0	0	0
8	Return supply voltage	48.8	32.5K	25.5K
9	Output voltage A	8.6	5.9K	6.1K
10	Neutral point	0.9	~	4.1M
11	E-W correction signal output	11.1	10.4K	10.1K
12	E-W correction signal input	0.73	62.5K	62.9K
13	Grounding	0	0	0

8. Analysis of line sync and line scan output circuits
As the line oscillation circuit is installed inside N201 (TDA8844), external line oscillation components are not necessary while the oscillation frequency is controlled by PH1 tester. Some brightness signals including compound sync signals are transmitted to the internal sync segregation circuits, where line sync and field sync pulses are segregated. The line sync pulse signals are transmitted to PH1 tester which functions to keep oscillation and input signal frequencies synchronic. C249 (472), R255 (15K Ω) and C241 (lu) connected to N201 (43) are phaselock loop filters. The line oscillation signals corrected by PH1 tester are transmitted to PH2 tester, which functions to stabilize and control the phase positions of output line pumping pulse and to ensure consistent line linearity and

centering. The capacitor C238 (103) connected to (42) is for wave filtering of PH2 tester. Line pumping signals are transmitted from (40) of N201 to line promotion triode V402 (KSC2331), and then drive the deflection coil to produce a magnetic field through the triode tube V403 (2SD1887) after being amplified through the switch to control the horizontal scan of the electronicbeam. C414, C415 and C427 are return capacitors, C406 is a line S correction capacitor and L402 is for line linear induction. EW geometric correction signals are transmitted from (45) of N201, input via (12) of N301, output via (11) of N301 after shaping, amplified through triode V401 (KSA614Y), processed by C403 and L401 for wave shaping and then added to the line scan circuits for EW geometric correction. The VD404A and VD404B are modem damping diodes and T444 is a line output transformer. VD408, R416, R256, R257 and C232 form high pressure trace circuits to compensate for the high pressure alteration as a result of brightness changes and to automatically regulate image geometric changes caused by high pressure alterations. R419, R239, DZ205, VD205, R270 and C226 form a beam to restrict the electric circuits. The line return pulse output from (9) and (8) of T444 is rectified and filtered for generating of +16.5V and +46V direct current voltage to (4) and (8) of N301 for forward and return power supply of output integrated circuits. +16.5V is regulated by N401 (KA7812A) to obtain +12V direct current voltage for power supply to some small signal processing circuits, including high frequency tuner TU101 (TECC7949), sound meter SF101(K6265K) and intermediate amplifier N101 (M9911A). (7) outputs 6.3 Vrms filament voltage. (1) provides sync signals to the microprocessor. (5) output return pulse to obtain +180V direct current voltage after rectifying and wave filtering for power supply of video amplifying circuits.

9. Analysis of video amplifying circuits

The video amplifying circuits are comprised of integrated circuits N501 (TDA6107) and peripheral components. R, G and B screen display signals output from N901 (23), (24) and (25), and B, G and R primary signals from (19), (20) and (21) of N201 are transmitted to (1), (2) and (3) of N501, respectively. TDA6107 is an amplified integrated video output circuit, including 3 video amplifiers for amplifying the input R, G and B primary signals, and then transmitting the signals to the kinescope cathode through (7), (8) and (9) after amplifying R, G and B primary signals input. (5) of N501 is the dark balance checking output, from which the test results are transmitted to (18) of N201 for adjustment of image dark balance. White balance adjustment is completed through N901 by output of the R, G and B primary signals of N201 under control of an I^2C serial bus control system. The components of C504 (4.7u), R504 (10M Ω) and VD501 (ERC2406) form cutoff bright spot elimination circuits.

Information introducing functions and testing data for TDA6107 maintenance is listed in Table 6. Test information is listed beneath VHFL, if a cylindrical color card is installed then a FLUKE 79 III meter is used.

Table 6

Step	Function	Working Voltage (V)	Ground Resistance (R)	
			Positive (Ω)	Negative (Ω)
1	R input	3.2	7.6K	7.4K
2	G input	3.0	7.6K	7.5K
3	B input	3.1	7.6K	7.4K
4	Grounding	0	0	0
5	Dark current test output	6.0	3.1M	2.7M
6	Power supply	182.6	34.2K	28.2K
7	R cathode output	97.6	1.4M	2.6M
8	G cathode output	100.1	1.4M	2.6M
9	B cathode output	93.4	1.4M	2.6M

10. Analysis of switch power circuits

The installed switch power source is a typical autonomous pulse switch power source. When the switch is set to on or off, the pulse voltage of the 220V voltage from the transmission line system rectified by VD810 rectifier is filtered by the capacitor C806 (220u) to obtain +300V direct current, which is added to (1) of the power integrated circuits N801 (KA3S0680RFBYDFU inlet) through (1)(4) of the switch transformer T801 (BCK10002). When the appliance is first switched on, the initiating voltage to N801 is supplied by an AC singlephase power source through activating the voltage dividing resistor R803 and R802. When the appliance is operational, voltage is supplied by the rectified pulse generated by (6) (7) of T801 coil. The coupler N802 (PC817C inlet) functions to control voltage, and the voltage tolerance information from the switch transformer T801 is transmitted to (4) of N801 through coupler N802 to regulate the oscillation information of N801.

The pulse voltage output from the secondary (8) of the switch transformer T801, rectified and filtered by VD805 (D5L60) and C816 (100u) is +130V direct current voltage which is supplied to the output stage. The pulse voltage output from (13) is rectified and filtered by VD807 (D6L20U) and C820 (2200u) and the resultant +15V direct current voltage is supplied to the sound power amplifying circuits. The pulse voltage output from (11) is rectified and filtered via VD806 (TR5GU41) and C818 (2200u) to obtain +12V direct current voltage to supply the secondary source N804 (KA7630). +8V direct current voltage, output from N804 (8), after rectification of the secondary source, is supplied to the decoder chip. +5V direct current voltage from (9) is supplied to CPU N901 (Wh2000) and capacitor N902 (KS24C08).

B. Service mode and adjusting items and datas

1.Factory adjustment information

Operation method: after the appliance is switched on, press P.STD, S.STD, CALL and POWER keys on the remote controller to enter the management menu.

Press button MENU for selection.

Press P+/(CH+/) button to select items for adjustment.

Press VOL+/button to adjust selected items.

Press 1 6 buttons for quick selection of menus 1 to 6.

Press button 9 to select OSD sync signal cathode.

Press AV/TV to switch from AV to TV.

Press the MUTE button to select or deselect mute.

Press the POWER button to switch off the appliance.

Press other buttons to deactivate the maintenance menu.

If 2.GEOMETRY is selected, a half image or a full image can be displayed in rotation if button 8 is pressed.
If 3.PICTURE is selected, a horizontal line can be displayed or removed if button 0 is pressed.

Maintenance menu 1 IF Adjustment (Table 7)

Item	Specifications	Range	Default Value	Remark
AGC	RF AGC delay	0~3FH	14	
VCO	Intermediate frequency correction	0~5	02	Not adjustable
YDL	Y delay compensation TV	0~8	04	Not adjustable

VCO 03 corresponds to IF 38.0MHz.

Maintenance menu 2 GEOMETRY (Table 8)

Item	Specifications	Range	Default Value	Remark
PSL/NSL	Field pitch correction	0~3FH		
PVS/NVS	Field center correction	0~3FH		
PVA/NVA	Field range correction	0~3FH		
PHS/NHS	Line center correction	0~3FH		
PEW/NEW	Line width correction	0~3FH		
PEP/NEP	Pincushion correction	0~3FH		
PEC/NEC	4-corner distortion correction	0~3FH		
PET/NET	Trapezium correction	0~3FH		
PSC/NSC	Field S correction	0~3FH		

S correction is adjusted according to the curvature of the kinescope, and kinescopes of the same model have the same S correction value.
Geometry correction will be automatically classified according to the 50/60 systems currently recognized.

Maintenance menu 3 PICTURE (Table 9)

Item	Specifications	Range	Default Value	Remark
RG	R pumping	0~3FH		
GG	G pumping	0~3FH		
BG	B pumping	0~3FH		
SBT	Secondary brightness	0~3FH	3A	
SCT	Secondary contrast	0~3FH	3A	
SCR	Secondary chroma	0~3FH	3A	
STT	N secondary tonality	0~3FH	3A	
CDL	Cathode drive level	0~07H	85	

Maintenance menu 3 PICTURE (Table 9)

Adjustment of acceleration limit: press button 0 to adjust the acceleration limit and a bright line will appear.

White balance: Multi audio and video mode degaussing, fixing R pumping, adjusting B and G pumping.

Maintenance menu 4 MULTISET (Table 10)

Item	Specifications	Range	Default Value	Remark
MV-R	Movie R raise	0~1FH	07	
NT-G	Natural G raise	0~1FH	07	
DY-B	Dynamic B raise	0~1FH	07	
SDTB	Standard high	0~55H	32	
SDBS	Standard bass	0~41H	32	
SDBT	Standard brightness	0~64H	32	
SDCT	Standard contrast	0~5AH	5A	
SDCR	Standard chroma	0~64H	32	
SDSP	Standard sharpness	0~64H	3C	
SDTT	Standard tincture	0~64H	3C	

If the brightness value of the standard picture is set, adjustment of the acceleration limit and white balance in the previous menu must be repeated.

Maintenance menu 5 BOOST (Table 11)

Item	Specifications	Range	Default Value	Remark
BT1	BLS BKS DS EBS	0~0FH	04	
BT2	WPO DGR DSK DBL BON	0~1FH	0F	
ABS	Appropriate black-level stretch	0~3FH	30	
NLA	Nonlinear amplifying	0~3FH	08	
VGM	Gamma modification	0~3FH	0D	
PAK	Peak value amplitude adjustment	0~3FH	26	
STP	Front and rear edge correction	0~3FH	30	
COR	Noise reduction adjustment	0~3FH	30	
LWD	Line width control	0~3FH	15	
YDL	Y delay fine adjustment	0~07H	04	

Maintenance menu 6 OPTION (Table 12)

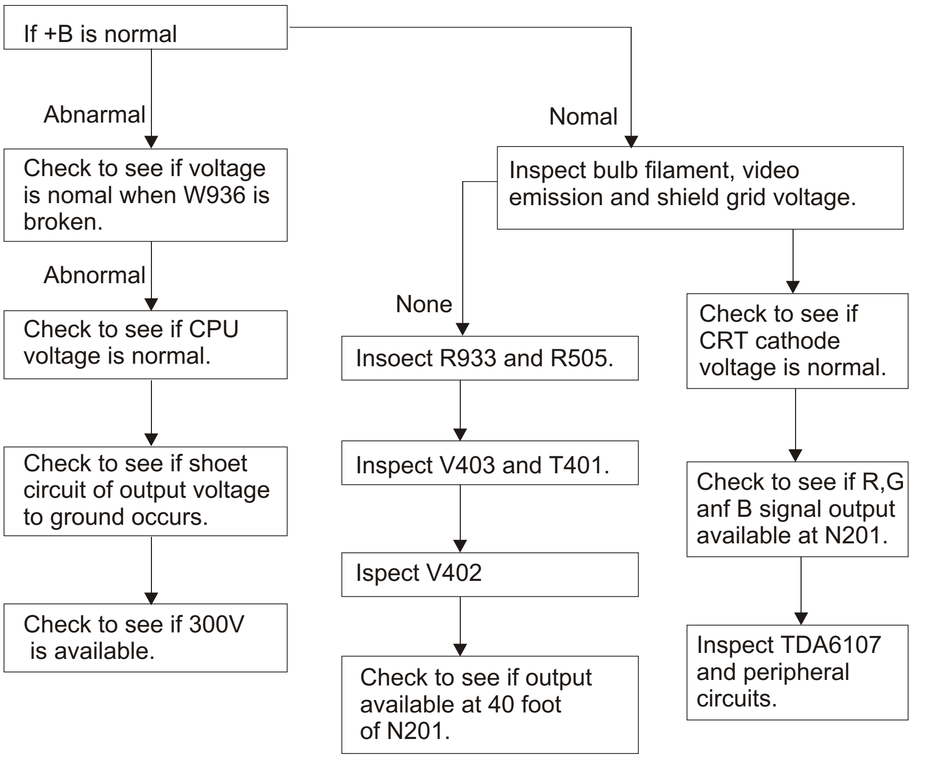
Item	Specifications	Range	Default Value	Remark
OPTION1			60	Not adjustable
OPTION2			A7	Not adjustable
ROWCON	Character display vertical position	0~1FH		
CLMCON	Character display horizontal position	0~1FH		
OPTION3			1B	Not adjustable

Maintenance menu 7 NICAM (Table 13)

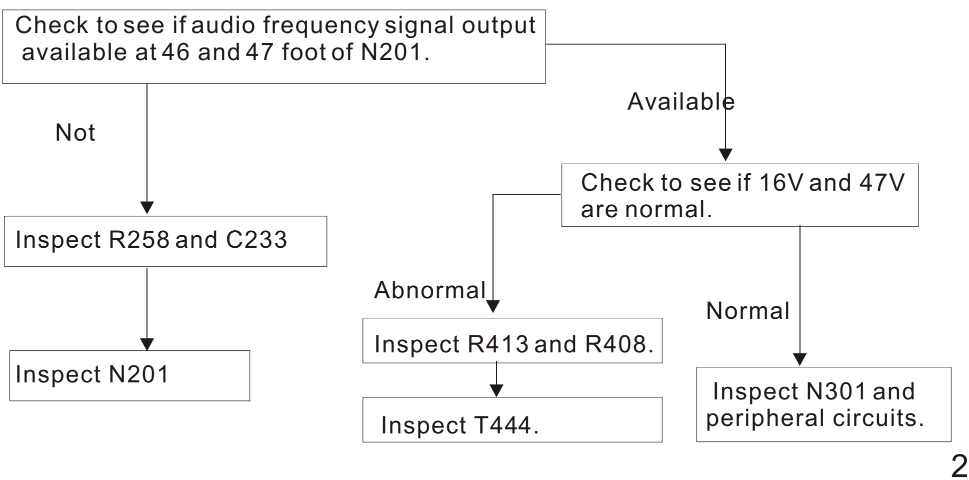
Item	Specifications	Range	Default value	Remark
LEVEL ADJ	Level adjustment	0~1EH	03	Not adjustable
LOWER ERROR		0~FFH	14	Not adjustable
UP ERROR		0~FFH	50	Not adjustable
FILTER BAND	Filter band width	0~03H	00	Not adjustable
A2 LEVEL ADJ	A2 level adjustment	0~0AH	08	

C. Error Detection Process

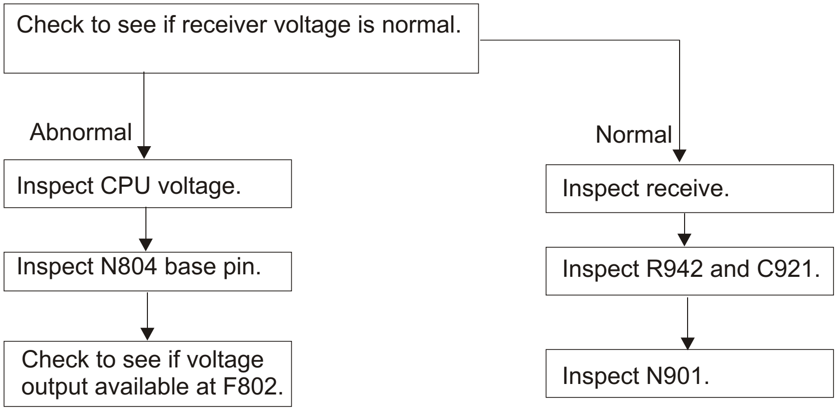
1. Raster free



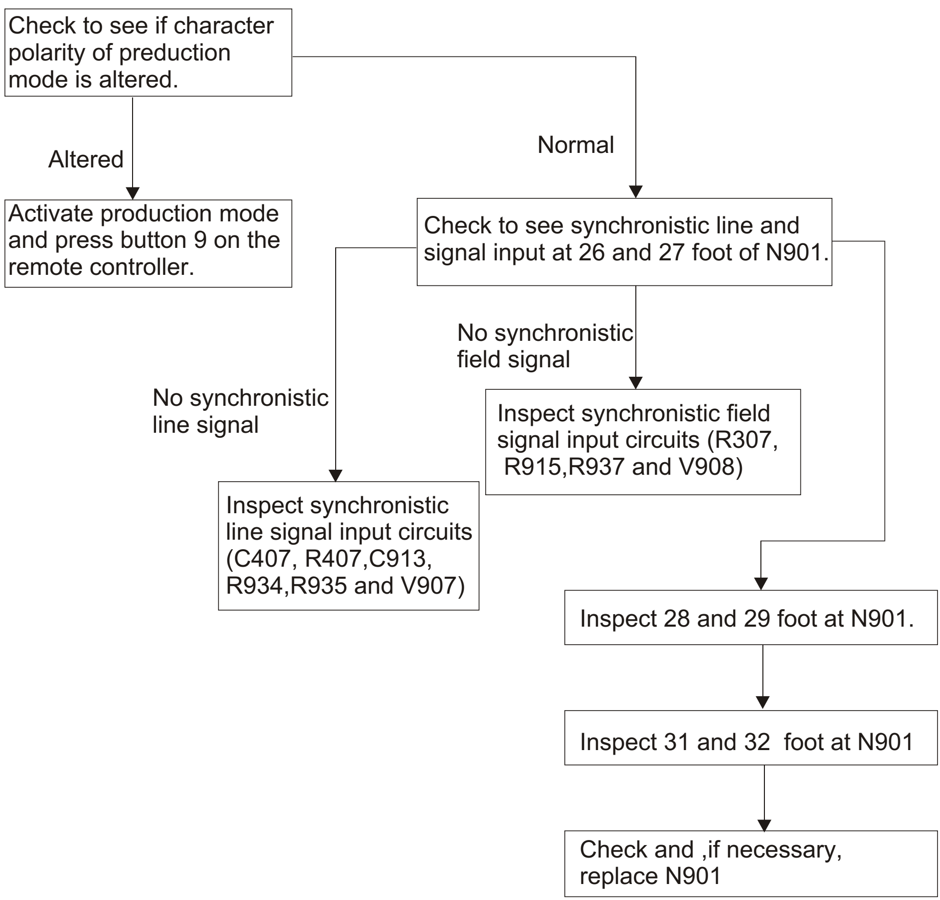
2. Horizontal bright lines



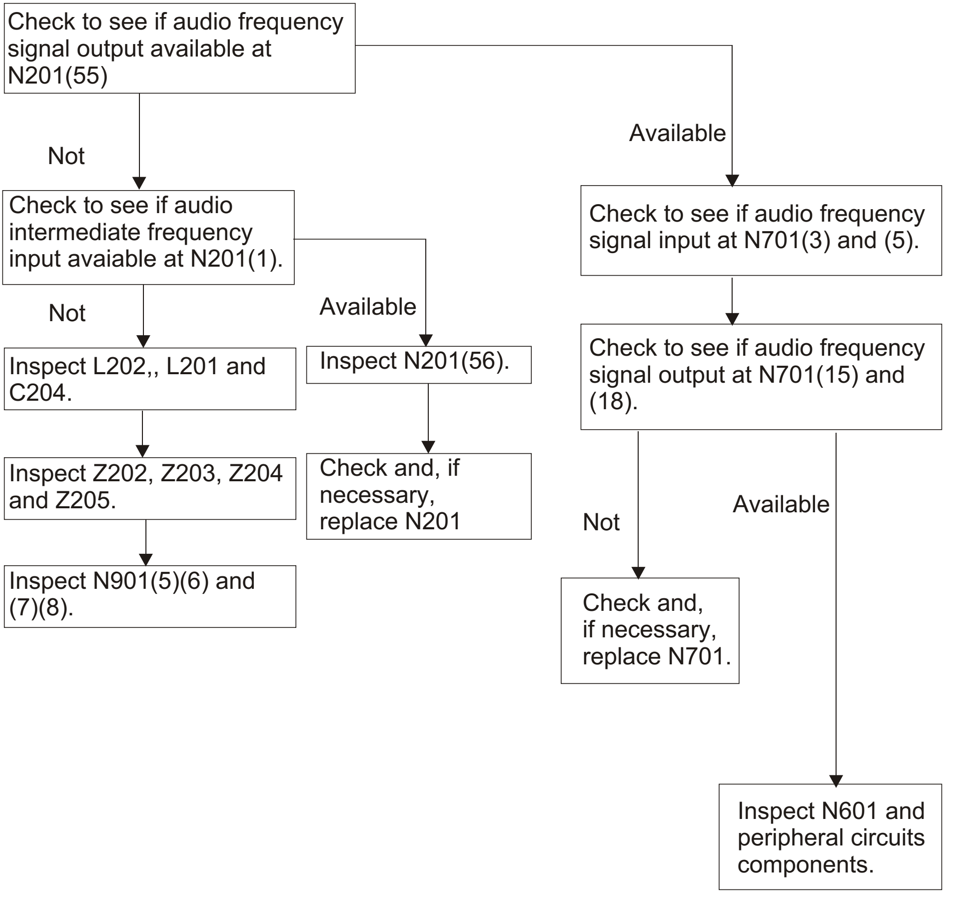
3. Failure of remote control



4. Screen display



5. Failure of TV sound



VII. ELECTRICAL ADJUSTMENT

A. Safety precautions

1. It is safe to adjust after using insulating transformer between the power supply line and chassis input to prevent the risk of electric shock and protect the instrument.
2. Never disconnect leads while the TV receiver is on.
3. Don't short any portion of circuits while power is on.
4. The adjustment must be done by the correct appliances. But this is changeable in view of productivity.

B. Adjustment procedure

The chassis of this TV set uses Philips single chip IC with the latest digital bus processing technology. The adjustment points are fewer and the adjustment is simpler. The adjustment method is as follows:

1. +B: 127V+-0.5V adjustment
   1) Switch on the power and connect PAL circular signals to the modulator.
   2) Turn the acceleration pole anticlockwise fully. Adjust potentiometer VR701 until the voltage of the main power is 127V+-0.5V.
2. Screen voltage adjustment
   1) Switch on the power and receive PAL system circular signal. Warm up the TV set for 15 min.
   2) Press factory handset SERVICE button to enter the adjustment status. Press MENU button twice. After the screen displays MENU3, press button 0 and a horizontal bright line appear. Adjust screen potentiometer to let the horizontal bright line just appears.
3. Focus adjustment
   1) Receive electronic circular signal
   2) Set contrast control to max.
   3) Set brightness control to middle
   4) Adjust focus potentiometer F1 and F2 until the optimum picture is achieved
4. AGC adjustment
   1) Switch on the power and connect signals to the modulator. Receive PAL system color bar signals (strength: 60dB)
   2) Connect the negative end of the digital display voltmeter to earth and the positive to TPA of AGC input.
   3) Press factory handset button to enter the adjustment status. Press button 6 to adjust AGCTAK, which is usually set to 0B and the measured voltage value is usually 3.85~4.25V.
5. White balance adjustment
   1) Close the color intensifying function.
   2) Enter the factory picture adjustment status and adjust R, G, and B.
   3) Coordinate of reference white color: (X=0.281, Y=0.311)
6. Adjustment of line and frame size
   1) Switch on the power and connect the signals to the modulator to receive PAL/NTSC system circular signal.
   2) Press factory handset button to enter the adjustment status. Enter GEOMETRY. First adjust PHS/NHS until the horizontal center is at the center of the screen. Then adjust PEW/NEW until the horizontal size is 90~92%. Adjust PSL/NSL, PVS/NVS, PVA/NVA after PSC/NSC until the vertical size is 90~92%. Try to make the electronic circle as round as possible and the vertical center in the center of the screen.
7. Adjustment of pincushion distortion

1) Receive grid signal.

2) Press factory handset button to enter the adjustment status. Enter GEOMETRY. First adjust PSC/NSC until the geometrical distortion in the eastwest direction is minimum. Adjust PEC/NEC until the geometrical distortion in the four corners is Minimum. Adjust PET/NET until the upper and bottom keystone distortion is minimum.

8. Adjustment of character positions

Adjust ROWCON and CLMCON for the vertical and horizontal positions of the screen menu.

VIII. INFORMATION OF RESISTORS AND CAPACITORS

RESISTORS & CAPACITORS PARTS CODE

Notes: 1.part numbers are indicated on most mechanical parts.
Please use this part number for parts orders.
2.The unit of resistance is Ω(ohm).K=1000Ω,M=1000KΩ
3.The unit of capacitance is uF(microfarad). UF=1000PF.

Numbering system of Capacitor

Example

CL42	17	50V	2F4	104 *	Z
Type		Voltage		Value(PF)	Toleance

CL21X	100V	223 *	J
Type	Voltage	Value(PF)	Toleance

CL110X	25V	100 UF	20%
Type	Voltage	Value	Toleance

* 104 $=10 \times 10^4$
223 $=22 \times 10^3$

Numbering system of Capacitor

Eaxmple

RY17S	2W	390	J	05-E-A
Type	Wattage	Value(Ω)	Toleance	

RS11	1/2W	1.8K	K
Type	Wattage	Value	Toleance

ABBREVIATION OF PART NAME AND DESCRIPTION

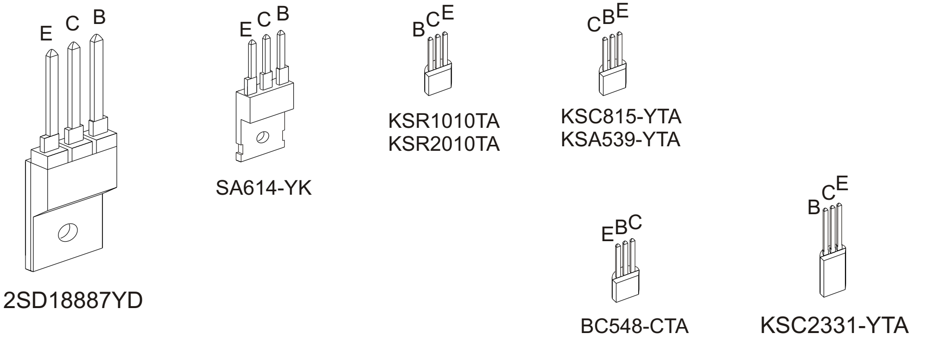
RESISTOR

PART NAME & DESCRIPTION			
TYPE		ALLOWANCE	
T	Carbon	F	1%
S	Solid	J	5%
J	Metal	K	10%
Y	Oxide	M	20%
F	Fuse	G	2%

CAPACITOR

PART NAME & DESCRIPTION			
TYPE		ALLOWANCE	
C	Ceramic	J	5%
T	Ceramic	K	10%
L	Film	L	15%
D	Electroytic	M	20%
A	Tantalum	P	+100%-0%
		Z	+80%-0%

Terminal view of transistor

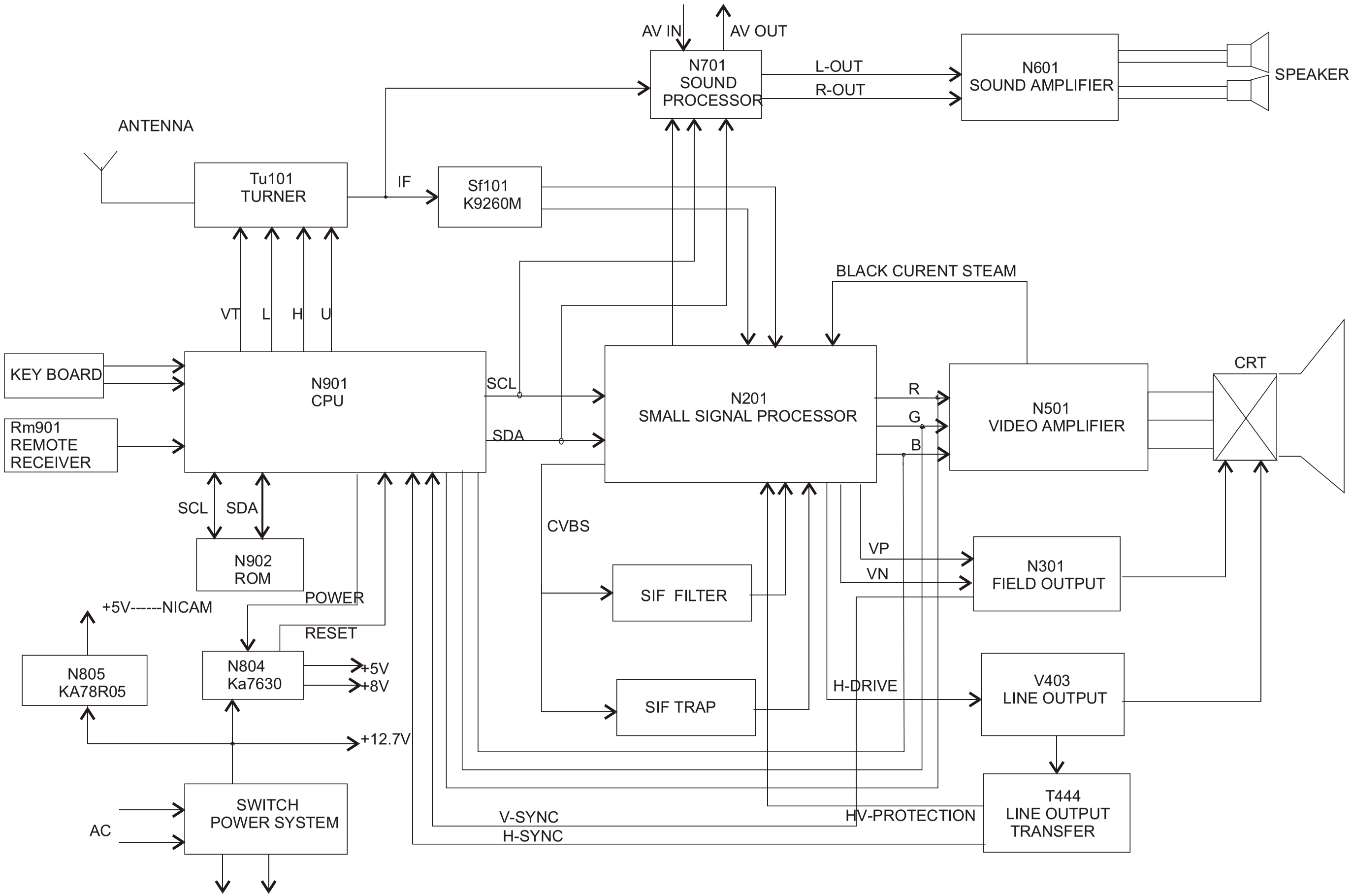


IV. DAMAGEABLE PARTS LIST

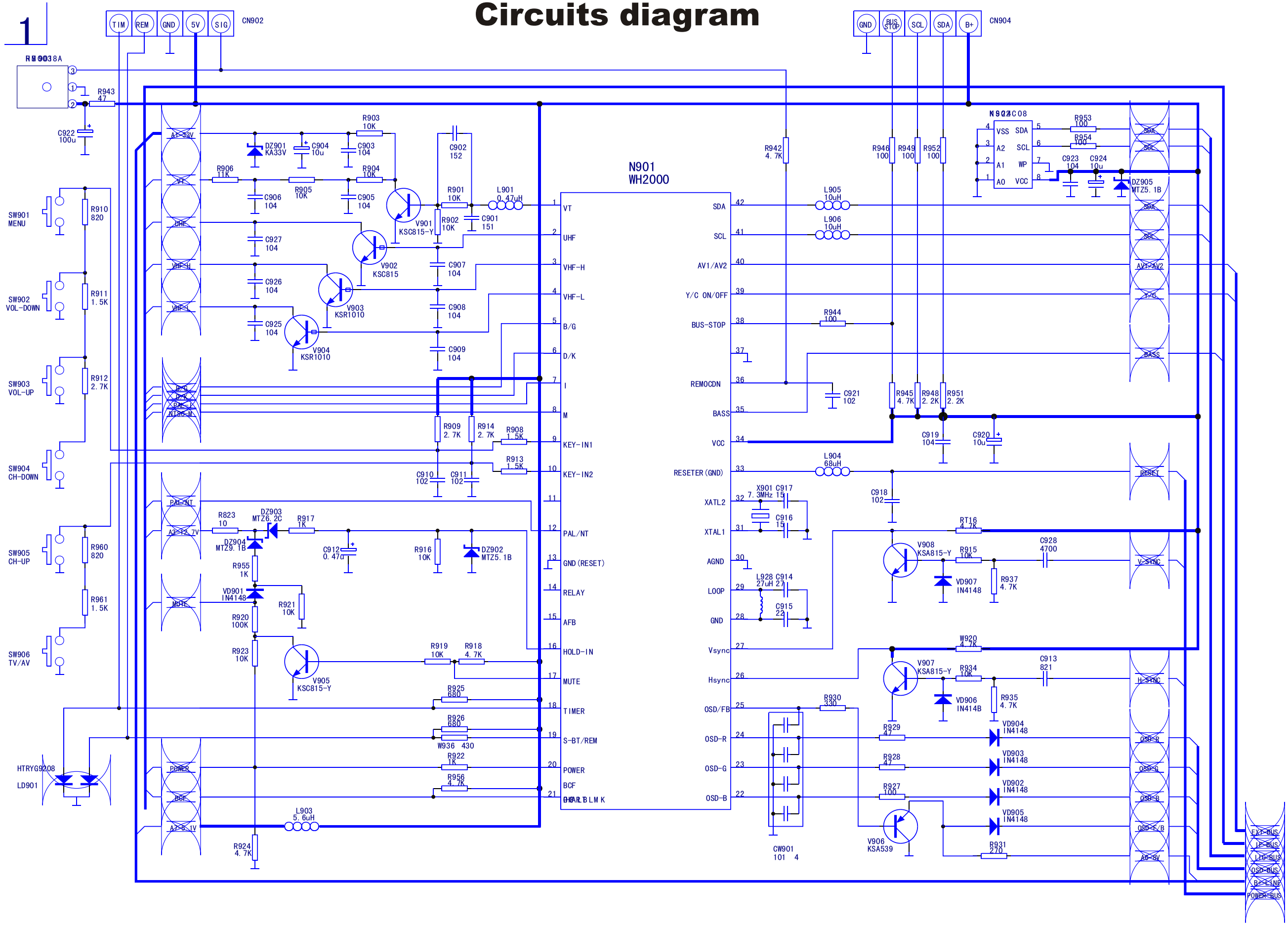
Model:25F99

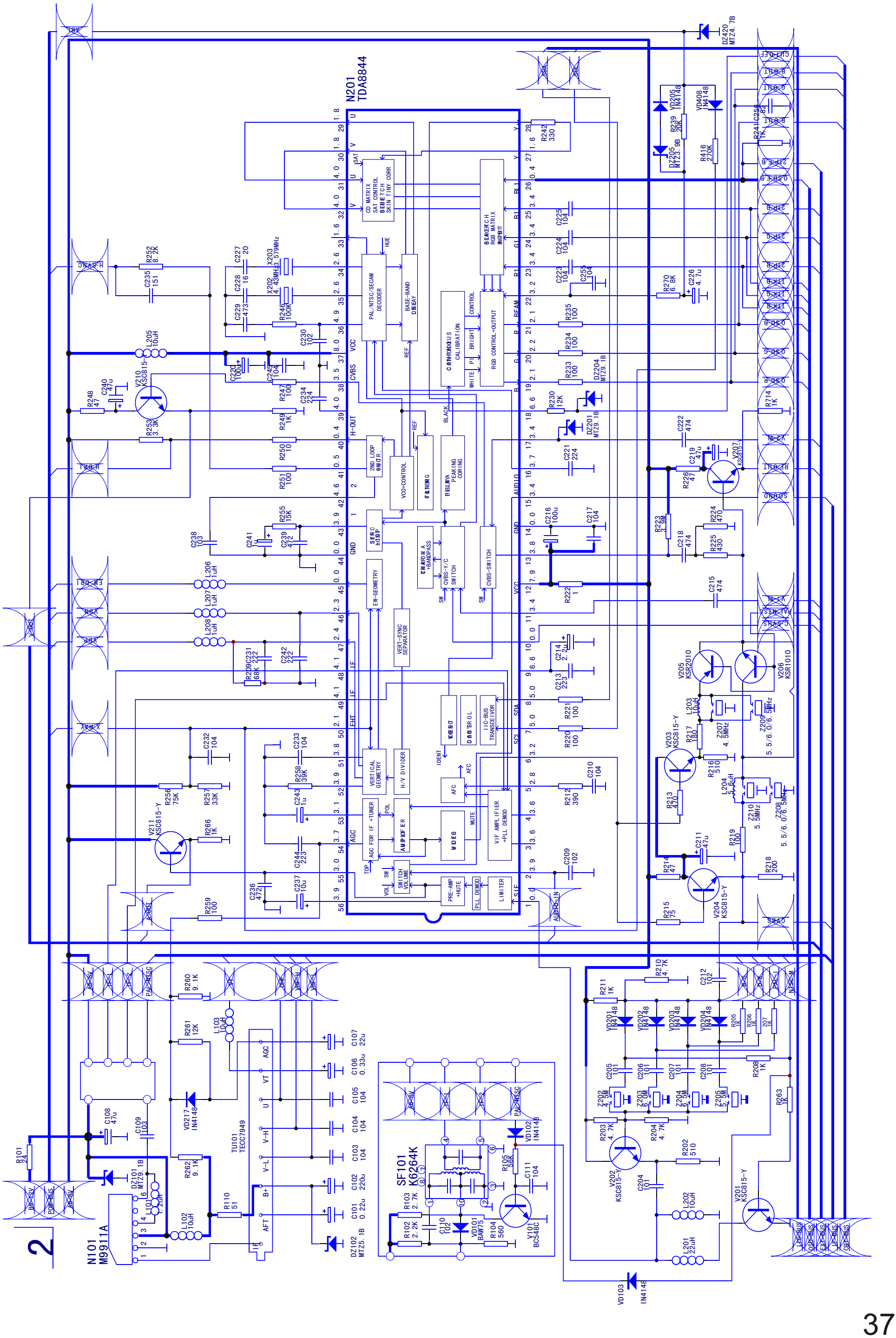
Circuit diagram	Name of part	Part specialized code	QTY.	remark
N301	IC	0094400185	1	
V403	TRANSISTOR	0094400184	1	
N501	IC	0094400186	1	
N801	IC	0094400189	1	
C806	CAPACITOR	0094200132	1	
L801	POWER FILTER	0094500031	1	
R601 R602	FUSE RESISTOR	0094101529	2	
R408	FUSE RESISTOR	0094100122	1	
F801	FUSE	0094000012	1	
F802	FUSE	0094000013	1	
TU101	TUNER	0094000014	1	
N901	IC	0094400781	1	
	PACKAGING		1	

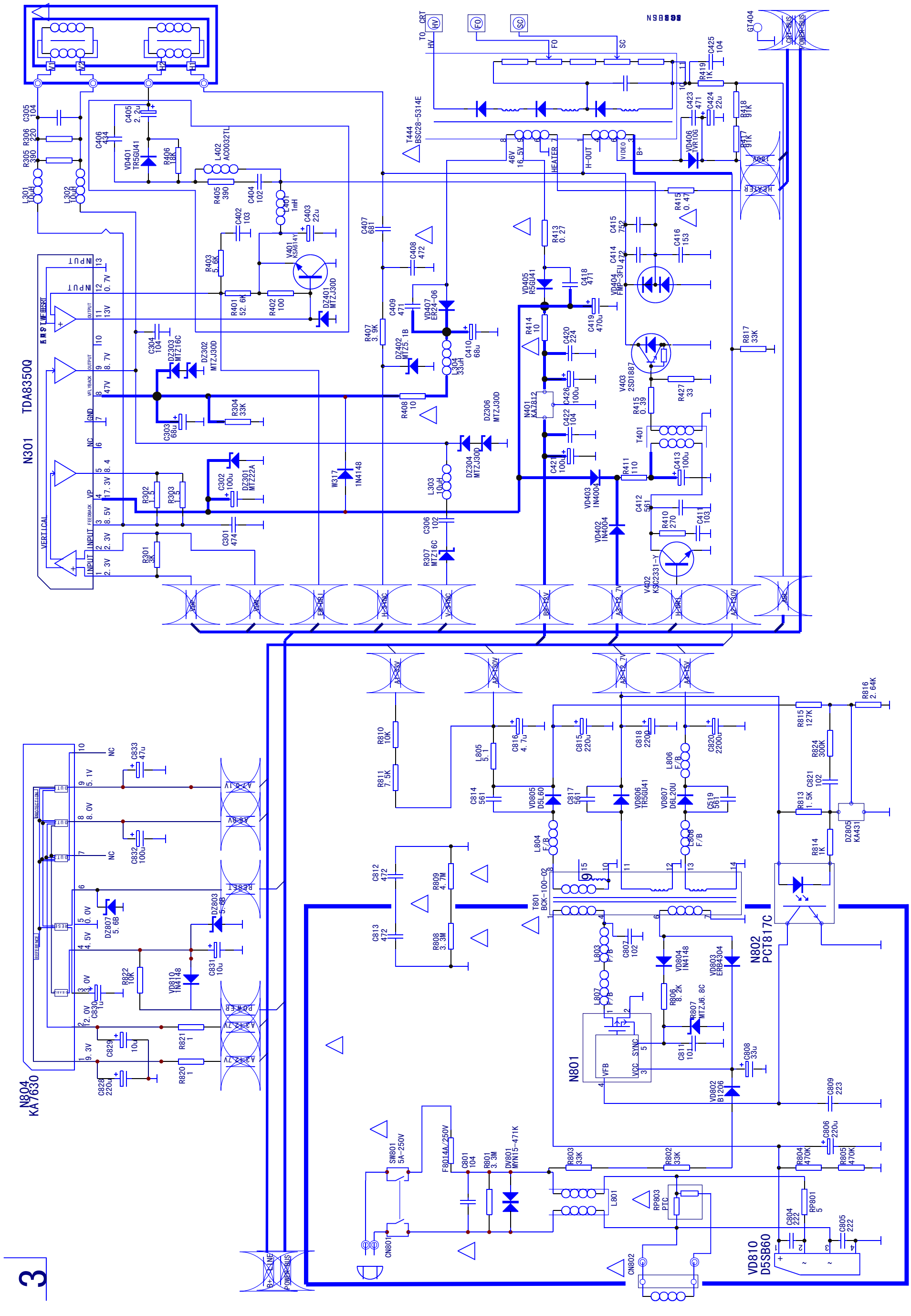
X. SYSTEM BLOCK DIAGRAM



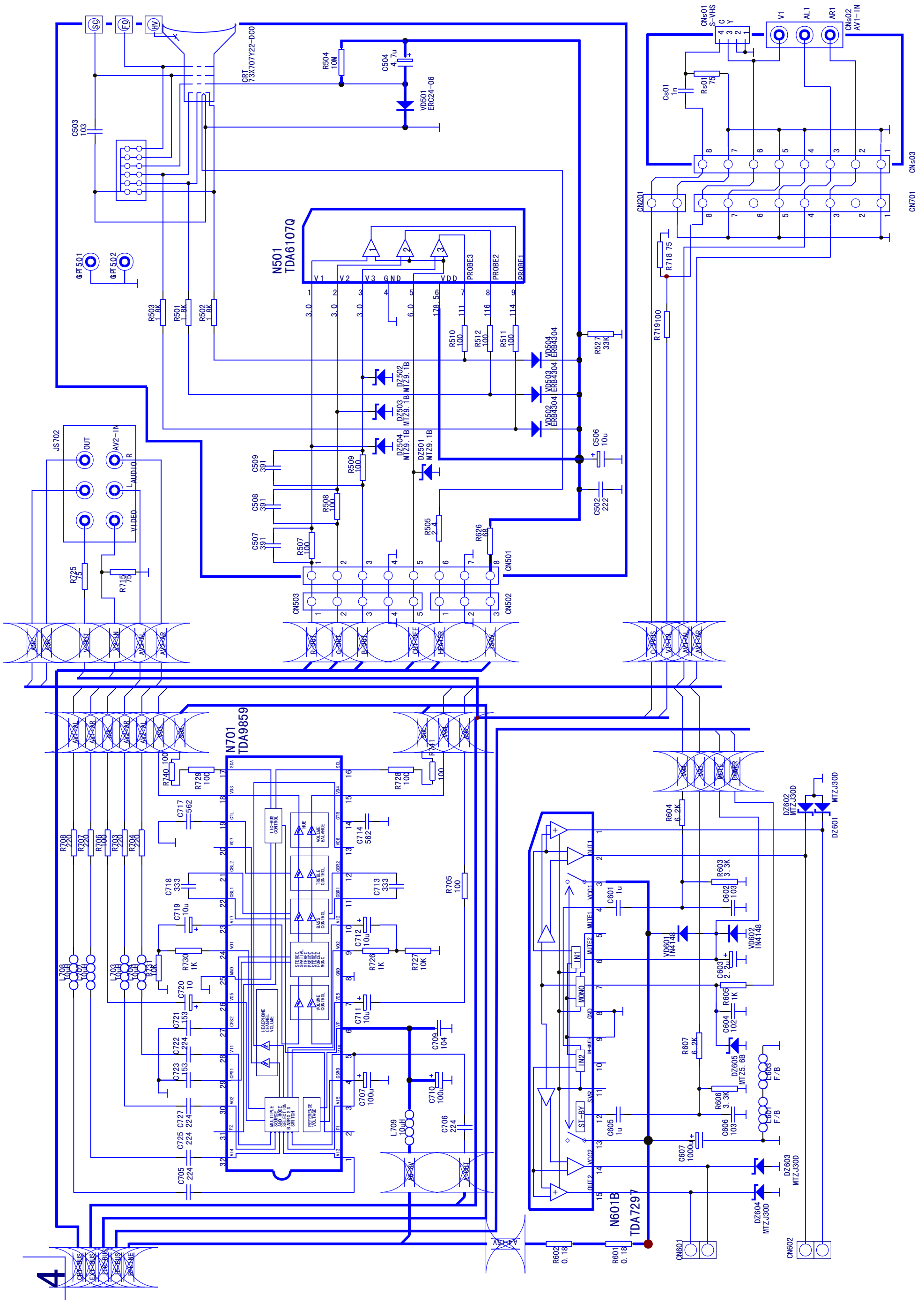
Circuits diagram




N201
TDA8844
SF101
K6264K
N101
M9911A
TU101
TECC7949
2



N301 TDA8350Q
N804 KA7630
T444 BSC28-5314E
N401 KA7812
T801 BCK-100-02
N801
N802 PCT817C
VD810 D5SB60


N501
TDA6107Q
N701
TDA9859
N601B
TDA7297
CRT
73X707Y22-DC0
JS702
CN501
CN502
CN503
CN701
CN201
CN601
CN602
CNs01 S-VHS
CNs02 AV1-IN

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