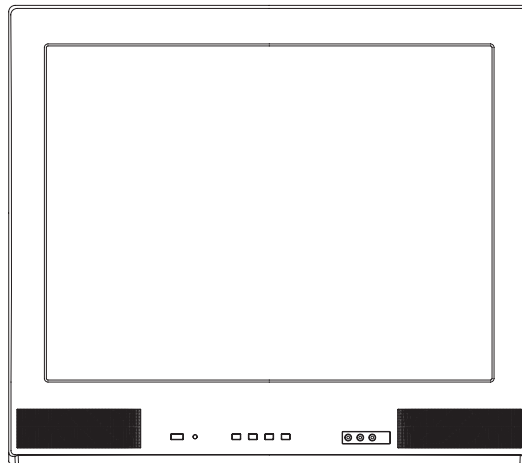


# SERVICE MANUAL

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COLOR TELEVISION RECEIVER

## IS-TV040923



All the specifications and features are subject to change without notice.

ORIGINAL  
VERSION (A)

S/M CODE NO. M3T111DASM  
DATE OF ISSUE 3/2005

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## IMPORTANT SERVICE SAFETY INFORMATION

Operating the receiver outside of its cabinet or with its back removed involves a shock hazard. Work on these models should only be performed by those who are thoroughly familiar with precautions necessary when working on high voltage equipment.

Exercise care when servicing this chassis with power applied. Many B plus and high voltage RF terminals are exposed which, if carelessly contacted, can cause serious shock or result in damage to the chassis. Maintain interconnecting ground lead connections between chassis, escutcheon, picture tube dag and tuner cluster when operating the chassis.

These receivers have a "polarized" AC line cord. The AC plug is designed to fit into standard AC outlets in one direction only. The wide blade connects to the "ground side" and the narrow blade connects to the "hot side" of the AC line. This assures that the TV receiver is properly grounded to the house wiring. If an extension cord must be used, make sure it is of the "polarized" type.

Since the chassis of this receiver is connected to one side of the AC supply during operation, service should not be attempted by anyone not familiar with the precautions necessary when working on these types of equipment.

When it is necessary to make measurements or tests with AC power applied to the receiver chassis, an Isolation Transformer must be used as a safety precaution and to prevent possible damage to transistors. The Isolation Transformer should be connected between the TV line cord plug and the AC power outlet.

Certain HV failures can increase X-ray radiation. Receivers should not be operated with HV levels exceeding the specified rating for their chassis type. The maximum operating HV specified for the chassis used in these receivers is  $33.0\text{kV} \pm 1.0\text{kV}$  at zero beam current with a line voltage of 120V AC. Higher voltage may also increase the possibility of failure in the HV supply.

It is important to maintain specified values of all components in the horizontal and high voltage circuits and anywhere else in the receiver that could cause a rise in high voltage, or operating supply voltages. No changes should be made to the original design of the receiver.

Components shown in the shaded areas on the schematic diagram and/or identified by  $\triangle$  in the replacement parts list should be replaced only with exact factory recommended replacement parts. The use of unauthorized substitute parts may create shock, fire, X-ray radiation, or other hazards.

To determine the presence of high voltage, use an accurate high impedance HV meter connected between the second anode lead and the CRT dag grounding device. When servicing the High Voltage System, remove static charges from it by connecting a 10k ohm resistor in series with an insulated wire (such as a test probe) between the picture tube dag and 2nd anode lead (have AC line cord disconnected from AC supply).

The picture tube used in this receiver employs integral implosion protection. Replace with a tube of the same type number for continued safety. Do not lift picture tube by the neck. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage completely. Keep others without shatterproof goggles away.

When removing springs or spring mounted parts from the tuner, tuner cluster or chassis, shatterproof goggles must be worn. Keep others without shatterproof goggles away.

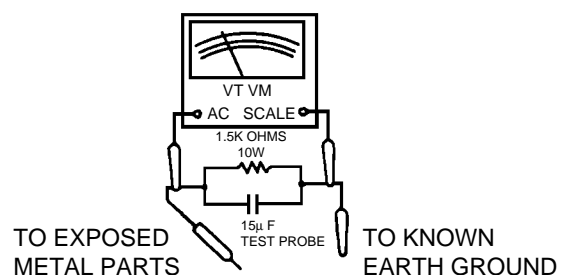
Before returning the receiver to the user, perform the following safety checks:

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Replace all protective devices such as nonmetallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
3. To be sure that no shock hazard exists, a check for the presence of leakage current should be made at each exposed metal part having a return path to the chassis (antenna, cabinet metal, screw heads, knobs and/or shafts, escutcheon, etc.) in the following manner.

Plug the AC line cord directly into a 120V AC receptacle. (Do not use an Isolation Transformer during these checks.) All checks must be repeated with the AC line cord plug connection reversed. (If necessary, a nonpolarized adapter plug must be used only for the purpose of completing these checks.)

If available, measure current using an accurate leakage current tester. Any reading of 0.35mA or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.

If a reliable leakage current tester is not available, this alternate method of measurement should be used. Using two clip leads, connect a 1500 ohm, 10 watt resistor paralleled by a 0.15 $\mu$ F capacitor in series with a known earth ground, such as a water pipe or conduit and the metal part to be checked. Use a VTVM or VOM with 1000 ohms per volt, or higher, sensitivity to measure this AC voltage drop across the resistor. Any reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.



## GENERAL SPECIFICATIONS

G-1	TV System	CRT	CRT Size / Visual Size	27 inch / 676.0mmV	
			CRT Type	Normal	
			Magnetic Field	BV/BH	+0.45G/0.18G
		Color System		NTSC	
		Speaker		2Speaker	
			Position	Front	
			Size	2.0 x 3.5 Inch	
			Impedance	8 ohm	
		Sound Output	MAX	2.5 + 2.5 W	
			10%(Typical)	- W	
		NTSC3.58+4.43 /PAL60Hz	No		
G-2	Tuning System	Broadcasting System		US System M	
		Tuner and Receive CH	System	1Tuner	
			Destination	USA(W/ CATV)	
			CH Coverage	2 - 69, 4A, A-5 - A-1, A - I, J - W, W+1 - W+84	
		Intermediate Frequency	Picture(FP)	45.75MHz	
			Sound(FS)	41.25MHz	
			FP-FS	4.50MHz	
		Preset CH		No	
		Stereo/Dual TV Sound		Yes	
		Tuner Sound Muting		Yes	
G-3	Power	Power Source	AC	120V AC 60Hz	
			DC		
		Power Consumption		at AC	
			Stand by (at AC)	Per Year	125 W at AC 120 V 60 Hz 5 W at AC 120 V 60 Hz -- kWh/Year
		Protector	Power Fuse	Yes	
	Safety Circuit	Yes			
	IC Protector(Micro Fuse)	No			
G-4	Regulation	Safety		UL/CSA	
		Radiation		FCC/IC	
		X-Radiation		DHHS/HWC	
G-5	Temperature	Operation		+5°C ~ +40°C	
		Storage		-20°C ~ +60°C	
G-6	Operating Humidity			Less than 80% RH	
G-7	On Screen Display	Menu		Yes	
		Menu Type		Character	
		Picture		Yes	
			Contrast	Yes	
			Brightness	Yes	
			Color	Yes	
			Tint	Yes	
			Sharpness	Yes	
		Audio		Yes	
			Bass	No	
			Treble	No	
			Balance	No	
			BBE On/Off	No	
			Stable Sound On/Off	Yes	
			Surround On/Off	No	
		CH Set Up		Yes	
			TV/CATV	Yes	
			Auto CH Memory	Yes	
			Add/Delete	Yes	
		Language		Yes	
		V-chip		Yes	
			CH Label	No	
			Favorite CH	No	
			Color Stream DVD/DTV	No	
		Control Level		Yes	
			Volume	Yes	
			Brightness	Yes	
			Contrast	Yes	
			Color	Yes	
			Tint	Yes	
	Sharpness	Yes			
	Tuning	No			
	Bass	No			
	Treble	No			
	Balance	No			

## GENERAL SPECIFICATIONS

		Back Light	No
		Stereo,Audio Output,SAP	Yes
		Video	Yes
		Color Stream	No
		Channel(TV/Cable)	Yes
		CH Label	No
		Sleep Timer	Yes
		Sound Mute	Yes
		V-chip Rating	Yes
<b>G-8</b>	<b>OSD Language</b>		English French Spanish
<b>G-9</b>	<b>Clock and Timer</b>	Sleep Timer	Max Time Step
		On/Off Timer	Program(On Timer / Off Timer)
		Wake Up Timer	No
		Timer Back-up (at Power Off Mode)	more than -- Min Sec
<b>G-10</b>	<b>Remote Control</b>	Unit	RC-DW
		Glow in Dark Remocon	No
		Format	NEC
		Remocon Format	Orion
		Custom Code	86-05 h
		Power Source	Voltage(D.C) UM size x pcs
		Total Keys	28 Keys
		Keys	Power
			1 Yes
			2 Yes
			3 Yes
			4 Yes
			5 Yes
			6 Yes
			7 Yes
			8 Yes
			9 Yes
			0 Yes
			100 No
			CH Up Yes
			CH Down Yes
			Volume Up Yes
			Volume Down Yes
			TV/Caption/Text Yes
			CH1/CH2 Yes
			TV/Video(TV/AV) Yes
			CH RTN/CH ENT(Quick View) Yes
			Sleep Yes
			RE Call(Call) Yes
			Reset Yes
			Menu Yes
			Enter Yes
			Mute Yes
			Exit No
			MTS(Audio Select) Yes
			Set + Yes
			Set - Yes
		Multi Brand Keys	CH Up(VCR) No
			CH Down(VCR) No
			Pause/Still No
			TV/VCR(VCR) No
			Code No
			CH Enter No
			MBR Set No
			FF No
			Rew No
			Rec No
			Play No
			Stop No
			TV No
			VCR No
			Cable No
<b>G-11</b>	<b>Features</b>	Auto Degauss	Yes
		Auto Shut Off	Yes
		Canal+	No

## GENERAL SPECIFICATIONS

		CATV	Yes
		Anti-theft	No
		Rental	No
		Memory(Last CH)	Yes
		Memory(Last Volume)	Yes
		V-Chip	Yes
		Type	USA, ORION Type
		BBE	No
		Auto Search	No
		CH Allocation	No
		SAP	Yes
		Tone Control	No
		Channel Lock	No
		Just Clock Function	No
		Game Position	No
		CH Label	No
		VM Circuit	No
		Full OSD	No
		Premiere	No
		Comb Filter	No
			___ Lines
		Auto CH Memory	Yes
		Hotel Lock	No
		Closed Caption	Yes
		Stable Sound	Yes
		Surround	No
		Energy Star	No
		Power On Memory	No
		Favorite CH	No
<b>G-12</b>	<b>Accessories</b>	Owner's Manual	Language w/Guarantee Card
			English / French / Spanish
		Remote Control Unit	Yes
		Rod Antenna	No
			Poles
			Terminal
		Loop Antenna	No
			Terminal
		U/V Mixer	No
		DC Car Cord (Center+)	No
		Guarantee Card	Yes
		Warning Sheet	No
		Circuit Diagram	No
		Antenna Change Plug	No
		Service Facility List	No
		Important Safeguard	No
		Dew/AHC Caution Sheet	No
		AC Plug Adapter	No
		Quick Set-up Sheet	No
		Battery	No
			UM size x pcs
			OEM Brand
		AC Cord	No
		AV Cord (2Pin-1Pin)	No
		Registration Card	No
		Information Sheet	No
		PTB Sheet	No
		300 ohm to 75 ohm Antenna Adapter	No
<b>G-13</b>	<b>Interface</b>	Switch	Front
			Power
			System Select
			Main Power SW
			Sub Power
			Channel Up/Reset
			Channel Down/Enter
			Volume Up/Set Up
			Volume Down/Set Down
			Menu: Vol Up + Vol Down
			Rear
			AC/DC
			TV/CATV Selector
			Degauss
			Main Power SW
		Indicator	Power
			Stand-by

## GENERAL SPECIFICATIONS

		On Timer	No	
	Terminals	Front	Video Input Audio Input Other Terminal	
		Rear	Video Input(Rear1) Video Input(Rear2) Audio Input(Rear1) Audio Input(Rear2) Video Output Audio Output S-Input Color Stream Diversity Ext Speaker DC Jack 12V(Center +) VHF/UHF Antenna Input AC Outlet	
			RCA RCA x 2 No RCA No RCA x 2 No No No Yes No No No No No F Type No	
<b>G-14</b>	<b>Set Size</b>	Approx. W x D x H (mm)	650 x 500.5 x 571.5	
<b>G-15</b>	<b>Weight</b>	Net (Approx.) Gross (Approx.)	36.5kg (80.5 lbs) 40.5Kg (89.3 lbs)	
<b>G-16</b>	<b>Carton</b>	Master Carton	No	
		Content	---- Sets	
		Material	-- /--	
		Dimensions W x D x H(mm)	-- x -- x --	
		Description of Origin	No	
		Gift Box	Material Dimensions W x D x H(mm) Design Description of Origin	Double/Brown 731 x 580 x 665 As per Buyer's Yes
		Drop Test	Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces	
		Height (cm)	31	
		Container Stuffing	192 Sets/40' container	
<b>G-17</b>		<b>Material</b>	Cabinet	Cabinet Front Cabinet Rear
			PS 94V0 PS 94V0	DECABROM DECABROM
			PCB	Non-Halogen Demand Eyelet Demand
<b>G-18</b>	<b>Environment</b>		Pb-free Soldering Parts Specificat	No No

# DISASSEMBLY INSTRUCTIONS

## 1. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

- \* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
- \* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

### REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. (Refer to Fig. 1-1.)

Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground. While holding the plastic part of the insulated screwdriver, touch the support of the Anode with the tip of the screwdriver.

A cracking noise will be heard as the voltage is discharged.

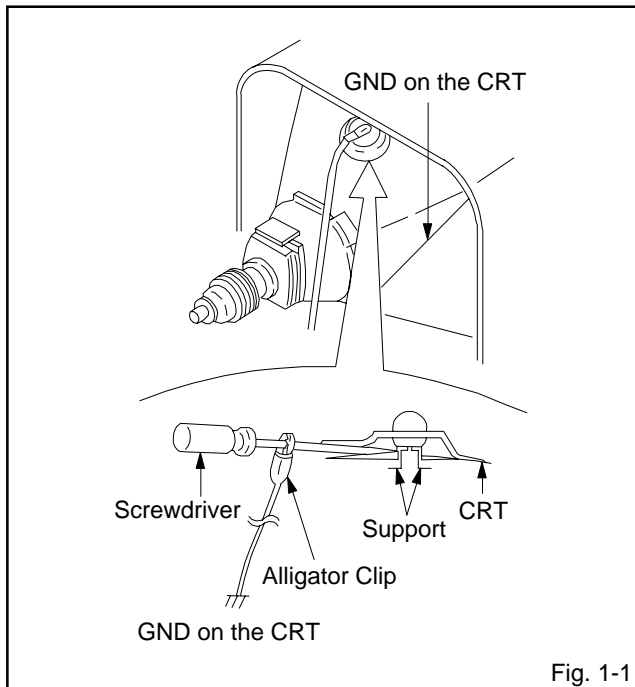


Fig. 1-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. (Refer to Fig. 1-2.)

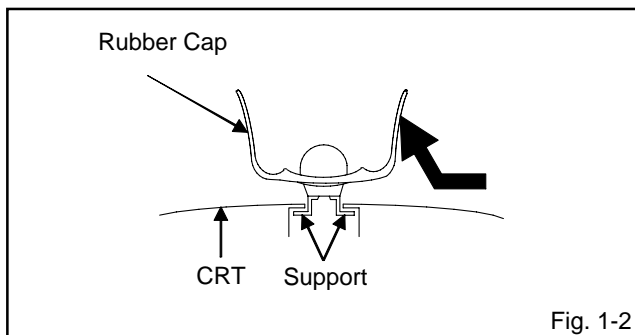


Fig. 1-2

3. After one side is removed, pull in the opposite direction to remove the other.

### NOTE

Take care not to damage the Rubber Cap.

### INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. (Refer to Fig. 1-3.)

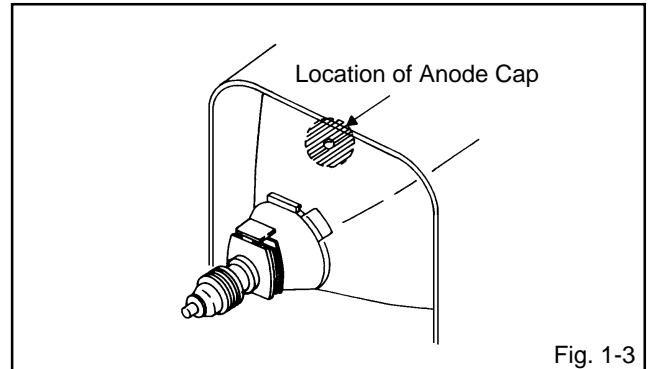


Fig. 1-3

### NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. (Refer to Fig. 1-4.)

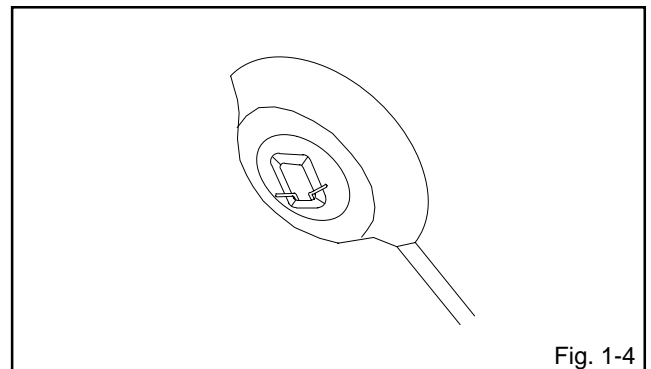


Fig. 1-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in Fig. 1-5.

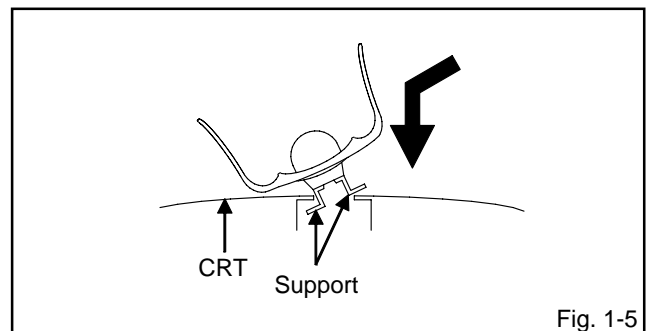


Fig. 1-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.



# DISASSEMBLY INSTRUCTIONS

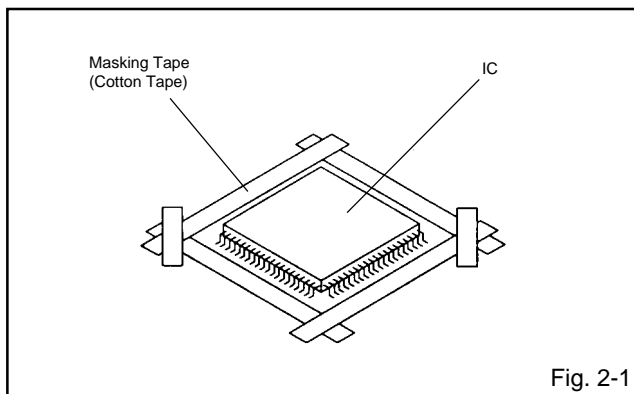
## 2. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

### REMOVAL

1. Put Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. (Refer to Fig. 2-1.)

#### NOTE

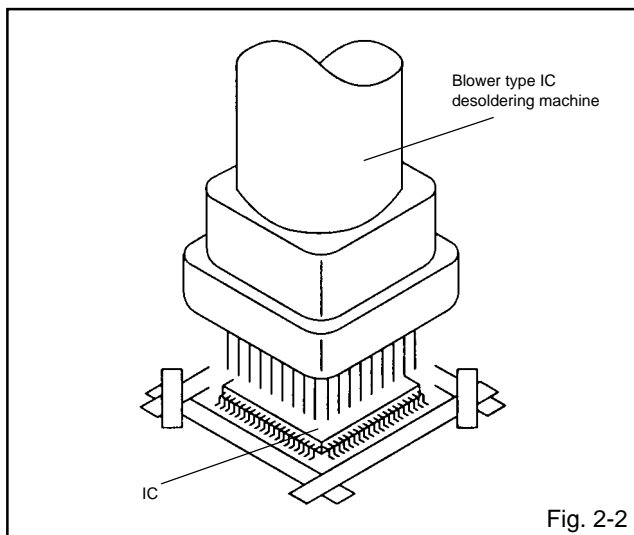
Masking is carried out on all the parts located within 10 mm distance from IC leads.



2. Heat the IC leads using a blower type IC desoldering machine. (Refer to Fig. 2-2.)

#### NOTE

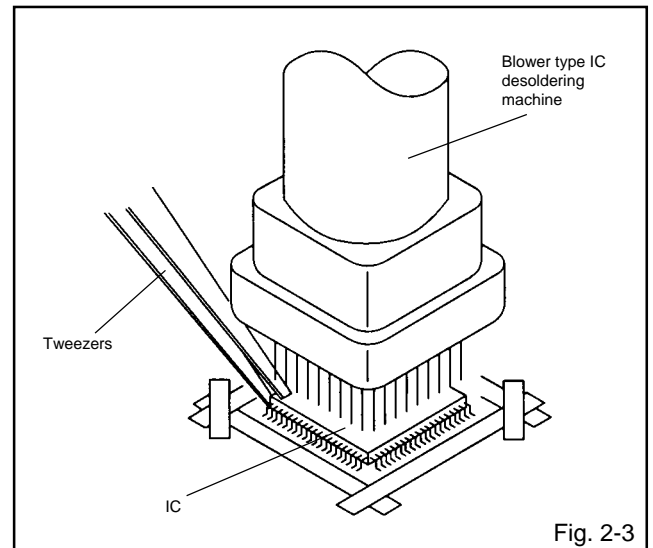
Do not rotate or move the IC back and forth until IC can move back and forth easily after desoldering the leads completely.



3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. (Refer to Fig. 2-3.)

#### NOTE

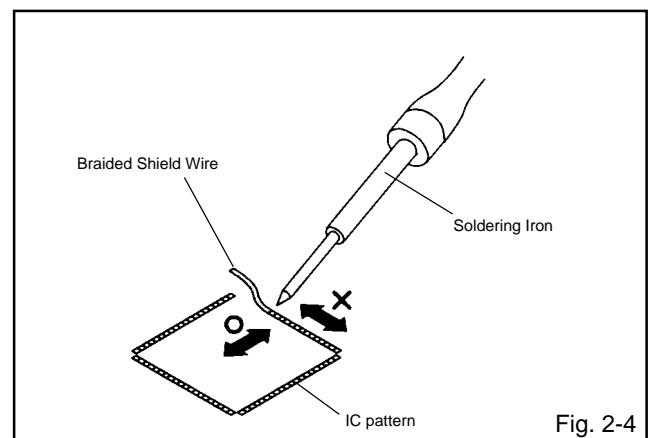
Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.



4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. (Refer to Fig. 2-4.)

#### NOTE

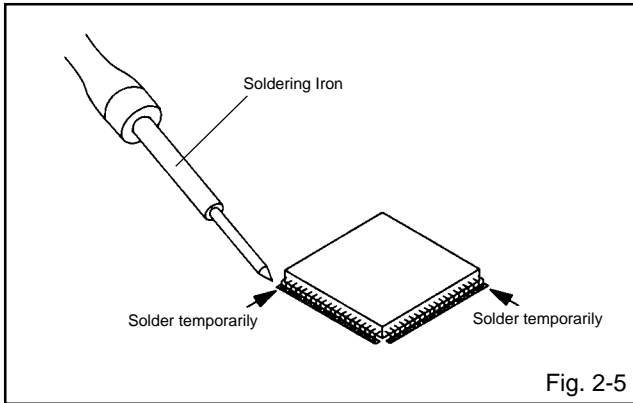
Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.



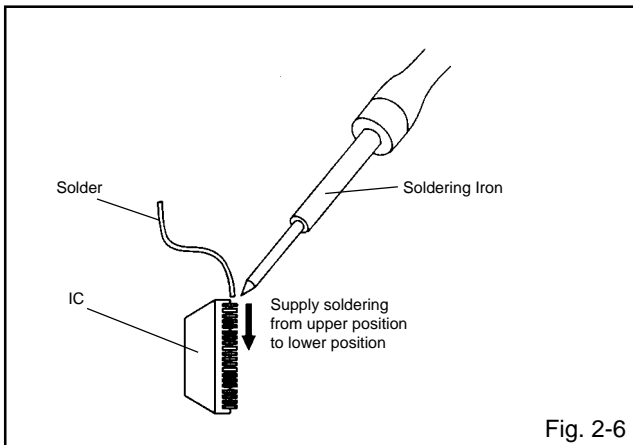
# DISASSEMBLY INSTRUCTIONS

## INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. (Refer to Fig. 2-5.)



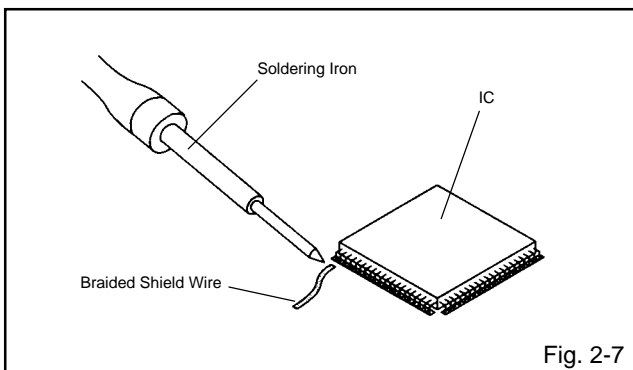
2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. (Refer to Fig. 2-6.)



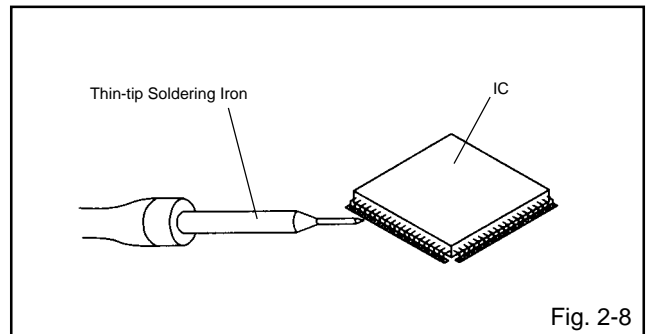
3. Absorb the solder left on the lead using the Braided Shield Wire. (Refer to Fig. 2-7.)

### NOTE

Do not absorb the solder to excess.



4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. (Refer to Fig. 2-8.)



5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass. Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

### NOTE

When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

## SERVICE MODE LIST

This unit is provided with the following SERVICE MODES so you can repair, examine and adjust easily. To enter to the Service Mode, press both set key and remote control key for more than 2 seconds.

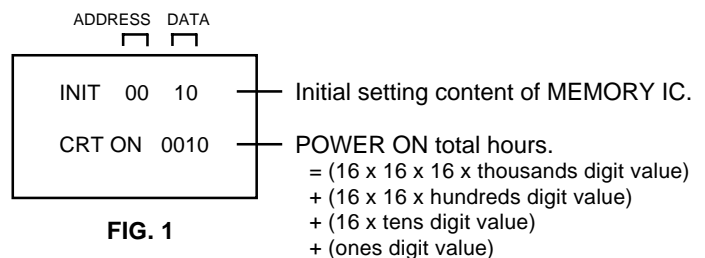
Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD and LOCK PASSWORD.
VOL. (-) MIN	1	Initialization of factory data. NOTE: Do not use this for normal servicing. If you set factory initialization, the memories are reset such as the clock setting, the channel setting, the POWER ON total hours, and PLAY/REC total hours.
VOL. (-) MIN	6	POWER ON total hours is displayed on the screen. Refer to the "CONFIRMATION OF HOURS USED".  Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

### CONFIRMATION OF HOURS USED

POWER ON total hours can be checked on the screen. Total hours are displayed in 16 system of notation.

**NOTE: If you set factory initialization, the total hours is reset to "0".**

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 2 seconds.
3. After the confirmation of using hours, turn off the power.



### WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	10	04	4A	4C	57	B3	24	7B	03	02	CC	50	D4	3F	00	03

**Table 1**

1. Enter DATA SET mode by setting VOLUME to minimum.
2. While holding down VOLUME button on front cabinet, press key 6 on remote control for more than 2 seconds. ADDRESS and DATA should appear as FIG 1.
3. ADDRESS is now selected and should "blink". Using the VOL. +/- button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using VOL. +/- button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.  
**After the data input, set to the initializing of shipping.**
9. Turn POWER on.
10. While holding down VOLUME button on front cabinet, press key 1 on remote control for more than 2 seconds.
11. After the finishing of the initializing of shipping, the unit will turn off automatically.

# ELECTRICAL ADJUSTMENTS

## 1. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

### CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
- When you exchange IC and Transistor with a heat sink, apply silicon grease (**YG6260M**) on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter
3. Multi-sound Generator
4. Pattern Generator

### On-Screen Display Adjustment

1. In the condition of NO indication on the screen. Press the VOL. DOWN button on the set and the Channel button (**9**) on the remote control for more than 2 seconds to appear the adjustment mode on the screen as shown in **Fig. 1-1**.

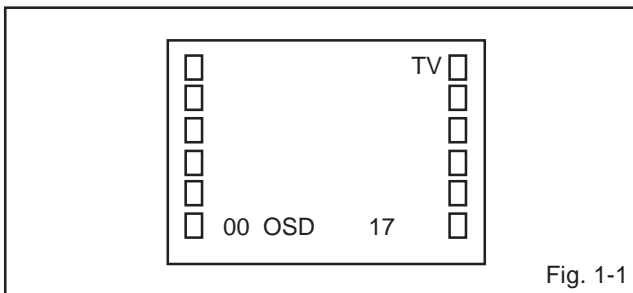


Fig. 1-1

2. Use the Channel UP/DOWN button or Channel button (**0-9**) on the remote control to select the options shown in **Fig. 1-2**.
3. Press the MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
00	OSD H	16	CONTRAST CENT
01	CUT OFF	17	CONTRAST MAX
04	H.VCO	18	CONTRAST MIN
05	H.PHASE	19	COLOR CENT
06	V.SIZE	20	COLOR MAX
07	V.SHIFT	21	COLOR MIN
08	R.DRIVE	22	TINT
09	B.DRIVE	23	SHARPNESS
10	R.BIAS	24	FM LEVEL
11	G.BIAS	25	LEVEL
12	B.BIAS	26	SEPARATION 1
13	BRIGHT CENT	27	SEPARATION 2
14	BRIGHT MAX	28	TEST MONO
15	BRIGHT MIN	29	TEST STEREO

Fig. 1-2

## 2. BASIC ADJUSTMENTS

### 2-1: CONSTANT VOLTAGE

1. Place the set in AV MODE without signal.
2. Connect the digital voltmeter to the **TP401**.
3. Adjust the **VR502** until the digital voltmeter is  $120 \pm 0.5V$ .

### 2-2: CUT OFF

1. Place the set in Aging Test for more than 15 minutes.
2. Place the set in AV MODE without signal.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**01**) on the remote control to select "CUT OFF".
5. Adjust the **Screen Volume** until a dim raster is obtained.

### 2-3: WHITE BALANCE

**NOTE:** Adjust after performing CUT OFF adjustment.

1. Place the set in Aging Test for more than 15 minutes.
2. Receive the white 100% signal from the Pattern Generator.
3. Using the adjustment control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**10**) on the remote control to select "R.BIAS".
5. Using the VOL. UP/DOWN button on the remote control, adjust the R.BIAS.
6. Press the CH. UP/DOWN button on the remote control to select the "R.DRIVE", "B.DRIVE", "G.BIAS" or "B.BIAS".
7. Using the VOL. UP/DOWN button on the remote control, adjust the R.DRIVE, B.DRIVE, G.BIAS or B.BIAS.
8. Perform the above adjustments 6 and 7 until the white color is achieved.

### 2-4: FOCUS

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

### 2-5: VERTICAL POSITION

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Adjust the **VR401** until the horizontal line becomes fit to the notch of the shadow mask. (**Refer to Fig. 2-1**)

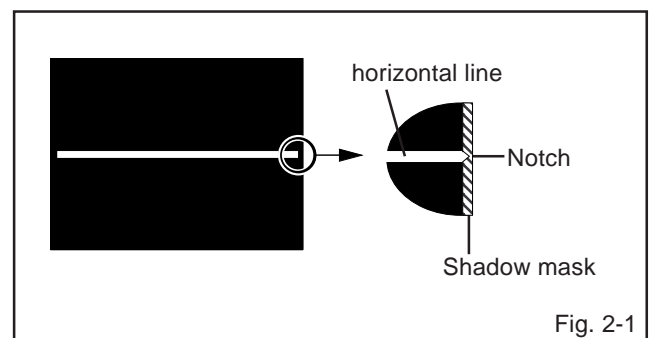


Fig. 2-1

# ELECTRICAL ADJUSTMENTS

## 2-6: VERTICAL SIZE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(06)** on the remote control to select "V. SIZE".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes  $9 \pm 2\%$ .

## 2-7: VERTICAL LINEARITY

**NOTE:** Adjust after performing adjustments in section 2-6. After the adjustment of Vertical Linearity, reconfirm the Vertical Position and Vertical Size adjustments.

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness, contrast, to normal position.
3. Adjust the **VR402** until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.

## 2-8: LEVEL

1. Connect the AC voltmeter to **pin 6 of CP601**.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(25)** on the remote control to select "LEVEL".
3. Press the VOL. UP/DOWN button on the remote control until the AC voltmeter is  $85 \pm 2\text{mV}$ .

## 2-9: HORIZONTAL PHASE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(05)** on the remote control to select "H.PHASE".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

## 2-10: CONTRAST MAX

1. Receive an over 70dB color bar pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(17)** on the remote control to select "CONT MAX".
4. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "70".
5. Receive a broadcast and check if the picture is normal.
6. Receive the color bar pattern. (Audio Video Input)
7. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.

## 2-11: SEPARATION 1, 2

**Please do the method (1) or method (2) adjustment.**

### Method (1)

1. Set the multi-sound signal generator for each different L-ch and R-ch frequency (Ex. L-ch=2KHz, R-ch=400Hz) and receive the RF.
2. Connect the oscilloscope to the **pin 6 and pin 7 of CP601**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(26)** on the remote control to select "SEP 1".
4. Press the VOL. UP/DOWN button on the remote control to adjust it until the audio output wave becomes a fine sine wave.
5. Press the CH UP button once the set to "SEP 2" mode. Then perform the above adjustment 4.

### Method (2)

1. Set the multi-sound signal generator L-ch=1KHz, R-ch=Non input and receive the RF.
2. Connect the oscilloscope to the **pin 6 and pin 7 of CP601**.
3. Press the AUDIO SELECT button on the remote control to set to the stereo mode.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(26)** on the remote control to select "SEP 1".
5. Press the VOL. UP/DOWN button on the remote control to adjust it until the R-ch output becomes minimum.
6. Set the multi-sound signal generator L-ch=Non input, R-ch=1KHz and receive the RF.
7. Connect the oscilloscope to the **pin 6 and pin 7 of CP601**.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(27)** on the remote control to select "SEP 2".
9. Press the VOL. UP/DOWN button on the remote control to adjust it until the L-ch output becomes minimum. The output difference of the between with Filter and without Filter should be more than 20db for both L and R.

## 2-12: OSD POSITION

1. Activate the adjustment mode display of **Fig. 1-1**.
2. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum. (**Refer to Fig. 2-2**)

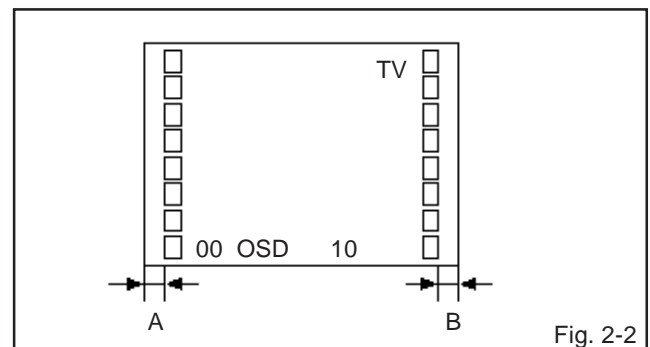


Fig. 2-2

# ELECTRICAL ADJUSTMENTS

## 2-13: BRIGHT CENT

1. Receive the monoscope pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(13)** on the remote control to select "BRI CENT".
4. Press the VOL. UP/DOWN button on the remote control until the white 10% is starting to be visible.
5. Receive the monoscope pattern. (Audio Video Input)
6. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2~4.

## 2-14: COLOR CENT

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscope to **TP022**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(19)** on the remote control to select "COLOR CENT".
5. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
6. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to  $120 \pm 5\%$  of the white level. **(Refer to Fig. 2-3)**
7. Receive the video color bar pattern. (Audio Video Input)
8. Set to the AV mode. Then perform the above adjustments 2~6.

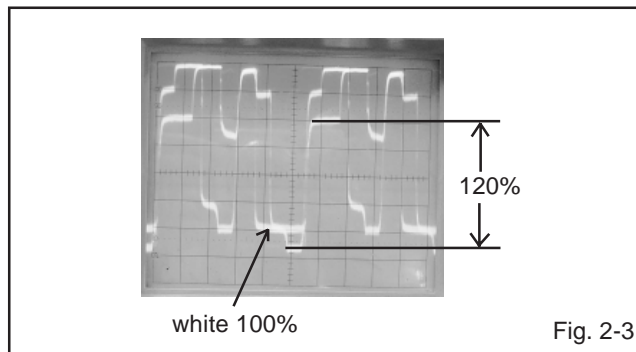


Fig. 2-3

## 2-15: TINT

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscope to **TP024**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(22)** on the remote control to select "TINT".
5. Press the VOL. UP/DOWN button on the remote control until the section "A" becomes as straight line. **(Refer to Fig. 2-4)**
6. Receive the video color bar pattern. (Audio Video Input)
7. Set to the AV mode. Then perform the above adjustments 2~5.

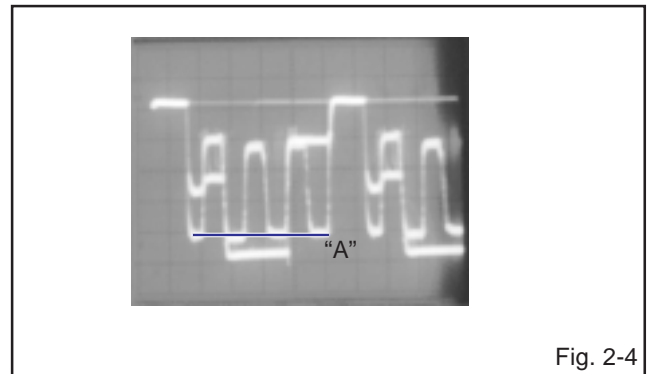


Fig. 2-4

## 2-16: HORIZONTAL SIZE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Adjust the **VR404** until the SHIFT quantity of the OVER SCAN on the right and left becomes  $10 \pm 4\%$ .

## 2-17: PALABOLA CORR

1. Receive the chosshatch pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Adjust the **VR403**, so that the 4th length line becomes straight from the outside of the right and left.

## 2-18: Confirmation of Fixed Value (step No.)

Please check if the fixed values of the each adjustment items are set correctly referring below.

NO.	FUNCTION	RF	AV
04	H VCO	04	04
07	V.SHIFT	02	02
14	BRIGHT MAX	130	130
15	BRIGHT MIN	60	60
16	CONT CENT	35	35
18	CONT MIN	25	25
20	COLOR MAX	75	75
21	COLOR MIN	00	00
23	SHARPNESS	45	45
24	FM LEVEL	01	01

# ELECTRICAL ADJUSTMENTS

## 3. PURITY AND CONVERGENCE ADJUSTMENTS

### NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

### 3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**  
If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

### 3-2: PURITY

#### NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.  
Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue color.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

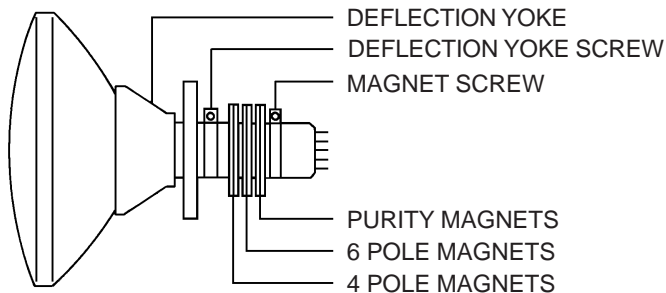


Fig. 3-1

### 3-3: STATIC CONVERGENCE

#### NOTE

Adjust after performing adjustments in section 3-2.

1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

### 3-4: DYNAMIC CONVERGENCE

#### NOTE

Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**

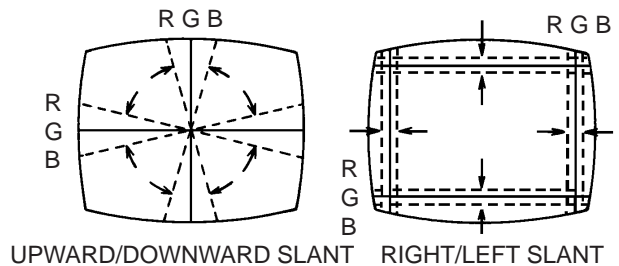


Fig. 3-2-a

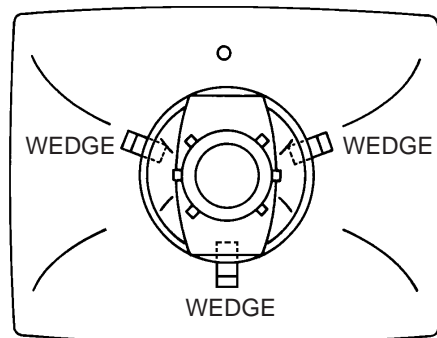
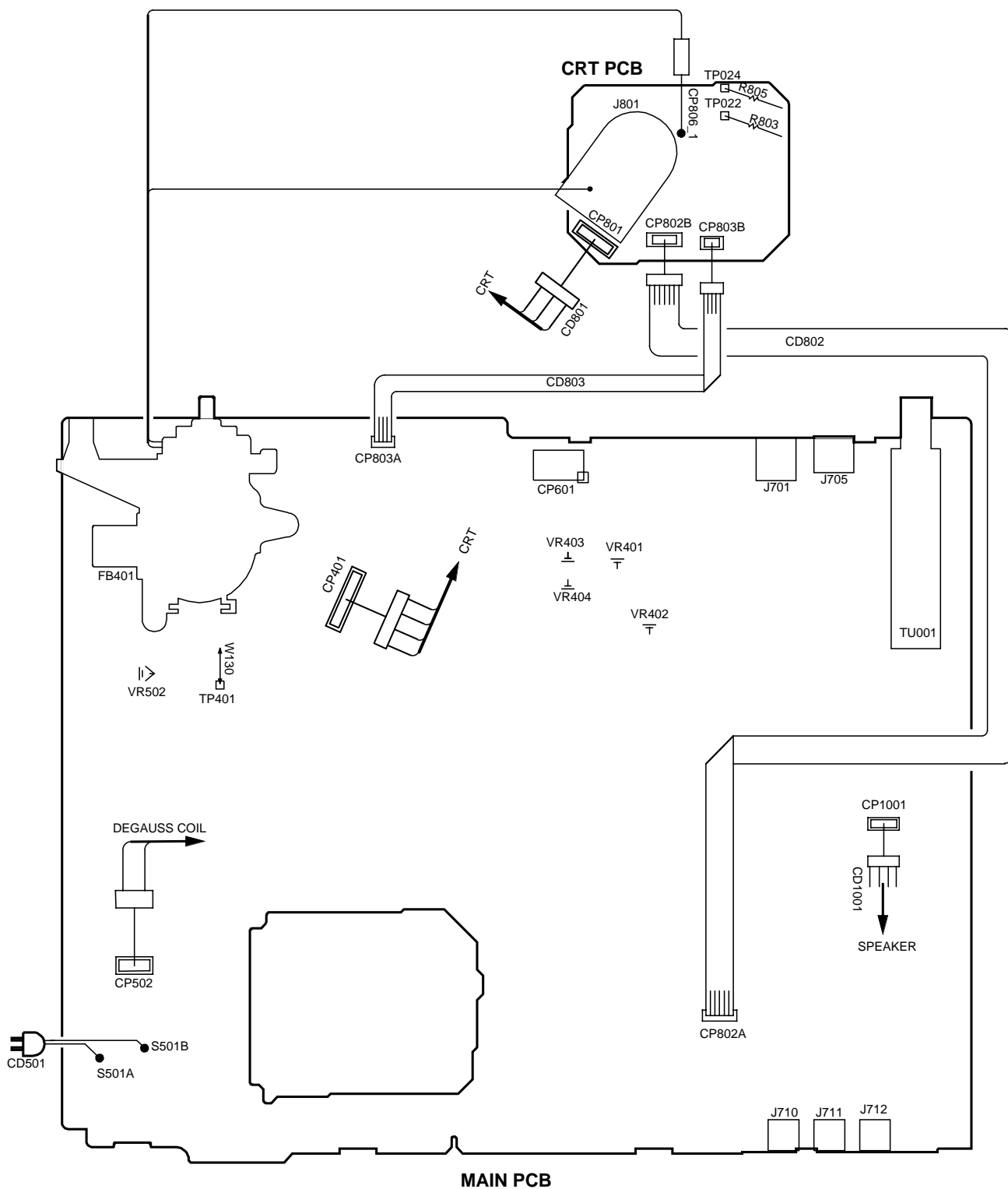


Fig. 3-2-b

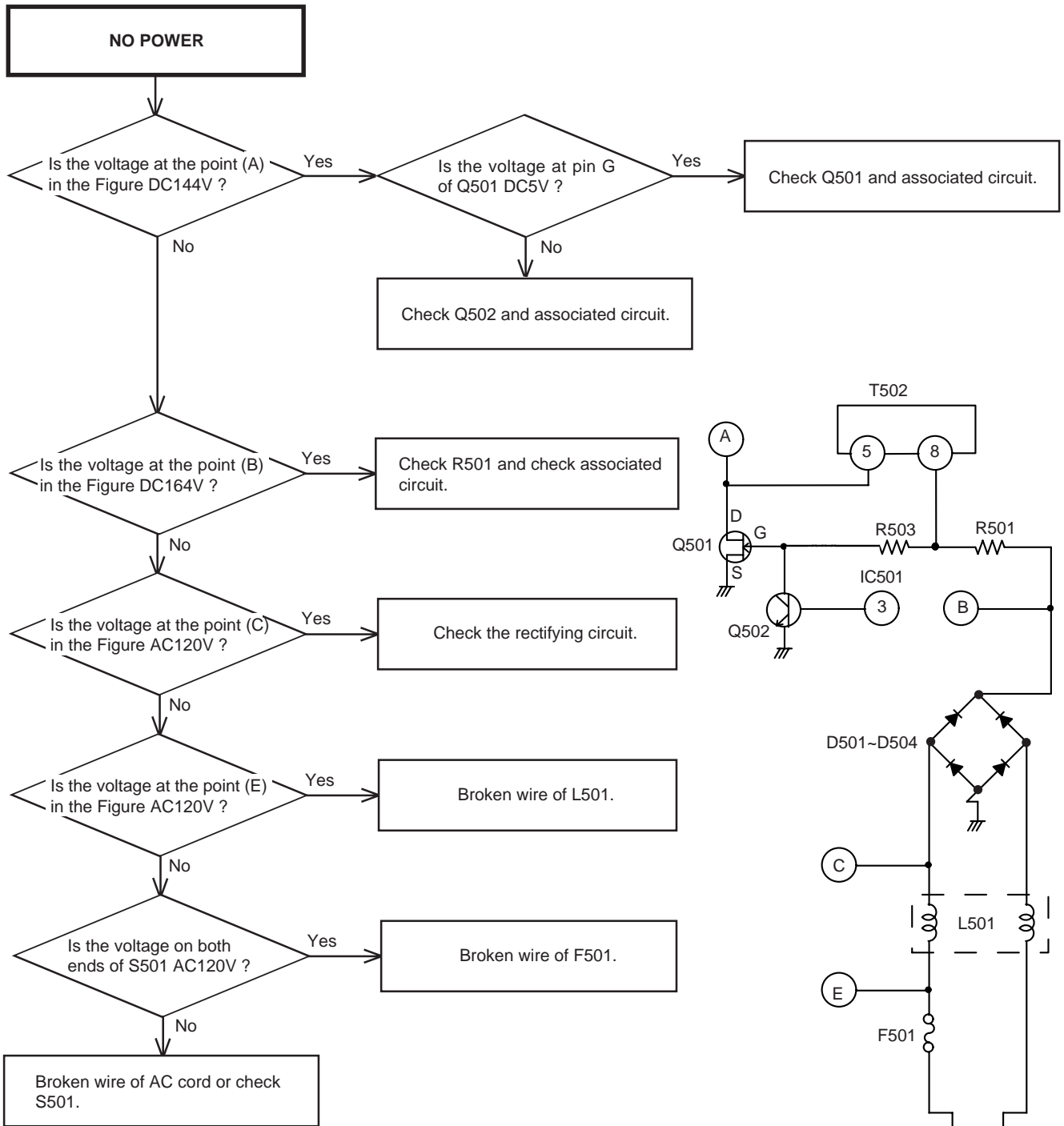
# ELECTRICAL ADJUSTMENTS

## 4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)

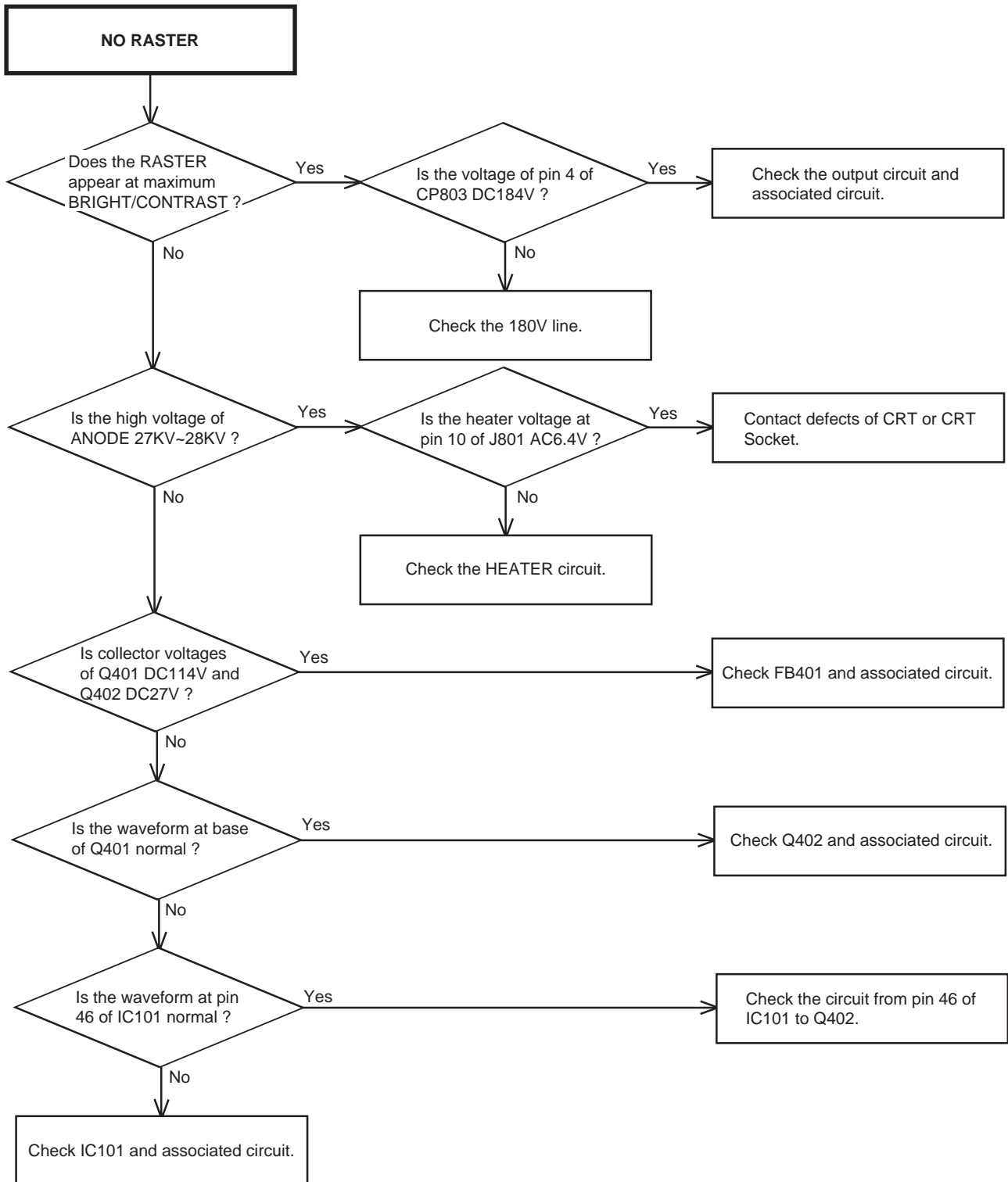




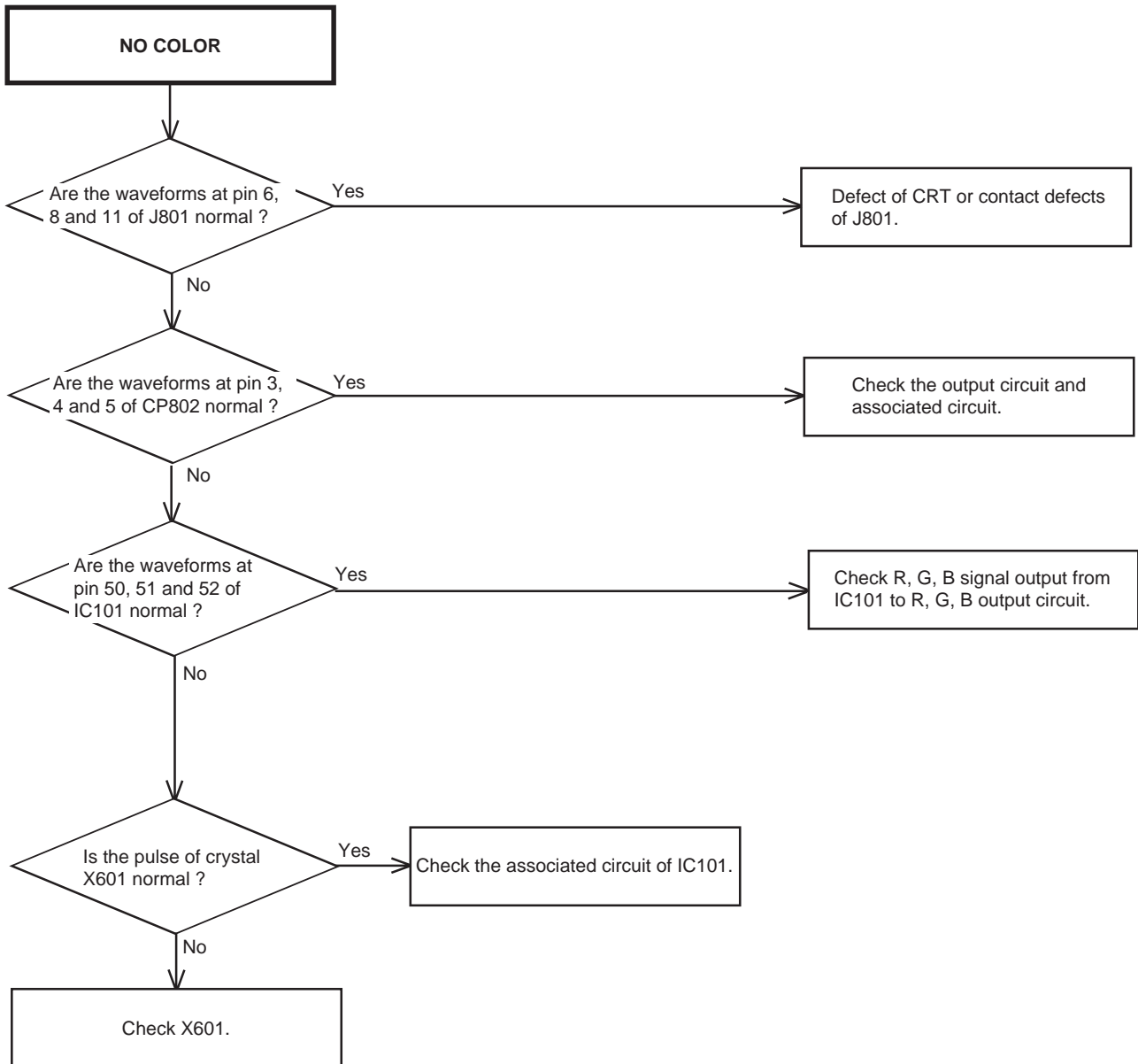
# TROUBLESHOOTING GUIDE



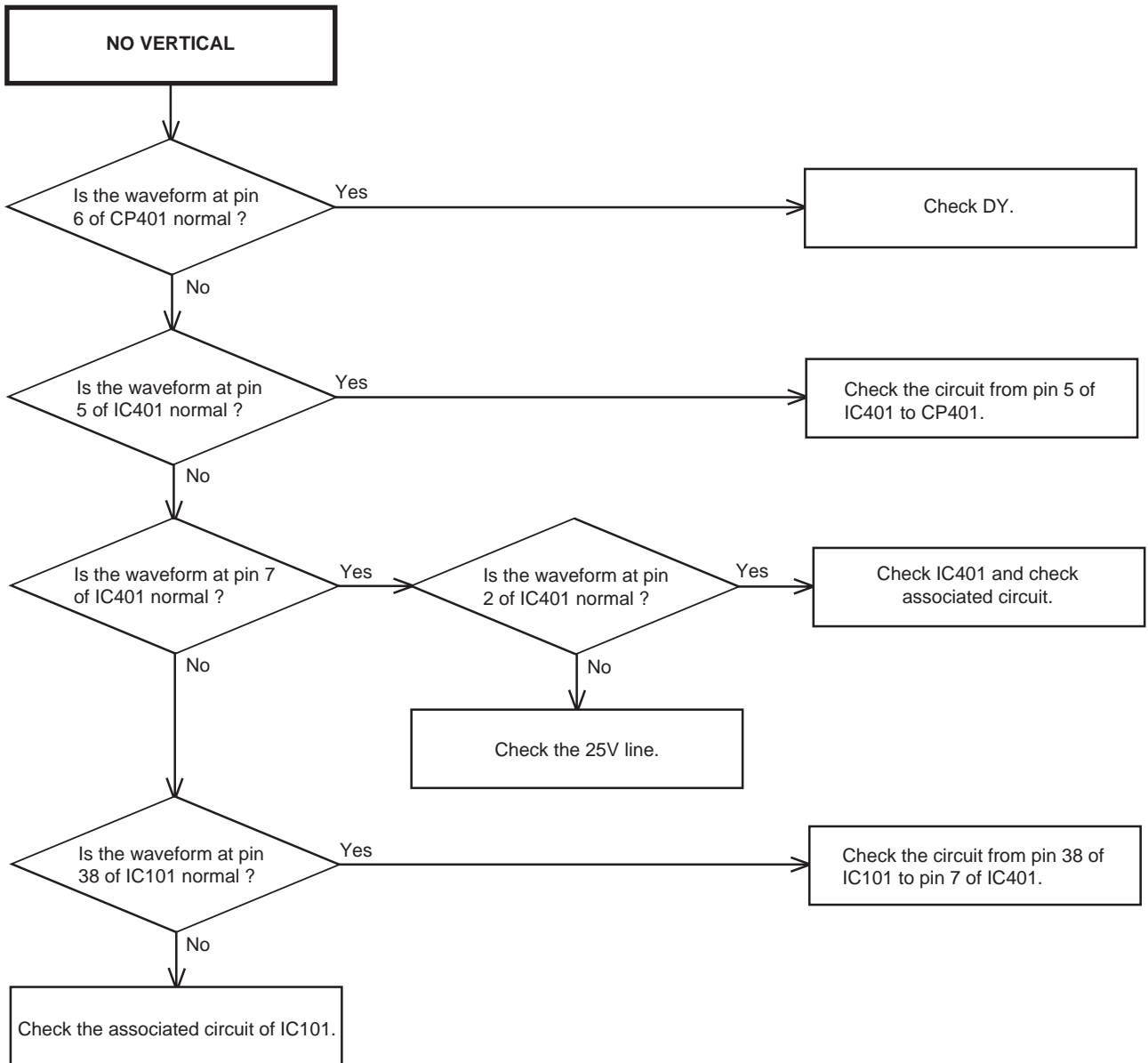
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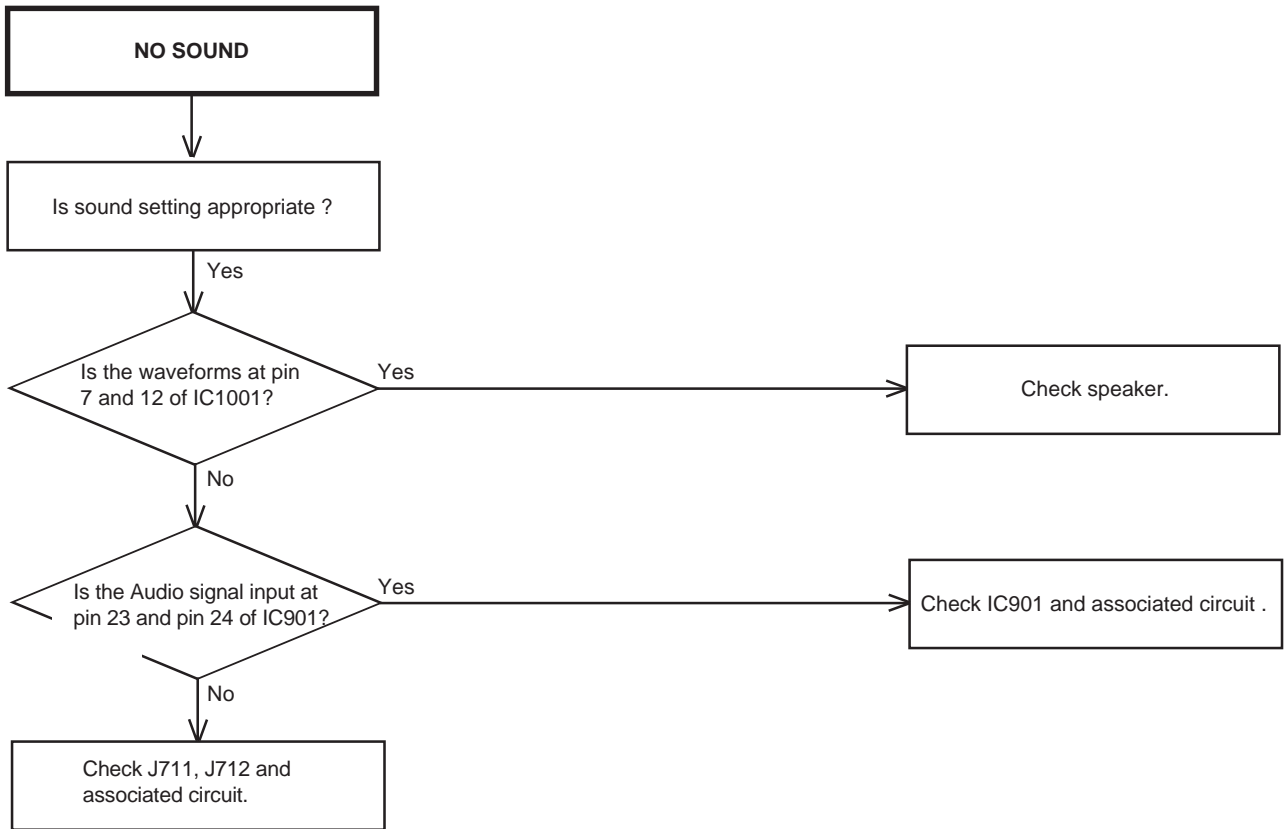
# TROUBLESHOOTING GUIDE



# TROUBLESHOOTING GUIDE



# TROUBLESHOOTING GUIDE



## IC DESCRIPTION

OEC7091C (IC101)

No.	PIN NAME	I/O	DESCRIPTIONS	Function
1	CNVSS	I/O	Ground.	
2	XIN	I	Ground.	
3	XOUT	O	Not used.	
4	TEST1		5V.	
5	VSS	I	Ground.	
6	MCU VCC	I	5V.	
7	TEST0		Ground.	
8	FILT	I	Condenser connection for FILT.	
9	HLT	I/O	Condenser connection for HLT.	
10	VHOLD	I/O	Condenser connection for V.HOLD.	
11	CVIN	I/O	Composite Video input terminal.	
12	RESET IN	I	Reset will be done when the voltage goes to LOW.	
13	MCU RESET OUT		Reset will be done when the voltage goes to LOW.	
14	Y SW OUT		Condenser connection for Y SW OUT.	
15	V/C GND		Ground.	
16	3.58 XTAL		Connect the main crystal. (3.579545MHz)	
17	C-APC		Condenser connection for C-APC.	
18	MCU5.7V REG OUT		Power of CPU.	
19	NC		Not used.	
20	CVBS IN3		Connect the Video input signal for tuner.	
21	AUDIO IN3		Not used.	
22	V/C VCC		5V.	
23	MCU TEST		Ground.	
24	CVBS IN2		Composite Video input terminal.	
25	AUDIO IN2		Not used.	
26	CVBS IN1		Composite Video input terminal.	
27	AUDIO IN1		Not used.	
28	5.7V REG OUT		5.7V.	
29	C (Y/C) IN		Input terminal of C-IN.	
30	Y (Y/C) IN		Input terminal of Y-IN.	
31	VREG OUT		Power of CPU.	
32	FSC OUT		Not used.	
33	MONITOR OUT		Not used.	
34	AUDIO ATT OUT		Not used.	
35	AUDIO ATT FILTER		Not used.	
36	NC		Ground.	
37	V RAMP F/B		Input terminal of V-FEEDBACK.	
38	V RAMP OUT		Output terminal for V.OUT.	
39	V RAMP CAP		Condenser connection for V.RAMP CAP.	
40	8.7 REG OUT		8.7V.	

## IC DESCRIPTION

OEC7091C (IC101)

No.	PIN NAME	I/O	DESCRIPTIONS	Function
41	NC		Not used.	
42	HVCO F/B		Condenser connection for HVCO F/B.	
43	AFC FILTER		Condenser connection for AFC FILTER.	
44	DEF GND		Ground.	
45	FBP IN		Input terminal for H-SYNC.	
46	H OUT		Output terminal for H.OUT.	
47	DEF VCC		8V.	
48	NC		Not used.	
49	HI VCC		8V.	
50	R OUT		Color signal red output.	
51	G OUT		Color signal green output.	
52	B OUT		Color signal blue output.	
53	ACL		Input terminal for control ACL.	
54	NC		Not used.	
55	PROTECT	O	Output HIGH at turning of a television.	C-MOS
56	SDA	I/O	DATA terminal for I2CBUS communication.	C-MOS
57	H_CTL	O	Output terminal for H_CTL.	C-MOS
58	SCL	O	Clock terminal for I2CBUS communication.	C-MOS
59	NC		Ground.	
60	NC		Ground.	
61	NC		Ground.	
62	DEGAUSS_H	O	Degauss control output	Nch-OD
63	STANBY_H	O	5V.	Nch-OD
64	VOLUME	O	PWM output of volume control.	Nch-OD
65	NC	I	AV/S-VIDEO control sw.	
66	AFT	I	Input terminal of AFT.	Nch-OD
67	KEY1	I	Main unit key input.	Nch-OD
68	KEY2	I	Main unit key input.	Nch-OD
69	POWER ON	I	Main unit key input.	Nch-OD
70	REMOCON	I	Receive the remote control signal.	Nch-OD
71	AV2	O	Not used.	C-MOS
72	AV1	O	Not used.	C-MOS
73	AUDIO MUTE	O	Volume muting output.	C-MOS
74	X-RAY	I	Input terminal of X-RAY detection.	C-MOS
75	IIC_OFF	O	When input "L" the I2CBUS communication is stopped.	C-MOS
76	ON TIMER	O	Not used.	C-MOS
77	SYNC	O	Not used.	C-MOS
78	POWER FAIL	I	Input for the detection of power interruption.	C-MOS
79	X-RAY TEST	I/O	Ground.	C-MOS
80	EXT MUTE	O	Not used.	C-MOS

# SEMICONDUCTOR BASE CONNECTIONS

## DIODE



RD47FBD-3  
 1N4937  
 1N4937-B-EIC  
 1SS133T-77  
 ERD07-15L50  
 FE201-6L49  
 MTZJ12B T-77  
 MTZJ18B T-77  
 MTZJ2.2B T-77  
 MTZJ33B T-77  
 MTZJ4.7B T-77  
 MTZJ5.1B T-77  
 MTZJ5.6B T-77  
 MTZJ8.2B T-77  
 MTZJ9.1B T-77

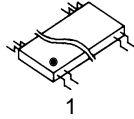


1N4002-PAN  
 1N4937-PAN  
 30DF6-FC  
 PS106R

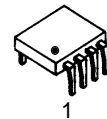


21DQ09N-TA2B1  
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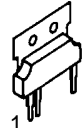
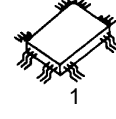
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AN5829S-E1V

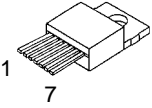


AT24C04N-10SU-2 OEC7091C

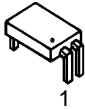


AN17805A

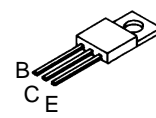
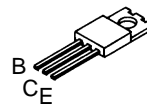
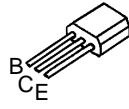
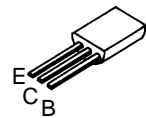
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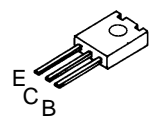
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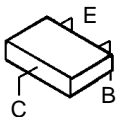
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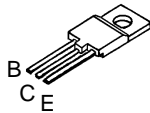
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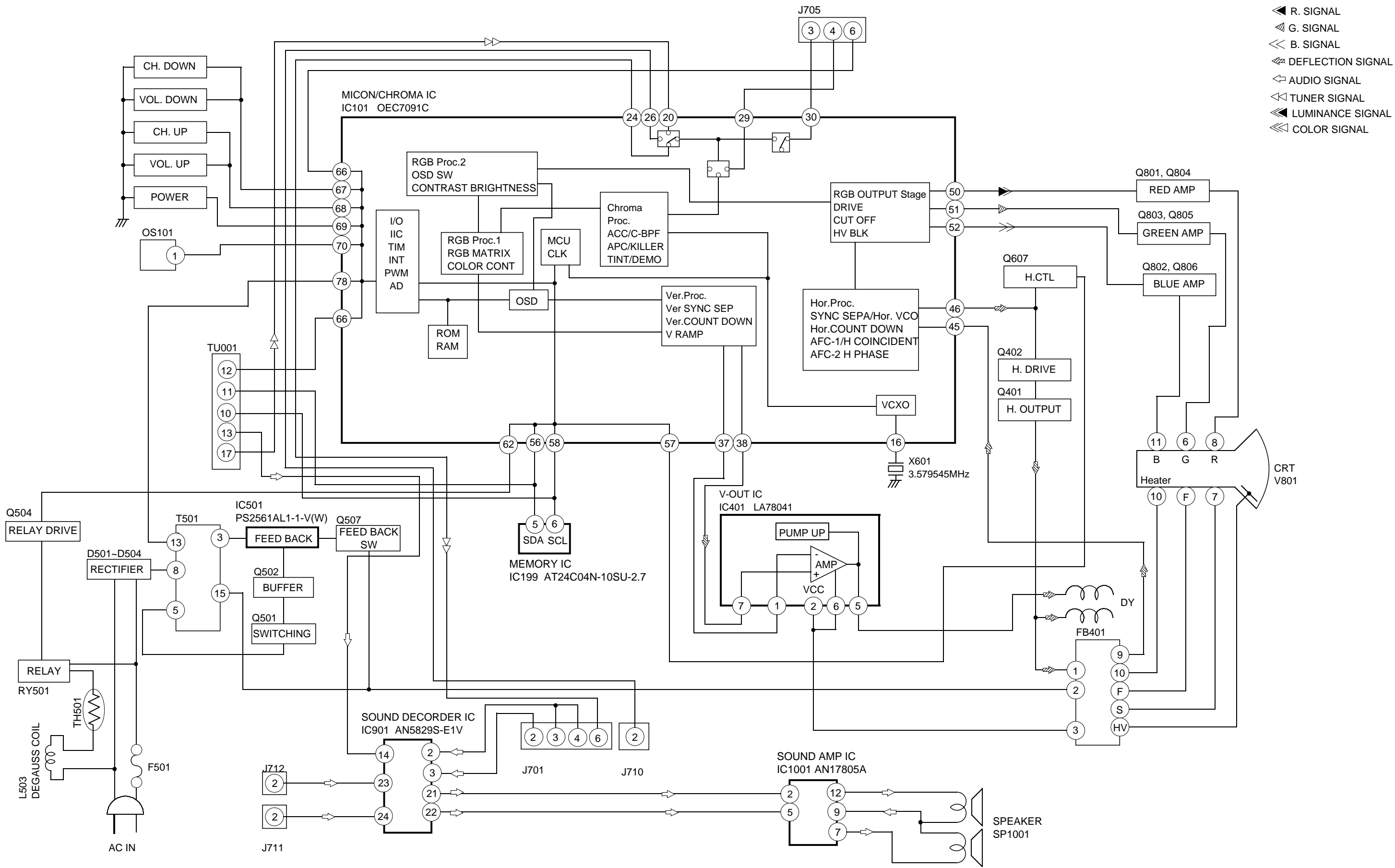
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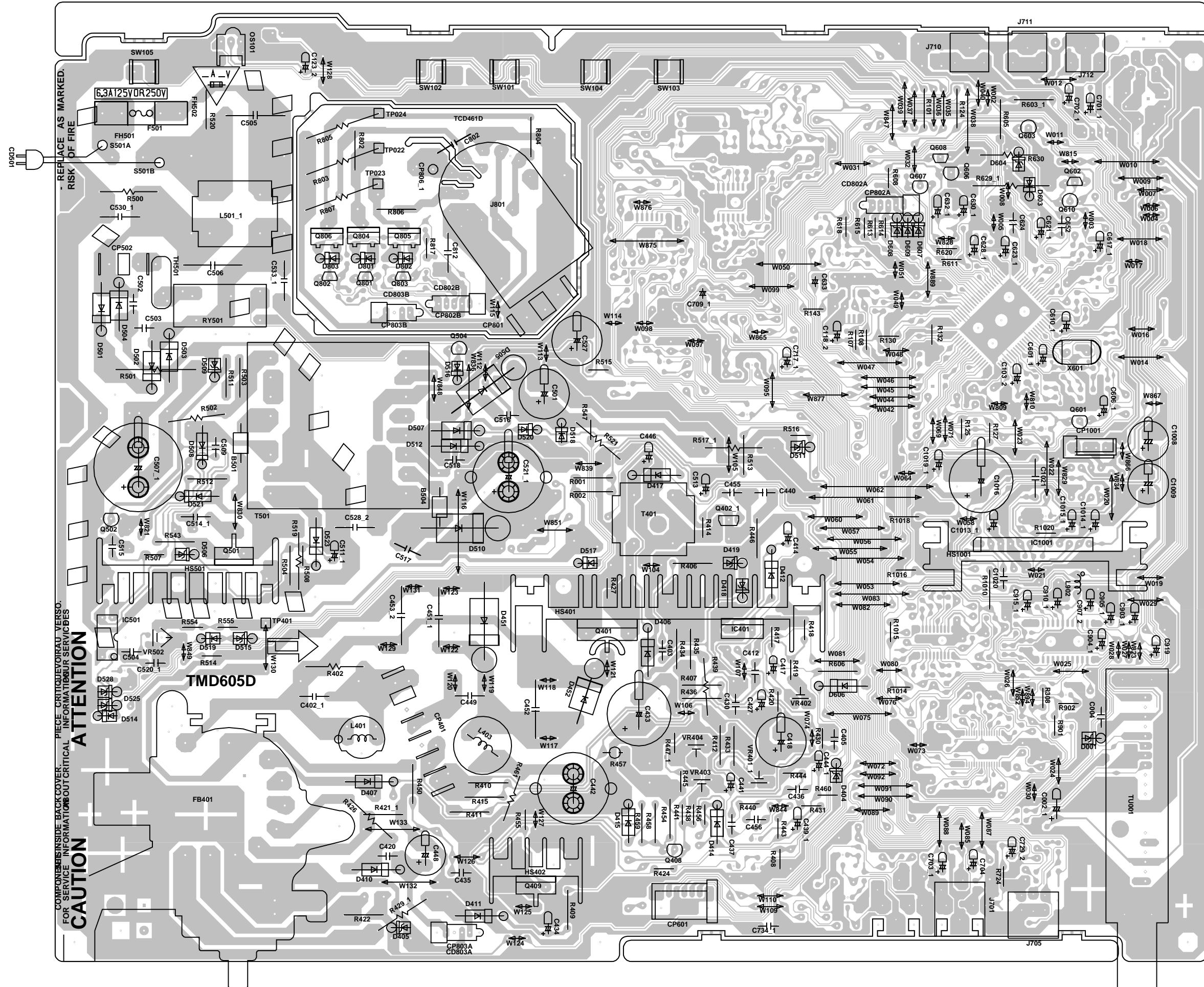
2SD2499(LBOEC1)



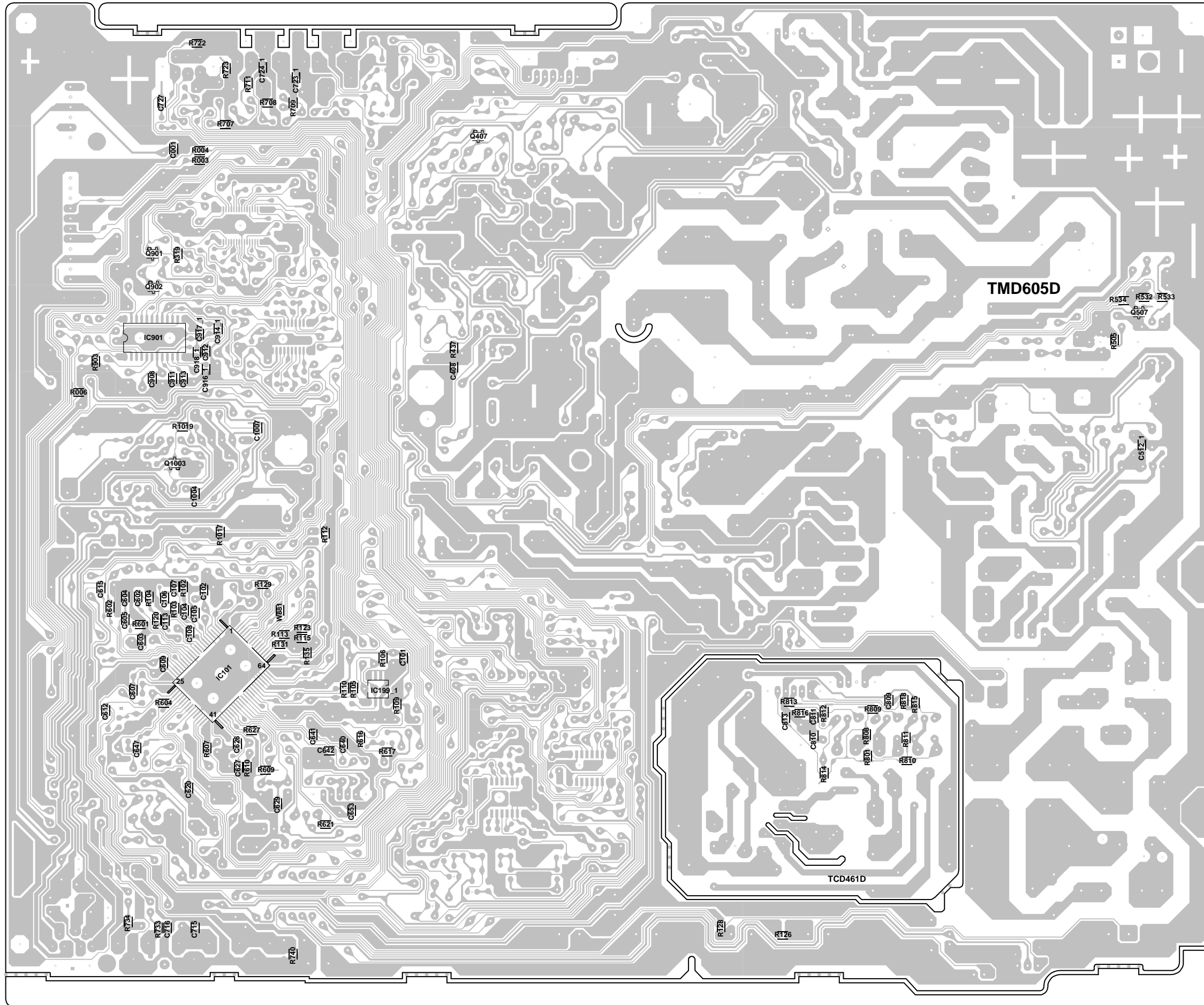
# BLOCK DIAGRAM



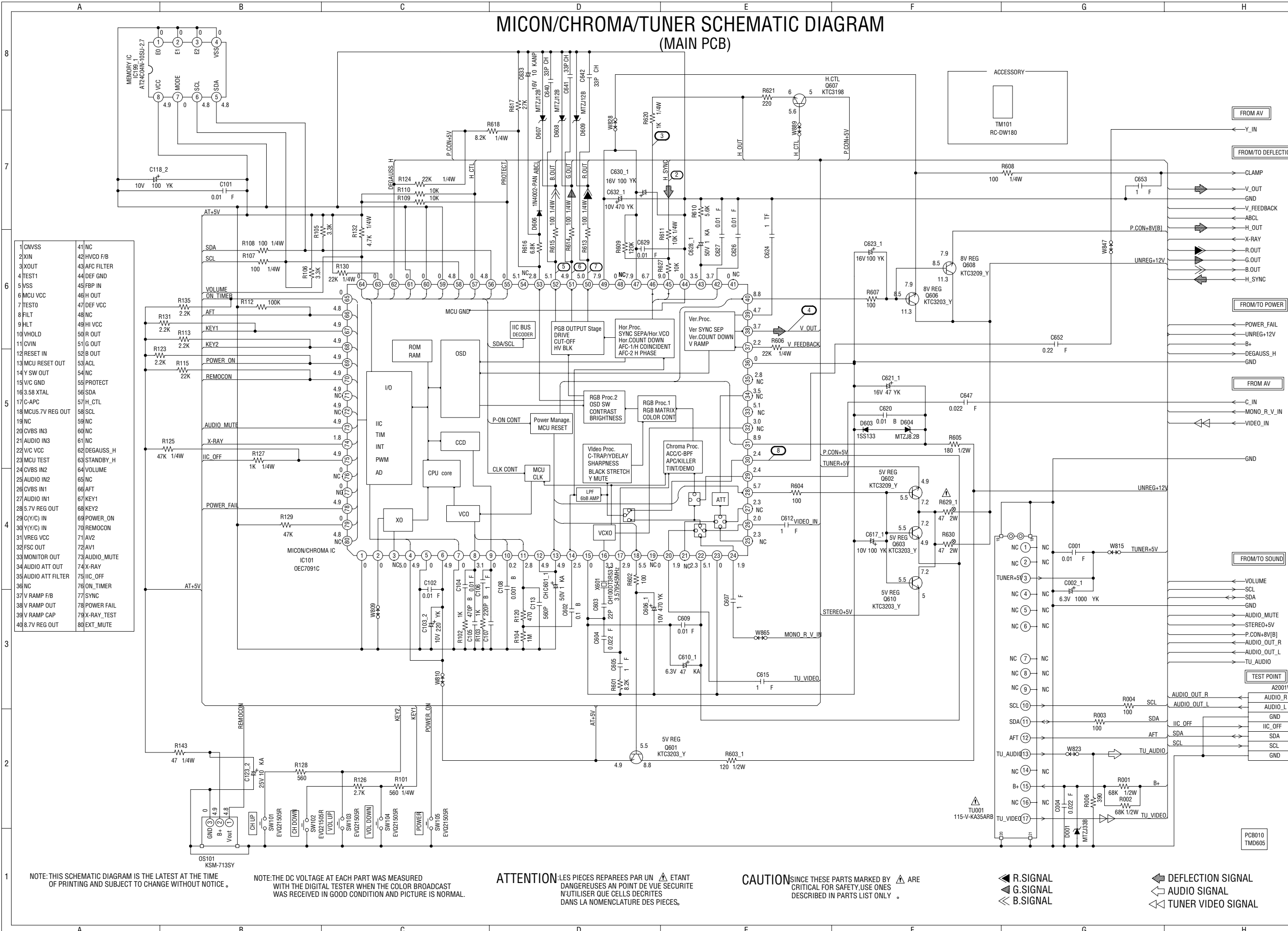
PRINTED CIRCUIT BOARDS  
MAIN/CRT (INSERTED PARTS)  
SOLDER SIDE



PRINTED CIRCUIT BOARDS  
MAIN/CRT (CHIP MOUNTED PARTS)  
SOLDER SIDE



# MICON/CHROMA/TUNER SCHEMATIC DIAGRAM (MAIN PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

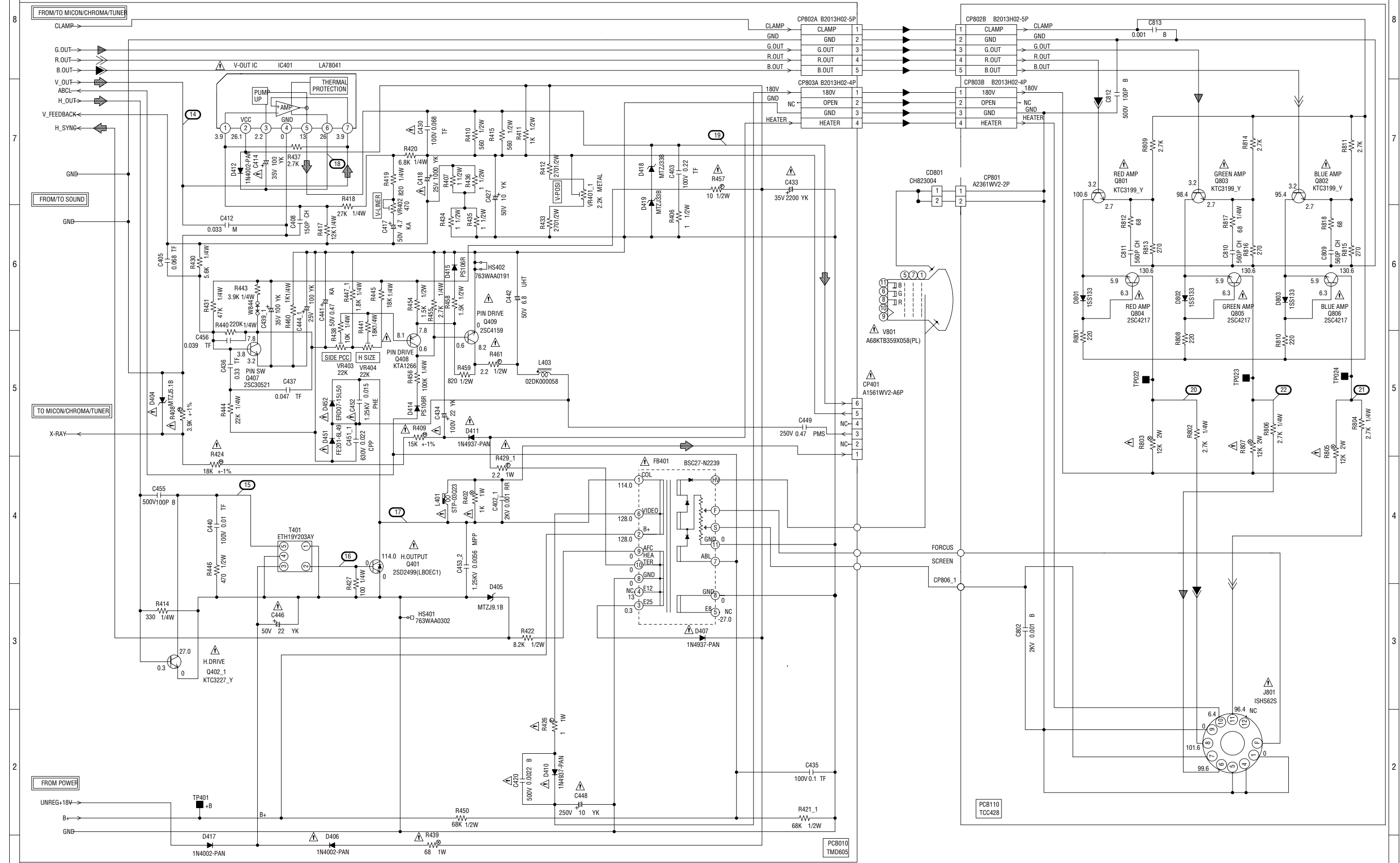
**ATTENTION** - LES PIÈCES RÉPARÉES PAR UN ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

**CAUTION** SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

R. SIGNAL  
 G. SIGNAL  
 B. SIGNAL

DEFLECTION SIGNAL  
 AUDIO SIGNAL  
 TUNER VIDEO SIGNAL

# DEFLECTION/CRT SCHEMATIC DIAGRAM (TV MT PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

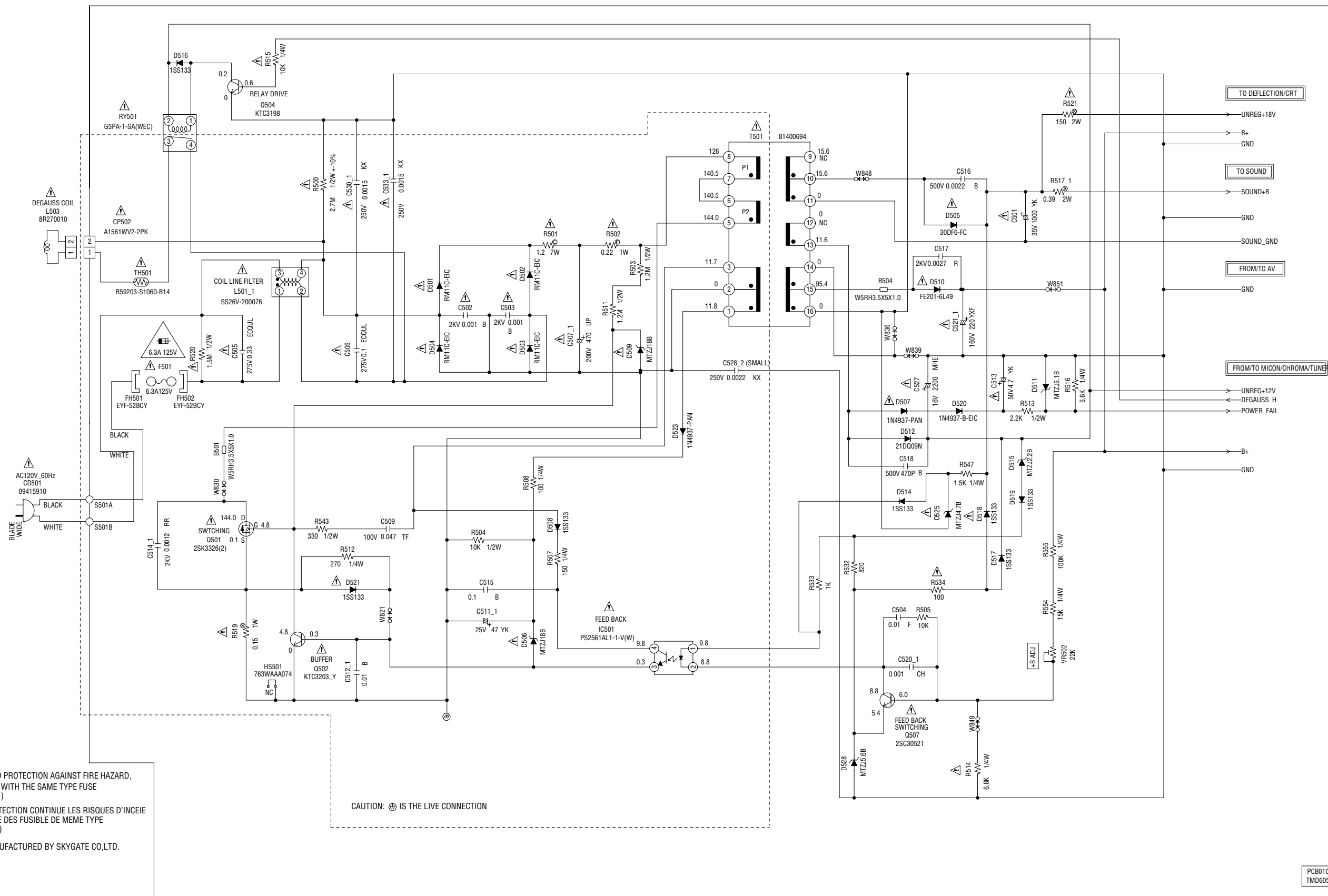
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

**ATTENTION** - LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIÈCES.

**CAUTION** SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

- R.SIGNAL
- G.SIGNAL
- B.SIGNAL
- DEFLECTION SIGNAL

# POWER SCHEMATIC DIAGRAM (TV MT PCB)



**CAUTION:** FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE 6.3A 125V(F501)

**ATTENTION:** POUR UNE PROTECTION CONTINUE LES RISQUES D'INCEIE N'UTILISER QUE DES FUSIBLE DE MEME TYPE 6.3A 125V(F501)

**CAUTION:** ICP501 IS MANUFACTURED BY SKYGATE CO.LTD. TYPE 20N.

CAUTION: ⊕ IS THE LIVE CONNECTION

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

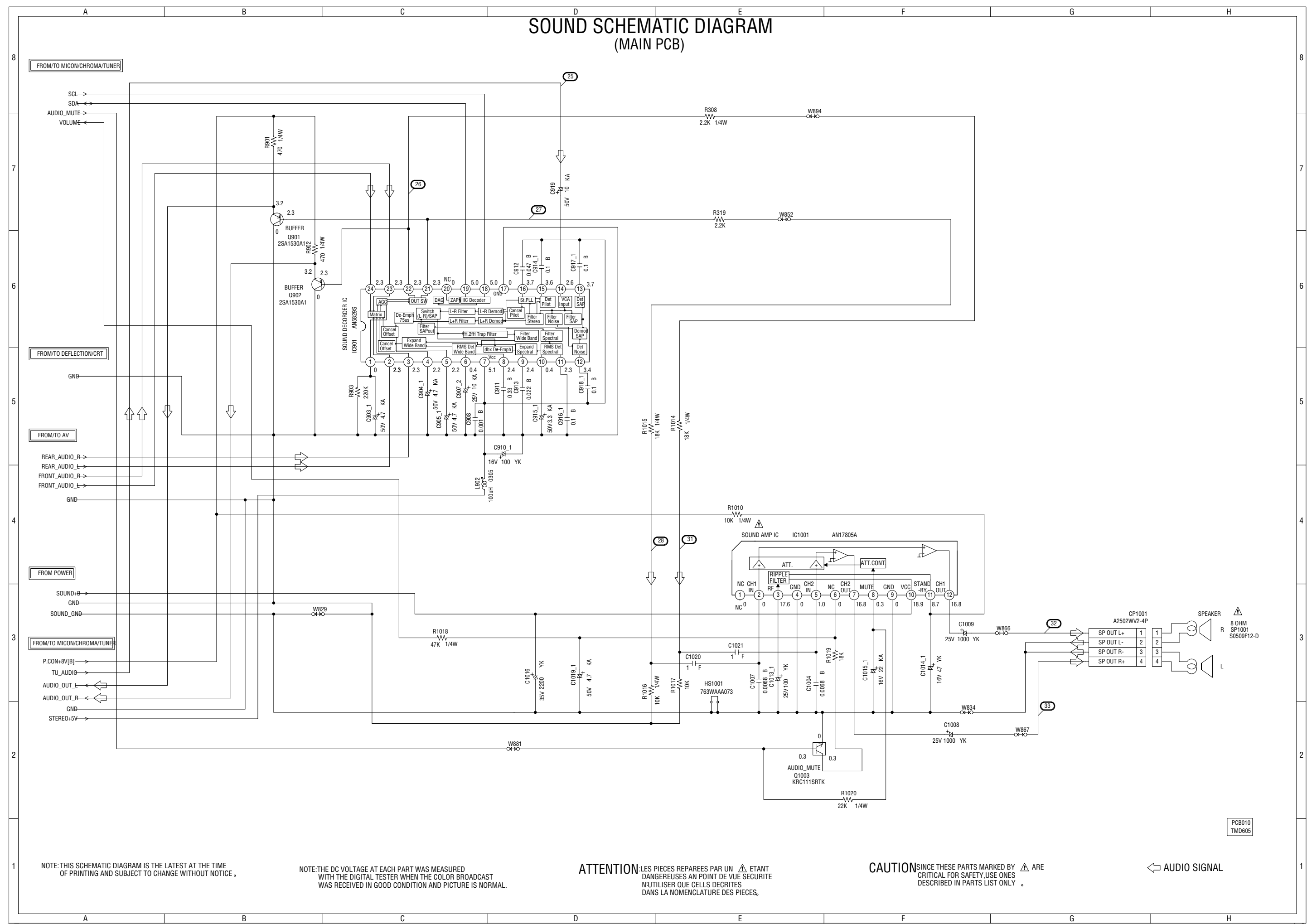
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

**ATTENTION:** LES PIECES REPARRES PAR UN ⊕ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

**CAUTION:** SINCE THESE PARTS MARKED BY ⊕ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

PCB010  
TMD605

# SOUND SCHEMATIC DIAGRAM (MAIN PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

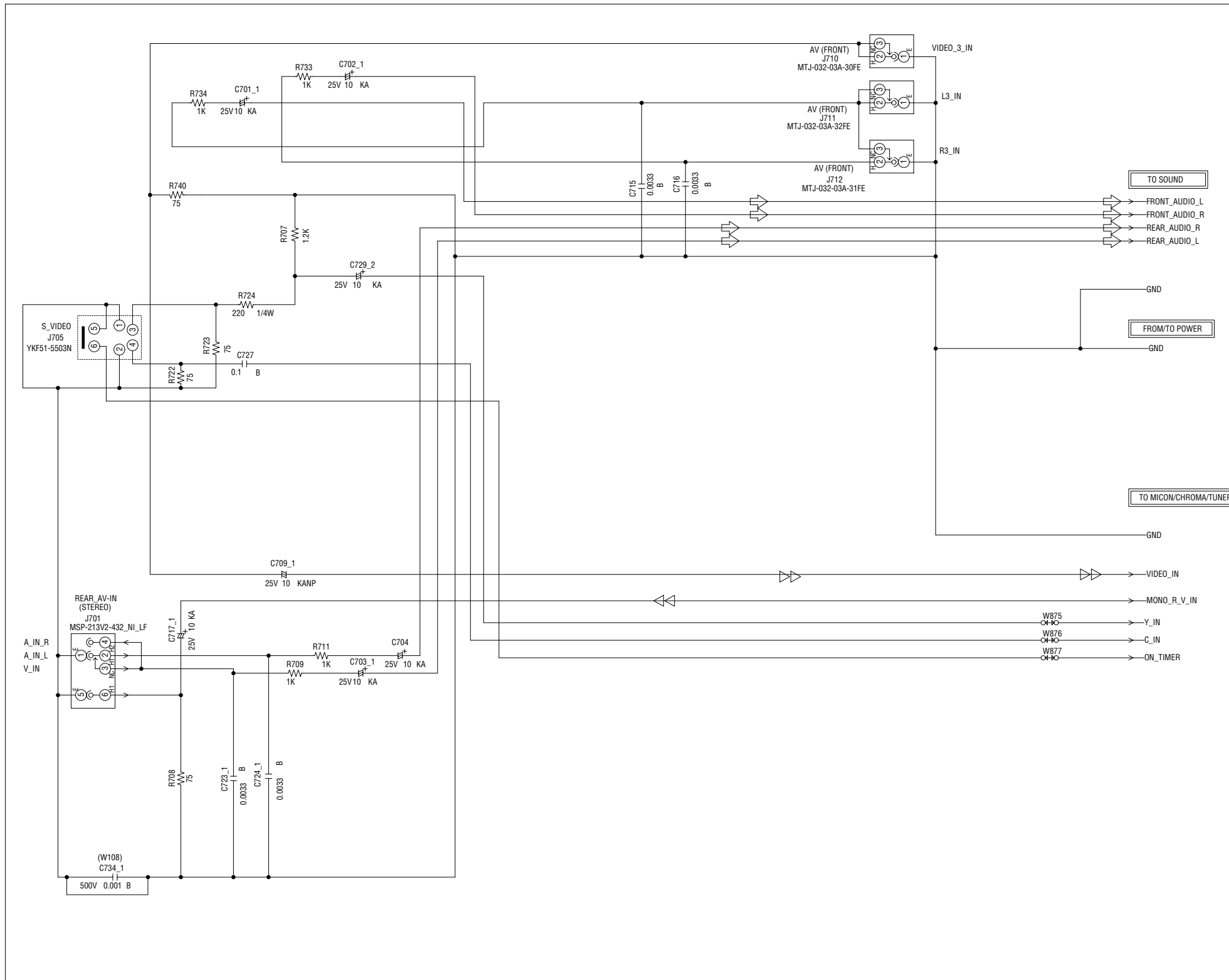
ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

← AUDIO SIGNAL

PCB010  
TMD605

# AV SCHEMATIC DIAGRAM (TV MT PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

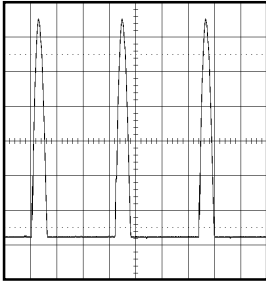
⇐ AUDIO SIGNAL  
 ⇐⇐ TUNER VIDEO SIGNAL

PCB010  
TMD605

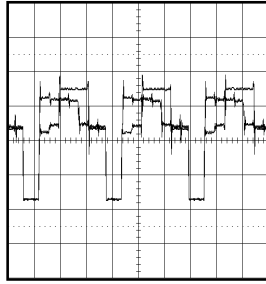


# WAVEFORMS

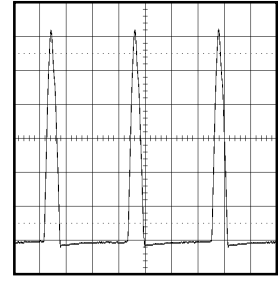
## MICON/CHROMA/TUNER



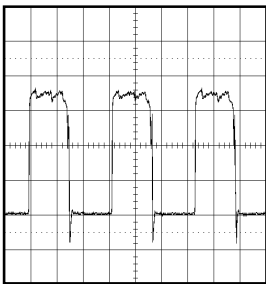
② 20V 20 $\mu$ s/div



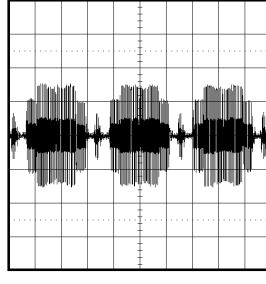
⑦ 1V 20 $\mu$ s/div



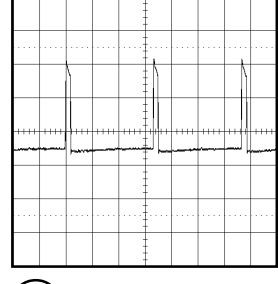
⑰ 200V 20 $\mu$ s/div



③ 200mV 20 $\mu$ s/div

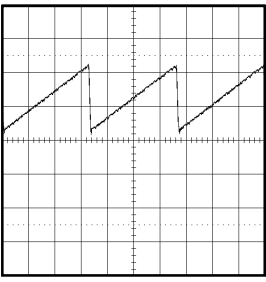


⑧ 200mV 20 $\mu$ s/div

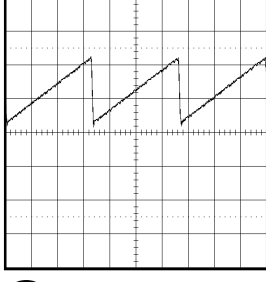


⑱ 10V 5ms/div

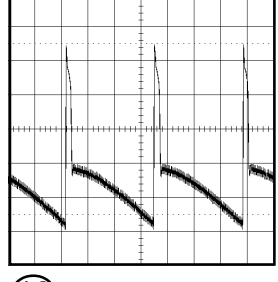
## DEFLECTION/CRT



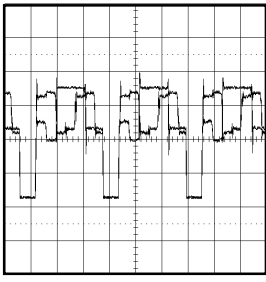
④ 0.5V 5ms/div



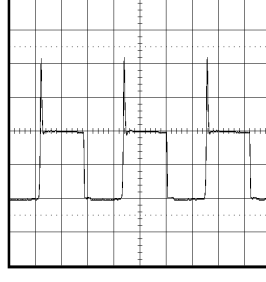
⑭ 0.5V 5ms/div



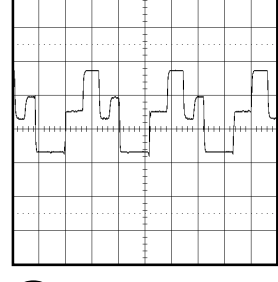
⑲ 10V 5ms/div



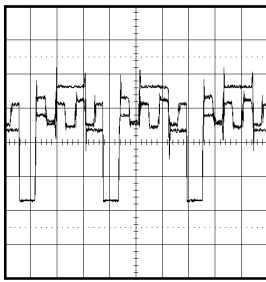
⑤ 1V 20 $\mu$ s/div



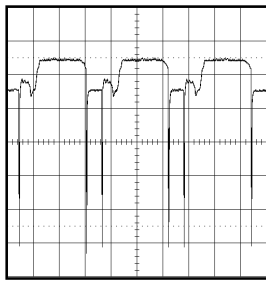
⑮ 20V 20 $\mu$ s/div



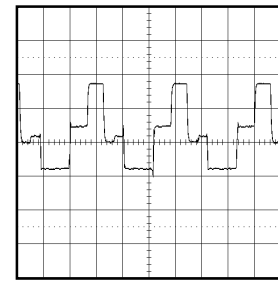
⑳ 50V 20 $\mu$ s/div



⑥ 1V 20 $\mu$ s/div



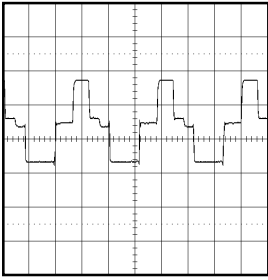
⑯ 2V 20 $\mu$ s/div



㉑ 50V 20 $\mu$ s/div

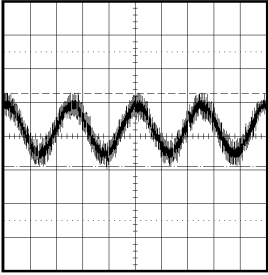
**NOTE:** The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

## WAVEFORMS

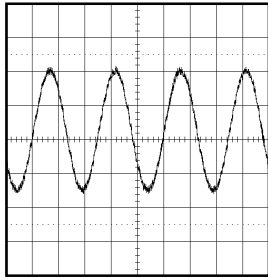


②② 50V 20 $\mu$ s/div

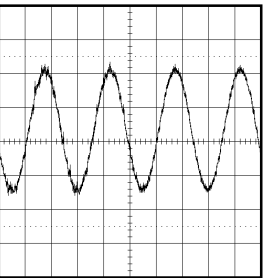
### SOUND



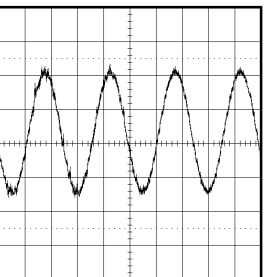
②⑤ 0.5V 1ms/div



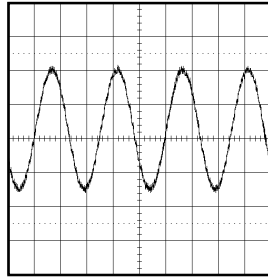
②⑥ 200mV 1ms/div



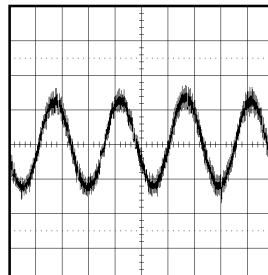
②⑦ 200mV 1ms/div



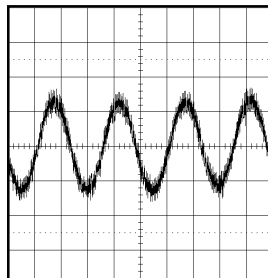
②⑧ 200mV 1ms/div



③① 200mV 1ms/div



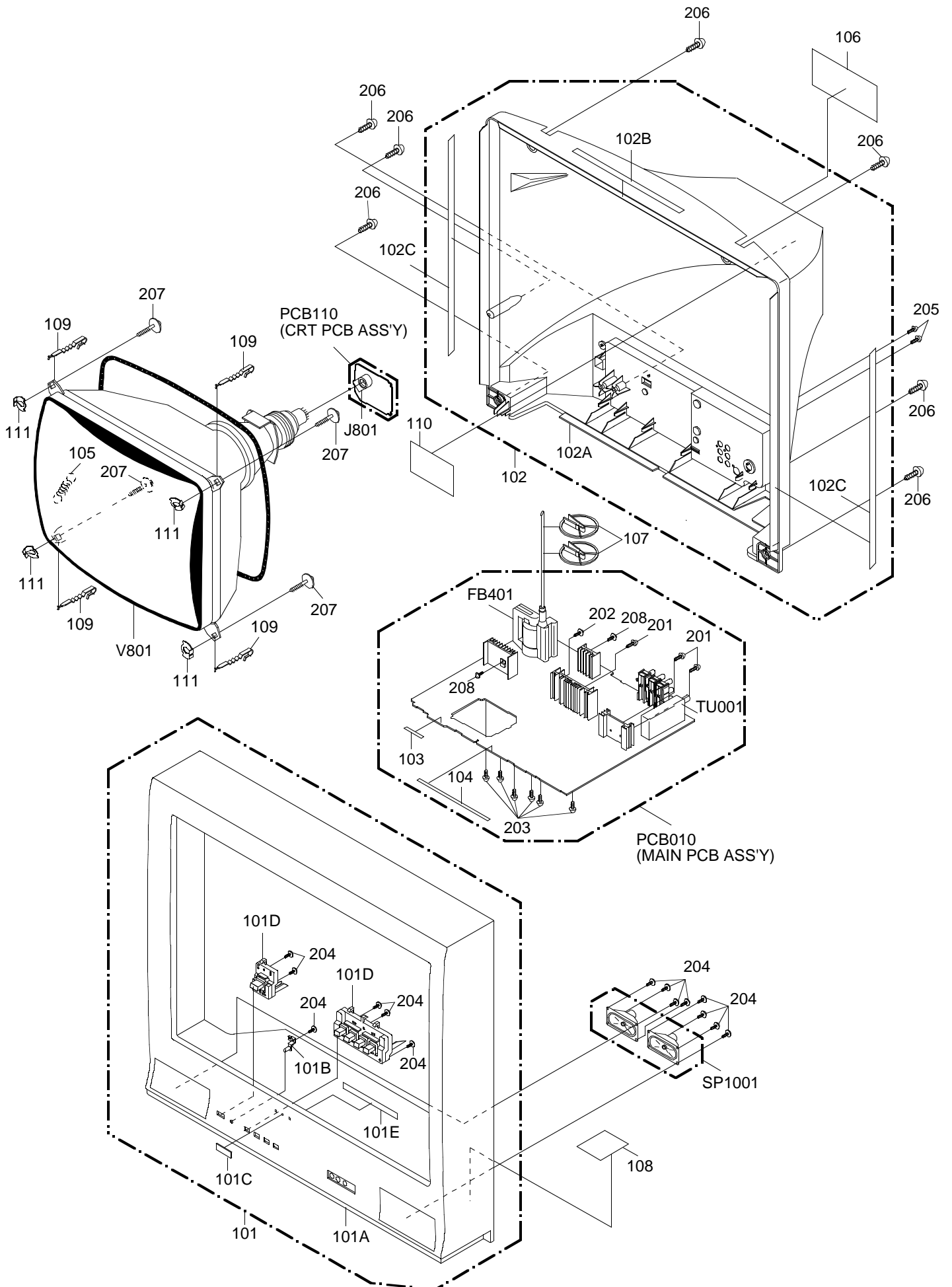
③② 0.5V 1ms/div



③③ 0.5V 1ms/div

**NOTE:** The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

# MECHANICAL EXPLODED VIEW



## MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		
101	7A701A410A	FRONT,CABI ASS'Y		
101A	701WPJD015	CABINET,FRONT		
101B	713WPAA220	GUIDE,REMOCON		
101C	723650A002	BADGE,BRAND		
101D	735WPBB385	BUTTON,ASS'Y		
101E	800WQQA075	FELT,SHEET	5x100xT=0.3	
102	7A702A080A	BACK,CABI ASS'Y		or
	7A702A137A	BACK,CABI ASS'Y		
102A	702WPAA792	CABINET,BACK		
102B	800WQQA046	FELT,SHEET	9x220xT=0.5	
102C	800WQQA090	FELT,SHEET	9x350xT=0.5	
103	800WQQA067	FELT,SHEET	5x30xT=0.5	
104	800WQQA070	FELT,SHEET	5x150xT=0.5	
105	741WUA0021	SPRING,EARTH		
106	722650A003	SHEET,RATING		
107	899HV3T000	HOLDER,ANODE WIRE		
108	724000A006	SHEET,CSA		
109	762WPA0009	HOLDER,CRT WIRE		
110	726000A077	SHEET,CRT SERVICEMAN		
111	769WSAA008	WASHER,CRT T=0.5		
201	810763080U	SCREW,TAP TITE(S)	BRAZIER	3x8
202	8109130A0U	SCREW,TAP TITE(B)	WH7	3x10
203	810963080Q	SCREW,TAP TITE(B)	BRAZIER	3x8
204	8110630A2U	SCREW,TAP TITE(P)	BRAZIER	3x12
205	8110630A0U	SCREW,TAP TITE(P)	BRAZIER	3x10
206	8117540B0U	SCREW,TAP TITE(B0)	TRUSS	4x20
207	8141H60D0U	SCREW,TAP TITE(P)	GW20	6x40
208	810913080U	SCREW,TAP TITE(B)	WH7	3x8
---	791WHAA115	FILM,BAG		
---	792WHA0431	PACKAGE,TOP(BACK)		
---	792WHAA137	PACKAGE,BOTTOM		
---	792WHAA138	PACKAGE,TOP (FRONT)		
---	793WCDC713	GIFT BOX		

## ACCESSORY REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		
TM101	076N0DW180	TRANSMITER		RC-DW/28
---	JB5KD300	POLYBAG,INSTRUCTION(RED CAUTION)		
---	J3R01102A	GUARANTEE CARD(E/S)		
---	J3R01112A	GUARANTEE CARD(F)		
---	J3T11131A	INSTRUCTION BOOK		
---	A3T111D975	INSTRUCTION BOOK KIT		

# ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
		<b>RESISTORS</b>			<b>RESISTORS</b>
R001	R002T2683J	RC 68K OHM 1/2W	△ R461	R655822R2J	R,FUSE 2.2 OHM 1/2W
R002	R002T2683J	RC 68K OHM 1/2W	△ R500	R0G3K2275K	RC 2.7M OHM 1/2W
R003	R803R9101J	RC 100 OHM 1/16W	△ R501	R5X2CE1R2J	R,CEMENT 1.2 OHM 7W
R004	R803R9101J	RC 100 OHM 1/16W	△ R502	R63881R22J	R,FUSE 0.22 OHM 1W
R006	R803R9391J	RC 390 OHM 1/16W	R503	R002T2125J	RC 1.2M OHM 1/2W
R101	R002T4561J	RC 560 OHM 1/4W	R504	R002T2103J	RC 10K OHM 1/2W
R102	R803R9102J	RC 1K OHM 1/16W	R505	R803R9103J	RC 10K OHM 1/16W
R103	R803R9102J	RC 1K OHM 1/16W	R507	R002T4151J	RC 150 OHM 1/4W
R104	R803R9105J	RC 1M OHM 1/16W	R508	R002T4101J	RC 100 OHM 1/4W
R105	R803R9332J	RC 3.3K OHM 1/16W	R511	R002T2125J	RC 1.2M OHM 1/2W
R106	R803R9332J	RC 3.3K OHM 1/16W	R512	R002T4271J	RC 270 OHM 1/4W
R107	R002T4101J	RC 100 OHM 1/4W	R513	R002T2222J	RC 2.2K OHM 1/2W
R108	R002T4101J	RC 100 OHM 1/4W	R514	R002T4682J	RC 6.8K OHM 1/4W
R109	R803R9103J	RC 10K OHM 1/16W	△ R515	R002T4103J	RC 10K OHM 1/4W
R110	R803R9103J	RC 10K OHM 1/16W	R516	R002T4562J	RC 5.6K OHM 1/4W
R112	R803R9104J	RC 100K OHM 1/16W	R517	R3X28AR39J	R,METAL OXIDE 0.39 OHM 2W
R113	R803R9222J	RC 2.2K OHM 1/16W	△ R519	R3X181R15J	R,METAL OXIDE 0.15 OHM 1W
R115	R803R9223J	RC 22K OHM 1/16W	△ R520	R002T2155J	RC 1.5M OHM 1/2W
R120	R803R9471J	RC 470 OHM 1/16W	R521	R3X28A151J	R,METAL OXIDE 150 OHM 2W
R123	R803R9222J	RC 2.2K OHM 1/16W	R532	R803R9821J	RC 820 OHM 1/16W
R124	R002T4223J	RC 22K OHM 1/4W	R533	R803R9102J	RC 1K OHM 1/16W
R125	R002T4473J	RC 47K OHM 1/4W	R534	R803R9101J	RC 100 OHM 1/16W
R126	R803R9272J	RC 2.7K OHM 1/16W	R543	R002T2331J	RC 330 OHM 1/2W
R127	R002T4102J	RC 1K OHM 1/4W	R547	R002T4152J	RC 1.5K OHM 1/4W
R128	R803R9561J	RC 560 OHM 1/16W	R554	R002T4153J	RC 15K OHM 1/4W
R129	R803R9473J	RC 47K OHM 1/16W	R555	R002T4104J	RC 100K OHM 1/4W
R130	R002T4223J	RC 22K OHM 1/4W	R601	R803R9822J	RC 8.2K OHM 1/16W
R131	R803R9222J	RC 2.2K OHM 1/16W	R602	R803R9101J	RC 100 OHM 1/16W
R132	R002T4472J	RC 4.7K OHM 1/4W	R603	R002T2121J	RC 120 OHM 1/2W
R135	R803R9222J	RC 2.2K OHM 1/16W	R604	R803R9101J	RC 100 OHM 1/16W
R143	R002T4470J	RC 47 OHM 1/4W	R605	R002T2181J	RC 180 OHM 1/2W
R308	R002T4222J	RC 2.2K OHM 1/4W	R606	R002T4223J	RC 22K OHM 1/4W
R319	R803R9222J	RC 2.2K OHM 1/16W	R607	R803R9101J	RC 100 OHM 1/16W
△ R402	R3K181102J	R,METAL OXIDE 1K OHM 1W	R608	R002T4101J	RC 100 OHM 1/4W
R406	R002T2010J	RC 1 OHM 1/2W	R609	R803R9124J	RC 120K OHM 1/16W
R407	R002T2010J	RC 1 OHM 1/2W	R610	R803R9562J	RC 5.6K OHM 1/16W
△ R408	R4X5T6392F	R,METAL 3.9K OHM 1/6W	R611	R002T4103J	RC 10K OHM 1/4W
△ R409	R4X5T6153F	R,METAL 15K OHM 1/6W	R613	R002T4101J	RC 100 OHM 1/4W
R410	R002T2561J	RC 560 OHM 1/2W	R614	R002T4101J	RC 100 OHM 1/4W
R411	R002T2102J	RC 1K OHM 1/2W	R615	R002T4101J	RC 100 OHM 1/4W
R412	R002T2271J	RC 270 OHM 1/2W	R616	R803R9682J	RC 6.8K OHM 1/16W
△ R414	R002T4331J	RC 330 OHM 1/4W	R617	R803R9273J	RC 27K OHM 1/16W
R415	R002T2561J	RC 560 OHM 1/2W	R618	R002T4822J	RC 8.2K OHM 1/4W
R417	R002T4123J	RC 12K OHM 1/4W	R620	R002T4102J	RC 1K OHM 1/4W
R418	R002T4273J	RC 27K OHM 1/4W	R621	R803R9221J	RC 220 OHM 1/16W
R419	R002T4821J	RC 820 OHM 1/4W	R627	R803R9103J	RC 10K OHM 1/16W
△ R420	R002T4682J	RC 6.8K OHM 1/4W	R629	R3X18A470J	R,METAL OXIDE 47 OHM 2W
R421	R002T2683J	RC 68K OHM 1/2W	R630	R3X28A470J	R,METAL OXIDE 47 OHM 2W
R422	R002T2822J	RC 8.2K OHM 1/2W	R707	R803R9122J	RC 1.2K OHM 1/16W
△ R424	R4X5T6183F	R,METAL 18K OHM 1/6W	R708	R803R9750J	RC 75 OHM 1/16W
△ R426	R65581010J	R,FUSE 1 OHM 1W	R709	R803R9102J	RC 1K OHM 1/16W
R427	R002T4101J	RC 100 OHM 1/4W	R711	R803R9102J	RC 1K OHM 1/16W
△ R429	R638812R2J	R,FUSE 2.2 OHM 1W	R722	R803R9750J	RC 75 OHM 1/16W
R430	R002T4562J	RC 5.6K OHM 1/4W	R723	R803R9750J	RC 75 OHM 1/16W
R431	R002T4473J	RC 47K OHM 1/4W	R724	R002T4221J	RC 220 OHM 1/4W
R433	R002T2271J	RC 270 OHM 1/2W	R733	R803R9102J	RC 1K OHM 1/16W
R434	R002T2010J	RC 1 OHM 1/2W	R734	R803R9102J	RC 1K OHM 1/16W
R435	R002T2010J	RC 1 OHM 1/2W	R740	R803R9750J	RC 75 OHM 1/16W
△ R436	R002T2010J	RC 1 OHM 1/2W	R801	R803R9221J	RC 220 OHM 1/16W
R437	R803R9272J	RC 2.7K OHM 1/16W	R802	R002T4272J	RC 2.7K OHM 1/4W
△ R438	R002T4103J	RC 10K OHM 1/4W	△ R803	R3X18A123J	R,METAL OXIDE 12K OHM 2W
△ R439	R3X181680J	R,METAL OXIDE 68 OHM 1W	R804	R002T4272J	RC 2.7K OHM 1/4W
R440	R002T4224J	RC 220K OHM 1/4W	△ R805	R3X18A123J	R,METAL OXIDE 12K OHM 2W
R441	R002T4183J	RC 18K OHM 1/4W	R806	R002T4272J	RC 2.7K OHM 1/4W
R443	R002T4392J	RC 3.9K OHM 1/4W	△ R807	R3X18A123J	R,METAL OXIDE 12K OHM 2W
R444	R002T4223J	RC 22K OHM 1/4W	R808	R803R9221J	RC 220 OHM 1/16W
R445	R002T4183J	RC 18K OHM 1/4W	R809	R803R9272J	RC 2.7K OHM 1/16W
R446	R002T2471J	RC 470 OHM 1/2W	R810	R803R9221J	RC 220 OHM 1/16W
R447	R002T4182J	RC 1.8K OHM 1/4W	R811	R803R9272J	RC 2.7K OHM 1/16W
R450	R002T2683J	RC 68K OHM 1/2W	R812	R803R9680J	RC 68 OHM 1/16W
R454	R002T2152J	RC 1.5K OHM 1/2W	R813	R803R9271J	RC 270 OHM 1/16W
R455	R002T4272J	RC 2.7K OHM 1/4W	R814	R803R9272J	RC 2.7K OHM 1/16W
R456	R002T4104J	RC 100K OHM 1/4W	R815	R803R9271J	RC 270 OHM 1/16W
R457	R638U2100J	R,FUSE 10 OHM 1/2W	R816	R803R9271J	RC 270 OHM 1/16W
R458	R002T2152J	RC 1.5K OHM 1/2W	R817	R002T4680J	RC 68 OHM 1/4W
R459	R002T2821J	RC 820 OHM 1/2W	R818	R803R9680J	RC 68 OHM 1/16W
R460	R002T4102J	RC 1K OHM 1/4W	R901	R002T4471J	RC 470 OHM 1/4W

# ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
<b>RESISTORS</b>			<b>CAPACITORS</b>		
R902	R002T4471J	RC 470 OHM 1/4W	C602	CS0PB0315K	CC 0.1 UF 25V B
R903	R803R9224J	RC 220K OHM 1/16W	C603	CS0PCH4H1J	CC 22 PF 50V CH
R1010	R002T4103J	RC 10K OHM 1/4W	C604	CS0PF04H4Z	CC 0.022 UF 50V F
R1014	R002T4183J	RC 18K OHM 1/4W	C605	CS0PF0N16Z	CC 1 UF 10V F
R1015	R002T4183J	RC 18K OHM 1/4W	C606	E02LU1471M	CE 470 UF 10V
R1016	R002T4103J	RC 10K OHM 1/4W	C607	CS0PF0316Z	CC 1 UF 25V F
R1017	R803R9103J	RC 10K OHM 1/16W	C609	CS0PF0414Z	CC 0.01 UF 50V F
R1018	R002T4473J	RC 47K OHM 1/4W	C610	E50HU0470M	CE 47 UF 6.3V
R1019	R803R9183J	RC 18K OHM 1/16W	C612	CS0PF0316Z	CC 1 UF 25V F
R1020	R002T4223J	RC 22K OHM 1/4W	C615	CS0PF0316Z	CC 1 UF 25V F
<b>CAPACITORS</b>			<b>CAPACITORS</b>		
C001	CS0PF0414Z	CC 0.01 UF 50V F	C617	E02LU1101M	CE 100 UF 10V
C002	E02LT0102M	CE 1000 UF 6.3V	C620	CS0PB0414K	CC 0.01 UF 50V B
C004	CQGTFO4H4Z	CC 0.022 UF 50V F	C621	E02LU2470M	CE 47 UF 16V
C101	CS0PF0414Z	CC 0.01 UF 50V F	C623	E02LU2101M	CE 100 UF 16V
C102	CS0PF0414Z	CC 0.01 UF 50V F	C624	P6M9T0105J	CMPL 1 UF 50V TF
C103	E02LU1221M	CE 220 UF 10V	C626	CS0PF0414Z	CC 0.01 UF 50V F
C104	CS0PF0414Z	CC 0.01 UF 50V F	C627	CS0PF0414Z	CC 0.01 UF 50V F
C105	CS0PB04Q2K	CC 470 PF 50V B	C628	E50HU5010M	CE 1 UF 50V
C106	CS0PF0N16Z	CC 1 UF 10V F	C629	CS0PF0414Z	CC 0.01 UF 50V F
C107	CS0PB04H2K	CC 220 PF 50V B	C630	E02LU2101M	CE 100 UF 16V
C108	CS0PB0413K	CC 0.001 UF 50V B	C632	E02LU1471M	CE 470 UF 10V
C113	CS0PCH4S2J	CC 560 PF 50V CH	C633	E00NU2100M	CE 10 UF 16V
C118	E02LU1101M	CE 100 UF 10V	C640	CS0PCH4L1J	CC 33 PF 50V CH
C123	E50HU3100M	CE 10 UF 25V	C641	CS0PCH4L1J	CC 33 PF 50V CH
C402	C0PLRR713K	CC 0.001 UF 2KV R	C642	CS0PCH4L1J	CC 33 PF 50V CH
C403	P611T1224J	CMPL 0.22 UF 100V TF	C647	CS0PF04H4Z	CC 0.022 UF 50V F
C405	P6M9T0683J	CMPL 0.068 UF 50V TF	C652	CQGTFO4H5Z	CC 0.22 UF 50V F
△ C408	CS0PCH4E2J	CC 150 PF 50V CH	C653	CS0PF0N16Z	CC 1 UF 10V F
△ C412	P1F4T0333J	CP 0.033 UF 50V	C701	E50HU3100M	CE 10 UF 25V
△ C414	E02LU4101M	CE 100 UF 35V	C702	E50HU3100M	CE 10 UF 25V
C417	E50HU54R7M	CE 4.7 UF 50V	C703	E50HU3100M	CE 10 UF 25V
△ C418	E02LF3102M	CE 1000 UF 25V	C704	E50HU3100M	CE 10 UF 25V
△ C420	C0JTB05H3K	CC 0.0022UF 500V B	C709	E00NU3100M	CE 10 UF 25V
C427	E02LU5100M	CE 10 UF 50V	C715	CS0PB04L3K	CC 0.0033UF 50V B
C430	P611T1683J	CMPL 0.068 UF 100V TF	C716	CS0PB04L3K	CC 0.0033UF 50V B
C433	E02LF4222M	CE 2200 UF 35V	C717	E50HU3100M	CE 10 UF 25V
△ C434	E02LU8220M	CE 22 UF 100V	C723	CS0PB04L3K	CC 0.0033UF 50V B
C435	P611T1104J	CMPL 0.1 UF 100V TF	C724	CS0PB04L3K	CC 0.0033UF 50V B
C436	P6M9T0334J	CMPL 0.33 UF 50V TF	C727	CS0PB0315K	CC 0.1 UF 25V B
C437	P6M9T0473J	CMPL 0.047 UF 50V TF	C729	E50HU3100M	CE 10 UF 25V
C439	E02LU4101M	CE 100 UF 35V	C734	C0JTB0513K	CC 0.001 UF 500V B
C440	P611W1103J	CMPL 0.01 UF 100V TF	C802	C0JBB0713K	CC 0.001 UF 2KV B
C441	E50HU5R47M	CE 0.47 UF 50V	C809	CS0PCH4S2J	CC 560 PF 50V CH
C442	E736F56R8M	CE 6.8 UF 50V	C810	CS0PCH4S2J	CC 560 PF 50V CH
C444	E02LU3101M	CE 100 UF 25V	C811	CS0PCH4S2J	CC 560 PF 50V CH
△ C446	E02LU5220M	CE 22 UF 50V	C812	C0J0B0512K	CC 100 PF 500V B
△ C448	E0ELTD100M	CE 10 UF 250V		C0JTB0512K	CC 100 PF 500V B
C449	P4J7F3474J	CMPP 0.47 UF 250V PMS	C813	CS0PB0413K	CC 0.001 UF 50V B
C451	P3G1F5223J	CPP 0.022 UF 630V PP	C903	E50HU54R7M	CE 4.7 UF 50V
△ C452	P4G8FJ153H	CMPP 0.015 UF 1.25KV PHE	C904	E50HU54R7M	CE 4.7 UF 50V
C453	P4N8FJ562H	CMPP 0.0056UF 1.25KV	C905	E50HU54R7M	CE 4.7 UF 50V
C455	C0JTB0512K	CC 100 PF 500V B	C907	E50HU3100M	CE 10 UF 25V
C456	P6M9T0393J	CMPL 0.039 UF 50V TF	C908	CS0PB0413K	CC 0.001 UF 50V B
△ C501	E02LF4102M	CE 1000 UF 35V	C910	E02LU2101M	CE 100 UF 16V
C502	C0PWB0713K	CC 0.001 UF 2KV B	C911	CS0PB0NLSK	CC 0.33 UF 10V B
C503	C0PWB0713K	CC 0.001 UF 2KV B	C912	CS0PB04Q4K	CC 0.047 UF 50V B
C504	CQGTFO414Z	CC 0.01 UF 50V F	C913	CS0PB04H4K	CC 0.022 UF 50V B
△ C505	P2122B334M	CMP 0.33 UF 275V ECQUL	C914	CS0PB0415K	CC 0.1 UF 50V B
△ C506	P2122B104M	CMP 0.1 UF 275V ECQUL	C915	E50HU53R3M	CE 3.3 UF 50V
△ C507	E51CGC471M	CE 470 UF 200V	C916	CS0PB0415K	CC 0.1 UF 50V B
C509	P611T1473J	CMPL 0.047 UF 100V TF	C917	CS0PB0415K	CC 0.1 UF 50V B
C511	E02LU3470M	CE 47 UF 25V	C918	CS0PB0415K	CC 0.1 UF 50V B
C512	CS0PB0414K	CC 0.01 UF 50V B	C919	E50HU5100M	CE 10 UF 50V
C513	E02LU54R7M	CE 4.7 UF 50V	C1004	CS0PB04U3K	CC 0.0068UF 50V B
C514	C0PLRR7B3K	CC 0.0012 UF 2KV R	C1007	CS0PB04U3K	CC 0.0068UF 50V B
C515	CQGTB0415K	CC 0.1 UF 50V B	C1008	E02L03102M	CE 1000 UF 25V
C516	C0JTB05H3K	CC 0.0022UF 500V B	C1009	E02L03102M	CE 1000 UF 25V
C517	C03L0R7K3K	CC 0.0027UF 2KV R	C1013	E02LU3101M	CE 100 UF 25V
C518	C0JTB05Q2K	CC 470 PF 500V B	C1014	E02LU2470M	CE 47 UF 16V
C520	CQGTCH413J	CC 0.001 UF 50V CH	C1015	E50HU2220M	CE 22 UF 16V
△ C521	E62NFB221M	CE 220 UF 160V	C1016	E02LF4222M	CE 2200 UF 35V
C527	E5E2F2222M	CE 2200 UF 16V	C1019	E50HU54R7M	CE 4.7 UF 50V
△ C528	CD39E0MH3M	CC 0.0022UF 250V	C1020	CQGTFO416Z	CC 1 UF 50V F
△ C530	CD39E0ME3M	CC 0.0015UF 250V	C1021	CQGTFO416Z	CC 1 UF 50V F
△ C533	CD39E0ME3M	CC 0.0015UF 250V			
C601	E50HU5010M	CE 1 UF 50V			
			<b>DIODES</b>		
	D001	D97U03301B	DIODE,ZENER	MTZJ33B T-77	
	△ D404	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77	

# ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
<b>DIODES</b>			<b>TRANSISTORS</b>		
D405	D97U09R11B	DIODE,ZENER	Q902	T6RA015300	TRANSISTOR SILICON
▲ D406	D2MXN40020	DIODE,FAST RECOVERY	Q1003	TNAAJ05003	COMPOUND TRANSISTOR
▲ D407	D2MXN49370	DIODE,FAST RECOVERY	<b>COILS &amp; TRANSFORMERS</b>		
▲ D410	D2MXN49370	DIODE,FAST RECOVERY	▲ L401	022810041A	COIL,LINEARITY
▲ D411	D2MXN49370	DIODE,FAST RECOVERY	L403	02DK000058	COIL CHOKE
D412	D2MXN40020	DIODE,FAST RECOVERY	▲ L501	029X000418	COIL,LINE FILTER
D414	D2MXS106R0	DIODE,FAST RECOVERY	▲ L503	028R270010	COIL,DEGAUSS
D415	D2MXS106R0	DIODE,FAST RECOVERY	L902	02167F101J	COIL
D417	D2MXN40020	DIODE,FAST RECOVERY	T401	0450190161	TRANS,HORIZONTAL DRIVE
D418	D97U03301B	DIODE,ZENER	▲ T501	0481400694	TRANSFORMER,SWITCHING
D419	D97U03301B	DIODE,ZENER	<b>JACKS</b>		
▲ D451	D2CF2016L0	DIODE SILICON	J701	060J431020	RCA JACK
▲ D452	D2CF0715L0	DIODE SILICON	J705	063Q700011	JACK
▲ D501	D2WTRM11C0	DIODE SILICON	J710	060J401104	RCA JACK
▲ D502	D2WTRM11C0	DIODE SILICON	J711	060J401106	RCA JACK
▲ D503	D2WTRM11C0	DIODE SILICON	J712	060J401105	RCA JACK
▲ D504	D2WTRM11C0	DIODE SILICON	▲ J801	066F130021	SOCKET,CATHODE RAY,TUBE
D505	D28F30DF60	DIODE RECTIFIER	<b>SWITCHES</b>		
▲ D506	D97U01801B	DIODE,ZENER	SW101	0504101T34	SWITCH,TACT
D507	D2MXN49370	DIODE,FAST RECOVERY	SW102	0504101T34	SWITCH,TACT
D508	D1VT001330	DIODE,SILICON	SW103	0504101T34	SWITCH,TACT
▲ D509	D97U01801B	DIODE,ZENER	SW104	0504101T34	SWITCH,TACT
▲ D510	D2CF2016L0	DIODE SILICON	SW105	0504101T34	SWITCH,TACT
D511	D97U05R11B	DIODE,ZENER	<b>VARIABLE RESISTORS</b>		
D512	D28T21DQ9N	DIODE SCHOTTKY	VR401	V1K63H3BTE	VOLUME,SEMI FIXED
D514	D1VT001330	DIODE,SILICON	VR402	V1163Q2BTC	VOLUME,SEMI FIXED
D515	D97U02R21B	DIODE,ZENER	VR403	V1163H4BTC	VOLUME,SEMI FIXED
D516	D1VT001330	DIODE,SILICON	VR404	V1163H4BTC	VOLUME,SEMI FIXED
D517	D1VT001330	DIODE,SILICON	VR502	V1163H4BTC	VOLUME,SEMI FIXED
D518	D1VT001330	DIODE,SILICON	<b>P.C.BOARD ASSEMBLIES</b>		
D519	D1VT001330	DIODE,SILICON	PCB010	A3T109D010	PCB ASS'Y
D520	D2WON49370	DIODE SILICON	PCB110	A3T109D110	PCB ASS'Y
▲ D521	D1VT001330	DIODE,SILICON	<b>MISCELLANEOUS</b>		
D523	D2MXN49370	DIODE,FAST RECOVERY	B501	024HT03553	CORE,BEADS
D525	D97U04R71B	DIODE,ZENER	B504	024HT03553	CORE,BEADS
D528	D97U05R61B	DIODE,ZENER	▲ CD501	1209415910	CORD AC BUSH
D603	D1VT001330	DIODE,SILICON	CD801	06CH823004	CORD CONNECTOR
D604	D97U08R21B	DIODE,ZENER	CD802	WCL6854038	FLAT CABLE AWM2468
D606	D2MXN40020	DIODE,FAST RECOVERY	CD803	WBL6040038	FLAT CABLE AWM2468
D607	D97U01201B	DIODE,ZENER	CP401	069S460089	CORD UX CONNECTOR
D608	D97U01201B	DIODE,ZENER	▲ CP502	069S420099	CONNECTOR PCB SIDE
D609	D97U01201B	DIODE,ZENER	CP601	069S270639	CONNECTOR PCB SIDE
D801	D1VT001330	DIODE,SILICON	CP801	069S320010	CONNECTOR PCB SIDE
D802	D1VT001330	DIODE,SILICON	CP1001	069S140419	CONNECTOR PCB SIDE
D803	D1VT001330	DIODE,SILICON	CP802A	067U005049	WIRE HOLDER
<b>ICS</b>			CP802B	067U005049	WIRE HOLDER
IC101	I56F07091C	IC	CP803A	067U004029	WIRE HOLDER
IC199	A3T109D015	INIT DATA	CP803B	067U004029	WIRE HOLDER
▲ IC401	I03TD80410	IC	EL001	124116281A	EYE LET
▲ IC501	000220002W	PHOTO COUPLER	EL002	124120301A	EYE LET
IC901	I01FF58290	IC	▲ F501	081PC6R305	FUSE
IC1001	I0FSP7805A	IC	▲ FB401	043227024Y	TRANSFORMER,FLYBACK
<b>TRANSISTORS</b>			FH501	06710T0009	HOLDER,FUSE
▲ Q401	TDUU024990	TRANSISTOR SILICON	FH502	06710T0009	HOLDER,FUSE
▲ Q402	TCAT03227Y	TRANSISTOR SILICON	OS101	077Q000025	REMOTE RECEIVER
Q407	T8RA030520	TRANSISTOR SILICON	▲ RY501	0560X20118	RELAY
▲ Q408	TAATA12660	TRANSISTOR,SILICON	▲ SP1001	070Y435005	SPEAKER
▲ Q409	TC30041590	TRANSISTOR,SILICON	▲ TH501	D8EE0B1400	DEGAUSS ELEMENT
▲ Q501	T220033260	FET	▲ TU001	0163300018	RF UNIT
▲ Q502	TCAT032034	TRANSISTOR, SILICON	▲ V801	098B270602	CRT W/DY
Q504	TCATC31980	TRANSISTOR,SILICON	X601	100DT3R531	CRYSTAL
Q507	T8RA030520	TRANSISTOR SILICON	<b>RESISTOR</b>		
Q601	TCAT032034	TRANSISTOR, SILICON	RC.....	CARBON RESISTOR	
Q602	TCAT03209Y	TRANSISTOR SILICON	<b>CAPACITORS</b>		
Q603	TCAT032034	TRANSISTOR, SILICON	CC.....	CERAMIC CAPACITOR	
Q606	TCAT032034	TRANSISTOR, SILICON	CE.....	ALUMI ELECTROLYTIC CAPACITOR	
Q607	TCATC31980	TRANSISTOR,SILICON	CP.....	POLYESTER CAPACITOR	
Q608	TCAT03209Y	TRANSISTOR SILICON	CPP.....	POLYPROPYLENE CAPACITOR	
Q610	TCAT032034	TRANSISTOR, SILICON	CPL.....	PLASTIC CAPACITOR	
Q801	TCATC3199Y	TRANSISTOR SILICON	CMP.....	METAL POLYESTER CAPACITOR	
Q802	TCATC3199Y	TRANSISTOR SILICON	CMP.....	METAL PLASTIC CAPACITOR	
▲ Q804	TC3F042170	TRANSISTOR,SILICON	CMPP.....	METAL POLYPROPYLENE CAPACITOR	
▲ Q805	TC3F042170	TRANSISTOR,SILICON			
▲ Q806	TC3F042170	TRANSISTOR,SILICON			
Q901	T6RA015300	TRANSISTOR SILICON			

### **HOW TO ORDER PARTS**

When placing a parts order, please have the following information.

**A. MODEL NUMBER and VERSION NUMBER**

Located on the back of the unit.

EX: VR0100 (Model no.), VERSION/A (Version no.)

**B. PART NO. and DESCRIPTION**

Located in your SERVICE MANUAL. (See pages M1-1~M2-3)

EX: I235953420, STK5342, Voltage Regulator

↑  
PART NO.

↑  
DESCRIPTION

**C. QUANTITY**

**D. Mailing address and NAME**

EX: ABC Service Center  
111 Broadway  
NEW YORK, N.Y. 10005

ATTN: MR. X Y Z

ORION SALES, INC.  
HIGHWAY 41  
ORION PLACE  
PRINCETON, INDIANA 47670