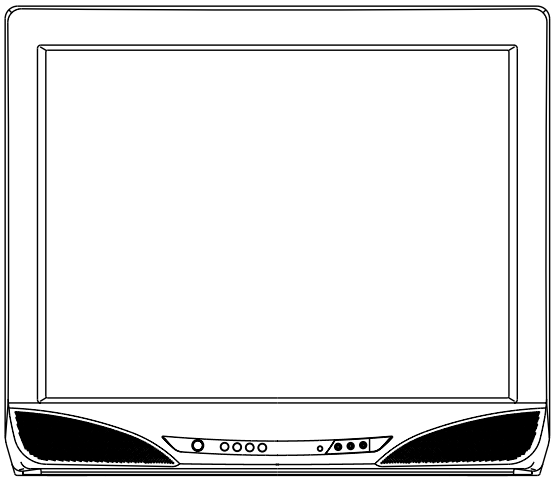
Memorex®

MT2271S

SERVICE MANUAL

COLOR TELEVISION RECEIVER



ORIGINAL
MFR'S VERSION A

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.
Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.
Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.
Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the eternal exposure metal **[Note 2]** should be more than 1M ohm by using the 500V insulation resistance meter **[Note 1]**.
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal
Earphone jack

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the VERSION LETTER.)

1. MODEL NUMBER and VERSION LETTER
   The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.
2. PART NO. and DESCRIPTION
   You can find it in your SERVICE MANUAL.

IMPORTANT

Inferior silicon grease can damage IC's and transistors.
When replacing an IC's or transistors, use only specified silicon grease (YG6260M).
Remove all old silicon before applying new silicon.

CONTENTS

GENERAL SPECIFICATIONS

G-1	**TV System**	CRT		CRT Size / Visual Size	27 inch / 675.1mmV
				CRT Type	Normal
				Deflection	111 degree
				Magnetic Field BV/BH	+0.45G/0.18G
		Color System			NTSC
		Speaker			2Speaker
				Position	Front
				Size	1.5 x 2.7 Inch
				Impedance	8 ohm
		Sound Output		MAX	2.5 + 2.5 W
				10%(Typical)	2.0 + 2.0 W
		NTSC3.58+4.43 /PAL60Hz			No
G-2	**Tuning System**	Broadcasting System			US System M
		Tuner and Receive CH		System	1Tuner
				Destination	Ohers
				Tuning System	F-Synth
				Input Impedance	VHF/UHF 75 ohm
				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	115 W at AC 120 V 60 Hz
				Stand by (at AC)	5 W at AC 120 V 60 Hz
				Per Year	-- kWh/Year
		Protector		Power Fuse	Yes
G-4	**Regulation**			Safety	UL
				Radiation	FCC
				X-Radiation	DHHS
G-5	**Temperature**			Operation	+5°C ~ +40°C
				Storage	-20°C ~ +60°C
G-6	**Operating Humidity**				Less then 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	Yes
				Treble	Yes
				Balance	Yes
				BBE On/Off	No
				Stable Sound 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 (NTSC Only)	Yes
				Sharpness	Yes
				Tuning	No
				Bass	Yes
				Treble	Yes
				Balance	Yes
				Back Light	No
			Stereo,Audio Output,SAP		Yes
			Video		Yes
			Color Stream		No
			Channel(TV/Cable)		Yes

GENERAL SPECIFICATIONS

		CH Label		No
		Sleep Timer		Yes
		Sound Mute		Yes
		V-chip Rating		Yes
G-8	**OSD Language**			English French Spanish
		OSD Language Setting		English
G-9	**Clock and Timer**	Sleep Timer	Max Time	120 Min
			Step	10 Min
		On/Off Timer	Program(On Tim / Off Tim)	No
		Wake Up Timer		No
		Timer Back-up (at Power Off Mode) more than		-- Min Sec
G-10	**Remote Control**	Unit		RC-DW
		Glow in Dark Remocon		No
		Format		NEC
		Custom Code		86-05 h
		Power Source	Voltage(D.C)	3V
			UM size x pcs	UM-4 x 2 pcs
		Total Keys		28 Keys
		Keys	Power	Yes
			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
G-11	**Features**	Auto Degauss		Yes
		Auto Shut Off		Yes
		Canal+		No
		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

GENERAL SPECIFICATIONS

		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			No
		Energy Star			No
		Favorite CH			No
G-12	**Accessories**	Owner's Manual		Language	English / Spanish
				w/Guarantee Card	No
		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	No
		AC Cord			No
		AV Cord (2Pin-1Pin)			No
		Registration Card			No
		PTB Sheet			No
		300 ohm to 75 ohm Antenna Adapter			No
G-13	**Interface**	Switch	Front	Power	Yes
				System Select	No
				Main Power SW	No
				Sub Power	No
				Channel Up/Reset	Yes
				Channel Down/Enter	Yes
				Volume Up/Set Up	Yes
				Volume Down/Set Down	Yes
				Menu: Vol Up + Vol Down	Yes
			Rear	AC/DC	No
				TV/CATV Selector	No
				Degauss	No
				Main Power SW	No
		Indicator		Power	No
				Stand-by	No
				On Timer	No
		Terminals	Front	Video Input	RCA
				Audio Input	RCA x 2
				Other Terminal	No
			Rear	Video Input(Rear1)	RCA
				Video Input(Rear2)	No
				Audio Input(Rear1)	RCA x 2
				Audio Input(Rear2)	No
				Video Output	RCA
				Audio Output	RCA x 2
				S-Input	Yes
				Color Stream	No
				Diversity	No
				Ext Speaker	No
				DC Jack 12V(Center +)	No
				VHF/UHF Antenna Input	F Type
				AC Outlet	No
G-14	**Set Size**			Approx. W x D x H (mm)	650 x 478 x 560
G-15	**Weight**			Net (Approx.)	35kg (77.6 lbs)
				Gross (Approx.)	38Kg (84.3 lbs)

GENERAL SPECIFICATIONS

G-16	**Carton**	Master Carton		No
			Content	---- Sets
			Material	-- /--
			Dimensions W x D x H(mm)	-- x -- x --
			Description of Origin	No
		Gift Box		Yes
			Material	Double/Brown
			Dimensions W x D x H(mm)	718 x 558 x 655
			Design	As per Buyer's
			Description of Origin	Yes
		Drop Test		Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces
			Height (cm)	31
		Container Stuffing		198 Sets/40' container
G-17	**Cabinet Material**		Cabinet Front	PS 94V0 DECABROM
			Cabinet Rear	PS 94V0

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.

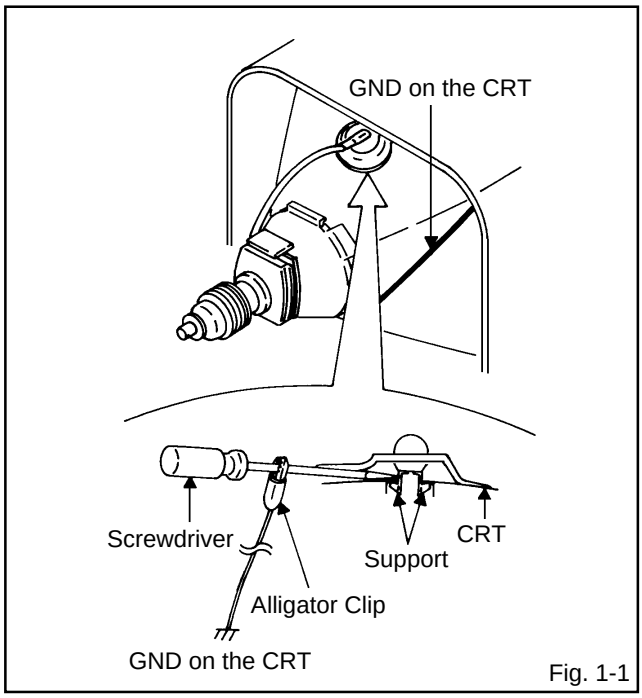


Fig. 1-1

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.)**

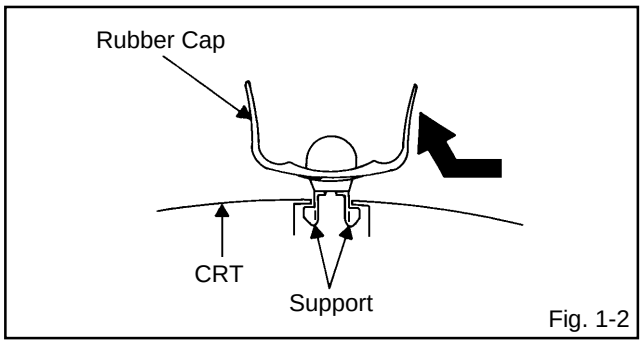


Fig. 1-2

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.)**

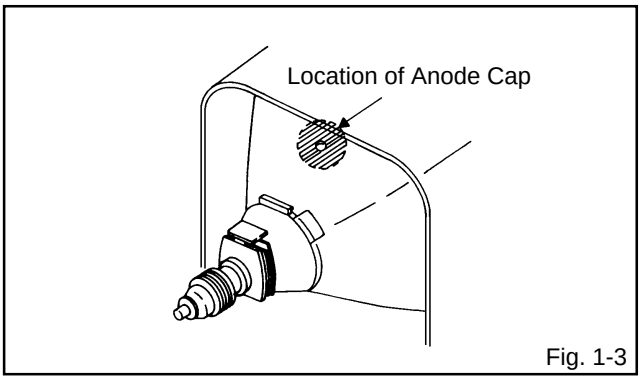


Fig. 1-3

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.)**

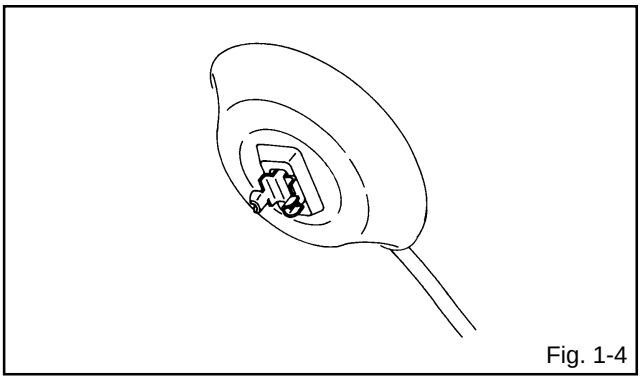


Fig. 1-4

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

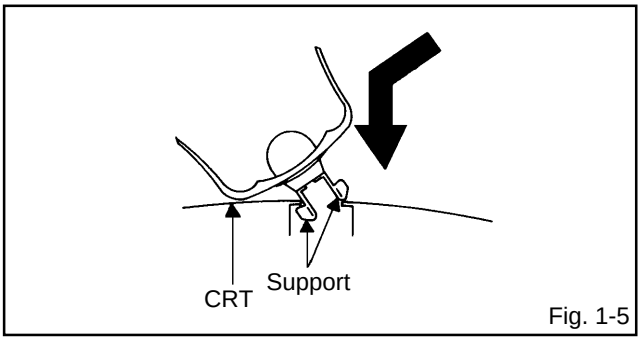


Fig. 1-5

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 the 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.

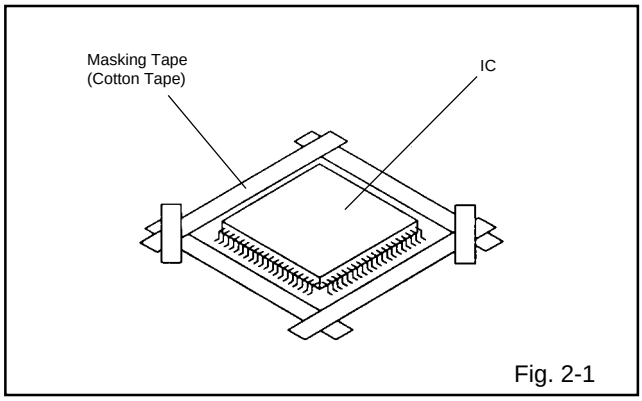


Fig. 2-1

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

   NOTE

   Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.

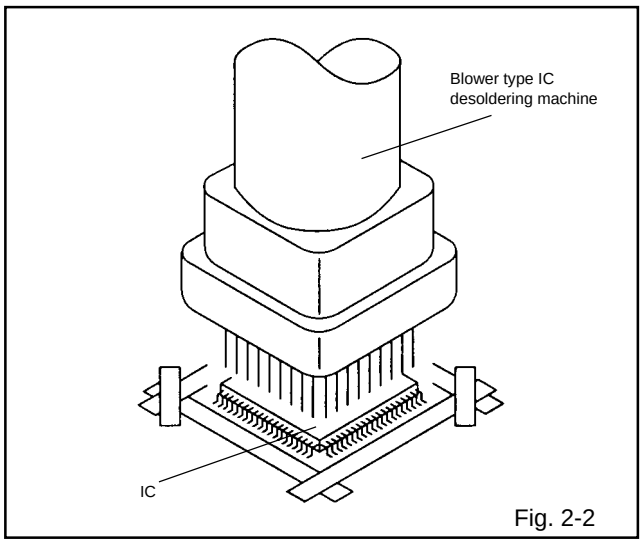


Fig. 2-2

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.

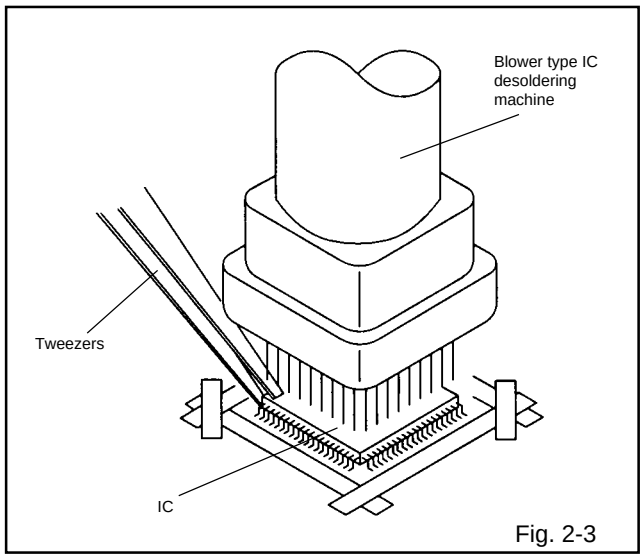


Fig. 2-3

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.

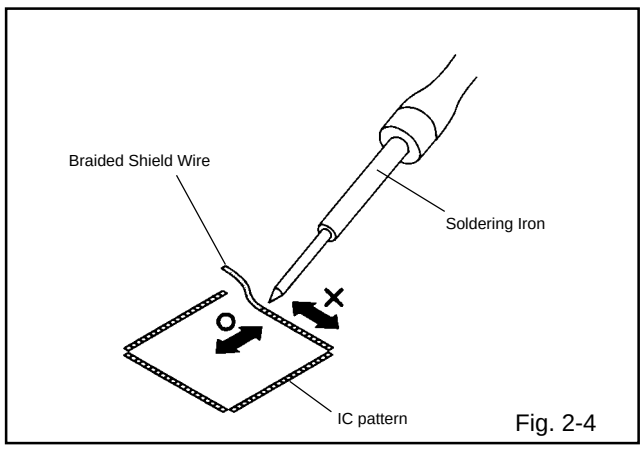


Fig. 2-4

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.)**

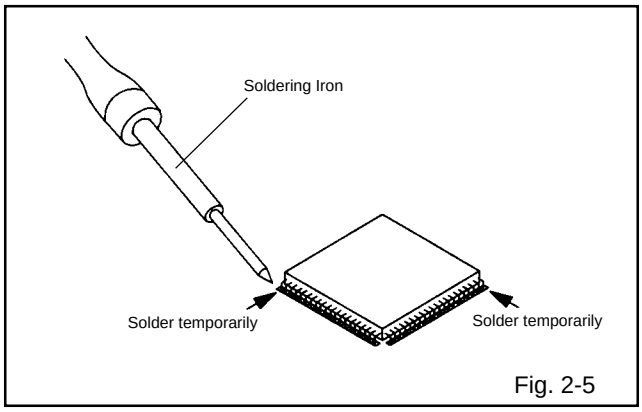


Fig. 2-5

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.)**

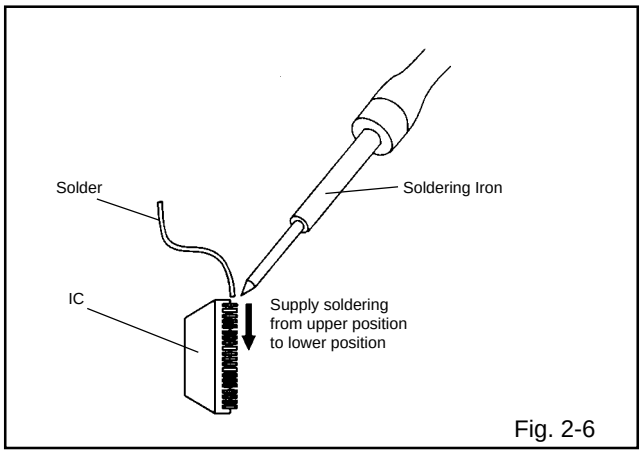


Fig. 2-6

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.

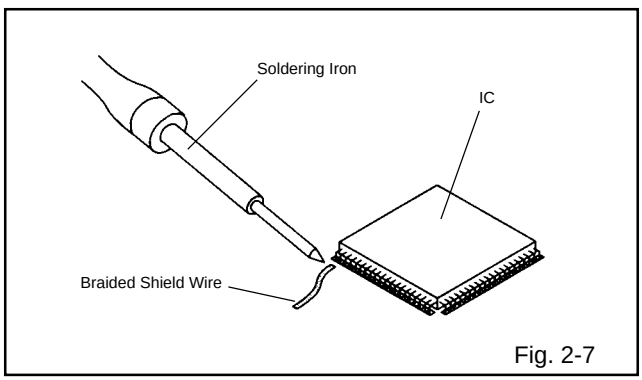


Fig. 2-7

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.)**

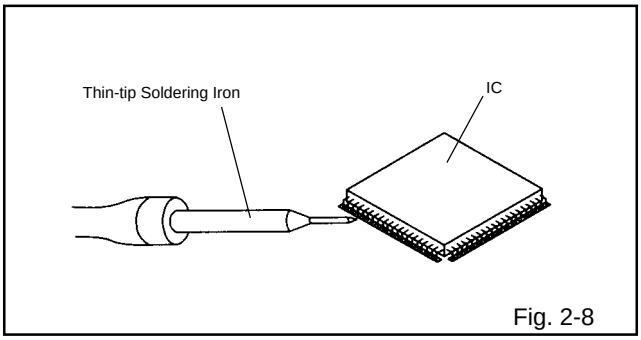


Fig. 2-8

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 provided with the following SERVICE MODES so you can repair, examine and adjust easily.
To enter the Service Mode, press both set key and remote control key for more than 1 second.

Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	Initialization of the factory. NOTE: Do not use this for the normal servicing. If you set a 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	8	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
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.

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 1 second.
3. After the confirmation of using hours, turn off the power.

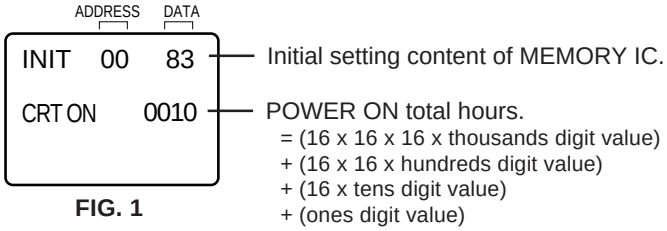


FIG. 1

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	08	60	89	0A	09	B3	24	1B	83	C0	00	03	08	3D	3D	A5

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 1 second. ADDRESS and DATA should appear as FIG 1.
3. ADDRESS is now selected and should "blink". Using the SET + or - keys 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 SET + or - 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.

The unit will now have the correct DATA for the new MEMORY IC.

ELECTRICAL ADJUSTMENTS

1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

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.
  Inferior silicon grease can damage IC's and transistors.
- When When you exchange IC and Transistor for a heat sink, apply the silicon grease **(YG6260M)** on the contract 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. Synchro Scope
2. Digital Voltmeter

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 1 second to appear the adjustment mode on the screen as shown in **Fig. 1-1**.

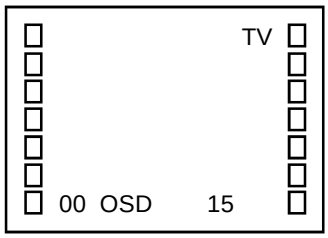


Fig. 1-1

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
02	RF AGC	18	CONTRAST MIN
03	VIF VCO	19	COLOR CENT
04	H.VCO	20	COLOR MAX
05	H.PHASE	21	COLOR MIN
06	V.SIZE	22	TINT
07	V.SHIFT	23	SHARPNESS
08	R.DRIVE	24	FM LEVEL
09	B.DRIVE	25	LEVEL
10	R.BIAS	26	SEPARATION 1
11	G.BIAS	27	SEPARATION 2
12	B.BIAS	28	TEST MONO
13	BRIGHT CENT	29	TEST STEREO
14	BRIGHT MAX	30	X-RAY TEST
15	BRIGHT MIN		

Fig. 1-2

2. BASIC ADJUSTMENTS

2-1: RF AGC

1. Place the set with Aging Test for more than 15 minutes.
2. Receive an 60dB monoscope pattern.
3. Connect the digital voltmeter to the **W013**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(02)** on the remote control to select "RF.AGC".
5. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is 2.65 ± 0.05V.

2-2: CUT OFF

1. Adjust the unit to the following settings.
   R.DRIVE=73, B.DRIVE=61, R.BIAS=88, G.BIAS=74, B.BIAS=73, BRIGHTNESS=124, CONTRAST=100.
2. Place the set with Aging Test for more than 15 minutes.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(01)** on the remote control to select "CUT OFF".
4. Adjust the **Screen Volume** until a dim raster is obtained.

2-3: FOCUS

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

2-4: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 10 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 looked like a white.

2-5: VIF VCO

1. Place the set with Aging Test for more than 15 minutes.
2. Receive an 80dB monoscope pattern.
3. Connect the digital voltmeter between the **pin 5 of CP601** and the **GND**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (03) on the remote control to select "V.VCO".
5. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is 2.5V.

ELECTRICAL ADJUSTMENTS

2-6: SUB TINT/SUB COLOR

1. Receive the color bar pattern.
2. Connect the oscilloscope to **TP024**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(22)** on the remote control to select "TINT".
4. Press the VOL. UP/DOWN button on the remote control until the section "A" becomes as straight line. **(Refer to Fig. 2-1)**
5. Connect the oscilloscope to **TP022**.
6. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(19)** on the remote control to select "COL.CENT".
7. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to 110% of the white level. **(Refer to Fig. 2-2)**
8. Receive the color bar pattern. (Audio Video Input)
9. Press the TV/AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~7**.**

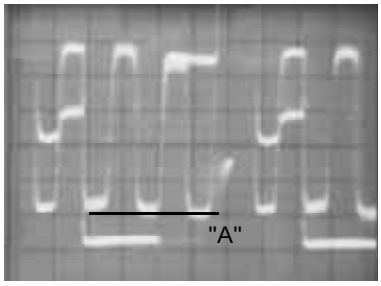


Fig. 2-1

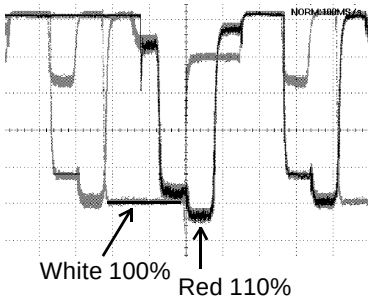


Fig. 2-2

2-7: HORIZONTAL PHASE

1. Receive the monoscope pattern.
2. Using the adjustment 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.PHAS".
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.

2-8: VERTICAL LINEARITY

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

2-9: VERTICAL SIZE

NOTE: Adjust after performing adjustments in section 2-8.

1. Receive the monoscope pattern.
2. Using the adjustment 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 10 ± 2%.
5. Receive a broadcast and check if the picture is normal.

2-10: VERTICAL SHIFT

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Check if the step No. V. SHIFT is "0".
4. Adjust the **VR401** until the horizontal line becomes fit to the notch of the shadow mask.

2-11: OSD HORIZONTAL

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. 2-3)**

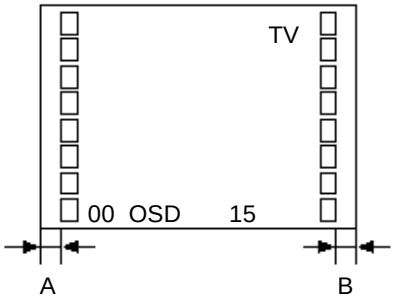


Fig. 2-3

2-12: SUB BRIGHTNESS

1. Receive an 70dB monoscope pattern.
2. Using the adjustment 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 screen begin to shine.
5. Press the TV/AV button on the remote to set to the AV mode. Then perform the above adjustment 2, 3.

ELECTRICAL ADJUSTMENTS

2-13: CONSTANT VOLTAGE

1. Place the set with Aging Test for more than 15 minutes.
2. Connect the digital voltmeter to the **TP402**.
3. Set condition is AV MODE without signal.
4. Using the remote control, set the brightness and contrast to normal position.
5. Adjust the **VR502** until the digital voltmeter is 130 ± 0.5V.

2-14: 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.

2-15: FM LEVEL

1. Receive a 80dB monoscope pattern.
2. Connect the AC voltmeter to the **pin 14 of IC901**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(24)** on the remote control to select "FM LEVEL".
4. Press the VOL. UP/DOWN button on the remote control until the AC voltmeter is 75 ± 5mV.

2-16: LEVEL

1. Receive a 80dB monoscope pattern.
2. Connect the AC voltmeter to the **pin 2 of J707**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(25)** on the remote control to select "LEVEL".
4. Press the VOL. UP/DOWN button on the remote control until the AC voltmeter is 100mV.

2-17: CONTRAST MAX

1. Receive the 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 "100".
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.

2-18: 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	---
14	BRIGHT MAX	165	---
15	BRIGHT MIN	50	---
16	CONT CENT	56	---
18	CONT MIN	20	---
20	COLOR MAX	78	---
21	COLOR MIN	01	---
23	SHARPNESS	40	---
28	TEST MONO	00	---
29	TEST STERIO	00	---

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 colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

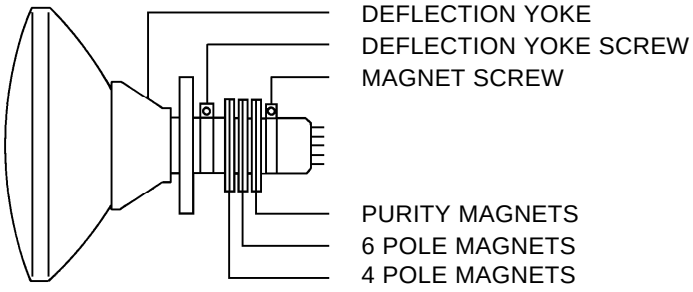


Fig. 3-1

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)**

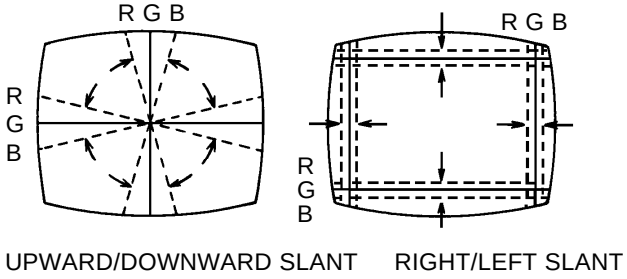


Fig. 3-2-a

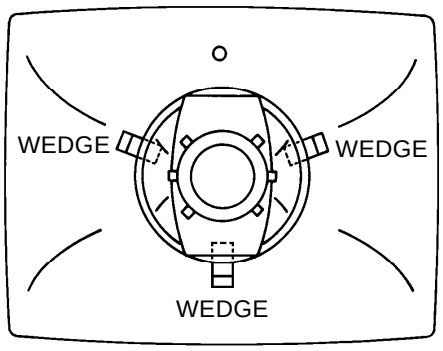
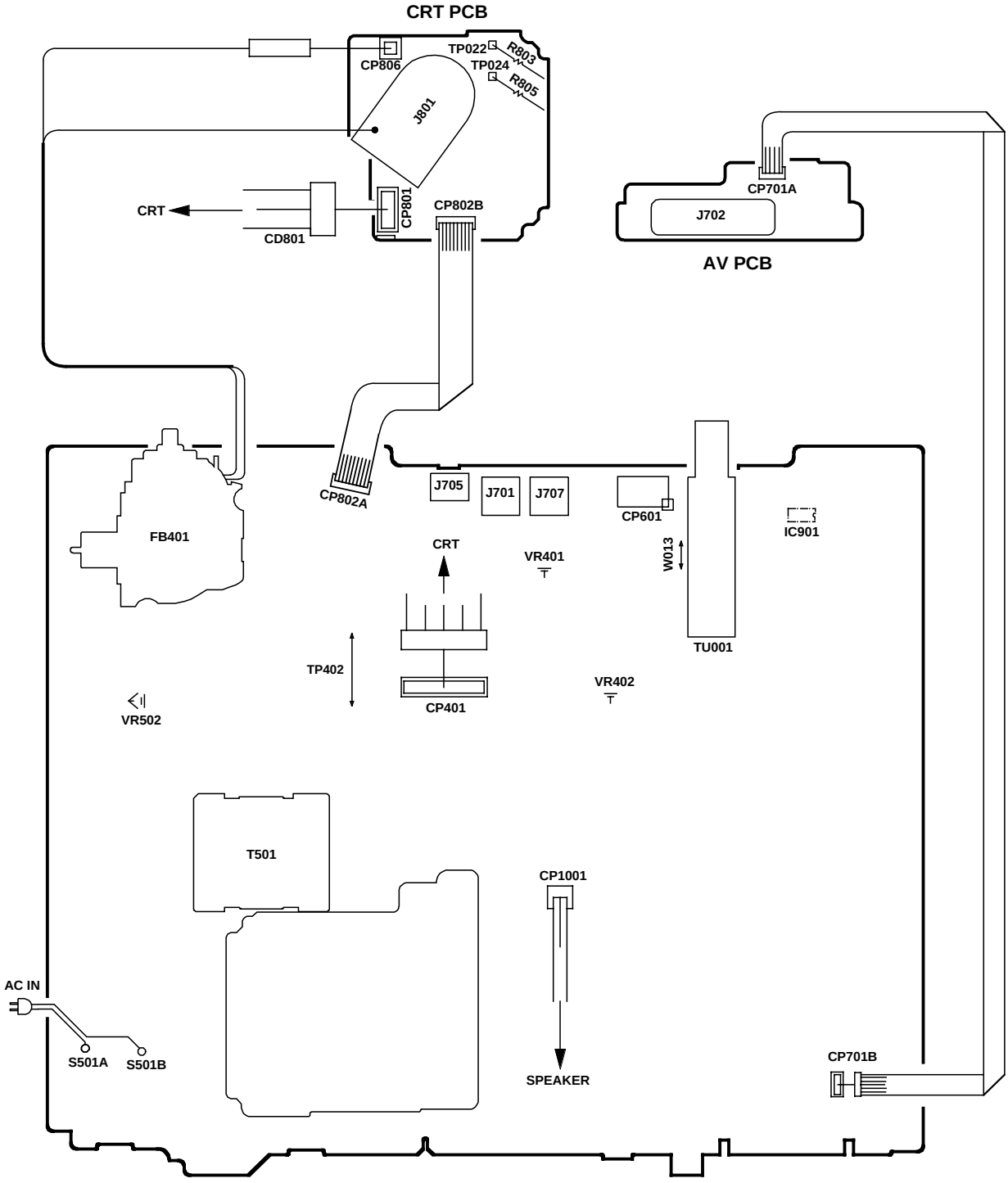


Fig. 3-2-b

ELECTRICAL ADJUSTMENTS

4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)



BLOCK DIAGRAM

SOUND DECORDER IC
IC901 AN5829S

TONE CONTROL IC
IC302 M62420SP

AV/S SW IC
IC1502 NJM2283M

P.CON + 9V

Q701 BUFFER
Q702 BUFFER
Q706 BUFFER

S_VIDEO
J705

Q1001
MUTE SW

Q902 BUFFER
Q901 BUFFER
Q707 MUTE
Q705 MUTE

TU001
IF SDA SCL AGC

CHROMA IC
IC601 M61250FP

IC1001 LA4600
SOUND AMP IC

SPEAKER
SP1001

CF601
SAW FILTER

X602
3.579545MHz

FRONT_A/V_IN
(STEREO)
J702

REAR_AV_OUT
(STEREO)
J707

REAR_AV-IN
(STEREO)
J701

CH DOWN
VOL DOWN
POWER
CH UP
VOL UP

MICON IC
IC101 OEC7072A

Q801, Q804
RED OUT
Q803, Q805
GREEN OUT
Q802, Q806
BLUE OUT

VIDEO AMP IC
IC702
NJM2245L

OS101

Q606 REG
Q603 5V REG → AT+5V

MEMORY IC
IC199
S-24C02BDP-1A

Q403 X-RAY TEST SW.
Q404 X-RAY TEST SW

Q607 SW
Q609 SW

PUMP UP
AMP
VCC

V-OUT IC
IC401
LA78041

Q402 H. DRIVE
Q401 H. OUTPUT

L503
DEGAUSS COIL

TH501

RY501 RELAY

AC IN

F501

D501~D504
RECTIFIER

T501

IC501
LTV-817M-VB

Q507 FEED BACK SW.
FEED BACK

Q501 SWITCHING

IC402
NJM78L05A
9V REG IC → P.CON + 9V

VR502
+B ADJ.

Q502 BUFFER

Q504 RELAY DRIVE

Q608 REG
STEREO+5V

Q604 REG
Q605 REG → TUNER+5V

DY

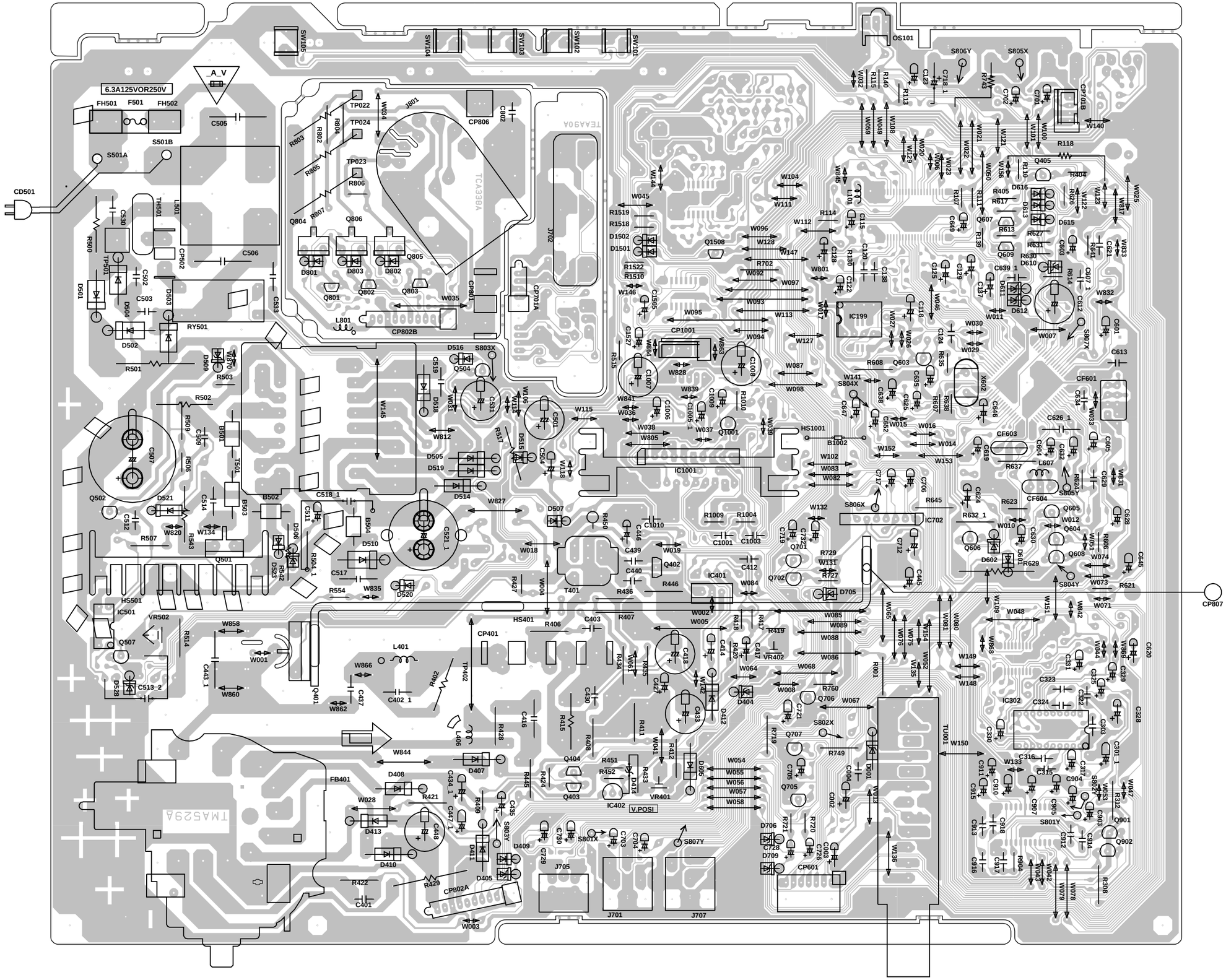
FB401
FBT

CRT
V801
Heater

E-1

E-2

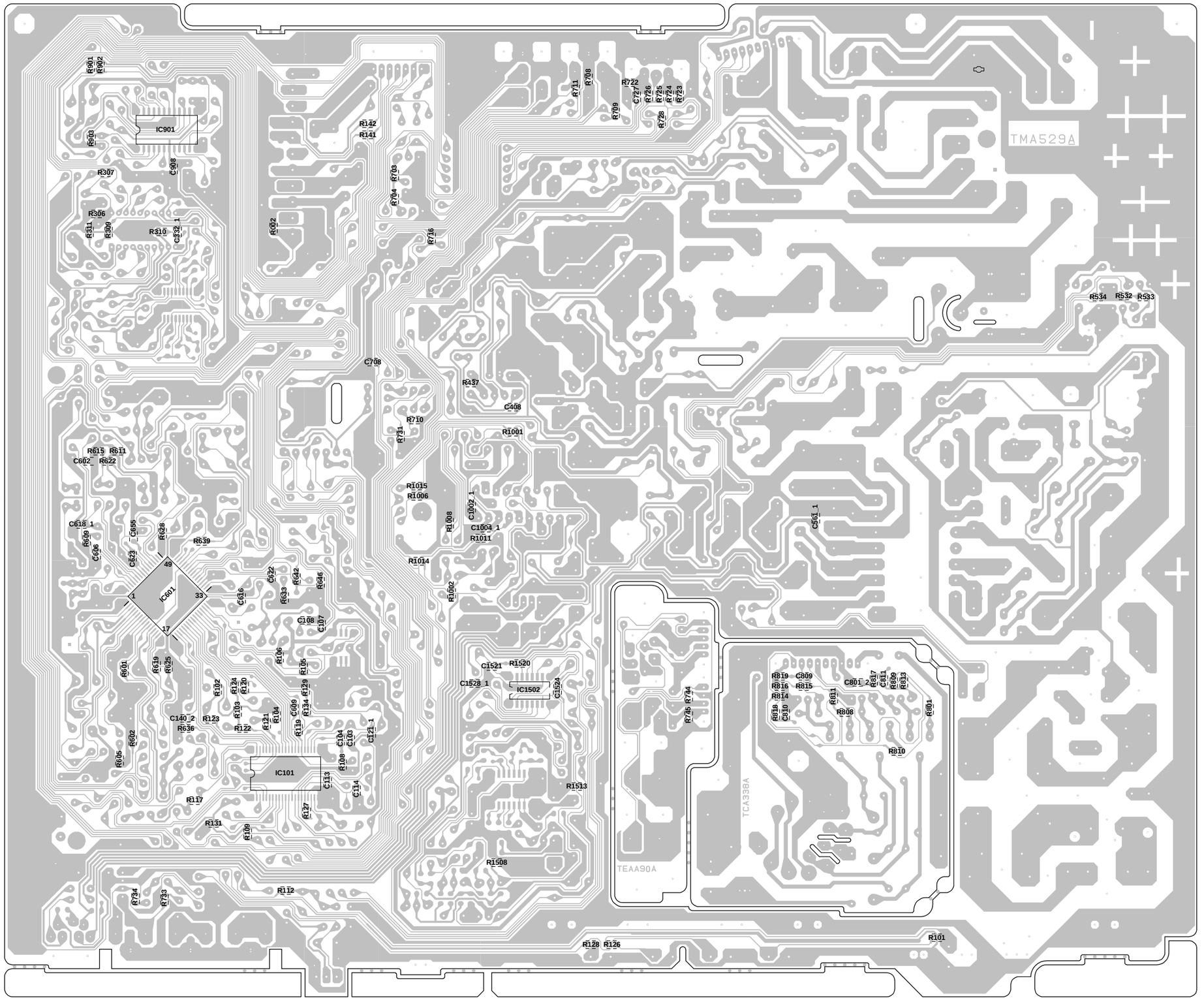
PRINTED CIRCUIT BOARDS
MAIN/CRT/AV (INSERTED PARTS)
SOLDER SIDE



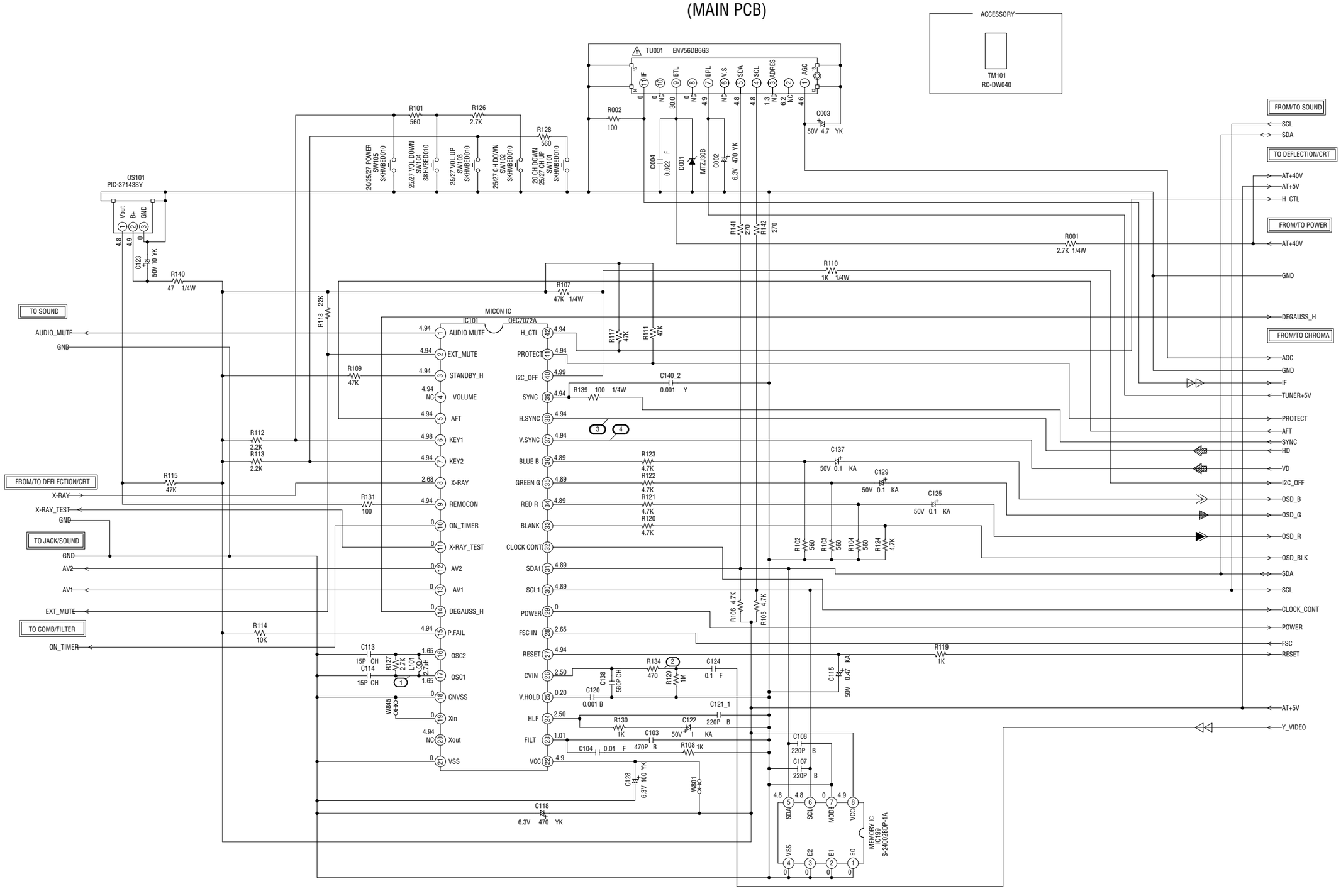
F-1

F-2

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



MICON/TUNER SCHEMATIC DIAGRAM
(MAIN PCB)



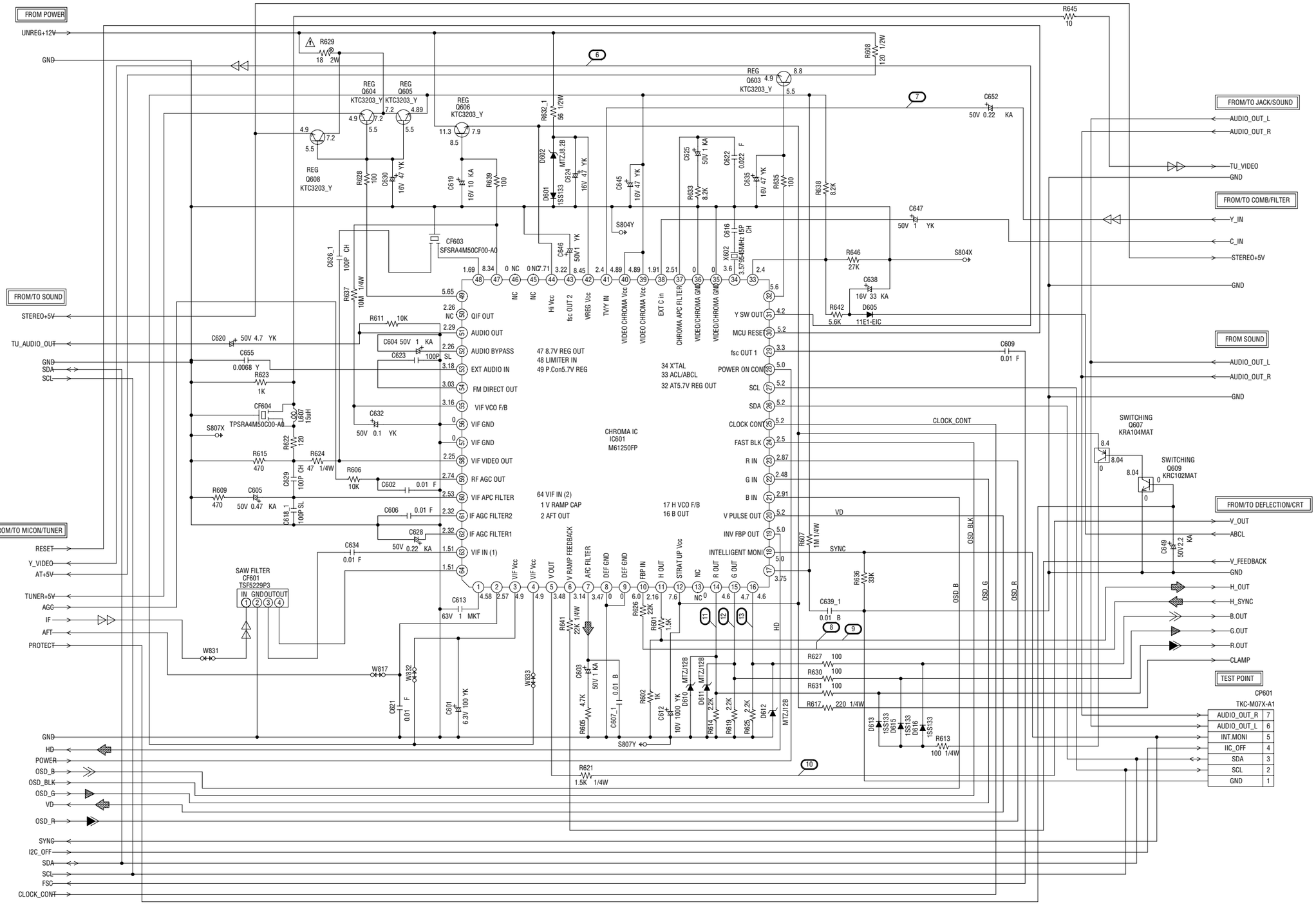
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

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.

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

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

CHROMA SCHEMATIC DIAGRAM
(MAIN PCB)



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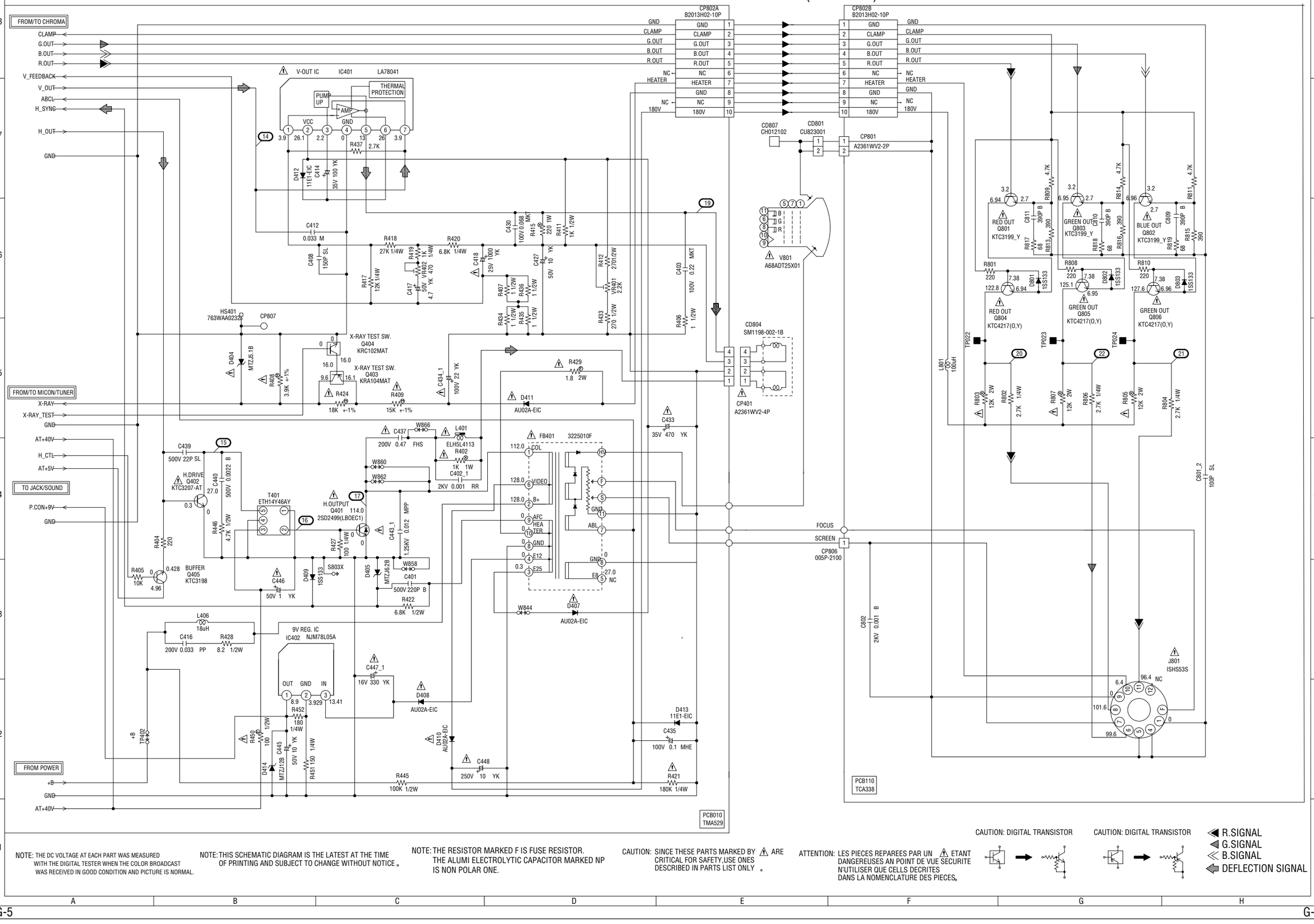
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

CAUTION: DIGITAL TRANSISTOR

CAUTION: DIGITAL TRANSISTOR

DEFLECTION SIGNAL
R.SIGNAL
G.SIGNAL
B.SIGNAL

DEFLECTION/CRT SCHEMATIC DIAGRAM (MAIN PCB)



POWER SCHEMATIC DIAGRAM
(MAIN PCB)

6.3A 125V

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)

D516 1SS133

RELAY DRIVE Q504 KTC3198

R515 10K

S803Y

RY501 ALKS321

DEGAUSS COIL L503 8R270009

CP502 A1561WV2-2P

TH501 ZPB45BL3R0A

TP501 003P-2100

R500 2.7M 1/2W

C530 +-10% 250V 0.0022 NU

C533 250V 0.0022 NU

T501 8135075S

R501 3.3 7W

R502 0.22 1W

D501 RM11C-EIC

D502 RM11C-EIC

D503 RM11C-EIC

D504 RM11C-EIC

C502 2KV 0.001 B

C503 2KV 0.001 B

C507 200V 470 UP

R503 2.2M 1/4W

W830

D509 MTZJ18B

C505 275V 0.1 PHE840

C506 275V 0.1 PHE840

F501 6.3A 125V

51MS063L 6.3A125V

FH501 EYF-52BC

FH502 EYF-52BC

L501 2R0A502F24Y

AC120V_60Hz CD501 07415905

BLACK S501A

WHITE S501B

BLADE WIDE

B501 W5RH3.5 X5X1.0

B503 W5RH3.5 X5X1.0

144.0 D G 4.8 0.1 S

SWTCHING Q501 2SK3326(2)

R543 220 1W X

C509 0.047 M

C514 2KV 680P RR

D523 1SS133

W820

R504_1 1.5M 1/2W

C511 50V 1 YK

R507 1K

FEED BACK IC501 LTV-817M-VB

D521 1SS133

B502 W5RH3.5 X5X1.0

BUFFER Q502 KTC3203_Y 4.8 0.1 0

R542 0.15 1W

HS501 763WAA0023

R506 2.2K 1/4W

R509 22K 1/4W

C512 0.0082 M

D506 MTZJ24B

9.82 9.77 0.3 8.8

R532 820

R533 220

R534 100

W827

C513_2 0.1 M

6.3 6.0 5.4

FEED BACK SWITCHING Q507 KTC3198

W835

R554 120K 1/4W

I_B ADJ VR502 1K

R514 5.6K 1/4W

D528 MTZJ5.6B

153.3 167.3 167.3 202 14.09 0 14.11

37.6 14.1 6.99 NC 0 128.2 0 10.49

C519 2KV 0.001 RR

D518 AU02A-EIC

C504 50V 47 YK

D519 SB290S

D505 SB290S

R517 0.39 2W

D507 1SS133

C501 25V 1000 YK

C561_1 680P W

D515 1SS133

W812

B504 W5RH3.5 X5X1.0

D510 RU2AM-EIC

C517 2KV 0.001 RR

C521_1 160V 220 PR

D514 SB140-EIC

C518_1 250V 0.001 KX

C531 16V 1000 YK

D520 1SS133

W826

TO CHROMA

UNREG+12V

GND

TO DEFLECTION/CRT

+B

AT+40V

GND

TO SOUND

SOUND+B

GND

SOUND_GND

FROM/TO MICON/TUNER

DEGAUSS_H

AT+40V

GND

CAUTION: ⏚ IS THE LIVE CONNECTION

PCB010
TMA529

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

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.

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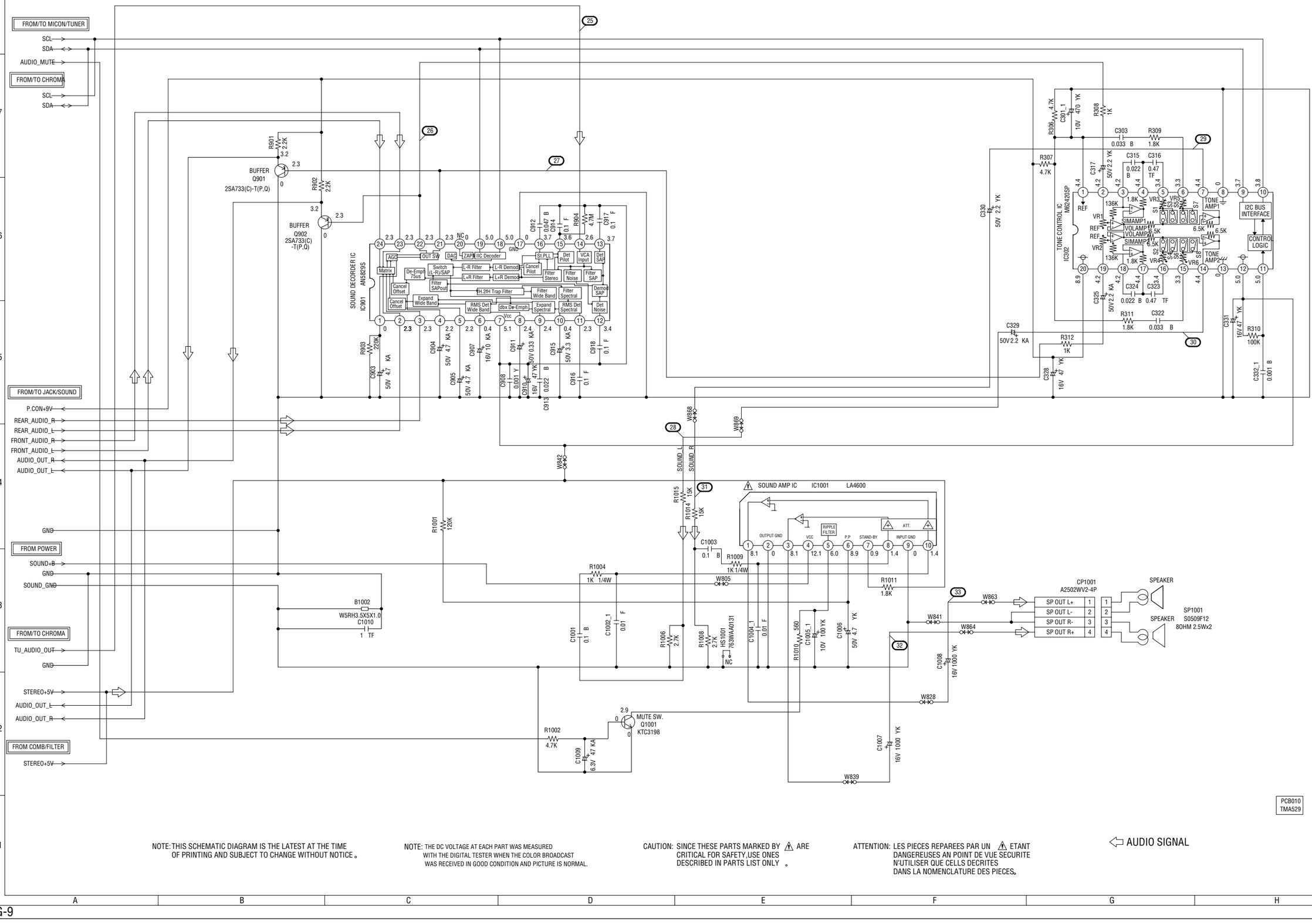
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

SOUND SCHEMATIC DIAGRAM
(MAIN PCB)



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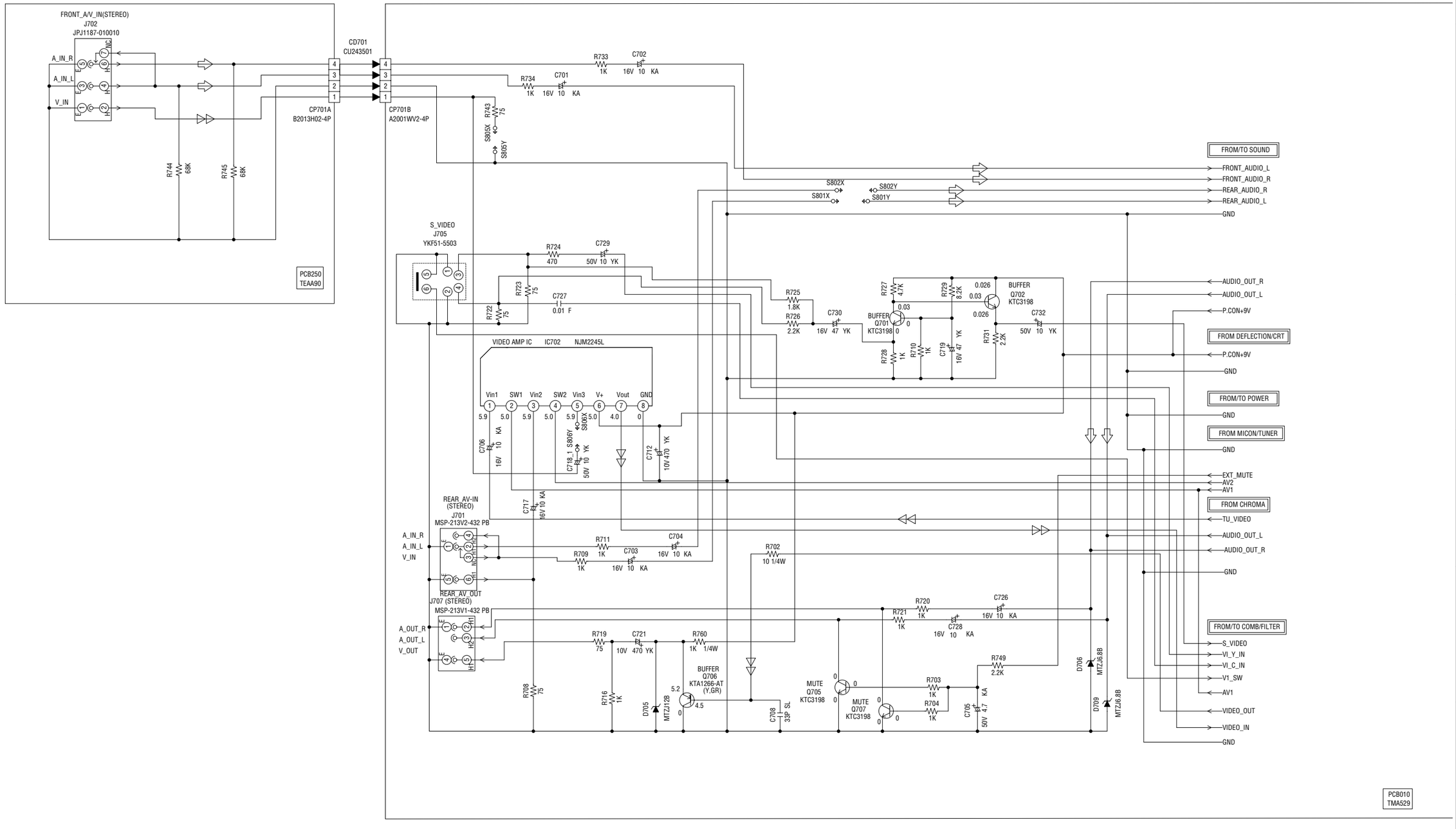
⇦ AUDIO SIGNAL

JACK/SOUND SCHEMATIC DIAGRAM
(MAIN PCB)



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.

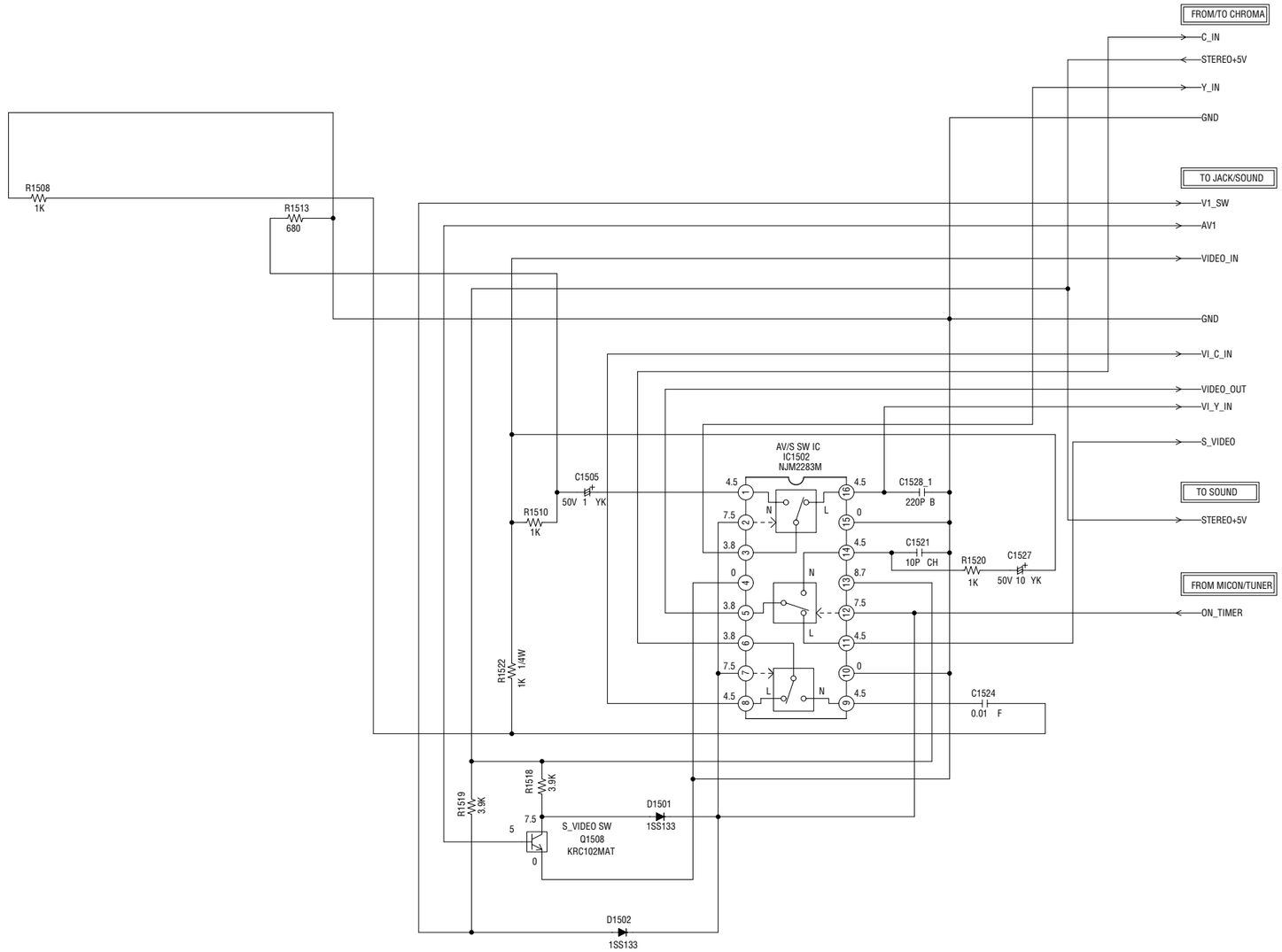
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

⇦ AUDIO SIGNAL

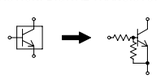
⇦⇦ TUNER VIDEO SIGNAL

COMB/FILTER SCHEMATIC DIAGRAM

(MAIN PCB)



CAUTION: DIGITAL TRANSISTOR



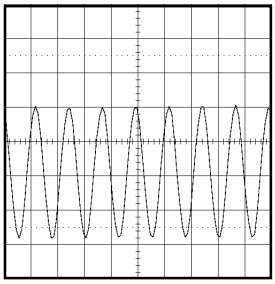
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

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

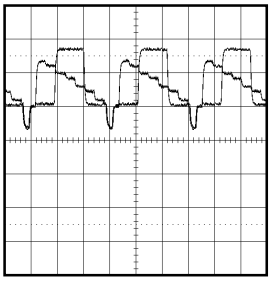
PCB010
TMA529

WAVEFORMS

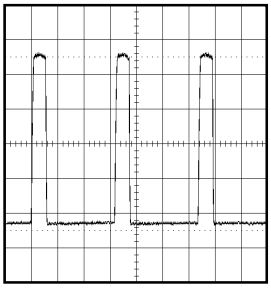
MICON/TUNER



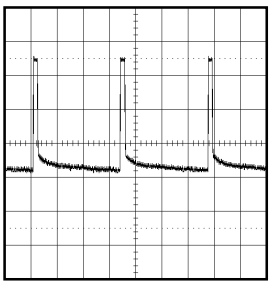
① 1V 0.1µs/div



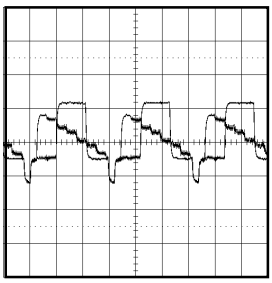
② 0.5V 20µs/div



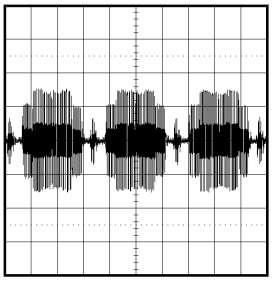
③ 200mV 20µs/div



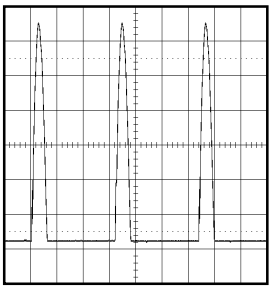
④ 200mV 5ms/div



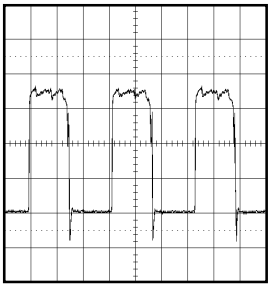
⑥ 0.5V 20µs/div



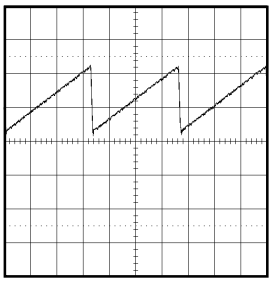
⑦ 200mV 20µs/div



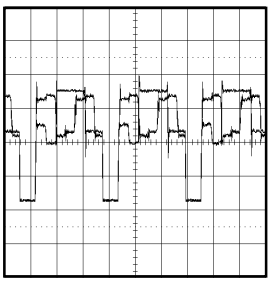
⑧ 20V 20µs/div



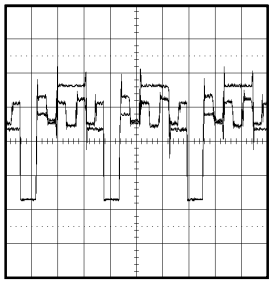
⑨ 200mV 20µs/div



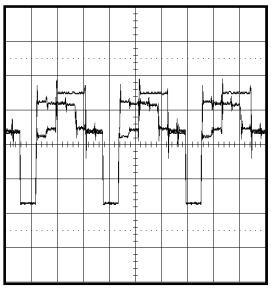
⑩ 0.5V 5ms/div



⑪ 1V 20µs/div

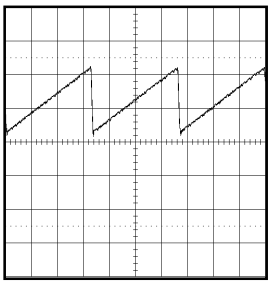


⑫ 1V 20µs/div

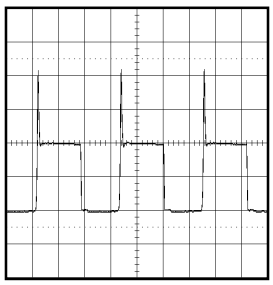


⑬ 1V 20µs/div

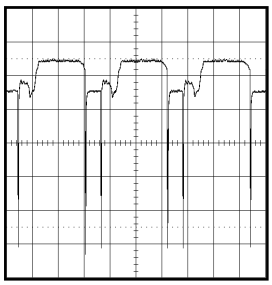
DEFLECTION/CRT



⑭ 0.5V 5ms/div



⑮ 20V 20µs/div



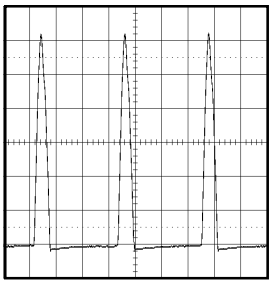
⑯ 2V 20µs/div

CHROMA

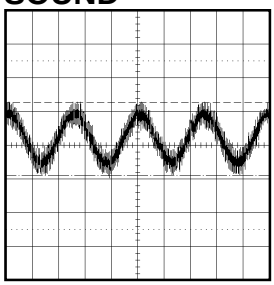
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

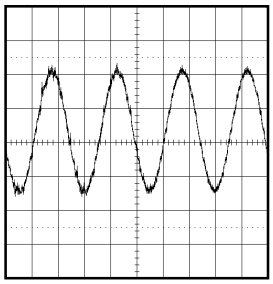
SOUND



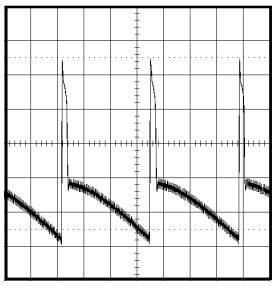
17 200V 20µs/div



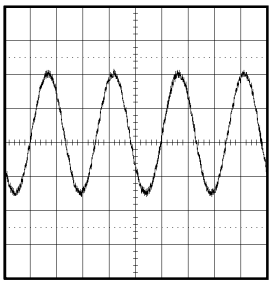
25 0.5V 1ms/div



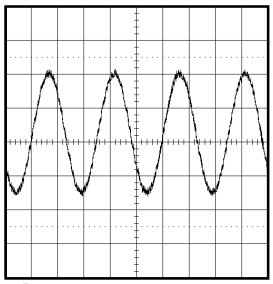
30 200mV 1ms/div



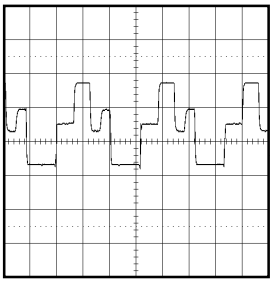
19 10V 5ms/div



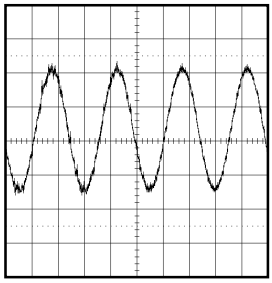
26 200mV 1ms/div



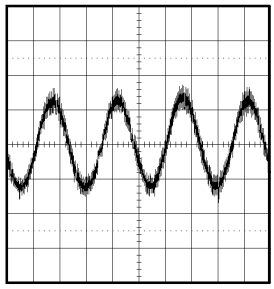
31 200mV 1ms/div



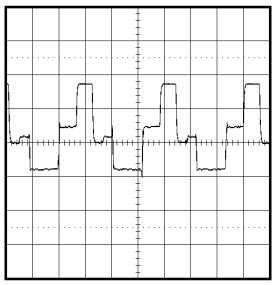
20 50V 20µs/div



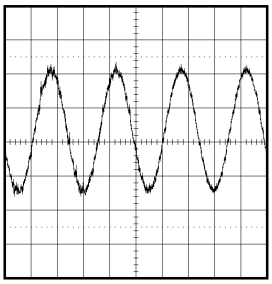
27 200mV 1ms/div



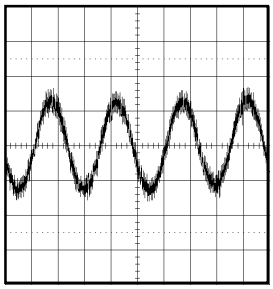
32 0.5V 1ms/div



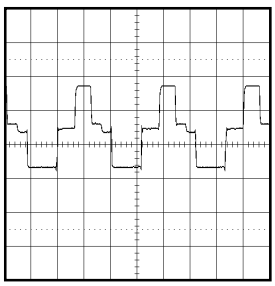
21 50V 20µs/div



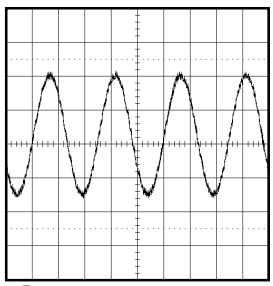
28 200mV 1ms/div



33 0.5V 1ms/div



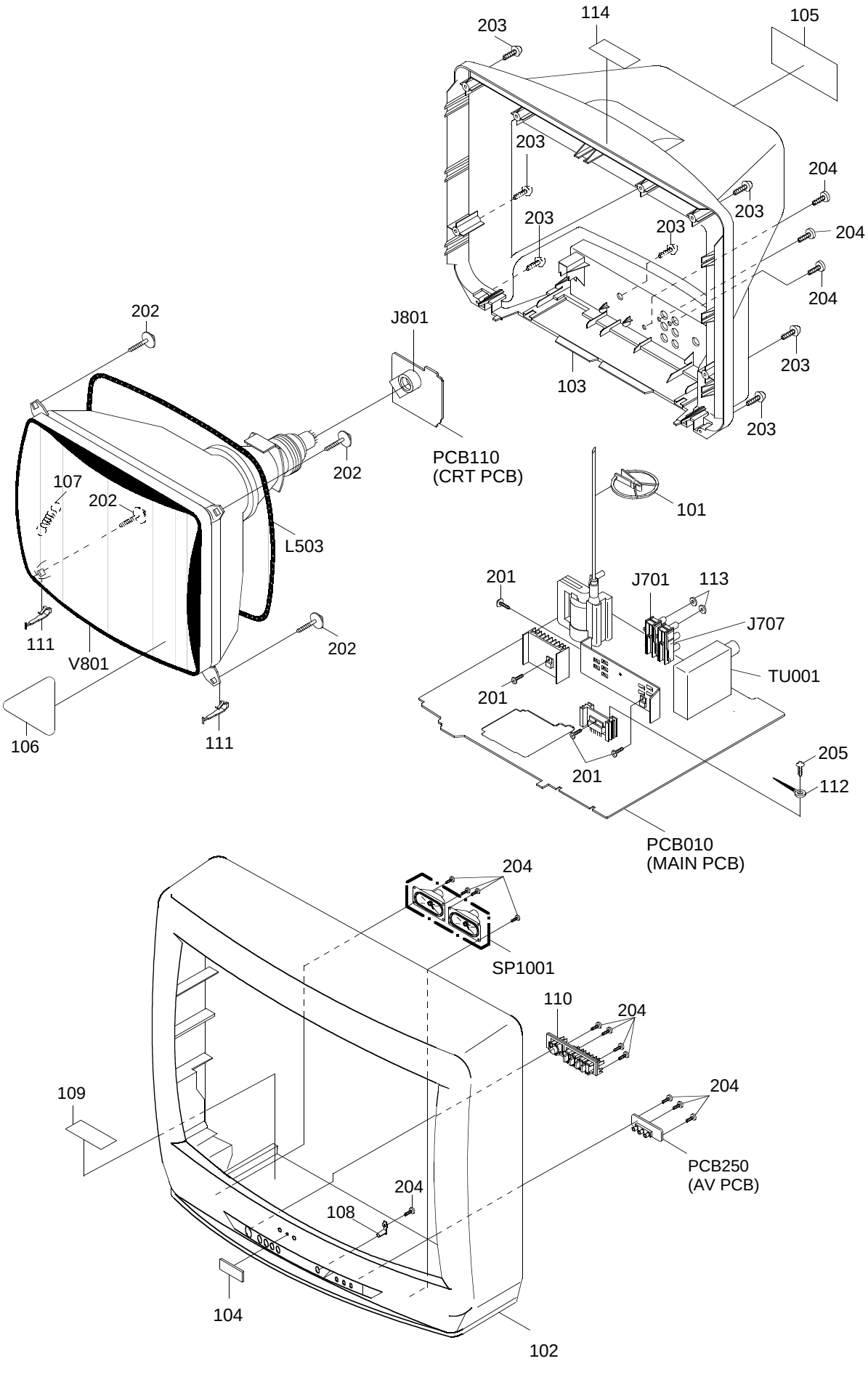
22 50V 20µs/div



29 200mV 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	899HV3T000	HOLDER,ANODE WIRE		
102	701APJA106	CABINET,FRONT		
103	702APAA005	CABINET,BACK		
104	711WPCA043	BADGE,BRAND		
105	722A08A114	SHEET,RATING		
106	723000B550	FILM,DECORATION		
107	741WUA0021	SPRING,EARTH		
108	713WPA0098	GUIDE,REMOCON		
109	7260000306	SHEET,CAUTION		
110	735WPA0565	BUTTON,ASS'Y		
111	762WPA0009	HOLDER,CRT WIRE		
112	8995034000	CORD CLIP UL CO.		
113	800WB0A009	FIBER WASHER		
201	8109I30A04	SCREW,TAP TITE(B)	WH7	3x10
202	8111J50D05	SCREW,TAPPING(A)	GW22	5x35
203	8117540B04	SCREW,TAPPING(B0)	TRUSS	4x20
204	8110630A04	SCREW,TAP TITE(P)	BRAZIER	3x10
205	8109630802	SCREW,TAP TITE(B)	BRAZIER	3x8
---	793ACDA155	GIFT BOX		
---	JB5L0200	POLYBAG,INSTRUCTION		
---	J3K00502	WARRANTY SHEET		
---	J3L40901	INSTRUCTION BOOK		
---	791AHA0021	FILM,BAG		
---	792AHA0077	PACKAGE,TOP		
---	792AHA0078	PACKAGE,BOTTOM		
---	A3L409I975	INSTRUCTION BOOK KIT		

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		
		RESISTORS		
R118	R00106223J	RC	22K OHM 1/6W	
R402	R3X181102J	R,METAL OXIDE	1K OHM 1W	
⚠ R408	R4X5T6392F	R,METAL	3.9K OHM 1/6W	
⚠ R409	R4X5T6153F	R,METAL	15K OHM 1/6W	
R415	R3X181221J	R,METAL OXIDE	220 OHM 1W	
⚠ R424	R4X5T6183F	R,METAL	18K OHM 1/6W	
⚠ R429	R6558A1R8J	R,FUSE	1.8 OHM 2W	
⚠ R450	R655U2101J	R,FUSE	100 OHM 1/2W	
⚠ R500	R0G3K2275K	RC	2.7M OHM 1/2W	
⚠ R501	R5X2AE3R3J	R,CEMENT	3.3 OHM 7W	
R502	R63581R22J	R,FUSE	0.22 OHM 1W	
⚠ R503	R002T4225J	RC	2.2M OHM 1/4W	
⚠ R506	R002T4222J	RC	2.2K OHM 1/4W	
⚠ R514	R002T4562J	RC	5.6K OHM 1/4W	
⚠ R515	R001T6103J	RC	10K OHM 1/6W	
⚠ R517	R3X28AR39J	R.METAL OXIDE	0.39 OHM 2W	
⚠ R542	R3X181R15J	R,METAL OXIDE	0.15 OHM 1W	
⚠ R543	R3X181221J	R,METAL OXIDE	220 OHM 1W	
R629	R3X18A180J	R,METAL OXIDE	18 OHM 2W	
R743	R00106750J	RC	75 OHM 1/6W	
⚠ R803	R3X18A123J	R,METAL OXIDE	12K OHM 2W	
⚠ R805	R3X18A123J	R,METAL OXIDE	12K OHM 2W	
⚠ R807	R3X18A123J	R,METAL OXIDE	12K OHM 2W	
		CAPACITORS		
C402	C0PLRR713K	CC	0.001 UF 2KV RR	
⚠ C414	E02LT4101M	CE	100 UF 35V	
C416	P3N1F2333J	CPP	0.033 UF 200V	
C418	E02L03102M	CE	1000 UF 25V	
⚠ C433	E02LT4471M	CE	470 UF 35V	
⚠ C437	P447F2474J	CMPP	0.47 UF 200V FHS	
C443	P4N8FJ123H	CMPP	0.012 UF 1.25KV	
⚠ C447	E02LU2331M	CE	330 UF 16V	
⚠ C448	E0ELTD100M	CE	10 UF 250V	or
	E51ZTD100M	CE	10 UF 250V	
⚠ C501	E02L03102M	CE	1000 UF 25V	
⚠ C504	E02LT5470M	CE	47 UF 50V	
C505	P2472B104M	CMP	0.1 UF 275V PHE840	
C506	P2472B104M	CMP	0.1 UF 275V PHE840	
⚠ C507	E51CGC471M	CE	470 UF 200V	
C513	P1S300104J	CP	0.1 UF 50V	
C514	C0PLRR7U2K	CC	680 PF 2KV RR	
C517	C0PLRR713K	CC	0.001 UF 2KV RR	
C518	CB3730M13M	CC	0.001 UF 250V	or
	CC3KE0M13M	CC	0.001 UF 250V	
C519	C0PLRR713K	CC	0.001 UF 2KV RR	
⚠ C521	E53VFB221M	CE	220 UF 160V	
C530	CBLLYEMH3M	CC	0.0022UF 250V	or
	CC3LE0MH3M	CC	0.0022UF 250V	
⚠ C531	E02LT2102M	CE	1000 UF 16V	
C533	CBLLYEMH3M	CC	0.0022UF 250V	or
	CC3LE0MH3M	CC	0.0022UF 250V	
C718	E02L05100M	CE	10 UF 50V	
		DIODES		
D001	D97U03001B	DIODE,ZENER	MTZJ30B T-77	
D404	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77	
⚠ D405	D97U06R21B	DIODE,ZENER	MTZJ6.2B T-77	
⚠ D407	D2WTAU02A0	DIODE SILICON	AU02A-EIC	
⚠ D408	D2WTAU02A0	DIODE SILICON	AU02A-EIC	
D409	D1VT001330	DIODE,SILICON	1SS133T-77	
⚠ D410	D2WTAU02A0	DIODE SILICON	AU02A-EIC	
⚠ D411	D2WTAU02A0	DIODE SILICON	AU02A-EIC	
D412	D2WT011E10	DIODE SILICON	11E1-EIC	
D413	D2WT011E10	DIODE SILICON	11E1-EIC	
D414	D97U01201B	DIODE,ZENER	MTZJ12B T-77	
⚠ D501	D2WTRM11C0	DIODE SILICON	RM11C-EIC	
⚠ D502	D2WTRM11C0	DIODE SILICON	RM11C-EIC	
⚠ D503	D2WTRM11C0	DIODE SILICON	RM11C-EIC	
⚠ D504	D2WTRM11C0	DIODE SILICON	RM11C-EIC	
D505	D2WXB290S0	DIODE SILICON	SB290S	
⚠ D506	D97U02401B	DIODE,ZENER	MTZJ24B T-77	
D507	D1VT001330	DIODE,SILICON	1SS133T-77	
⚠ D509	D97U01801B	DIODE,ZENER	MTZJ18B T-77	
⚠ D510	D2WXRU2AM0	DIODE SILICON	RU2AM-EIC	
⚠ D514	D2WXSB1400	DIODE SCHOTTKY	SB140-EIC	
D515	D1VT001330	DIODE,SILICON	1SS133T-77	
D516	D1VT001330	DIODE,SILICON	1SS133T-77	
⚠ D518	D2WTAU02A0	DIODE SILICON	AU02A-EIC	

REF. NO.	PART NO.	DESCRIPTION	
		DIODES	
D519	D2WXB290S0	DIODE SILICON	SB290S
D520	D1VT001330	DIODE,SILICON	1SS133T-77
D521	D1VT001330	DIODE,SILICON	1SS133T-77
D523	D1VT001330	DIODE,SILICON	1SS133T-77
D528	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D601	D1VT001330	DIODE,SILICON	1SS133T-77
D602	D97U08R21B	DIODE,ZENER	MTZJ8.2B T-77
D605	D2WT011E10	DIODE SILICON	11E1-EIC
D610	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D611	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D612	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D613	D1VT001330	DIODE,SILICON	1SS133T-77
D615	D1VT001330	DIODE,SILICON	1SS133T-77
D616	D1VT001330	DIODE,SILICON	1SS133T-77
D705	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D706	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D709	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D801	D1VT001330	DIODE,SILICON	1SS133T-77
D802	D1VT001330	DIODE,SILICON	1SS133T-77
D803	D1VT001330	DIODE,SILICON	1SS133T-77
D1501	D1VT001330	DIODE,SILICON	1SS133T-77
D1502	D1VT001330	DIODE,SILICON	1SS133T-77
		ICS	
IC101	I56F07072A	IC	OEC7072A
IC199	A3L519H015	IC	S-24C02BDP-1A
IC302	I06DF62420	IC	M62420SP
⚠ IC401	I03TD80410	IC	LA78041
IC402	I0QT98L050	IC	NJM78L05A(T3)
⚠ IC501	0002E00610	PHOTO COUPLER	LTV-817M-VB
IC601	I06FC61250	IC	M61250FP
IC702	I0QS02245L	IC	NJM2245L
IC901	I01FF58290	IC	AN5829S
⚠ IC1001	I03SP46000	IC	LA4600
IC1502	I0QF022830	IC	NJM2283M
		TRANSISTORS	
⚠ Q401	TDUU024990	TRANSISTOR SILICON	2SD2499(LB0EC1)
⚠ Q402	TCAT032070	TRANSISTOR SILICON	KTC3207-AT
Q403	TPATD03003	COMPOUND	KRA104MAT
Q404	TNATB03005	COMPOUND TRANSISTOR	KRC102MAT
Q405	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR or
	TC3T0536KG	TRANSISTOR,SILICON	2SC536KG-NP-AA
⚠ Q501	T220033260	FET	2SK3326(2)
Q502	TCAT032034	TRANSISTOR, SILICON	KTC3203_Y-AT
Q504	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q507	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q603	TCAT032034	TRANSISTOR, SILICON	KTC3203_Y-AT
Q604	TCAT032034	TRANSISTOR, SILICON	KTC3203_Y-AT
Q605	TCAT032034	TRANSISTOR, SILICON	KTC3203_Y-AT
Q606	TCAT032034	TRANSISTOR, SILICON	KTC3203_Y-AT
Q607	TPATD03003	COMPOUND	KRA104MAT
Q608	TCAT032034	TRANSISTOR, SILICON	KTC3203_Y-AT
Q609	TNATB03005	COMPOUND TRANSISTOR	KRC102MAT
Q701	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q702	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q705	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q706	TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
Q707	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q801	TCATC3199Y	TRANSISTOR SILICON	KTC3199_Y-AT
Q802	TCATC3199Y	TRANSISTOR SILICON	KTC3199_Y-AT
Q803	TCATC3199Y	TRANSISTOR SILICON	KTC3199_Y-AT
⚠ Q804	TCA0042170	TRANSISTOR SILICON	KTC4217(O,Y)
⚠ Q805	TCA0042170	TRANSISTOR SILICON	KTC4217(O,Y)
⚠ Q806	TCA0042170	TRANSISTOR SILICON	KTC4217(O,Y)
Q901	TALT007330	TRANSISTOR,SILICON	2SA733(C)-T(P,Q)
Q902	TALT007330	TRANSISTOR,SILICON	2SA733(C)-T(P,Q)
Q1001	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q1508	TNATB03005	COMPOUND TRANSISTOR	KRC102MAT
		COILS &TRANSFORMERS	
L101	021LA62R7K	COIL	2.7 UH
L401	022100027A	COIL,LINEARITY	ELH5L4113
L406	021U6D180K	COIL	18 UH
⚠ L501	029T000100	COIL,LINE FILTER	2R0A502F24Y
⚠ L503	028R270009	COIL,DEGAUSS	8R270009
L607	021LA6150K	COIL	15 UH
L801	021673101J	COIL	100 UH
T401	045013002J	TRANS,HORIZONTAL DRIVE	ETH14Y46AY
⚠ T501	048135075S	TRANSFORMER,SWITCHING	8135075S

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		JACKS	
J701	060J431019	RCA JACK	MSP-213V2-432 PBSN
J702	0602431013	RCA JACK	JPJ1187-010010
J705	063Q700002	JACK	YKF51-5503
J707	060J411018	RCA JACK	MSP-213V1-432 PBSN
J801	066F130020	SOCKET,CATHODE RAY,TUBE	ISHS53S
		SWITCHES	
SW101	0504201T31	SWITCH,TACT	SKHVBED010
SW102	0504201T31	SWITCH,TACT	SKHVBED010
SW103	0504201T31	SWITCH,TACT	SKHVBED010
SW104	0504201T31	SWITCH,TACT	SKHVBED010
SW105	0504201T31	SWITCH,TACT	SKHVBED010
		VARIABLE RESISTORS	
VR401	V1163H3BTC	VOLUME,SEMI FIXED	EVNCYAA03BE3
VR402	V1163Q2BTC	VOLUME,SEMI FIXED	EVNCYAA03BQ2
VR502	V116313BTC	VOLUME,SEMI FIXED	EVNCYAA03B13 or
	V116213BT1	VOLUME,SEMI FIXED	EVN-DCAA03B13
		P.C.BOARD ASSEMBLIES	
PCB010	A3L519G010K	PCB ASS'Y	TMA529A
PCB110	A3L504G110K	PCB ASS'Y	TCA338A
PCB250	A3L504G250K	PCB ASS'Y	TEAA90A
		MISCELLANEOUS	
B501	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B502	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B503	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B504	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B1002	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
⚠ CD501	1207415905	CORD AC BUSH	7415905
CD701	06CU243501	CORD CONNECTOR	CU243501
CD801	06CU823001	CORD CONNECTOR	CU823001
⚠ CD804	06CU344001	CORD CONNECTOR	SM1198-002-1B
CD807	06CH012102	CORD CONNECTOR	CH012102
CF601	1029045R7G	FILTER,SAW	TSF5229P3
CF603	1012T4R520	FILTER,CERAMIC	SFSRA4M50CF00-A0
CF604	1012T4R519	FILTER,CERAMIC TRAP	TPSRA4M50C00-A0
⚠ CP401	069S340010	CONNECTOR PCB SIDE	A2361WV2-4P
⚠ CP502	069S420110	CONNECTOR PCB SIDE	A1561WV2-2P
CP601	0697270650	CONNECTOR PCB SIDE	TKC-M07X-A1
CP801	069S320010	CONNECTOR PCB SIDE	A2361WV2-2P
CP806	069W010010	CONNECTOR PCB SIDE	005P-2100
CP1001	069S140419	CONNECTOR PCB SIDE	A2502WV2-4P
CP701A	067U004029	WIRE HOLDER	B2013H02-4P
CP701B	069S240629	CONNECTOR PCB SIDE	A2001WV2-4P
CP802A	067U010049	WIRE HOLDER	B2013H02-10P
CP802B	067U010049	WIRE HOLDER	B2013H02-10P
CUS012	800WFAA008	CUSHION C	
EL001	124116281A	EYE LET	XRY16X28BD
EL002	124120301A	EYE LET	XRY20X30BD
⚠ F501	081PC6R305	FUSE	51MS063L
⚠ FB401	043225010F	TRANSFORMER,FLYBACK	3225010F
FH501	06710T0006	HOLDER,FUSE	EYF-52BC
FH502	06710T0006	HOLDER,FUSE	EYF-52BC
OS101	077Q037003	REMOTE RECEIVER	PIC-37143SY
⚠ RY501	0560V20115	RELAY	ALKS321
S101	WHL6042038	FLAT CABLE AWM2468	AWG26 10C BLACK 420MM
⚠ SP1001	070Y435001	SPEAKER	S0509F12
TH501	DF5EL3R0A0	DEGAUSS ELEMENT	ZPB45BL3R0A
TM101	076N0DW040	TRANSMITTER	RC-DW040
⚠ TU001	0145100059	TUNER,VHF-UHF	ENV56DB6G3
⚠ V801	0984270706	CRT W/DY	A68ADT25X01
X602	100CT3R505	CRYSTAL	HC-49/C

RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR
CE..... ALUMI ELECTROLYTIC CAPACITOR
CP..... POLYESTER CAPACITOR
CPP..... POLYPROPYLENE CAPACITOR
CPL..... PLASTIC CAPACITOR
CMP..... METAL POLYESTER CAPACITOR
CMPL..... METAL PLASTIC CAPACITOR
CMPP..... METAL POLYPROPYLENE CAPACITOR

SPEC.NO.	M3L5-19G
O/R NO.	A243512