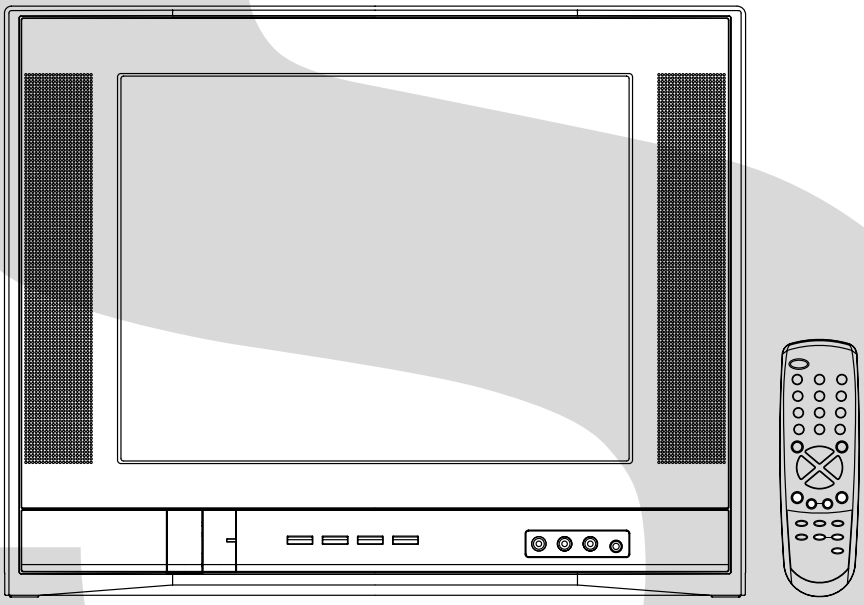
TOSHIBA

FILE NO. 050-200508
(MFR'S VERSION A)

SERVICE MANUAL

COLOR TELEVISION

14AF45
14AF45C



DOCUMENT CREATED IN JAPAN, February, 2005

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
Headphone 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.

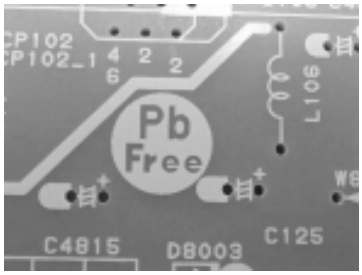
IMPORTANT

When you exchange IC and Transistor with a heat sink, apply silicon grease on the contact section of the heat sink. Befor applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)

ABOUT LEAD FREE SOLDER (PbF)

Distinction of PbF PCB:

PCBs (manufactured) using lead free solder will have a PbF printing on the PCB.
(Please refer to figures.)



Caution:

- Pb free solder has a higher melting point than standard solder;
  Typically the melting point is 50°F~70°F(30°C~40°C) higher.
  Please use a soldering iron with temperature control and adjust it to 650°F ± 20°F (350°C ± 10°C).
  In case of using high temperature soldering iron, please be carefull not to heat too long.
- Pb free solder will tend to splash when heated too high (about 1100°F/ 600°C).
- All products with the printed circuit board with PbF printing must be serviced with lead free solder.
  When soldering or unsoldering, completely remove all of the solder from the pins or solder area,
  and be sure to heat the soldering points with the lead free solder until it melts sufficiently.

Recommendations

Recommended lead free solder composition is Sn-3.0Ag-0.5Cu.

TABLE OF CONTENTS

GENERAL SPECIFICATIONS

G-1	**TV System**	CRT	CRT Size / Visual Size	14 inch / 357mmV
			CRT Type	Flat
			Magnetic Field BV/BH	+0.45G/0.18G
		Color System		NTSC
		Speaker		2 Speaker
			Position	Front Side
			Size	1.6 x 2.8 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	System	1Tuner
		Receive CH	Destination	USA(W/ CATV)
			CH Coverage	2 - 69, 4A, A-5 - A-1, A - I, J - W, W+1 - W+84
		Intermediate	Picture(FP)	45.75MHz
		Frequency	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	
				80 W at AC 120 V 60 Hz
			Stand by (at AC)	3 W at AC 120 V 60 Hz
			Per Year	-- kWh/Year
		Protector	Power Fuse	Yes
			Safety Circuit	Yes
			IC Protector(Micro Fuse)	No
G-4	**Regulation**		Safety	UL
			Radiation	FCC
			X-Radiation	DHHS
G-5	**Temperature**		Operation	+5oC ~ +40oC
			Storage	-20oC ~ +60oC
G-6	**Operating Humidity**			Less than 80% RH

GENERAL SPECIFICATIONS

G-7	**On Screen Display**	Menu			Yes
			Menu Type		Icon
			Picture		Yes
				Contrast	Yes
				Brightness	Yes
				Color	Yes
				Tint	Yes
				Sharpness	Yes
			Audio		Yes
				Bass	Yes
				Treble	Yes
				Balance	Yes
				Stable Sound On/Off	Yes
				Surround On/Off	Yes
			Set Up		Yes
				TV/CATV	Yes
				Auto CH Memory	Yes
				Add/ Delete	Yes
			Option		Yes
				Language	Yes
				CH Label	Yes
				Favorite CH	Yes
				V-Chip	Yes
				Lock	Yes
				On/Off Timer	Yes
				Color Stream DVD/DTV	Yes
			Control Level		Yes
				Volume	Yes
				Brightness	Yes
				Contrast	Yes
				Color	Yes
				Tint	Yes
				Sharpness	Yes
				Tuning	No
				Bass	Yes
				Treble	Yes
				Balance	Yes
				Back Light	No
			Stereo,Audio Output,SAP		Yes
			Video		Yes
			Color Stream		Yes
			Channel(TV/Cable)		Yes
			CH Label		Yes
			Game Timer		Yes
			Sleep Timer		Yes
			Sound Mute		Yes
			V-chip Rating		Yes
			16: 9		Yes
G-8	**OSD Language**				English French Spanish
G-9	**Clock and Timer**	Sleep Timer		Max Time	120 Min
				Step	10 Min
		On/Off Timer		Program(On Timer / Off Timer / Clock)	Yes
		Wake Up Timer			No
		Timer Back-up (at Power Off Mode)		more than	-- Min Sec

GENERAL SPECIFICATIONS

G-10	**Remote Control**	Unit		RC-GQ
		Glow in Dark Remocon		Yes
		Format		Toshiba
		Remocon Format		Toshiba
		Custom Code		TV:40-BF h
		Power Source	Voltage(D.C)	3V
			UM size x pcs	UM-4 x 2 pcs
		Total Keys		30 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	Yes
			CH Up	Yes
			CH Down	Yes
			Volume Up	Yes
			Volume Down	Yes
			Cap/Text(TV/Caption/Text)	Yes
			1/2(CH1/CH2)	Yes
			TV/Video(TV/AV)	Yes
			CH RTN(Quick View)	Yes
			Sleep	Yes
			RECall(Call)	Yes
			Reset	Yes
			Menu/Enter	Yes
			Mute	Yes
			Exit	Yes
			MTS(Audio Select)	Yes
			Fav.Up	Yes
			Fav.Down	Yes
			16: 9	Yes
		Multi Brand Keys	CH Up(VCR)	No
			CH Down(VCR)	No
			Pause/Still	No
			TV/VCR(VCR)	No
			FF	No
			Rew	No
			Rec	No
			Play	No
			Stop	No
			TV	No
			VCR	No
			Cable	No
			DVD	No
			CODE	No
			DVD MENU <	No
			DVD MENU >	No
			DVD CLEAR	No
			TOP MENU	No
			DVD MENU	No

GENERAL SPECIFICATIONS

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,Toshiba Type
		BBE		No
		Auto Search		No
		CH Allocation		No
		SAP		Yes
		Just Clock Function		No
		CH Label		Yes
		VM Circuit		No
		Full OSD		No
		Premiere		No
		Comb Filter		Yes 2 Lines
		Auto CH Memory		Yes
		Hotel Lock		No
		Closed Caption		Yes
		Stable Sound		Yes
		FBT Leak Test Protect		Yes
		CH Lock		Yes
		Video Lock		Yes
		Game Timer (Max Time:120 Min)		Yes
		Energy Star		No
		Favorite CH		Yes
		Surround		Yes
		16:9 Mode		Yes
G-12	**Accessories**	Owner's Manual	Language	English/Spanish
			W/ Warranty	Yes
		Remote Control Unit		Yes
		Rod Antenna		No
			Poles	
			Terminal	
		Loop Antenna		No
			Terminal	-
		U/V Mixer		No
		DC Car Cord (Center+)		No
		Guarantee Card		No
		Warning Sheet		No
		Circuit Diagram		No
		Antenna Change Plug		No
		Service Station List		No
		Important Safety Instructions		No
		Dew/AHC Caution Sheet		No
		AC Plug Adapter		No
		Quick Set-up Sheet		No
		Battery		Yes
			UM size x pcs	UM-4 x 2
			OEM Brand	No
		AC Cord		No
		AV Cord (2Pin-1Pin)		No
		Registration Card (NDL Card)		Yes
		PTB Sheet		No
		ESP Card		No
		300 ohm to 75 ohm Antenna Adapter		No

GENERAL SPECIFICATIONS

G-13	**Interface**	Switch	Front	Power	Yes
				System Select	No
				Main Power SW	No
				Sub Power	No
				Channel Up	Yes
				Channel Down	Yes
				Volume Up	Yes
				Volume Down	Yes
			Rear	AC/DC	No
				TV/CATV Selector	No
				Degauss	No
				Main Power SW	No
		Indicator		Power	Yes(RED)
				Stand-by	No
				On Timer	No
		Terminals	Front	Video Input = VIDEO2	RCA
				Audio Input = VIDEO2	RCA x 2
				Other Terminal	Head Phone
			Rear	Video Input(Rear1) = VIDEO1	RCA
				Video Input(Rear2) = VIDEO2	No
				Audio Input(Rear1) = VIDEO1	RCA x 2
				Audio Input(Rear2) = VIDEO2	No
				Video Output	No
				Audio Output	No
				Euro Scart	No
				Color Stream	RCA x 3
				S Input	Yes
				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)	432 x 386 x 344.5
G-15	**Weight**			Net (Approx.)	11.0kg (24.3 lbs)
				Gross (Approx.)	13.0 kg (28.7 lbs)
G-16	**Carton**		Master Carton		No
				Content	---- Sets
				Material	-- /--
				Dimensions W x D x H(mm)	-- x -- x --
				Description of Origin	--
			Gift Box	Material	Double/Brown
				Dimensions W x D x H(mm)	540 x 460 x 465
				Description of Origin	Yes
			Drop Test		Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces
				Height (cm)	62
			Container Stuffing		550 Sets/40' container
G-17	**Cabinet Material**		Cabinet	Cabinet Front	PS 94V0 DECABROM
				Cabinet Rear	PS 94V0 DECABROM
			PCB	Non-Halogen Demand	No
				Eyelet Demand	Yes
G-18	**Environment**		Pb-free Soldering		Yes
			Parts Specification(Phase3 : based on RoHS)		Yes

GENERAL SPECIFICATIONS

G-1	**TV System**	CRT	CRT Size / Visual Size	14 inch / 357mmV
			CRT Type	Flat
			Magnetic Field BV/BH	+0.45G/0.18G
		Color System		NTSC
		Speaker		2 Speaker
			Position	Front Side
			Size	1.6 x 2.8 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	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	
				80 W at AC 120 V 60 Hz
			Stand by (at AC)	3 W at AC 120 V 60 Hz
			Per Year	-- kWh/Year
		Protector	Power Fuse	Yes
			Safety Circuit	Yes
			IC Protector(Micro Fuse)	No
G-4	**Regulation**		Safety	CSA
			Radiation	IC
			X-Radiation	HWC
G-5	**Temperature**		Operation	+5oC ~ +40oC
			Storage	-20oC ~ +60oC
G-6	**Operating Humidity**			Less than 80% RH

GENERAL SPECIFICATIONS

G-7	**On Screen Display**	Menu			Yes
			Menu Type		Icon
			Picture		Yes
				Contrast	Yes
				Brightness	Yes
				Color	Yes
				Tint	Yes
				Sharpness	Yes
			Audio		Yes
				Bass	Yes
				Treble	Yes
				Balance	Yes
				Stable Sound On/Off	Yes
				Surround On/Off	Yes
			Set Up		Yes
				TV/CATV	Yes
				Auto CH Memory	Yes
				Add/ Delete	Yes
			Option		Yes
				Language	Yes
				CH Label	Yes
				Favorite CH	Yes
				V-Chip	No
				Lock	Yes
				On/Off Timer	Yes
				Color Stream DVD/DTV	Yes
			Control Level		Yes
				Volume	Yes
				Brightness	Yes
				Contrast	Yes
				Color	Yes
				Tint	Yes
				Sharpness	Yes
				Tuning	No
				Bass	Yes
				Treble	Yes
				Balance	Yes
				Back Light	No
			Stereo,Audio Output,SAP		Yes
			Video		Yes
			Color Stream		Yes
			Channel(TV/Cable)		Yes
			CH Label		Yes
			Game Timer		Yes
			Sleep Timer		Yes
			Sound Mute		Yes
			V-chip Rating		No
			16: 9		Yes
G-8	**OSD Language**				English French Spanish
G-9	**Clock and Timer**	Sleep Timer		Max Time	120 Min
				Step	10 Min
		On/Off Timer		Program(On Timer / Off Timer / Clock)	Yes
		Wake Up Timer			No
		Timer Back-up (at Power Off Mode)		more than	-- Min Sec

GENERAL SPECIFICATIONS

G-10	**Remote Control**	Unit		RC-GQ
		Glow in Dark Remocon		Yes
		Format		Toshiba
		Remocon Format		Toshiba
		Custom Code		TV:40-BF h
		Power Source	Voltage(D.C)	3V
			UM size x pcs	UM-4 x 2 pcs
		Total Keys		30 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	Yes
			CH Up	Yes
			CH Down	Yes
			Volume Up	Yes
			Volume Down	Yes
			Cap/Text(TV/Caption/Text)	Yes
			1/2(CH1/CH2)	Yes
			TV/Video(TV/AV)	Yes
			CH RTN(Quick View)	Yes
			Sleep	Yes
			RECall(Call)	Yes
			Reset	Yes
			Menu/Enter	Yes
			Mute	Yes
			Exit	Yes
			MTS(Audio Select)	Yes
			Fav.Up	Yes
			Fav.Down	Yes
			16: 9	Yes
		Multi Brand Keys	CH Up(VCR)	No
			CH Down(VCR)	No
			Pause/Still	No
			TV/VCR(VCR)	No
			FF	No
			Rew	No
			Rec	No
			Play	No
			Stop	No
			TV	No
			VCR	No
			Cable	No
			DVD	No
			CODE	No
			DVD MENU <	No
			DVD MENU >	No
			DVD CLEAR	No
			TOP MENU	No
			DVD MENU	No

GENERAL SPECIFICATIONS

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		No
			Type	
		BBE		No
		Auto Search		No
		CH Allocation		No
		SAP		Yes
		Just Clock Function		No
		CH Label		Yes
		VM Circuit		No
		Full OSD		No
		Premiere		No
		Comb Filter		Yes 2 Lines
		Auto CH Memory		Yes
		Hotel Lock		No
		Closed Caption		Yes
		Stable Sound		Yes
		FBT Leak Test Protect		Yes
		CH Lock		Yes
		Video Lock		Yes
		Game Timer (Max Time:120 Min)		Yes
		Energy Star		No
		Favorite CH		Yes
		Surround		Yes
		16:9 Mode		Yes
G-12	**Accessories**	Owner's Manual	Language	English / French
			W/ Warranty	Yes
		Remote Control Unit		Yes
		Rod Antenna		No
			Poles	
			Terminal	
		Loop Antenna		No
			Terminal	-
		U/V Mixer		No
		DC Car Cord (Center+)		No
		Guarantee Card		No
		Warning Sheet		No
		Circuit Diagram		No
		Antenna Change Plug		No
		Service Station List		No
		Important Safety Instructions		No
		Dew/AHC Caution Sheet		No
		AC Plug Adapter		No
		Quick Set-up Sheet		No
		Battery		Yes
			UM size x pcs	UM-4 x 2
			OEM Brand	No
		AC Cord		No
		AV Cord (2Pin-1Pin)		No
		Registration Card (NDL Card)		No
		PTB Sheet		No
		ESP Card		No
		300 ohm to 75 ohm Antenna Adapter		No

GENERAL SPECIFICATIONS

G-13	**Interface**	Switch	Front	Power	Yes
				System Select	No
				Main Power SW	No
				Sub Power	No
				Channel Up	Yes
				Channel Down	Yes
				Volume Up	Yes
				Volume Down	Yes
			Rear	AC/DC	No
				TV/CATV Selector	No
				Degauss	No
				Main Power SW	No
		Indicator		Power	Yes(RED)
				Stand-by	No
				On Timer	No
		Terminals	Front	Video Input = VIDEO2	RCA
				Audio Input = VIDEO2	RCA x 2
				Other Terminal	Head Phone
			Rear	Video Input(Rear1) = VIDEO1	RCA
				Video Input(Rear2) = VIDEO2	No
				Audio Input(Rear1) = VIDEO1	RCA x 2
				Audio Input(Rear2) = VIDEO2	No
				Video Output	No
				Audio Output	No
				Euro Scart	No
				Color Stream	RCA x 3
				S Input	Yes
				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)	432 x 386 x 344.5
G-15	**Weight**			Net (Approx.)	11.0kg (24.3 lbs)
				Gross (Approx.)	13.0 kg (28.7 lbs)
G-16	**Carton**		Master Carton		No
				Content	---- Sets
				Material	-- /--
				Dimensions W x D x H(mm)	-- x -- x --
				Description of Origin	--
			Gift Box	Material	Double/Brown
				Dimensions W x D x H(mm)	540 x 460 x 465
				Description of Origin	Yes
			Drop Test		Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces
				Height (cm)	62
			Container Stuffing		550 Sets/40' container
G-17	**Cabinet Material**		Cabinet	Cabinet Front	PS 94V0 DECABROM
				Cabinet Rear	PS 94V0 DECABROM
			PCB	Non-Halogen Demand	No
				Eyelet Demand	Yes
G-18	**Environment**		Pb-free Soldering		Yes
			Parts Specification(Phase3 : based on RoHS)		Yes

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.

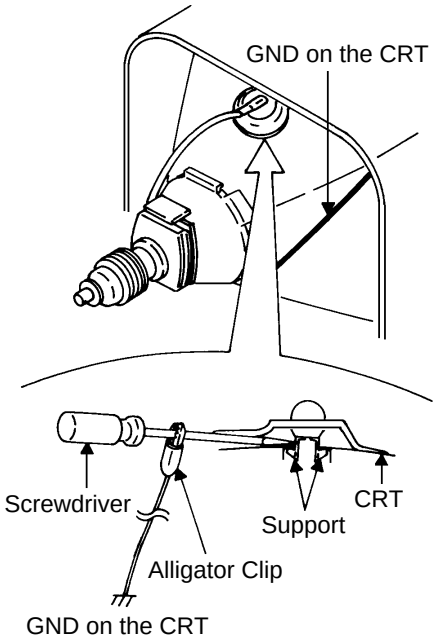


Fig. 1-1

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.)**

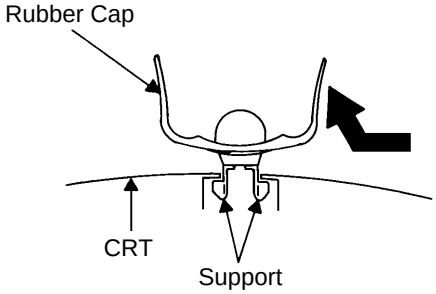


Fig. 1-2

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.)**

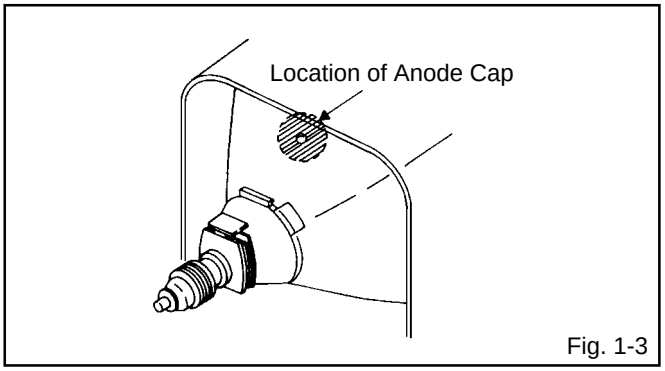


Fig. 1-3

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.)**

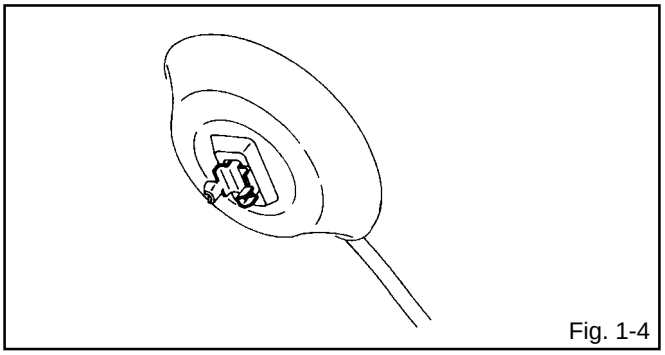


Fig. 1-4

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

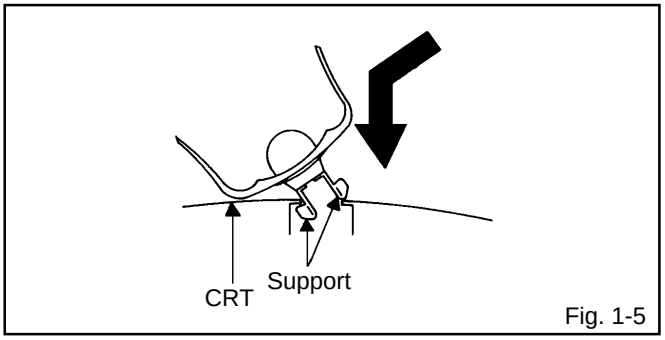


Fig. 1-5

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.

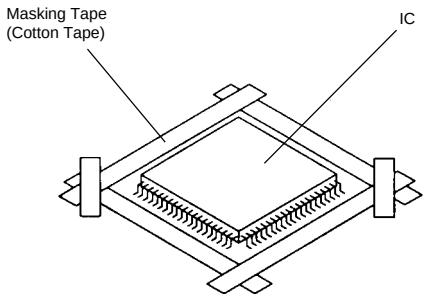


Fig. 2-1

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.

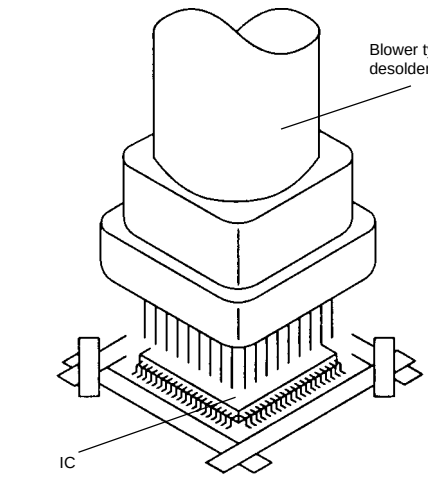


Fig. 2-2

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.

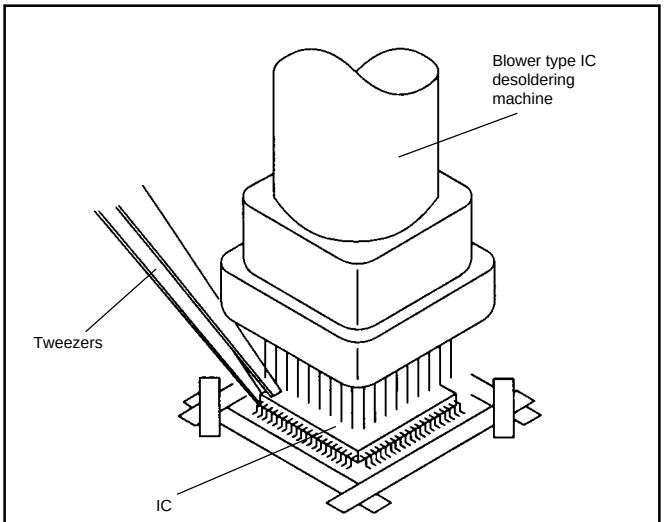


Fig. 2-3

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.

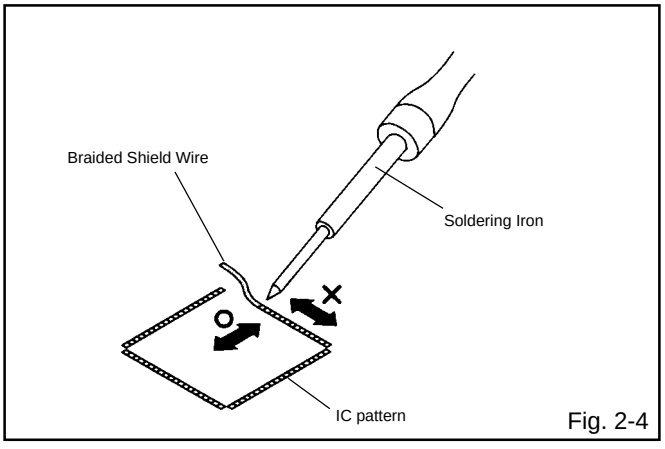


Fig. 2-4

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.)**

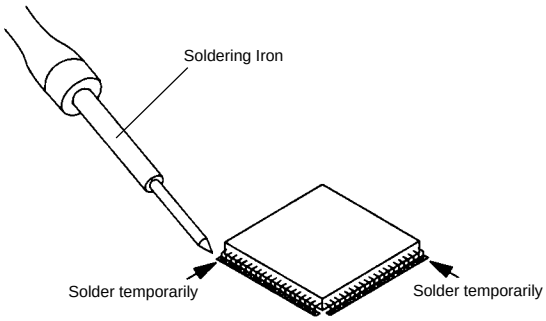


Fig. 2-5

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.)**

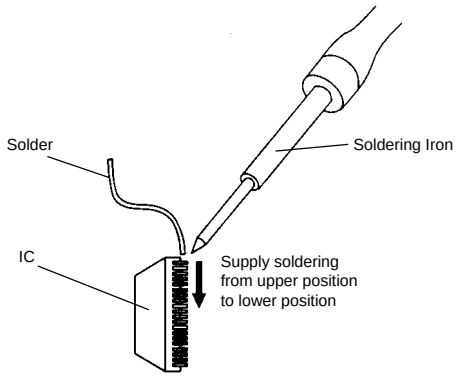


Fig. 2-6

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.

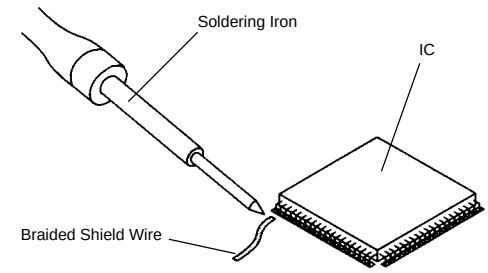


Fig. 2-7

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.)**

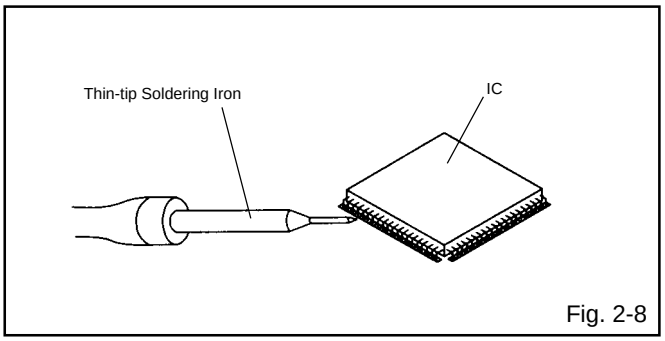


Fig. 2-8

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, always be 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.

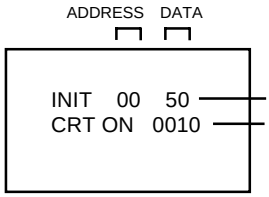
Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	Initialization of factory data. NOTE: Do not use this for normal servicing. If you set factory initialization, the memories are reset such as the channel setting, and the POWER ON total hours.
VOL. (-) MIN	6	POWER 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 a 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.



Initial setting content of MEMORY IC.
POWER ON total hours.
= (16 x 16 x 16 x thousands digit value)
+ (16 x 16 x hundreds digit value)
+ (16 x tens digit value)
+ (ones digit value)

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.

NOTE: No need to set data after position INI 1F due to the adjustment value.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	50	E8	0A	45	5E	B3	24	B5	*1	AC	0B	04	40	40	40	7F
10	50	00	00	00	01	00	00	00	28	0F	0D	E2	A6	88	42	00

*1

INI	USA	CANADA
08	39	38

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 2 seconds. ADDRESS and DATA should appear as FIG 1.
3. ADDRESS is now selected and should "blink". Using the VOL. UP/DOWN 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. UP/DOWN 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. Press both VOL. DOWN button on the set and Channel button **(1)** on the remote control for more than 2 seconds.
11. After the finishing of the initializing of shipping, the unit will turn off automatically.

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

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 on the contact section of the heat sink. Befor 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**.

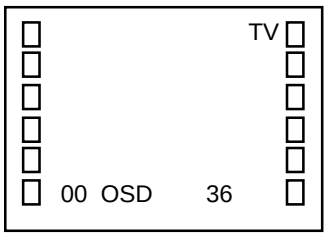


Fig. 1-1

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	19	CONTRAST CENT
01	CUT OFF	20	CONTRAST MIN
02	H. VCO	21	COLOR MAX
03	H. PHASE	22	COLOR CENTER
04	AFC GAIN	23	COLOR MIN
05	V. SHIFT	24	TINT
06	H. SIZE	25	SHARPNESS
07	V. SIZE	26	Cb DELAY FINE
08	V. LINERITY	27	Cr DELAY FINE
09	VS CORRECTION	28	Cb PEDESTAL ADJ
10	R DRIVE	29	Cr PEDESTAL ADJ
11	B DRIVE	30	PARABOLA
12	R CUT OFF	31	CORNER
13	G CUT OFF	32	TRAPWZIUM
14	B CUT OFF	33	LEVEL
15	BRIGHT MAX	34	SEPARATION1
16	BRIGHT CENT	35	SEPARATION2
17	BRIGHT MIN	88	READ DATA
18	CONTRAST MAX		

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 **TP003**.
3. Adjust the **VR502** until the digital voltmeter is 115 ± 1.0V.

2-2: CUT OFF

1. Place the set in Aging Test for more than 15 minutes.
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 **(01)** on the remote control to select “CUT OFF”.
4. 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 10 minutes.
2. Receive the gray scale pattern from the Pattern Generator.
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 **(12)** on the remote control to select “R CUT OFF”.
5. Press the CH. UP/DOWN button on the remote control to select the “R. BIAS”, “G. BIAS”, “B. BIAS”, “B. DRIVE” or “R. DRIVE”.
6. Adjust the VOL. UP/DOWN button on the remote control to whiten the R. BIAS, G. BIAS, B. BIAS, B. DRIVE and R. DRIVE at each step tone sections equally.
7. Perform the above adjustments 5 and 6 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: HORIZONTAL POSITION

1. Receive the center cross signal from the Pattern Generator.
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 **(03)** 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.

ELECTRICAL ADJUSTMENTS

2-6: 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)**

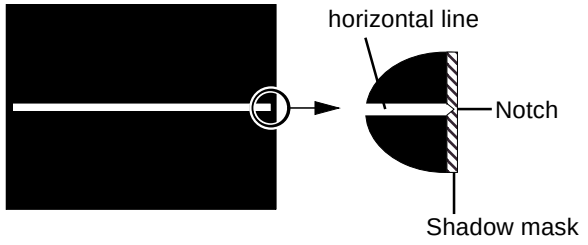


Fig. 2-1

2-7: 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 **(07)** 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 ± 2%.

2-8: VERTICAL LINEARITY

NOTE: Adjust after performing adjustments in section 2-7. 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. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(08)** on the remote control to select “V. LIN”.
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.

2-9: LEVEL

1. Connect the AC voltmeter to **pin 6 of CP101**.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(33)** on the remote control to select “LEVEL”.
3. Press the VOL. UP/DOWN button on the remote control until the AC voltmeter is 75 ± 2mV.

2-10: 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 **Audio Out Jack**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(34)** 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 **Audio Out Jack (R-ch)**.
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 **(34)** 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 **Audio Out Jack (L-ch)**.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(35)** 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 25db for both L and R.

2-11: 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)**

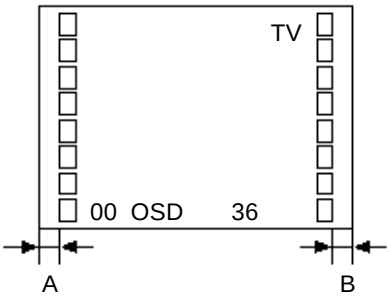


Fig. 2-2

ELECTRICAL ADJUSTMENTS

2-12: 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 **(16)** on the remote control to select “BRI CENT”.
4. Press the VOL. UP/DOWN button on the remote control until the white 0% 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.
7. Press the TV/VIDEO button on the remote control to set to the CS mode.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(16)** on the remote control to select “BRI CENT”.
9. Press the VOL. UP/DOWN button on the remote control until the costrast step No. becomes “77”.

2-13: TINT/COLOR CENT

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 **(24)** 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. 2-3)**
5. Connect the oscilloscope to **TP023**.
6. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(22)** 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 115 ± 10% of the white level. **(Refer to Fig. 2-4)**
8. Receive the color bar pattern. (Audio Video Input)
9. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2~7.
10. Press the TV/VIDEO button on the remote control to set to the CS mode.
11. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(24)** on the remote control to select "TINT".
12. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes “55”.
13. Press the CH DOWN button 2times to set to “COL.CENT” mode.
14. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes “62”.
15. Receive a broadcast and check if the picture is normal.

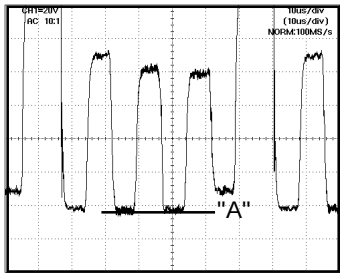


Fig. 2-3

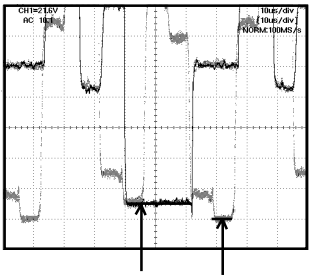


Fig. 2-4

2-14: CONTRAST MAX

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(18)** on the remote control to select “CONT. MAX”.
2. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes “64”.
3. Receive a broadcast and check if the picture is normal.
4. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments.
5. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(18)** on the remote control to select “CONT. MAX”.
6. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes “86”.
7. Press the TV/VIDEO button on the remote control to set to the CS mode.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(18)** on the remote control to select “CONT. MAX”.
9. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes “90”.

ELECTRICAL ADJUSTMENTS

2-15: 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	CS
02	H.VCO	03	03	03
04	AFC GAIN	04	04	04
05	V.SHIFT	03	03	03
06	H.SIZE	00	00	00
09	VS.CORRECTION	42	42	42
15	BRI.MAX	125	125	125
17	BRI.MIN	50	50	50
19	CONT.CENT	50	50	50
20	CONT.MIN	18	18	18
21	COL.MAX	90	90	90
23	COL.MIN	00	00	00
25	SHARPNESS	40	40	40
26	CB DL	00	00	00
27	CR DL	00	00	00
30	PARABOLA	31	31	31
31	CORNER	31	31	31
32	TRAPWZIUM	31	31	31

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.

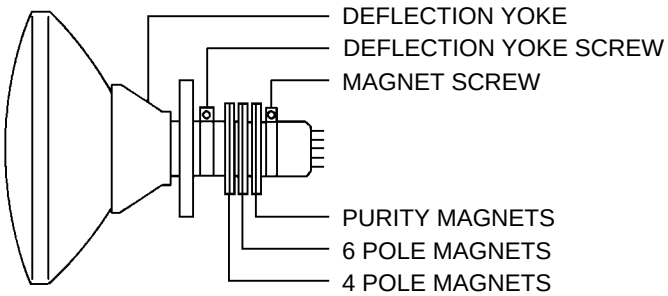


Fig. 3-1

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)**

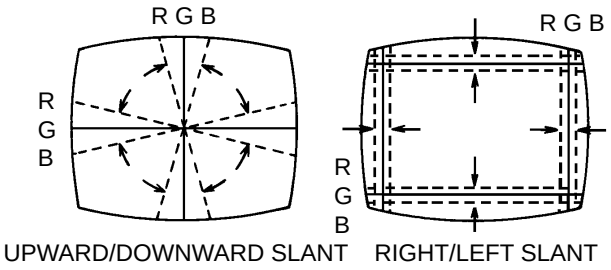


Fig. 3-2-a

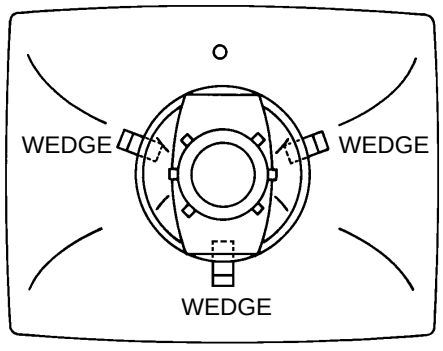
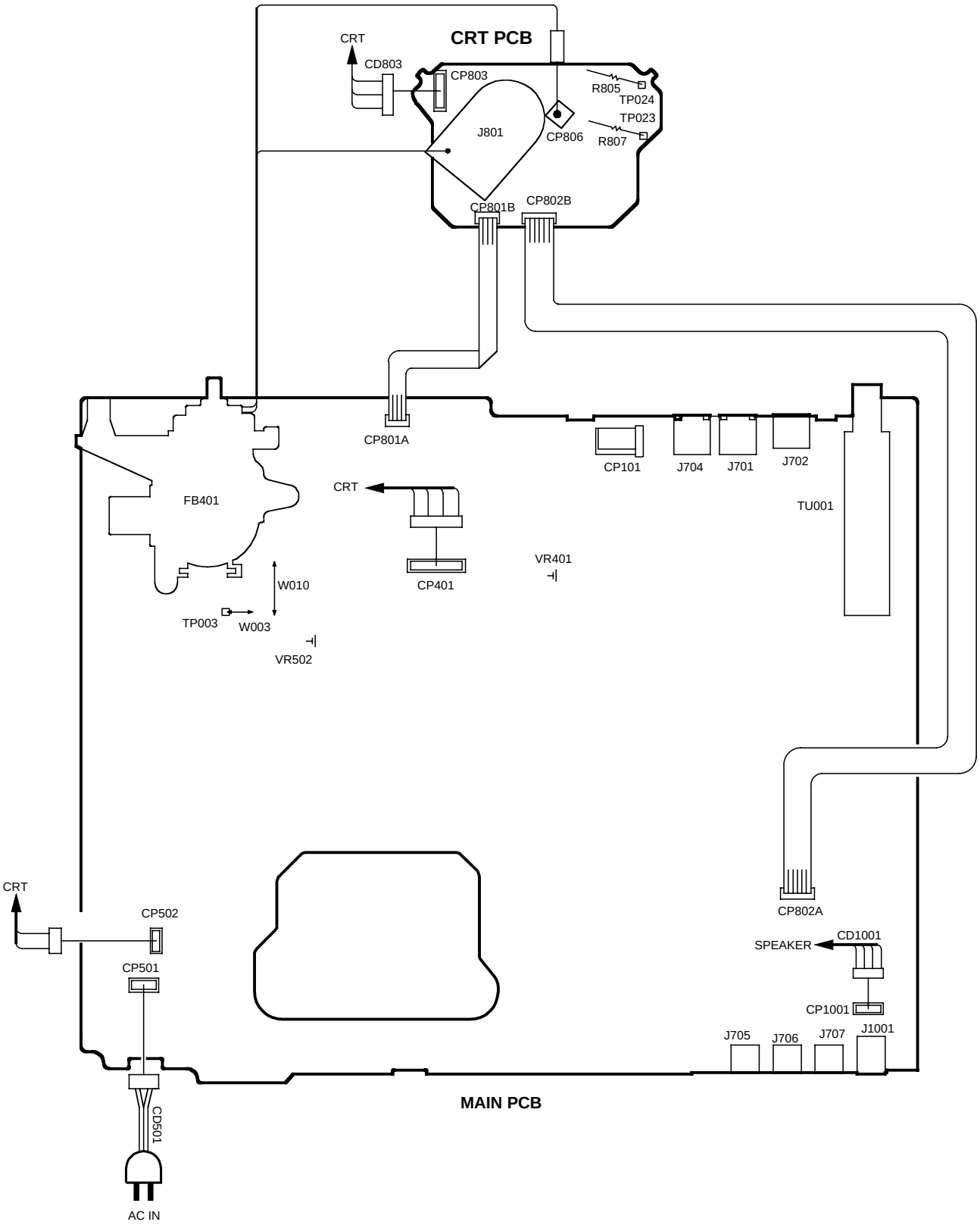


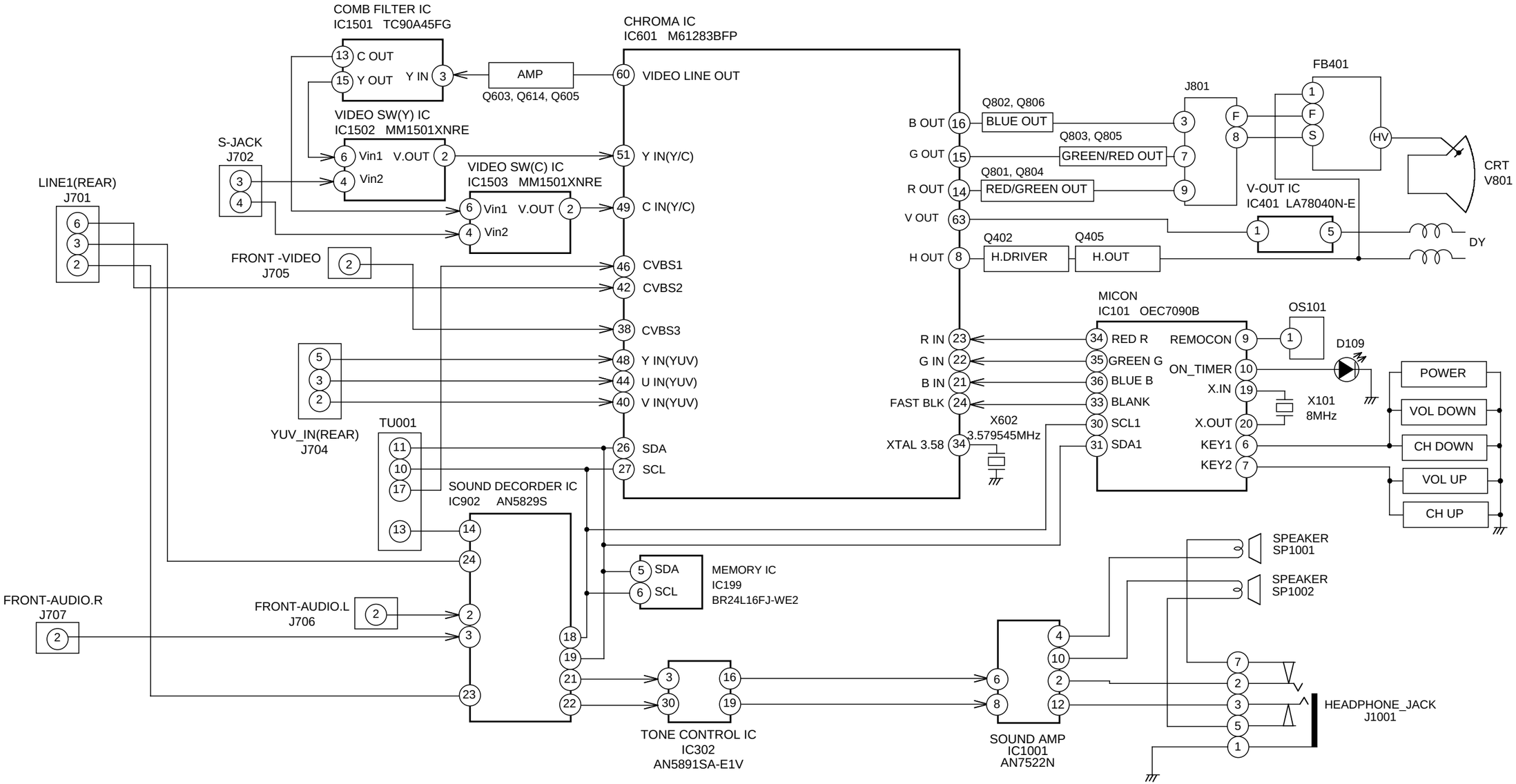
Fig. 3-2-b

ELECTRICAL ADJUSTMENTS

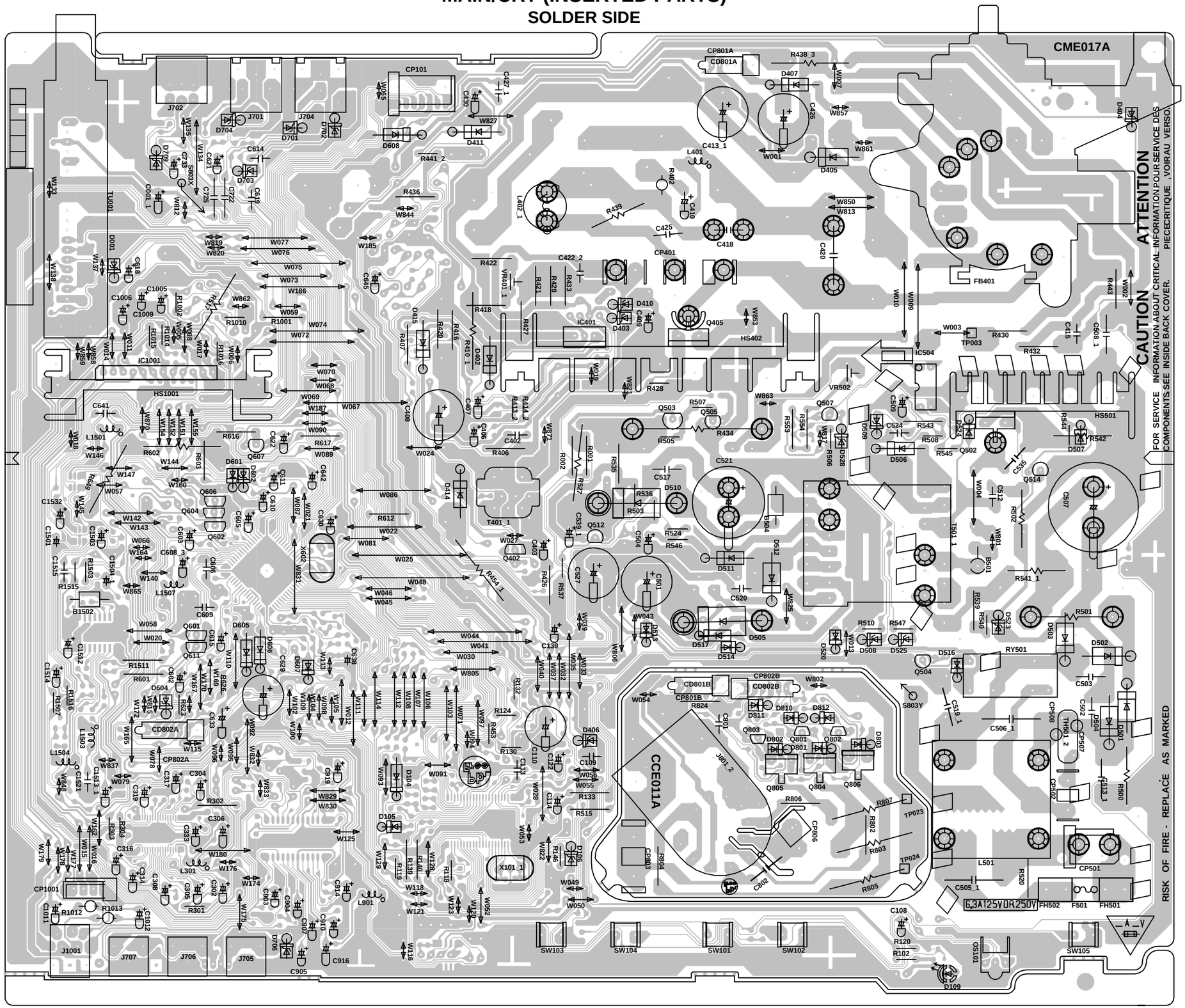
4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)



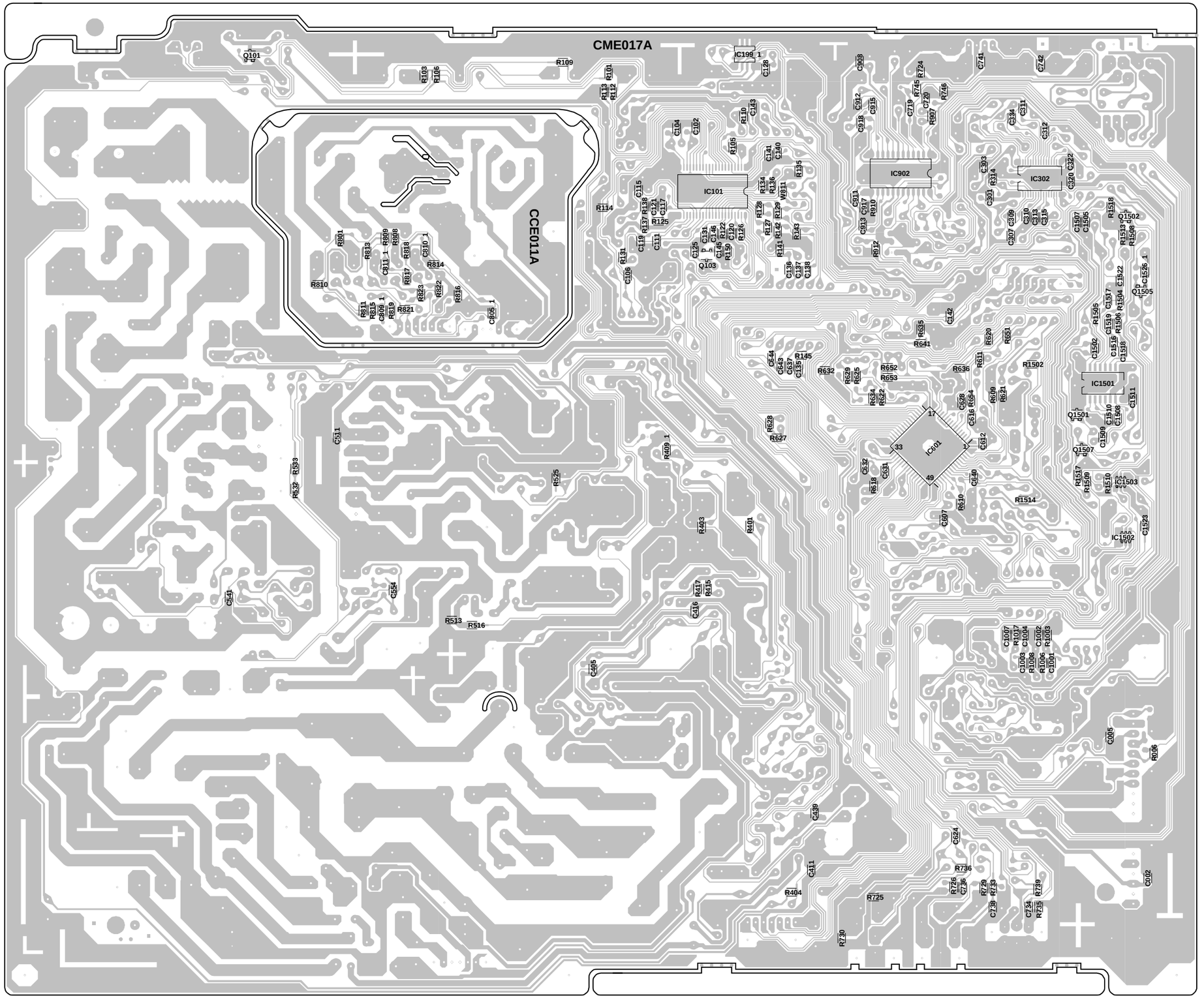
BLOCK DIAGRAM



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



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



MICON SCHEMATIC DIAGRAM
(MAIN PCB)

ACCESSORY
BT001 GR03X-SP2
BT002 GR03X-SP2
TM101 RC-GQ020

POWER ON D109 SLR-342VC/T32
LED SW Q101 KTC3875S_Y_RTK
R102 47K 270 1/4W
R109 1K
R120 47K 1/4W
OS101 RPM7138-WH5 (B+ 5.0, GND 0, Vout 4.9)
C108 47uF 10 KA 25V

R101 560
R103 2.7K
R106 560
CH UP SW101 EVQ21505R
VOL UP SW102 EVQ21505R
CH DOWN SW103 EVQ21505R
VOL DOWN SW104 EVQ21505R
POWER SW105 EVQ21505R

MICON IC
IC101 OEC7090B

1	AUDIO MUTE	5.0	
2	EXT MUTE	4.0	
3	VOLUME	0	
4	BBE SW	0	
5	AFT	3.2	
6	KEY 1	5.0	
7	KEY 2	5.0	
8	X RAY	2.2	
9	REMOCON	5.0	
10	ON_TIMER	0	
11	S_IN	0	
12	Y/C_SW	0	
13	AUDIO_SW	5.0	
14	NC	0 NC	
15	P FAIL	3.5	
16	DEGAUSS H	5.0	
17	X-RAY TEST	3.2 NC	
18	CNVSS	0	
19	X.IN	2.3	
20	X.OUT	1.7	
21	VSS	0	
22	H_CTL	0	
23	PROTEC	0	
24	12C_OFF	5.0	
25	SYNC	2.1	
26	H SYNC	4.0	
27	V SYNC	4.8	
28	BLUE B	0	
29	GREEN G	0	
30	RED R	0	
31	BLANK	0	
32	CLOCK_CNT	5.0 NC	
33	SDA1	5.0	
34	SCL1	5.0	
35	POWER	5.0	
36	MCU_CLOCK	5.0	
37	RESET	5.0	
38	CVIN	2.4	
39	VHOLD	2.0	
40	HLF	2.0	
41	FILT	1.0	
42	VCC	5.0	

R146 100 1/4W
R124 1K 1/4W
R130 47K 1/4W
C145 220P CH
C125 0.001 B
R150 1K
R122 1K
CLAMP SW Q103 KTC3875S_Y_RTK
C120 0.001 B
R126 100
C146 33P CH
C142 220P CH
C143 220P CH
R118 2.2K 1/4W
R110 10K
R112 2.2K
R113 2.2K
R114 47K
R119 22K 1/4W
C140 220P CH
C141 220P CH
C139 47uF 10 KA 25V
C106 0.1 B
D106 MTZJ5.1B
C102 27P CH
C104 27P CH
X101_1 100CT8R005 8MHz
C109 0.1 B
C110 2200uF YK 6.3V
R137 10K
C114 0.47uF KA 50V
C115 820P CH
C113 0.1 B
C111 0.001 B
R131 1K
C119 220P CH
C122 1uF 50V KA
R125 10
C117 47P CH
C121 0.01 B
R132 100 1/4W
R138 1M
R133 1K 1/4W
C128 0.1 F
W822
C136 0.1 B
C137 0.1 B
C138 0.1 B
D104 1SS133
D105 1SS133
W811
C131 150P CH
R127 6.8K
R128 6.8K
R129 6.8K
R141 1.5K
R142 1.5K
R143 1.5K
R145 2.2K
C135 10P CH
R135 4.7K
R136 4.7K
R139 100 1/4W
R140 100 1/4W
R134 10K

MEMORY IC IC102 BR24L16FJ-WE2

5	SDA	5.0	
6	SCL	5.0	
7	MODE	0	
8	VCC	5.0	
4	VSS	0	
3	E2	0	
2	E1	0	
1	E0	0	

TEST POINT
CP101 173979-7

GND	1
I2C_SCL	2
I2C_SDA	3
I2C_OFF	4
GND	5
AUDIO L	6
AUDIO R	7

FROM/TO CHROMA
AT+5V
PROTECT
CLAMP_OFF
SYNC_OUT
HD
VD
OSD_B
OSD_G
OSD_R
OSD_BLK
SW_Y_OUT
RESET
POWER
SDA
SCL

FROM/TO TUNER/STEREO
J_AUDIO_OUT_R
J_AUDIO_OUT_L
SDA
SCL

FROM/TO SOUND
SDA
SCL

TO SOUND
TV_MUTE
VOLUME

FROM TUNER/STEREO
AFT

FROM/TO COMB FILTER/AV
S_IN
Y/C_SW

FROM/TO DEFLECTION
H_CTL
X-RAY

FROM/TO POWER
X-RAY
P.FAIL
DEGAUSS_H
GND
POWER

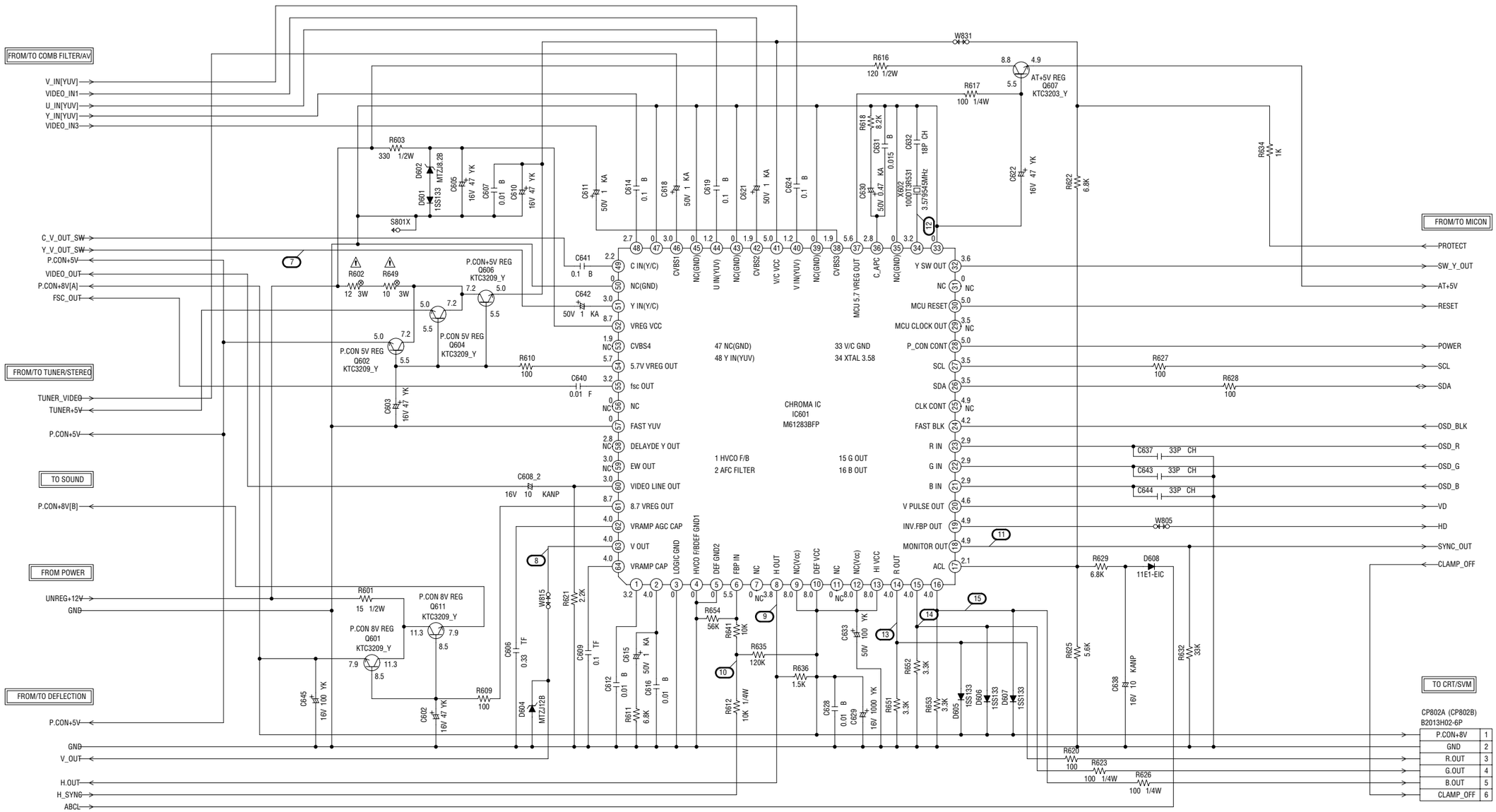
PCB010
CME017

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.

CHROMA SCHEMATIC DIAGRAM

(MAIN PCB)



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

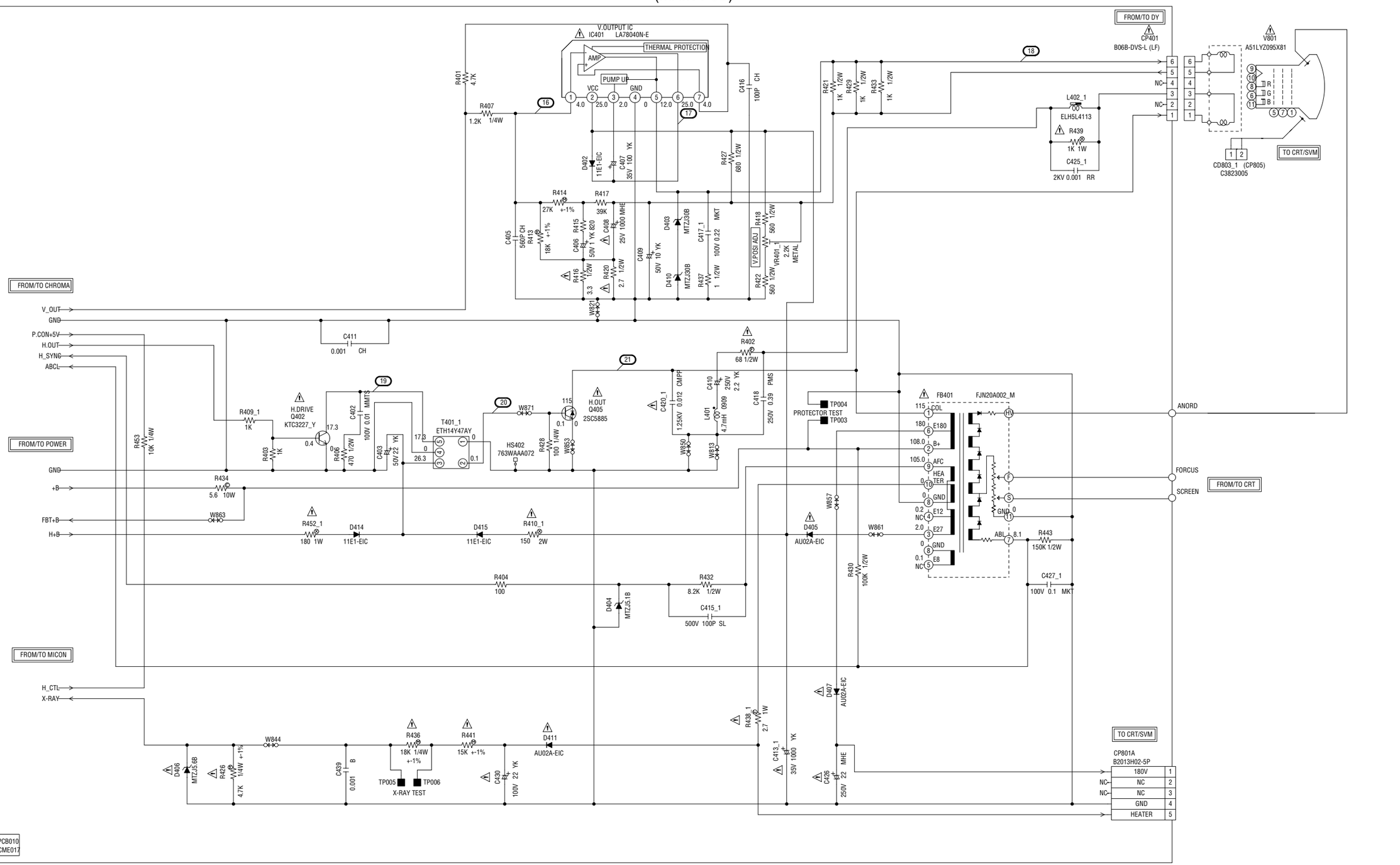
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

ATTENTION: LES PIECES REPAREES 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
CME017

DEFLECTION SCHEMATIC DIAGRAM
(MAIN PCB)



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

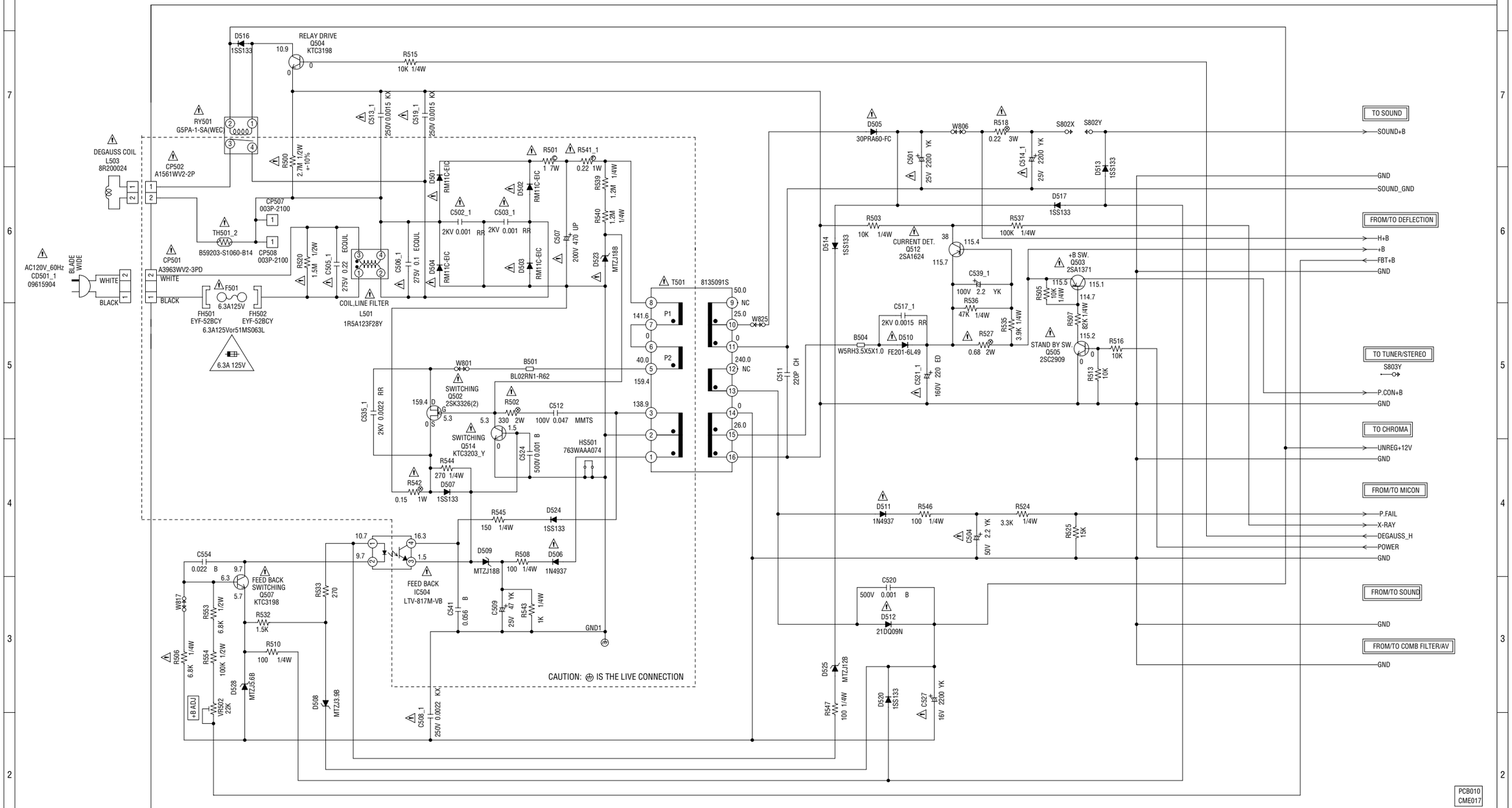
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

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

ATTENTION: LES PIECES REPAREES 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 。

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)

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

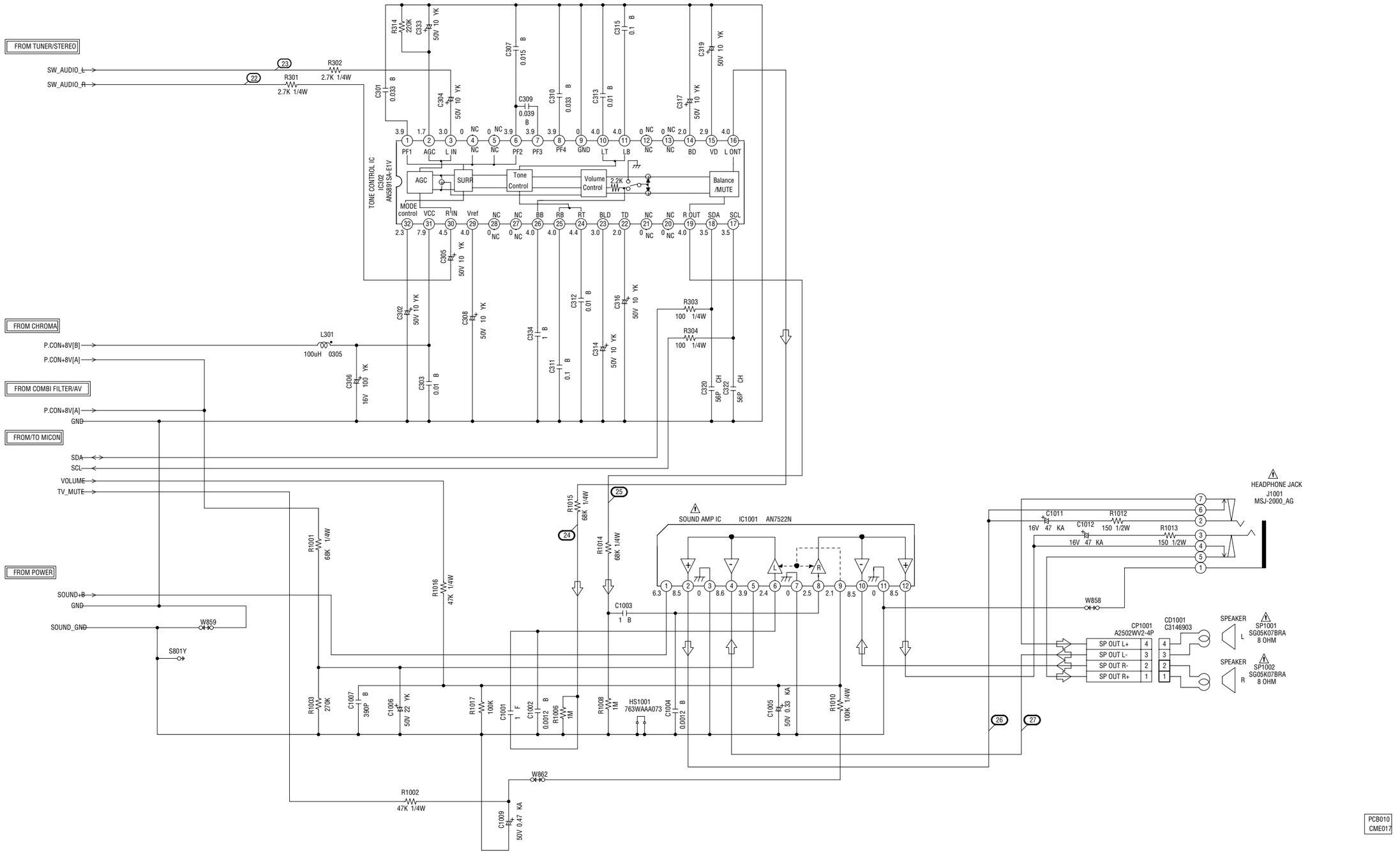
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

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

ATTENTION: LES PIECES REPAREES 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 。

SOUND SCHEMATIC DIAGRAM
(MAIN PCB)



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

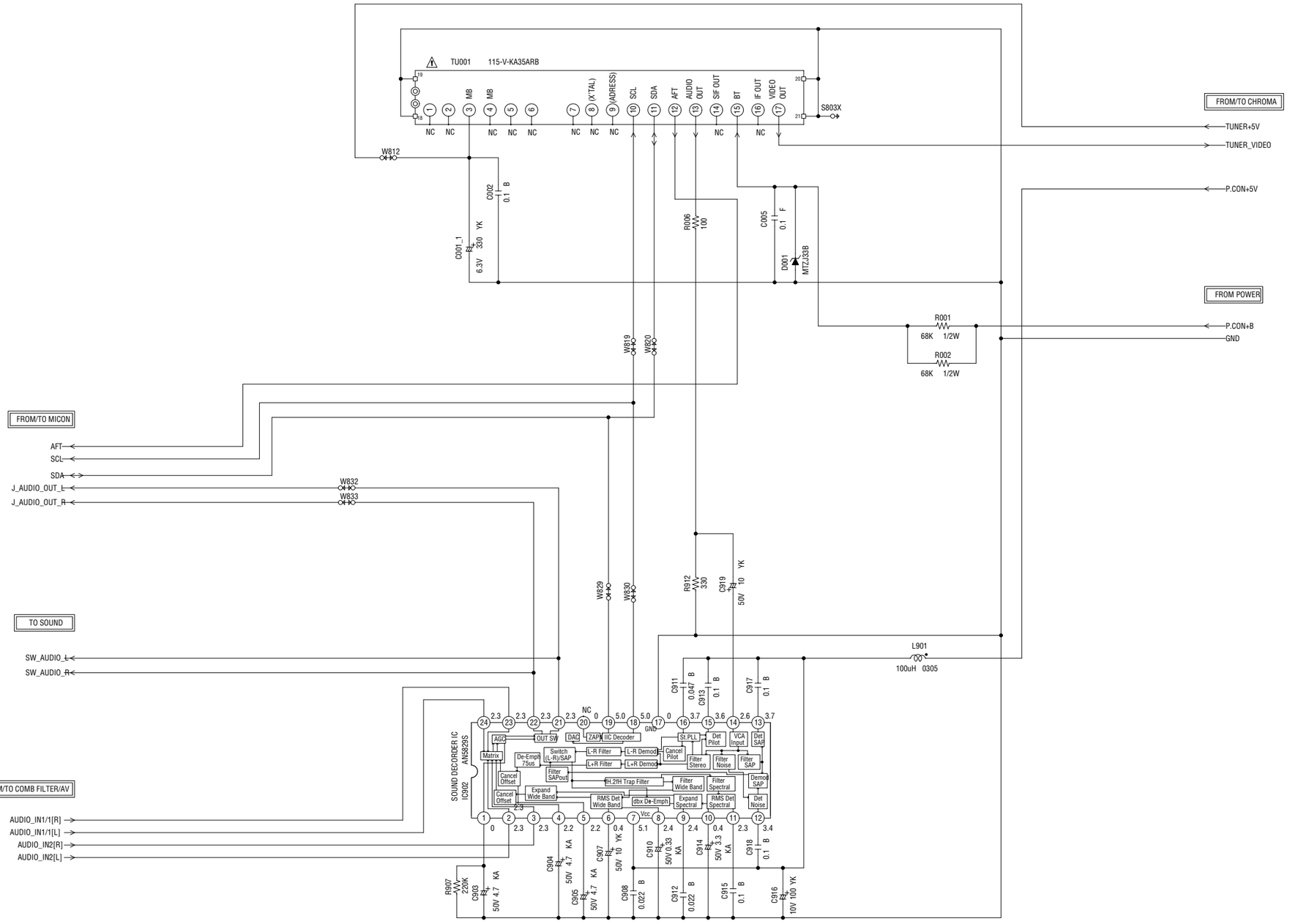
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

ATTENTION: LES PIECES REPAREES 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 。

⇦ AUDIO SIGNAL

TUNER/STEREO SCHEMATIC DIAGRAM
(MAIN PCB)



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

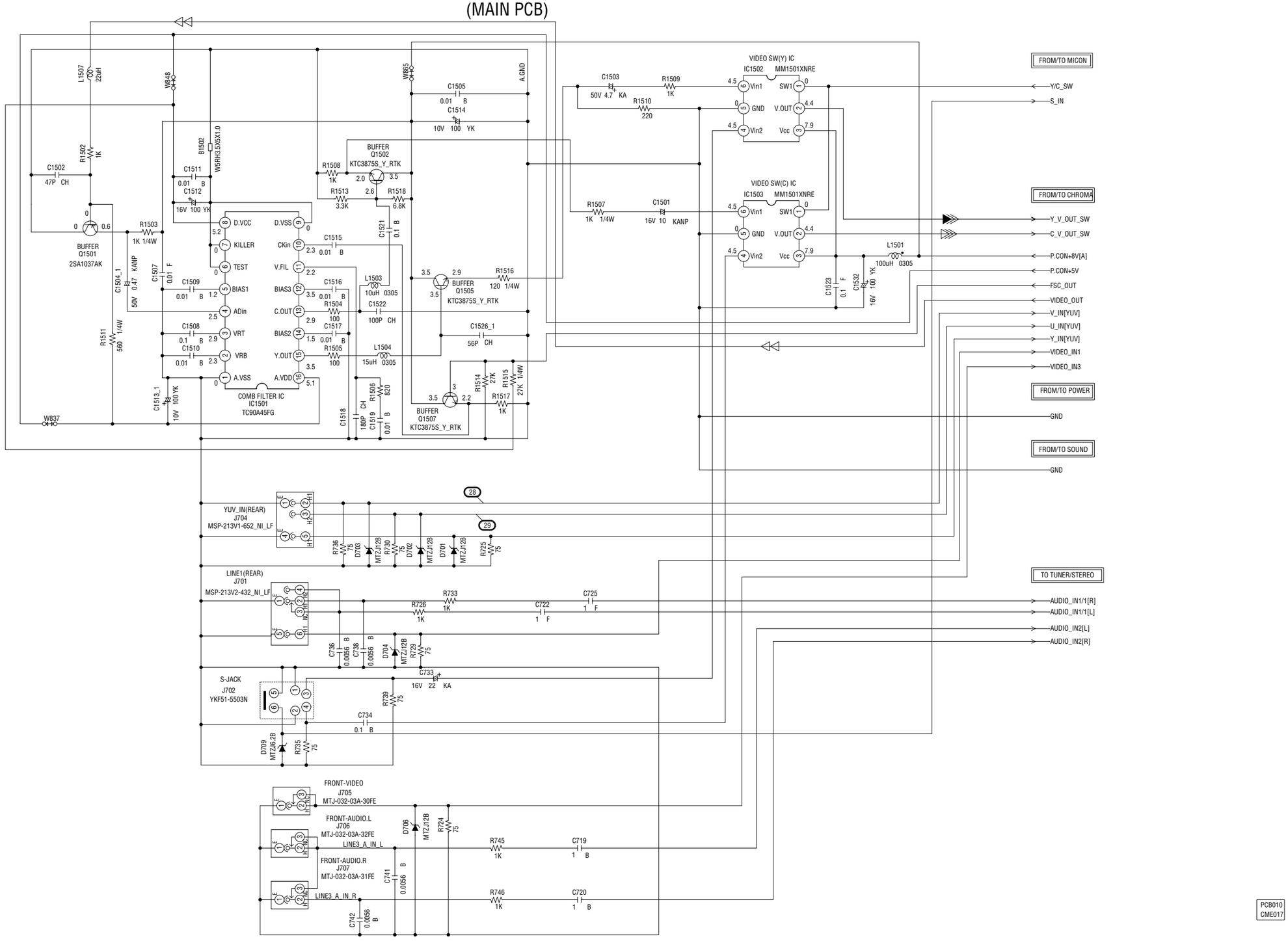
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

ATTENTION: LES PIECES REPAREES 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 。

COMB FILTER/AV SCHEMATIC DIAGRAM

(MAIN PCB)

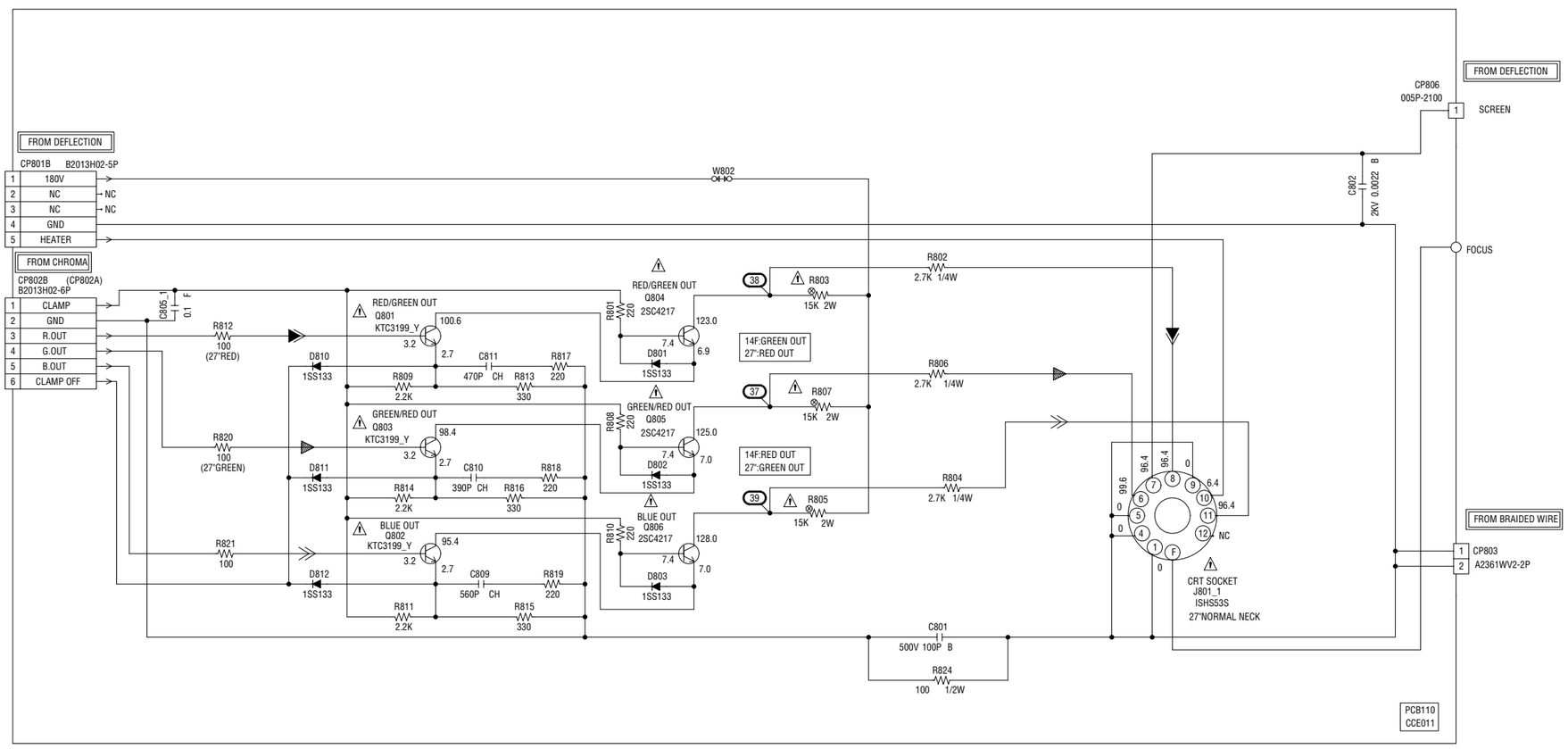


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

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.

LUMINANCE SIGNAL
COLOR SIGNAL
TUNER VIDEO SIGNAL

CRT SCHEMATIC DIAGRAM
(CRT 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。

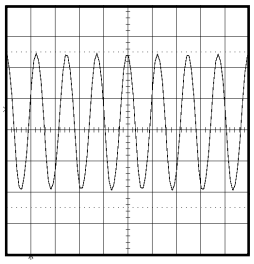
CAUTION SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

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

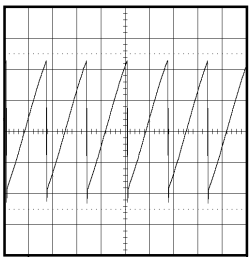
◀ R.SIGNAL
◀ G.SIGNAL
≪ B.SIGNAL

WAVEFORMS

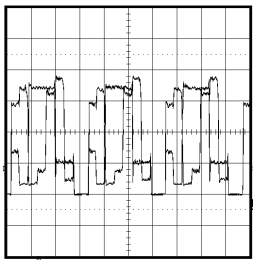
MICON



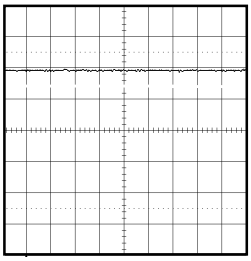
① 1V 0.1µs/div



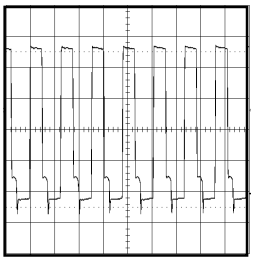
⑧ 0.5V 10ms/div



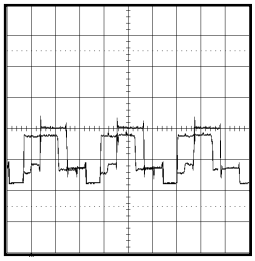
⑬ 1V 20µs/div



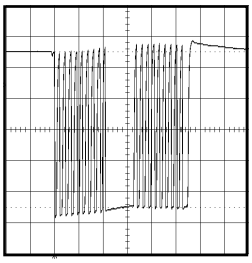
② 1V 1µs/div



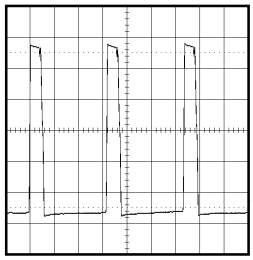
⑨ 1V 50µs/div



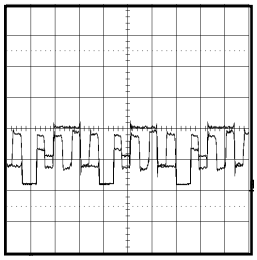
⑭ 2V 20µs/div



③ 1V 50µs/div

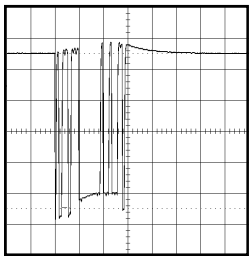


⑩ 2V 20µs/div

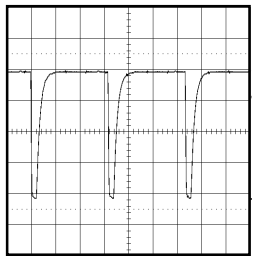


⑮ 2V 20µs/div

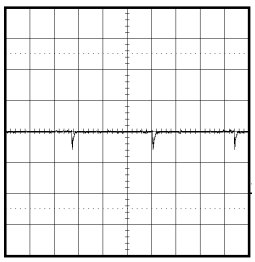
DEFLECTION



④ 1V 0.1ms/div

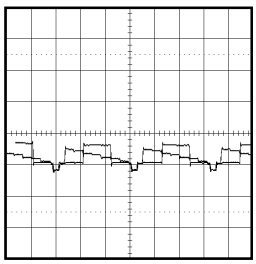


⑪ 0.5V 20µs/div

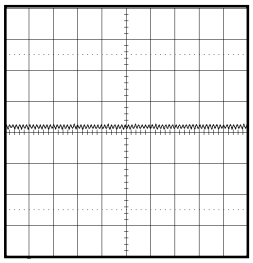


⑯ 2V 5ms/div

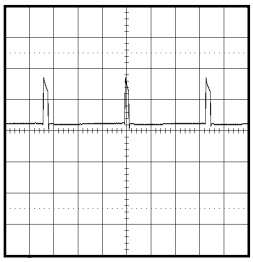
CHROMA



⑦ 1V 20µs/div



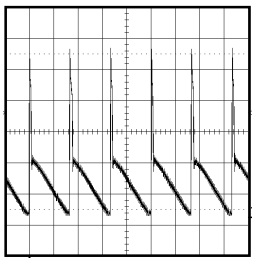
⑫ 1V 2µs/div



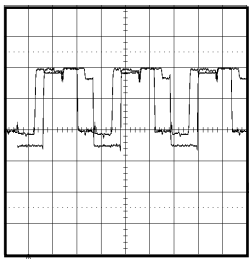
⑰ 20V 5ms/div

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

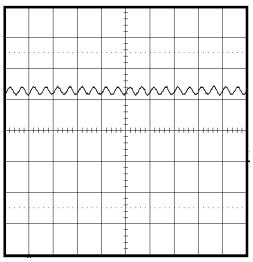
WAVEFORMS



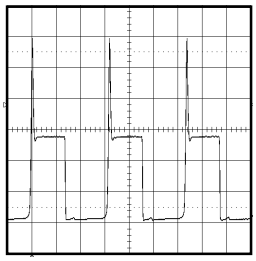
(18) 10V 10ms/div



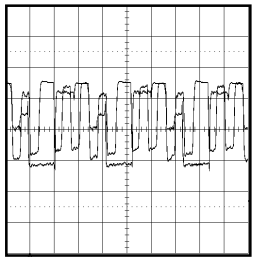
(38) 50V 20µs/div



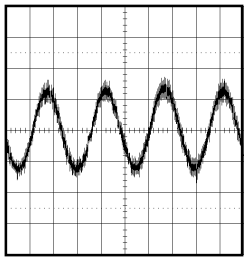
(25) 2V 5ms/div



(19) 20V 20µs/div

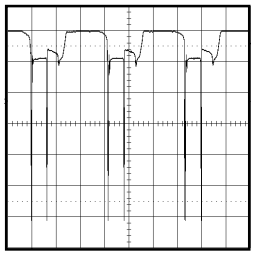


(39) 50V 20µs/div

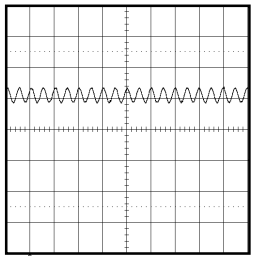


(26) 0.5V 1ms/div

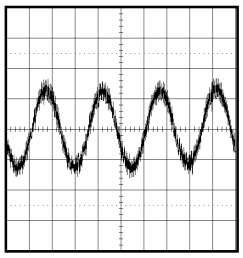
SOUND



(20) 2V 20µs/div

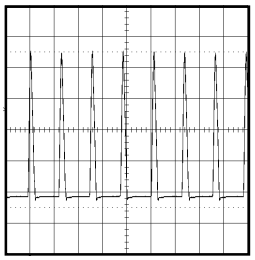


(22) 2V 5ms/div

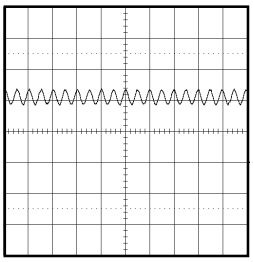


(27) 0.5V 1ms/div

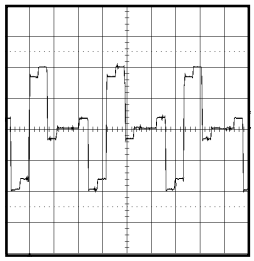
COMB/FILTER/AV



(21) 200V 50µs/div

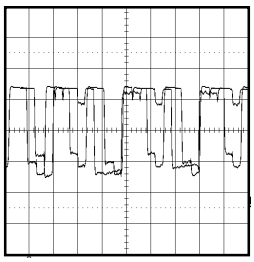


(23) 2V 5ms/div

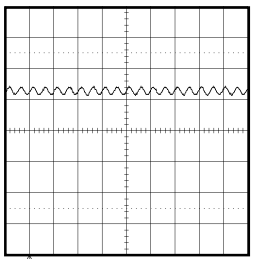


(28) 200mV 20µs/div

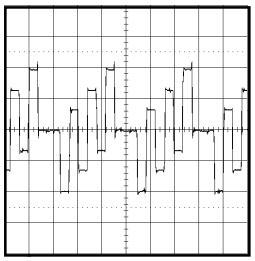
CRT



(37) 50V 20µs/div



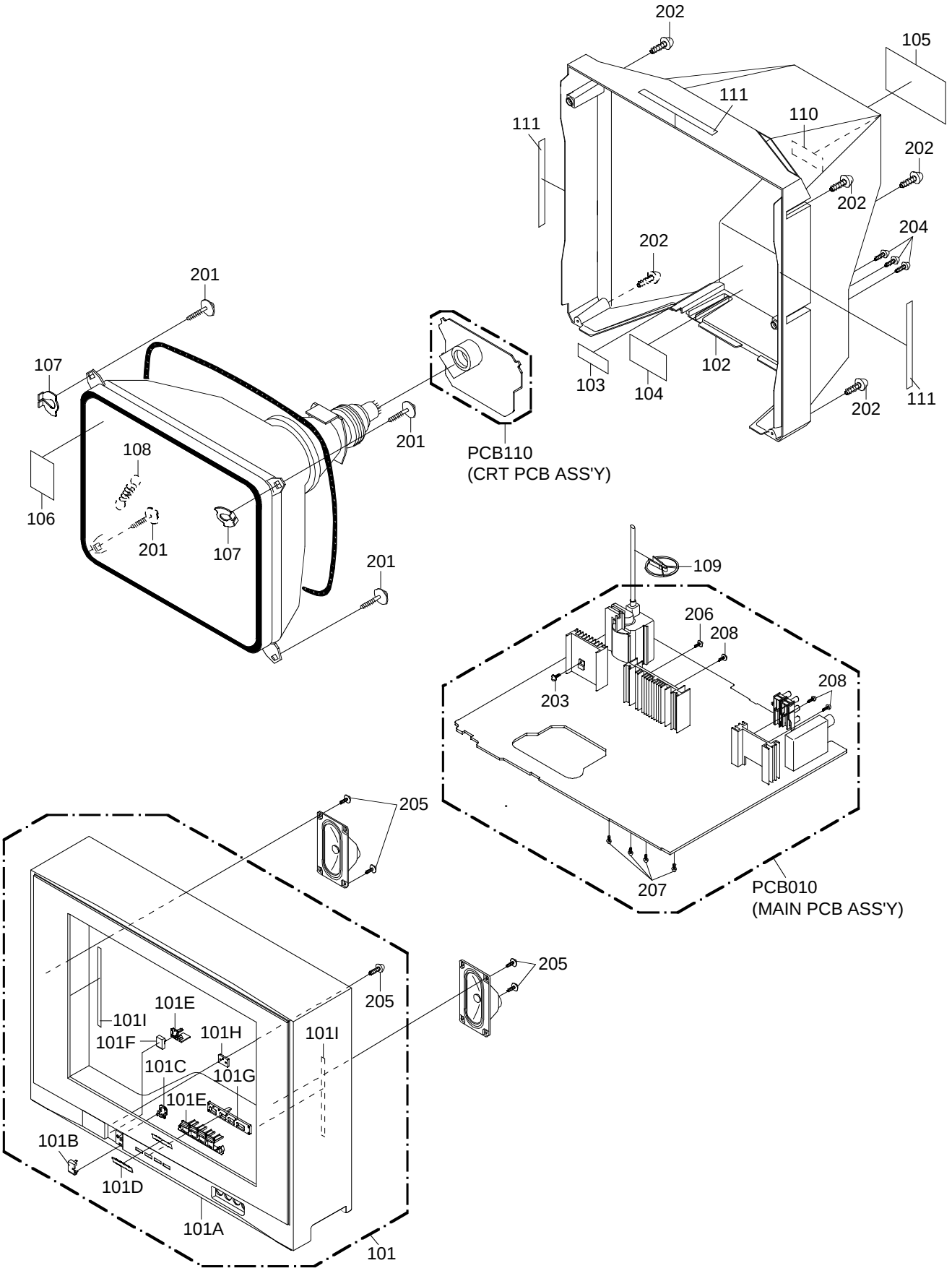
(24) 2V 5ms/div



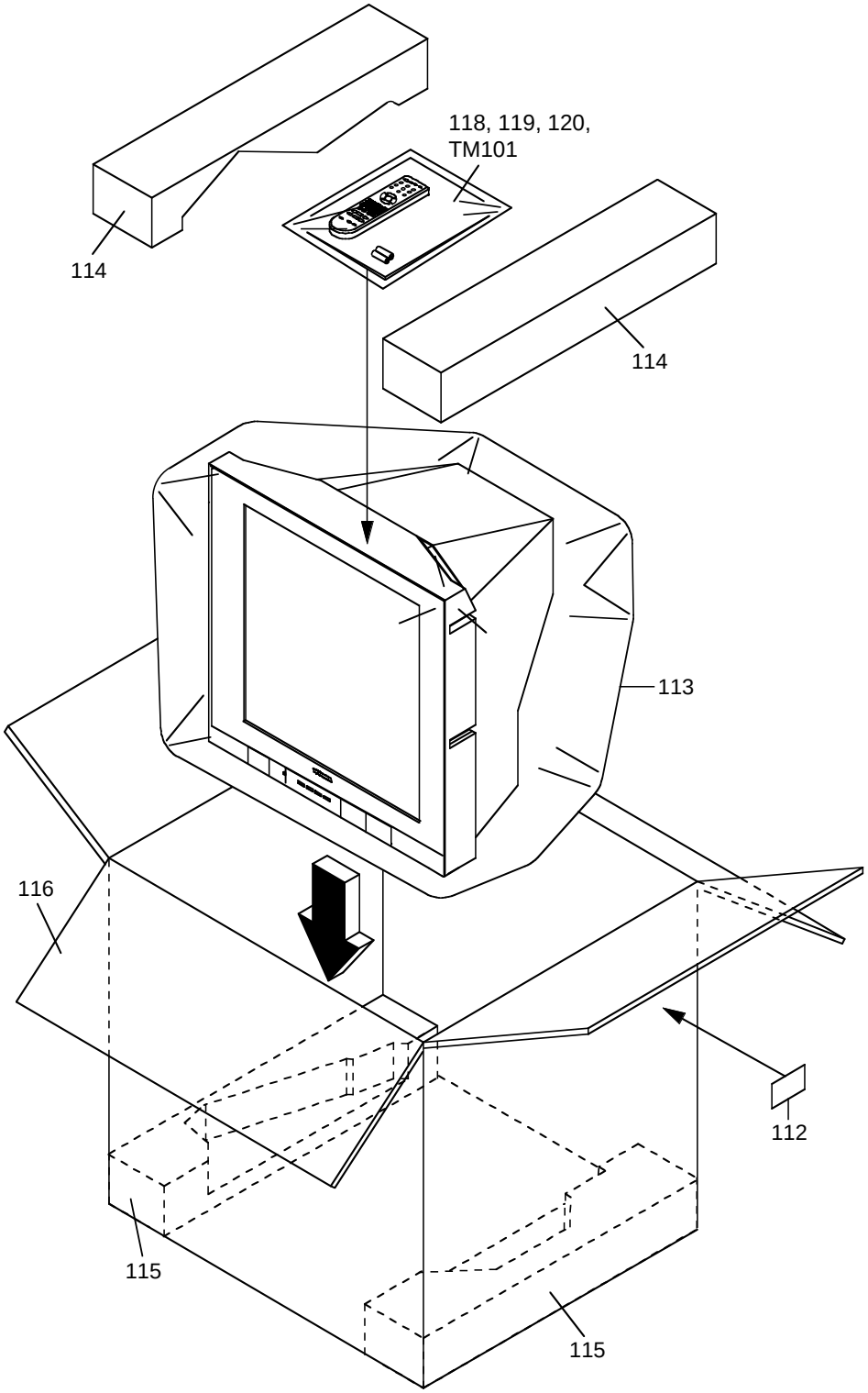
(29) 200mV 20µs/div

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

MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW
(PACKING DIAGRAM)



MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
101	AE006005	7A701A307A	FRONT CABI ASS'Y	
101A	AE005740	701WPJC915	CABINET,FRONT	
101B	AE006309	711WPAA109	PLATE,FRONT	
101C	AE006310	713WPAA159	GLASS,LED	
101D	AE005349	723549A039	BADGE,BRAND	
101E	AE006311	735WPBB356	BUTTON,FRAME	
101F	AE006312	735WPJA850	BUTTON,POWER	
101G	AE006313	735WPAA709	STOPPER,BUTTON 1	
101H	AE006314	735WPAA701	STOPPER,BUTTON 2	
101I	AE006315	800WQ0A087	FELT SHEET	
102	AE006316	A3S101N740	CABINET,BACK ASS'Y	
105	AE006317	722549A421	SHEET,RATING	
106	AE006318	723000C847	POP LABEL	
107	AE005971	769WSAA012	WASHER CRT T=0.5	
108	BZ710660	741WUA0021	SPRING,EARTH	
109	BZ710260	899HV3T000	HOLDER,ANODE WIRE	
110	AE006258	726000A090	SHEET,CRT SERVICEMAN	
111	AE003071	800WQ0A041	FELT SHEET	
112	AE006319	723000C813	SHEET,BARCODE	
113	AE005712	791WHAA122	FILM BAG	
114	AD302286	792WHA0446	PACKAGE,TOP	
115	AD302287	792WHA0447	PACKAGE,BOTTOM	
116	AE006320	793WCDC595	GIFT BOX	
117	AE006233	A3S001U975	INSTRUCTION BOOK KIT	
118	AE005582	JA4KD200	POLYBAG,INSTRUCTION(RED CAUTION)	
119	AE004983	J2D60117A	REGISTRATION CARD	
120	AE006234	J3S00121A	INSTRUCTION BOOK(E/S)	
201	AE006265	8121J50C0U	SCREW,TAPPING(B0) GW15	5x30
202	AE004847	8117540A6U	SCREW,TAP TITE(B0) TRUSS	4x16
203	AE005659	8109I3080U	SCREW,TAP TITE(B) WH7	3x8
204	AE003528	8110630A0U	SCREW,TAP TITE(P) BRAZIER	3x10
205	AE003529	811063080U	SCREW,TAP TITE(P) BRAZIER	3x8
206	AE003524	8109I30A0U	SCREW,TAP TITE(B) WH7	3x10
207	AE005917	810963080Q	SCREW,TAP TITE(B) BRAZIER	3x8
208	AE003531	810763080U	SCREW,TAP TITE(S) BRAZIER	3x8

MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
101	AE006005	7A701A307A	FRONT CABI ASS'Y	
101A	AE005740	701WPJC915	CABINET,FRONT	
101B	AE006309	711WPAA109	PLATE,FRONT	
101C	AE006310	713WPAA159	GLASS,LED	
101D	AE005349	723549A039	BADGE,BRAND	
101E	AE006311	735WPBB356	BUTTON,FRAME	
101F	AE006312	735WPJA850	BUTTON,POWER	
101G	AE006313	735WPAA709	STOPPER,BUTTON 1	
101H	AE006314	735WPAA701	STOPPER,BUTTON 2	
101I	AE006315	800WQ0A087	FELT SHEET	
102	AE006321	A3S102N740	CABINET,BACK ASS'Y	
103	AE000091	722000A023	SHEET,HWC	
104	AE006166	722000A267	SHEET,CSA WARNING	
105	AE006323	722549A442	SHEET,RATING	
106	AE006324	723000C870	POP LABEL	
107	AE005971	769WSAA012	WASHER CRT T=0.5	
108	BZ710660	741WUA0021	SPRING,EARTH	
109	BZ710260	899HV3T000	HOLDER,ANODE WIRE	
110	AE006258	726000A090	SHEET,CRT SERVICEMAN	
111	AE003071	800WQ0A041	FELT SHEET	
112	AE006325	723000C857	SHEET,BARCODE	
113	AE005712	791WHAA122	FILM BAG	
114	AD302286	792WHA0446	PACKAGE,TOP	
115	AD302287	792WHA0447	PACKAGE,BOTTOM	
116	AE006326	793WCDC653	GIFT BOX	
117	AE006240	A3S002U975	INSTRUCTION BOOK KIT	
118	AE006098	JA4KD100	POLYBAG,INSTRUCTION(RED CAUTION)	
120	AE006241	J3S00221A	INSTRUCTION BOOK	
201	AE006265	8121J50C0U	SCREW,TAPPING(B0) GW15	5x30
202	AE004847	8117540A6U	SCREW,TAP TITE(B0) TRUSS	4x16
203	AE005659	8109I3080U	SCREW,TAP TITE(B) WH7	3x8
204	AE003528	8110630A0U	SCREW,TAP TITE(P) BRAZIER	3x10
205	AE003529	811063080U	SCREW,TAP TITE(P) BRAZIER	3x8
206	AE003524	8109I30A0U	SCREW,TAP TITE(B) WH7	3x10
207	AE005917	810963080Q	SCREW,TAP TITE(B) BRAZIER	3x8
208	AE003531	810763080U	SCREW,TAP TITE(S) BRAZIER	3x8

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
			RESISTORS	
⚠R402	AE006221	R638U2680J	R,FUSE	68 OHM 1/2W
⚠R410	AE005692	R3K58A221J	R,METAL OXIDE	220 OHM 2W
⚠R413	BZ210105	R4X5T6183F	R,METAL	18K OHM 1/6W
⚠R416	AD300416	R002T25R6J	RC	5.6 OHM 1/2W
⚠R420	BZ210053	R002T22R2J	RC	2.2 OHM 1/2W
⚠R426	AE006429	R4K1T4472F	R,METAL	4.7K OHM 1/4W
⚠R434	AD301972	R5X2CF5R6J	R,CEMENT	5.6 OHM 10W
⚠R436	AE006428	R4K1T4183F	R,METAL	18K OHM 1/4W
⚠R438	AE005870	R3K58B4R7J	R,METAL OXIDE	4.7 OHM 3W
⚠R439	BZ210003	R3K181102J	R,METAL OXIDE	1K OHM 1W
⚠R441	BZ210231	R4X5T6153F	R,METAL	15K OHM 1/6W
R454	BZ210277	R3X181101J	R,METAL OXIDE	100 OHM 1W
⚠R500	BZ210080	R0G3K2275K	RC	2.7M OHM 1/2W
⚠R501	AD301596	R5X2AE010J	R,CEMENT	1 OHM 7W
⚠R502	BZ210249	R3X28A331J	R,METAL OXIDE	330 OHM 2W
⚠R506	BZ210162	R002T4682J	RC	6.8K OHM 1/4W
⚠R517	AD301973	R3X28BR22J	R,METAL OXIDE	0.22 OHM 3W
⚠R520	BZ210206	R002T2155J	RC	1.5M OHM 1/2W
⚠R527	AE006025	R3K58A010J	R,METAL OXIDE	1 OHM 2W
⚠R541	AE005735	R63881R22J	R,FUSE	0.22 OHM 1W
⚠R542	AE006024	R3K581R22J	R,METAL OXIDE	0.22 OHM 1W
⚠R602	AD301975	R3X28B120J	R,METAL OXIDE	12 OHM 3W
⚠R649	AE006427	R3K58B5R6J	R,METAL OXIDE	5.6 OHM 3W
⚠R803	BZ210026	R3X18A153J	R,METAL OXIDE	15K OHM 2W
⚠R805	BZ210026	R3X18A153J	R,METAL OXIDE	15K OHM 2W
⚠R807	BZ210026	R3X18A153J	R,METAL OXIDE	15K OHM 2W
			CAPACITORS	
⚠C408	BZ110032	E5EZF3102M	CE	1000 UF 25V
⚠C413	AD301977	E0ELF4102M	CE	1000 UF 35V
C418	AD301144	P4J7F3274J	CMPP	0.27 UF 250V PMS
⚠C420	BZ110218	P4N8FJ103H	CMPP	0.01 UF 1.25KV
C425	BZ110202	C0PLRR713K	CC	0.001 UF 2KV R
⚠C426	BZ110225	E5EZFD220M	CE	22 UF 250V
⚠C430	BZ110195	E02LU8220M	CE	22 UF 100V
⚠C501	BZ110053	E02LF3102M	CE	1000 UF 25V
⚠C502	BZ110202	C0PLRR713K	CC	0.001 UF 2KV R
⚠C503	BZ110202	C0PLRR713K	CC	0.001 UF 2KV R
⚠C504	AD301729	E02LU52R2M	CE	2.2 UF 50V
⚠C505	BZ110025	P2122B224M	CMP	0.22 UF 275V ECQUL
⚠C506	BZ110035	P2122B104M	CMP	0.1 UF 275V ECQUL
⚠C507	AD301635	E51CGC331M	CE	330 UF 200V
⚠C508	BZ110222	CD39E0MH3M	CC	0.0022UF 250V
⚠C513	AD301026	CD39E0M13M	CC	0.001 UF 250V
C517	AE000874	C0PLRR7E3K	CC	0.0015 UF 2KV R
⚠C519	AD301026	CD39E0M13M	CC	0.001 UF 250V
⚠C521	BZ110139	E62NFB101M	CE	100 UF 160V
⚠C527	BZ110119	E02LF2222M	CE	2200 UF 16V
C535	BZ110182	C03L0R713K	CC	0.001 UF 2KV R
C802	BZ110247	C0JBB0713K	CC	0.001 UF 2KV B
			DIODES	
D001	BZ410037	D97U03301B	DIODE,ZENER	MTZJ33B T-77
D104	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D105	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D106	BZ410020	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77
D109	BZ410054	0021721150	LED	SLR-342VCT32
D402	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
D403	BZ410019	D97U03001B	DIODE,ZENER	MTZJ30B T-77
D404	BZ410020	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77
⚠D405	BZ410063	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
⚠D406	BZ410021	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
⚠D407	BZ410063	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
D410	BZ410019	D97U03001B	DIODE,ZENER	MTZJ30B T-77
⚠D411	BZ410063	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
D414	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
D415	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
⚠D501	BZ410062	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D502	BZ410062	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D503	BZ410062	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D504	BZ410062	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D505	AE006082	D28F0PRA60	DIODE,RECTIFIER	30PRA60-FC
⚠D506	AD300731	D2WXN49370	DIODE,SILICON	1N4937

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		DIODES		
D507	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D508	BZ410064	D97U03R91B	DIODE,ZENER	MTZJ3.9B T-77
D509	AD300671	D97U01801B	DIODE,ZENER	MTZJ18B T-77
⚠D510	AD301980	D2CF2016L0	DIODE,SILICON	FE201-6L49
⚠D511	AD300731	D2WXN49370	DIODE,SILICON	1N4937
⚠D512	BZ410010	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
D513	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D514	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D516	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D517	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D520	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D523	AD300671	D97U01801B	DIODE,ZENER	MTZJ18B T-77
D524	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D525	AD302208	D97U03R31B	DIODE,ZENER	MTZJ3.3B T-77
D528	BZ410021	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D601	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D602	BZ410058	D97U08R21B	DIODE,ZENER	MTZJ8.2B T-77
D604	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D605	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D606	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D607	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D608	BZ410043	D2WT011E10	DIODE SILICON	11E1-EIC
D701	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D702	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D703	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D704	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D706	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D709	BZ410066	D97U06R21B	DIODE,ZENER	MTZJ6.2B T-77
D801	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D802	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D803	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D810	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D811	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D812	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
		ICS		
IC101	AE006067	I56F07090B	IC	OEC7090B
IC199	AE006425	A3S101N015	INIT DATA	BR24L16FJ-WE2
IC302	AD301983	I01FF58910	IC	AN5891SA-E1V
⚠IC401	AE002783	I03TD804N0	IC	LA78040N-E
⚠IC504	BZ410088	0002E00610	PHOTO COUPLER	LTV-817M-VB
IC601	AE003906	I06FC1283B	IC	M61283BFP
IC902	BZ611068	I01FF58290	IC	AN5829S
⚠IC1001	AD302184	I0FSP7522N	IC	AN7522N
IC1501	AE006220	I05FEA45FG	IC	TC90A45FG
IC1502	AD301988	I0UF015010	IC	MM1501XNRE
IC1503	AD301988	I0UF015010	IC	MM1501XNRE
		TRANSISTORS		
Q101	AE005873	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
Q103	AE005873	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
⚠Q402	BZ510097	TCAT03227Y	TRANSISTOR,SILICON	KTC3227_Y-AT
⚠Q405	AE000656	TC1G058850	TRANSISTOR,SILICON	2SC5885
⚠Q502	AE002251	T25F035630	FET	2SK3563(ORION_Q)
⚠Q503	BZ510005	TA3T1371A0	TRANSISTOR,SILICON	2SA1371(D,E)-AE
Q504	BZ510069	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
⚠Q505	BZ510011	TC3T029090	TRANSISTOR,SILICON	2SC2909(S,T)-AA
⚠Q507	BZ510069	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
⚠Q512	BZ510004	TA3T016240	TRANSISTOR,SILICON	2SA1624-AA
⚠Q514	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q601	BZ510105	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q602	BZ510105	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q604	BZ510105	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q606	BZ510105	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q607	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q611	BZ510105	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
⚠Q801	BZ510100	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q802	BZ510100	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q803	BZ510100	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q804	BZ510091	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
⚠Q805	BZ510091	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
⚠Q806	BZ510091	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
Q1501	AE005872	T6RA015300	TRANSISTOR,SILICON	2SA1530A-T1

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
			TRANSISTORS	
Q1502	AE005873	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
Q1505	AE005873	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
Q1507	AE005873	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
			COILS &TRANSFORMERS	
L301	BZ310041	02167F101J	COIL	100 UH
L401	BZ310004	021679472K	COIL	4.7 MH
L402	BZ310063	022100027A	COIL,LINEARITY	ELH5L4113
⚠L501	BZ310144	029T000097	COIL,LINE FILTER	1R5A123F28Y
⚠L503	BZ310116	028R140023	COIL,DEGAUSS	8R140023
L901	BZ310041	02167F101J	COIL	100 UH
L1501	BZ310041	02167F101J	COIL	100 UH
L1503	BZ310141	02167F100J	COIL	10 UH
L1504	AD300613	02167F150J	COIL	15 UH
L1507	BZ310183	021LA6220J	COIL	22 UH
T401	BZ310172	045013003J	TRANS,HORIZONTAL DRIVE	ETH14Y47AY
⚠T501	AE006422	0481291314	TRANSFORMER,SWITCHING	81291314
			JACKS	
J701	AE002759	060J431020	RCA JACK	MSP-213V2-432_NI_LF
J702	AE006074	063Q700011	JACK	YKF51-5503N
J704	AE002761	060J411032	RCA JACK	MSP-213V1-652_NI_LF
J705	AE004756	060J401104	RCA JACK	MTJ-032-03A-30FE
J706	AE004758	060J401106	RCA JACK	MTJ-032-03A-32FE
J707	AE004757	060J401105	RCA JACK	MTJ-032-03A-31FE
⚠J801	BZ614434	066F120018	SOCKET,CATHODE RAY TUBE	ISMS01S
⚠J1001	AE003431	060J131016	HEADPHONE JACK	MSJ-2000_AG
			SWITCHES	
SW101	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW102	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW103	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW104	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW105	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
			VARIABLE RESISTORS	
VR401	BZ210218	V1K63H3BTE	VOLUME,SEMI FIXED	NVG6TLTAB222
VR502	BZ210101	V1163H4BTC	VOLUME,SEMI FIXED	EVNCYAA03BE4
			P.C.BOARD ASSEMBLIES	
PCB010	AE006424	A3S101N010	PCB ASS'Y	CME017A
PCB110	AE006426	A3S101N110	PCB ASS'Y	CCE011A
			MISCELLANEOUS	
B501	BZ310045	024AT03481	CORE,BEADS	BL02RN1-R62T2
B504	BZ310121	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B1502	BZ310121	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
BT001	AE005640	141R004016	BATTERY,MANGAN	GR03X-SP2
BT002	AE005640	141R004016	BATTERY,MANGAN	GR03X-SP2
⚠CD501	AE006423	1209619905	CORD,AC BUSH	9619905
CD801	AE000567	WCL6826038	FLAT CABLE	AWM2468 AWG26 5C GRAY 260MM
CD802	BZ614329	WDL6036038	FLAT CABLE	AWM2468 AWG26 6C BLACK 360MM
CD803	AD301363	06CU822501	CORD,CONNECTOR	CU822501
CP101	BZ614102	0694270139	CONNECTOR PCB SIDE	173979-7
⚠CP401	AE006075	069X460109	CONNECTOR PCB SIDE	B06B-DVS-L (LF)
⚠CP501	BZ614176	069S320419	CONNECTOR PCB SIDE	A3963WV2-3PD
⚠CP502	BZ614283	069S420110	CONNECTOR PCB SIDE	A1561WV2-2P
CP507	BZ614444	069D01001A	CONNECTOR PCB SIDE	003P-2100
CP508	BZ614444	069D01001A	CONNECTOR PCB SIDE	003P-2100
CP803	BZ614269	069S320010	CONNECTOR PCB SIDE	A2361WV2-2P
CP806	BZ614058	069W010010	CONNECTOR PCB SIDE	005P-2100
CD1001	AE000569	06CU146901	CORD,CONNECTOR	CU146901
CP1001	AD301045	069S140419	CONNECTOR PCB SIDE	A2502WV2-4P
CP801A	BZ614276	067U005049	WIRE HOLDER	B2013H02-5P
CP801B	BZ614276	067U005049	WIRE HOLDER	B2013H02-5P
CP802A	BZ614333	067U006049	WIRE HOLDER	B2013H02-6P
CP802B	BZ614333	067U006049	WIRE HOLDER	B2013H02-6P
EL001	BZ614044	124120301A	EYE LET	XRY20X30BD
EL002	BZ614043	124116281A	EYE LET	XRY16X28BD
⚠F501	BZ614422	081PC6R305	FUSE	51MS063L
⚠FB401	AE003159	043214045F	TRANSFORMER,FLYBACK	FQI14B003F_M
FH501	AE002634	06710T0009	HOLDER,FUSE	EYF-52BCY
FH502	AE002634	06710T0009	HOLDER,FUSE	EYF-52BCY
OS101	AD301048	0773071001	REMOTE RECEIVER	RPM7138-WH5
⚠RY501	AD300114	0560V20115	RELAY	ALKS321
⚠SP1001	BZ614029	070C533008	SPEAKER	810-47-171
⚠SP1002	BZ614029	070C533008	SPEAKER	810-47-171

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
			MISCELLANEOUS	
⚠TH501	BZ410079	DF5EL3R0A0	DEGAUSS ELEMENT	ZPB45BL3R0A
TM101	AE006214	076N0GQ020	TRANSMITTER	RC-GQ020
⚠TU001	AE006069	0163300018	RF UNIT	115-V-KA35ARB
⚠V801	AE003160	098Q150408	CRT W/DY	A36AKJ13X05(U)
X101	AD302002	100CT8R005	CRYSTAL	HC-49/U-S
X602	BZ613004	100CT3R505	CRYSTAL	HC-49/U

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

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
			RESISTORS	
⚠R402	AE006221	R638U2680J	R,FUSE	68 OHM 1/2W
⚠R410	AE005692	R3K58A221J	R,METAL OXIDE	220 OHM 2W
⚠R413	BZ210105	R4X5T6183F	R,METAL	18K OHM 1/6W
⚠R416	AD300416	R002T25R6J	RC	5.6 OHM 1/2W
⚠R420	BZ210053	R002T22R2J	RC	2.2 OHM 1/2W
⚠R426	AE006429	R4K1T4472F	R,METAL	4.7K OHM 1/4W
⚠R434	AD301972	R5X2CF5R6J	R,CEMENT	5.6 OHM 10W
⚠R436	AE006428	R4K1T4183F	R,METAL	18K OHM 1/4W
⚠R438	AE005870	R3K58B4R7J	R,METAL OXIDE	4.7 OHM 3W
⚠R439	BZ210003	R3K181102J	R,METAL OXIDE	1K OHM 1W
⚠R441	BZ210231	R4X5T6153F	R,METAL	15K OHM 1/6W
R454	BZ210277	R3X181101J	R,METAL OXIDE	100 OHM 1W
⚠R500	BZ210080	R0G3K2275K	RC	2.7M OHM 1/2W
⚠R501	AD301596	R5X2AE010J	R,CEMENT	1 OHM 7W
⚠R502	BZ210249	R3X28A331J	R,METAL OXIDE	330 OHM 2W
⚠R506	BZ210162	R002T4682J	RC	6.8K OHM 1/4W
⚠R517	AD301973	R3X28BR22J	R,METAL OXIDE	0.22 OHM 3W
⚠R520	BZ210206	R002T2155J	RC	1.5M OHM 1/2W
⚠R527	AE006025	R3K58A010J	R,METAL OXIDE	1 OHM 2W
⚠R541	AE005735	R63881R22J	R,FUSE	0.22 OHM 1W
⚠R542	AE006024	R3K581R22J	R,METAL OXIDE	0.22 OHM 1W
⚠R602	AD301975	R3X28B120J	R,METAL OXIDE	12 OHM 3W
⚠R649	AE006427	R3K58B5R6J	R,METAL OXIDE	5.6 OHM 3W
⚠R803	BZ210026	R3X18A153J	R,METAL OXIDE	15K OHM 2W
⚠R805	BZ210026	R3X18A153J	R,METAL OXIDE	15K OHM 2W
⚠R807	BZ210026	R3X18A153J	R,METAL OXIDE	15K OHM 2W
			CAPACITORS	
⚠C408	BZ110032	E5EZF3102M	CE	1000 UF 25V
⚠C413	AD301977	E0ELF4102M	CE	1000 UF 35V
C418	AD301144	P4J7F3274J	CMPP	0.27 UF 250V PMS
⚠C420	BZ110218	P4N8FJ103H	CMPP	0.01 UF 1.25KV
C425	BZ110202	C0PLRR713K	CC	0.001 UF 2KV R
⚠C426	BZ110225	E5EZFD220M	CE	22 UF 250V
⚠C430	BZ110195	E02LU8220M	CE	22 UF 100V
⚠C501	BZ110053	E02LF3102M	CE	1000 UF 25V
⚠C502	BZ110202	C0PLRR713K	CC	0.001 UF 2KV R
⚠C503	BZ110202	C0PLRR713K	CC	0.001 UF 2KV R
⚠C504	AD301729	E02LU52R2M	CE	2.2 UF 50V
⚠C505	BZ110025	P2122B224M	CMP	0.22 UF 275V ECQUL
⚠C506	BZ110035	P2122B104M	CMP	0.1 UF 275V ECQUL
⚠C507	AD301635	E51CGC331M	CE	330 UF 200V
⚠C508	BZ110222	CD39E0MH3M	CC	0.0022UF 250V
⚠C513	AD301026	CD39E0M13M	CC	0.001 UF 250V
C517	AE000874	C0PLRR7E3K	CC	0.0015 UF 2KV R
⚠C519	AD301026	CD39E0M13M	CC	0.001 UF 250V
⚠C521	BZ110139	E62NFB101M	CE	100 UF 160V
⚠C527	BZ110119	E02LF2222M	CE	2200 UF 16V
C535	BZ110182	C03L0R713K	CC	0.001 UF 2KV R
C802	BZ110247	C0JBB0713K	CC	0.001 UF 2KV B
			DIODES	
D001	BZ410037	D97U03301B	DIODE,ZENER	MTZJ33B T-77
D104	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D105	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D106	BZ410020	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77
D109	BZ410054	0021721150	LED	SLR-342VCT32
D402	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
D403	BZ410019	D97U03001B	DIODE,ZENER	MTZJ30B T-77
D404	BZ410020	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77
⚠D405	BZ410063	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
⚠D406	BZ410021	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
⚠D407	BZ410063	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
D410	BZ410019	D97U03001B	DIODE,ZENER	MTZJ30B T-77
⚠D411	BZ410063	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
D414	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
D415	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
⚠D501	BZ410062	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D502	BZ410062	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D503	BZ410062	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D504	BZ410062	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D505	AE006082	D28F0PRA60	DIODE,RECTIFIER	30PRA60-FC
⚠D506	AD300731	D2WXN49370	DIODE,SILICON	1N4937

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		DIODES		
D507	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D508	BZ410064	D97U03R91B	DIODE,ZENER	MTZJ3.9B T-77
D509	AD300671	D97U01801B	DIODE,ZENER	MTZJ18B T-77
⚠D510	AD301980	D2CF2016L0	DIODE,SILICON	FE201-6L49
⚠D511	AD300731	D2WXN49370	DIODE,SILICON	1N4937
⚠D512	BZ410010	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
D513	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D514	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D516	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D517	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D520	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D523	AD300671	D97U01801B	DIODE,ZENER	MTZJ18B T-77
D524	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D525	AD302208	D97U03R31B	DIODE,ZENER	MTZJ3.3B T-77
D528	BZ410021	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D601	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D602	BZ410058	D97U08R21B	DIODE,ZENER	MTZJ8.2B T-77
D604	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D605	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D606	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D607	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D608	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
D701	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D702	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D703	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D704	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D706	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D709	BZ410066	D97U06R21B	DIODE,ZENER	MTZJ6.2B T-77
D801	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D802	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D803	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D810	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D811	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D812	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
		ICS		
IC101	AE006067	I56F07090B	IC	OEC7090B
IC199	AE006934	A3S102N015	INIT DATA	BR24L16FJ-WE2
IC302	AD301983	I01FF58910	IC	AN5891SA-E1V
⚠IC401	AE002783	I03TD804N0	IC	LA78040N-E
⚠IC504	BZ410088	0002E00610	PHOTO COUPLER	LTV-817M-VB
IC601	AE003906	I06FC1283B	IC	M61283BFP
IC902	BZ611068	I01FF58290	IC	AN5829S
⚠IC1001	AD302184	I0FSP7522N	IC	AN7522N
IC1501	AE006220	I05FEA45FG	IC	TC90A45FG
IC1502	AD301988	I0UF015010	IC	MM1501XNRE
IC1503	AD301988	I0UF015010	IC	MM1501XNRE
		TRANSISTORS		
Q101	AE005873	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
Q103	AE005873	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
⚠Q402	BZ510097	TCAT03227Y	TRANSISTOR,SILICON	KTC3227_Y-AT
⚠Q405	AE000656	TC1G058850	TRANSISTOR,SILICON	2SC5885
⚠Q502	AE002251	T25F035630	FET	2SK3563(ORION_Q)
⚠Q503	BZ510005	TA3T1371A0	TRANSISTOR,SILICON	2SA1371(D,E)-AE
Q504	BZ510069	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
⚠Q505	BZ510011	TC3T029090	TRANSISTOR,SILICON	2SC2909(S,T)-AA
⚠Q507	BZ510069	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
⚠Q512	BZ510004	TA3T016240	TRANSISTOR,SILICON	2SA1624-AA
⚠Q514	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q601	BZ510105	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q602	BZ510105	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q604	BZ510105	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q606	BZ510105	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q607	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q611	BZ510105	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
⚠Q801	BZ510100	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q802	BZ510100	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q803	BZ510100	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q804	BZ510091	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
⚠Q805	BZ510091	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
⚠Q806	BZ510091	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
Q1501	AE005872	T6RA015300	TRANSISTOR,SILICON	2SA1530A-T1

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
			TRANSISTORS	
Q1502	AE005873	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
Q1505	AE005873	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
Q1507	AE005873	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
			COILS &TRANSFORMERS	
L301	BZ310041	02167F101J	COIL	100 UH
L401	BZ310004	021679472K	COIL	4.7 MH
L402	BZ310063	022100027A	COIL,LINEARITY	ELH5L4113
⚠L501	BZ310144	029T000097	COIL,LINE FILTER	1R5A123F28Y
⚠L503	BZ310116	028R140023	COIL,DEGAUSS	8R140023
L901	BZ310041	02167F101J	COIL	100 UH
L1501	BZ310041	02167F101J	COIL	100 UH
L1503	BZ310141	02167F100J	COIL	10 UH
L1504	AD300613	02167F150J	COIL	15 UH
L1507	BZ310183	021LA6220J	COIL	22 UH
T401	BZ310172	045013003J	TRANS,HORIZONTAL DRIVE	ETH14Y47AY
⚠T501	AE006422	0481291314	TRANSFORMER,SWITCHING	81291314
			JACKS	
J701	AE002759	060J431020	RCA JACK	MSP-213V2-432_NI_LF
J702	AE006074	063Q700011	JACK	YKF51-5503N
J704	AE002761	060J411032	RCA JACK	MSP-213V1-652_NI_LF
J705	AE004756	060J401104	RCA JACK	MTJ-032-03A-30FE
J706	AE004758	060J401106	RCA JACK	MTJ-032-03A-32FE
J707	AE004757	060J401105	RCA JACK	MTJ-032-03A-31FE
⚠J801	BZ614434	066F120018	SOCKET,CATHODE RAY TUBE	ISMS01S
⚠J1001	AE003431	060J131016	HEADPHONE JACK	MSJ-2000_AG
			SWITCHES	
SW101	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW102	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW103	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW104	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW105	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
			VARIABLE RESISTORS	
VR401	BZ210218	V1K63H3BTE	VOLUME,SEMI FIXED	NVG6TLTAB222
VR502	BZ210101	V1163H4BTC	VOLUME,SEMI FIXED	EVNCYAA03BE4
			P.C.BOARD ASSEMBLIES	
PCB010	AE006935	A3S102N010	PCB ASS'Y	CME017A
PCB110	AE006426	A3S101N110	PCB ASS'Y	CCE011A
			MISCELLANEOUS	
B501	BZ310045	024AT03481	CORE,BEADS	BL02RN1-R62T2
B504	BZ310121	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B1502	BZ310121	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
BT001	AE005640	141R004016	BATTERY,MANGAN	GR03X-SP2
BT002	AE005640	141R004016	BATTERY,MANGAN	GR03X-SP2
⚠CD501	AE006423	1209619905	CORD,AC BUSH	9619905
CD801	AE000567	WCL6826038	FLAT CABLE	AWM2468 AWG26 5C GRAY 260MM
CD802	BZ614329	WDL6036038	FLAT CABLE	AWM2468 AWG26 6C BLACK 360MM
CD803	AD301363	06CU822501	CORD,CONNECTOR	CU822501
CP101	BZ614102	0694270139	CONNECTOR PCB SIDE	173979-7
⚠CP401	AE006075	069X460109	CONNECTOR PCB SIDE	B06B-DVS-L (LF)
⚠CP501	BZ614176	069S320419	CONNECTOR PCB SIDE	A3963WV2-3PD
⚠CP502	BZ614283	069S420110	CONNECTOR PCB SIDE	A1561WV2-2P
CP507	BZ614444	069D01001A	CONNECTOR PCB SIDE	003P-2100
CP508	BZ614444	069D01001A	CONNECTOR PCB SIDE	003P-2100
CP803	BZ614269	069S320010	CONNECTOR PCB SIDE	A2361WV2-2P
CP806	BZ614058	069W010010	CONNECTOR PCB SIDE	005P-2100
CD1001	AE000569	06CU146901	CORD,CONNECTOR	CU146901
CP1001	AD301045	069S140419	CONNECTOR PCB SIDE	A2502WV2-4P
CP801A	BZ614276	067U005049	WIRE HOLDER	B2013H02-5P
CP801B	BZ614276	067U005049	WIRE HOLDER	B2013H02-5P
CP802A	BZ614333	067U006049	WIRE HOLDER	B2013H02-6P
CP802B	BZ614333	067U006049	WIRE HOLDER	B2013H02-6P
EL001	BZ614044	124120301A	EYE LET	XRY20X30BD
EL002	BZ614043	124116281A	EYE LET	XRY16X28BD
⚠F501	BZ614422	081PC6R305	FUSE	51MS063L
⚠FB401	AE003159	043214045F	TRANSFORMER,FLYBACK	FQI14B003F_M
FH501	AE002634	06710T0009	HOLDER,FUSE	EYF-52BCY
FH502	AE002634	06710T0009	HOLDER,FUSE	EYF-52BCY
OS101	AD301048	0773071001	REMOTE RECEIVER	RPM7138-WH5
⚠RY501	AD300114	0560V20115	RELAY	ALKS321
⚠SP1001	BZ614029	070C533008	SPEAKER	810-47-171
⚠SP1002	BZ614029	070C533008	SPEAKER	810-47-171

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
			MISCELLANEOUS	
⚠TH501	BZ410079	DF5EL3R0A0	DEGAUSS ELEMENT	ZPB45BL3R0A
TM101	AE006214	076N0GQ020	TRANSMITTER	RC-GQ020
⚠TU001	AE006069	0163300018	RF UNIT	115-V-KA35ARB
⚠V801	AE003160	098Q150408	CRT W/DY	A36AKJ13X05(U)
X101	AD302002	100CT8R005	CRYSTAL	HC-49/U-S
X602	BZ613004	100CT3R505	CRYSTAL	HC-49/U

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

TOSHIBA CORPORATION
1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105-8001, JAPAN

TOSHIBA

FILE NO. 050-200508GR
(MFR'S VERSION A)
SUPPLEMENT

SERVICE MANUAL

COLOR TELEVISION

14AF45
14AF45C

The above models are classified as either green products (*1) or non-green products. The green products are indicated by underlined serial numbers. This Service Manual describes replacement parts for the green products. When repairing these green product(s), use the part(s) described in this manual and lead-free solder (*2).

-SUMMARY-

Use this Service Manual in conjunction with the original Service Manual (File No. 050-200508) for 14AF45 and 14AF45C.

For (*1) and (*2), see the next page.

DOCUMENT CREATED IN JAPAN, November, 2005

(*1) GREEN PRODUCT PROCUREMENT

The EC is actively promoting the WEEE & RoHS Directives that define standards for recycling and reuse of Waste Electrical and Electronic Equipment and for the Restriction of the use of certain Hazardous Substances. From July 1, 2006, the RoHS Directive will prohibit any marketing of new products containing lead.

Increasing attention is given to issues related to the global environmental. Toshiba Corporation recognizes environmental protection as a key management tasks, and is doing its utmost to enhance and improve the quality and scope of its environmental activities. In line with this, Toshiba proactively promotes Green Procurement, and seeks to purchase and use products, parts and materials that have low environmental impacts.

Green procurement of parts is not only confined to manufacture. The same green parts used in manufacture must also be used as replacement parts.

(*2) LEAD-FREE SOLDER

This product is manufactured using lead-free solder as a part of a movement within the CE industry at large to be environmentally responsible. Lead-free solder must be used in the servicing and repair of this product.

WARNING

This product is manufactured using lead free solder.

DO NOT USE LEAD BASED SOLDER TO REPAIR THIS PRODUCT !

The melting temperature of lead-free solder is higher than that of leaded solder by 86°F to 104°F (30°C to 40°C). Use of a soldering iron designed for lead-based solders to repair product made with lead-free solder may result in damage to the component and or PCB being soldered. Great care should be made to ensure high-quality soldering when servicing this product — especially when soldering large components, through-hole pins, and on PCBs — as the level of heat required to melt lead-free solder is high.

ORION ELECTRIC CO.,LTD.
41-1 IEHISA-CHO,ECHIZEN-CITY,FUKUI 915-8555 JAPAN
FACSIMILE: (0778)24-5456 PHONE: (0778)23-0001

SERVICE INSTRUCTION

FILE NO. 053-200508GRA
DATE:Jan.,2006
RANK:

A

Product: COLOR TELEVISION
Model: 14AF45/14AF45C

Corrective reason: Maker change of CRT.

Corrective action: Parts exchange.

Applicable units: BCA103012150 or younger.

ORION ELECTRIC CO.,LTD.

NOBUO TSUKAMOTO
MANAGER
TEC-HQ 2TEC SEC3

ELECTRICAL REPLACEMENT PARTS LIST

REF NO.	MFR'S VERSION A			MFR'S VERSION B			CAUSE
	PART NO.	DESCRIPTION	TSB P/N	PART NO.	DESCRIPTION	TSB P/N	
⚠ V801	098Q150408	CRT W/DY A36AKJ13X05(U)	72796976	098Y150413	CRT W/DY A36MBC30X01B	72783331	Maker change of CRT.

MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
101	72781142	7A701A307A	FRONT CABI ASS'Y
101A	72799311	701WPJC915	CABINET FRONT
101B	72799407	711WPAA109	PLATE FRONT
101C	72799473	713WPAA159	GLASS LED
101D	72783007	7235490048	BADGE BRAND
101E	72799762	735WPBB356	BUTTON FRAME
101F	72799792	735WPJA850	BUTTON POWER
101G	72783011	735WPAA709	STOPPER BUTTON 1
101H	72799735	735WPAA701	STOPPER BUTTON 2
101I	72781220	800WQ0A087	FELT SHEET
102	72783054	A3S101N740	CABINET,BACK ASSY
105	72799529	722549A421	SHEET RATING
106	72799645	723000C847	POP LABEL
107	72795682	769WSAA012	WASHER CRT T=0.5
108	72795687	741WUA0021	SPRING EARTH
109	72794734	899HV3T000	HOLDER ANODE WIRE
110	72799716	726000A090	SHEET CRT SERVICEMAN
111	72795625	800WQ0A041	FELT SHEET
112	72799625	723000C813	SHEET BARCODE
113	72799981	791WHAA122	FILM BAG
114	72783018	792WHA0446	PACKAGE TOP
115	72783019	792WHA0447	PACKAGE BOTTOM
116	72781062	793WCDC595	GIFT BOX
117	72783052	A3S001U975	INSTRUCTION BOOK KIT
118	72781628	JA4ND200	POLYBAG INSTRUCTION(RED CAUTION)
119	72781569	J3N51617A	REGISTRATION CARD
120	72783078	J3S00121C	INSTRUCTION BOOK(E/S)
201	72781282	8121J50C0U	SCREW TAPPING(B0) GW15 5*30 CH HEXAGON
202	72781279	8117540A6U	SCREW TAP TITE(B0) TRUSS 4*16 CH
203	72781255	8109I3080U	SCREW TAP TITE(B) WH7 3*8 CH
204	72798791	8110630A0U	SCREW TAP TITE(P) BRAZIER 3*10 CH
205	72798790	811063080U	SCREW TAP TITE(P) BRAZIER 3*8 CH
206	72798789	8109I30A0U	SCREW TAP TITE(B) WH7 3*10 CH
207	72781251	810963080Q	SCREW TAP TITE(B) BRAZIER 3*8 STAINLESS
208	72798786	810763080U	SCREW TAP TITE(S) BRAZIER 3*8 CH

MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
101	72781142	7A701A307A	FRONT CABI ASS'Y
101A	72799311	701WPJC915	CABINET FRONT
101B	72799407	711WPAA109	PLATE FRONT
101C	72799473	713WPAA159	GLASS LED
101D	72783007	7235490048	BADGE BRAND
101E	72799762	735WPBB356	BUTTON FRAME
101F	72799792	735WPJA850	BUTTON POWER
101G	72783011	735WPAA709	STOPPER BUTTON 1
101H	72799735	735WPAA701	STOPPER BUTTON 2
101I	72781220	800WQ0A087	FELT SHEET
102	72783055	A3S102N740	CABINET,BACK ASSY
103	72795593	722000A023	SHEET HWC
104	72795594	722000A267	SHEET CSA WARNING
105	72799544	722549A442	SHEET RATING
106	72799654	723000C870	POP LABEL
107	72795682	769WSAA012	WASHER CRT T=0.5
108	72795687	741WUA0021	SPRING EARTH
109	72794734	899HV3T000	HOLDER ANODE WIRE
110	72799716	726000A090	SHEET CRT SERVICEMAN
111	72795625	800WQ0A041	FELT SHEET
112	72799647	723000C857	SHEET BARCODE
113	72799981	791WHAA122	FILM BAG
114	72783018	792WHA0446	PACKAGE TOP
115	72783019	792WHA0447	PACKAGE BOTTOM
116	72781075	793WCDC653	GIFT BOX
117	72783053	A3S002U975	INSTRUCTION BOOK KIT
118	72795600	JA4ND100	POLYBAG INSTRUCTION(RED CAUTION)
120	72783079	J3S00221C	INSTRUCTION BOOK
121	72798549	7230007398	SECURITY TAG
201	72781282	8121J50C0U	SCREW TAPPING(B0) GW15 5*30 CH HEXAGON
202	72781279	8117540A6U	SCREW TAP TITE(B0) TRUSS 4*16 CH
203	72781255	8109I3080U	SCREW TAP TITE(B) WH7 3*8 CH
204	72798791	8110630A0U	SCREW TAP TITE(P) BRAZIER 3*10 CH
205	72798790	811063080U	SCREW TAP TITE(P) BRAZIER 3*8 CH
206	72798789	8109I30A0U	SCREW TAP TITE(B) WH7 3*10 CH
207	72781251	810963080Q	SCREW TAP TITE(B) BRAZIER 3*8 STAINLESS
208	72798786	810763080U	SCREW TAP TITE(S) BRAZIER 3*8 CH

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
			RESISTORS	
⚠R402	72781748	R638U2680J	R,FUSE	68 OHM 1/2W
⚠R410	72781693	R3K58A221J	R,METAL OXIDE	220 OHM 2W
⚠R426	72781722	R4K1T4472F	R,METAL	4.7K OHM 1/4W
⚠R434	72795116	R5X2CF5R6J	R,CEMENT	5.6 OHM 10W
⚠R436	72781717	R4K1T4183F	R,METAL	18K OHM 1/4W
⚠R438	72781702	R3K58B4R7J	R,METAL OXIDE	4.7 OHM 3W
⚠R439	72796031	R3K181102J	R,METAL OXIDE	1K OHM 1W
⚠R441	72795516	R4X5T6153F	R,METAL	15K OHM 1/6W
R454	72796461	R3X181101J	R,METAL OXIDE	100 OHM 1W
⚠R500	72794631	R0G3K2275K	RC	2.7M OHM 1/2W
⚠R501	72795523	R5X2AE010J	R,CEMENT	1 OHM 7W
⚠R502	72795503	R3X28A331J	R,METAL OXIDE	330 OHM 2W
⚠R506	72794616	R002T4682J	RC	6.8K OHM 1/4W
⚠R517	72796002	R3X28BR22J	R,METAL OXIDE	0.22 OHM 3W
⚠R520	72795500	R002T2155J	RC	1.5M OHM 1/2W
⚠R527	72781686	R3K58A010J	R,METAL OXIDE	1 OHM 2W
⚠R541	72794633	R63881R22J	R,METAL	0.22 OHM 1W
⚠R542	72781681	R3K581R22J	R,METAL OXIDE	0.22 OHM 1W
⚠R602	72797913	R3X28B120J	R,METAL OXIDE	12 OHM 3W
⚠R649	72781703	R3K58B5R6J	R,METAL OXIDE	5.6 OHM 3W
⚠R803	72796459	R3X18A153J	R,METAL OXIDE	15K OHM 2W
⚠R805	72796459	R3X18A153J	R,METAL OXIDE	15K OHM 2W
⚠R807	72796459	R3X18A153J	R,METAL OXIDE	15K OHM 2W
			CAPACITORS	
C408	72794410	E5EZF3102M	CE	1000 UF 25V
⚠C413	72797426	E0ELF4102M	CE	1000 UF 35V
C418	72796346	P4J7F3274J	CMPP	0.27 UF 250V PMS
⚠C420	72795825	P4N8FJ103H	CMPP	0.01 UF 1.25KV
C425	72794399	C0PLRR713K	CC	0.001 UF 2KV R
⚠C426	72794394	E5EZFD220M	CE	22 UF 250V
⚠C430	72794396	E02LU8220M	CE	22 UF 100V
⚠C501	72794360	E02LF3102M	CE	1000 UF 25V
C502	72794399	C0PLRR713K	CC	0.001 UF 2KV R
C503	72794399	C0PLRR713K	CC	0.001 UF 2KV R
⚠C504	72795091	E02LU52R2M	CE	2.2 UF 50V
⚠C505	72795566	P2122B224M	CMP	0.22 UF 275V ECQUL
⚠C506	72795567	P2122B104M	CMP	0.1 UF 275V ECQUL
⚠C507	72795568	E51CGC331M	CE	330 UF 200V
⚠C508	72794403	CD39E0MH3M	CC	0.0022UF 250V
⚠C513	72794409	CD39E0M13M	CC	0.001 UF 250V
C517	72795581	C0PLRR7E3K	CC	0.0015 UF 2KV R
⚠C519	72794409	CD39E0M13M	CC	0.001 UF 250V
⚠C521	72797525	E62NFB101M	CE	100 UF 160V
⚠C527	72796330	E02LF2222M	CE	2200 UF 16V
C535	72794393	C03L0R713K	CC	0.001 UF 2KV R
C802	72795578	C0JBB0713K	CC	0.001 UF 2KV B
			DIODES	
D001	72794465	D97U03301B	DIODE,ZENER	MTZJ33B T-77
D104	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D105	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D106	72794469	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77
D109	72795529	0021721150	LED	SLR-342VCT32
D402	72794488	D2WT011E10	DIODE,SILICON	11E1-EIC
D403	72794471	D97U03001B	DIODE,ZENER	MTZJ30B T-77
D404	72794469	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77
⚠D405	72794472	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
⚠D406	72794489	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
⚠D407	72794472	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
D410	72794471	D97U03001B	DIODE,ZENER	MTZJ30B T-77
⚠D411	72794472	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
D414	72794488	D2WT011E10	DIODE,SILICON	11E1-EIC
D415	72794488	D2WT011E10	DIODE,SILICON	11E1-EIC
⚠D501	72794473	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D502	72794473	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D503	72794473	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D504	72794473	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D505	72794474	D28F0PRA60	DIODE,RECTIFIER	30PRA60 FC
⚠D506	72794483	D2WXN49370	DIODE,SILICON	1N4937
D507	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D508	72795542	D97U03R91B	DIODE,ZENER	MTZJ3.9B T-77
D509	72795541	D97U01801B	DIODE,ZENER	MTZJ18B T-77
⚠D510	72794475	D2CF2016L0	DIODE,SILICON	FE201-6L49
⚠D511	72794483	D2WXN49370	DIODE,SILICON	1N4937
⚠D512	72794480	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
D513	72794491	D1VT001330	DIODE,SILICON	1SS133T-77

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
			DIODES	
D514	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D516	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D517	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D520	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D523	72795541	D97U01801B	DIODE,ZENER	MTZJ18B T-77
D524	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D525	72797335	D97U03R31B	DIODE,ZENER	MTZJ3.3B T-77
D528	72794489	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D601	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D602	72794486	D97U08R21B	DIODE,ZENER	MTZJ8.2B T-77
D604	72794487	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D605	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D606	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D607	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D608	72794488	D2WT011E10	DIODE,SILICON	11E1-EIC
D701	72794487	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D702	72794487	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D703	72794487	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D704	72794487	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D706	72794487	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D709	72794490	D97U06R21B	DIODE,ZENER	MTZJ6.2B T-77
D801	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D802	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D803	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D810	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D811	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D812	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
			ICS	
IC101	72795533	I56F07090B	IC	OEC7090B
IC199	72782887	A3S101N015	INIT DATA	BR24L16FJ-WE2
IC302	72794498	I01FF58910	IC	AN5891SA-E1V
⚠IC401	72795534	I03TD804N0	IC	LA78040N-E
⚠IC504	72795524	0002E00610	PHOTO COUPLER	LTV-817M-VB
IC601	72794514	I06FC1283B	IC	M61283BFP
IC902	72795535	I01FF58290	IC	AN5829S-E1V
⚠IC1001	72795908	I0FSP7522N	IC	AN7522N
IC1501	72794500	I05FEA45FG	IC	TC90A45FG
IC1502	72794502	I0UF015010	IC	MM1501XNRE
IC1503	72794502	I0UF015010	IC	MM1501XNRE
			TRANSISTORS	
Q101	72795479	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
Q103	72795479	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
⚠Q402	72794561	TCAT03227Y	TRANSISTOR,SILICON	KTC3227_Y-AT
⚠Q405	72795478	TC1G058850	TRANSISTOR,SILICON	2SC5885
⚠Q502	72795539	T25F035630	FET	2SK3563(ORION_Q)
⚠Q503	72795475	TA3T1371A0	TRANSISTOR,SILICON	2SA1371(D,E)-AE
Q504	72794577	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
⚠Q505	72795474	TC3T029090	TRANSISTOR,SILICON	2SC2909(S,T)-AA
⚠Q507	72794577	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
⚠Q512	72794569	TA3T016240	TRANSISTOR,SILICON	2SA1624-AA
⚠Q514	72795476	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q601	72794570	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q602	72794570	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q604	72794570	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q606	72794570	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q607	72795476	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q611	72794570	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
⚠Q801	72794573	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q802	72794573	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q803	72794573	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q804	72794574	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
⚠Q805	72794574	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
⚠Q806	72794574	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
Q1501	72795481	T6RA015300	TRANSISTOR,SILICON	2SA1530A-T1
Q1502	72795479	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
Q1505	72795479	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
Q1507	72795479	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
			COILS &TRANSFORMERS	
L301	72794540	02167F101J	COIL	100 UH
L401	72794527	021679472K	COIL	4.7 MH
L402	72794528	022100027A	COIL,LINEARITY	ELH5L4113
⚠L501	72796630	029T000097	COIL,LINE FILTER	1R5A123F28Y
⚠L503	72796403	028R140023	COIL,DEGAUSS	8R140023
L901	72794540	02167F101J	COIL	100 UH
L1501	72794540	02167F101J	COIL	100 UH

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
			COILS &TRANSFORMERS	
L1503	72795062	02167F100J	COIL	10 UH
L1504	72795932	02167F150J	COIL	15 UH
L1507	72796571	021LA6220J	COIL	22 UH
T401	72796055	045013003J	TRANS,HORIZONTAL DRIVE	ETH14Y47AY
⚠T501	72798973	0481291314	TRANSFORMER,SWITCHING	81291314
			JACKS	
J701	72794518	060J431020	RCA JACK	MSP-213V2-432_NI_LF
J702	72794517	063Q700011	JACK	YKF51-5503N
J704	72795493	060J411032	RCA JACK	MSP-213V1-652_NI_LF
J705	72794519	060J401104	RCA JACK	MTJ-032-03A-30FE
J706	72794520	060J401106	RCA JACK	MTJ-032-03A-32FE
J707	72794521	060J401105	RCA JACK	MTJ-032-03A-31FE
⚠J801	72795491	066F120018	SOCKET,CATHODE RAY TUBE	ISMS01S
J1001	72794516	060J131016	HEADPHONE JACK	MSJ-2000_AG
			SWITCHES	
SW101	72794688	0504101T34	SWITCH,TACT	EVQ21505R
SW102	72794688	0504101T34	SWITCH,TACT	EVQ21505R
SW103	72794688	0504101T34	SWITCH,TACT	EVQ21505R
SW104	72794688	0504101T34	SWITCH,TACT	EVQ21505R
SW105	72794688	0504101T34	SWITCH,TACT	EVQ21505R
			VARIABLE RESISTORS	
VR401	72795471	V1K63H3BTE	VOLUME,SEMI FIXED	NVG6TLTAB222
VR502	72794701	V1163H4BTC	VOLUME,SEMI FIXED	EVNCYAA03BE4
			P.C.BOARD ASSEMBLIES	
PCB010	72782912	A3S101N010	PCB ASS'Y	CME017B
PCB110	72782933	A3S101N110	PCB ASS'Y	CCE011B
			MISCELLANEOUS	
B501	72795549	024AT03481	CORE,BEADS	BL02RN1-R62T2
B504	72794357	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B1502	72794357	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
BT001	72799278	141R004016	BATTERY,MANGAN	GR03X-SP2
BT002	72799278	141R004016	BATTERY,MANGAN	GR03X-SP2
⚠CD501	72799252	1209619905	CORD,AC BUSH	9619905
CD801	72798399	WCL6826038	FLAT CABLE	AWM2468 AWG26 5C GRAY 260MM
CD802	72798416	WDL6036038	FLAT CABLE	AWM2468 AWG26 6C BLACK 360MM
CD803	72796911	06CU822501	CORD,CONNECTOR	CU822501
CP101	72782677	0694270139	CONNECTOR PCB SIDE	173979-7
⚠CP401	72782003	069X460109	CONNECTOR PCB SIDE	B06B-DVS-L_(LF)
⚠CP501	72796817	069S320419	CONNECTOR PCB SIDE	A3963WV2-3PD
⚠CP502	72796821	069S420110	CONNECTOR PCB SIDE	A1561WV2-2P
CP507	72796768	069D01001A	CONNECTOR PCB SIDE	003P-2100
CP508	72796768	069D01001A	CONNECTOR PCB SIDE	003P-2100
CP803	72796816	069S320010	CONNECTOR PCB SIDE	A2361WV2-2P
CP806	72796824	069W010010	CONNECTOR PCB SIDE	005P-2100
CD1001	72796875	06CU146901	CORD,CONNECTOR	CU146901
CP1001	72796793	069S140419	CONNECTOR PCB SIDE	A2502WV2-4P
CP801A	72796751	067U005049	WIRE HOLDER	B2013H02-5P
CP801B	72796751	067U005049	WIRE HOLDER	B2013H02-5P
CP802A	72796752	067U006049	WIRE HOLDER	B2013H02-6P
CP802B	72796752	067U006049	WIRE HOLDER	B2013H02-6P
EL001	72797070	124120301A	EYE LET	XRY20X30BD
EL002	72797069	124116281A	EYE LET	XRY16X28BD
⚠F501	72794493	081PC6R305	FUSE	51MS063L
⚠FB401	72796665	043214045F	TRANSFORMER,FLYBACK	FQI14B003F_M
FH501	72794496	06710T0009	HOLDER,FUSE	EYF-52BCY
FH502	72794496	06710T0009	HOLDER,FUSE	EYF-52BCY
OS101	72794541	0773071001	REMOTE RECEIVER	RPM7138-WH5
⚠RY501	72796047	0560V20115	RELAY	ALKS321
SP1001	72782956	070C533008	SPEAKER	810-47-171
SP1002	72782956	070C533008	SPEAKER	810-47-171
⚠TH501	72795546	DF5EL3R0A0	DEGAUSS ELEMENT	ZPB45BL3R0A
TM101	72799199	076N0GQ020	TRANSMITTER	RC-GQ020
⚠TU001	72795492	0163300018	RF UNIT	115-V-KA35ARB
⚠V801	72796976	098Q150408	CRT W/DY	A36AKJ13X05(U)
X101	72794702	100CT8R005	CRYSTAL	HC-49/U-S
X602	72794703	100CT3R505	CRYSTAL	HC-49/U

ELECTRICAL REPLACEMENT PARTS LIST

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

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
			RESISTORS	
⚠R402	72781748	R638U2680J	R,FUSE	68 OHM 1/2W
⚠R410	72781693	R3K58A221J	R,METAL OXIDE	220 OHM 2W
⚠R426	72781722	R4K1T4472F	R,METAL	4.7K OHM 1/4W
⚠R434	72795116	R5X2CF5R6J	R,CEMENT	5.6 OHM 10W
⚠R436	72781717	R4K1T4183F	R,METAL	18K OHM 1/4W
⚠R438	72781702	R3K58B4R7J	R,METAL OXIDE	4.7 OHM 3W
⚠R439	72796031	R3K181102J	R,METAL OXIDE	1K OHM 1W
⚠R441	72795516	R4X5T6153F	R,METAL	15K OHM 1/6W
R454	72796461	R3X181101J	R,METAL OXIDE	100 OHM 1W
⚠R500	72794631	R0G3K2275K	RC	2.7M OHM 1/2W
⚠R501	72795523	R5X2AE010J	R,CEMENT	1 OHM 7W
⚠R502	72795503	R3X28A331J	R,METAL OXIDE	330 OHM 2W
⚠R506	72794616	R002T4682J	RC	6.8K OHM 1/4W
⚠R517	72796002	R3X28BR22J	R,METAL OXIDE	0.22 OHM 3W
⚠R520	72795500	R002T2155J	RC	1.5M OHM 1/2W
⚠R527	72781686	R3K58A010J	R,METAL OXIDE	1 OHM 2W
⚠R541	72794633	R63881R22J	R,FUSE	0.22 OHM 1W
⚠R542	72781681	R3K581R22J	R,METAL OXIDE	0.22 OHM 1W
⚠R602	72797913	R3X28B120J	R,METAL OXIDE	12 OHM 3W
⚠R649	72781703	R3K58B5R6J	R,METAL OXIDE	5.6 OHM 3W
⚠R803	72796459	R3X18A153J	R,METAL OXIDE	15K OHM 2W
⚠R805	72796459	R3X18A153J	R,METAL OXIDE	15K OHM 2W
⚠R807	72796459	R3X18A153J	R,METAL OXIDE	15K OHM 2W
			CAPACITORS	
C408	72794410	E5EZF3102M	CE	1000 UF 25V
⚠C413	72797426	E0ELF4102M	CE	1000 UF 35V
C418	72796346	P4J7F3274J	CMPP	0.27 UF 250V PMS
⚠C420	72795825	P4N8FJ103H	CMPP	0.01 UF 1.25KV
C425	72794399	C0PLRR713K	CC	0.001 UF 2KV R
⚠C426	72794394	E5EZFD220M	CE	22 UF 250V
⚠C430	72794396	E02LU8220M	CE	22 UF 100V
⚠C501	72794360	E02LF3102M	CE	1000 UF 25V
C502	72794399	C0PLRR713K	CC	0.001 UF 2KV R
C503	72794399	C0PLRR713K	CC	0.001 UF 2KV R
⚠C504	72795091	E02LU52R2M	CE	2.2 UF 50V
⚠C505	72795566	P2122B224M	CMP	0.22 UF 275V ECQUL
⚠C506	72795567	P2122B104M	CMP	0.1 UF 275V ECQUL
⚠C507	72795568	E51CGC331M	CE	330 UF 200V
⚠C508	72794403	CD39E0MH3M	CC	0.0022UF 250V
⚠C513	72794409	CD39E0M13M	CC	0.001 UF 250V
C517	72795581	C0PLRR7E3K	CC	0.0015 UF 2KV R
⚠C519	72794409	CD39E0M13M	CC	0.001 UF 250V
⚠C521	72797525	E62NFB101M	CE	100 UF 160V
⚠C527	72796330	E02LF2222M	CE	2200 UF 16V
C535	72794393	C03L0R713K	CC	0.001 UF 2KV R
C802	72795578	C0JBB0713K	CC	0.001 UF 2KV B
			DIODES	
D001	72794465	D97U03301B	DIODE,ZENER	MTZJ33B T-77
D104	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D105	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D106	72794469	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77
D109	72795529	0021721150	LED	SLR-342VCT32
D402	72794488	D2WT011E10	DIODE,SILICON	11E1-EIC
D403	72794471	D97U03001B	DIODE,ZENER	MTZJ30B T-77
D404	72794469	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77
⚠D405	72794472	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
⚠D406	72794489	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
⚠D407	72794472	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
D410	72794471	D97U03001B	DIODE,ZENER	MTZJ30B T-77
⚠D411	72794472	D2WTAU02A0	DIODE,SILICON	AU02A-EIC
D414	72794488	D2WT011E10	DIODE,SILICON	11E1-EIC
D415	72794488	D2WT011E10	DIODE,SILICON	11E1-EIC
⚠D501	72794473	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D502	72794473	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D503	72794473	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D504	72794473	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D505	72794474	D28F0PRA60	DIODE RECTIFIER	30PRA60 FC
⚠D506	72794483	D2WXN49370	DIODE,SILICON	1N4937
D507	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D508	72795542	D97U03R91B	DIODE,ZENER	MTZJ3.9B T-77
D509	72795541	D97U01801B	DIODE,ZENER	MTZJ18B T-77
⚠D510	72794475	D2CF2016L0	DIODE,SILICON	FE201-6L49
⚠D511	72794483	D2WXN49370	DIODE,SILICON	1N4937
⚠D512	72794480	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
D513	72794491	D1VT001330	DIODE,SILICON	1SS133T-77

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
			DIODES	
D514	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D516	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D517	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D520	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D523	72795541	D97U01801B	DIODE,ZENER	MTZJ18B T-77
D524	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D525	72797335	D97U03R31B	DIODE,ZENER	MTZJ3.3B T-77
D528	72794489	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D601	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D602	72794486	D97U08R21B	DIODE,ZENER	MTZJ8.2B T-77
D604	72794487	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D605	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D606	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D607	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D608	72794488	D2WT011E10	DIODE,SILICON	11E1-EIC
D701	72794487	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D702	72794487	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D703	72794487	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D704	72794487	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D706	72794487	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D709	72794490	D97U06R21B	DIODE,ZENER	MTZJ6.2B T-77
D801	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D802	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D803	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D810	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D811	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
D812	72794491	D1VT001330	DIODE,SILICON	1SS133T-77
			ICS	
IC101	72795533	I56F07090B	IC	OEC7090B
IC199	72782888	A3S102N015	INIT DATA	BR24L16FJ-WE2
IC302	72794498	I01FF58910	IC	AN5891SA-E1V
⚠IC401	72795534	I03TD804N0	IC	LA78040N-E
⚠IC504	72795524	0002E00610	PHOTO COUPLER	LTV-817M-VB
IC601	72794514	I06FC1283B	IC	M61283BFP
IC902	72795535	I01FF58290	IC	AN5829S-E1V
⚠IC1001	72795908	I0FSP7522N	IC	AN7522N
IC1501	72794500	I05FEA45FG	IC	TC90A45FG
IC1502	72794502	I0UF015010	IC	MM1501XNRE
IC1503	72794502	I0UF015010	IC	MM1501XNRE
			TRANSISTORS	
Q101	72795479	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
Q103	72795479	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
⚠Q402	72794561	TCAT03227Y	TRANSISTOR,SILICON	KTC3227_Y-AT
⚠Q405	72795478	TC1G058850	TRANSISTOR,SILICON	2SC5885
⚠Q502	72795539	T25F035630	FET	2SK3563(ORION_Q)
⚠Q503	72795475	TA3T1371A0	TRANSISTOR,SILICON	2SA1371(D,E)-AE
Q504	72794577	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
⚠Q505	72795474	TC3T029090	TRANSISTOR,SILICON	2SC2909(S,T)-AA
⚠Q507	72794577	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
⚠Q512	72794569	TA3T016240	TRANSISTOR,SILICON	2SA1624-AA
⚠Q514	72795476	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q601	72794570	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q602	72794570	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q604	72794570	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q606	72794570	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q607	72795476	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q611	72794570	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
⚠Q801	72794573	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q802	72794573	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q803	72794573	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q804	72794574	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
⚠Q805	72794574	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
⚠Q806	72794574	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
Q1501	72795481	T6RA015300	TRANSISTOR,SILICON	2SA1530A-T1
Q1502	72795479	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
Q1505	72795479	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
Q1507	72795479	T8RA030520	TRANSISTOR,SILICON	2SC3052-T1
			COILS &TRANSFORMERS	
L301	72794540	02167F101J	COIL	100 UH
L401	72794527	021679472K	COIL	4.7 MH
L402	72794528	022100027A	COIL,LINEARITY	ELH5L4113
⚠L501	72796630	029T000097	COIL,LINE FILTER	1R5A123F28Y
⚠L503	72796403	028R140023	COIL,DEGAUSS	8R140023
L901	72794540	02167F101J	COIL	100 UH
L1501	72794540	02167F101J	COIL	100 UH

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
			COILS &TRANSFORMERS	
L1503	72795062	02167F100J	COIL	10 UH
L1504	72795932	02167F150J	COIL	15 UH
L1507	72796571	021LA6220J	COIL	22 UH
T401	72796055	045013003J	TRANS,HORIZONTAL DRIVE	ETH14Y47AY
⚠T501	72798973	0481291314	TRANSFORMER,SWITCHING	81291314
			JACKS	
J701	72794518	060J431020	RCA JACK	MSP-213V2-432_NI_LF
J702	72794517	063Q700011	JACK	YKF51-5503N
J704	72795493	060J411032	RCA JACK	MSP-213V1-652_NI_LF
J705	72794519	060J401104	RCA JACK	MTJ-032-03A-30FE
J706	72794520	060J401106	RCA JACK	MTJ-032-03A-32FE
J707	72794521	060J401105	RCA JACK	MTJ-032-03A-31FE
⚠J801	72795491	066F120018	SOCKET,CATHODE RAY	TUBEISMS01S
J1001	72794516	060J131016	HEADPHONE JACK	MSJ-2000_AG
			SWITCHES	
SW101	72794688	0504101T34	SWITCH,TACT	EVQ21505R
SW102	72794688	0504101T34	SWITCH,TACT	EVQ21505R
SW103	72794688	0504101T34	SWITCH,TACT	EVQ21505R
SW104	72794688	0504101T34	SWITCH,TACT	EVQ21505R
SW105	72794688	0504101T34	SWITCH,TACT	EVQ21505R
			VARIABLE RESISTORS	
VR401	72795471	V1K63H3BTE	VOLUME,SEMI FIXED	NVG6TLTAB222
VR502	72794701	V1163H4BTC	VOLUME,SEMI FIXED	EVNCYAA03BE4
			P.C.BOARD ASSEMBLIES	
PCB010	72782913	A3S102N010	PCB ASS'Y	CME017B
PCB110	72782933	A3S101N110	PCB ASS'Y	CCE011B
			MISCELLANEOUS	
B501	72795549	024AT03481	CORE,BEADS	BL02RN1-R62T2
B504	72794357	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B1502	72794357	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
BT001	72799278	141R004016	BATTERY,MANGAN	GR03X-SP2
BT002	72799278	141R004016	BATTERY,MANGAN	GR03X-SP2
⚠CD501	72799252	1209619905	CORD,AC BUSH	9619905
CD801	72798399	WCL6826038	FLAT CABLE	AWM2468 AWG26 5C GRAY 260MM
CD802	72798416	WDL6036038	FLAT CABLE	AWM2468 AWG26 6C BLACK 360MM
CD803	72796911	06CU822501	CORD,CONNECTOR	CU822501
CP101	72782677	0694270139	CONNECTOR PCB SIDE	173979-7
⚠CP401	72782003	069X460109	CONNECTOR PCB SIDE	B06B-DVS-L_(LF)
⚠CP501	72796817	069S320419	CONNECTOR PCB SIDE	A3963WV2-3PD
⚠CP502	72796821	069S420110	CONNECTOR PCB SIDE	A1561WV2-2P
CP507	72796768	069D01001A	CONNECTOR PCB SIDE	003P-2100
CP508	72796768	069D01001A	CONNECTOR PCB SIDE	003P-2100
CP803	72796816	069S320010	CONNECTOR PCB SIDE	A2361WV2-2P
CP806	72796824	069W010010	CONNECTOR PCB SIDE	005P-2100
CD1001	72796875	06CU146901	CORD,CONNECTOR	CU146901
CP1001	72796793	069S140419	CONNECTOR PCB SIDE	A2502WV2-4P
CP801A	72796751	067U005049	WIRE HOLDER	B2013H02-5P
CP801B	72796751	067U005049	WIRE HOLDER	B2013H02-5P
CP802A	72796752	067U006049	WIRE HOLDER	B2013H02-6P
CP802B	72796752	067U006049	WIRE HOLDER	B2013H02-6P
EL001	72797070	124120301A	EYE LET	XRY20X30BD
EL002	72797069	124116281A	EYE LET	XRY16X28BD
⚠F501	72794493	081PC6R305	FUSE	51MS063L
⚠FB401	72796665	043214045F	TRANSFORMER,FLYBACK	FQI14B003F_M
FH501	72794496	06710T0009	HOLDER,FUSE	EYF-52BCY
FH502	72794496	06710T0009	HOLDER,FUSE	EYF-52BCY
OS101	72794541	0773071001	REMOTE RECEIVER	RPM7138-WH5
⚠RY501	72796047	0560V20115	RELAY	ALKS321
SP1001	72782956	070C533008	SPEAKER	810-47-171
SP1002	72782956	070C533008	SPEAKER	810-47-171
⚠TH501	72795546	DF5EL3R0A0	DEGAUSS ELEMENT	ZPB45BL3R0A
TM101	72799199	076N0GQ020	TRANSMITTER	RC-GQ020
⚠TU001	72795492	0163300018	RF UNIT	115-V-KA35ARB
⚠V801	72796976	098Q150408	CRT W/DY	A36AKJ13X05(U)
X101	72794702	100CT8R005	CRYSTAL	HC-49/U-S
X602	72794703	100CT3R505	CRYSTAL	HC-49/U

ELECTRICAL REPLACEMENT PARTS LIST

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

TOSHIBA CORPORATION
1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105-8001, JAPAN