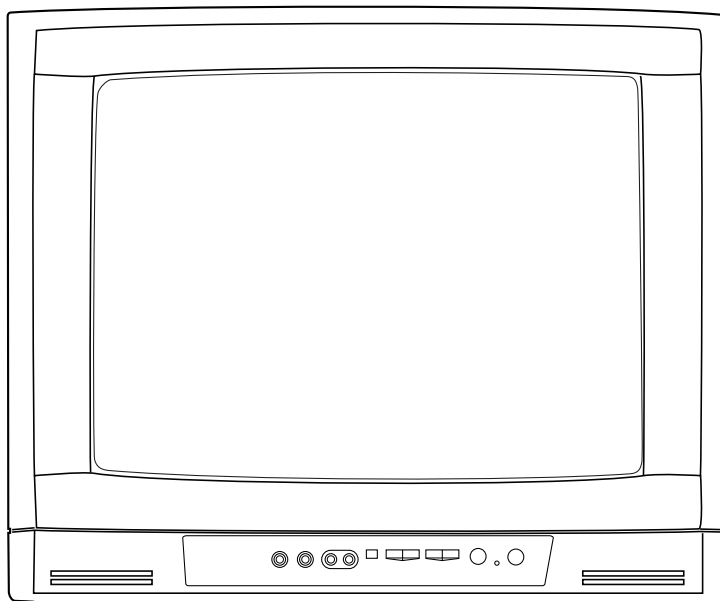




SERVICE MANUAL

20" COLOR TELEVISION

TV-2000A MK12



IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Funai Equipment. The service procedures recommended by Funai and described in this service manual are effective methods of performing service operations. Some of these service special tools should be used when and as recommended.

It is important to note that this service manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Funai could not possibly know, evaluate and advice the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Funai has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Funai must first use all precautions thoroughly so that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

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SPECIFICATIONS

< TUNER >

ANT. Input ----- 75ohm Unbal., F type
 Reference Level ----- 20Vp-p (CRT Green Cathode)
 Test Input Signal ----- 400Hz 30% modulation

Description	Condition	Unit	Nominal	Limit
1. Intermediate Freq.	Picture	MHz	38.0	—
	Sound(B/G)	MHz	32.5	—
	(D/K)	MHz	31.5	—
2. Peak Picture Sens	VHF	dBμV	15	30
	CATV	dBμV	15	30
	UHF	dBμV	15	40
3. AFT Pull In Range (10mV input)	—	MHz	± 2.3	± 0.7

< DEFLECTION >

Description	Condition	Unit	Nominal	Limit
1. Deflection Freq.	Horizontal	KHz	15.625(PAL)	—
	Vertical(PAL) (NTSC)	Hz	15.750(NTSC)	—
		Hz	50	—
2. Linearity	Horizontal	%	—	± 15
	Vertical	%	—	± 10
3. Over Scan	—	%	10	—
4. High Voltage	—	KV	26	—

< VIDEO & CHROMA >

Description	Condition	Unit	Nominal	Limit
1. Misconvergence	Center	mm	—	0.4
	Side	mm	—	1.5
	Corner	mm	—	2.1
2. Brightness	APL 100%	Ft-L	40	25
3. Color Temperature	—	°K	8000°K-10MPCD	—
4. Resolution	Horizontal	Line	350	—
	Vertical	Line	400	—

<AUDIO>

All items are measured across 8Ω load at speaker output terminal.

Description	Condition	Unit	Nominal	Limit
1. Audio Output Power	10% THD	W	3	2.7
2. Audio Distortion (w/LPF)	500mW	%	2	5
3. Audio Freq. Response	−3dB	Hz	100~10K	—

Note:

Nominal specifications represent the design specifications. All units should be able to approximate these. Some will exceed and some may drop slightly below these specifications. Limit specifications represent the absolute worst condition that still might be considered acceptable. In no case should a unit fail to meet limit specifications.

IMPORTANT SAFETY PRECAUTIONS

Prior to shipment from the factory, our products are strictly inspected for recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

Safety Precautions for TV Circuit

1. Before returning an instrument to the customer, always make a safety check of the entire instrument, including, but not limited to, the following items:

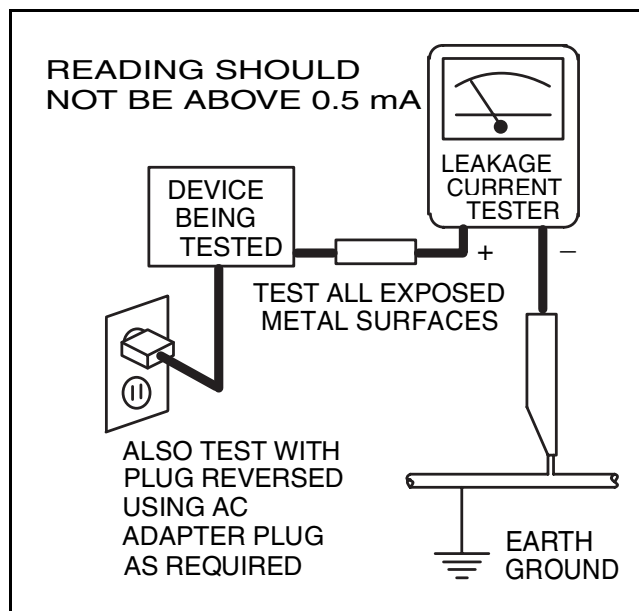
a. Be sure that no built-in protective devices are defective and have been defeated during servicing. (1) Protective shields are provided on this chassis to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience. (2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including but not limited to, non-metallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. **Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damage.**

b. Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, (1) spacing between the picture tube and the cabinet mask, (2) excessively wide cabinet ventilation slots, and (3) an improperly fitted and/or incorrectly secured cabinet back cover.

c. Antenna Cold Check - With the instrument AC plug removed from any AC source, connect an electrical jumper across the two AC plug prongs. Place the instrument AC switch in the on position. Connect one lead of an ohmmeter to the AC plug prongs tied together and touch the other ohmmeter lead in turn to each tuner antenna input exposed terminal screw and, if applicable, to the coaxial connector. If the measured resistance is less than 1.0 megohm or greater than 5.2 megohm, an abnormality exists that must be corrected before the instrument is returned to the customer. Repeat this test with the instrument AC switch in the off position.

d. Leakage Current Hot Check - With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage

current tester or a metering system that complies with American National Standards Institute (ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1410, (50.7). With the instrument AC switch first in the on position and then in the off position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinet, screw heads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5 milli-ampere. Reverse the instrument power cord plug in the outlet and repeat the test.



ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER OR BEFORE CONNECTING THE ANTENNA OR ACCESSORIES.

e. X-Radiation and High Voltage Limits - Because the picture tube is the primary potential source of X-radiation in solid-state TV receivers, it is specially constructed to prohibit X-radiation emissions. For continued X-radiation protection, the replacement picture tube must be the same type as the original. Also, because the picture tube shields and mounting hardware perform an X-radiation protection function, they must be correctly in place. High voltage must be measured each time servicing

is performed that involves B+, horizontal deflection or high voltage. Correct operation of the X-radiation protection circuits also must be reconfirmed each time they are serviced. (X-radiation protection circuits also may be called "horizontal disable" or "hold down.") Read and apply the high voltage limits and, if the chassis is so equipped, the X-radiation protection circuit specifications given on instrument labels and in the Product Safety & X-Radiation Warning note on the service data chassis schematic. High voltage is maintained within specified limits by close tolerance safety-related components/adjustments in the high-voltage circuit. If high voltage exceeds specified limits, check each component specified on the chassis schematic and take corrective action.

2. Read and comply with all caution and safety-related notes on or inside the receiver cabinet, on the receiver chassis, or on the picture tube.

3. Design Alteration Warning - Do not alter or add to the mechanical or electrical design of this TV receiver. Design alterations and additions, including, but not limited to circuit modifications and the addition of items such as auxiliary audio and/or video output connections, might alter the safety characteristics of this receiver and create a hazard to the user. Any design alterations or additions will void the manufacturer's warranty and may make you, the servicer, responsible for personal injury or property damage resulting therefrom.


4. Picture Tube Implosion Protection Warning

- The picture tube in this receiver employs integral implosion protection. For continued implosion protection, replace the picture tube only with one of the same type number. Do not remove, install, or otherwise handle the picture tube in any manner without first putting on shatterproof goggles equipped with side shields. People not so equipped must be kept safely away while picture tubes are handled. Keep the picture tube away from your body. Do not handle the picture tube by its neck. Some "in-line" picture tubes are equipped with a permanently attached deflection yoke; because of potential hazard, do not try to remove such "permanently attached" yokes from the picture tube.

5. Hot Chassis Warning -

- a. Some TV receiver chassis are electrically connected directly to one conductor of the AC power cord and may be safety-serviced without an isolation transformer only if the AC power plug is inserted so that the chassis is connected to the ground side of the AC power source. To confirm that the AC power plug is inserted correctly, with an AC voltmeter, measure between the chassis and a known earth

ground. If a voltage reading in excess of 1.0V is obtained, remove and reinsert the AC power plug in the opposite polarity and again measure the voltage potential between the chassis and a known earth ground.

- b. Some TV receiver chassis normally have 85V AC(RMS) between chassis and earth ground regardless of the AC plug polarity. This chassis can be safety-serviced only with an isolation transformer inserted in the power line between the receiver and the AC power source, for both personnel and test equipment protection.
 - c. Some TV receiver chassis have a secondary ground system in addition to the main chassis ground. This secondary ground system is not isolated from the AC power line. The two ground systems are electrically separated by insulation material that must not be defeated or altered.
6. Observe original lead dress. Take extra care to assure correct lead dress in the following areas: a. near sharp edges, b. near thermally hot parts-be sure that leads and components do not touch thermally hot parts, c. the AC supply, d. high voltage, and e. antenna wiring. Always inspect in all areas for pinched, out of place, or frayed wiring. Check AC power cord for damage.
7. Components, parts, and/or wiring that appear to have overheated or are otherwise damaged should be replaced with components, parts, or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.
- 8. Product Safety Notice** - Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc.. Parts that have special safety characteristics are identified by a () on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The product's safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are strictly inspected to confirm they comply with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

Precautions during Servicing

A. Parts identified by the (⚠) symbol are critical for safety.

Replace only with part number specified.

B. In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.

Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.

C. Use specified internal wiring. Note especially:

- 1) Wires covered with PVC tubing
- 2) Double insulated wires
- 3) High voltage leads

D. Use specified insulating materials for hazardous live parts. Note especially:

- 1) Insulation Tape
- 2) PVC tubing
- 3) Spacers
- 4) Insulators for transistors.

E. When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.

F. Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

G. Check that replaced wires do not contact sharp edged or pointed parts.

H. When a power cord has been replaced, check that 5~6 kg of force in any direction will not loosen it.

I. Also check areas surrounding repaired locations.

J. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

K. Crimp type wire connector

The power transformer uses crimp type connectors which connect the power cord and the primary side of the transformer. When replacing the transformer, follow these steps carefully and precisely to prevent shock hazards.

Replacement procedure

- 1) Remove the old connector by cutting the wires at a point close to the connector.

Important: Do not re-use a connector (discard it).

- 2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

- 3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

- 4) Use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

L. When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC supply outlet.

Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

Table 1 : Ratings for selected area

AC Line Voltage	Clearance Distance (d) (d')
110 to 240 V	$\geq 3\text{mm(d)}$ $\geq 6\text{mm(d')}$

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) is lower than or equal to the specified value in the table below.

Measuring Method : (Power ON)

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See Fig. 2 and following table.

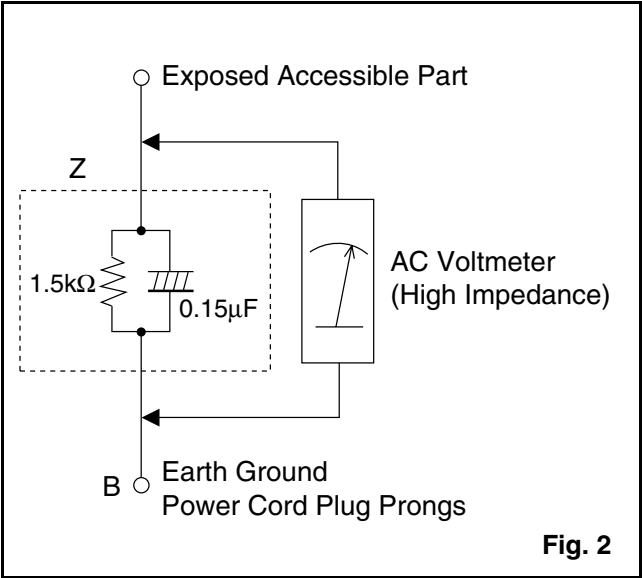
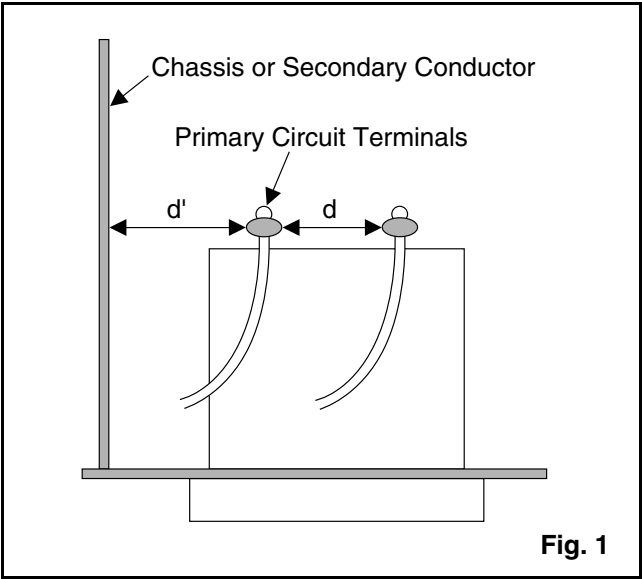


Table 2 : Leakage current ratings for selected areas

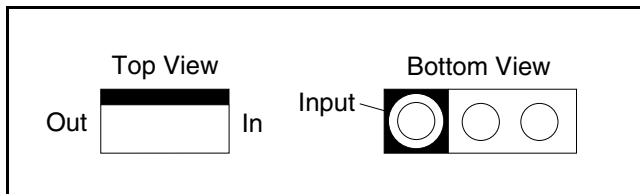
AC Line Voltage	Load Z	Leakage Current (i)	One side of power cord plug prongs (B) to:
110 to 240 V	2kΩ RES. Connected in parallel	$i \leq 0.7\text{mA AC Peak}$ $i \leq 2\text{mA DC}$	RF or Antenna terminals
	50kΩ RES. Connected in parallel	$i \leq 0.7\text{mA AC Peak}$ $i \leq 2\text{mA DC}$	A/V Input, Output

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

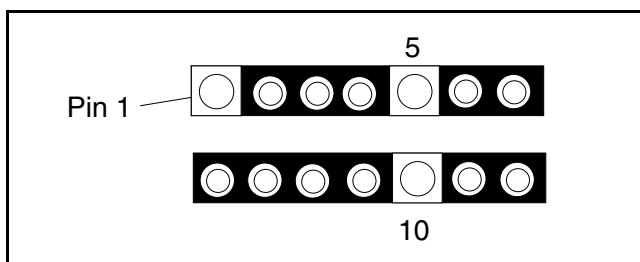
STANDARD NOTES FOR SERVICING

Circuit Board Indications

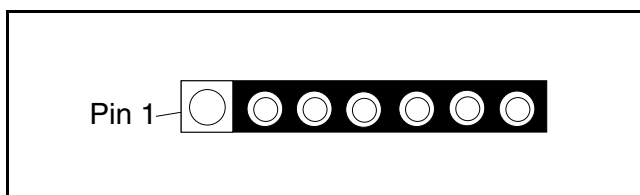
- a. The output pin of the 3 pin Regulator ICs is indicated as shown.



- b. For other ICs, pin 1 and every fifth pin are indicated as shown.



- c. The 1st pin of every male connector is indicated as shown.



How to Remove / Install Flat Pack-IC

1. Removal

With Hot-Air Flat Pack-IC Desoldering Machine:

- (1) Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. S-1-1)

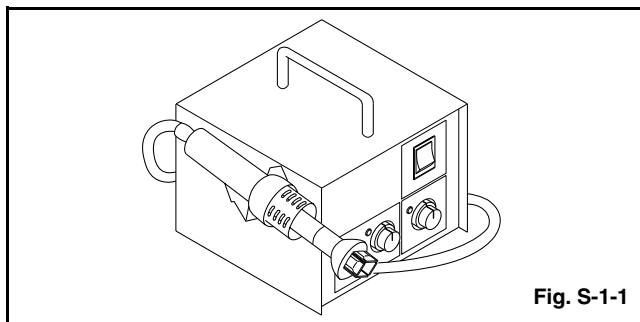


Fig. S-1-1

- (2) Remove the flat pack-IC with tweezers while applying the hot air.
- (3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
- (4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Caution:

1. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape around the flat pack-IC to protect other parts from damage. (Fig. S-1-2)
2. The flat pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or the solder lands under the IC when removing it.

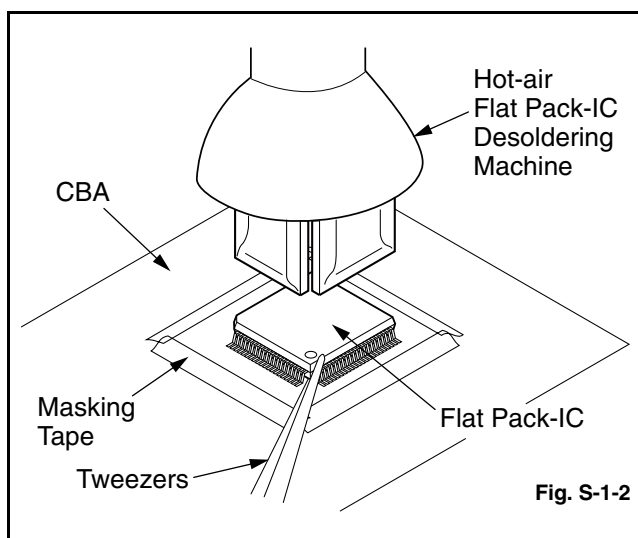
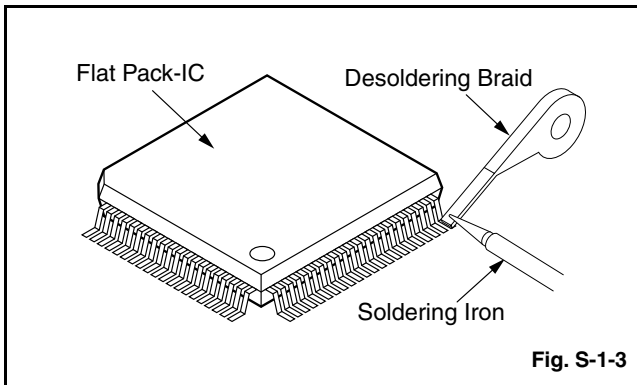


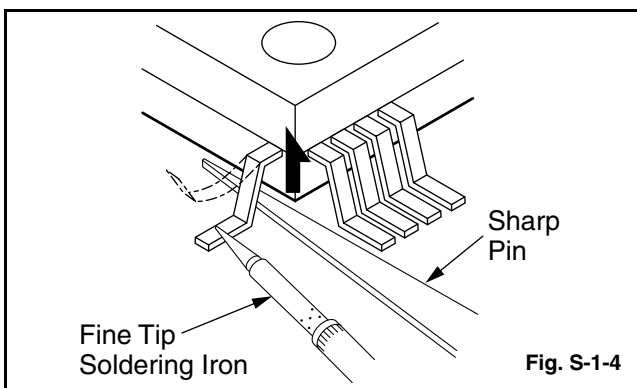
Fig. S-1-2

With Soldering Iron:

- (1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)



- (2) Lift each lead of the flat pack-IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air desoldering machine. (Fig. S-1-4)



- (3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
- (4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

With Iron Wire:

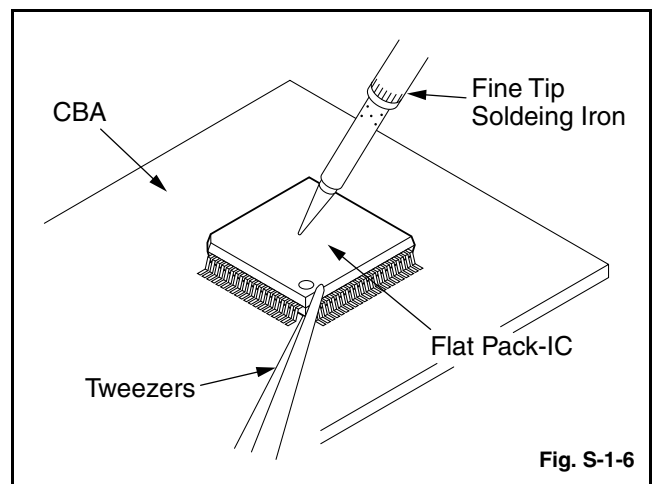
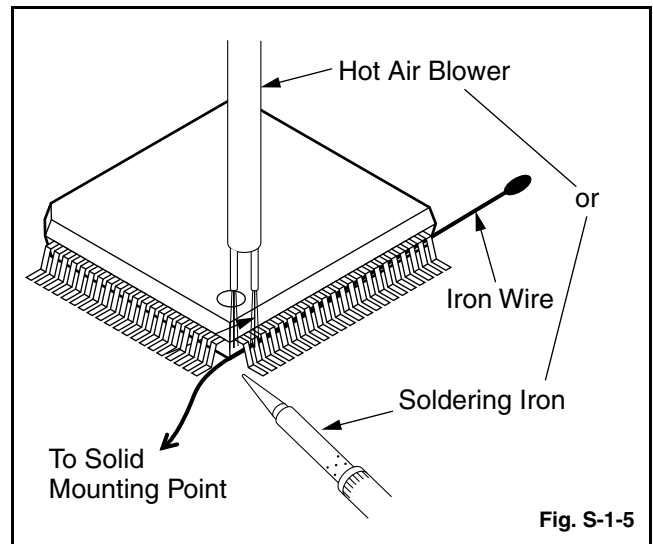
- (1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)
- (2) Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.
- (3) While heating the pins using a fine tip soldering iron or hot air blower, pull up the wire as the solder melts so as to lift the IC leads from the CBA contact pads as shown in Fig. S-1-5.
- (4) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply

soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

- (5) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Note:

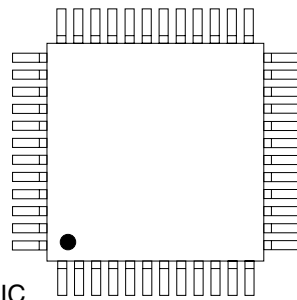
When using a soldering iron, care must be taken to ensure that the flat pack-IC is not being held by glue. When the flat pack-IC is removed from the CBA, handle it gently because it may be damaged if force is applied.



2. Installation

- (1) Using desoldering braid, remove the solder from the foil of each pin of the flat pack-IC on the CBA so you can install a replacement flat pack-IC more easily.
- (2) The "●" mark on the flat pack-IC indicates pin 1. (See Fig. S-1-7.) Be sure this mark matches the 1 on the PCB when positioning for installation. Then pre-solder the four corners of the flat pack-IC. (See Fig. S-1-8.)
- (3) Solder all pins of the flat pack-IC. Be sure that none of the pins have solder bridges.

Example :



Pin 1 of the Flat Pack-IC is indicated by a "●" mark.

Fig. S-1-7

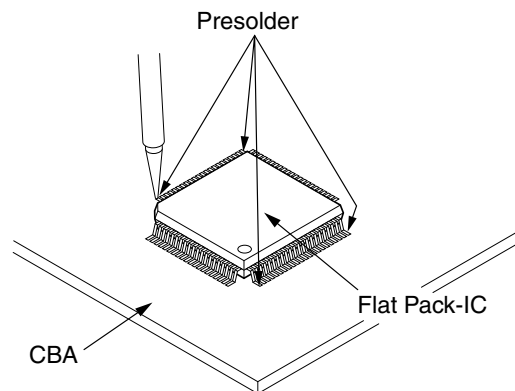


Fig. S-1-8

Instructions for Handling Semiconductors

Electrostatic breakdown of the semiconductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

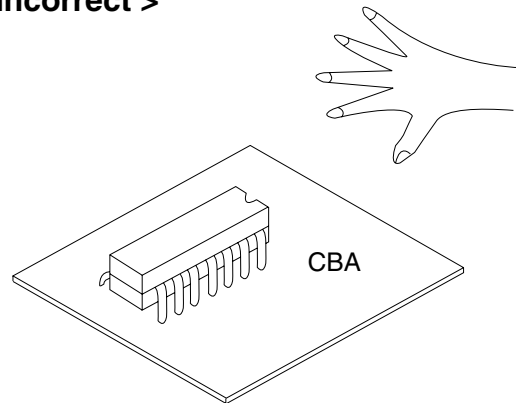
1. Ground for Human Body

Be sure to wear a grounding band ($1M\Omega$) that is properly grounded to remove any static electricity that may be charged on the body.

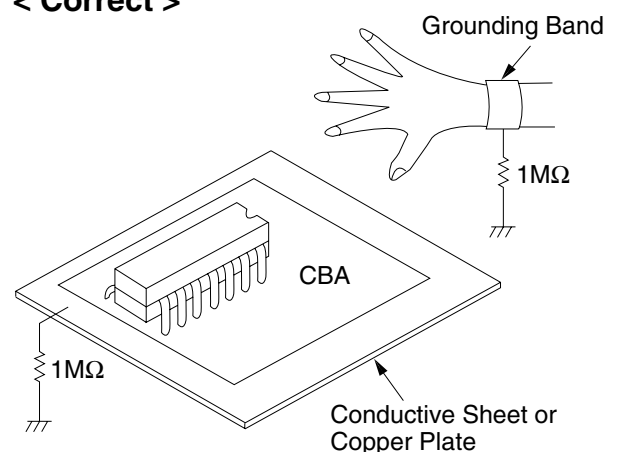
2. Ground for Workbench

Be sure to place a conductive sheet or copper plate with proper grounding ($1M\Omega$) on the workbench or other surface, where the semiconductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semiconductors with your clothing.

< Incorrect >



< Correct >



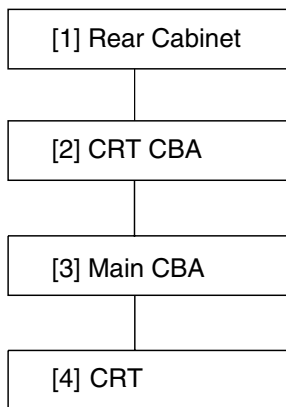
CABINET DISASSEMBLY INSTRUCTIONS

1. Disassembly Flowchart

This flowchart indicates the disassembly steps for the cabinet parts, and the CBA in order to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route and dress the cables as they were.

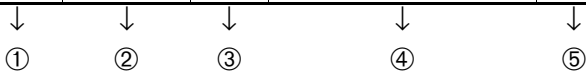
Caution !

When removing the CRT, be sure to discharge the Anode Lead of the CRT with the CRT Ground Wire before removing the Anode Cap.



2. Disassembly Method

Step/ Loc. No.	Part	Removal		
		Fig. No.	Remove/*unlock/ release/unplug/ unclamp/desolder	Note
[1]	Rear Cabinet	1,2	5(S-1), 1(S-3), 1(S-4)	1
[2]	CRT CBA	4,5	CN501	2
[3]	Main CBA	3,5	CN571	3
[4]	CRT	4	4(S-2), Anode Cap	4



Note :

- ①. Order of steps in procedure. When reassembling, follow the steps in reverse order. These numbers are also used as the Identification (location) No. of parts in figures.
- ②. Parts to be removed or installed.
- ③. Fig. No. showing procedure of part location
- ④. Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
S=Screw, P=Spring, L=Locking Tab, CN=Connector, *=Unhook, Unlock, Release, Unplug, or Desolder
2(S-2) = two Screws (S-2)
- ⑤. Refer to the following "Reference Notes in the Table."

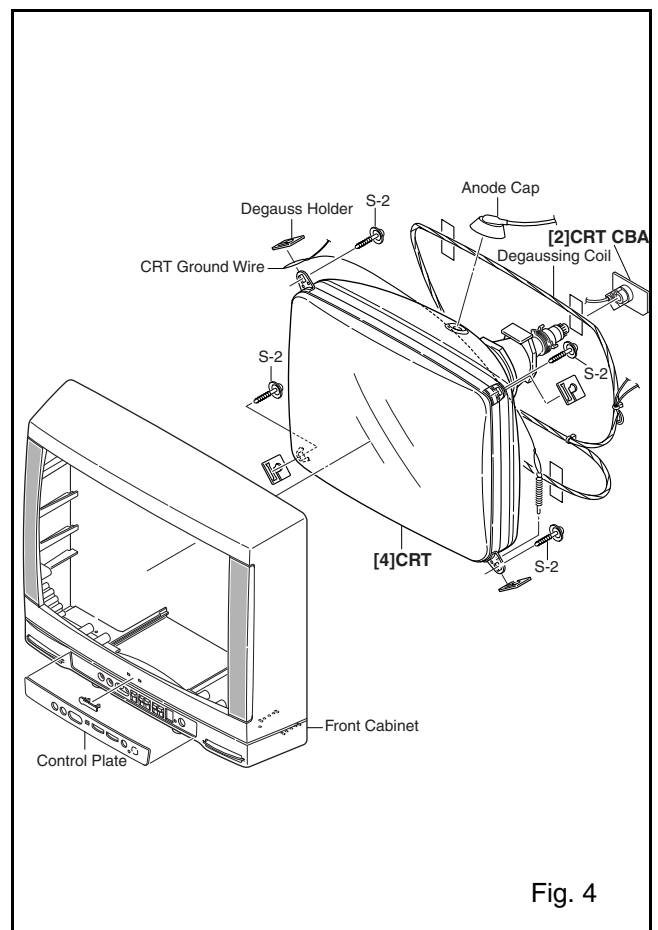
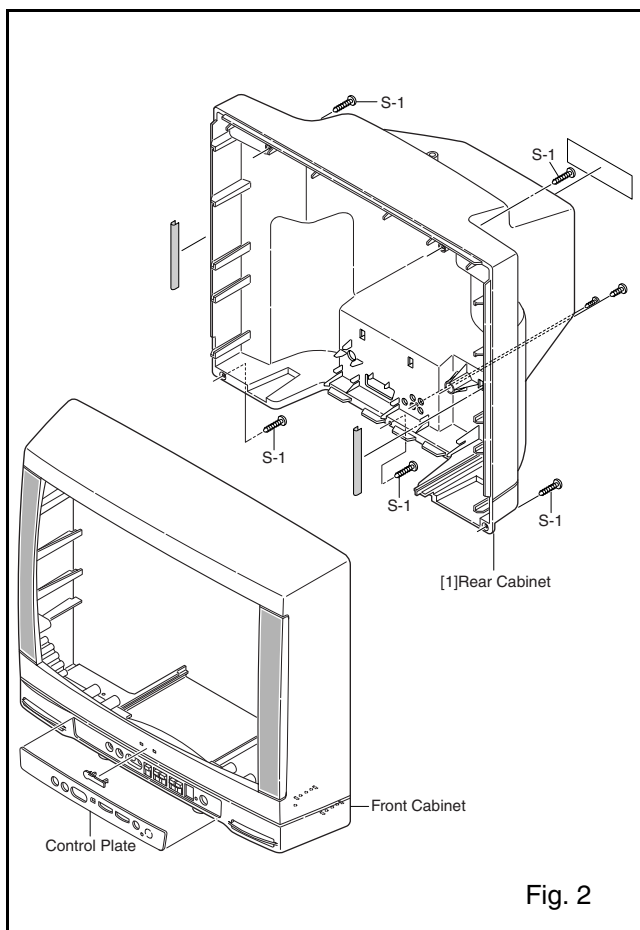
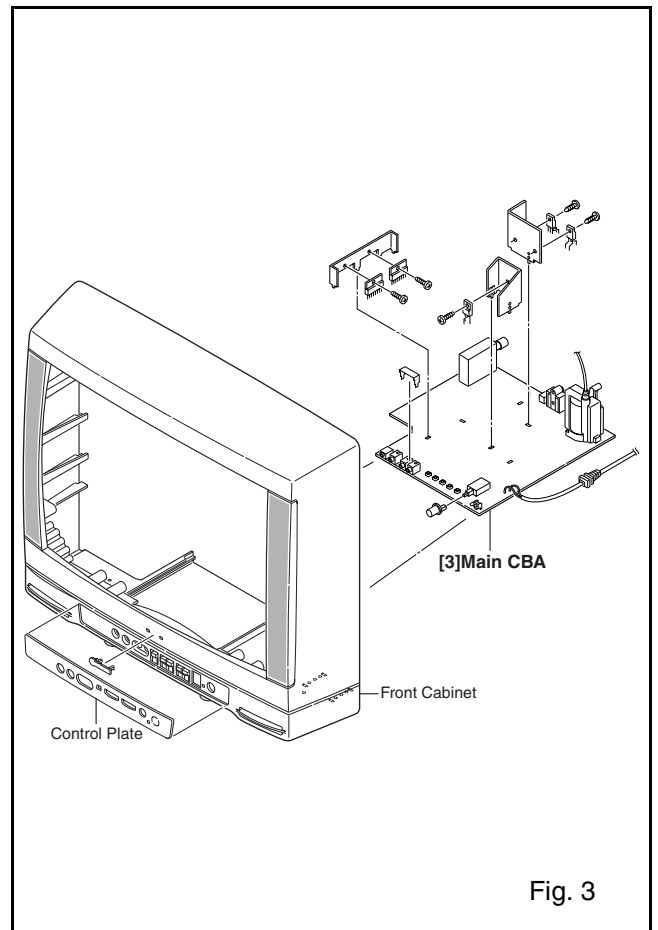
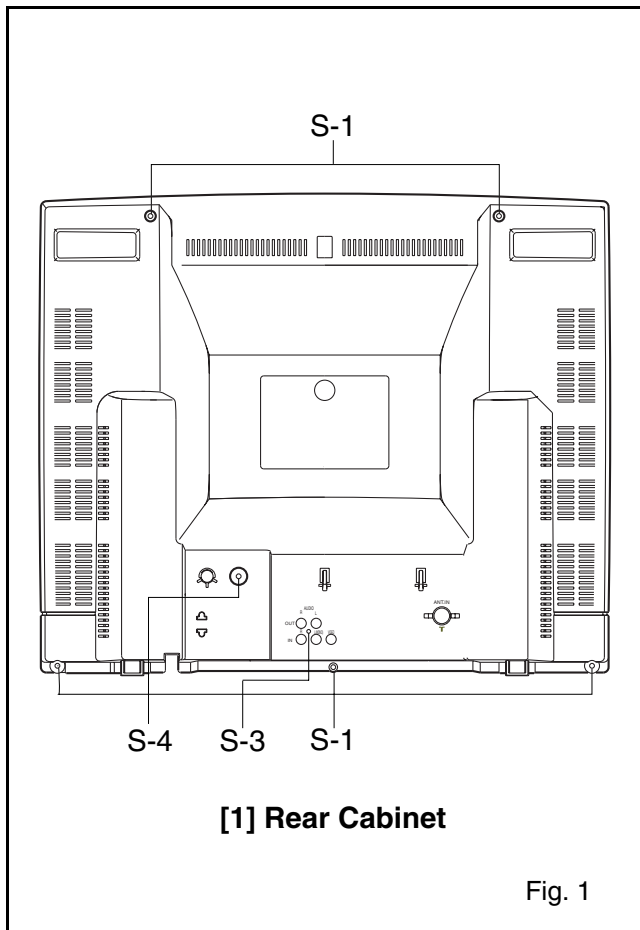
Reference Notes in the Table

1. Removal of the Rear Cabinet. Remove screws 5(S-1) and (S-3) then slide the Rear Cabinet backward.
2. Removal of the CRT CBA. Disconnect CN501 then pull the CRT CBA backward.
3. Removal of the Main CBA. Disconnect CN571 on the Main CBA then slide the Main CBA backward.

Caution !

Discharge the Anode Lead of the CRT with the CRT Ground Wire before removing the Anode Cap.

4. Removal of the CRT. Remove screws 4(S-2) and Anode Cap. then slide the CRT backward.



TV Cable Wiring Diagram

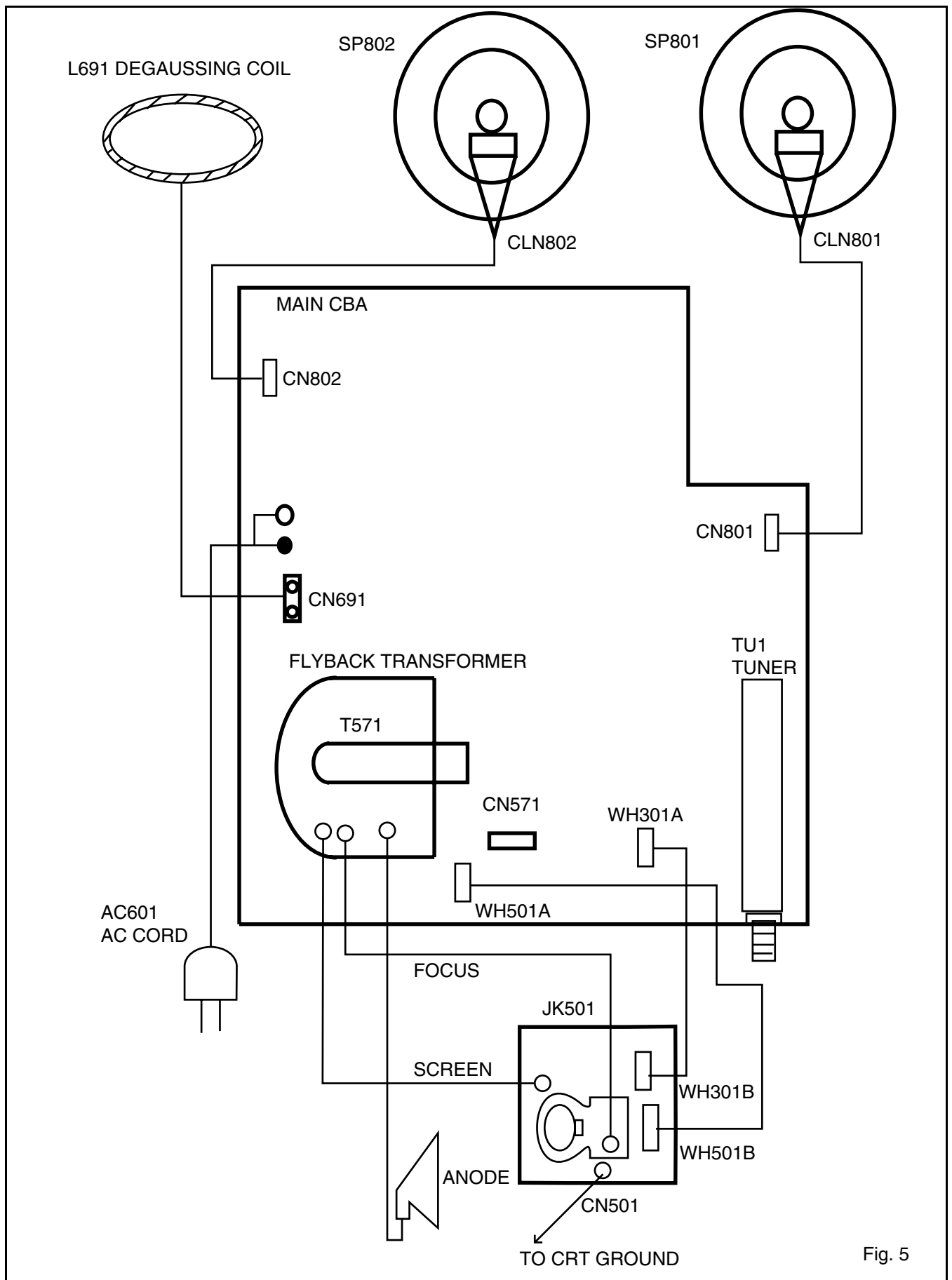


Fig. 5

ELECTRICAL ADJUSTMENT INSTRUCTIONS

General Note:

"CBA" is abbreviation for "Circuit Board Assembly".

NOTE:

Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed.

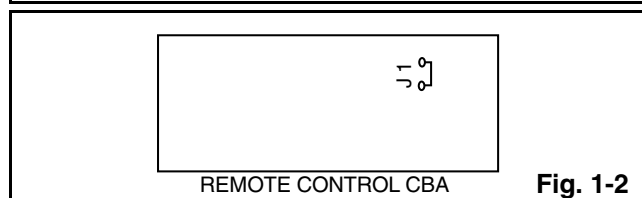
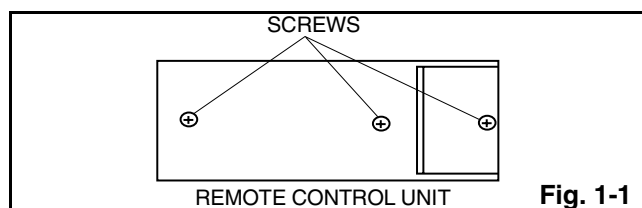
Also, do not attempt these adjustments unless the proper equipment is available.

Test Equipment Required

1. NTSC Pattern Generator (Color Bar W/White Window, Red Color, Dot Pattern, Gray Scale, Monoscope, Multi-Burst)
2. DC Voltmeter
3. Oscilloscope: Dual-trace with 10:1 probe, V-Range: 0.001~50V/Div, F-Range: DC~AC-60MHz
4. Plastic Tip Driver
5. Remote control unit: Part No. N0121UD or N0134UD
6. DC power supply 13.2V/5A

How to make Service remote control unit:

1. Prepare normal remote control unit. (Part No. N0121UD or N0134UD) Remove 3 Screws from the back lid. (Fig. 1-1)
2. Added J1 (Jumper Wire) to the remote control CBA. (Fig. 1-2)



How to set up the service mode:

Service mode:

1. Use the service remote control unit.
2. Turn the power on. (Use main power on the TV unit.)
3. Press " SLEEP " button on the service remote control unit. Version of micro computer will display on the CRT. (Ex: 056-0.07)

4. When CPU version is 054-0.13: Check the display on the lower left is "00" and if it is not "00", set it at "00" according to "3-1 FRENCH, ACCESS CODE, VIDEO TONE".

When CPU version is 200-0.07: Confirm that the character of U (U.S.A. model) is indicated on the bottom left of the CRT. If the character of C (CAN-ADA model) is indicated, perform "3-1 Setting for FRENCH data Values".

1. DC 105V Adjustment

Purpose: To obtain correct operation.

Symptom of Misadjustment: The picture is dark and the unit does not operate correctly.

Test Point	Adj. Point	Mode	Input
TP601 TP300 (GND)	VR661	---	---
Tape	M. EQ.	Spec.	
---	DC Voltmeter	+114±1.0V DC.	

Note: TP601, TP300(GND), VR661 --- Main CBA

1. Connect DC Volt Meter to TP601 and TP300(GND).
2. Adjust VR661 so that the voltage of TP601 becomes +113±1.0V DC.

2. Black Stretch Control Adjustment

Purpose: To show the fine black color.

Symptom of Misadjustment: Black color will not appear correctly.

Note: Use Service remote control unit.

1. Enter the Service mode. (See page 5-1)
2. Press " 6 " button on the Service remote control unit. " B-S " is indicated.
3. Press " CH ▲ / ▼ " buttons on the Service remote control unit so that display will change " OFF ", " 0 ", " 1 ", " 2 " and " 3 ". Then choose " B-S OFF ".
4. Press " 6 " button on the Service remote control unit. " B-S*2 " is indicated.
5. Press " CH ▲ / ▼ " buttons on the Service remote control unit so that display will change " 0 ", " 1 ", " 2 " and " 3 ". Then choose " B-S*2 0 ".
6. Turn the power off and on again. (Main power button on the TV unit.)

3-1. Setting for 7F, H/L STEP, TV DELAY, SOUND SYS, BAND SELECT, VIF FREQUENCY and RF AMP data Values

General

1. Enter the Service mode. (See page 5-1)
2. Press "VOL ▼" button on the Service remote control unit. Display changes "C/D/SCM B-L", "VCO", "7F", "H/L STEP", "TV DELAY", "SOUND SYSTEM", "VHFL/VHFH/UHF", "VIF FREQ" and "RF AMP" cyclically when "VOL ▼" button is pressed.

7F

1. Press "VOL ▼" button on the Service remote control unit. Then select 7F display.
2. Press "CH ▲ / ▼" buttons on the Service remote control unit. Then choose 7F=FF.

H/L STEP

1. Press "VOL ▼" button on the Service remote control unit. Then select H/L STEP display.
2. Press "1" button, you can select H-STEP(R).
Press "2" button, you can select H-STEP(B).
Press "3" button, you can select L-STEP(R).
Press "4" button, you can select L-STEP(B).
Press "CH ▲ / ▼" button on the Service remote control unit. Then choose:
H-STEP(R)=2
H-STEP(B)=12
L-STEP(R)=2
L-STEP(B)=8

TV DELAY

1. Press "VOL ▼" button on the Service remote control unit. Then select TV DELAY display.
2. Press "1" button, you can select PAL DELAY.
Press "2" button, you can select SECAM DELAY.
Press "CH ▲ / ▼" button on the Service remote control unit. Then choose:
PAL DELAY=2
SECAM DELAY=7

SOUND SYS

1. Press "VOL ▼" button on the Service remote control unit. Then select SOUND SYS display.
2. Press "CH ▲ / ▼" buttons on the Service remote control unit. Then choose SOUND SYS=OFF.

BAND SELECT

1. Press "VOL ▼" button on the Service remote control unit. Then select VHFL/VHFH/UHF, VHFL/VHFH, VHFH/UHF or UHF display.

2. Press "CH ▲ / ▼" buttons on the Service remote control unit. Then choose VHFL/VHFH/UHF.

VIF FREQUENCY

1. Press "VOL ▼" button on the Service remote control unit. Then select VIF FREQ display.
2. Press "CH ▲ / ▼" buttons on the Service remote control unit. Then choose VIF FREQ=38.

RF AMP

1. Press "VOL ▼" button on the Service remote control unit. Then select RF AMP display.
2. Press "CH ▲ / ▼" buttons on the Service remote control unit. Then choose RF AMP=OFF.

Note: C/D and VCO data values are no need to adjust at this moment.

3-2. Setting for CONTRAST, COLOUR AND TINT data Values

1. Enter the Service mode. (See page 5-1)
2. Press "PICTURE SELECT" button on the Service remote control unit. Display changes "BRIGHT", "CONTRAST", "COLOUR", "TINT" cyclically when "PICTURE SELECT" button is pressed.
Press "CH ▲ / ▼" buttons on the Service remote control unit so that the value of :
CONTRAST becomes 84
COLOUR becomes 52
TINT becomes 60

Note: BRIGHT data value is no need to adjust at this moment.

4. H f₀ Adjustment

Purpose: To get correct horizontal frequency.

Symptom of Misadjustment: . If H f₀ adjustment is in correct, sqew distortion will appear on the screen.

Test Point	Adj. Point	Mode	Input
TP302	CH ▲ / ▼ button ["H-ADJ"] MODE		----
Tape	M. EQ.	Spec.	
----	Frequency Counter	15.625 kHz±150Hz	

Note: TP302 --- Main CBA

Use Service remote control unit.

1. Connect Frequency Counter to TP302 and ground.
2. Set the unit to the VIDEO mode which is located before CH2 and no input is necessary. Enter the Service mode. (See Page 5-1)

3. Operate the unit for at least 20 minutes.
4. Press "2" button on the Service remote control unit and select H-ADJ Mode. (By pressing "2" button the display will change from TV AGC to H-ADJ)
5. Press "CH ▲ / ▼" button on the Service remote control unit so that the display will change "0" ~ "7". At this moment, Choose display one of them from "0" ~ "7" when the Frequency Counter shows 15.625 kHz±150Hz or closer.
6. Turn the power off and on again. (Main Power button on the TV unit.)

5. VCO Adjustment

Purpose: To operate VCO correctly.

Symptom of Misadjustment: VCO does not work correctly and/or synchronization is faulty.

Test Point	Adj. Point	Mode	Input
---	---		No signal
Tape	M. EQ.	Spec.	
---	---	---	

Note: Use service remote control unit.

1. Disconnect the RF input and set the unit to Channel 4.
2. Enter the Service mode. (See Page 5-1)
3. Press "3" button on the Service remote control unit. The Auto VCO adjustment is started.
4. If the display color is changed from red to green, This adjustment is done.
5. Turn the Power off and on again. (Main power button on the TV unit.)

6. AGC Adjustment

Purpose: Set AGC (Auto Gain Control) Level.

Symptom of Misadjustment: AGC does not synchronize correctly when RF input level is too weak and picture distortion may occur if it is too strong.

Test Point	Adj. Point	Mode	Input
TP301	CH ▲ / ▼ buttons	RF	Color Bar 62.25MHz 60dBμV
Tape	M. EQ.	Spec.	
---	Pattern Generator DC Volt Meter	+2.2±0.1VDC	

Notes: TP301 --- Main CBA

Use Service remote control unit.

1. Enter the Service mode. (See Page 5-1) Then press number "2" button on the Service remote control unit.

2. Receive the Color Bar signal for channel 4 (62.25MHz). (RF Input Level: 60dBμV)
3. Press "CH ▲ / ▼" buttons so that the voltage of TP301 becomes +2.2±0.1V DC.
4. Turn the Power off and on again. (Main power button on the TV unit.)

7. Black Level Adjustment

Purpose: Set Sub-bright Level

Symptom of Misadjustment: If Sub-brightness is incorrect, Proper brightness can not be obtained by adjusting the Brightness Control.

Note: TP502, TP501 (GND) --- CRT CBA

1. Enter the Service mode. (See page 5-1).
2. Press "MENU" button on the Service remote control unit and select "BRT" mode. (Display changes "BRT", "CNT", "CLR" and "TNT" cyclically when MENU button is pressed).
3. Press "CH ▲ / ▼" buttons on the Service remote control unit so that the value of "BRT" becomes 128.
4. Turn the power off and on again. (Main power button on the TV unit.)

8. C-Trap Adjustment

Purpose: To get minimum leakage of the color signal carrier.

Symptom of Misadjustment: If C-Trap Adjustment is incorrect, stripes will appear on the screen.

Test Point	Adj. Point	Mode	Input
TP502 (Blue) TP501 (GND)	CH ▲ / ▼ buttons	RF	Color Bar
Tape	M. EQ.	Spec.	
----	Oscilloscope	----	

Note: TP502, TP501 --- CRT CBA

Use Service remote control unit.

1. Connect Oscilloscope to TP502 and TP501 (GND).
2. Enter the Service mode. (See Page 5-1) Receive color bar signal from RF Input.
3. Press "0" button on the Service remote control unit and select C-TRP Mode.
4. Press "CH ▲ / ▼" buttons on the Service remote control unit so that the display will change "0", "1", "2" and "3". Choose display "0", "1", "2" or "3" when B-Out (3.58MHz) value becomes minimum on the oscilloscope reading.
5. Turn the power off and on again. (Main power button on the TV unit.)

9. V. Size Adjustment

Purpose: To obtain correct vertical width of screen image.

Symptom of Misadjustment: If V. Size is incorrect, vertical size of image on the screen may not be properly displayed.

Test Point	Adj. Point	Mode	Input
---	Screen Control CH ▲ / ▼ buttons [V-S] Mode	RF	Monoscope
Tape	M. EQ.	Spec.	
---	Monoscope	90±5%	

Note: Use service remote control unit.

1. Operate the unit for at least 20 minutes.
2. Enter the Service mode. (See page 5-1)
3. Receive the Monoscope Pattern.
4. Press " 9 " button on the Service remote control unit and select " V-S " mode. (Display changes " V-S " and " V-P " cyclically when " 9 " button is pressed).
5. Press " CH ▲ / ▼ " buttons on the Service remote control unit so that the monoscope pattern will be 90±5% of display size and the circle is round.
6. Turn the power off and on again. (Main power button on the TV unit.)

10. V. Position Adjustment

Purpose: To obtain correct vertical width of screen image.

Symptom of misadjustment: If V. Position is incorrect, vertical height of image on the screen may not be properly displayed.

Test Point	Adj. Point	Mode	Input
---	Screen Control CH ▲ / ▼ buttons [V-P] Mode	RF	Monoscope
Tape	M. EQ.	Spec.	
---	Monoscope	90±5%	

Note: Use Service remote control unit

1. Operate the unit for at least 20 minutes.
2. Enter the Service Mode. (See page 5-1)
3. Receive the Monoscope Pattern.
4. Press " 9 " button on the Service remote control unit and select " V-P " mode. (Display change " V-S " and " V-P " cyclically when " 9 " button is pressed).
5. Press " CH ▲ / ▼ " buttons on the Service remote control unit so that the top and bottom of the monoscope pattern will be equal of each other.
6. Turn the Power off and on again. (Main power button on the TV unit.)

11. H. Position Adjustment

Purpose: To obtain correct horizontal position of screen image.

Symptom of Misadjustment: If H. Position is incorrect, horizontal position of image on the screen may not be properly displayed.

Test Point	Adj. Point	Mode	Input
---	Screen Control CH ▲ / ▼ buttons [H-P] Mode	RF	Monoscope
Tape	M. EQ.	Spec.	
---	Monoscope	90±5%	

Note: Use Service remote control unit

1. Operate the unit for at least 20 minutes.
2. Enter the Service mode. (See page 5-1)
3. Receive the Monoscope Pattern.
4. Press " 8 " button on the remote control unit and select " H-P " mode.
5. Press " CH ▲ / ▼ " buttons on the Service remote control unit so that the monoscope pattern will be 90±5% of display size and the circle is round.
6. Turn the Power off and on again. (Main power button on the TV unit.)

12. Cut-off Adjustment

Purpose: To adjust the beam current of R, G, B, and screen voltage.

Symptom of Misadjustment: White color may be reddish, greenish or bluish.

Test Point	Adj. Point	Mode	Input
---	Screen-Control CH ▲ / ▼ buttons	RF	Black Raster
Tape	M. EQ.	Spec.	
---	Pattern Generator	See Reference Notes below.	

Figure

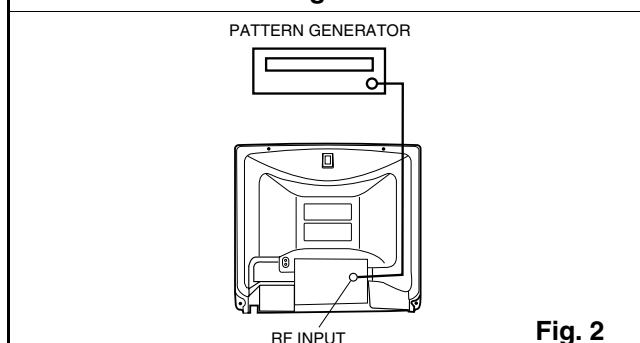


Fig. 2

Note: Screen Control FBT --- Main CBA

F.B.T= Fly Back Transformer

Use Service remote control unit

1. Degauss the CRT and allow CRT to operate for 20 minutes before starting the alignment.
2. Input the Black Raster Signal from RF Input.
3. Enter the Service mode. (See page 5-1)
4. Press " VOL ▼ " button on the Service remote control unit and select " C/D/SCM B-L " mode. (Display changes " C/D/SCM B-L ", "VCO ", " 7F ", " H/L STEP ", " TV DELAY", "SOUND SYSTEM", "VHFL/VHFH/UHF", "VIF FREQ", "RF AMP" cyclically when " VOL ▼ " button is pressed.) then press " 1 ". The display will momentarily show " CUT OFF R " (R= Red). Now there should be a horizontal line across the center of the picture tube. If needed gradually turn the screen control on the flyback, clockwise until the horizontal line appears. Adjust the Red Cut off by pressing the " CH ▲ / ▼ " buttons. Proceed to Step 5 when the Red Cut off adjustment is done.
5. Press the " 2 " button. The display will momentarily show " CUT OFF G " (G=Green). Adjust the Green Cut off by pressing the " CH ▲ / ▼ " buttons. Proceed to step 6 when the Green Cut off adjustment is done.
6. Press the " 3 " button. The display will momentarily show " CUT OFF B " (B=Blue). Adjust the Blue cut off by pressing the " CH ▲ / ▼ " buttons. When done with steps 4, 5 and 6 the horizontal line should be

pure white if not, then attempt the Cut off adjustment again.

13. White Balance Adjustment

Purpose: To mix red, green and blue beams correctly for pure white.

Symptom of Misadjustment: White becomes bluish or reddish.

Test Point	Adj. Point	Mode	Input
Screen	CH ▲ / ▼ buttons	RF	White Raster (APL 100%)
Tape	M. EQ.	Spec.	
	Pattern Generator, Color analyzer	See below	

Figure

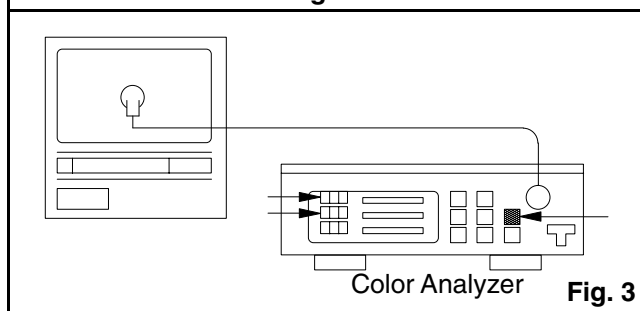


Fig. 3

Note: Use Service remote control unit

1. Operate the unit more than 20 minutes.
2. Face the unit to east. Degauss the CRT using De-gaussing Coil.
3. Input the White Raster (APL 100%).
4. Set the color analyzer to the CHROMA mode and after zero point calibration, bring the optical receptor to the center on the tube surface (CRT).
5. Enter the Service mode . Press " VOL ▼ " button on the Service remote control unit and select " C/D/SCM B-L " mode. (Display changes " C/D/SCM B-L ", "VCO ", " 7F ", " H/L STEP ", " TV DELAY", "SOUND SYSTEM", "VHFL/VHFH/UHF", "VIF FREQ", "RF AMP" cyclically when " VOL ▼ " button is pressed.) then Press No. 8 button on the Service remote control Unit.
6. Press No. 4 button on the service remote control unit for Red adjustment. Press NO. 5 button on the Service remote control unit for Blue adjustment.
7. In each color mode, Press " CH ▲ / ▼ " button to adjust the values of color.
8. Adjusting Red and Blue color so that the temperature becomes 8000K (x : 300 / y : 290) ±3%.
9. At this time, Re-check that Horizontal line is white. If not, Re-adjust Cut-off Adjustment until the Horizontal Line becomes pure white.

- Turn off and on again to return to normal mode.
Receive APL 100% white signal and Check Chroma temperatures become 8000K (x : 300 / y : 290) $\pm 3\%$.

Note: Confirm that Cut Off Adj. is correct after this adjustment, and attempt Cut Off Adj. if needed.

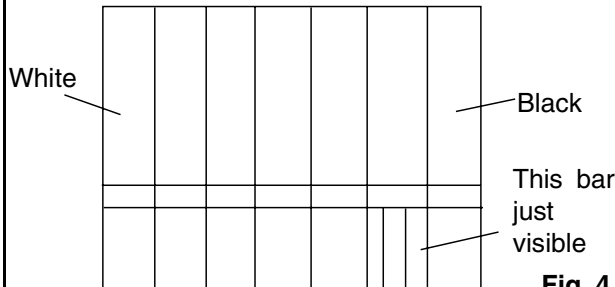
14. Sub-Brightness Adjustment

Purpose: To get proper brightness.

Symptom of Misadjustment: If Sub-Brightness is incorrect, proper brightness cannot be obtained by adjusting the Brightness Control.

Test Point	Adj. Point	Mode	Input
---	CH ▲ / ▼ buttons	RF	IQW
Tape	M. EQ.	Spec.	
---	PAL Pattern Generator	See below	

Figure



White

Black

This bar just visible

Fig. 4

Note: IQW Setup level --- 0 IRE
Use Service remote control unit

- Enter the Service mode. (See page 5-1)
Then input IQW signal from RF Input.
- Press " PICTURE SELECT " button on the Service remote control unit and Select " BRIGHT " mode. (Display changes " BRIGHT ", " CONTRAST ", " COLOUR ", and " TINT " cyclically when " PICTURE SELECT " button is pressed). Press " CH ▲ / ▼ " buttons so that the bar is just visible (See above figure).
- Turn the power off and on again. (Main power button on the TV unit.)

15. Focus Adjustment

Purpose: Set the optimum Focus.

Symptom of Misadjustment: If Focus Adjustment is incorrect, blurred images are shown on the display.

Test Point	Adj. Point	Mode	Input
---	Focus Control	---	Monoscope
Tape	M. EQ.	Spec.	
---	Pattern Generator	See below.	

Note: Focus VR(FBT)—Main CBA FBT=FlyBack Transformer

- Operate the unit more than 30 minutes
- Face the unit to the East and Degauss the CRT using Degaussing Coil.
- Input the Monoscope Pattern.
- Adjust the Focus Control on the FBT to obtain clear picture.

The following 2 adjustments normally are not attempted in the field. Only when replacing the CRT then adjust as a preparation.

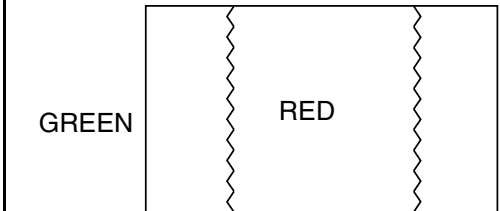
16. Purity Adjustment

Purpose: To obtain pure color.

Symptom of Misadjustment: If Color Purity Adjustment is incorrect, large areas of color may not be properly displayed.

Test Point	Adj. Point	Mode	Input
---	Deflection Yoke Purity Magnet	---	Red Color
Tape	M. EQ.	Spec.	
---	Pattern Generator	See below.	

Figure



The diagram consists of a large rectangle. Inside this rectangle, there are two vertical wavy lines that divide the space into three vertical columns. The leftmost column is labeled 'GREEN', the middle column is labeled 'RED', and the rightmost column is labeled 'BLUE'. The labels are in all caps and are positioned to the left, center, and right of their respective columns. The wavy lines are vertical and extend from the top to the bottom of the rectangle.

Fig. 5

- Set the unit facing east.
- Operate the unit for over 30 minutes before adjusting.
- Fully degauss the unit using an external degaussing coil.
- Loosen the screw on the Deflection Yoke Clamper and pull the Deflection Yoke back away from the screen. (See Fig. 6)
- Loosen the Ring Lock and adjust the Purity Magnets so that a red field is obtained at the center of the screen. Tighten Ring Lock. (See Fig. 5,6)
- Slowly push the Deflection Yoke toward bell of CRT and set it where a uniform red field is obtained.
- Tighten the clamp screw on the Deflection Yoke.

17. SECAM BLACK LEVEL Adjustment

Purpose: To obtain proper secam black.

Symptom of Misadjustment: If SECAM black Adjustment is incorrect, the black may not become pure.

Test Point	Adj. Point	Mode	Input
CN301PIN No.1	CH ▲ / ▼ buttons	RF	SECAM Gray Scale
Tape	M. EQ.	Spec.	
---	SECAM Pattern Generator	See below.	

Figures

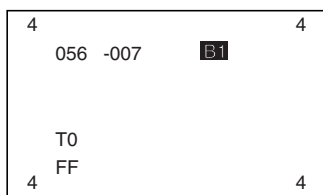


Fig. 6

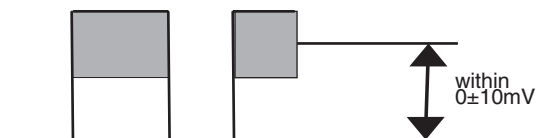


Fig. 7

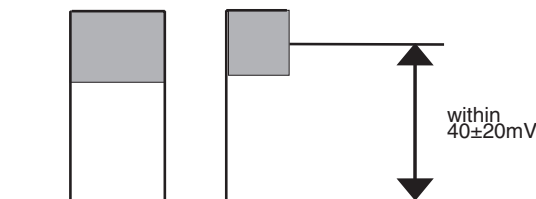


Fig. 8

1. Enter the Service mode. (See page 5-1)
2. Press " VOL ▼ " button on the Service remote control unit and select " C/D/SCM B-L " mode. (Display changes " C/D/SCM B-L ", "VCO ", " 7F ", " H/L STEP ", " TV DELAY", "SOUND SYSTEM", "VHFL/VHFH/UHF", "VIF FREQ", "RF AMP" cyclically when " VOL ▼ " button is pressed.)
3. Press " 7 ". The display will momentarily show " SECAM B-L ". Adjust the blue by pressing the " CH ▲ / ▼ " buttons. Adjust the blue like Fig.8.
4. Press " 6 ". The display will momentarily show " SECAM B-L ". Adjust the blue by pressing the " CH ▲ / ▼ " buttons like Fig.7.

18. Convergence Adjustment

Purpose: To obtain proper convergence of red, green and blue beams.

Symptom of Misadjustment: If Convergence Adjustment is incorrect, the edge of white letters may have color edges.

Test Point	Adj. Point	Mode	Input
---	C.P. Magnet (RB), C.P. Magnet (RB-G), Deflection Yoke	---	Dot Pattern or Crosshatch
Tape	M. EQ.	Spec.	
---	Pattern Generator	See below.	

Figures

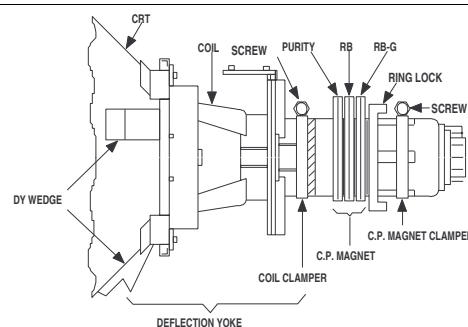


Fig. 9

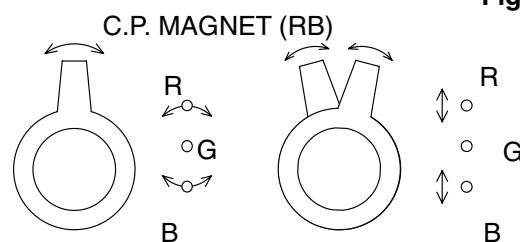


Fig. 10

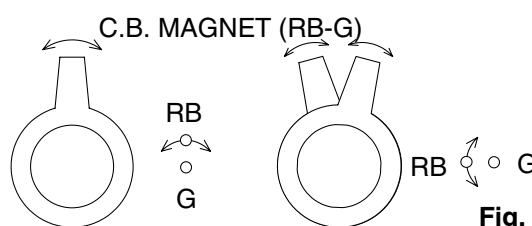
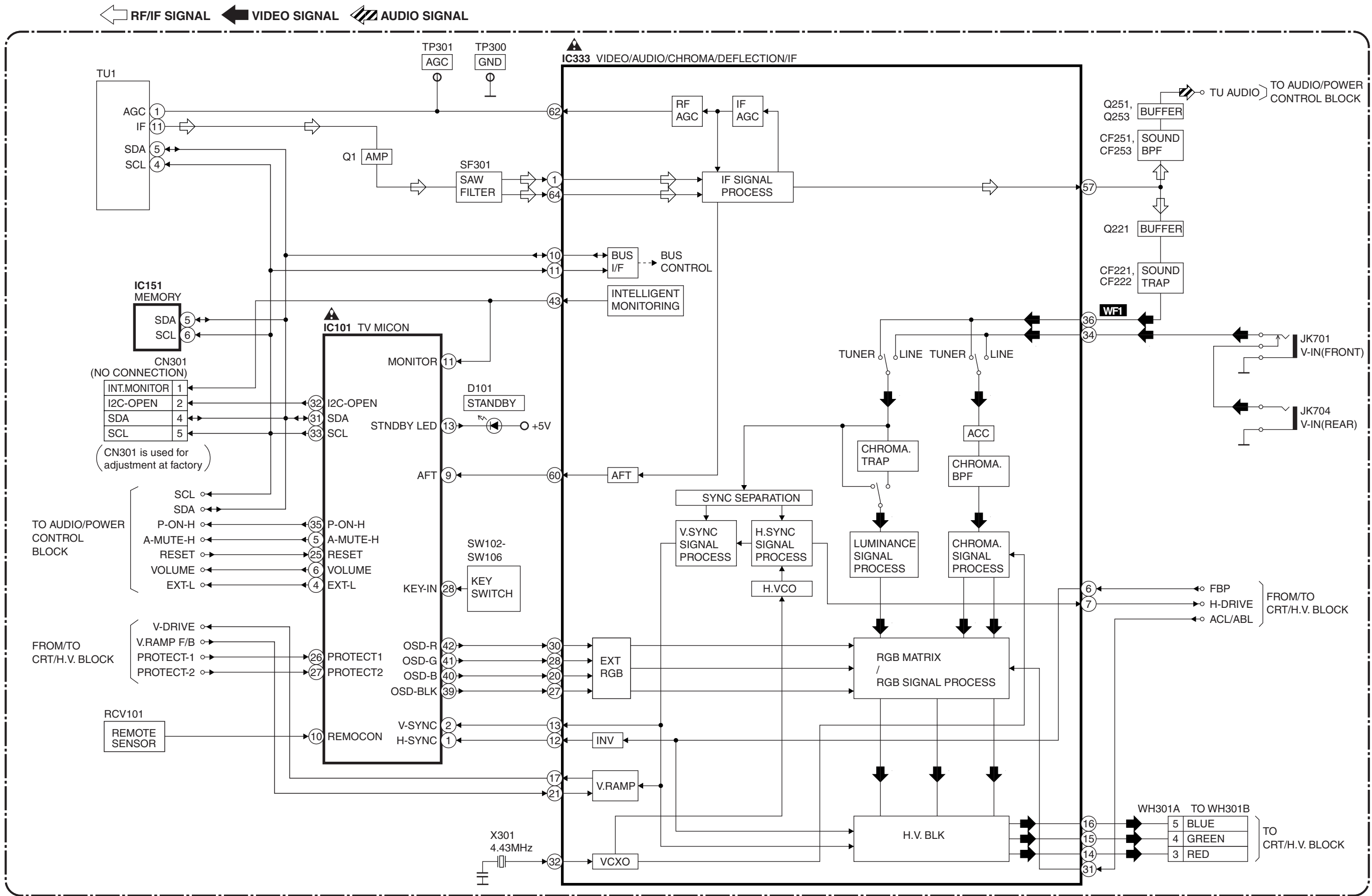


Fig. 11

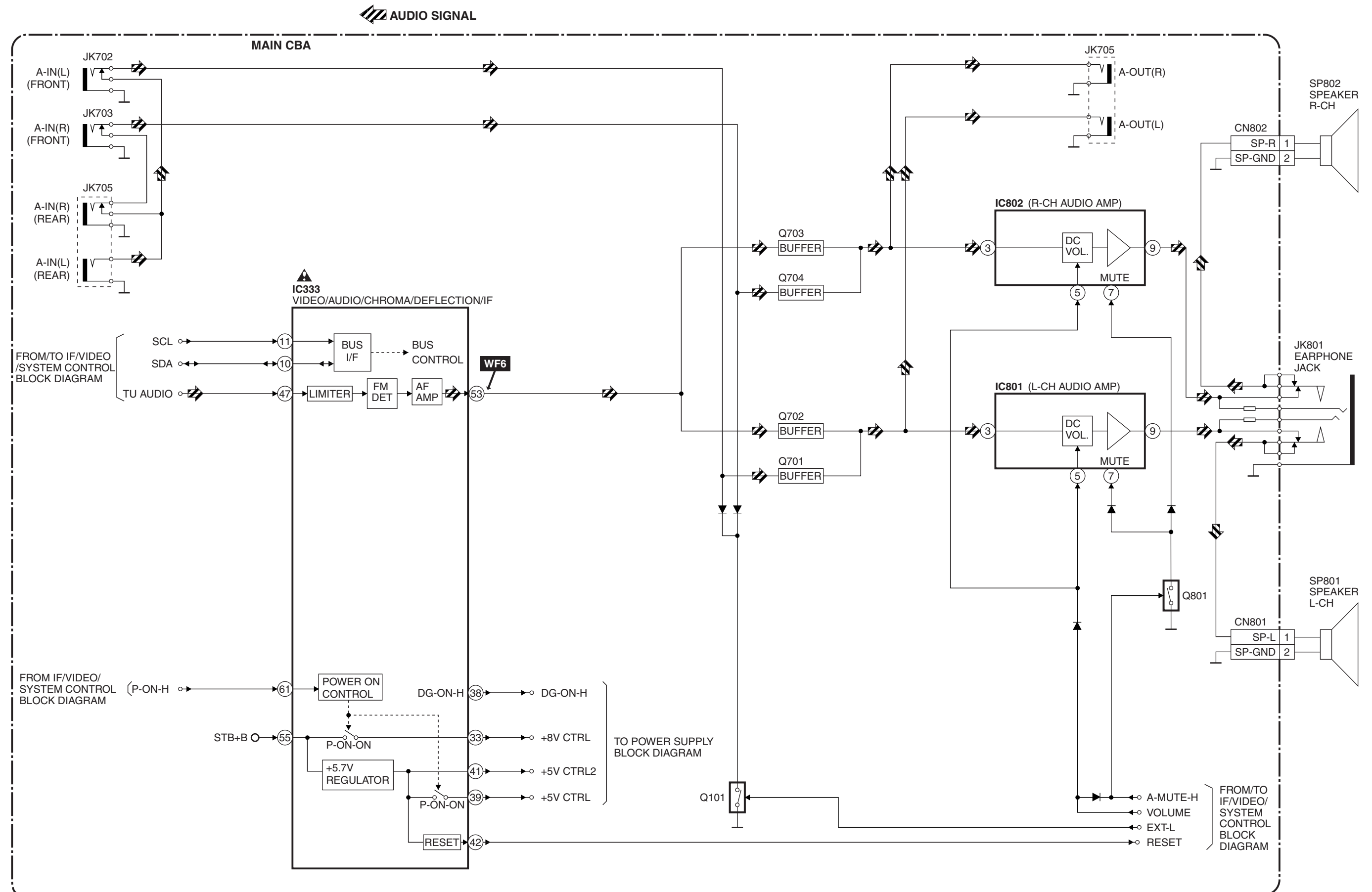
1. Loosen the Ring Lock and align red with blue dots or Crosshatch at the center of the screen by rotating (RB) C.P. Magnets. (See Fig. 10)
2. Align red / blue with green dots at the center of the screen by rotating (RB-G) C.P. Magnet. (See Fig. 11)
3. Fix the C.P. Magnets by tightening the Ring Lock.
4. Remove the DY Wedges and slightly tilt the Deflection Yoke horizontally and vertically to obtain the best overall convergence.
5. Fix the Deflection Yoke by carefully inserting the DY Wedges between CRT and Deflection Yoke.

BLOCK DIAGRAMS

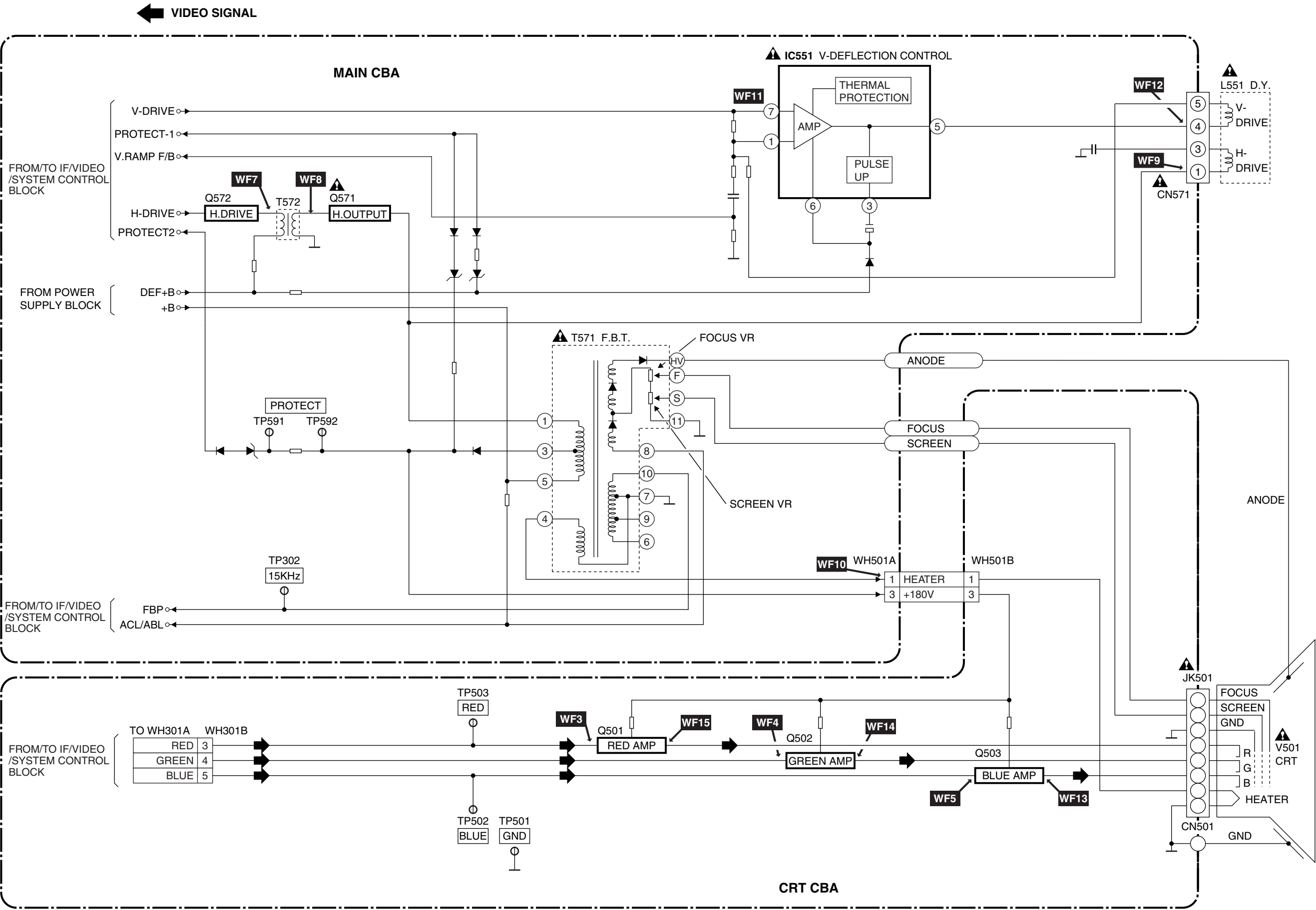
IF/Video/System Control Block Diagram



Audio/Power Control Block Diagram



CRT/H.V. Block Diagram

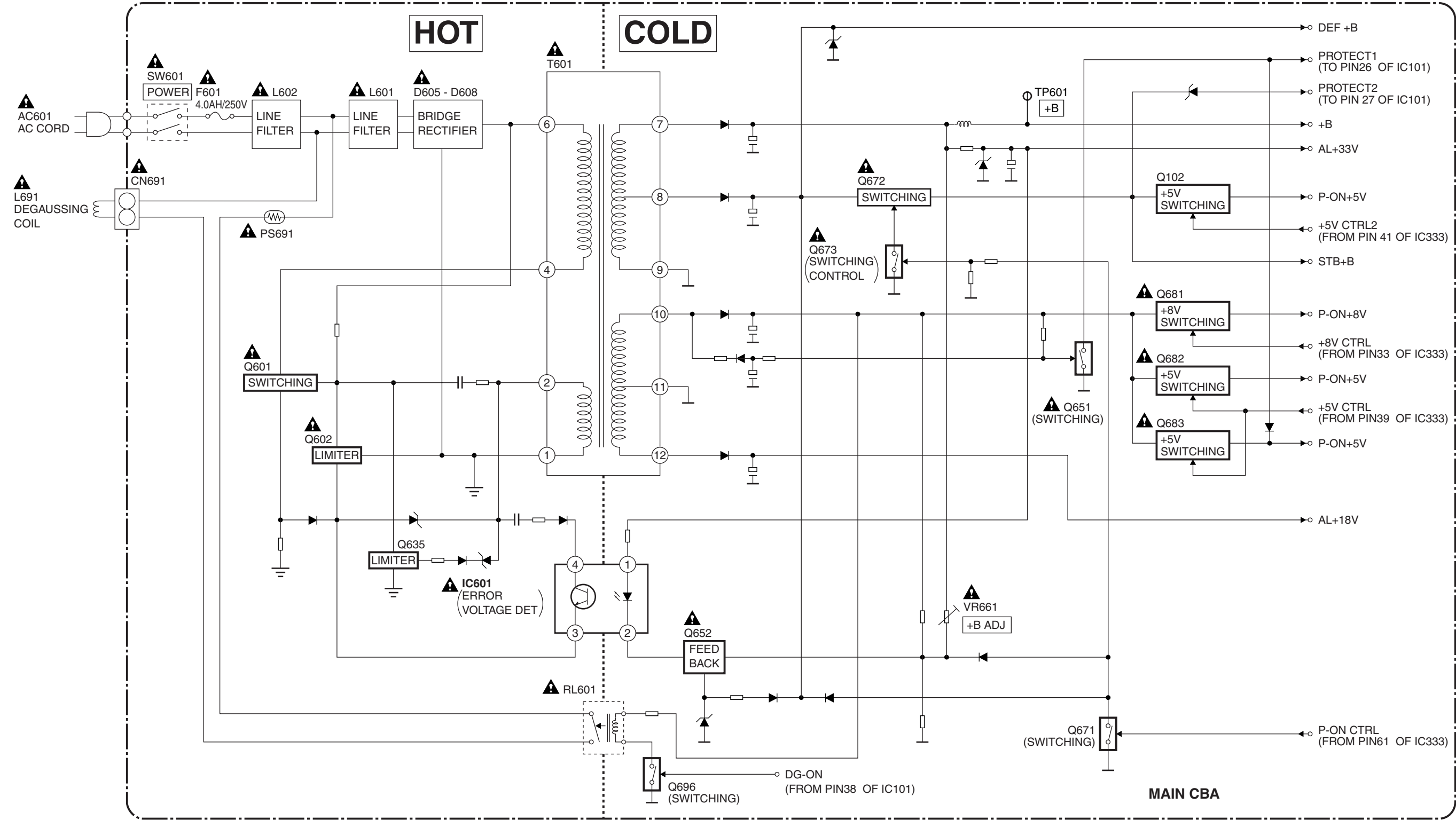


Power Supply Block Diagram

CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 4A/125V FUSE.

NOTE :
The voltage for parts in hot circuit is measured using
hot GND as a common terminal.



SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS

Standard Notes

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark "⚠" in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

Note:

1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. All resistance values are indicated in ohms ($K=10^3$, $M=10^6$).
3. Resistor wattages are 1/4W or 1/6W unless otherwise specified.
4. All capacitance values are indicated in μF ($P=10^{-6}\mu F$).
5. All voltages are DC voltages unless otherwise specified

Note of Capacitors:

ML --- Mylar Cap. PP --- Metalized Film Cap. SC --- Semiconductor Cap. L --- Low Leakage type

Temperature Characteristics of Capacitors are noted with the following:

B --- $\pm 10\%$ CH --- $0 \pm 60 \text{ ppm}/^\circ\text{C}$ SL --- $+350 \sim 1000 \text{ ppm}/^\circ\text{C}$

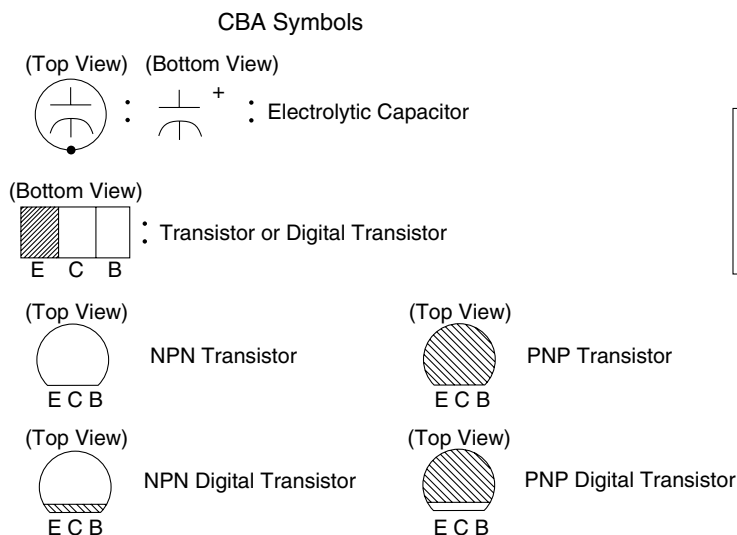
Tolerance of Capacitors are noted with the following:

Z --- $+80 \sim -20\%$

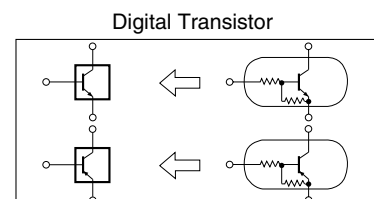
Note of Resistors:

CEM --- Cement Res. MTL --- Metal Res. F --- Fuse Res.

Capacitors and transistors are represented by the following symbols.

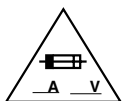


Schematic Diagram Symbols



LILIST OF CAUTION, NOTES, AND SYMBOLS USED IN THE SCHEMATIC DIAGRAMS ON THE FOLLOWING PAGES:

1. **CAUTION:** FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE. ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.



RISK OF FIRE-REPLACE FUSE AS MARKED.

2. CAUTION:

Fixed Voltage (or Auto voltage selectable) power supply circuit is used in this unit.

If Main Fuse (F001) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

3. Note:

- (1) Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.
- (2) To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

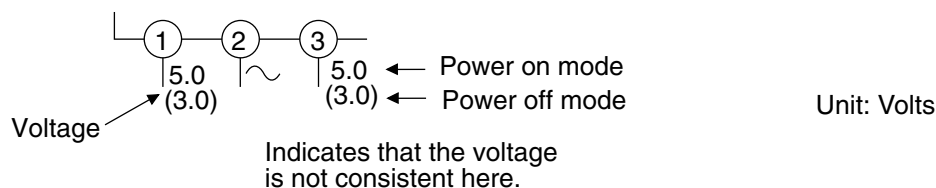
4. Wire Connectors

- (1) Prefix symbol "CN" means "connector" (can disconnect and reconnect).
- (2) Prefix symbol "CL" means "wire-solder holes of the PCB" (wire is soldered directly).

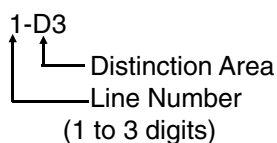
5. Note: Mark "•" is a leadless (chip) component.

6. Voltage indications on the schematics are as shown below:

Plug the TV power cord into a standard AC outlet.

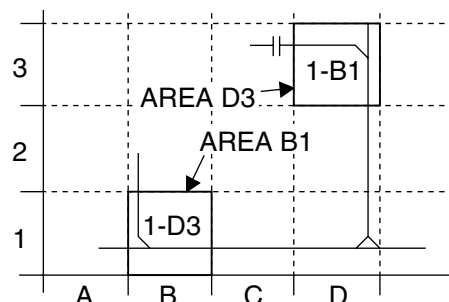


7. How to read converged lines



Examples:

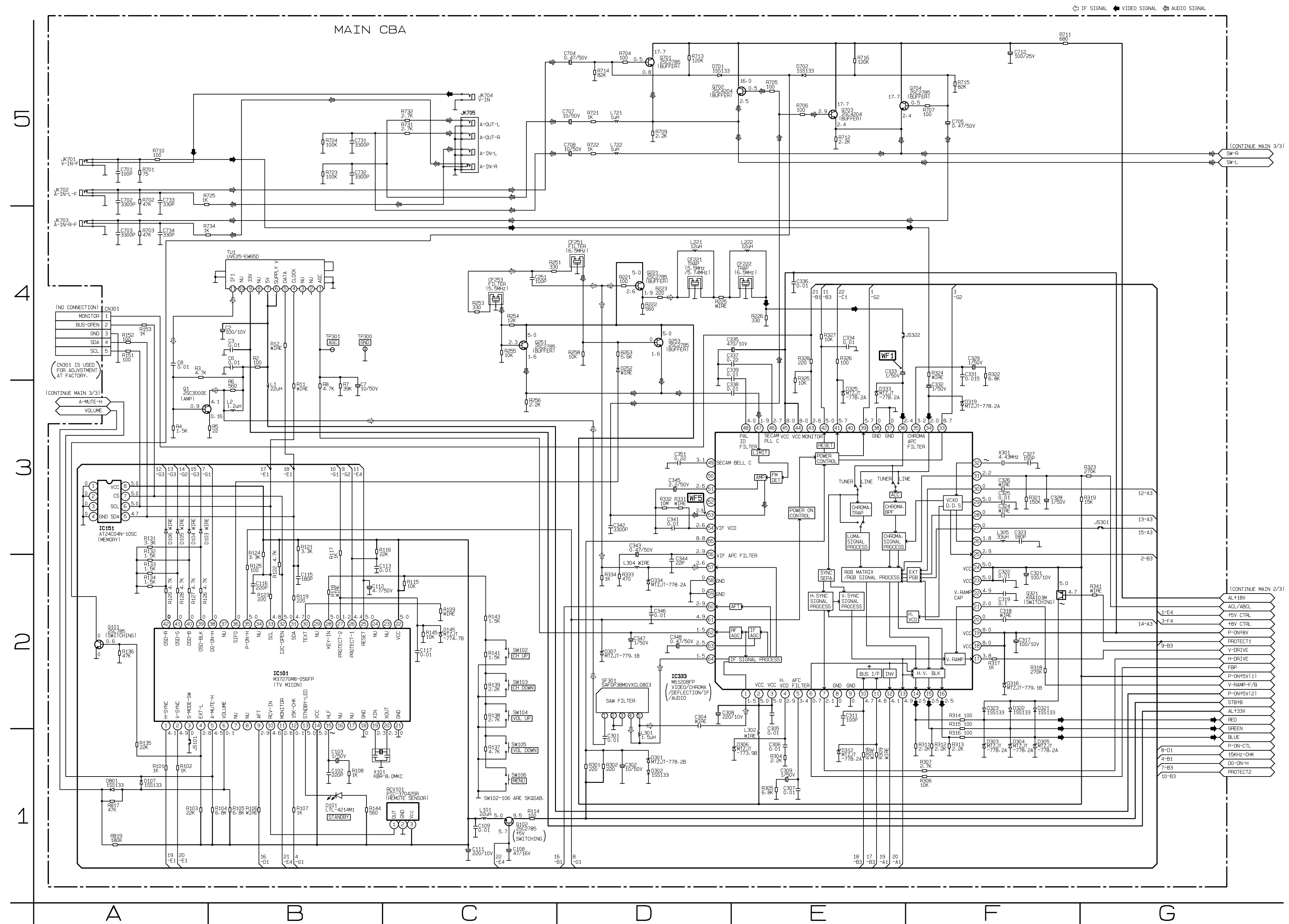
1. "1-D3" means that line number "1" goes to area "D3".
2. "1-B1" means that line number "1" goes to area "B1".



8. Test Point Information

- ⊙ : Indicates a test point with a jumper wire across a hole in the PCB.
- : Used to indicate a test point with a component lead on foil side.
- ⊘ : Used to indicate a test point with no test pin.
- : Used to indicate a test point with a test pin.

Main 1/3 Schematic Diagram



Main 2/3 & CRT Schematic Diagram

CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

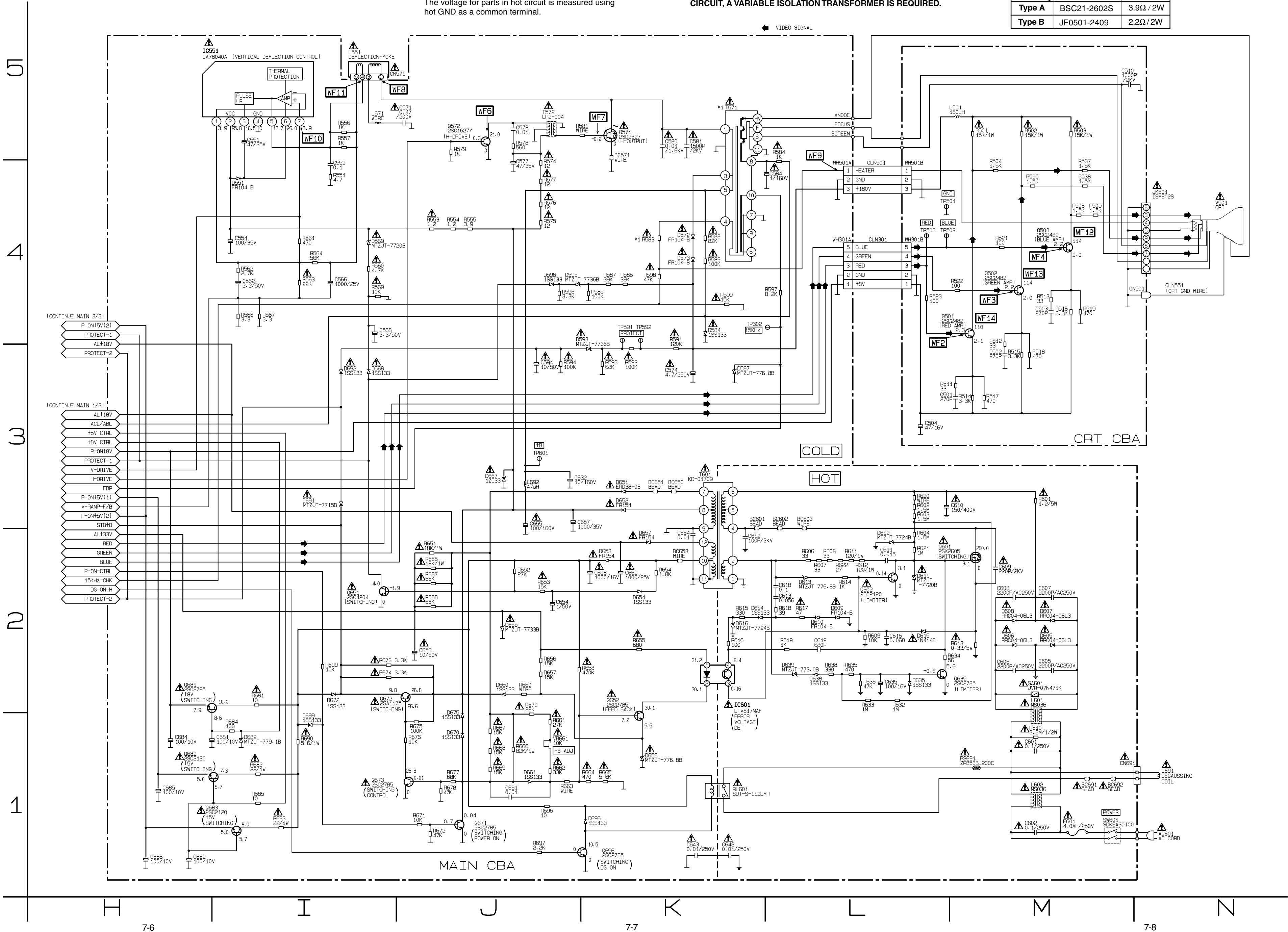
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.

NOTE:
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

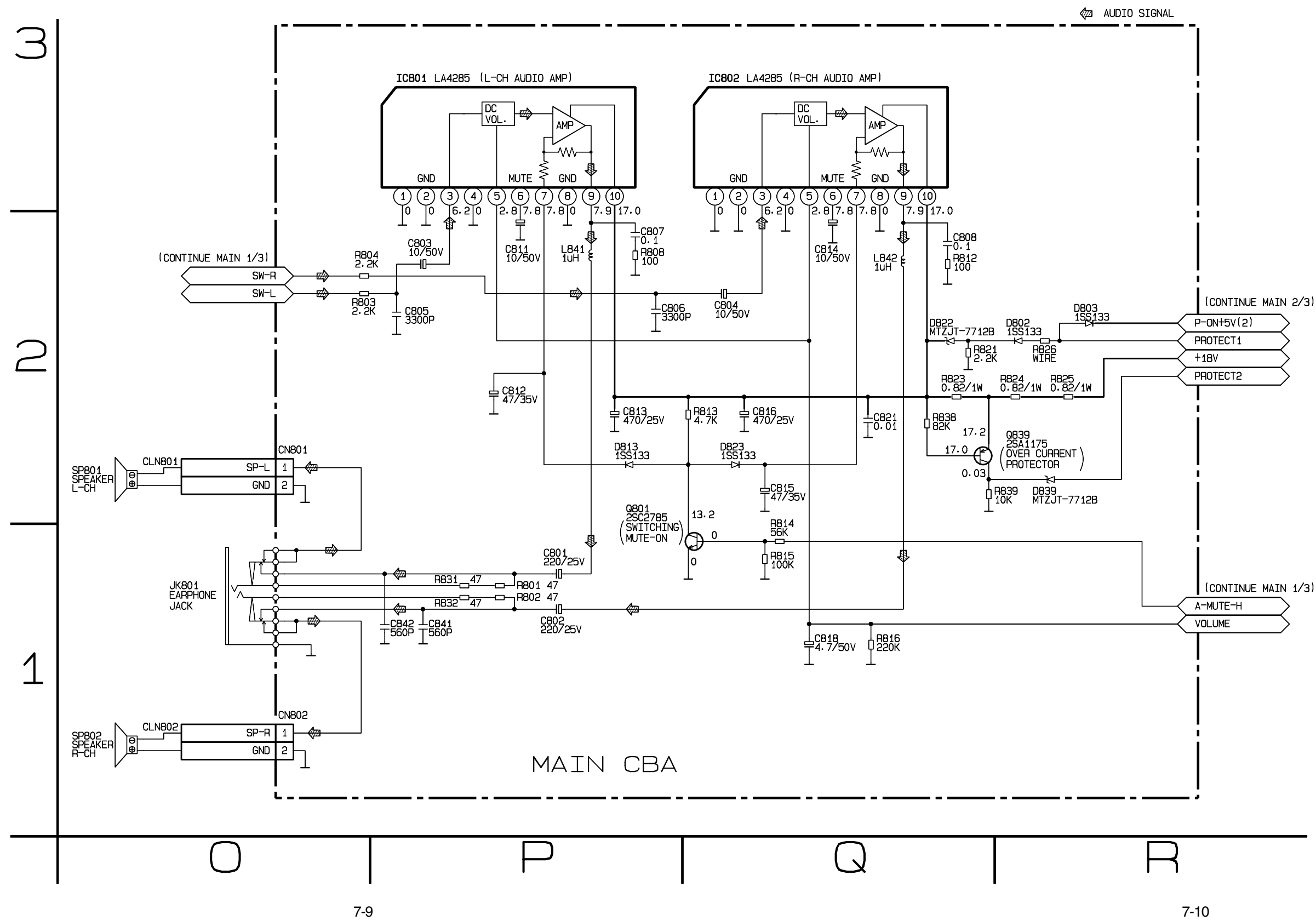
BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT, AN ISOLATION TRANSFORMER MUST BE USED. ALSO, IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY, WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT, A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.

***1 NOTE:**
The flyback transformer (T571) is either type A or type B.
These two types are exchangeable and can be equally used whichever the model is. The difference between type A and type B is shown in the table below.

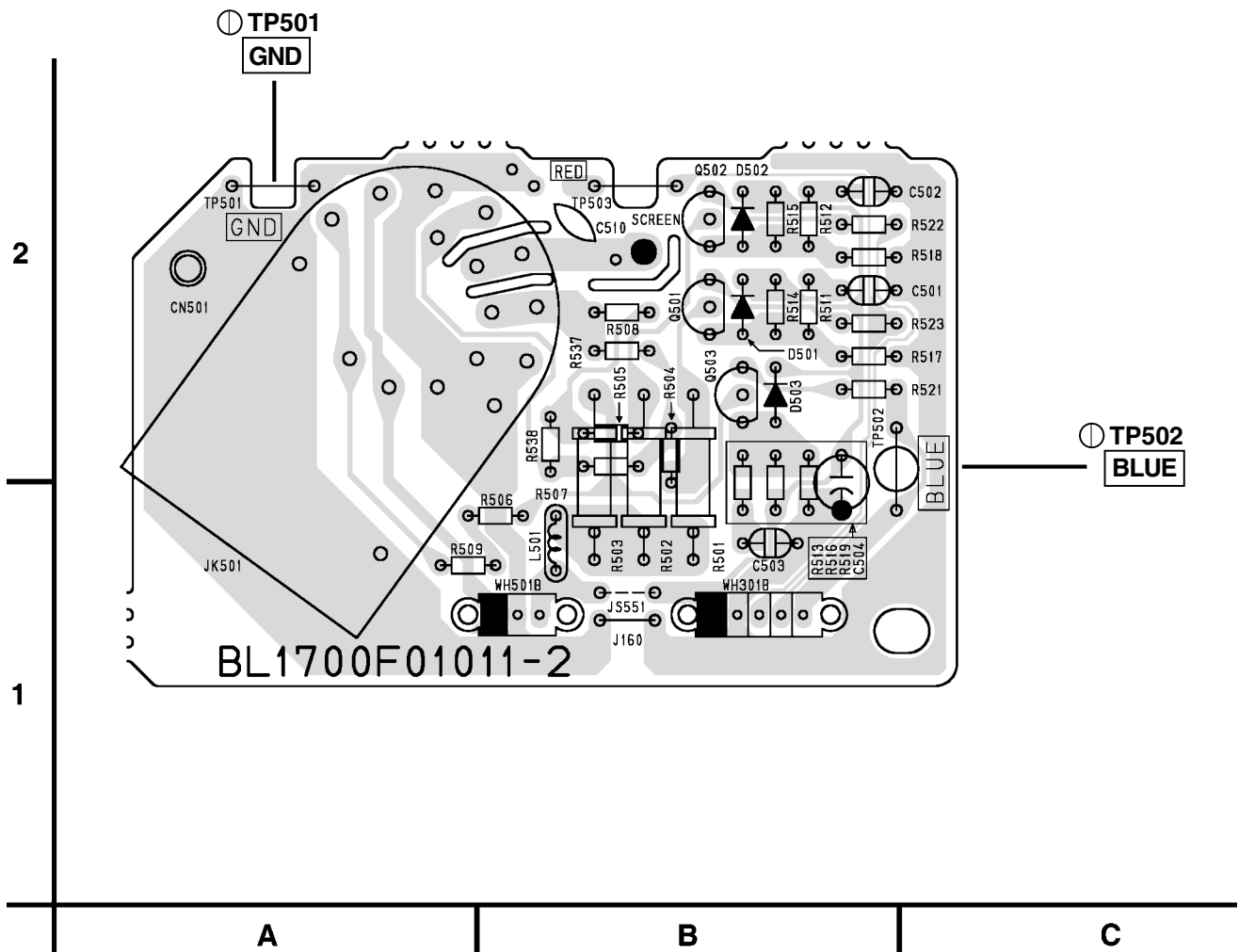
	T571	R583
Type A	BSC21-2602S	3.9Ω / 2W
Type B	JF0501-2409	2.2Ω / 2W



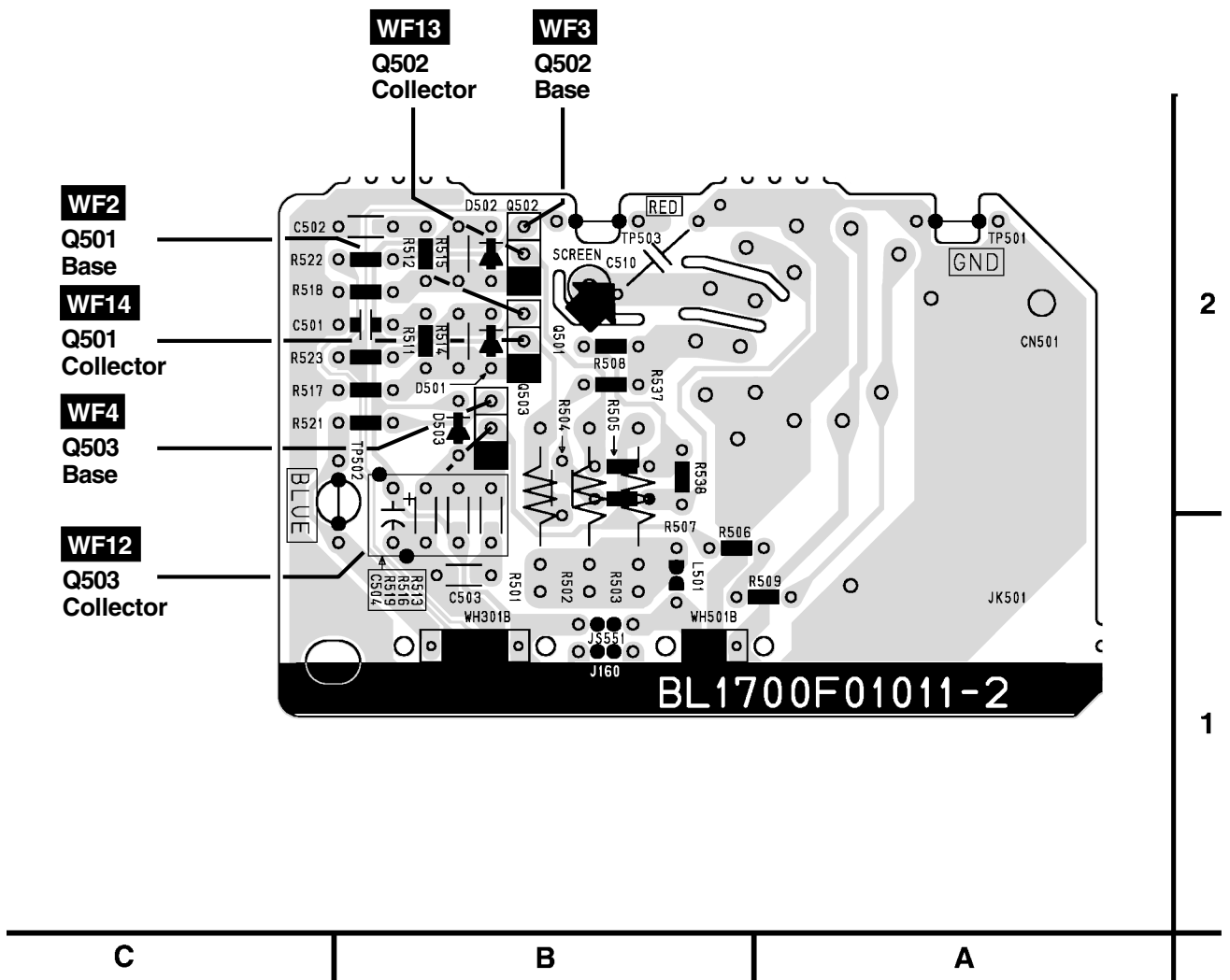
Main 3/3 Schematic Diagram



CRT CBA Top View



CRT CBA Bottom View

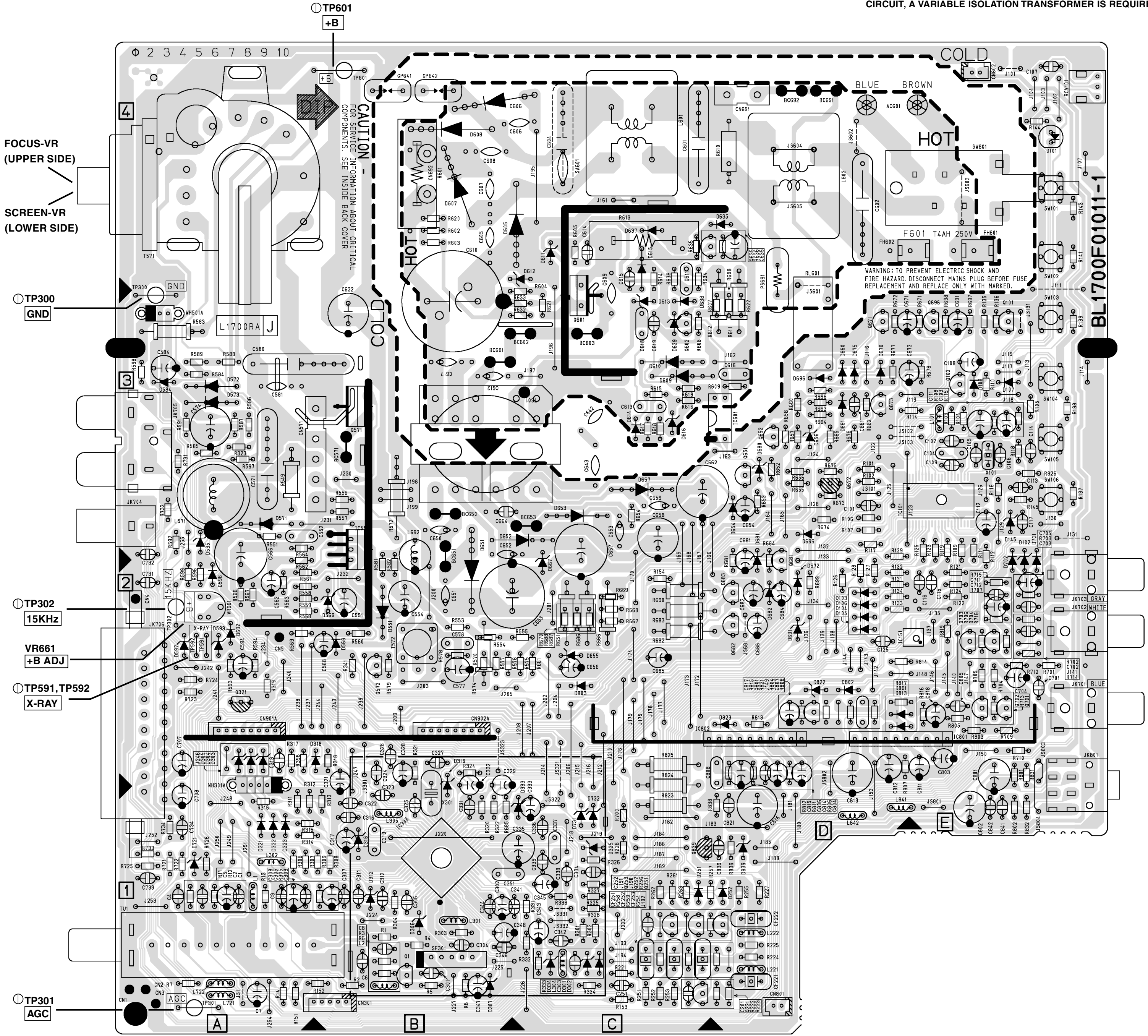


Main CBA Top View

CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.

BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT, AN ISOLATION TRANSFORMER MUST BE USED.
ALSO, IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY, WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT, A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.

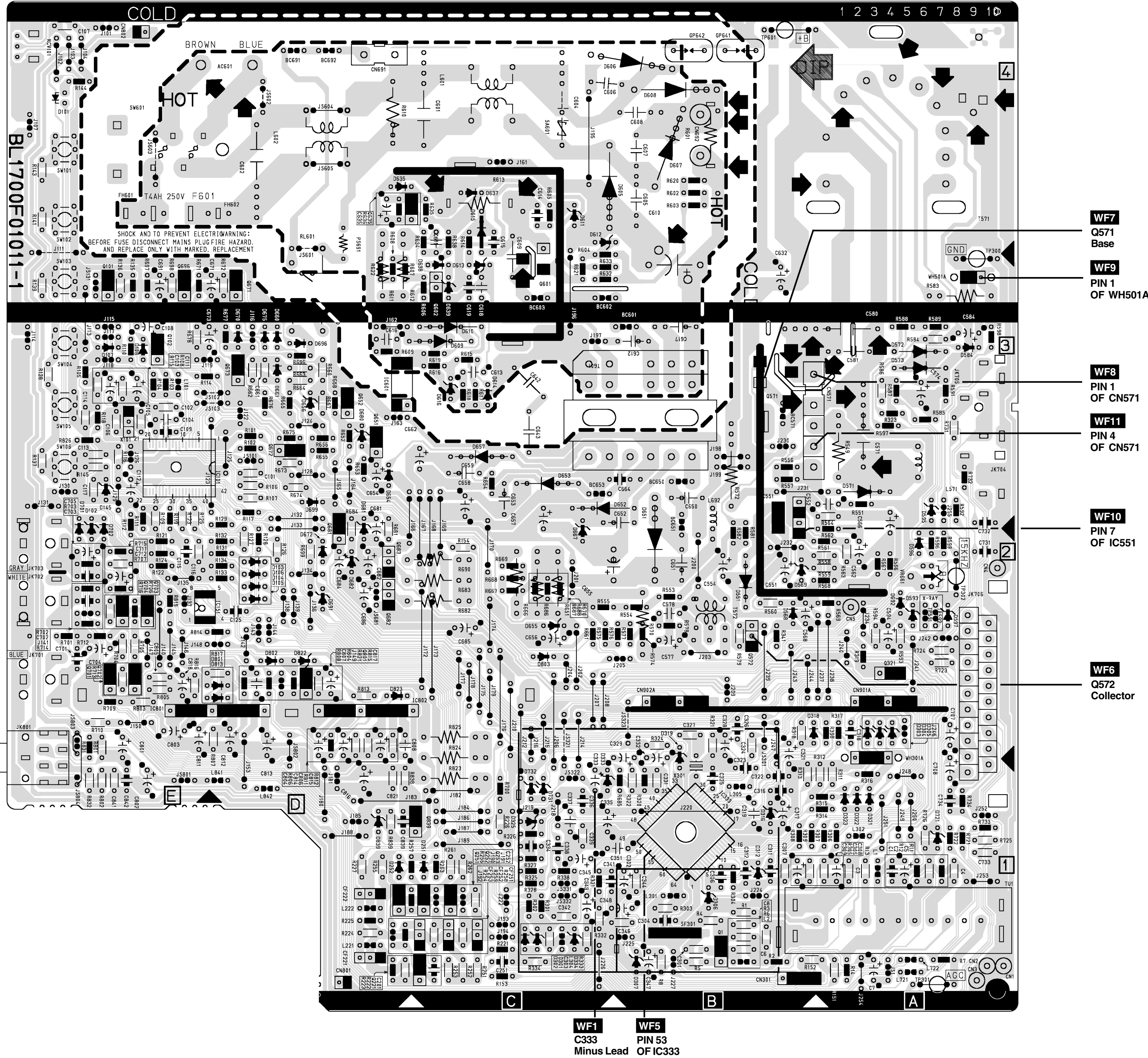


Main CBA Bottom View

CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD
REPLACE ONLY WITH THE SAME TYPE FUSE.

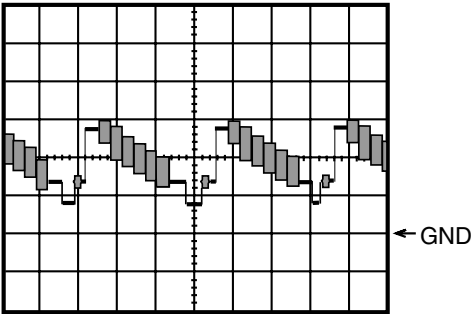
BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT, AN ISOLATION TRANSFORMER MUST BE USED ALSO, IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY, WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT, A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.



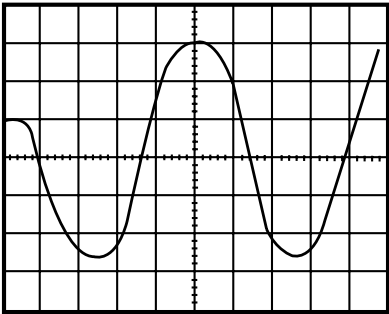
WAVEFORMS

WF1 ~ WF16 = Waveforms to be observed at Waveform check points. (Shown in Schematic Diagram.)

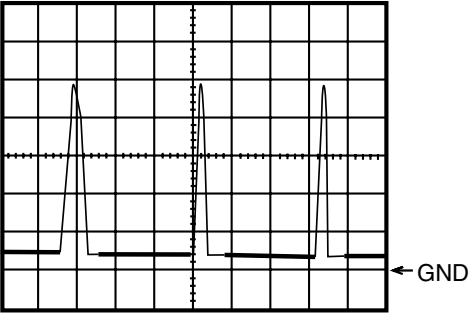
Input: PAL Color Bar Signal (with 1kHz Audio Signal)
INITIAL POSITION: Unplug unit from AC outlet for at least 5 minutes. reconnect to AC outlet and then turn power on.
(Brightness---Center Color---Center Tint --- Center Contrast---Approx 70%)



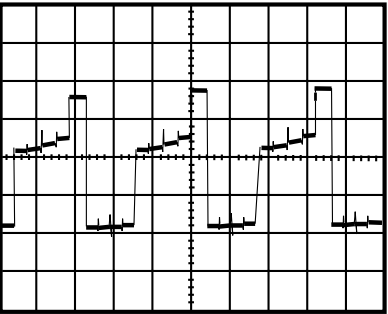
WF1 1DIV: 0.5V 20μsec
C 333 Minus Lead



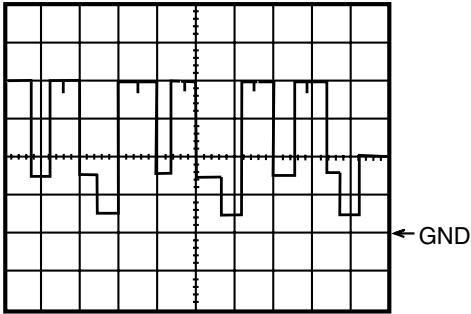
WF5 1DIV: 0.2V 0.2msec
IC 333 Pin 53



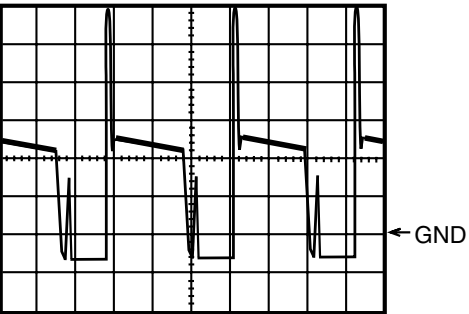
WF9 1DIV: 5V 20μsec
WH501A Pin 1



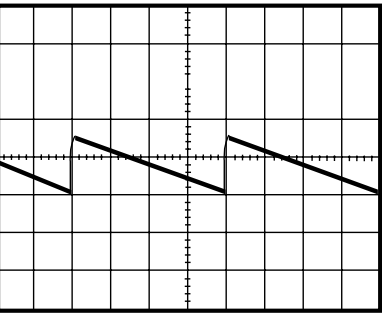
WF13 1DIV: 20V 20μsec
Q 502 Collector



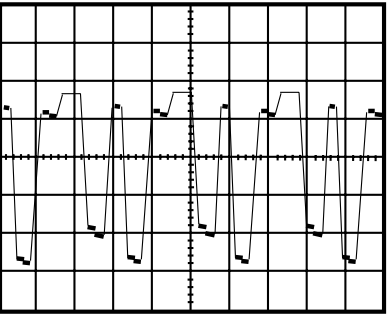
WF2 1DIV: 2V 20μsec
Q501 Base



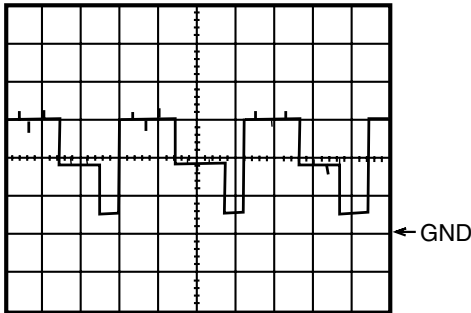
WF6 1DIV: 10V 20μsec
Q 572 Collector



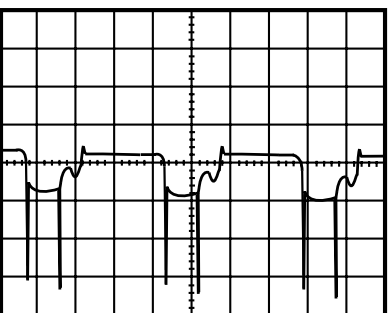
WF10 1DIV: 1V 5msec
IC 551 Pin 7



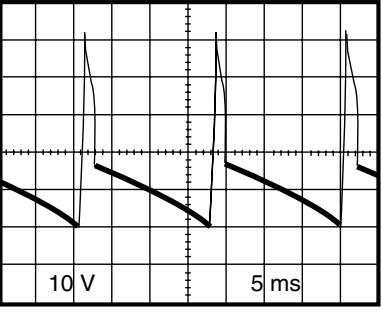
WF14 1DIV: 20V 20μsec
Q 501 Collector



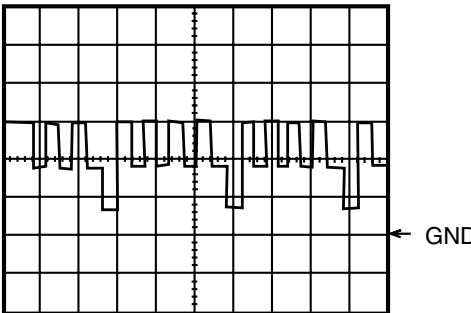
WF3 1DIV: 2V 20μsec
Q 502 Base



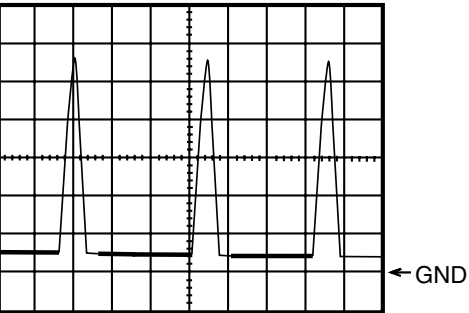
WF7 1DIV: 5V 20μsec
Q 571 Base



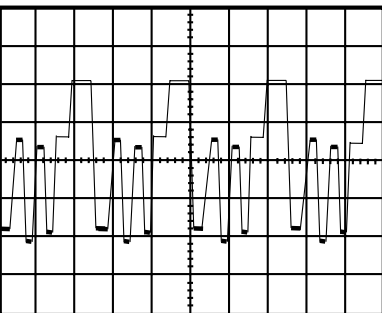
WF11 1DIV: 10V 5msec
CN 571 Pin 4



WF4 1DIV: 2V 20μsec
Q 503 Base

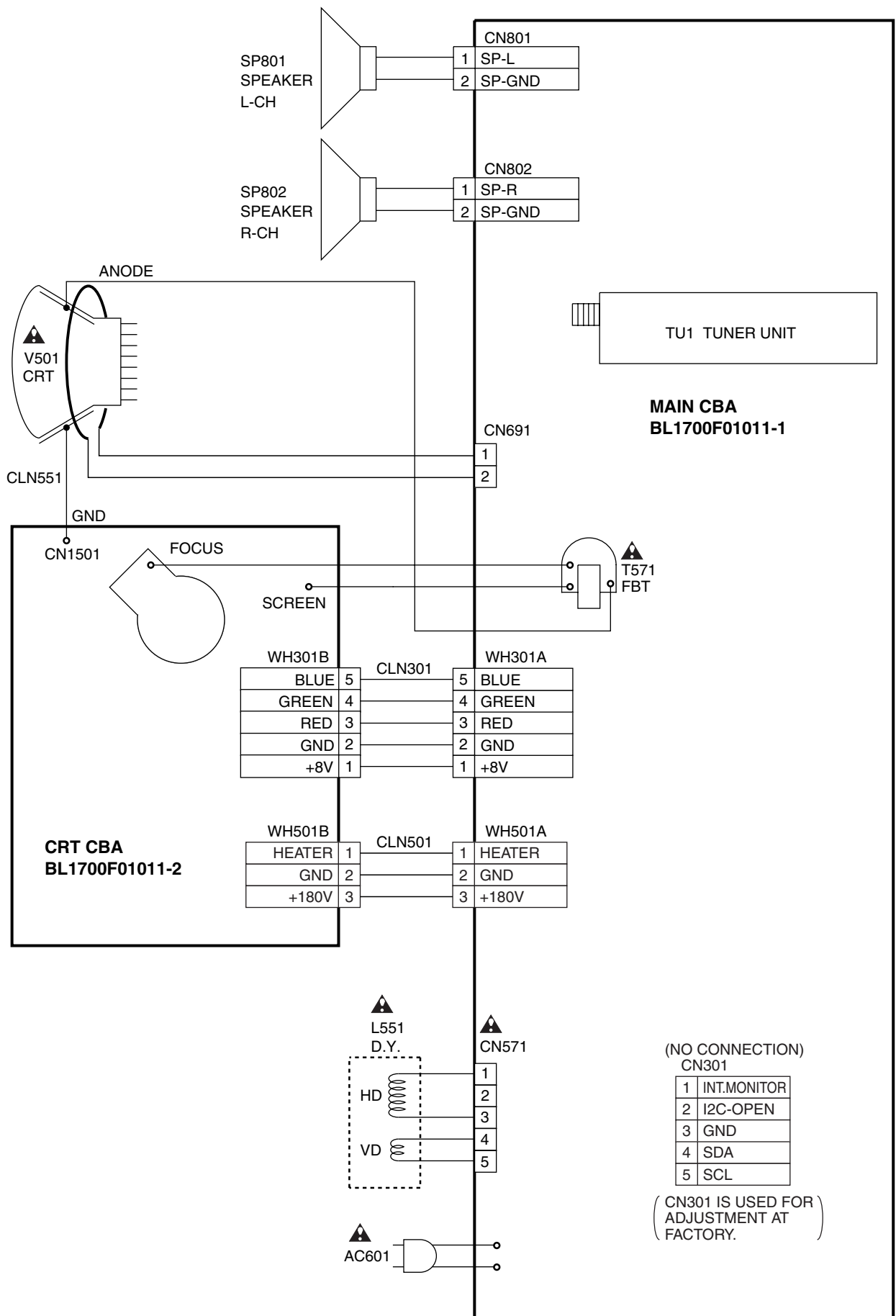


WF8 1DIV: 200V 20μsec
CN 571 Pin 1



WF12 1DIV: 20V 20μsec
Q503 Collector

WIRING DIAGRAM



IC PIN FUNCTIONS

IC101 (TV Micro Computer)

Pin No.	Signal Name	Function
1	H-SYNC	Input For Horizontal Synchronize Signal
2	V-SYNC	Input For Vertical Synchronize Signal
3	N.U.	Not Used
4	EXT-L	Ext-L
5	A-MUTE	Audio Mute
6	VOLUME	VOLUME
7	N.U.	Not Used
8	N.U.	Not Used
9	AFT-IN	Input For AFT
10	RCV-IN	Input For Remote Control
11	MONITOR	Input For INTELLIGENT MONITOR
12	15K CHK	Power Supply Protection
13	ST-BY-LED	STANDBY-LED
14	ALL+5V	+5V
15	HLF	Filter for CCD
16	VHOLD	VHOLD
17	CVIN	Input for Video Signal
18	GND	GND
19	XIN	Input for Oscillator
20	XOUT	Output for Oscillator
21	GND	GND
22	ALL+5V	+5V
23	N.U.	Not Used
24	N.U.	Not Used
25	RESET	RESET
26	PROTECT-1	Power Supply Protection
27	PROTECT-2	Power Supply Protection
28	KEY-IN	Key Input (Main)
29	AV-CTL	Input For AV Signal
30	TEXT	TEXT IC
31	SDA	I2C-BUS Controller Interface (Data)
32	I2C-OPEN	White Balance Adjustment Judgement
33	SCL	I2C-BUS Controller Interface (Clock)

Pin No.	Signal Name	Function
34	SPOT-KILL	Spot Countermeasure (Not Used)
35	P-ON-H	Output for P-ON-H
36	SIF 0	Output for SOUND SYSTEM 0
37	SIF 1	Output for SOUND SYSTEM 1
38	DG-ON	Output for Removing Magnet
39	OUT	Picture Shut Down Output
40	B	Blue Output
41	G	Green Output
42	R	Red Output

IC333 (IF/Video/Chrominance/Deflection)

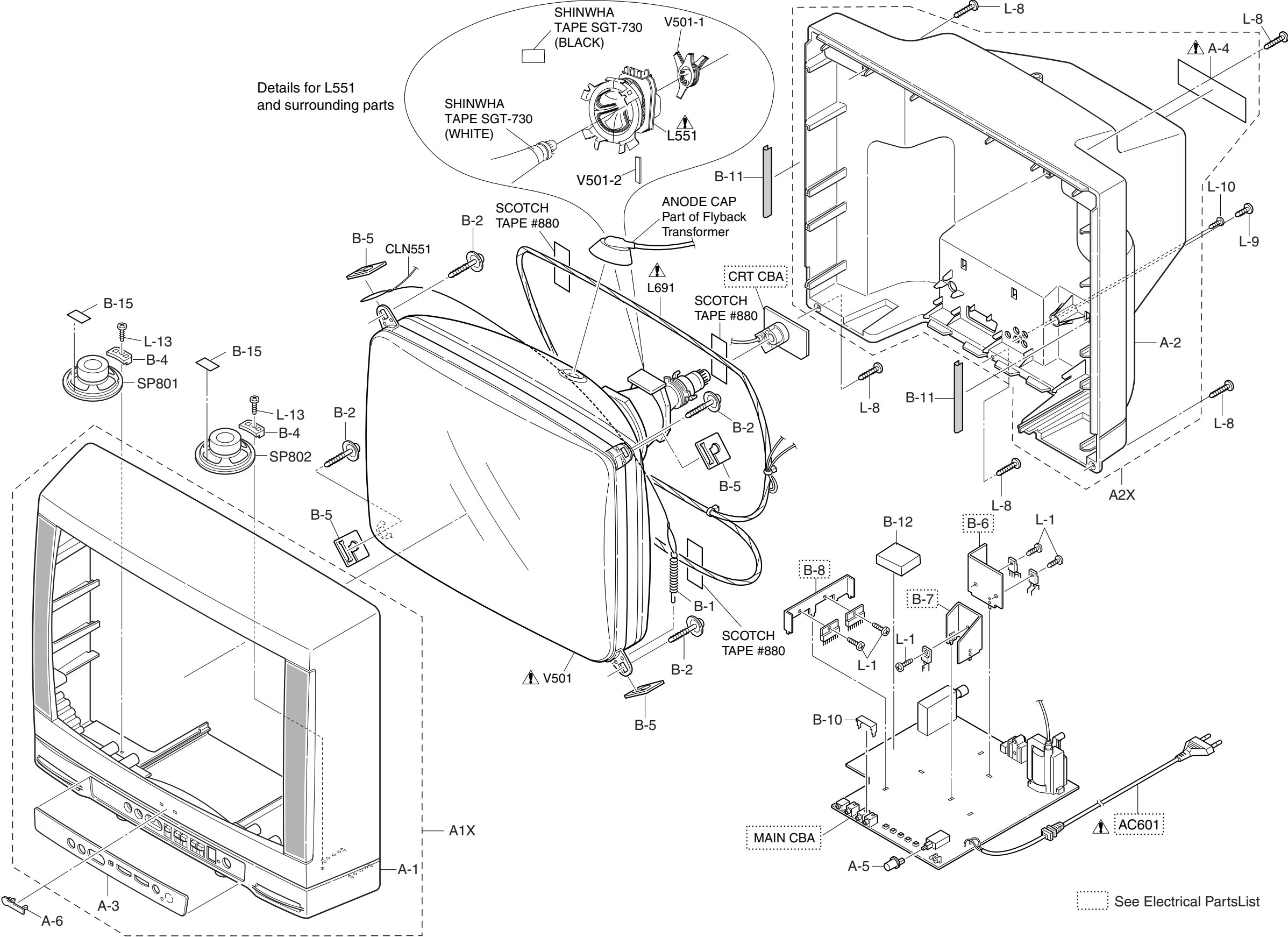
Pin No.	Signal Name	Function
1	VIF IN 2	VIF Input 2
2	VIF-VCC1	VIF-VCC 1
3	VIF-VCC2	VIF VCC 2
4	H. VCOF/B	H. VCO-FB
5	AF C1 FILTER	AFC Filter1
6	FBP-IN	FBP Input
7	H-OUT	H-Output
8	DEF GND 1	DEF GND 1
9	DEF GND 2	DEF GND 2
10	SDA	SDA
11	SCL	SCL
12	INV. FBP-OUT	INV. FBP-OUT
13	V-PULSE OUT	V-Pulse Output
14	R-OUT	R Output
15	G-OUT	G Output
16	B-OUT	B Output
17	V-OUT	Vertical Out
18	START UP VCC 1	Start up VCC 1
19	START UP VCC 2	Start up VCC 2
20	B-IN	OSD Blue Input

Pin No.	Signal Name	Function
21	V-RAMP FEEDBACK	V Ramp Feedback
22	V RAMP CAP	Filter for V Ramp
23	VC-VCC1	VC VCC 1
24	VC-VCC2	VC VCC 2
25	FSC-OUT	Freq. Sub carrier Output
26	DDS FILTER	DDS Filter
27	FAST BLK	Fast Blanking Input
28	G-IN	OSD Green Input
29	DDS DECOUPLI NG	DDS Decoupling
30	R-IN	OSD Red Input
31	ACL/ABCL	ACL/ABCL
32	X-TAL 4.43	Chroma Osc
33	8.7V REG OUT	8.7V Output
34	EXT/C IN	External Input
35	CHROMA APC FILTER	Filter for CHROMA APC
36	TV/Y IN	TV Input
37	VC GND 1	VC GND 1
38	VC GND 2	VC GND 2
39	5.7V REG OUT	5.7V Output
40	Y-SW OUT	Y-SW Output
41	M CU 5.7V OUT	5.7V Output
42	M CU Reset	MCU Reset Output
43	INTERI GENT MONITOR	Interigent Monitor Out
44	Hi Vcc 1	Hi Vcc 1
45	Hi Vcc 2	Hi Vcc 2
46	SECAM PLL C	Switching Reg. Control Output
47	SIF LIMITER- IN	SIF Limitter Input

Pin No.	Signal Name	Function
48	PAL ID FILTER	Filter for PAL ID
49	SECAM BELL C	SECAM Bell C
50	AUDIO OUT	Audio Output
51	AUDIO BYPASS	Filter for Audio Bypass
52	EXT AUDIO IN	External Audio In (Not Used)
53	FM DETECT OUT	RF Output
54	VIF VCO- F/B	VIF VCO-FB
55	VREG. Vcc	REG. Vcc Input
56	VIF APC FILTER	Filter for Video APC
57	VIF VIDEO OUT	Video Out
58	VIF GND 1	GND 1
59	VIF GND 2	GND 2
60	AFT OUT	AFT Out
61	P-ON CONTROL	P-ON Control
62	RF AGC OUT	RF AGC Out
63	IF AGC FILTER 1	Filter for IF AGC
64	VIF IN 1	IF Input 1

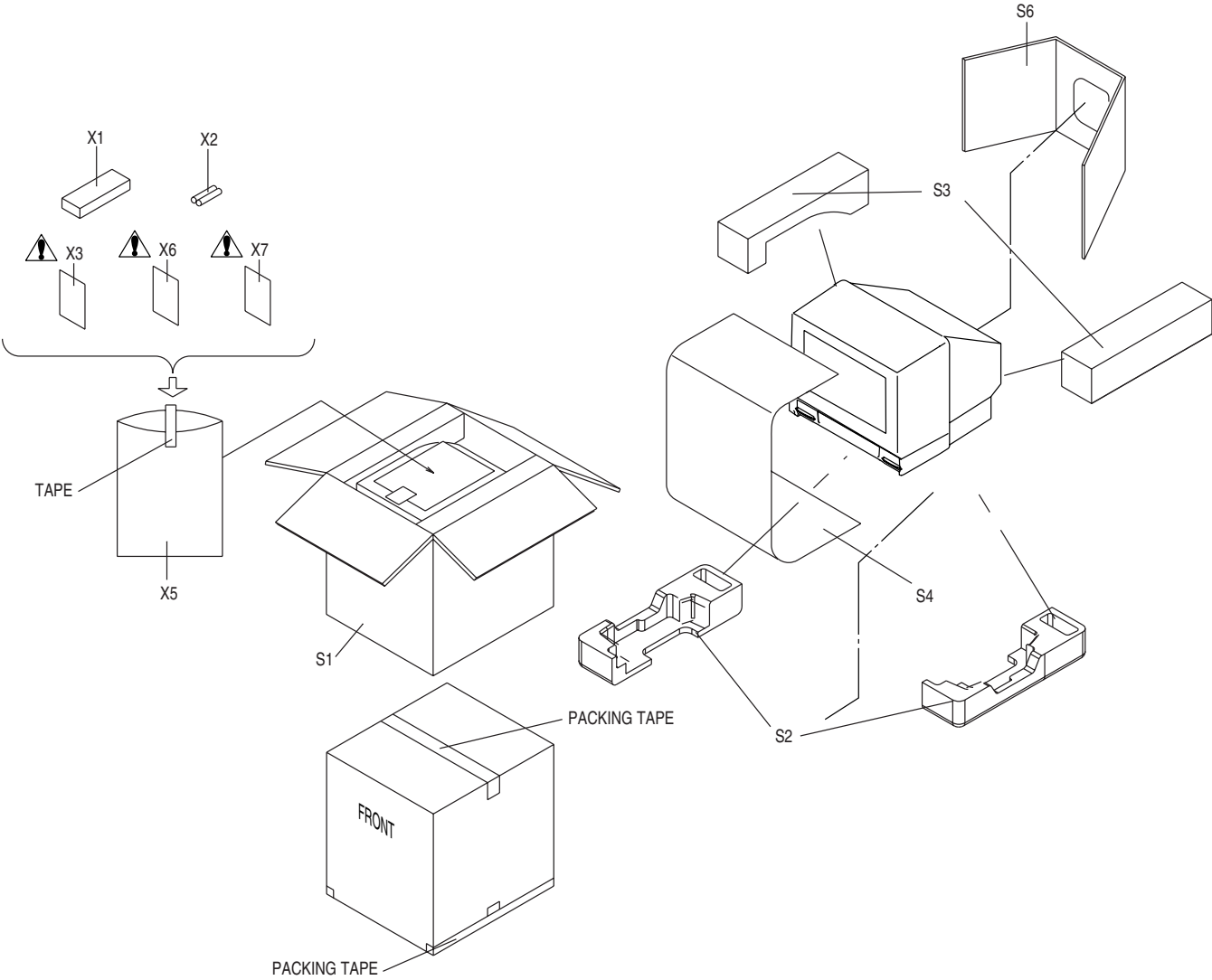
EXPLODED VIEWS

Cabinet




Packing

Some Ref. Numbers are not in sequence.



MECHANICAL PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a  have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

Ref. No.	Description	Part No.
A1X	FRONT CABINET ASSEMBLY L1700RA	0EM201439
A-1	FRONT CABINET L1700RA	0EM000510
A-3	CONTROL PLATE L1700RA	0EM201389
A2X	REAR CABINET ASSEMBLY L1700RA	0EM201440
A-2	REAR CABINET L1700RA	0EM000511
A-4 	RATING LABEL L1700RA	0EM406184
A-5	POWER KNOB L1700RA	0EM406206
A-6	BRAND BADGE L1700RA	0EM406280
AC601 	AC CORD LA-1814-1 or (See Electrical Parts List)	
	AC CORD 9707020 (See Electrical Parts List)	
B-1	TENSION SPRING B0080B0:EM40808	26WH006
B-2	CRT MOUNTING SCREW B0030U1:K42419	8A00083
B-4	SPEAKER HOLDER L1400UA	0EM406026
B-5 	DEGAUSS HOLDER L9800UA	0EM404845
B-6	HEAT SINK(PFB)ASSEMBLY L1400UZ (See Electrical Parts List)	
B-8	HEAT SINK AUDIO (See Electrical Parts List)	
B-7	HEAT SINK POWER ASSEMBLY L1700UA (See Electrical Parts List)	
B-10	JACK HOLDER L9304UZ (See Electrical Parts List)	
B-11	CLOTH L9800UA:95X15XT:0.5	0EM405041
B-12	SHIELD PLATE(A) L1700RA (See Electrical Parts List)	
B-15	CLOTH(10X30XT1.0) L9814UQ	0EM405137
L-1	B-TITE SCREW 3X8 BIND + CHROME (See Electrical Parts List)	
L-8	SCREW, P-TIGHT 4X18 BIND HEAD +	GBMP4180
L-9	SCREW TAPPING M4X14	DBU14140
L-10	SCREW, P-TIGHT 3X10 BIND HEAD+	GBKP3100
L-13	SCREW, P-TIGHT 3X12 BIND HEAD+	GBMP3120
PACKING		
S-1	CARTON L1700RA	0EM406186
S-2	STYRFOAM BOTTOM L1700RA	0EM000513
S-3	STYRFOAM TOP L1700RA	0EM000512
S-4	SET SHEET B7500UA:1000X1700	0EM402178
S-6	HOLD PAD L1400UA	0EM406207
S-7	SERIAL NO. LABEL L7770UA	0EM401639
ACCESSORIES		
X-1	REMOCON UNIT 130/ERC001/N0135RD	N0135RD
X-2	DRY BATTERY R6P/2S or DRY BATTERY(SUNRISE) R6SSE/2S or DRY BATTERY R6P(AR)2PX or DRY BATTERY R6P(AR)2P X ICI	XB0M451T0001 XB0M451MS002 XB0M451HU002 XB0M451HU003
X-3 	OWNER'S MANUAL(E)/(S) L1700RA:ENGLISH/ SPANISH	0EMN01794
X-5	POLYETHYLENE BAG F8626B5	Z325350
X-6 	OWNER'S MANUAL(R) L1700RA:RUSSIA	0EMN01826
X-7 	OWNER'S MANUAL(A) L1700RA:ARABIA	0EMN01827









Ref. No.	Description	Part No.
DE PARTS		
CLN551	CRT GND WIRE CRT GND	WX1L7820-003
L691 	DEGAUSSING COIL F-041	LLBH00ZTM041
SP801	SPEAKER S08F16-J	DSD0808XQ009
SP802	SPEAKER S08F26-J	DSD0808XQ008
Note: 1. V501 (CRT) HAS COUPLE OF SUBSTITUTIONAL PARTS AND EACH PARTS ALSO HAS MATCHING COMBINATION WITH L551. PLEASE SEE TABLE 1 FOR DETAILS OF MATCHING COMBINATION. 2. L551 (DEFLECTION YOKE) HAS MATCHING COMBINATION WITH V501. PLEASE SEE TABLE 1 FOR DETAILS OF MATCHING COMBINATION.		
CRT TYPE 1		
L551 	DEFLECTION YOKE KDY3MDA84X or	LLBY00ZMS013
	DEFLECTION YOKE LLBY00ZSY006 or	LLBY00ZSY006
	DEFLECTION YOKE CDY-M2019F	LLBY00ZQS004
V501 	CRT A48JLL90X	TCRT190QS009
V501-1	C.P.MAGNET JH225-014	XM04000BV009
V501-2	WEDGE FT-00110W or WEDGE DB25SR	XV10000T4001 XV10000D9001
CRT TYPE 2		
L551 	DEFLECTION YOKE CDY-M2023F or	LLBY00ZQS005
	DEFLECTION YOKE LLBY00ZSY007	LLBY00ZSY007
V501 	CRT A48LRH93X(W)	TCRT190P7002
V501-1	C.P.MAGNET JH225-014	XM04000BV009
V501-2	WEDGE FT-00110W or WEDGE DB25SR	XV10000T4001 XV10000D9001

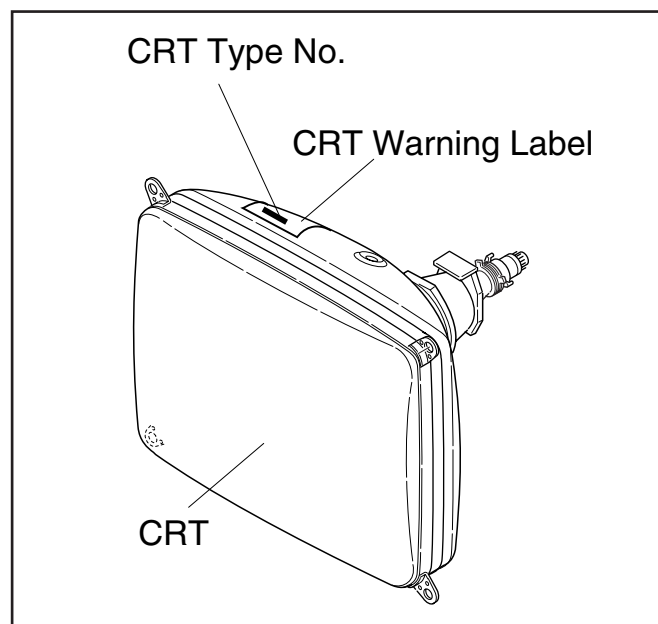
Table 1 (V501 and L551 Combination)

Note 1: Purity and Convergence Adjustments must be performed following CRT replacement. Refer to Electrical Adjustment Instructions.


Note2: Please confirm CRT Type No. on the CRT Warning Label which is located on the CRT. Then See the Table 1 for V501 and L551 combination chart. Please refer this CRT, Deflection Yoke combination chart for parts order.

V501: CRT Type No.	V501: CRT Part No.	L551: Deflection Yoke Part No.
CRT A48JLL90X	TCRT190QS009	LLBY00ZMS013
		LLBY00ZSY006
		LLBY00ZQS004
CRT A48LRH93X(W)	TCRT190P7002	LLBY00ZQS005
		LLBY00ZSY007

CRT Warning Label Location



ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a  have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTES:

- Parts that not assigned part numbers (-----) are not available.
- Tolerance of Capacitors and Resistors are noted with the following symbols.

C.....±0.25%	D.....±0.5%	F.....±1%
G.....±2%	J.....±5%	K.....±10%
M.....±20%	N.....±30%	Z.....+80/-20%

MMA-328 CBA

Ref. No.	Description	Part No.
	MMA-328 CBA (Main CBA+CRT CBA) Consists of the following	0ESA04153
	Main CBA	-----
	CRT CBA	-----

Main CBA

Ref. No.	Description	Part No.
	Main CBA Consists of the following	-----
CAPACITORS		
C2	ELECTROLYTIC CAP. 100µF/10V M or	CE1AMASTL101
	ELECTROLYTIC CAP. 100µF/10V M	CE1AMASDL101
C3	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZT0F103
C4	CERAMIC CAP.(AX) B K 100pF/50V	CCA1JKT0B101
C5	CERAMIC CAP.(AX) B K 100pF/50V	CCA1JKT0B101
C6	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZT0F103
C7	ELECTROLYTIC CAP. 10µF/50V M or	CE1JMASTL100
	ELECTROLYTIC CAP. 10µF/50V M	CE1JMASDL100
C8	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZT0F103
C102	CERAMIC CAP.(AX) B K 220pF/50V	CCA1JKT0B221
C103	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASTL1R0
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASTL010
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASDL010
C108	ELECTROLYTIC CAP. 47µF/16V M or	CE1CMASDL470
	ELECTROLYTIC CAP. 47µF/16V M	CE1CMASDL470
C109	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZT0F103
C111	ELECTROLYTIC CAP. 220µF/10V M or	CE1AMASTL221
	ELECTROLYTIC CAP. 220µF/10V M	CE1AMASDL221
C112	ELECTROLYTIC CAP. 4.7µF/50V M or	CE1JMASTL4R7
	ELECTROLYTIC CAP. 4.7µF/50V M	CE1JMASDL4R7
C113	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZT0F103
C115	CERAMIC CAP.(AX) B K 180pF/50V	CCA1JKT0B181
C116	CERAMIC CAP.(AX) B K 220pF/50V	CCA1JKT0B221
C117	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZT0F103
C126	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZT0F103
C136	ELECTROLYTIC CAP. 100µF/10V M or	CE1AMASTL101

Ref. No.	Description	Part No.
	ELECTROLYTIC CAP. 100µF/10V M	CE1AMASDL101
C251	CERAMIC CAP.(AX) B K 100pF/50V	CCA1JKT0B101
C253	ELECTROLYTIC CAP. 100µF/10V M or	CE1AMASTL101
	ELECTROLYTIC CAP. 100µF/10V M	CE1AMASDL101
C301	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZT0F103
C302	ELECTROLYTIC CAP. 10µF/50V M or	CE1JMASTL100
	ELECTROLYTIC CAP. 10µF/50V M	CE1JMASDL100
C304	PCB JUMPER D0.6-P5.0	JW5.0T
C305	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZT0F103
C306	CARBON RES. 1/4W J 47kΩ or	RCX4JATZ0473
	CARBON RES. 1/6W J 47kΩ	RCX6JATZ0473
C307	CERAMIC CAP.(AX) B K 0.01µF/50V or	CA1J103TU011
	CERAMIC CAP.(AX) Y K 0.01µF/16V	CDA1CKT0Y103
C308	ELECTROLYTIC CAP. 220µF/10V M or	CE1AMASTL221
	ELECTROLYTIC CAP. 220µF/10V M	CE1AMASDL221
C309	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASTL1R0
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASTL010
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASDL010
C310	CERAMIC CAP.(AX) B K 0.01µF/50V or	CA1J103TU011
	CERAMIC CAP.(AX) Y K 0.01µF/16V	CDA1CKT0Y103
C311	CERAMIC CAP.(AX) B K 100pF/50V	CCA1JKT0B101
C316	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZT0F103
C317	ELECTROLYTIC CAP. 100µF/10V M or	CE1AMASTL101
	ELECTROLYTIC CAP. 100µF/10V M	CE1AMASDL101
C318	PCB JUMPER D0.6-P5.0	JW5.0T
C319	FILM CAP.(P) 0.1µF/50V J or	CMA1JJS00104
	FILM CAP.(P) 0.1µF/50V J or	CA1J104MS029
	FILM CAP.(P) 0.1µF/50V J TV or	CMB1JJS00104
	*MYLAR CAP. 0.1µF/50V K	2250104S
C321	ELECTROLYTIC CAP. 100µF/10V M or	CE1AMASTL101
	ELECTROLYTIC CAP. 100µF/10V M	CE1AMASDL101
C322	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZT0F103
C323	CERAMIC CAP.(AX) CH J 180pF/50V	CA1J181TU008
C324	PCB JUMPER D0.6-P5.0	JW5.0T
C325	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZT0F103
C326	PCB JUMPER D0.6-P5.0	JW5.0T
C327	CERAMIC CAP.(AX) CH J 150pF/50V	CA1J151TU008
C328	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASTL1R0
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASTL010
	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASDL1R0
C328	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASDL010
C329	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASTL1R0
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASTL010
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASDL010
C331	CERAMIC CAP.(AX) B K 0.015µF/50V	CA1J153TU011
C332	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASTL1R0
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASTL010
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASDL010
C333	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASTL1R0
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASTL010
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASDL010
C334	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZT0F103
C335	ELECTROLYTIC CAP. 470µF/10V M or	CE1AMASTL471

*Mylar is a registered trademark of E.I. Du Pont de Nemours and Company.

Ref. No.	Description	Part No.
	ELECTROLYTIC CAP. 470µF/10V M	CE1AMASDL471
C336	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZTOF103
C337	MYLAR CAP. 0.22µF/50V J or	CMA1JJS00224
	FILM CAP.(P) 0.22µF/50V J or	CA1J224MS029
	FILM CAP.(P) 0.22µF/50V J TV or	CMB1JJS00224
	MYLAR CAP. 0.22µF/50V K	2250224S
C338	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZTOF103
C339	CERAMIC CAP.(AX) Y K 0.01µF/50V or	CA1J103TU011
	CERAMIC CAP.(AX) Y K 0.01µF/16V	CDA1CKT0Y103
C341	CERAMIC CAP.(AX) B K 0.01µF/50V or	CA1J103TU011
	CERAMIC CAP.(AX) Y K 0.01µF/16V	CDA1CKT0Y103
C342	CERAMIC CAP.(AX) X K 3300pF/16V	CDA1CKT0X332
C343	ELECTROLYTIC CAP. 0.47µF/50V M or	CE1JMASTLR47
	ELECTROLYTIC CAP. 0.47µF/50V M	CE1JMASDLR47
C344	CERAMIC CAP.(AX) SL J 22pF/50V	CCA1J7TSL220
C345	ELECTROLYTIC CAP. 2.2µF/50V M or	CE1JMASTL2R2
	ELECTROLYTIC CAP. 2.2µF/50V M	CE1JMASDL2R2
C346	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZTOF103
C347	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASTL1R0
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASTL010
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASDL010
C348	ELECTROLYTIC CAP. 0.47µF/50V M or	CE1JMASTLR47
	ELECTROLYTIC CAP. 0.47µF/50V M	CE1JMASDLR47
C351	MYLAR CAP. 0.22µF/50V J or	CMA1JJS00224
	FILM CAP.(P) 0.22µF/50V J or	CA1J224MS029
	FILM CAP.(P) 0.22µF/50V J TV or	CMB1JJS00224
	MYLAR CAP. 0.22µF/50V K	2250224S
C551	ELECTROLYTIC CAP. 47µF/35V M or	CE1GMASTL470
	ELECTROLYTIC CAP. 47µF/35V M	CE1GMASDL470
C552	FILM CAP.(P) 0.1µF/50V J or	CMA1JJS00104
	FILM CAP.(P) 0.1µF/50V J or	CA1J104MS029
	FILM CAP.(P) 0.1µF/50V J TV or	CMB1JJS00104
	MYLAR CAP. 0.1µF/50V K	2250104S
C554	ELECTROLYTIC CAP. 100µF/35V M or	CE1GMASTL101
	ELECTROLYTIC CAP. 100µF/35V M	CE1GMASDL101
C562	ELECTROLYTIC CAP. 2.2µF/50V M or	CE1JMASTL2R2
	ELECTROLYTIC CAP. 2.2µF/50V M	CE1JMASDL2R2
C566	ELECTROLYTIC CAP. 1000µF/25V M or	CE1EMZNTL102
	ELECTROLYTIC CAP. 1000µF/25V M or	CE1EMZPDL102
	ELECTROLYTIC CAP. 1000µF/25V M	CE1EMZADL102
C568	ELECTROLYTIC CAP. 3.3µF/50V M or	CE1JMASTL3R3
	ELECTROLYTIC CAP. 3.3µF/50V M	CE1JMASDL3R3
C571	PP CAP. 0.47µF/250V J or	CT2E474MS041
	P.P. CAP. 0.47µF/200V J or	CA2D474KF002
	P.P.CAP 0.47µF/200 J	CA2D474VC012
C574	ELECTROLYTIC CAP. 4.7µF/250V M or	CE2EMASTL4R7
	ELECTROLYTIC CAP. 4.7µF/250V M	CE2EMASDL4R7
C577	ELECTROLYTIC CAP. 47µF/35V M or	CE1GMASTL470
	ELECTROLYTIC CAP. 47µF/35V M	CE1GMASDL470
C578	FILM CAP.(P) 0.01µF/50V J or	CMA1JJS00103
	FILM CAP.(P) 0.01µF/50V J or	CA1J103MS029
	FILM CAP.(P) 0.01µF/50V J TV or	CMB1JJS00103
	MYLAR CAP. 0.01µF/50V K	2250103S
C580	PP CAP. 0.01µF/1.6kV J or	CT3C103MS039
	PP CAP. 0.01µF/1.6kV J or	CBH3CJQ00103
	P.P.CAP 0.01µF/1.6kV J	CA3C103VC011
C581	CERAMIC CAP. LB 1500pF/2kV or	CA3D152KG004
	CERAMIC CAP. BN 1500pF/2kV or	CCD3DKA0B152
	CERAMIC CAP. 1500pF/2kV	CA3D152PAN04
C584	ELECTROLYTIC CAP. 1µF/160V M or	CE2CMASTL1R0

Ref. No.	Description	Part No.
	ELECTROLYTIC CAP. 1µF/160V M	CE2CMASDL010
C594	ELECTROLYTIC CAP. 10µF/50V M or	CE1JMASTL100
	ELECTROLYTIC CAP. 10µF/50V M	CE1JMASDL100
C601	METALLIZED FILM CAP. 0.1µF/250V or	CT2E104MS037
	FILM CAP.(MP) 0.1µF/250V M or	CT2E104DC009
	FILM CAP.(MP) 0.1µF/250V K	CT2E104DC011
C602	METALLIZED FILM CAP. 0.1µF/250V or	CT2E104MS037
	FILM CAP.(MP) 0.1µF/250V M or	CT2E104DC009
	FILM CAP.(MP) 0.1µF/250V K	CT2E104DC011
C605	CERAMIC CAP. B K 2200pF/500V or	CCD2JKD0B222
	CERAMIC CAP. 0.0022µF/250V	CCD2EZA0E222
C606	CERAMIC CAP. B K 2200pF/500V or	CCD2JKD0B222
	CERAMIC CAP. 0.0022µF/250V	CCD2EZA0E222
C607	CERAMIC CAP. B K 2200pF/500V or	CCD2JKD0B222
	CERAMIC CAP. 0.0022µF/250V	CCD2EZA0E222
C608	CERAMIC CAP. B K 2200pF/500V or	CCD2JKD0B222
	CERAMIC CAP. 0.0022µF/250V	CCD2EZA0E222
C609	CERAMIC CAP. LB 220pF/2kV or	CA3D221KG004
	CERAMIC CAP. BN J 220pF/2kV or	CCD3DKA0B221
	CERAMIC CAP. 220pF/2kV	CA3D221PAN04
C610	ELECTROLYTIC CAP. 150µF/400V(LQ TYPE) or	CA2H151NC050
	ELECTROLYTIC CAP. 150µF/400V M W/F or	CA2H151EA030
	ELECTROLYTIC CAP. 150µF/400V or	CA2H151NC027
	ELECTROLYTIC CAP. 150µF/400V M	CA2H151SM006
C611	FILM CAP.(P) 0.015µF/50V J or	CMA1JJS00153
	FILM CAP.(P) 0.015µF/50V J or	CA1J153MS029
	FILM CAP.(P) 0.015µF/50V J TV or	CMB1JJS00153
	MYLAR CAP. 0.015µF/50V K	2250153S
C612	CERAMIC CAP. LB 100pF/2kV or	CA3D101KG004
	CERAMIC CAP. BN J 100pF/2kV or	CCD3DKA0B101
	CERAMIC CAP. 100pF/2kV	CA3D101PAN04
C613	FILM CAP.(P) 0.056µF/50V J or	CMA1JJS00563
	FILM CAP.(P) 0.056µF/50V J or	CA1J563MS029
	FILM CAP.(P) 0.056µF/50V J TV or	CMB1JJS00563
	MYLAR CAP. 0.056µF/50V KT	2250563S
C616	FILM CAP.(P) 0.068µF/50V J or	CMA1JJS00683
	FILM CAP.(P) 0.068µF/50V J or	CA1J683MS029
	FILM CAP.(P) 0.068µF/50V J TV or	CMB1JJS00683
	MYLAR CAP. 0.068µF/50V K	2250683S
C618	FILM CAP.(P) 0.1µF/50V J or	CMA1JJS00104
	FILM CAP.(P) 0.1µF/50V J or	CA1J104MS029
	FILM CAP.(P) 0.1µF/50V J TV or	CMB1JJS00104
	MYLAR CAP. 0.1µF/50V K	2250104S
C619	CERAMIC CAP.(AX) B K 680pF/50V	CCA1JKT0B681
C632	ELECTROLYTIC CAP. 10µF/160V M or	CE2CMASTL100
	ELECTROLYTIC CAP. 10µF/160V M	CE2CMASDL100
C635	ELECTROLYTIC CAP. 100µF/16V M or	CE1CMASTL101
	ELECTROLYTIC CAP. 100µF/16V M	CE1CMASDL101
C642	CERAMIC CAP. 0.01UF F CS or	CCG2HMN0F103
	SAFETY CAP. F M 0.01µF/250V	CCG2EMPOF103
C643	CERAMIC CAP. 0.01UF F CS or	CCG2HMN0F103
	SAFETY CAP. F M 0.01µF/250V	CCG2EMPOF103
C654	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASTL1R0
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASTL010
	ELECTROLYTIC CAP. 1µF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1µF/50V M	CE1JMASDL010
C655	ELECTROLYTIC CAP. 100µF/160V M	CE2CMZPTL101
C656	ELECTROLYTIC CAP. 10µF/50V M or	CE1JMASTL100
	ELECTROLYTIC CAP. 10µF/50V M	CE1JMASDL100
C657	ELECTROLYTIC CAP. 1000µF/35V M or	CE1GMZNTL102

Ref. No.	Description	Part No.
	ELECTROLYTIC CAP. 1000µF/35V M or	CE1GMZNDL102
	ELECTROLYTIC CAP. 1000µF/35V M	CE1GMZADL102
C658	ELECTROLYTIC CAP. 1000µF/16V M(VR/HC) or	CE1CMZNTL102
	ELECTROLYTIC CAP. 1000µF/16V M or	CE1CMZPDL102
	ELECTROLYTIC CAP. 1000µF/16V M	CE1CMZADL102
C661	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZT0F103
C662	ELECTROLYTIC CAP. 1000µF/25V M or	CE1EMZNTL102
	ELECTROLYTIC CAP. 1000µF/25V M or	CE1EMZPDL102
	ELECTROLYTIC CAP. 1000µF/25V M	CE1EMZADL102
C664	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZT0F103
C681	ELECTROLYTIC CAP. 33µF/10V M or	CE1AMASTL330
	ELECTROLYTIC CAP. 33µF/10V M	CE1AMASDL330
C682	ELECTROLYTIC CAP. 100µF/10V M or	CE1AMASTL101
	ELECTROLYTIC CAP. 100µF/10V M	CE1AMASDL101
C684	ELECTROLYTIC CAP. 100µF/10V M or	CE1AMASTL101
	ELECTROLYTIC CAP. 100µF/10V M	CE1AMASDL101
C685	ELECTROLYTIC CAP. 100µF/10V M or	CE1AMASTL101
	ELECTROLYTIC CAP. 100µF/10V M	CE1AMASDL101
C686	ELECTROLYTIC CAP. 100µF/10V M or	CE1AMASTL101
	ELECTROLYTIC CAP. 100µF/10V M	CE1AMASDL101
C701	CERAMIC CAP.(AX) B K 100pF/50V	CCA1JKT0B101
C702	CERAMIC CAP.(AX) X K 3300pF/16V	CDA1CKT0X332
C703	CERAMIC CAP.(AX) X K 3300pF/16V	CDA1CKT0X332
C704	ELECTROLYTIC CAP. 0.47µF/50V M or	CE1JMASTLR47
	ELECTROLYTIC CAP. 0.47µF/50V M	CE1JMASDLR47
C705	ELECTROLYTIC CAP. 0.47µF/50V M or	CE1JMASTLR47
	ELECTROLYTIC CAP. 0.47µF/50V M	CE1JMASDLR47
C707	ELECTROLYTIC CAP. 10µF/50V M or	CE1JMASTL100
	ELECTROLYTIC CAP. 10µF/50V M	CE1JMASDL100
C708	ELECTROLYTIC CAP. 10µF/50V M or	CE1JMASTL100
	ELECTROLYTIC CAP. 10µF/50V M	CE1JMASDL100
C712	ELECTROLYTIC CAP. 100µF/25V M or	CE1EMASTL101
	ELECTROLYTIC CAP. 100µF/25V M	CE1EMASDL101
C731	CERAMIC CAP.(AX) X K 3300pF/16V	CDA1CKT0X332
C732	CERAMIC CAP.(AX) X K 3300pF/16V	CDA1CKT0X332
C733	CERAMIC CAP.(AX) B K 330pF/50V	CCA1JKT0B331
C734	CERAMIC CAP.(AX) B K 330pF/50V	CCA1JKT0B331
C801	ELECTROLYTIC CAP. 220µF/25V M or	CE1EMASTL221
	ELECTROLYTIC CAP. 220µF/25V M	CE1EMASDL221
C802	ELECTROLYTIC CAP. 220µF/25V M or	CE1EMASTL221
	ELECTROLYTIC CAP. 220µF/25V M	CE1EMASDL221
C803	ELECTROLYTIC CAP. 10µF/50V M or	CE1JMASTL100
	ELECTROLYTIC CAP. 10µF/50V M	CE1JMASDL100
C804	ELECTROLYTIC CAP. 10µF/50V M or	CE1JMASTL100
	ELECTROLYTIC CAP. 10µF/50V M	CE1JMASDL100
C805	CERAMIC CAP.(AX) X K 3300pF/16V	CDA1CKT0X332
C806	CERAMIC CAP.(AX) X K 3300pF/16V	CDA1CKT0X332
C807	FILM CAP.(P) 0.1µF/50V J or	CMA1JJS00104
	FILM CAP.(P) 0.1µF/50V J or	CA1J104MS029
	FILM CAP.(P) 0.1µF/50V J TV or	CMB1JJS00104
	MYLAR CAP. 0.1µF/50V K	2250104S
C808	FILM CAP.(P) 0.1µF/50V J or	CMA1JJS00104
	FILM CAP.(P) 0.1µF/50V J or	CA1J104MS029
	FILM CAP.(P) 0.1µF/50V J TV or	CMB1JJS00104
	MYLAR CAP. 0.1µF/50V K	2250104S
C811	ELECTROLYTIC CAP. 10µF/50V M or	CE1JMASTL100
	ELECTROLYTIC CAP. 10µF/50V M	CE1JMASDL100
C812	ELECTROLYTIC CAP. 47µF/35V M or	CE1GMASTL470
	ELECTROLYTIC CAP. 47µF/35V M	CE1GMASDL470
C813	ELECTROLYTIC CAP. 470µF/25V M or	CE1EMASTL471

Ref. No.	Description	Part No.
	ELECTROLYTIC CAP. 470µF/25V M	CE1EMASDL471
C814	ELECTROLYTIC CAP. 10µF/50V M or	CE1JMASTL100
	ELECTROLYTIC CAP. 10µF/50V M	CE1JMASDL100
C815	ELECTROLYTIC CAP. 47µF/35V M or	CE1GMASTL470
	ELECTROLYTIC CAP. 47µF/35V M	CE1GMASDL470
C816	ELECTROLYTIC CAP. 470µF/25V M or	CE1EMASTL471
	ELECTROLYTIC CAP. 470µF/25V M	CE1EMASDL471
C818	ELECTROLYTIC CAP. 4.7µF/50V M or	CE1JMASTL4R7
	ELECTROLYTIC CAP. 4.7µF/50V M	CE1JMASDL4R7
C821	CERAMIC CAP.(AX) F Z 0.01µF/25V	CDA1EZT0F103
C841	CERAMIC CAP.(AX) B K 560pF/50V	CCA1JKT0B561
C842	CERAMIC CAP.(AX) B K 560pF/50V	CCA1JKT0B561
CONNECTORS		
CN301	CONNECTOR BASE, 5P TUC-P05P-B1	J3TUA05TG001
CN571	CONNECTOR BASE, 5P TV-50P-05-V3 or	J3TVC05TG002
	CONNECTOR BASE, 5P RTB-1.5-5P or	J3RTC05JG001
	CONNECTOR BASE, 5P W-P3005-02	1730812
CN691	CONNECTOR BASE, 2P TV-50P-02-V3 or	J3TVC02TG002
	CONNECTOR BASE, 2P RTB-1.5-2P	J3RTC02JG001
CN801	STRAIGHT CONNECTOR BASE 00 8283 0212 00 000 or	J383C02UG002
	STRAIGHT PIN HEADER, 2P 173981-2	1770258
CN802	STRAIGHT CONNECTOR BASE 00 8283 0212 00 000 or	J383C02UG002
	STRAIGHT PIN HEADER, 2P 173981-2	1770258
DIODES		
D101	LED LTL-4214M1 or	NPQZLTL4214M
	LED(RED)L-FORMING LT1814G-81-FL or	NP4Z0LT1814G
	LED L-53HT or	NP4Z000L53HT
	LED LAMP 333HT/F45-50K or	NPWK333HTF45
	LED LAMP 333HT/F45-50L or	NPWL333HTF45
	LED LAMP 333HT/F45-50M	NPWM333HTF45
D102	ZENER DIODE MTZJT-7715B	QDTB00MTZJ15
D103	PCB JUMPER D0.6-P5.0	JW5.0T
D104	PCB JUMPER D0.6-P5.0	JW5.0T
D105	PCB JUMPER D0.6-P5.0	JW5.0T
D106	PCB JUMPER D0.6-P5.0	JW5.0T
D107	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D145	ZENER DIODE MTZJT-774.7B	QDTB0MTZJ4R7
D252	CARBON RES. 1/4W J 2.2kΩ or	RCX4JATZ0222
	CARBON RES. 1/6W J 2.2kΩ	RCX6JATZ0222
D301	ZENER DIODE MTZJT-778.2B	QDTB0MTZJ8R2
D302	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D303	ZENER DIODE MTZJT-778.2A	QDTA0MTZJ8R2
D304	ZENER DIODE MTZJT-778.2A	QDTA0MTZJ8R2
D305	ZENER DIODE MTZJT-778.2A	QDTA0MTZJ8R2
D307	ZENER DIODE MTZJT-779.1B	QDTB0MTZJ9R1
D312	ZENER DIODE MTZJT-778.2A	QDTA0MTZJ8R2
D316	ZENER DIODE MTZJT-779.1B	QDTB0MTZJ9R1
D319	ZENER DIODE MTZJT-778.2A	QDTA0MTZJ8R2
D321	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D322	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D323	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133

Ref. No.	Description	Part No.
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D325	ZENER DIODE MTZJT-778.2A	QDTA0MTZJ8R2
D333	ZENER DIODE MTZJT-778.2A	QDTA0MTZJ8R2
D334	ZENER DIODE MTZJT-778.2A	QDTA0MTZJ8R2
D551	DIODE FR104-B or	NDLZ000FR104
	RECTIFIER DIODE ERA22-02 or	QDPZ0ERA2202
	RECTIFIER DIODE 10ELS2	QDQZ0010ELS2
D568	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D569	ZENER DIODE MTZJT-7720B	QDTB00MTZJ20
D572	DIODE FR104-B or	NDLZ000FR104
	RECTIFIER DIODE ERA22-02 or	QDPZ0ERA2202
	RECTIFIER DIODE 10ELS2	QDQZ0010ELS2
D573	DIODE FR104-B or	NDLZ000FR104
	RECTIFIER DIODE ERA22-02 or	QDPZ0ERA2202
	RECTIFIER DIODE 10ELS2	QDQZ0010ELS2
D584	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D593	ZENER DIODE MTZJT-7736B	QDTB00MTZJ36
D595	ZENER DIODE MTZJT-7736B	QDTB00MTZJ36
D596	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D597	ZENER DIODE MTZJT-776.8B	QDTB0MTZJ6R8
D605	DIODE 1N5406 or	NDLZ001N5406
	DIODE RRC04-06L3	QD4Z0ERC0406
D606	DIODE 1N5406 or	NDLZ001N5406
	DIODE RRC04-06L3	QD4Z0ERC0406
D607	DIODE 1N5406 or	NDLZ001N5406
	DIODE RRC04-06L3	QD4Z0ERC0406
D608	DIODE 1N5406 or	NDLZ001N5406
	DIODE RRC04-06L3	QD4Z0ERC0406
D609	DIODE FR104-B or	NDLZ000FR104
	RECTIFIER DIODE ERA22-02 or	QDPZ0ERA2202
	RECTIFIER DIODE 10ELS2	QDQZ0010ELS2
D610	DIODE FR104-B or	NDLZ000FR104
	RECTIFIER DIODE ERA22-02 or	QDPZ0ERA2202
	RECTIFIER DIODE 10ELS2	QDQZ0010ELS2
D611	ZENER DIODE MTZJT-7720B	QDTB00MTZJ20
D612	ZENER DIODE MTZJT-7724B	QDTB00MTZJ24
D613	ZENER DIODE MTZJT-776.8B	QDTB0MTZJ6R8
D614	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D615	SWITCHING DIODE 1N4148 T-77	QDTZ001N4148
D616	ZENER DIODE MTZJT-7724B	QDTB00MTZJ24
D635	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D638	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D639	ZENER DIODE MTZJT-773.0B	QDTB0MTZJ3R0
D651	FAST RECOVERY DIODE ERD38-06	QDQZ0ERD3806
D652	DIODE FR154 or	NDLZ000FR154
	FAST RECOVERY DIODE ERB44-02	QDPZ0ERB4402
D653	DIODE FR154 or	NDLZ000FR154
	FAST RECOVERY DIODE ERB44-02	QDPZ0ERB4402

Ref. No.	Description	Part No.
D654	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D655	ZENER DIODE MTZJT-7733B	QDTB00MTZJ33
D656	ZENER DIODE MTZJT-776.8B	QDTB0MTZJ6R8
D657	DIODE FR154 or	NDLZ000FR154
	FAST RECOVERY DIODE ERB44-02	QDPZ0ERB4402
D660	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D661	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D667	DIODE 1ZC33 or	QDQZ0001ZC33
	ZENER DIODE RD33FB	QDQZ000RD33F
D670	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D672	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D675	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D682	ZENER DIODE MTZJT-779.1B	QDTB0MTZJ9R1
D691	ZENER DIODE MTZJT-7715B	QDTB00MTZJ15
D692	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D696	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D699	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D701	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D702	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D721	ZENER DIODE MTZJT-775.1B	QDTB0MTZJ5R1
D801	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D802	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D803	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D813	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D822	ZENER DIODE MTZJT-7712B	QDTB00MTZJ12
D823	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148 or	NDTZ001N4148
	DIODE 1SS176TPA7	1SS176T
D839	ZENER DIODE MTZJT-7712B	QDTB00MTZJ12

ICS

Ref. No.	Description	Part No.
IC101	IC M3727GM8-056FP	QSZAB0SMB053
IC151	IC:MEMORY AT24C04N-10SC or	NSMMA0SAZ013
	IC(EEPROM) M24C04-MN6 or	NSMMA0SSS029
	IC:MEMORY BR24C04F or	QSMMA0SRM004
	IC:MEMORY BR24C04F-W	QSMBA0SRM004
IC333	IC:CHROMA/IF 1 CHIP M61208FP-61	QSZBA0RMB006
IC551	VERTICAL OUTPUT IC LA78040A or	QSBBA0SSY003
	VERTICAL OUTPUT IC AN5522	QSZBA0SMS002
IC601	PHOTO COUPLER LTV817MAF or	NPEALTV817MF
	PHOTO COUPLER LTV817MBF	NPEBLTV817MF
IC801	IC:AF POWER AMP LA4285	QSZBA0SSY002
IC802	IC:AF POWER AMP LA4285	QSZBA0SSY002
COILS		
L1	INDUCTOR 22μH-K-5FT or	LLARKBSTU220
	INDUCTOR 22μH-K-5FT	LLARKDSKA220
L2	INDUCTOR 1.2μH-J-26T or	LLAXJATTU1R2
	INDUCTOR 1.2μH-K-26T	LLAXKDTKA1R2
L101	INDUCTOR 22μH-K-5FT or	LLARKBSTU220
	INDUCTOR 22μH-K-5FT	LLARKDSKA220
L221	INDUCTOR 12μH-J-26T or	LLAXJATTU120
	INDUCTOR 12μH-K-26T	LLAXKDTKA120
L222	INDUCTOR 12μH-J-26T or	LLAXJATTU120
	INDUCTOR 12μH-K-26T	LLAXKDTKA120
L301	INDUCTOR 1.5μH-J-26T or	LLAXJATTU1R5
	INDUCTOR 1.5μH-K-26T	LLAXKDTKA1R5
L302	PCB JUMPER D0.6-P5.0	JW5.0T
L304	PCB JUMPER D0.6-P5.0	JW5.0T
L305	INDUCTOR 33μH-J-26T or	LLAXJATTU330
	INDUCTOR 33μH-K-26T	LLAXKDTKA330
L571	PCB JUMPER D0.6-P10.0	JW10.0T
L601	LINE FILTER JLB2808 or	LLBG00ZXB004
	LINE FILTER MS036	LLBG00ZY2009
L602	LINE FILTER JLB2808 or	LLBG00ZXB004
	LINE FILTER MS036	LLBG00ZY2009
L692	CHOKE COIL 47μH-K or	LLBD00PKV007
	POT COIL 47μH K or	LLBD**DMM001
	POT COIL 47μH K	LLBD00DQE001
L721	INDUCTOR 1.0μH-J-26T or	LLAXJATTU1R0
	INDUCTOR 1.0μH-K-26T	LLAXKDTKA1R0
L722	INDUCTOR 1.0μH-J-26T or	LLAXJATTU1R0
	INDUCTOR 1.0μH-K-26T	LLAXKDTKA1R0
L841	INDUCTOR 1.0μH-J-26T or	LLAXJATTU1R0
	INDUCTOR 1.0μH-K-26T	LLAXKDTKA1R0
L842	INDUCTOR 1.0μH-J-26T or	LLAXJATTU1R0
	INDUCTOR 1.0μH-K-26T	LLAXKDTKA1R0
TRANSISTORS		
Q1	TRANSISTOR 2SC3000E or	2SC3000EZ
	TRANSISTOR 2SC3000D	2SC3000DZ
Q101	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198GR TO-92 or	NQS40KTC3198
	TRANSISTOR 2SC3331(T)-AANP or	2SC3331TZ
	TRANSISTOR 2SC3331(U)-AANP or	2SC3331UZ
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q102	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199














	TRANSISTOR KTC3198GR TO-92 or	NQS40KTC3198
	TRANSISTOR 2SC3331(T)-AANP or	2SC3331TZ
	TRANSISTOR 2SC3331(U)-AANP or	2SC3331UZ
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q221	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198GR TO-92 or	NQS40KTC3198
	TRANSISTOR 2SC3331(T)-AANP or	2SC3331TZ
	TRANSISTOR 2SC3331(U)-AANP or	2SC3331UZ
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q251	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198GR TO-92 or	NQS40KTC3198
	TRANSISTOR 2SC3331(T)-AANP or	2SC3331TZ
	TRANSISTOR 2SC3331(U)-AANP or	2SC3331UZ
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q253	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198GR TO-92 or	NQS40KTC3198
	TRANSISTOR 2SC3331(T)-AANP or	2SC3331TZ
	TRANSISTOR 2SC3331(U)-AANP or	2SC3331UZ
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q321	RES. BUILT-IN TRANSISTOR KRA103M	NQSZ0KRA103M
Q571	TRANSISTOR 2SD2627LS-FEC-YB11 or	QQZZ02SD2627
	TRANSISTOR 2SD2629-YB	QQZZ02SD2629
Q572	TRANSISTOR 2SC1627Y-TPE2	QQSY02SC1627
Q601	MOS FET 2SK2605	QFZZ02SK2605
Q602	TRANSISTOR 2SC2120-O-TPE2 or	QQS002SC2120
	TRANSISTOR 2SC2120-Y(TPE2) or	QQSY02SC2120
	TRANSISTOR KTC3203(Y)	NQSY0KTC3203
Q635	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198GR TO-92 or	NQS40KTC3198
	TRANSISTOR 2SC3331(T)-AANP or	2SC3331TZ
	TRANSISTOR 2SC3331(U)-AANP or	2SC3331UZ
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q651	TRANSISTOR 2SC4204 or	QQQZ02SC4204
	TRANSISTOR 2SC4204-AA	QQSZ02SC4204
Q652	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198GR TO-92 or	NQS40KTC3198
	TRANSISTOR 2SC3331(T)-AANP or	2SC3331TZ
	TRANSISTOR 2SC3331(U)-AANP or	2SC3331UZ
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q671	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198GR TO-92 or	NQS40KTC3198
	TRANSISTOR 2SC3331(T)-AANP or	2SC3331TZ
	TRANSISTOR 2SC3331(U)-AANP or	2SC3331UZ




Ref. No.	Description	Part No.
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q672	TRANSISTOR 2SA1175(F) or	QQSF02SA1175
	TRANSISTOR KTA1267(GR) or	NQS10KTA1267
	TRANSISTOR KTA1266(GR) or	NQS40KTA1266
	TRANSISTOR 2SA1318(T)-AANP or	2SA1318TZ
	TRANSISTOR 2SA1318(U)-AANP or	2SA1318UZ
	TRANSISTOR 2SA1015-GR(TPE2)	QQS102SA1015
Q673	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198GR TO-92 or	NQS40KTC3198
	TRANSISTOR 2SC3331(T)-AANP or	2SC3331TZ
	TRANSISTOR 2SC3331(U)-AANP or	2SC3331UZ
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q681	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198GR TO-92 or	NQS40KTC3198
	TRANSISTOR 2SC3331(T)-AANP or	2SC3331TZ
	TRANSISTOR 2SC3331(U)-AANP or	2SC3331UZ
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q682 	TRANSISTOR 2SC2120-O-TPE2 or	QQS002SC2120
	TRANSISTOR 2SC2120-Y(TPE2) or	QQSY02SC2120
	TRANSISTOR KTC3203(Y)	NQSY0KTC3203
Q683 	TRANSISTOR 2SC2120-O-TPE2 or	QQS002SC2120
	TRANSISTOR 2SC2120-Y(TPE2) or	QQSY02SC2120
	TRANSISTOR KTC3203(Y)	NQSY0KTC3203
Q696	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198GR TO-92 or	NQS40KTC3198
	TRANSISTOR 2SC3331(T)-AANP or	2SC3331TZ
	TRANSISTOR 2SC3331(U)-AANP or	2SC3331UZ
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q701	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198GR TO-92 or	NQS40KTC3198
	TRANSISTOR 2SC3331(T)-AANP or	2SC3331TZ
	TRANSISTOR 2SC3331(U)-AANP or	2SC3331UZ
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q702	TRANSISTOR 2SC4204 or	QQQZ02SC4204
	TRANSISTOR 2SC4204-AA	QQSZ02SC4204
Q703	TRANSISTOR 2SC4204 or	QQQZ02SC4204
	TRANSISTOR 2SC4204-AA	QQSZ02SC4204
Q704	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KTC3198GR TO-92 or	NQS40KTC3198
	TRANSISTOR 2SC3331(T)-AANP or	2SC3331TZ
	TRANSISTOR 2SC3331(U)-AANP or	2SC3331UZ
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q801	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR 2SC2785(H) or	QQSH02SC2785
	TRANSISTOR 2SC2785(J) or	QQSJ02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199

Ref. No.	Description	Part No.
	TRANSISTOR KTC3198GR TO-92 or	NQS40KTC3198
	TRANSISTOR 2SC3331(T)-AANP or	2SC3331TZ
	TRANSISTOR 2SC3331(U)-AANP or	2SC3331UZ
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q839	TRANSISTOR 2SA1175(F) or	QQSF02SA1175
	TRANSISTOR KTA1267(GR) or	NQS10KTA1267
	TRANSISTOR KTA1266(GR) or	NQS40KTA1266
	TRANSISTOR 2SA1318(T)-AANP or	2SA1318TZ
	TRANSISTOR 2SA1318(U)-AANP or	2SA1318UZ
	TRANSISTOR 2SA1015-GR(TPE2)	QQS102SA1015
RESISTORS		
R2	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R3	CARBON RES. 1/4W J 4.7kΩ or	RCX4JATZ0472
	CARBON RES. 1/6W J 4.7kΩ	RCX6JATZ0472
R4	CARBON RES. 1/4W J 1.5kΩ or	RCX4JATZ0152
	CARBON RES. 1/6W J 1.5kΩ	RCX6JATZ0152
R5	CARBON RES. 1/4W J 22 Ω or	RCX4JATZ0220
	CARBON RES. 1/6W J 22 Ω	RCX6JATZ0220
R6	CARBON RES. 1/4W J 560 Ω or	RCX4JATZ0561
	CARBON RES. 1/6W J 560 Ω	RCX6JATZ0561
R7	CARBON RES. 1/4W J 39kΩ or	RCX4JATZ0393
	CARBON RES. 1/6W J 39kΩ	RCX6JATZ0393
R8	CARBON RES. 1/4W J 4.7kΩ or	RCX4JATZ0472
	CARBON RES. 1/6W J 4.7kΩ	RCX6JATZ0472
R11	PCB JUMPER D0.6-P5.0	JW5.0T
R12	PCB JUMPER D0.6-P5.0	JW5.0T
R101	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R102	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R103	CARBON RES. 1/4W J 22kΩ or	RCX4JATZ0223
	CARBON RES. 1/6W J 22kΩ	RCX6JATZ0223
R104	CARBON RES. 1/4W J 6.8kΩ or	RCX4JATZ0682
	CARBON RES. 1/6W J 6.8kΩ	RCX6JATZ0682
R105	CARBON RES. 1/4W J 6.8kΩ or	RCX4JATZ0682
	CARBON RES. 1/6W J 6.8kΩ	RCX6JATZ0682
R106	PCB JUMPER D0.6-P5.0	JW5.0T
R107	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R108	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R109	PCB JUMPER D0.6-P5.0	JW5.0T
R114	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R115	CARBON RES. 1/4W J 10kΩ or	RCX4JATZ0103
	CARBON RES. 1/6W J 10kΩ	RCX6JATZ0103
R116	CARBON RES. 1/4W J 22kΩ or	RCX4JATZ0223
	CARBON RES. 1/6W J 22kΩ	RCX6JATZ0223
R117	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R118	PCB JUMPER D0.6-P5.0	JW5.0T
R119	CARBON RES. 1/4W J 220 Ω or	RCX4JATZ0221
	CARBON RES. 1/6W J 220 Ω	RCX6JATZ0221
R121	CARBON RES. 1/4W J 3.3kΩ or	RCX4JATZ0332
	CARBON RES. 1/6W J 3.3kΩ	RCX6JATZ0332
R122	CARBON RES. 1/4W J 4.7kΩ or	RCX4JATZ0472
	CARBON RES. 1/6W J 4.7kΩ	RCX6JATZ0472
R123	CARBON RES. 1/4W J 220 Ω or	RCX4JATZ0221
	CARBON RES. 1/6W J 220 Ω	RCX6JATZ0221

Ref. No.	Description	Part No.
R124	CARBON RES. 1/4W J 3.3kΩ or	RCX4JATZ0332
	CARBON RES. 1/6W J 3.3kΩ	RCX6JATZ0332
R125	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R126	CARBON RES. 1/4W J 4.7kΩ or	RCX4JATZ0472
	CARBON RES. 1/6W J 4.7kΩ	RCX6JATZ0472
R127	CARBON RES. 1/4W J 4.7kΩ or	RCX4JATZ0472
	CARBON RES. 1/6W J 4.7kΩ	RCX6JATZ0472
R128	CARBON RES. 1/4W J 4.7kΩ or	RCX4JATZ0472
	CARBON RES. 1/6W J 4.7kΩ	RCX6JATZ0472
R129	CARBON RES. 1/4W J 4.7kΩ or	RCX4JATZ0472
	CARBON RES. 1/6W J 4.7kΩ	RCX6JATZ0472
R131	CARBON RES. 1/4W J 3.3kΩ or	RCX4JATZ0332
	CARBON RES. 1/6W J 3.3kΩ	RCX6JATZ0332
R132	CARBON RES. 1/4W J 1.5kΩ or	RCX4JATZ0152
	CARBON RES. 1/6W J 1.5kΩ	RCX6JATZ0152
R133	CARBON RES. 1/4W J 1.5kΩ or	RCX4JATZ0152
	CARBON RES. 1/6W J 1.5kΩ	RCX6JATZ0152
R134	CARBON RES. 1/4W J 1.5kΩ or	RCX4JATZ0152
	CARBON RES. 1/6W J 1.5kΩ	RCX6JATZ0152
R135	CARBON RES. 1/4W J 22kΩ or	RCX4JATZ0223
	CARBON RES. 1/6W J 22kΩ	RCX6JATZ0223
R136	CARBON RES. 1/4W J 47kΩ or	RCX4JATZ0473
	CARBON RES. 1/6W J 47kΩ	RCX6JATZ0473
R137	CARBON RES. 1/4W J 4.7kΩ or	RCX4JATZ0472
	CARBON RES. 1/6W J 4.7kΩ	RCX6JATZ0472
R138	CARBON RES. 1/4W J 2.7kΩ or	RCX4JATZ0272
	CARBON RES. 1/6W J 2.7kΩ	RCX6JATZ0272
R139	CARBON RES. 1/4W J 2.2kΩ or	RCX4JATZ0222
	CARBON RES. 1/6W J 2.2kΩ	RCX6JATZ0222
R141	CARBON RES. 1/4W J 1.5kΩ or	RCX4JATZ0152
	CARBON RES. 1/6W J 1.5kΩ	RCX6JATZ0152
R143	CARBON RES. 1/4W J 1.5kΩ or	RCX4JATZ0152
	CARBON RES. 1/6W J 1.5kΩ	RCX6JATZ0152
R144	CARBON RES. 1/4W J 560 Ω or	RCX4JATZ0561
	CARBON RES. 1/6W J 560 Ω	RCX6JATZ0561
R145	CARBON RES. 1/4W J 22kΩ or	RCX4JATZ0223
	CARBON RES. 1/6W J 22kΩ	RCX6JATZ0223
R151	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R152	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R153	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R154	PCB JUMPER D0.6-P5.0	JW5.0T
R221	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R222	CARBON RES. 1/4W J 560 Ω or	RCX4JATZ0561
	CARBON RES. 1/6W J 560 Ω	RCX6JATZ0561
R223	CARBON RES. 1/4W J 220 Ω or	RCX4JATZ0221
	CARBON RES. 1/6W J 220 Ω	RCX6JATZ0221
R225	PCB JUMPER D0.6-P5.0	JW5.0T
R226	CARBON RES. 1/4W J 330 Ω or	RCX4JATZ0331
	CARBON RES. 1/6W J 330 Ω	RCX6JATZ0331
R251	CARBON RES. 1/4W J 330 Ω or	RCX4JATZ0331
	CARBON RES. 1/6W J 330 Ω	RCX6JATZ0331
R253	CARBON RES. 1/4W J 330 Ω or	RCX4JATZ0331
	CARBON RES. 1/6W J 330 Ω	RCX6JATZ0331
R254	CARBON RES. 1/4W J 12kΩ or	RCX4JATZ0123
	CARBON RES. 1/6W J 12kΩ	RCX6JATZ0123
R255	CARBON RES. 1/4W J 10kΩ or	RCX4JATZ0103

Ref. No.	Description	Part No.
	CARBON RES. 1/6W J 10kΩ	RCX6JATZ0103
R256	CARBON RES. 1/4W J 2.2kΩ or	RCX4JATZ0222
	CARBON RES. 1/6W J 2.2kΩ	RCX6JATZ0222
R258	CARBON RES. 1/4W J 15kΩ or	RCX4JATZ0153
	CARBON RES. 1/6W J 15kΩ	RCX6JATZ0153
R263	CARBON RES. 1/4W J 5.6kΩ or	RCX4JATZ0562
	CARBON RES. 1/6W J 5.6kΩ	RCX6JATZ0562
R301	CARBON RES. 1/4W J 220 Ω or	RCX4JATZ0221
	CARBON RES. 1/6W J 220 Ω	RCX6JATZ0221
R302	CARBON RES. 1/4W J 220 Ω or	RCX4JATZ0221
	CARBON RES. 1/6W J 220 Ω	RCX6JATZ0221
R304	ZENER DIODE MTZJT-773.9B	QDTB0MTZJ3R9
R305	CARBON RES. 1/4W J 6.8kΩ or	RCX4JATZ0682
	CARBON RES. 1/6W J 6.8kΩ	RCX6JATZ0682
R306	CARBON RES. 1/4W J 10kΩ or	RCX4JATZ0103
	CARBON RES. 1/6W J 10kΩ	RCX6JATZ0103
R307	CARBON RES. 1/4W J 2.7kΩ or	RCX4JATZ0272
	CARBON RES. 1/6W J 2.7kΩ	RCX6JATZ0272
R308	PCB JUMPER D0.6-P5.0	JW5.0T
R309	PCB JUMPER D0.6-P5.0	JW5.0T
R310	CARBON RES. 1/4W J 2.2kΩ or	RCX4JATZ0222
	CARBON RES. 1/6W J 2.2kΩ	RCX6JATZ0222
R311	CARBON RES. 1/4W J 2.2kΩ or	RCX4JATZ0222
	CARBON RES. 1/6W J 2.2kΩ	RCX6JATZ0222
R312	CARBON RES. 1/4W J 2.2kΩ or	RCX4JATZ0222
	CARBON RES. 1/6W J 2.2kΩ	RCX6JATZ0222
R313	CARBON RES. 1/4W J 2.2kΩ or	RCX4JATZ0222
	CARBON RES. 1/6W J 2.2kΩ	RCX6JATZ0222
R314	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R315	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R316	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R317	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R318	CARBON RES. 1/4W J 270kΩ or	RCX4JATZ0274
	CARBON RES. 1/6W J 270kΩ	RCX6JATZ0274
R319	CARBON RES. 1/4W J 15kΩ or	RCX4JATZ0153
	CARBON RES. 1/6W J 15kΩ	RCX6JATZ0153
R321	CARBON RES. 1/4W J 150kΩ or	RCX4JATZ0154
	CARBON RES. 1/6W J 150kΩ	RCX6JATZ0154
R322	CARBON RES. 1/4W J 6.8kΩ or	RCX4JATZ0682
	CARBON RES. 1/6W J 6.8kΩ	RCX6JATZ0682
R323	CARBON RES. 1/4W J 270kΩ or	RCX4JATZ0274
	CARBON RES. 1/6W J 270kΩ	RCX6JATZ0274
R324	PCB JUMPER D0.6-P5.0	JW5.0T
R325	CARBON RES. 1/4W J 10kΩ or	RCX4JATZ0103
	CARBON RES. 1/6W J 10kΩ	RCX6JATZ0103
R326	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R327	CARBON RES. 1/4W J 10kΩ or	RCX4JATZ0103
	CARBON RES. 1/6W J 10kΩ	RCX6JATZ0103
R328	CARBON RES. 1/4W J 220 Ω or	RCX4JATZ0221
	CARBON RES. 1/6W J 220 Ω	RCX6JATZ0221
R329	CARBON RES. 1/4W J 33kΩ or	RCX4JATZ0333
	CARBON RES. 1/6W J 33kΩ	RCX6JATZ0333
R331	PCB JUMPER D0.6-P5.0	JW5.0T
R332	CARBON RES. 1/4W J 10M Ω or	RCX4JATZ0106
	CARBON RES. 1/6W J 10M Ω	RCX6JATZ0106
R333	CARBON RES. 1/4W J 470 Ω or	RCX4JATZ0471





Ref. No.	Description	Part No.
	CARBON RES. 1/6W J 470 Ω	RCX6JATZ0471
R334	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R341	PCB JUMPER D0.6-P5.0	JW5.0T
R551	CARBON RES. 1/4W J 4.7 Ω or	RCX4JATZ04R7
	CARBON RES. 1/6W J 4.7 Ω	RCX6JATZ04R7
R553	CARBON RES. 1/4W J 1.2 Ω or	RCX4JATZ01R2
	CARBON RES. 1/6W J 1.2 Ω	RCX6JATZ01R2
R554	CARBON RES. 1/4W J 1.2 Ω or	RCX4JATZ01R2
	CARBON RES. 1/6W J 1.2 Ω	RCX6JATZ01R2
R555	CARBON RES. 1/4W J 3.9 Ω or	RCX4JATZ03R9
	CARBON RES. 1/6W J 3.9 Ω	RCX6JATZ03R9
R556	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R557	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R560	CARBON RES. 1/4W J 4.7kΩ or	RCX4JATZ0472
	CARBON RES. 1/6W J 4.7kΩ	RCX6JATZ0472
R561	CARBON RES. 1/4W J 470 Ω or	RCX4JATZ0471
	CARBON RES. 1/6W J 470 Ω	RCX6JATZ0471
R562	CARBON RES. 1/4W J 2.7kΩ or	RCX4JATZ0272
	CARBON RES. 1/6W J 2.7kΩ	RCX6JATZ0272
R563	CARBON RES. 1/4W J 22kΩ or	RCX4JATZ0223
	CARBON RES. 1/6W J 22kΩ	RCX6JATZ0223
R564	CARBON RES. 1/4W J 56kΩ or	RCX4JATZ0563
	CARBON RES. 1/6W J 56kΩ	RCX6JATZ0563
R566	CARBON RES. 1/4W J 3.3 Ω or	RCX4JATZ03R3
	CARBON RES. 1/6W J 3.3 Ω	RCX6JATZ03R3
R567	CARBON RES. 1/4W J 3.3 Ω or	RCX4JATZ03R3
	CARBON RES. 1/6W J 3.3 Ω	RCX6JATZ03R3
R569	CARBON RES. 1/4W J 10kΩ or	RCX4JATZ0103
	CARBON RES. 1/6W J 10kΩ	RCX6JATZ0103
R574	CARBON RES. 1/4W J 12 Ω or	RCX4JATZ0120
	CARBON RES. 1/6W J 12 Ω	RCX6JATZ0120
R575 	CARBON RES. 1/4W J 12 Ω or	RCX4JATZ0120
	CARBON RES. 1/6W J 12 Ω	RCX6JATZ0120
R576 	CARBON RES. 1/4W J 12 Ω or	RCX4JATZ0120
	CARBON RES. 1/6W J 12 Ω	RCX6JATZ0120
R577 	CARBON RES. 1/4W J 12 Ω or	RCX4JATZ0120
	CARBON RES. 1/6W J 12 Ω	RCX6JATZ0120
R578	CARBON RES. 1/4W J 560 Ω or	RCX4JATZ0561
	CARBON RES. 1/6W J 560 Ω	RCX6JATZ0561
R579	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R581	PCB JUMPER D0.6-P5.0	JW5.0T
R583 	FIXED METAL OXIDE FILM RES. 2W J 2.2 Ω or	RN02JZQZ02R2
	FIXED METAL OXIDE FILM RES. 2W J 2.2 Ω or	RN02JZPZ02R2
	METAL OXIDE FILM RES. 2W J 2.2 Ω or	RN022R2ZU001
	FIXED METAL OXIDE FILM RES. 2W J 3.9 Ω or	RN02JZQZ03R9
	FIXED METAL OXIDE FILM RES. 2W J 3.9 Ω or	RN02JZPZ03R9
	METAL OXIDE FILM RES. 2W J 3.9 Ω	RN023R9ZU001
R584 	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R585	CARBON RES. 1/4W J 100kΩ or	RCX4JATZ0104
	CARBON RES. 1/6W J 100kΩ	RCX6JATZ0104
R586	CARBON RES. 1/4W J 39kΩ or	RCX4JATZ0393
	CARBON RES. 1/6W J 39kΩ	RCX6JATZ0393
R587	CARBON RES. 1/4W J 39kΩ or	RCX4JATZ0393
	CARBON RES. 1/6W J 39kΩ	RCX6JATZ0393
R588	CARBON RES. 1/4W J 82kΩ or	RCX4JATZ0823
	CARBON RES. 1/6W J 82kΩ	RCX6JATZ0823










Ref. No.	Description	Part No.
R589	CARBON RES. 1/4W J 100kΩ or	RCX4JATZ0104
	CARBON RES. 1/6W J 100kΩ	RCX6JATZ0104
R591	CARBON RES. 1/4W J 120kΩ or	RCX4JATZ0124
	CARBON RES. 1/6W J 120kΩ	RCX6JATZ0124
R592	CARBON RES. 1/4W J 100kΩ or	RCX4JATZ0104
	CARBON RES. 1/6W J 100kΩ	RCX6JATZ0104
R593	CARBON RES. 1/4W J 68kΩ or	RCX4JATZ0683
	CARBON RES. 1/6W J 68kΩ	RCX6JATZ0683
R594	CARBON RES. 1/4W J 100kΩ or	RCX4JATZ0104
	CARBON RES. 1/6W J 100kΩ	RCX6JATZ0104
R596	CARBON RES. 1/4W J 3.3kΩ or	RCX4JATZ0332
	CARBON RES. 1/6W J 3.3kΩ	RCX6JATZ0332
R597	CARBON RES. 1/4W J 8.2kΩ or	RCX4JATZ0822
	CARBON RES. 1/6W J 8.2kΩ	RCX6JATZ0822
R598 	CARBON RES. 1/4W J 47kΩ or	RCX4JATZ0473
	CARBON RES. 1/6W J 47kΩ	RCX6JATZ0473
R599	CARBON RES. 1/4W J 15kΩ or	RCX4JATZ0153
	CARBON RES. 1/6W J 15kΩ	RCX6JATZ0153
R601 	CEMENT RES. 5W K 1.2 Ω or	RW051R2DP005
	CEMENT RESISTOR 5W K 1.2 Ω or	RW051R2PG001
	CEMENT RESISTOR SQZ05S1R2J	RW051R2Y4001
R602	CARBON RES. 1/4W J 1.5M Ω or	RCX4JATZ0155
	CARBON RES. 1/6W J 1.5M Ω	RCX6JATZ0155
R603	CARBON RES. 1/4W J 1.5M Ω or	RCX4JATZ0155
	CARBON RES. 1/6W J 1.5M Ω	RCX6JATZ0155
R604	CARBON RES. 1/4W J 1.5M Ω or	RCX4JATZ0155
	CARBON RES. 1/6W J 1.5M Ω	RCX6JATZ0155
R606	CARBON RES. 1/4W J 33 Ω or	RCX4JATZ0330
	CARBON RES. 1/6W J 33 Ω	RCX6JATZ0330
R607	CARBON RES. 1/4W J 33 Ω or	RCX4JATZ0330
	CARBON RES. 1/6W J 33 Ω	RCX6JATZ0330
R608	CARBON RES. 1/4W J 33 Ω or	RCX4JATZ0330
	CARBON RES. 1/6W J 33 Ω	RCX6JATZ0330
R609	CARBON RES. 1/4W J 10kΩ or	RCX4JATZ0103
	CARBON RES. 1/6W J 10kΩ	RCX6JATZ0103
R610	CARBON RES. 1/2W J 3.3M Ω or	RCX2335DP001
	ANTI-SURGE RESISTOR 1/2W J 3.3M Ω	RMX2335KA011
R611	METAL OXIDE FILM RES. 1W J 120 Ω or	RN01121KE009
	METAL OXIDE FILM RES. 1W J 120 Ω or	RN01121ZU001
	METAL RESISTOR 1W J 120 Ω or	RN01121UB001
	METAL OXIDE FILM RES. 1W J 120 Ω	RN01121DP003
R612	METAL OXIDE FILM RES. 1W J 120 Ω or	RN01121KE009
	METAL OXIDE FILM RES. 1W J 120 Ω or	RN01121ZU001
	METAL RESISTOR 1W J 120 Ω or	RN01121UB001
	METAL OXIDE FILM RES. 1W J 120 Ω	RN01121DP003
R613 	CEMENT RES. 5W K 0.33 Ω or	RW05R33DP005
	CEMENT RESISTOR 5W J 0.33 Ω or	RW05R33PG001
	CEMENT RESISTOR SQZ05SR33J	RW05R33Y4001
R614	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R615	CARBON RES. 1/4W J 330 Ω or	RCX4JATZ0331
	CARBON RES. 1/6W J 330 Ω	RCX6JATZ0331
R616	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R617	CARBON RES. 1/4W J 47 Ω or	RCX4JATZ0470
	CARBON RES. 1/6W J 47 Ω	RCX6JATZ0470
R618	CARBON RES. 1/4W J 39 Ω or	RCX4JATZ0390
	CARBON RES. 1/6W J 39 Ω	RCX6JATZ0390
R619	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R620	PCB JUMPER D0.6-P5.0	JW5.0T

Ref. No.	Description	Part No.
R621	CARBON RES. 1/4W J 1M Ω or	RCX4JATZ0105
	CARBON RES. 1/6W J 1M Ω	RCX6JATZ0105
R622	CARBON RES. 1/4W J 27 Ω or	RCX4JATZ0270
	CARBON RES. 1/6W J 27 Ω	RCX6JATZ0270
R632	CARBON RES. 1/4W J 1M Ω or	RCX4JATZ0105
	CARBON RES. 1/6W J 1M Ω	RCX6JATZ0105
R633	CARBON RES. 1/4W J 1M Ω or	RCX4JATZ0105
	CARBON RES. 1/6W J 1M Ω	RCX6JATZ0105
R634	CARBON RES. 1/4W J 56 Ω or	RCX4JATZ0560
	CARBON RES. 1/6W J 56 Ω	RCX6JATZ0560
R635	CARBON RES. 1/4W J 470 Ω or	RCX4JATZ0471
	CARBON RES. 1/6W J 470 Ω	RCX6JATZ0471
R636	CARBON RES. 1/4W J 47k Ω or	RCX4JATZ0473
	CARBON RES. 1/6W J 47k Ω	RCX6JATZ0473
R638	CARBON RES. 1/4W J 330 Ω or	RCX4JATZ0331
	CARBON RES. 1/6W J 330 Ω	RCX6JATZ0331
R651	FIXED METAL OXIDE FILM RES. 1W J 18k Ω or	RN01183KE007
	METAL OXIDE FILM RES. 1W J 18k Ω or	RN01183ZU001
	METAL RESISTOR 1W J 18k Ω or	RN01183UB001
	METAL OXIDE FILM RES. 1W J 18k Ω	RN01183DP003
R652	CARBON RES. 1/4W J 27k Ω or	RCX4JATZ0273
	CARBON RES. 1/6W J 27k Ω	RCX6JATZ0273
R653	CARBON RES. 1/4W J 15k Ω or	RCX4JATZ0153
	CARBON RES. 1/6W J 15k Ω	RCX6JATZ0153
R654	CARBON RES. 1/4W J 1.8k Ω or	RCX4JATZ0182
	CARBON RES. 1/6W J 1.8k Ω	RCX6JATZ0182
R655	CARBON RES. 1/4W J 680 Ω or	RCX4JATZ0681
	CARBON RES. 1/6W J 680 Ω	RCX6JATZ0681
R656	CARBON RES. 1/4W J 15k Ω or	RCX4JATZ0153
	CARBON RES. 1/6W J 15k Ω	RCX6JATZ0153
R657	CARBON RES. 1/4W J 15k Ω or	RCX4JATZ0153
	CARBON RES. 1/6W J 15k Ω	RCX6JATZ0153
R658	CARBON RES. 1/4W J 470k Ω or	RCX4JATZ0474
	CARBON RES. 1/6W J 470k Ω	RCX6JATZ0474
R660	PCB JUMPER D0.6-P5.0	JW5.0T
R661	CARBON RES. 1/4W J 27k Ω or	RCX4JATZ0273
	CARBON RES. 1/6W J 27k Ω	RCX6JATZ0273
R662	CARBON RES. 1/4W J 33k Ω or	RCX4JATZ0333
	CARBON RES. 1/6W J 33k Ω	RCX6JATZ0333
R663	PCB JUMPER D0.6-P5.0	JW5.0T
R664	CARBON RES. 1/4W J 470 Ω or	RCX4JATZ0471
	CARBON RES. 1/6W J 470 Ω	RCX6JATZ0471
R665	CARBON RES. 1/4W J 5.6k Ω or	RCX4JATZ0562
	CARBON RES. 1/6W J 5.6k Ω	RCX6JATZ0562
R666	METAL OXIDE FILM RES. 1W J 82k Ω or	RN01823KE009
	METAL OXIDE FILM RES. 1W J 82k Ω or	RN01823ZU001
	METAL RES. 1W J 82k Ω or	RN01823UB001
	METAL OXIDE FILM RES. 1W J 82k Ω	RN01823DP003
R667	CARBON RES. 1/4W J 15k Ω or	RCX4JATZ0153
	CARBON RES. 1/6W J 15k Ω	RCX6JATZ0153
R668	CARBON RES. 1/4W J 15k Ω or	RCX4JATZ0153
	CARBON RES. 1/6W J 15k Ω	RCX6JATZ0153
R669	CARBON RES. 1/4W J 15k Ω or	RCX4JATZ0153
	CARBON RES. 1/6W J 15k Ω	RCX6JATZ0153
R670	CARBON RES. 1/4W J 22k Ω or	RCX4JATZ0223
	CARBON RES. 1/6W J 22k Ω	RCX6JATZ0223
R671	CARBON RES. 1/4W J 10k Ω or	RCX4JATZ0103
	CARBON RES. 1/6W J 10k Ω	RCX6JATZ0103
R672	CARBON RES. 1/4W J 47k Ω or	RCX4JATZ0473
	CARBON RES. 1/6W J 47k Ω	RCX6JATZ0473
R673	CARBON RES. 1/4W J 3.3k Ω or	RCX4JATZ0332

Ref. No.	Description	Part No.
	CARBON RES. 1/6W J 3.3k Ω	RCX6JATZ0332
R674	CARBON RES. 1/4W J 3.3k Ω or	RCX4JATZ0332
	CARBON RES. 1/6W J 3.3k Ω	RCX6JATZ0332
R675	CARBON RES. 1/4W J 100k Ω or	RCX4JATZ0104
	CARBON RES. 1/6W J 100k Ω	RCX6JATZ0104
R676	CARBON RES. 1/4W J 10k Ω or	RCX4JATZ0103
	CARBON RES. 1/6W J 10k Ω	RCX6JATZ0103
R677	CARBON RES. 1/4W J 68k Ω or	RCX4JATZ0683
	CARBON RES. 1/6W J 68k Ω	RCX6JATZ0683
R678	CARBON RES. 1/4W J 47k Ω or	RCX4JATZ0473
	CARBON RES. 1/6W J 47k Ω	RCX6JATZ0473
R680	CARBON RES. 1/4W J 2.2k Ω or	RCX4JATZ0222
	CARBON RES. 1/6W J 2.2k Ω	RCX6JATZ0222
R681	CARBON RES. 1/4W J 10 Ω or	RCX4JATZ0100
	CARBON RES. 1/6W J 10 Ω	RCX6JATZ0100
R682	FIXED METAL OXIDE FILM RES. 1W J 22 Ω or	RN01220KE007
	METAL OXIDE FILM RES. 1W J 22 Ω or	RN01220ZU001
	METAL RESISTOR 1W J 22 Ω or	RN01220UB001
	METAL OXIDE FILM RES. 1W J 22 Ω	RN01220DP003
R683	FIXED METAL OXIDE FILM RES. 1W J 22 Ω or	RN01220KE007
	METAL OXIDE FILM RES. 1W J 22 Ω or	RN01220ZU001
	METAL RESISTOR 1W J 22 Ω or	RN01220UB001
	METAL OXIDE FILM RES. 1W J 22 Ω	RN01220DP003
R684	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R685	CARBON RES. 1/4W J 120 Ω or	RCX4JATZ0121
	CARBON RES. 1/6W J 120 Ω	RCX6JATZ0121
R686	FIXED METAL OXIDE FILM RES. 1W J 18k Ω or	RN01183KE007
	METAL OXIDE FILM RES. 1W J 18k Ω or	RN01183ZU001
	METAL RESISTOR 1W J 18k Ω or	RN01183UB001
	METAL OXIDE FILM RES. 1W J 18k Ω	RN01183DP003
R687	CARBON RES. 1/4W J 68k Ω or	RCX4JATZ0683
	CARBON RES. 1/6W J 68k Ω	RCX6JATZ0683
R688	CARBON RES. 1/4W J 68k Ω or	RCX4JATZ0683
	CARBON RES. 1/6W J 68k Ω	RCX6JATZ0683
R690	METAL OXIDE FILM RES. 1W J 5.6 Ω or	RN015R6KE009
	METAL OXIDE FILM RES. 1W J 5.6 Ω or	RN015R6ZU001
	METAL RESISTOR 1W J 5.6 Ω or	RN015R6UB001
	METAL OXIDE FILM RES. 1W J 5.6 Ω	RN015R6DP003
R696	CARBON RES. 1/4W J 10 Ω or	RCX4JATZ0100
	CARBON RES. 1/6W J 10 Ω	RCX6JATZ0100
R697	CARBON RES. 1/4W J 2.2k Ω or	RCX4JATZ0222
	CARBON RES. 1/6W J 2.2k Ω	RCX6JATZ0222
R699	CARBON RES. 1/4W J 10k Ω or	RCX4JATZ0103
	CARBON RES. 1/6W J 10k Ω	RCX6JATZ0103
R701	CARBON RES. 1/4W J 75 Ω or	RCX4JATZ0750
	CARBON RES. 1/6W J 75 Ω	RCX6JATZ0750
R702	CARBON RES. 1/4W J 47k Ω or	RCX4JATZ0473
	CARBON RES. 1/6W J 47k Ω	RCX6JATZ0473
R703	CARBON RES. 1/4W J 47k Ω or	RCX4JATZ0473
	CARBON RES. 1/6W J 47k Ω	RCX6JATZ0473
R704	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R705	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R706	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R707	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R709	CARBON RES. 1/4W J 2.2k Ω or	RCX4JATZ0222
	CARBON RES. 1/6W J 2.2k Ω	RCX6JATZ0222













Ref. No.	Description	Part No.
R710	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R711	CARBON RES. 1/4W J 680 Ω or	RCX4JATZ0681
	CARBON RES. 1/6W J 680 Ω	RCX6JATZ0681
R712	CARBON RES. 1/4W J 2.2kΩ or	RCX4JATZ0222
	CARBON RES. 1/6W J 2.2kΩ	RCX6JATZ0222
R713	CARBON RES. 1/4W J 120kΩ or	RCX4JATZ0124
	CARBON RES. 1/6W J 120kΩ	RCX6JATZ0124
R714	CARBON RES. 1/4W J 82kΩ or	RCX4JATZ0823
	CARBON RES. 1/6W J 82kΩ	RCX6JATZ0823
R715	CARBON RES. 1/4W J 82kΩ or	RCX4JATZ0823
	CARBON RES. 1/6W J 82kΩ	RCX6JATZ0823
R716	CARBON RES. 1/4W J 120kΩ or	RCX4JATZ0124
	CARBON RES. 1/6W J 120kΩ	RCX6JATZ0124
R721	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R722	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R723	CARBON RES. 1/4W J 100kΩ or	RCX4JATZ0104
	CARBON RES. 1/6W J 100kΩ	RCX6JATZ0104
R724	CARBON RES. 1/4W J 100kΩ or	RCX4JATZ0104
	CARBON RES. 1/6W J 100kΩ	RCX6JATZ0104
R725	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R726	CARBON RES. 1/4W J 8.2kΩ or	RCX4JATZ0822
	CARBON RES. 1/6W J 8.2kΩ	RCX6JATZ0822
R731	CARBON RES. 1/4W J 2.7kΩ or	RCX4JATZ0272
	CARBON RES. 1/6W J 2.7kΩ	RCX6JATZ0272
R732	CARBON RES. 1/4W J 2.7kΩ or	RCX4JATZ0272
	CARBON RES. 1/6W J 2.7kΩ	RCX6JATZ0272
R734	CARBON RES. 1/4W J 1kΩ or	RCX4JATZ0102
	CARBON RES. 1/6W J 1kΩ	RCX6JATZ0102
R801	CARBON RES. 1/4W J 47 Ω or	RCX4JATZ0470
	CARBON RES. 1/6W J 47 Ω	RCX6JATZ0470
R802	CARBON RES. 1/4W J 47 Ω or	RCX4JATZ0470
	CARBON RES. 1/6W J 47 Ω	RCX6JATZ0470
R803	CARBON RES. 1/4W J 2.2kΩ or	RCX4JATZ0222
	CARBON RES. 1/6W J 2.2kΩ	RCX6JATZ0222
R804	CARBON RES. 1/4W J 2.2kΩ or	RCX4JATZ0222
	CARBON RES. 1/6W J 2.2kΩ	RCX6JATZ0222
R808	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R812	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R813	CARBON RES. 1/4W J 4.7kΩ or	RCX4JATZ0472
	CARBON RES. 1/6W J 4.7kΩ	RCX6JATZ0472
R814	CARBON RES. 1/4W J 56kΩ or	RCX4JATZ0563
	CARBON RES. 1/6W J 56kΩ	RCX6JATZ0563
R815	CARBON RES. 1/4W J 100kΩ or	RCX4JATZ0104
	CARBON RES. 1/6W J 100kΩ	RCX6JATZ0104
R816	CARBON RES. 1/4W J 220kΩ or	RCX4JATZ0224
	CARBON RES. 1/6W J 220kΩ	RCX6JATZ0224
R817	CARBON RES. 1/4W J 47kΩ or	RCX4JATZ0473
	CARBON RES. 1/6W J 47kΩ	RCX6JATZ0473
R819	CARBON RES. 1/4W J 180kΩ or	RCX4JATZ0184
	CARBON RES. 1/6W J 180kΩ	RCX6JATZ0184
R821	CARBON RES. 1/4W J 2.2kΩ or	RCX4JATZ0222
	CARBON RES. 1/6W J 2.2kΩ	RCX6JATZ0222
R823	METAL OXIDE FILM RES. 1W J 0.82 Ω or	RN01R82KE009
	METAL OXIDE FILM RES. 1W J 0.82 Ω or	RN01R82ZU001
	METAL RES. 1W J 0.82 Ω or	RN01R82UB001


Ref. No.	Description	Part No.
	METAL OXIDE FILM RES. 1W J 0.82 Ω	RN01R82DP003
R824	METAL OXIDE FILM RES. 1W J 0.82 Ω or	RN01R82KE009
	METAL OXIDE FILM RES. 1W J 0.82 Ω or	RN01R82ZU001
	METAL RES. 1W J 0.82 Ω or	RN01R82UB001
	METAL OXIDE FILM RES. 1W J 0.82 Ω	RN01R82DP003
R825	METAL OXIDE FILM RES. 1W J 0.82 Ω or	RN01R82KE009
	METAL OXIDE FILM RES. 1W J 0.82 Ω or	RN01R82ZU001
	METAL RES. 1W J 0.82 Ω or	RN01R82UB001
	METAL OXIDE FILM RES. 1W J 0.82 Ω	RN01R82DP003
R826	PCB JUMPER D0.6-P5.0	JW5.0T
R831	CARBON RES. 1/4W J 47 Ω or	RCX4JATZ0470
	CARBON RES. 1/6W J 47 Ω	RCX6JATZ0470
R832	CARBON RES. 1/4W J 47 Ω or	RCX4JATZ0470
	CARBON RES. 1/6W J 47 Ω	RCX6JATZ0470
R838	CARBON RES. 1/4W J 82kΩ or	RCX4JATZ0823
	CARBON RES. 1/6W J 82kΩ	RCX6JATZ0823
R839	CARBON RES. 1/4W J 22kΩ or	RCX4JATZ0223
	CARBON RES. 1/6W J 22kΩ	RCX6JATZ0223
SWITCHES		
SW102	TACT SWITCH SKQSAB or	SST0101AL038
	TACT SWITCH KSM0612B or	SST0101HH003
	TACT SWITCH SKHHAM	SST0101AL029
SW103	TACT SWITCH SKQSAB or	SST0101AL038
	TACT SWITCH KSM0612B or	SST0101HH003
	TACT SWITCH SKHHAM	SST0101AL029
SW104	TACT SWITCH SKQSAB or	SST0101AL038
	TACT SWITCH KSM0612B or	SST0101HH003
	TACT SWITCH SKHHAM	SST0101AL029
SW105	TACT SWITCH SKQSAB or	SST0101AL038
	TACT SWITCH KSM0612B or	SST0101HH003
	TACT SWITCH SKHHAM	SST0101AL029
SW106	TACT SWITCH SKQSAB or	SST0101AL038
	TACT SWITCH KSM0612B or	SST0101HH003
	TACT SWITCH SKHHAM	SST0101AL029
SW601 	POWER SWITCH SDKEA30100	SPP0A5ZAL001
MISCELLANEOUS		
AC601 	AC CORD LA-1814-1 or	WAE0172LW001
	AC CORD 9707020	WAE0172AS001
B-6	HEAT SINK(PFB)ASSEMBLY L1400UZ	0EM406029
B-7	HEAT SINK POWER ASSEMBLY L1700UA	0EM406329
B-8	HEAT SINK AUDIO	0EM406330
B-10	JACK HOLDER L9304UZ	0EM404325
B-12	SHIELD PLATE(A) L1700RA	0EM406525
BC571	PCB JUMPER D0.6-P5.0	JW5.0T
BC601	BEAD INDUCTORS FBR07HA121TB-00	LLBF00ZTU021
BC602	BEAD INDUCTORS FBR07HA121TB-00	LLBF00ZTU021
BC603	PCB JUMPER D0.6-P5.0	JW5.0T
BC650	BEAD INDUCTORS FBR07HA121TB-00	LLBF00ZTU021
BC651	BEAD INDUCTORS FBR07HA121TB-00	LLBF00ZTU021
BC653	PCB JUMPER D0.6-P5.0	JW5.0T
BC691	BEAD INDUCTORS FBR07HA121TB-00	LLBF00ZTU021
BC692	BEAD INDUCTORS FBR07HA121TB-00	LLBF00ZTU021
CF221	CERAMIC TRAP 5.5MHz/5.74MHz	FBE575PMR001
CF222	6.5M TRAP TPSRA6M50B00-B0	FBE655PMR006
CF251	6.5M FILTER SFSRA6M50CF00-B0	FBB655PMR006
CF253	5.5M FILTER SFSRA5M50CF00-B0	FBB555PMR006
CLN301	WIRE ASSEMBLY L=410 5P	WX1L1040-101
F601 	FUSE T4.0AH/250V	PAGC20BAG402
FH601	FUSE HOLDER MSF-015 or	XH01Z00LY001
	FUSE HOLDER FH-V-03078 or	XH01Z00DK001

Ref. No.	Description	Part No.
	HOLDER, FUSE CNT41-0014	1790424
FH602	FUSE HOLDER MSF-015 or	XH01Z00LY001
	FUSE HOLDER FH-V-03078 or	XH01Z00DK001
	HOLDER, FUSE CNT41-0014	1790424
JK701	RCA JACK 1P(BLUE) (SW) AV1-09S-7	JYRL010RP013
JK702	RCA JACK 1P(WHITE)WITH SWITCH AV1-09S-4	JYRL010RP010
JK703	RCA JACK 1P(GRAY) (SW)AV 1-09S-6	JYRL010RP012
JK704	RCA JACK 1P YELLOW (H=8) MTJ-032-03B-02PBSN	JXRL010LY020
JK705	RCA JACK 4P(SW) MTJ-034-22DB-09PBSN	JYRL040LY006
JK801	HEADPHONE JACK MSJ-035-10A B	JYSL020LY002
L-1	B-TITE SCREW 3X8 BIND + CHROME or	GBMB3080
	B-TITE SCREW 3X8 BIND + CHROME or	GBMB3080
	B-TITE SCREW 3X8 BIND + CHROME	GBMB3080
PS691 	THERMISTOR ZPB53BL200C or	5790117
	THERMISTOR ZPB58BL200A or	QNWZ58BL200A
	THERMISTOR PA2A5200C270Y00	QN4ZPA2A5200
RCV101	REMOCON RECEIVE UNIT PIC-37042SR	USESJRSKK034
RL601 	POWER RELAY SDT-S-112LMR or	MRNDC12QN014
	POWER RELAY RPEF-12-901	MRNDC12KB002
SF301	SAW FILTER SAFGP38MOVXCL0B03	FBF386PMR006
T571 	FLYBACK TRANSFORMER JF0501-2409 or	LTF00CPXB021
	FLYBACK TRANS BSC21-2602S	LTF00CPS2027
T572	HORIZONTAL DRIVE TRANS LP2-004	LTH00CPA5004
T601 	SWITCHING TRANS KD-01709 or	LTT00EPTK074
	SWITCHING TRANS SA-01017	LTT00EPSA102
TP300	PCB JUMPER D0.6-P10.0	JW10.0T
TP301	PCB JUMPER D0.6-P10.0	JW10.0T
TP302	PCB JUMPER D0.6-P10.0	JW10.0T
TP591	PCB JUMPER D0.6-P5.0	JW5.0T
TP592	PCB JUMPER D0.6-P5.0	JW5.0T
TP601	PCB JUMPER D0.6-P12.5	JW12.5T
TU1	TUNER UNIT UVE25-EW65D	UTUNPSDMM003
VR661	CARBON P.O.T. 10kΩ B or	VRCB103KA011
	CARBON P.O.T. 10kΩ B	VRCB103HH014
X101	CERAMIC RESONATOR KBR-8.0MKC or	FY0805PKC002
	CERAMIC RESONATOR CSTS0800MG03 or	FYL805PMR001
	CERAMIC RESONATOR ZTT 8.00MHz or	FY0805PLN001
	CERAMIC RESONATOR FCR8.0MC	FY0805PTE001
X301	X'TAL 4.433619MHz	FXC445LNL002

CRT CBA

Ref. No.	Description	Part No.
	CRT CBA Consists of the following	-----
CAPACITORS		
C501	CERAMIC CAP.(AX) B K 270pF/50V	CCA1JKT0B271
C502	CERAMIC CAP.(AX) B K 270pF/50V	CCA1JKT0B271
C503	CERAMIC CAP.(AX) B K 270pF/50V	CCA1JKT0B271
C504	ELECTROLYTIC CAP. 47μF/16V M or	CE1CMASLT470
	ELECTROLYTIC CAP. 47μF/16V M	CE1CMASDL470
C510	CERAMIC CAP. B K 1000pF/2kV or	CCD3DKD0B102
	CERAMIC CAP. B K 1000pF/2kV or	CCD3DKP0B102
	CERAMIC CAP. B K 1000pF/2kV	CA3D102MR030
CONNECTOR		
CN501	PIN CONNECTOR 005P-5100	JTEA001TG001
COIL		
L501	INDUCTOR 180μH-J-5FT or	LLARJCSTU181
	INDUCTOR 180μH-K-5FT	LLARKDSKA181

Ref. No.	Description	Part No.
TRANSISTORS		
Q501	TRANSISTOR 2SC2482 TPE6 or	QQSZ02SC2482
	TRANSISTOR 2SC3468(E)-AE or	QQSE02SC3468
	TRANSISTOR 2SC3468(D)-AE or	QQSD02SC3468
	TRANSISTOR 2SC2271(D)-AEMP or	2SC2271DZ
	TRANSISTOR 2SC2271(E)-AE	QQSE02SC2271
Q502	TRANSISTOR 2SC2482 TPE6 or	QQSZ02SC2482
	TRANSISTOR 2SC3468(E)-AE or	QQSE02SC3468
	TRANSISTOR 2SC3468(D)-AE or	QQSD02SC3468
	TRANSISTOR 2SC2271(D)-AEMP or	2SC2271DZ
	TRANSISTOR 2SC2271(E)-AE	QQSE02SC2271
Q503	TRANSISTOR 2SC2482 TPE6 or	QQSZ02SC2482
	TRANSISTOR 2SC3468(E)-AE or	QQSE02SC3468
	TRANSISTOR 2SC3468(D)-AE or	QQSD02SC3468
	TRANSISTOR 2SC2271(D)-AEMP or	2SC2271DZ
	TRANSISTOR 2SC2271(E)-AE	QQSE02SC2271
RESISTORS		
R501 	FIXED METAL OXIDE FILM RES. 1W J 15kΩ or	RN01153KE007
	METAL OXIDE FILM RES. 1W J 15kΩ or	RN01153ZU001
	METAL RESISTOR 1W J 15kΩ or	RN01153UB001
	METAL OXIDE FILM RES. 1W J 15kΩ	RN01153DP003
R502 	FIXED METAL OXIDE FILM RES. 1W J 15kΩ or	RN01153KE007
	METAL OXIDE FILM RES. 1W J 15kΩ or	RN01153ZU001
	METAL RESISTOR 1W J 15kΩ or	RN01153UB001
	METAL OXIDE FILM RES. 1W J 15kΩ	RN01153DP003
R503 	FIXED METAL OXIDE FILM RES. 1W J 15kΩ or	RN01153KE007
	METAL OXIDE FILM RES. 1W J 15kΩ or	RN01153ZU001
	METAL RESISTOR 1W J 15kΩ or	RN01153UB001
	METAL OXIDE FILM RES. 1W J 15kΩ	RN01153DP003
R504	CARBON RES. 1/4W J 1.5kΩ or	RCX4JATZ0152
	CARBON RES. 1/6W J 1.5kΩ	RCX6JATZ0152
R505	CARBON RES. 1/4W J 1.5kΩ or	RCX4JATZ0152
	CARBON RES. 1/6W J 1.5kΩ	RCX6JATZ0152
R506	CARBON RES. 1/4W J 1.5kΩ or	RCX4JATZ0152
	CARBON RES. 1/6W J 1.5kΩ	RCX6JATZ0152
R509	CARBON RES. 1/4W J 1.5kΩ or	RCX4JATZ0152
	CARBON RES. 1/6W J 1.5kΩ	RCX6JATZ0152
R511	CARBON RES. 1/4W J 33 Ω or	RCX4JATZ0330
	CARBON RES. 1/6W J 33 Ω	RCX6JATZ0330
R512	CARBON RES. 1/4W J 33 Ω or	RCX4JATZ0330
	CARBON RES. 1/6W J 33 Ω	RCX6JATZ0330
R513	CARBON RES. 1/4W J 33 Ω or	RCX4JATZ0330
	CARBON RES. 1/6W J 33 Ω	RCX6JATZ0330
R514	CARBON RES. 1/4W J 3.3kΩ or	RCX4JATZ0332
	CARBON RES. 1/6W J 3.3kΩ	RCX6JATZ0332
R515	CARBON RES. 1/4W J 3.3kΩ or	RCX4JATZ0332
	CARBON RES. 1/6W J 3.3kΩ	RCX6JATZ0332
R516	CARBON RES. 1/4W J 3.3kΩ or	RCX4JATZ0332
	CARBON RES. 1/6W J 3.3kΩ	RCX6JATZ0332
R517	CARBON RES. 1/4W J 470 Ω or	RCX4JATZ0471
	CARBON RES. 1/6W J 470 Ω	RCX6JATZ0471
R518	CARBON RES. 1/4W J 470 Ω or	RCX4JATZ0471
	CARBON RES. 1/6W J 470 Ω	RCX6JATZ0471
R519	CARBON RES. 1/4W J 470 Ω or	RCX4JATZ0471
	CARBON RES. 1/6W J 470 Ω	RCX6JATZ0471
R521	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R522	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R523	CARBON RES. 1/4W J 100 Ω or	RCX4JATZ0101

Ref. No.	Description	Part No.
	CARBON RES. 1/6W J 100 Ω	RCX6JATZ0101
R537	CARBON RES. 1/4W J 1.5k Ω or	RCX4JATZ0152
	CARBON RES. 1/6W J 1.5k Ω	RCX6JATZ0152
R538	CARBON RES. 1/4W J 1.5k Ω or	RCX4JATZ0152
	CARBON RES. 1/6W J 1.5k Ω	RCX6JATZ0152
R539	CARBON RES. 1/4W J 10 Ω or	RCX4JATZ0100
	CARBON RES. 1/6W J 10 Ω	RCX6JATZ0100
MISCELLANEOUS		
CLN501	PARALLEL WIRE 3P	WX1L1114-101
JK501 	CRT SOCKET ISMS02S	JSCC220PK003
TP501	PCB JUMPER D0.6-P7.5	JW7.5T
TP502	PCB JUMPER D0.6-P7.5	JW7.5T
TP503	PCB JUMPER D0.6-P7.5	JW7.5T

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