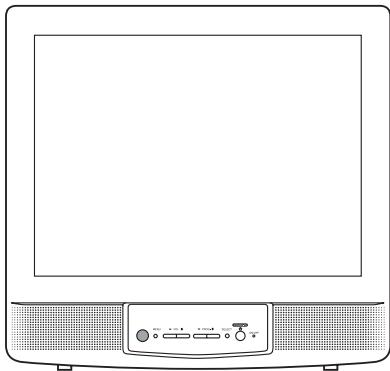


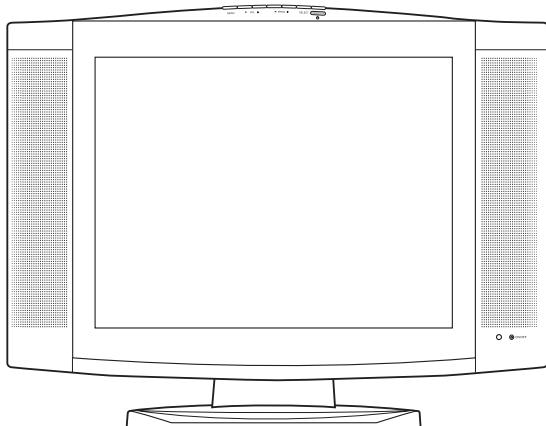


SERVICE MANUAL

**15" COLOR LCD TELEVISION
LCD-A1504**



**20" COLOR LCD TELEVISION
LCD-A2004**



15"/20" COLOR LCD TELEVISION

LCD-A1504

LCD-A2004

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The LCD panel is manufactured to provide many years of useful life. Occasionally a few non active pixels may appear as a tiny spec of color. This is not to be considered a defect in the LCD screen.

SPECIFICATIONS

<TUNER>

ANT. Input ----- 80 dB μ V, Video: PAL 87.5%, Audio: 30 kHz dev (1 kHz Sin)
 Test Input Signal----- 400Hz 30% modulation

Description	Condition	Unit	Nominal	Limit
1. Intermediate Freq.	Picture Sound	MHz MHz	45.75 41.25	- -
2. Color Killer Sens.	CH-3	dB μ V	20	23
3. AFT Pull In Range (10mV input)	-	MHz	\pm 1.6	\pm 0.7

<LCD PANEL>

Description	Condition	Unit	Nominal	Limit
1. Number of Pixels	Horizontal Vertical	pixels pixels	640 x 3 480	- -
2. Brightness	-	cd/m ²	450	-
3. Response Time	-	msec	16	-
4. Support Color	-	-	16mil.(8bit)	-
5. Viewing Angle	Horizontal Vertical	° °	-85 to 85 -85 to 70	- -

<VIDEO>

Description	Condition	Unit	Nominal	Limit
1. Over Scan	Horizontal Vertical	% %	8.5 6.5	10 \pm 5 10 \pm 5
2. Color Temperature	- x y	°K	8500 0.29 0.30	- 0.29 \pm 0.03 0.30 \pm 0.03
3. Resolution	Horizontal Vertical	line line	400 350	<250 <300

<AUDIO>

All items are measured across 8Ω load at speaker output terminal with L.P.F.

Description	Condition	Unit	Nominal	Limit
1. Audio Output Power	10% THD: Lch/Rch	W	1.0/1.0	0.8/0.8
2. Audio Distortion	500mW: Lch/Rch	%	1.0/1.0	<3
3. Audio Freq. Response	-6dB: Lch -6dB: Rch	Hz Hz	50 to 12K 50 to 12K	- -
4. Audio S/N	RF VIDEO 1 VIDEO 2	dB dB dB	60 60 60	45 45 45

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

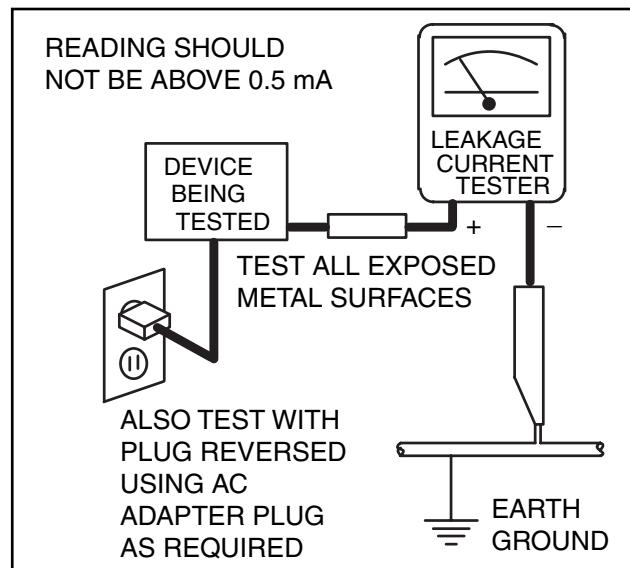
Prior to shipment from the factory, our products are strictly inspected for recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

Safety Precautions for LCD 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, nonmetallic 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 LCD module 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 230 V 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.

2. Read and comply with all caution and safety-related notes on or inside the receiver cabinet, on the receiver chassis, or on the LCD module.
3. **Design Alteration Warning** - Do not alter or add to the mechanical or electrical design of this LCD 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. Hot Chassis Warning -**
 - a. Some TV receiver chassis are electrically connected directly to one conductor of the AC power cord and maybe 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.
- 5. 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.
- 6. 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.
- 7. 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 (heat sinks, 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.
- M. When installing parts or assembling the cabinet parts, be sure to use the proper screws and tighten certainly.

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')
230 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.).

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.

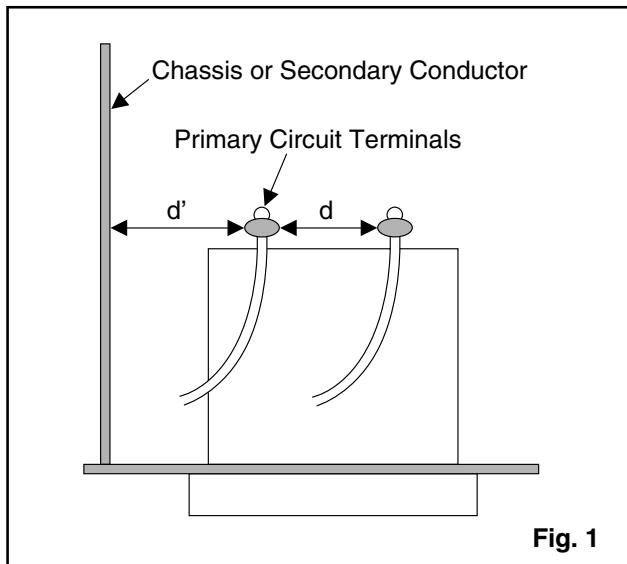


Fig. 1

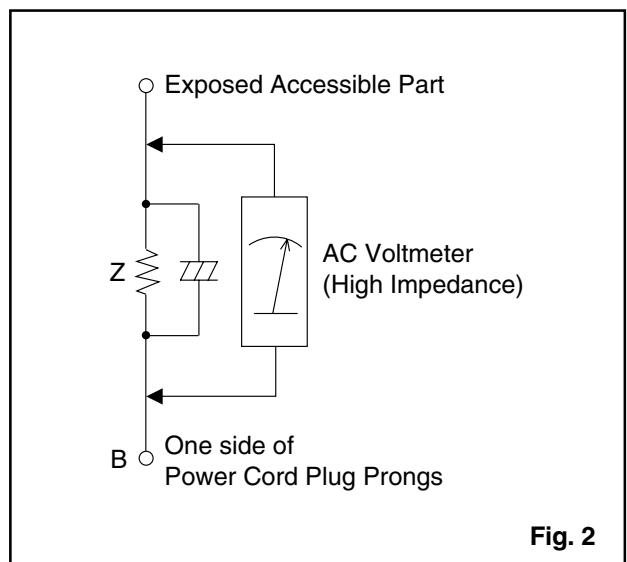


Fig. 2

Table 2: Leakage current ratings for selected areas

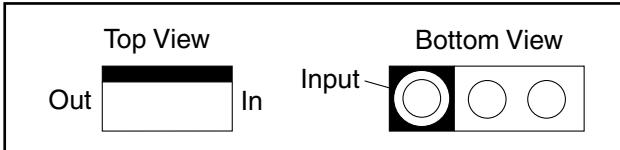
AC Line Voltage	Load Z	Leakage Current (i)	One side of power cord plug prongs (B) to:
230 V	2k Ω RES. Connected in parallel	i $\leq 0.7\text{mA}$ AC Peak i $\leq 2\text{mA}$ DC	RF or Antenna terminals
	50k Ω RES. Connected in parallel	i $\leq 0.7\text{mA}$ AC Peak i $\leq 2\text{mA}$ DC	A/V Input, Output

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

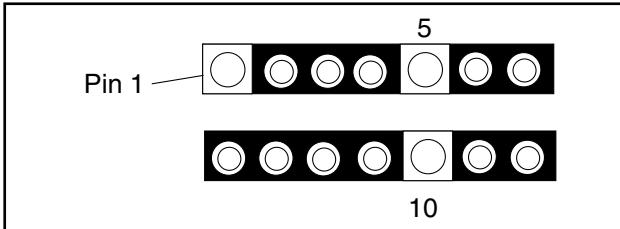
STANDARD NOTES FOR SERVICING

Circuit Board Indications

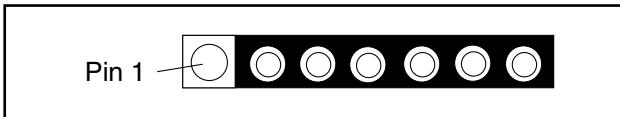
1. The output pin of the 3 pin Regulator ICs is indicated as shown.



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

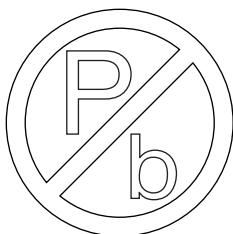


3. The 1st pin of every male connector is indicated as shown.



Pb (Lead) Free Solder

Pb free mark will be found on PCBs which use Pb free solder. (Refer to figure.) For PCBs with Pb free mark, be sure to use Pb free solder. For PCBs without Pb free mark, use standard solder.



Pb free mark

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)

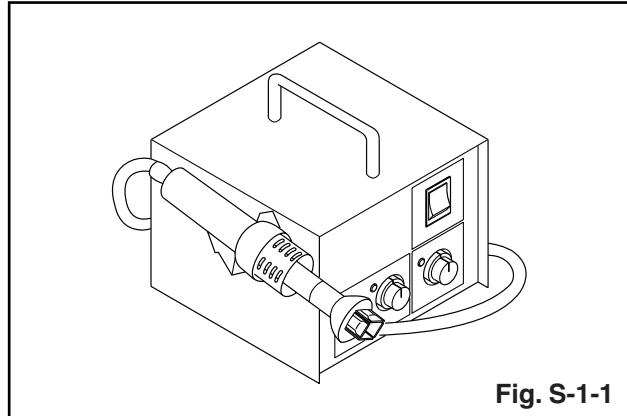


Fig. S-1-1

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. The Flat Pack-IC shape may differ by models. Use an appropriate hot-air flat pack-IC desoldering machine, whose shape matches that of the Flat Pack-IC.
2. 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)
3. 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.

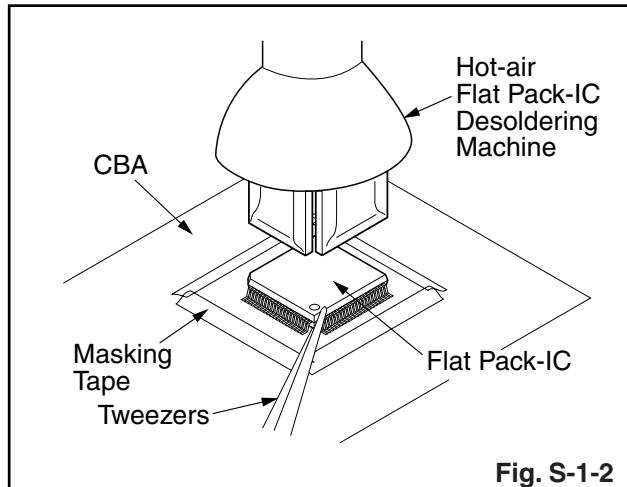
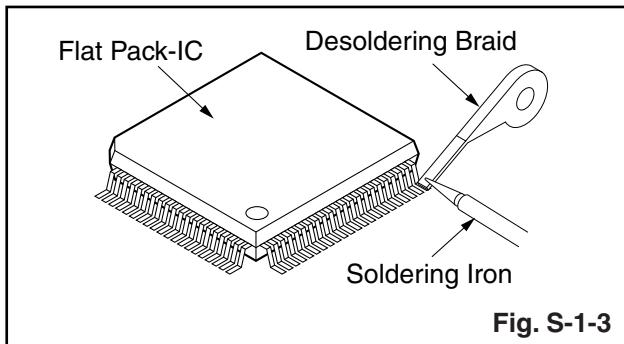


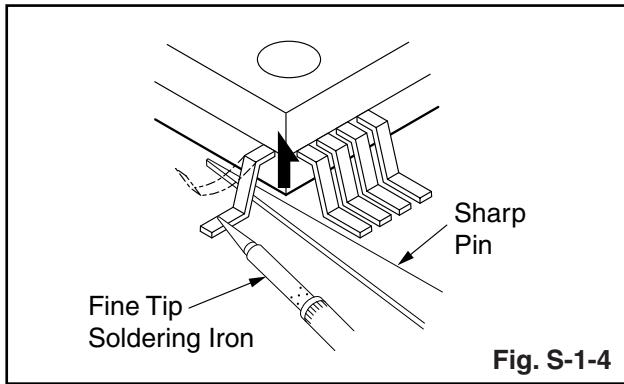
Fig. S-1-2

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)

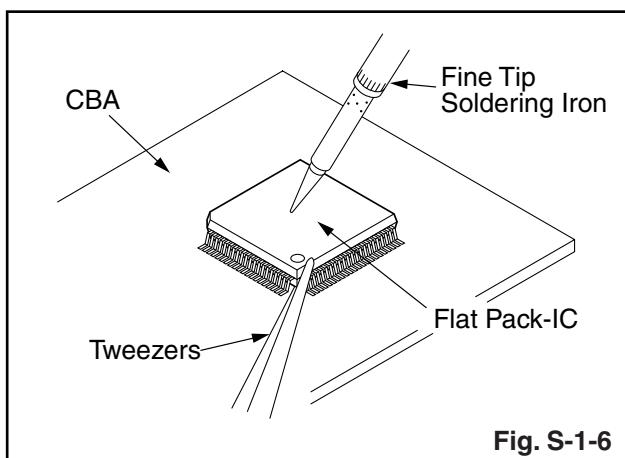
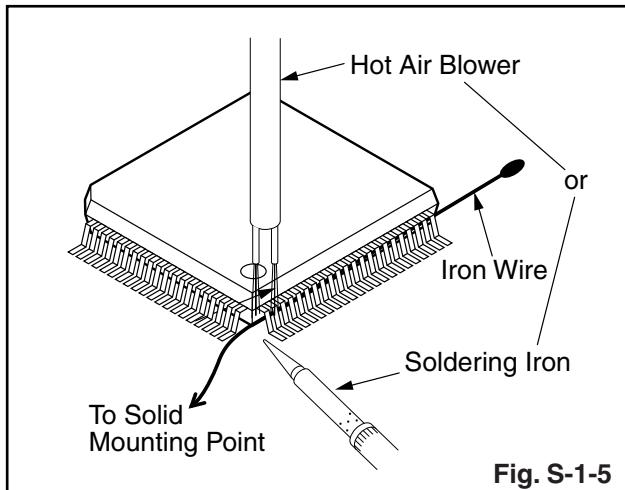


3. Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
4. Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

With Iron Wire:

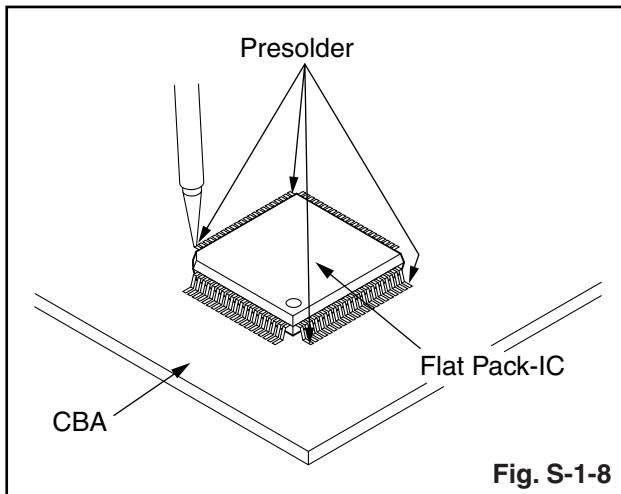
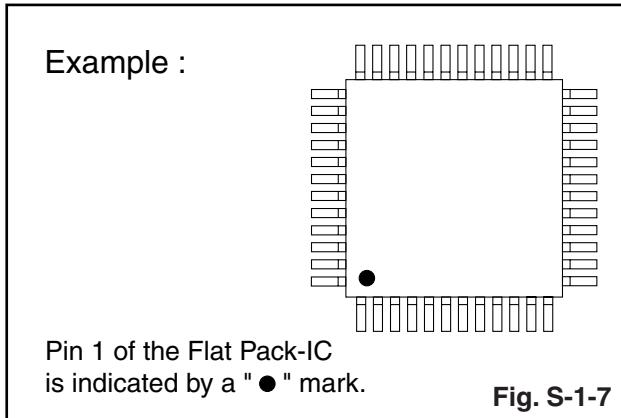
1. Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)
2. Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.
3. While heating the pins 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 presolder 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.



Instructions for Handling Semiconductors

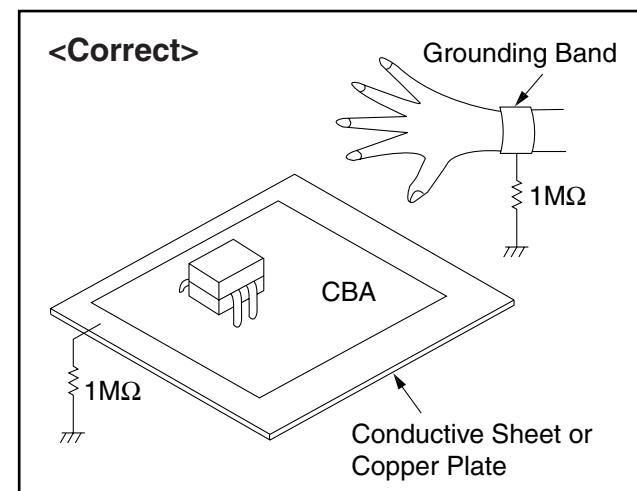
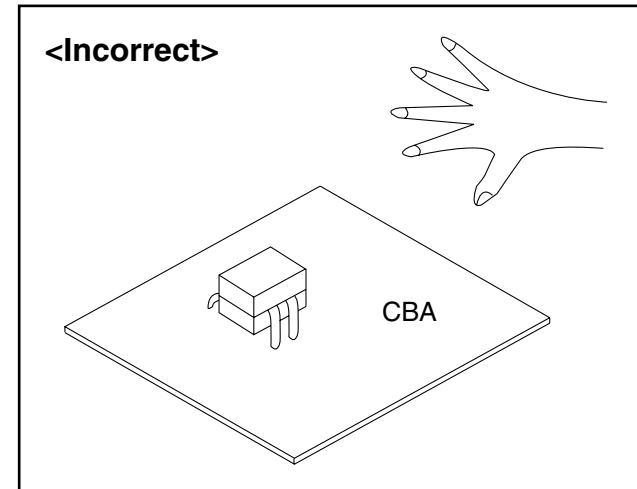
Electrostatic breakdown of the semi-conductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

1. Ground for Human Body

Be sure to wear a grounding band ($1\text{ M}\Omega$) 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 ($1\text{ M}\Omega$) on the workbench or other surface, where the semi-conductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semi-conductors with your clothing.

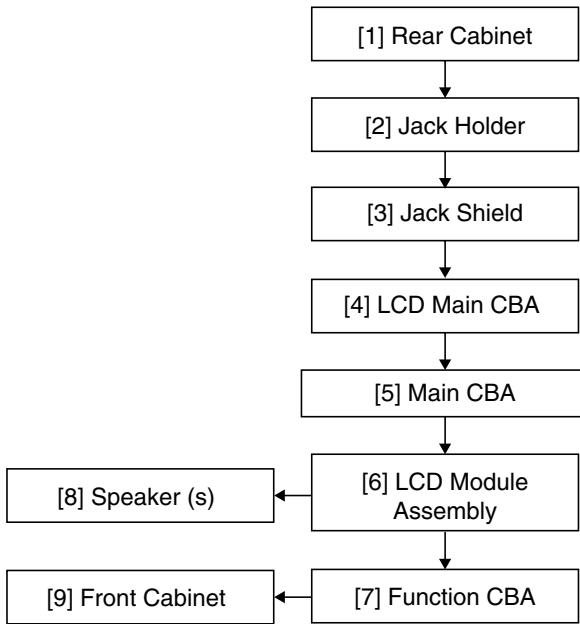


CABINET DISASSEMBLY INSTRUCTIONS

[LCD-A1504]

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.



2. Disassembly Method

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/ *UNHOOK/ UNLOCK/ RELEASE/UNPLUG/ DESOLDER	Note
[1]	Rear Cabinet	D1	6(S-1), 3(S-2)	---
[2]	Jack Holder	D2	2(S-3), (S-4)	---
[3]	Jack Shield	D2	-----	---
[4]	LCD Main CBA	D2 D3	3(S-5), *CN320A, *CN321A, *CN101B, *CN102B, *CN103B	---
[5]	Main CBA	D2 D3	5(S-6), (S-7), *CN801, *CN802, *T401, *T402, *CN31A	---
[6]	LCD Module Assembly	D2 D3	7(S-8)	---
[7]	Function CBA	D2 D3	4(S-9)	---
[8]	Speaker (s)	D2 D3	4(S-10)	---
[9]	Front Cabinet	D2	-----	---

↓ ↓ ↓ ↓ ↓
(1) (2) (3) (4) (5)

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.

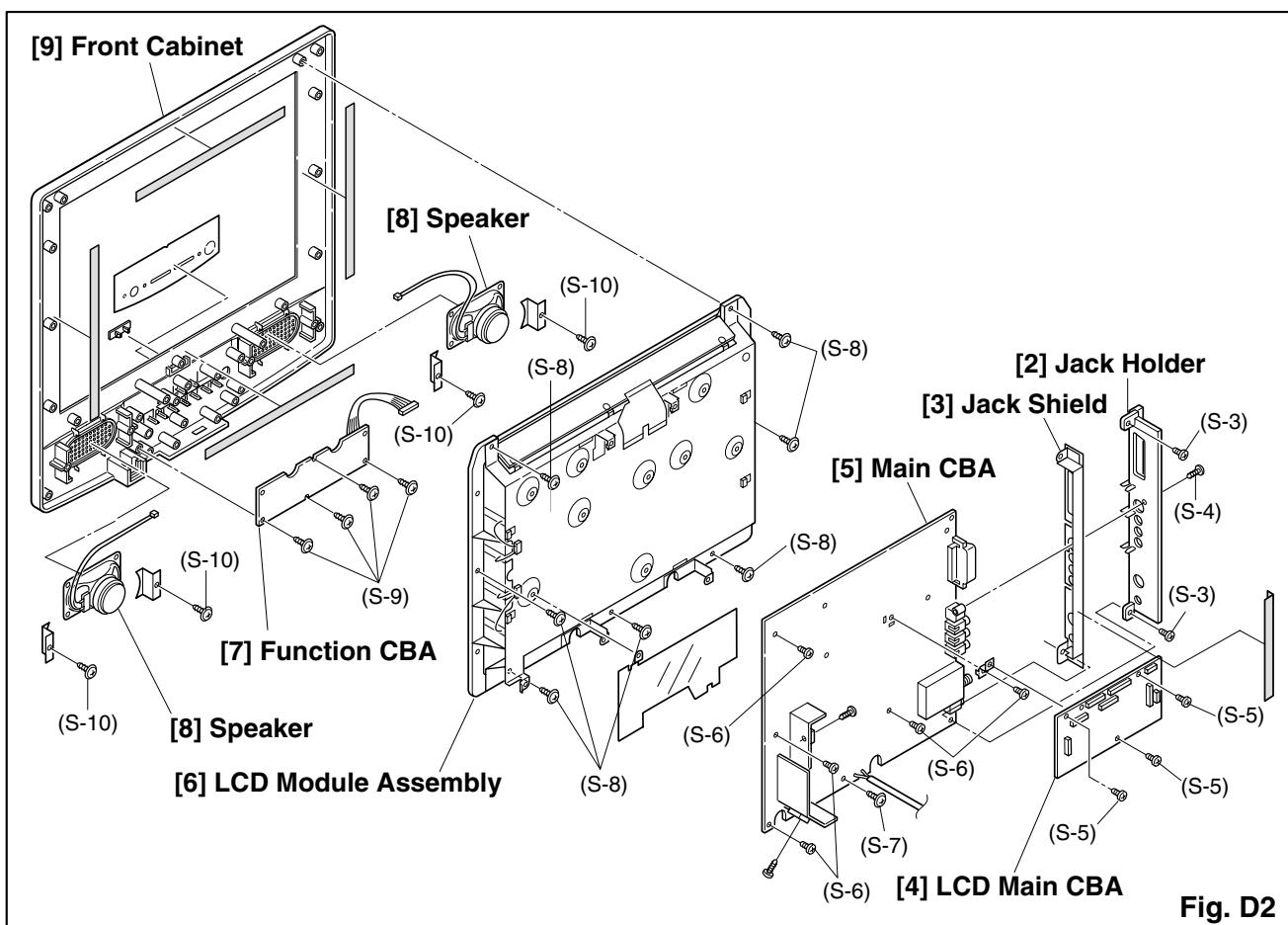
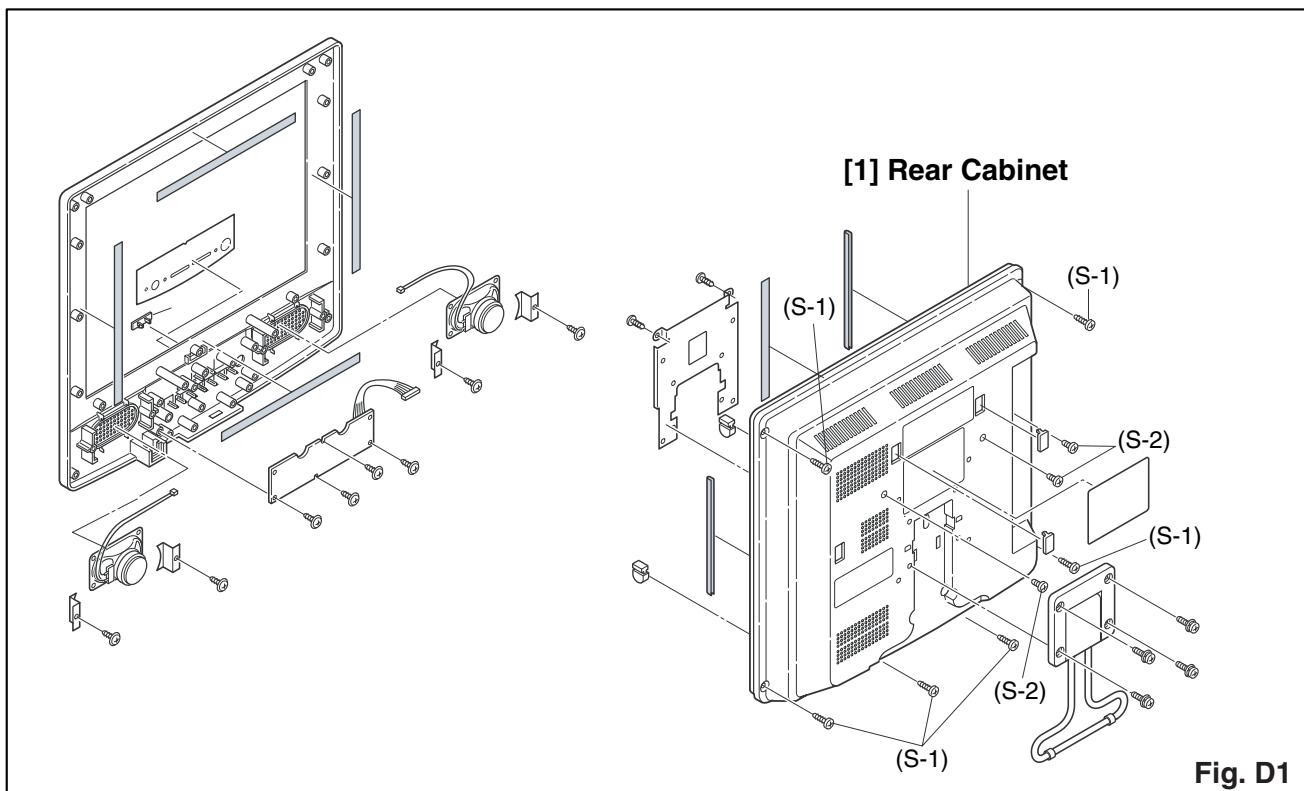
(3): Fig. No. showing Procedure of Part Location.

(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.



Wiring Diagram

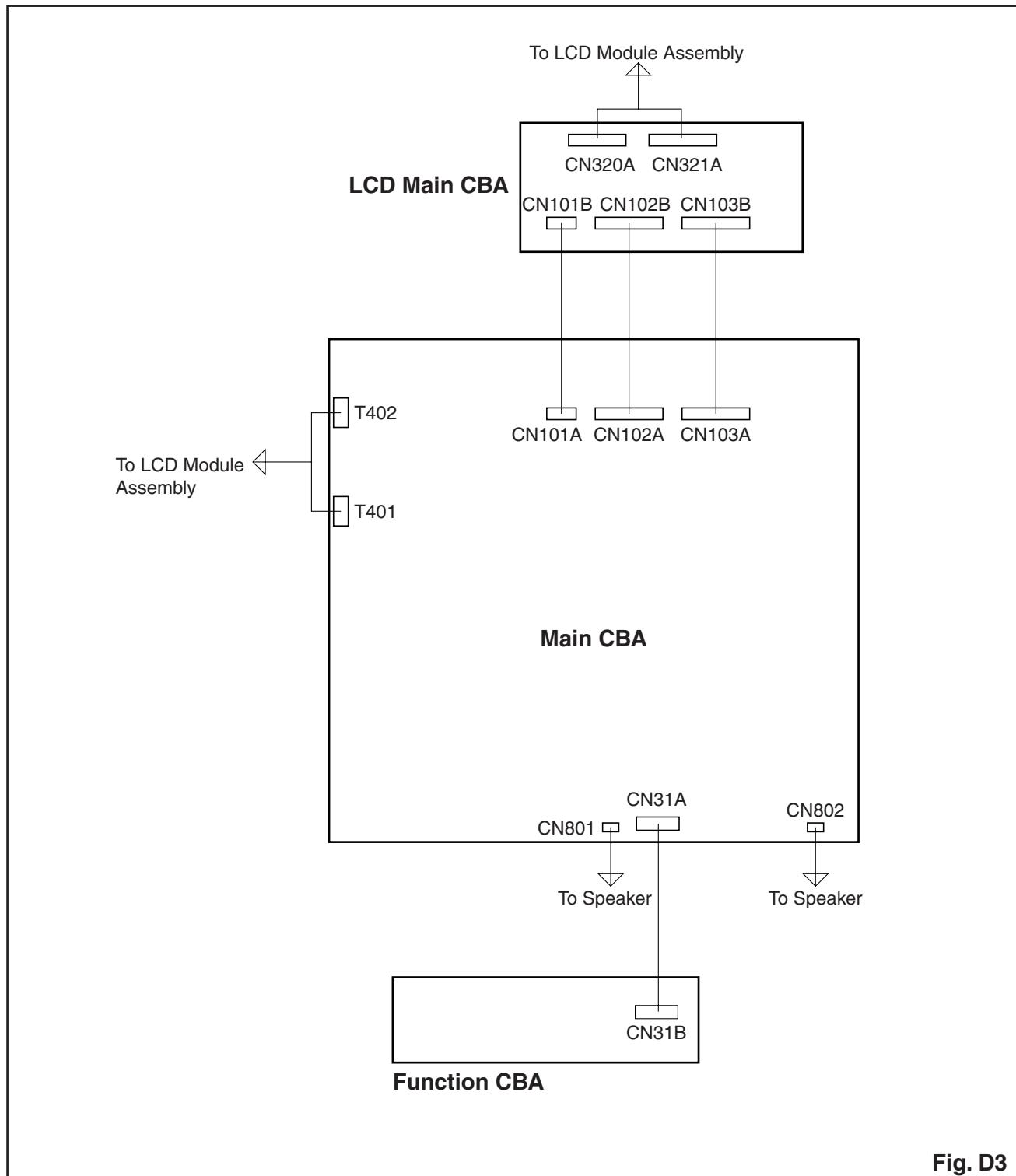
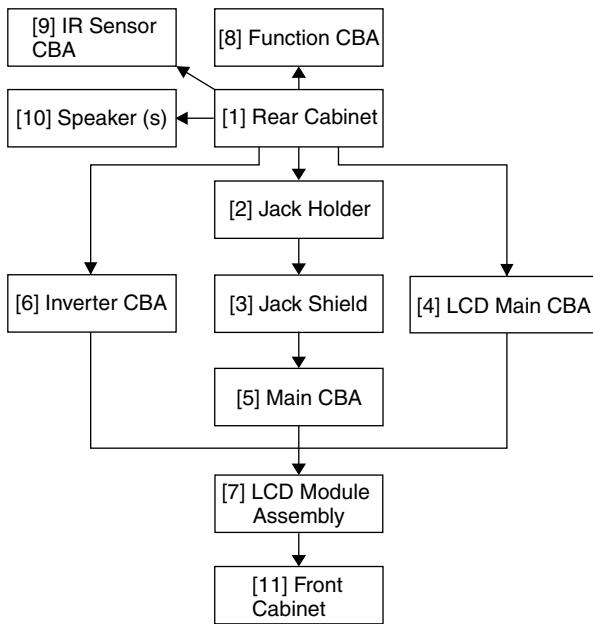


Fig. D3

[LCD-A2004]

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.



2. Disassembly Method

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/ *UNHOOK/UNLOCK/ RELEASE/UNPLUG/ DESOLDER	Note
[1]	Rear Cabinet	D1	11(S-1), 3(S-2)	---
[2]	Jack Holder	D2	2(S-3), (S-4)	---
[3]	Jack Shield	D2	-----	---
[4]	LCD Main CBA	D2 D3	3(S-5), *CN310A, *CN311A, *CN313A, *CN101B, *CN102B, *CN103B	---
[5]	Main CBA	D2 D3	5(S-6), *CN801, *CN802, *CN405, *CN51, *CN53	---
[6]	Inverter CBA	D2 D3	6(S-7), *T1401, *T1402, *T1403, *T1404	---
[7]	LCD Module Assembly	D2 D3	13(S-8)	---
[8]	Function CBA	D2 D3	4(S-9)	---
[9]	IR Sensor CBA	D2 D3	2(S-10)	---
[10]	Speaker (s)	D2 D3	4(S-11)	---
[11]	Front Cabinet	D2	-----	---

(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.

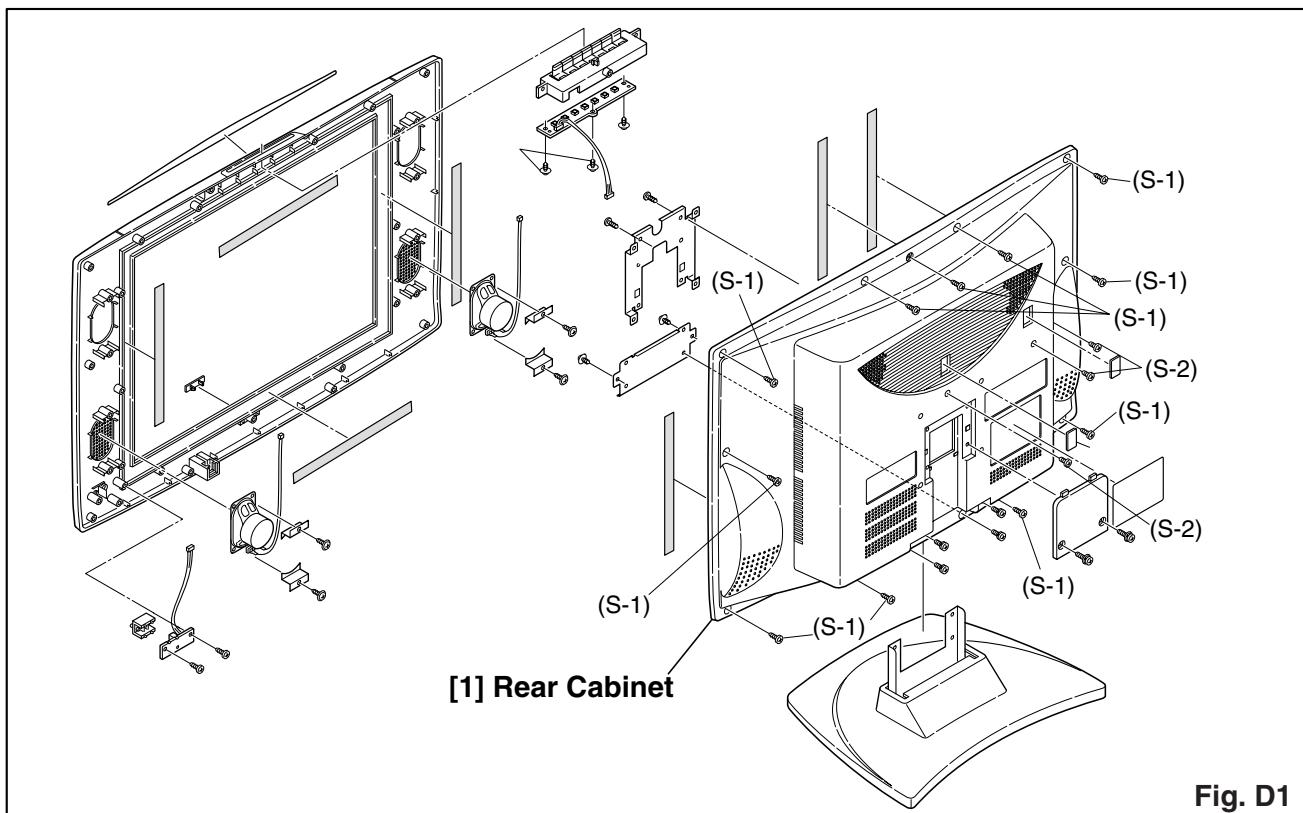


Fig. D1

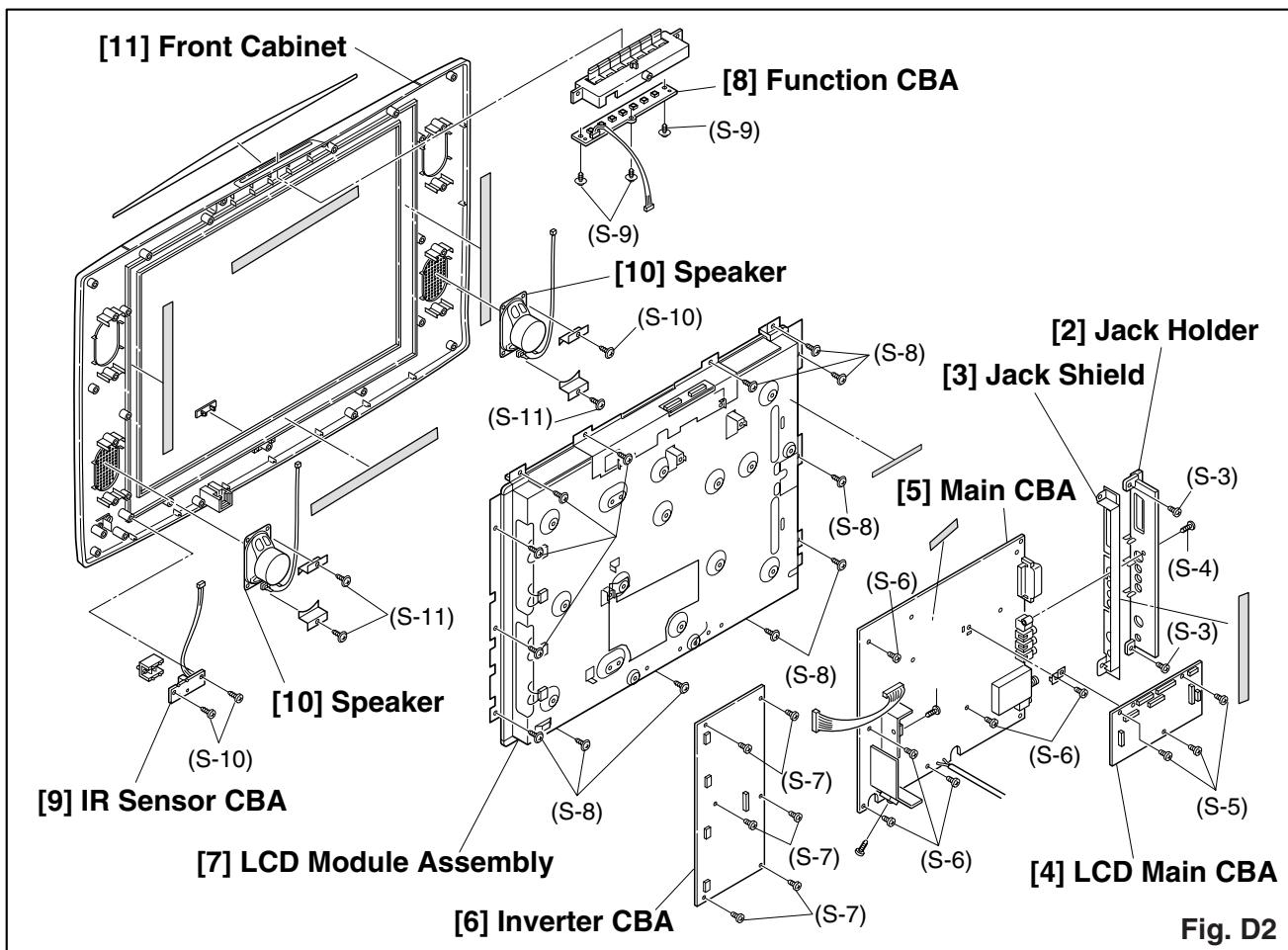


Fig. D2

Cable Wiring Diagram

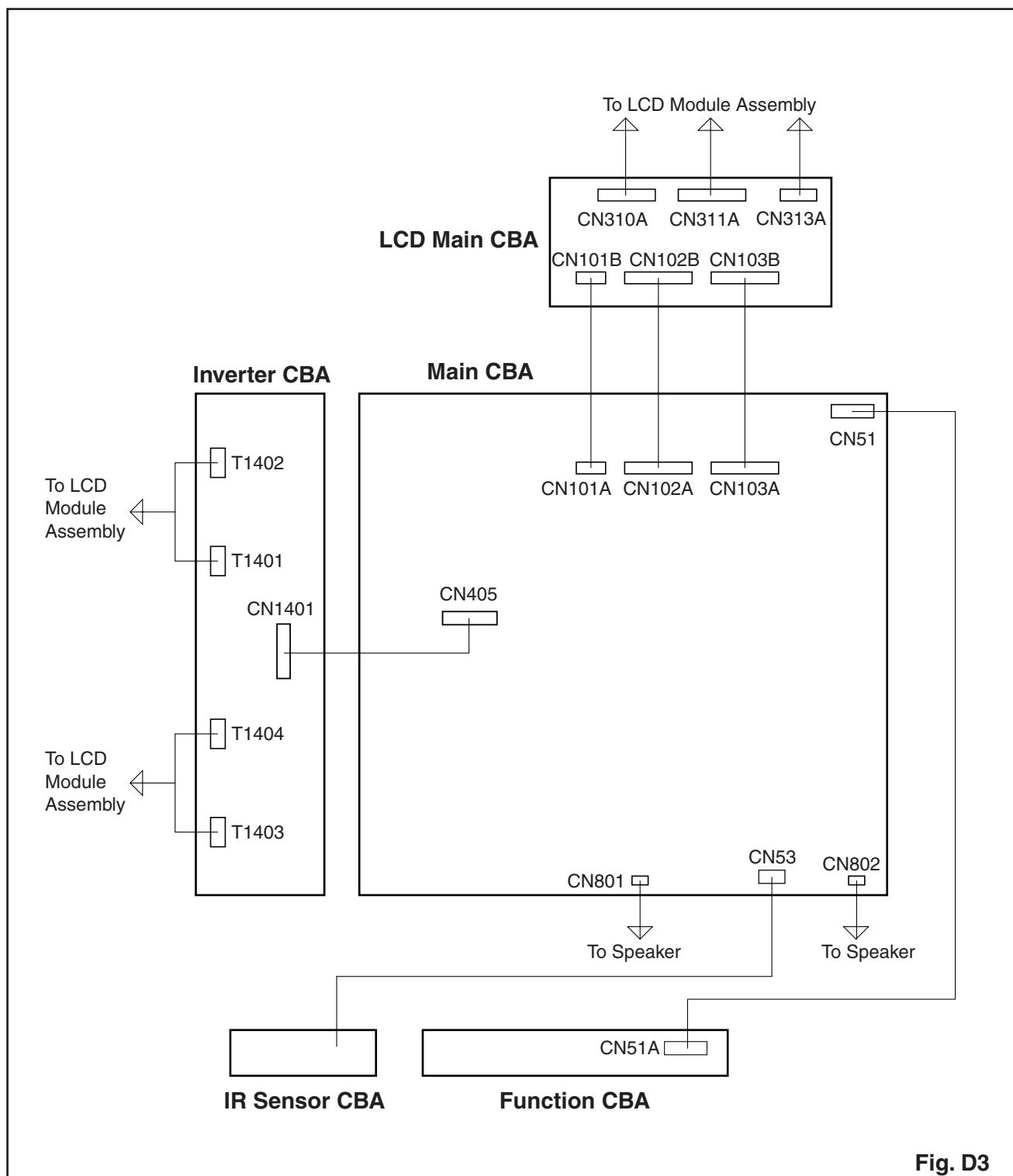


Fig. D3

HOW TO INITIALIZE THE LCD TELEVISION

To put the program back at the factory-default, initialize the LCD television as the following procedure.

How to initialize the LCD television:

1. Turn the power on. (Use main power on the TV unit.)
2. To enter the service mode, press [STANDBY], [2], [7], [1], and [MUTE] buttons on the remote control unit in that order within 5 seconds.
 - To cancel the service mode, press [STANDBY] button on the remote control.
3. To initialize the LCD television, press "DISPLAY" button on the remote control unit.
4. Confirm "FF" indication on the upper right of the screen.

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. DC Voltmeter
2. Pattern Generator
3. Color Analyzer

How to Set up the Service mode:

1. Turn the power on. (Use main power on the TV unit.)
2. Press [STANDBY], [2], [7], [1], and [MUTE] buttons on the remote control unit in that order within 5 seconds.
- To cancel the service mode, press [STANDBY] button on the remote control.

1. Initial Setting

General

Enter the Service mode.

Set the each initial data as shown on table 1 below.

Table 1: Initial Data

ITEM	BUTTON (on the remote control)	DATA VALUE	
		LCD- A1504	LCD- A2004
BRT(PAL)	MENU → 1	130	134
CNT(PAL)		174	174
CLR-R(PAL)		78	74
CLR-B(PAL)		78	74
SHR(PAL)		143	143
S-BRT(PAL)	MENU → 2	130	134
S-CNT(PAL)		174	174
S-CLR-R(PAL)		78	74
S-CLR-B(PAL)		78	74
S-SHR(PAL)		143	143
C-BRT(PAL)	MENU → 3	134	134
C-CNT(PAL)		122	132
C-CLR-R(PAL)		156	154
C-CLR-B(PAL)		156	154
C-SHR(PAL)		143	143
BRT(SECAM)	MENU → 4	130	134
CNT(SECAM)		174	174
CLR-R(SECAM)		78	74
CLR-B(SECAM)		78	74
SHR(SECAM)		143	143
S-BRT(SECAM)	MENU → 5	130	134
S-CNT(SECAM)		174	174
S-CLR-R(SECAM)		78	74
S-CLR-B(SECAM)		78	74
S-SHR(SECAM)		143	143
C-BRT(SECAM)	MENU → 6	134	134
C-CNT(SECAM)		122	132
C-CLR-R(SECAM)		156	154
C-CLR-B(SECAM)		156	154
C-SHR(SECAM)		143	143
BRT(NTSC)	MENU → 7	134	134
CNT(NTSC)		172	174
CLR-R(NTSC)		78	70
CLR-B(NTSC)		78	70
TNT(NTSC)		148	148
SHR(NTSC)		143	143
S-BRT(NTSC)	MENU → 8	134	134
S-CNT(NTSC)		172	174
S-CLR-R(NTSC)		78	70
S-CLR-B(NTSC)		78	70
S-TNT(NTSC)		148	148
S-SHR(NTSC)		143	143

ITEM	BUTTON (on the remote control)	DATA VALUE	
		LCD- A1504	LCD- A2004
C-BRT(NTSC)	MENU → 9	134	134
C-CNT(NTSC)		122	132
C-CLR-R(NTSC)		156	154
C-CLR-B(NTSC)		156	154
C-TNT(NTSC)		148	148
C-SHR(NTSC)		143	143
BRIGHT	0	0	0
NORMAL	0	40	65
DARK	0	95	98
COR(C/D/S-1)	VOL. ▼ → 1	131	131
COG(C/D/S-1)	VOL. ▼ → 2	131	131
COB(C/D/S-1)	VOL. ▼ → 3	131	131
DR(C/D/S-1)	VOL. ▼ → 4	145	145
DG(C/D/S-1)	VOL. ▼ → 5	143	143
DB(C/D/S-1)	VOL. ▼ → 6	140	140
SBR(C/D/S-1)	VOL. ▼ → 7	0	0
SBB(C/D/S-1)	VOL. ▼ → 9	0	0
C-COR(C/D/S-2)	VOL. ▼ → 1	131	131
C-COG(C/D/S-2)	VOL. ▼ → 2	131	131
C-COB(C/D/S-2)	VOL. ▼ → 3	131	131
C-DR(C/D/S-2)	VOL. ▼ → 4	145	145
C-DG(C/D/S-2)	VOL. ▼ → 5	143	143
C-DB(C/D/S-2)	VOL. ▼ → 6	140	140
C-SBR(C/D/S-2)	VOL. ▼ → 7	0	0
C-SBB(C/D/S-2)	VOL. ▼ → 9	0	0
7F	VOL. ▼	FF	FF
LAST POWER		OFF	OFF
SYSTEM		PAL-BG	PAL-BG
NCM		ON	ON
ASPECT		OFF	OFF
RUSSIAN		OFF	OFF

2. +B Adjustment

Purpose: To obtain correct operation.

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

Test Point	Adj. Point
TP401 (+B) TP300 (GND)	VR649
M. EQ.	Spec.
DC Voltmeter	+13.0±0.3V DC [LCD-A1504] +21.0±0.3V DC [LCD-A2004]

Note: TP401(+B), TP300(GND), VR649 --- Main CBA

1. Connect DC Volt Meter to TP401 and TP300(GND).
2. Adjust VR649 so that the voltage of TP401 becomes $+13.0\pm0.3V$ DC [LCD-A1504] or $+21.0\pm0.3V$ DC [LCD-A2004].

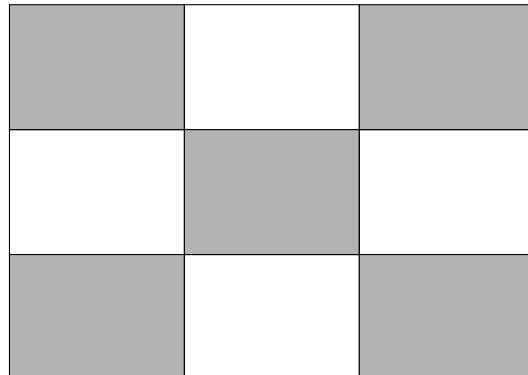
3. Flicker Adjustment

Adjustment Point: R977 (LCD Main CBA)

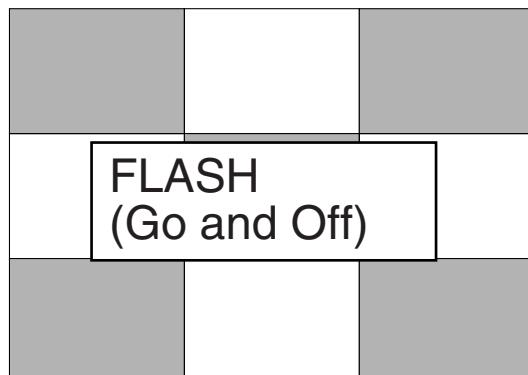
LCD Main CBA



1. Enter the Service mode.
2. Press "2" button on the remote control unit.
The following screen appears.



3. If Flicker Adjustment is not fit, the screen become the following.



4. Adjust R977 so that flash stops.

The following adjustment normally are not attempted in the field. Only when replacing the LCD Panel then adjust as a preparation.

4. White Balance Adjustment

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

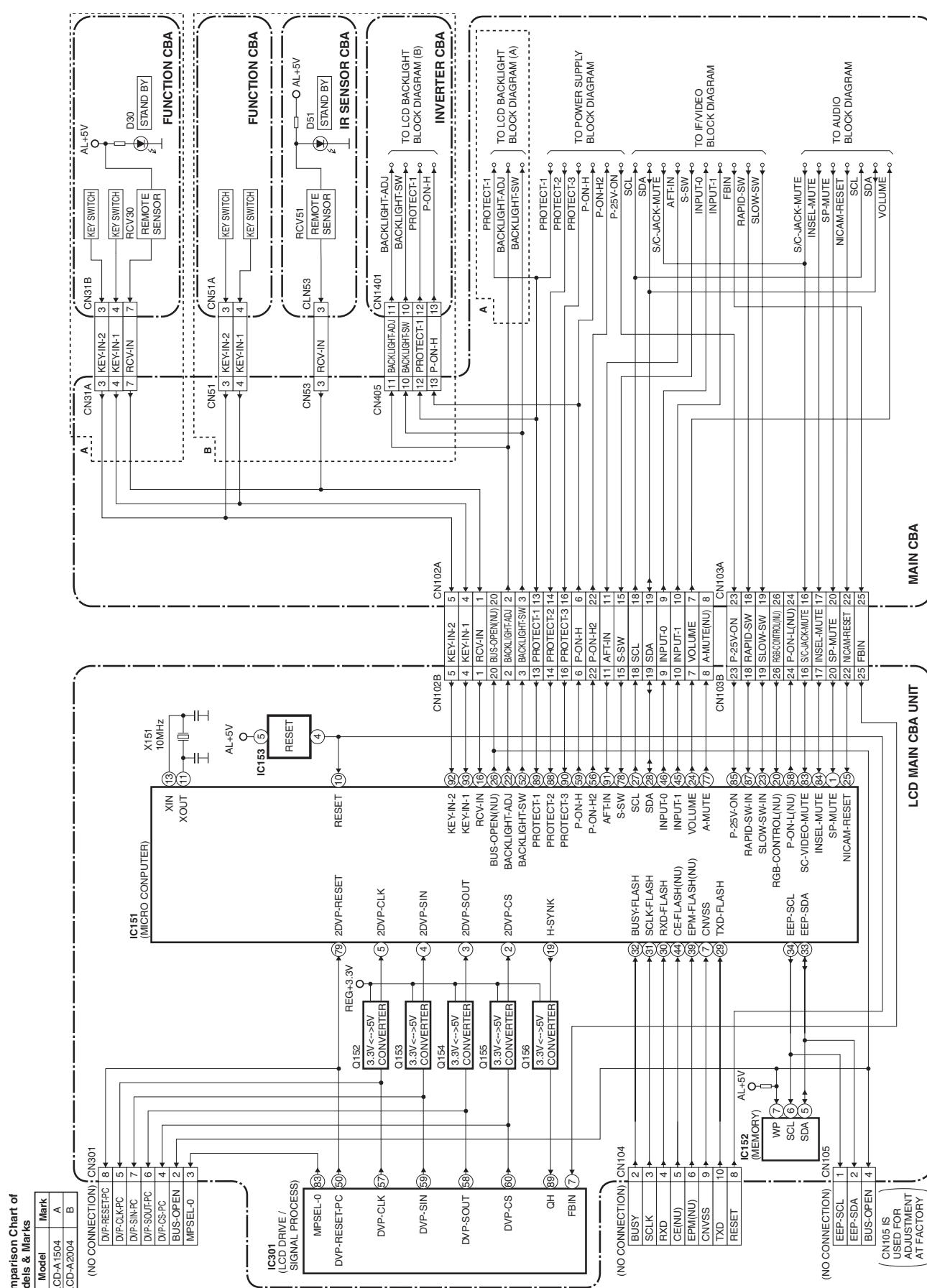
Symptom of Misadjustment: White becomes bluish or reddish.

Test Point	Adj. Point	Mode	Input			
Screen	VOL. ▼ buttons	[RF/AV2(CVBS)] C/D/S-1 [AV1(RGB)] C/D/S-2	White Purity (APL 80%) or (APL 40%)			
M. EQ.	Spec.					
Pattern Generator, Color analyzer	x: 260 to 320, y: 270 to 330					
Figure						
<p>It carries out in a darkroom. Perpendicularity L = 50 cm INPUT: WHITE 80% Color Analyzer</p>						

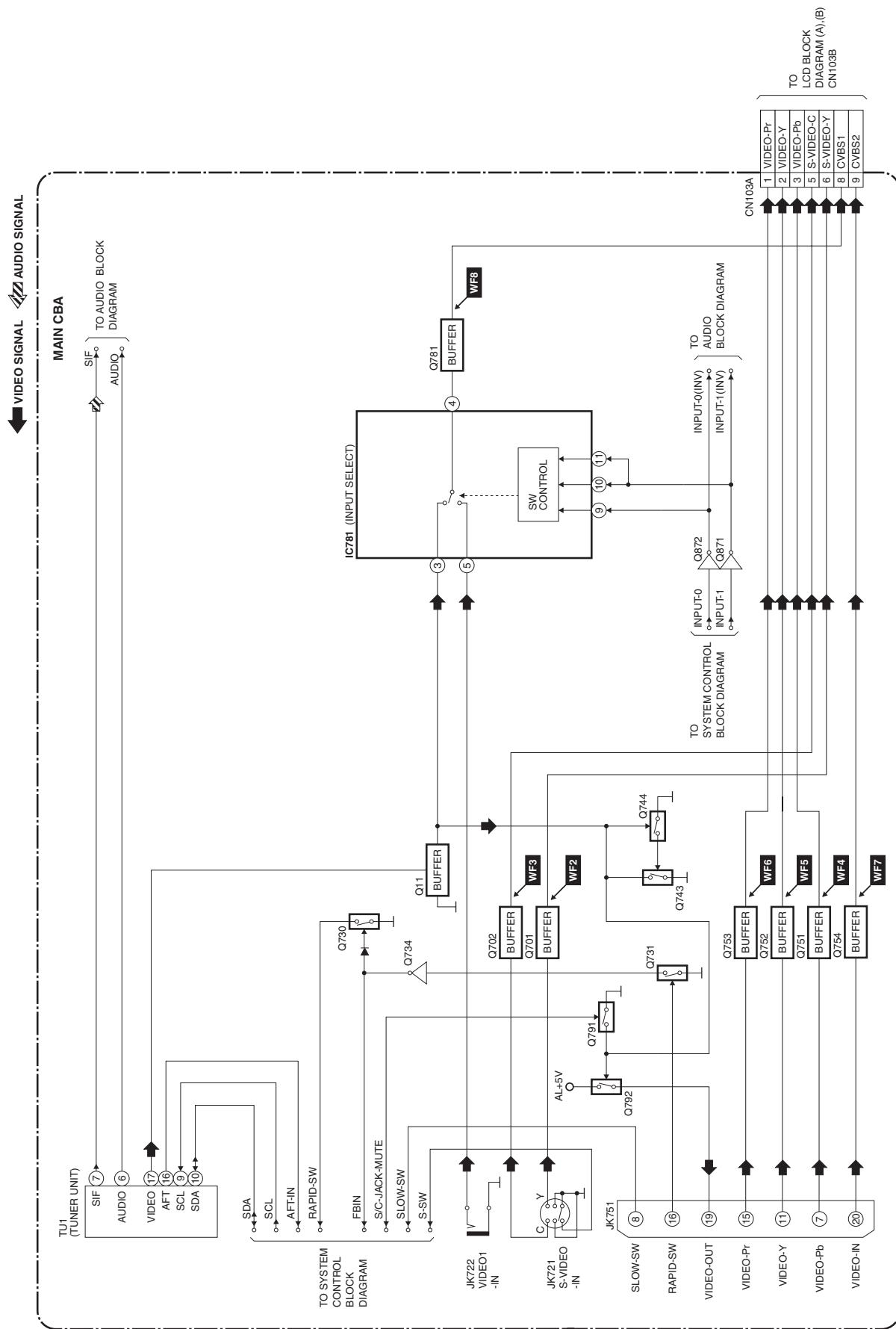
1. Operate the unit for more than 20 minutes.
2. Input the White Purity (APL 80% or APL 40%).
3. Set the color analyzer to the CHROMA mode and bring the optical receptor to the center on the LCD-Panel surface after zero point calibration as shown above.
Note: The optical receptor must be set perpendicularly to the LCD Panel surface.
4. **[RF/AV2(CVBS)]**
Enter the Service mode. Press "VOL ▼" button on the remote control unit and select "C/D/S-1" mode.
[AV1(RGB)]
Enter the Service mode. Press "VOL ▼" button on the remote control unit and select "C/D/S-2" mode.
5. **[RF/AV2(CVBS)]**
When "x" value and "y" value are not within specification, adjust "DB (C/D/S-1)" or "DR (C/D/S-1)". Refer to "1. Initial Setting."
Note: "DB(C/D/S1)" or "DR(C/D/S1)" must be adjusted within ±10.
[AV1(RGB)]
When "x" value and "y" value are not within specification, adjust "C-DB(C/D/S-2)" or "C-DR(C/D/S-2)". Refer to "1. Initial Setting."
Note: "C-DB(C/D/S-2)" or "C-DR(C/D/S-2)" must be adjusted within ±10.
6. Turn the power off and on again. (Main power button on the TV unit.)

BLOCK DIAGRAMS

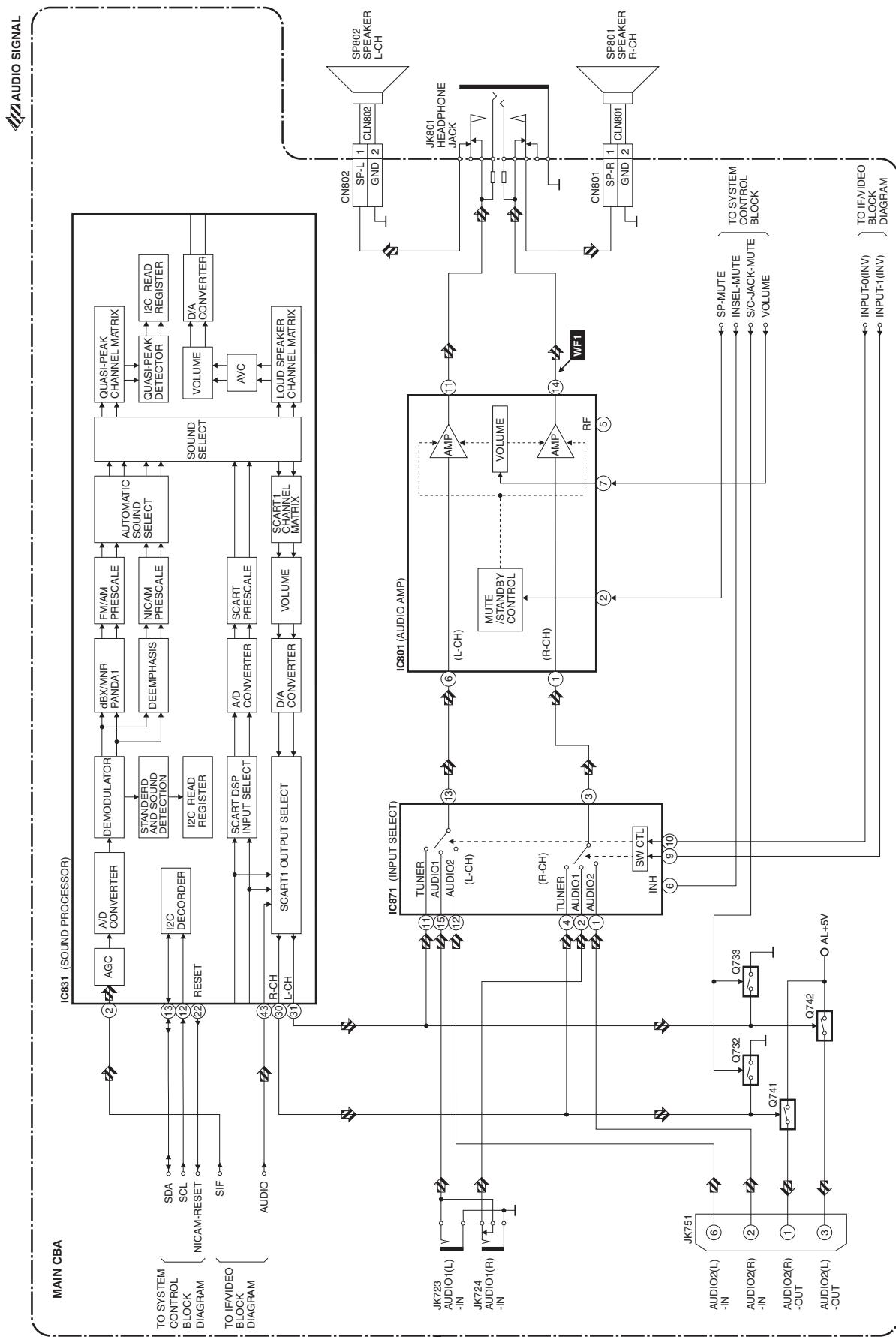
System Control Block Diagram



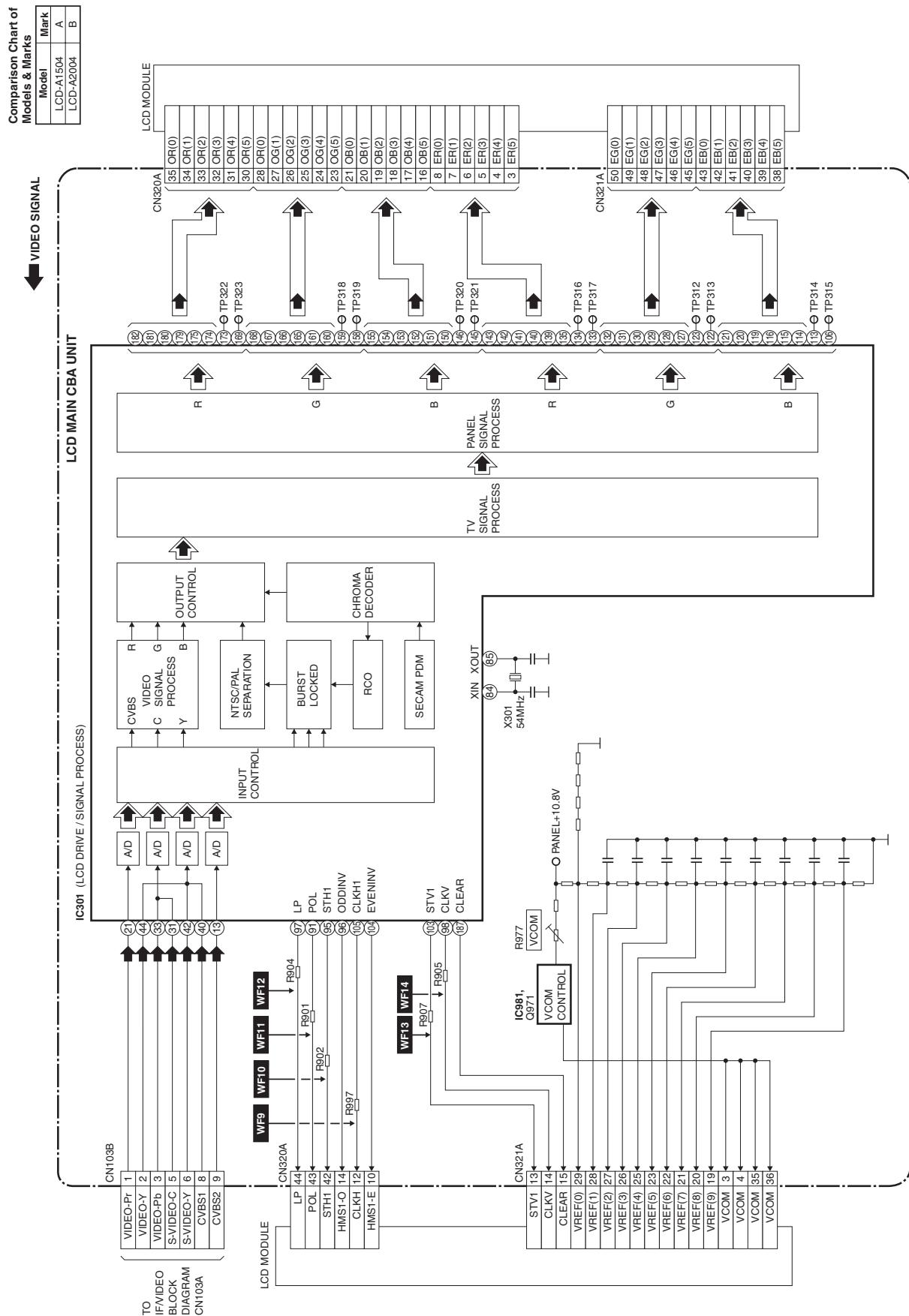
IF/Video Block Diagram



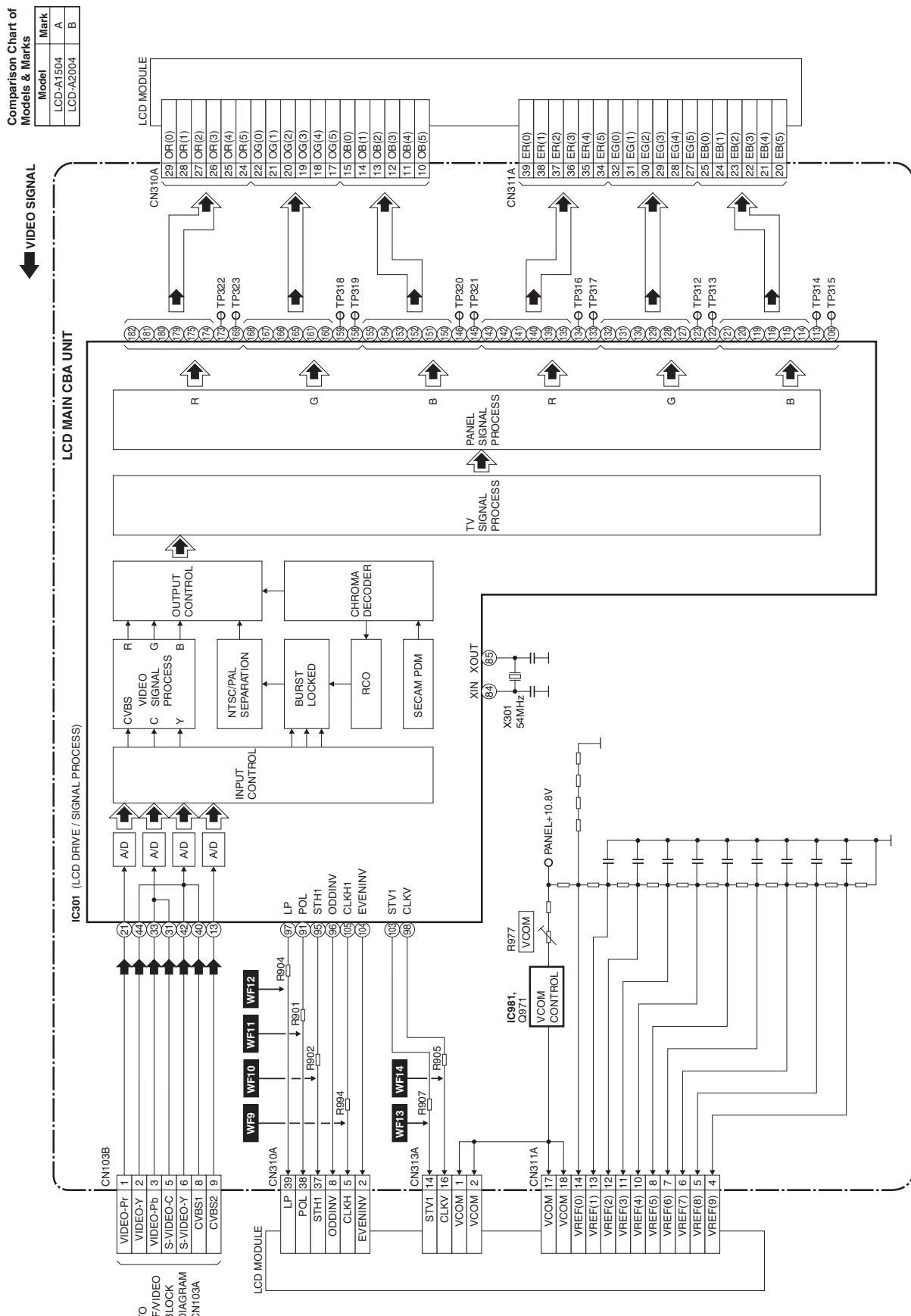
Audio Block Diagram



LCD Block Diagram (A)



LCD Block Diagram (B)



Power Supply Block Diagram

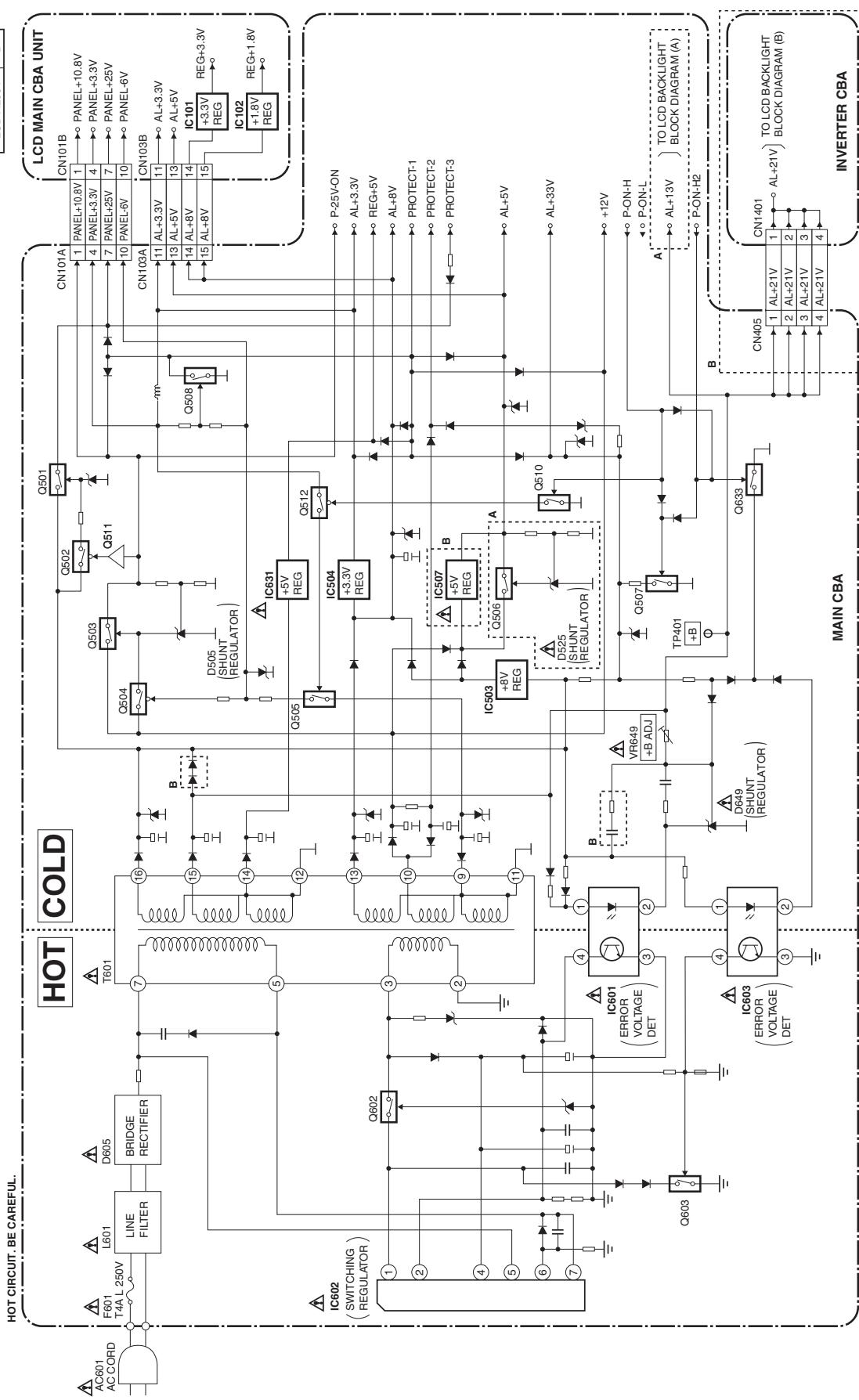
NOTE :
The voltage for parts in hot circuit is measured using
hot GND as a common terminal.

CAUTION !
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 1A, 250 V FUSE.

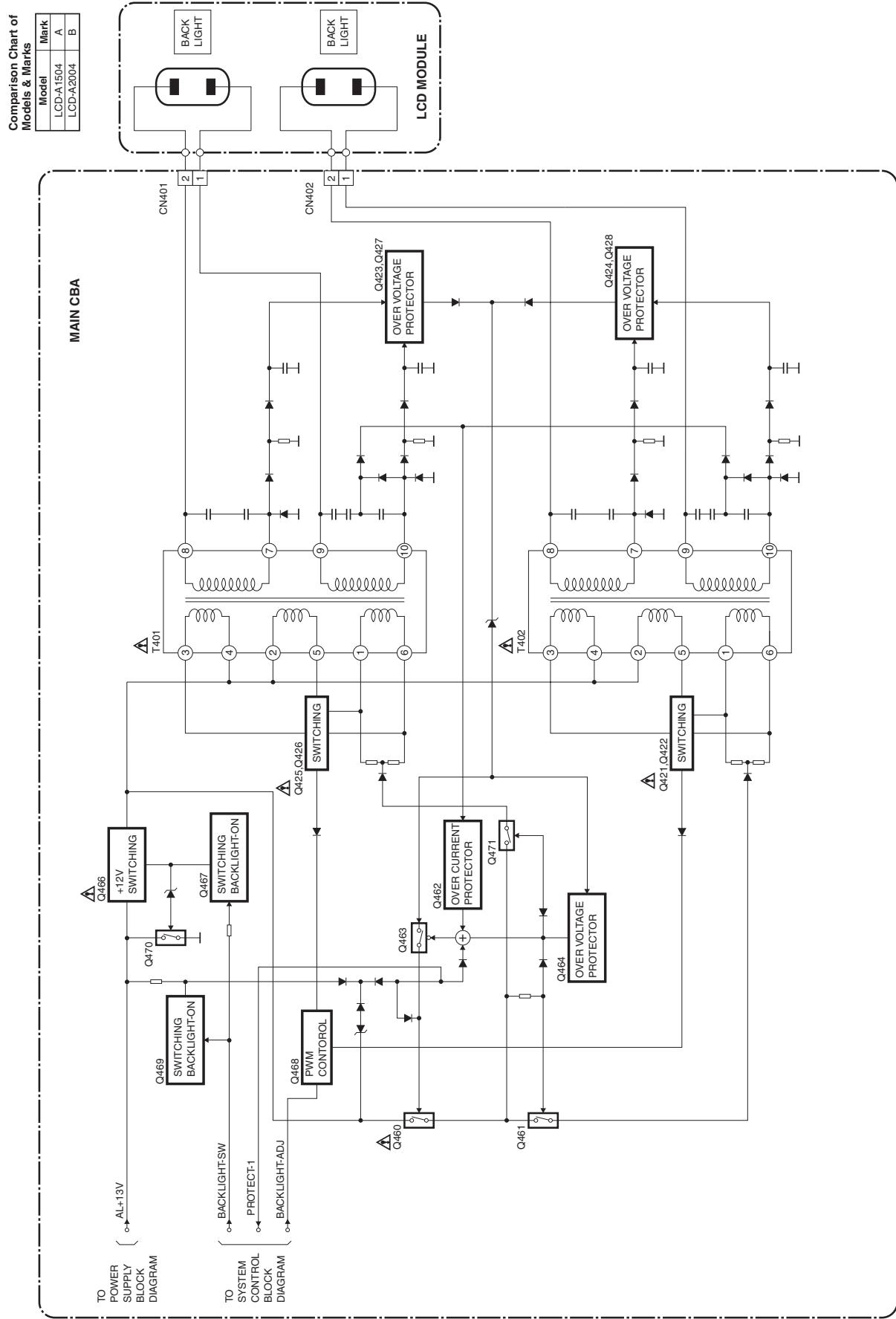
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F001) is blown, check to see that all components in the power supply
circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

Comparison Chart of
Models & Marks

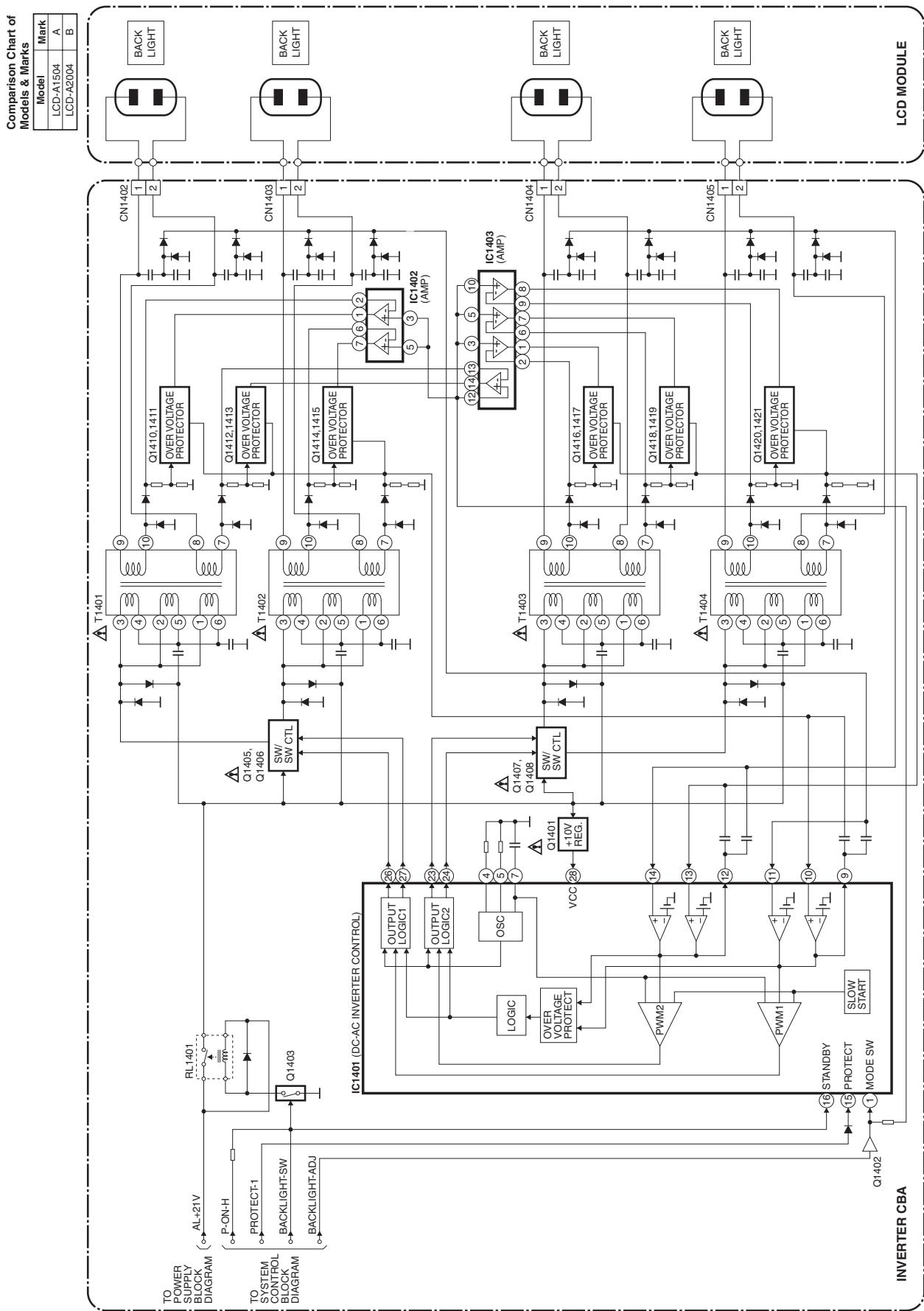
Model	Mark
LCD-A1504	A
LCD-A2004	B



LCD Backlight Block Diagram (A)



LCD Backlight Block Diagram (B)



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.

Notes:

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 --- Metallized Film Cap. SC --- Semiconductor Cap. L --- Low Leakage type

Temperature Characteristics of Capacitors are noted with the following:

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

Tolerance of Capacitors are noted with the following:

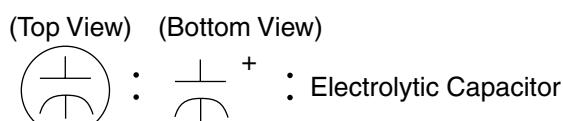
Z --- $+80 \sim -20\%$

Note of Resistors:

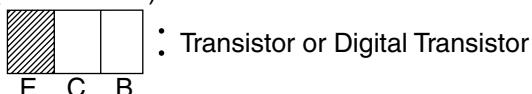
CEM --- Cement Res. MTL --- Metal Res. F --- Fuse Res.

Capacitors and transistors are represented by the following symbols.

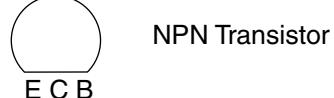
CBA Symbols



(Bottom View)



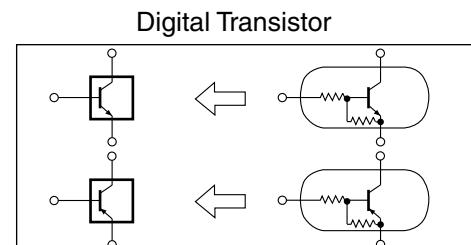
(Top View)



(Top View)



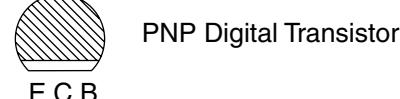
Schematic Diagram Symbols



(Top View)



(Top View)



PNP Transistor

PNP Digital Transistor

PNP Digital Transistor

LIST 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.

2. CAUTION:

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

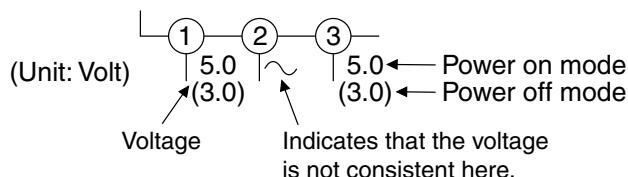
If Main Fuse (F601) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

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. Voltage indications on the schematics are as shown below:

Plug the TV power cord into a standard AC outlet.:

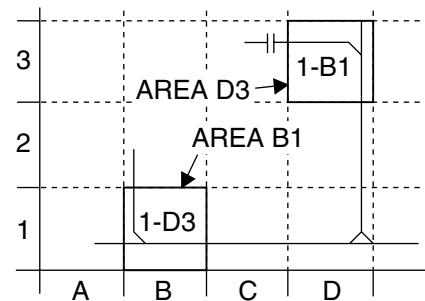


5. How to read converged lines

1-D3
↑
Distinction Area
Line Number
(1 to 3 digits)

Examples:

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



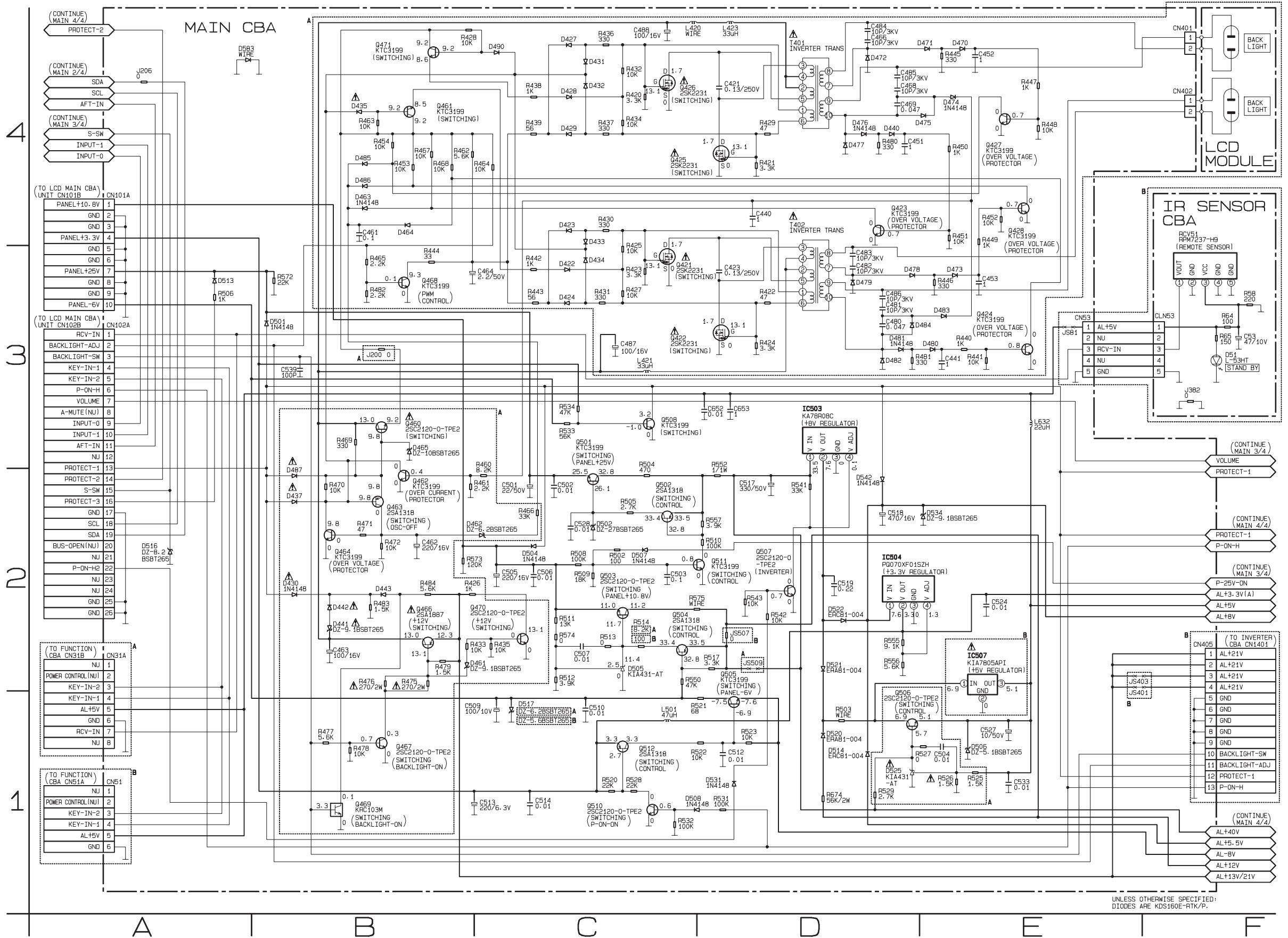
6. Test Point Information

- : 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.

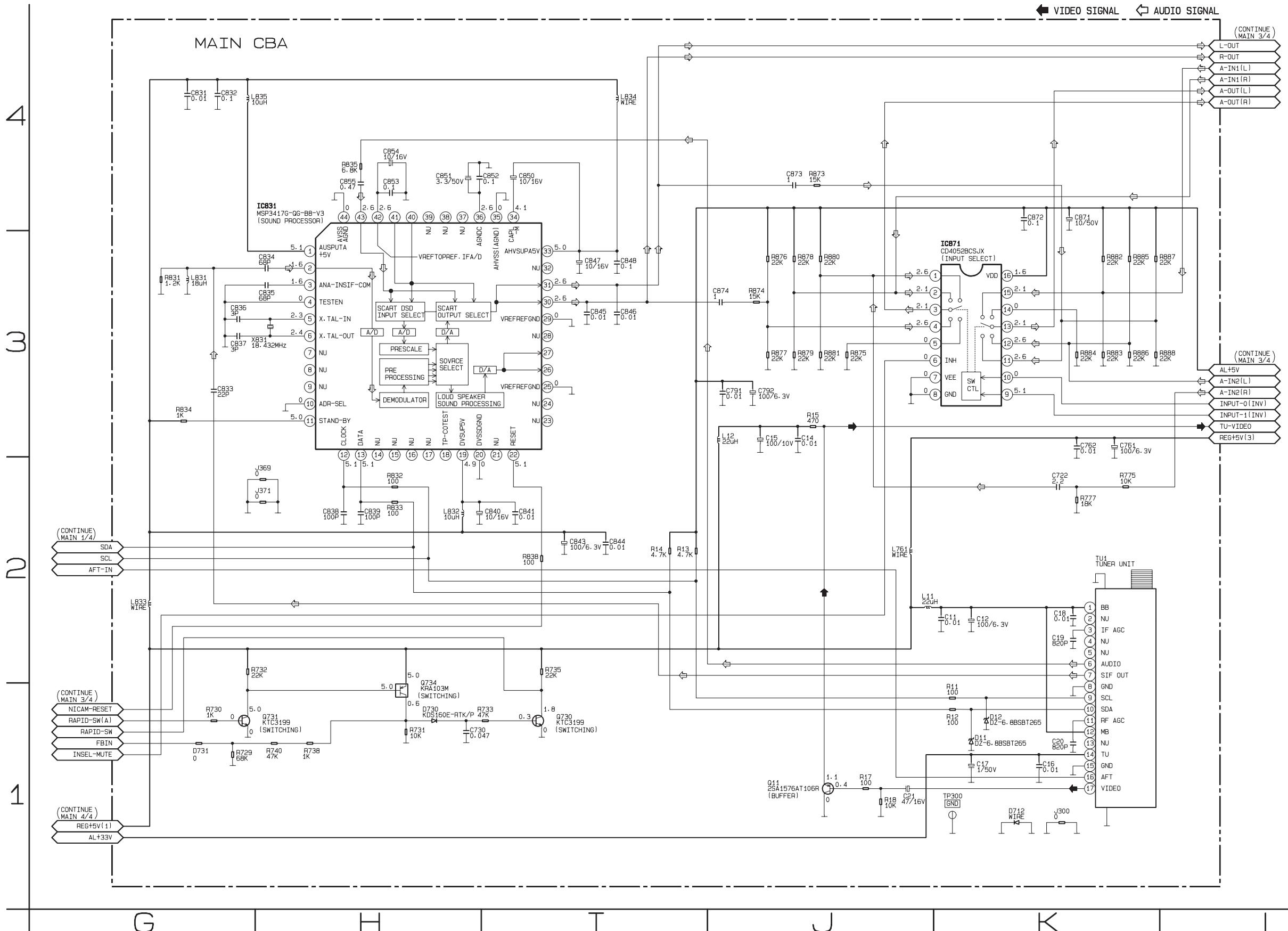
Main 1/4 & IR Sensor Schematic Diagram

Comparison Chart of
Models and Marks

MODEL	MARK
LCD-A1504	A
LCD-A2004	B



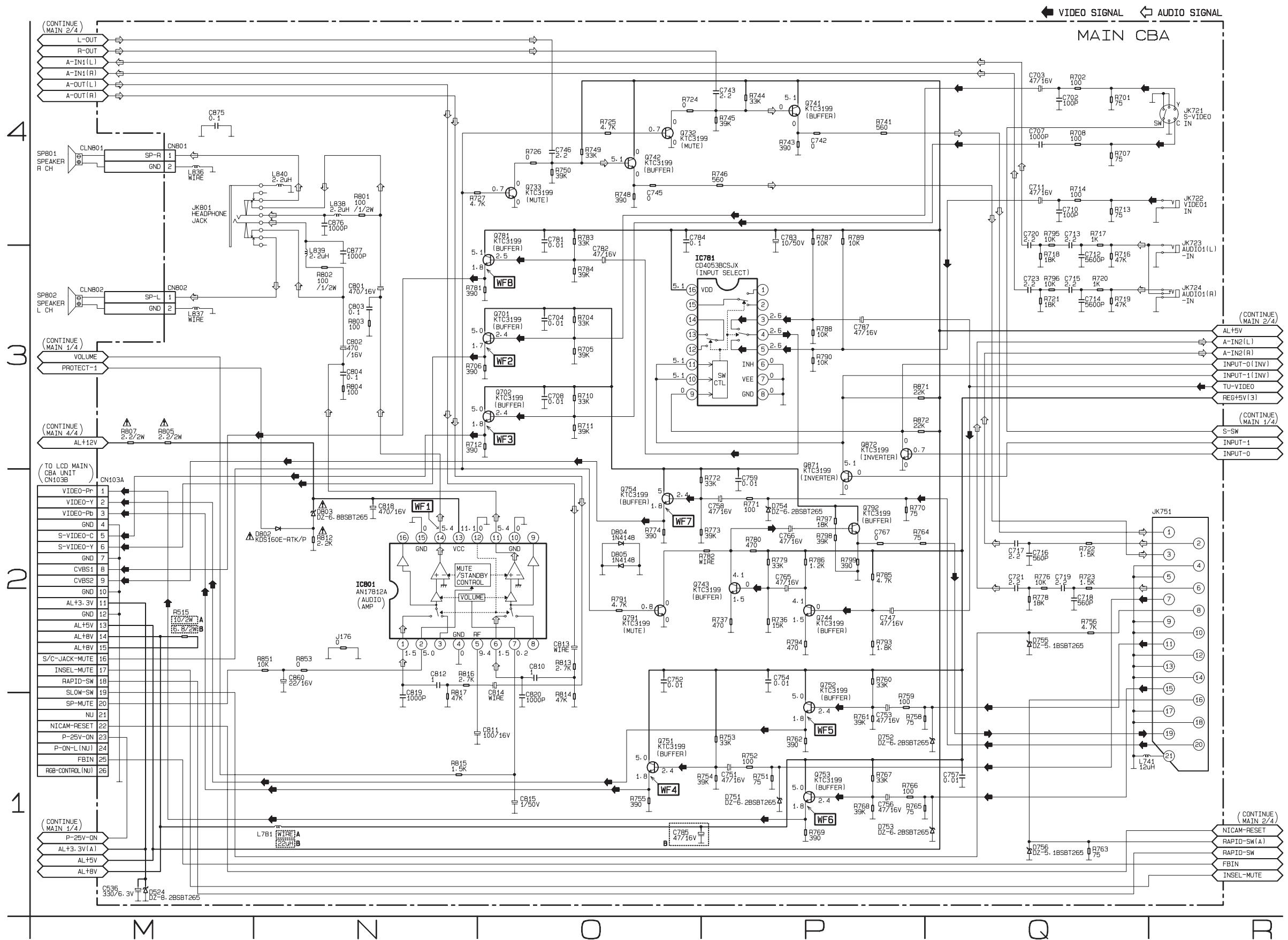
Main 2/4 Schematic Diagram



Main 3/4 Schematic Diagram

Comparison Chart of
Models and Marks

MODEL	MARK
LCD-A1504	A
LCD-A2004	B



Main 4/4 Schematic Diagram

Comparison Chart of Models and Marks

MODEL	MARK
LCD-A1504	A
LCD-A2004	B

CAUTION !

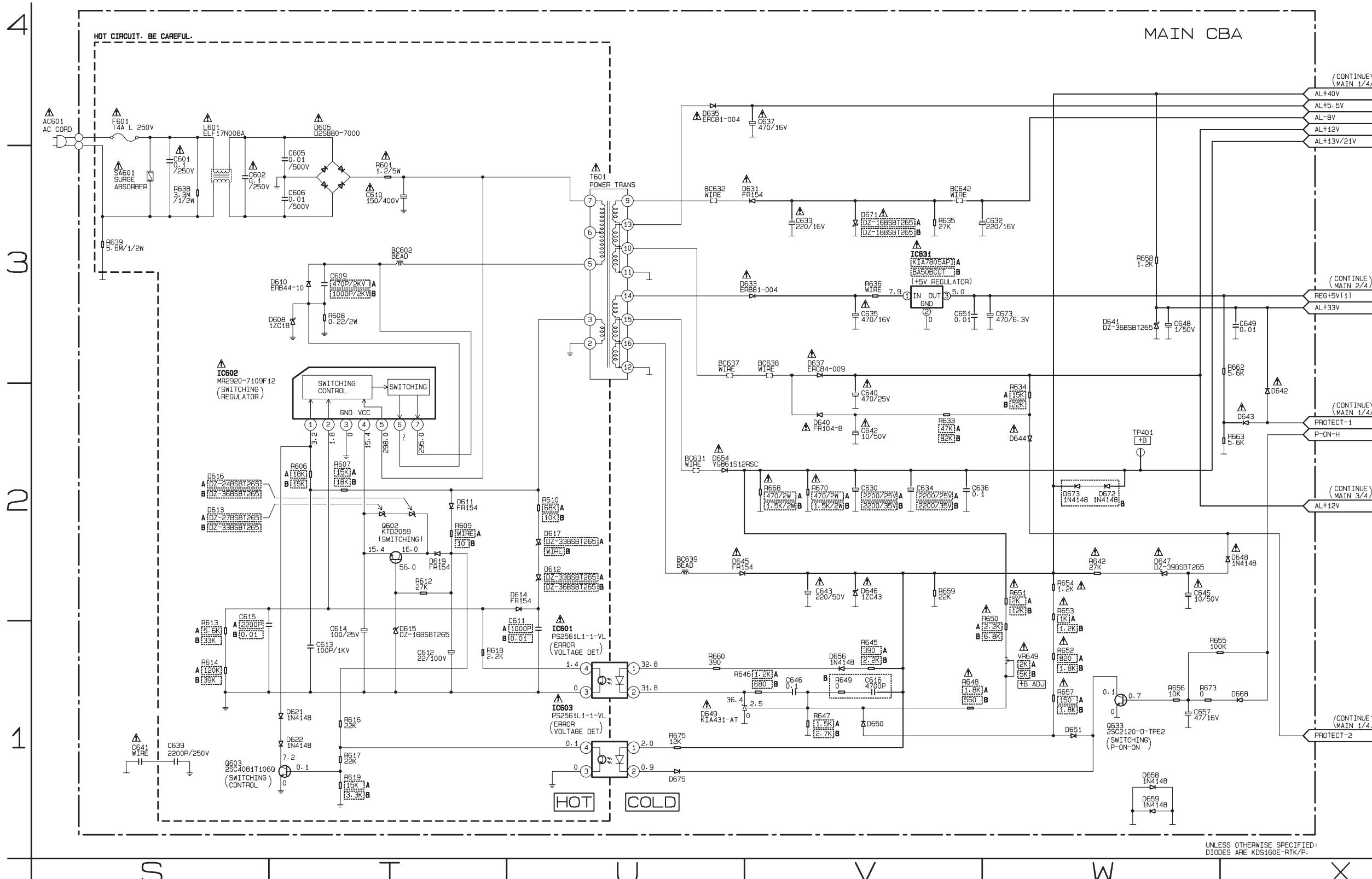
For continued protection against fire hazard, replace only with the same type fuse.

NOTE:

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

CAUTION !

Fixed voltage (or Auto voltage selectable) 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.

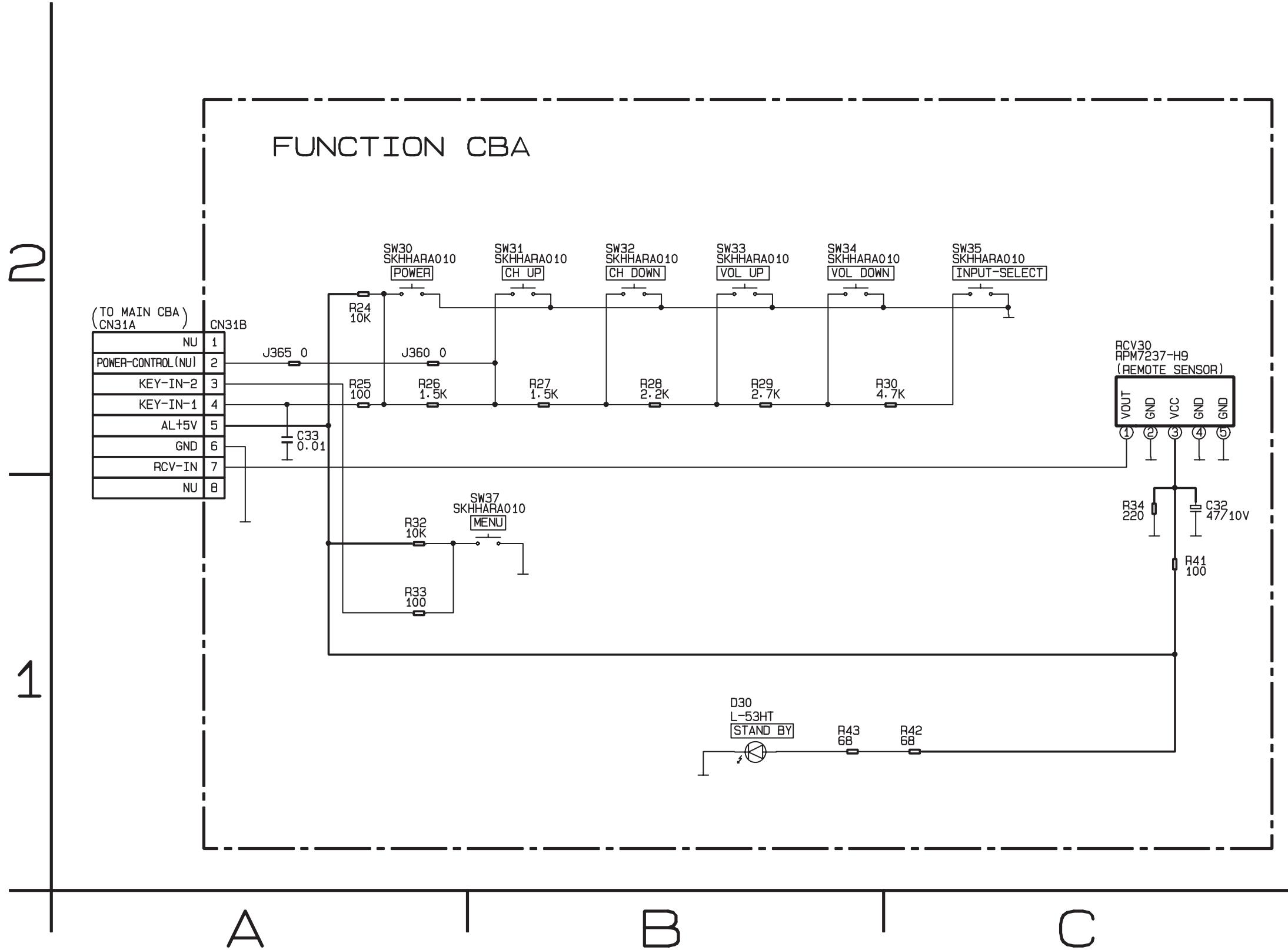


UNLESS OTHERWISE SPECIFIED:
DIODES ARE KDS160E-RTK/P.

Function Schematic Diagram (A)

Comparison Chart of
Models and Marks

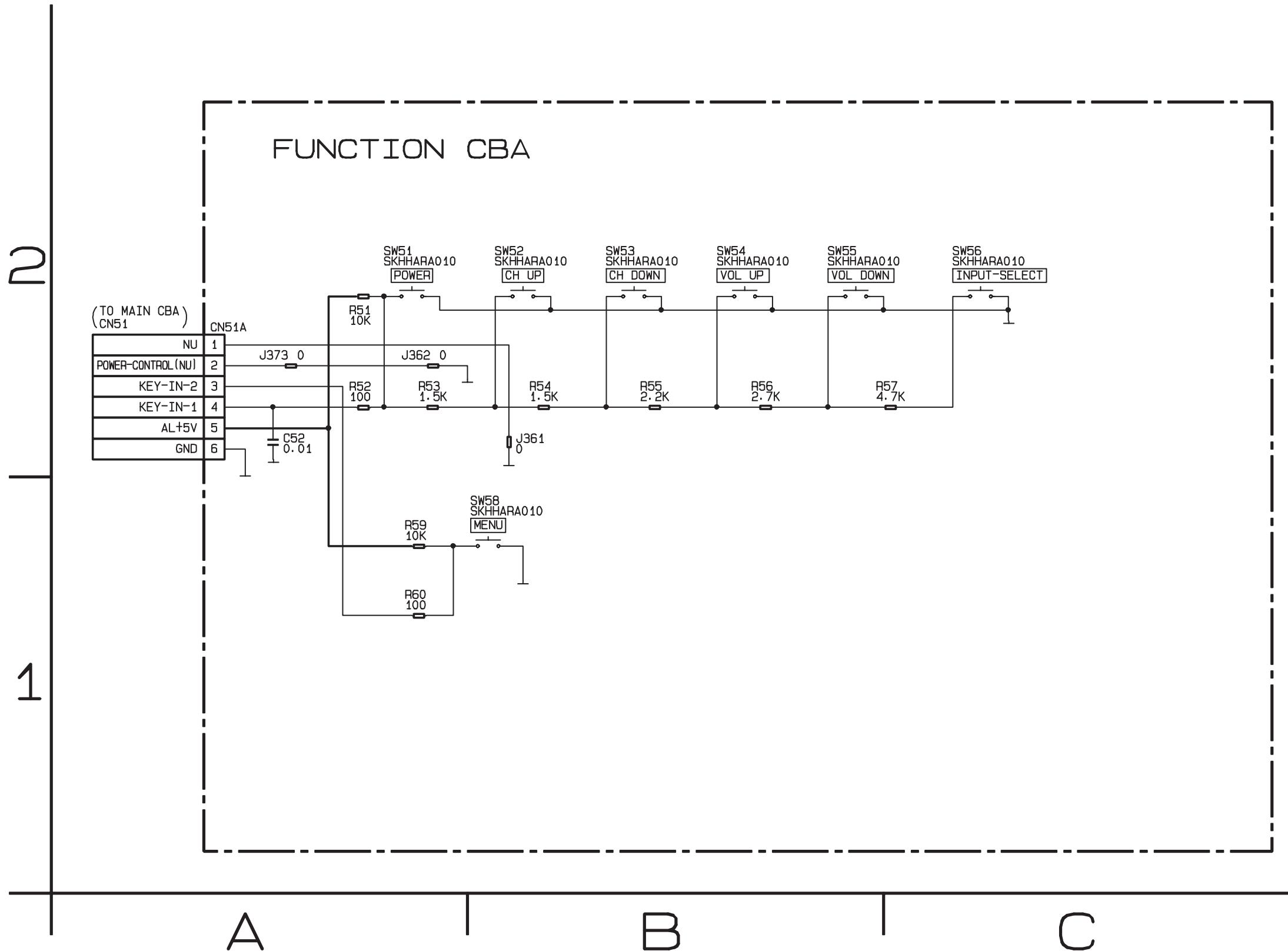
MODEL	MARK
LCD-A1504	A
LCD-A2004	B



Function Schematic Diagram (B)

Comparison Chart of
Models and Marks

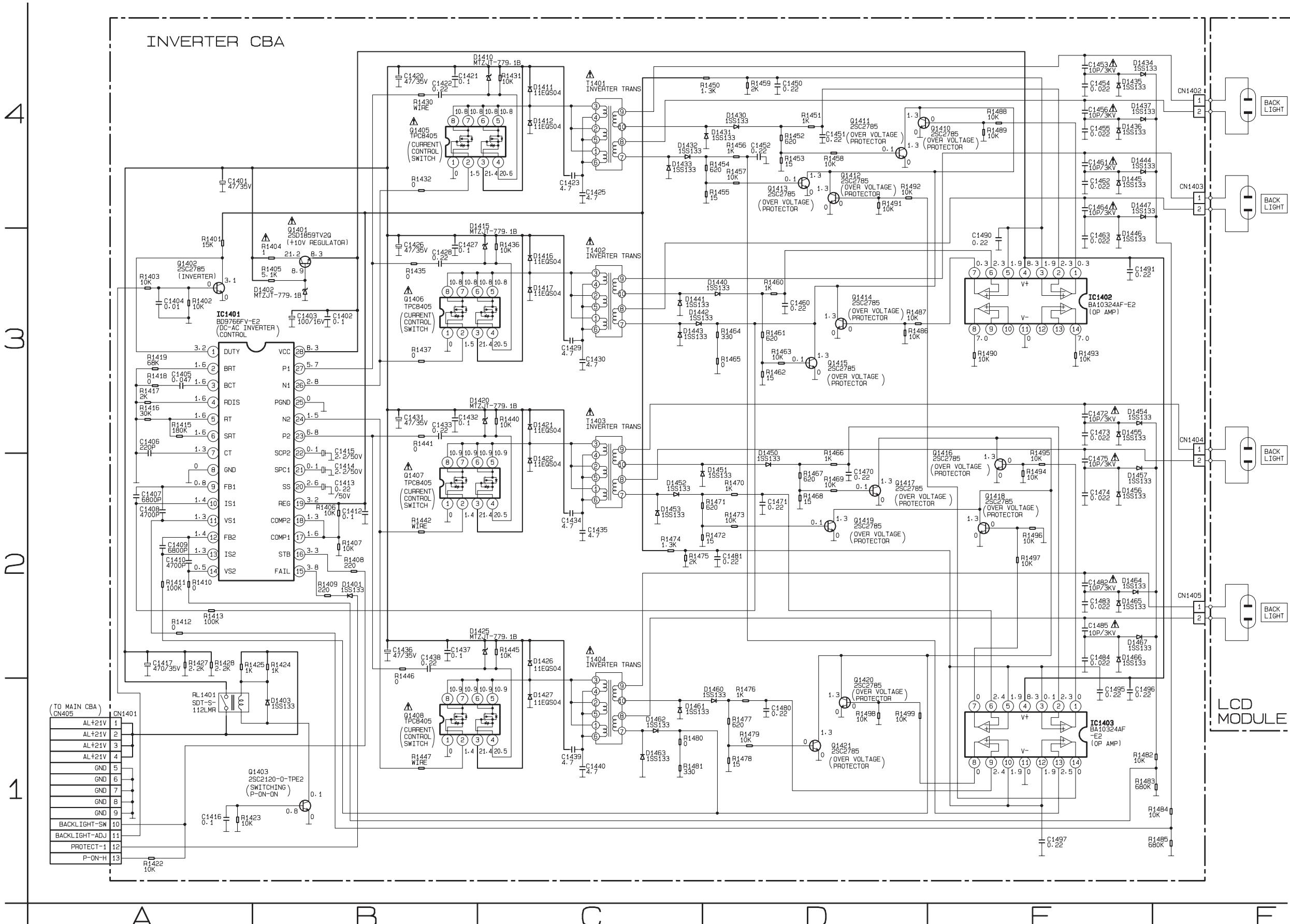
MODEL	MARK
LCD-A1504	A
LCD-A2004	B



Inverter Schematic Diagram (B)

Comparison Chart of
Models and Marks

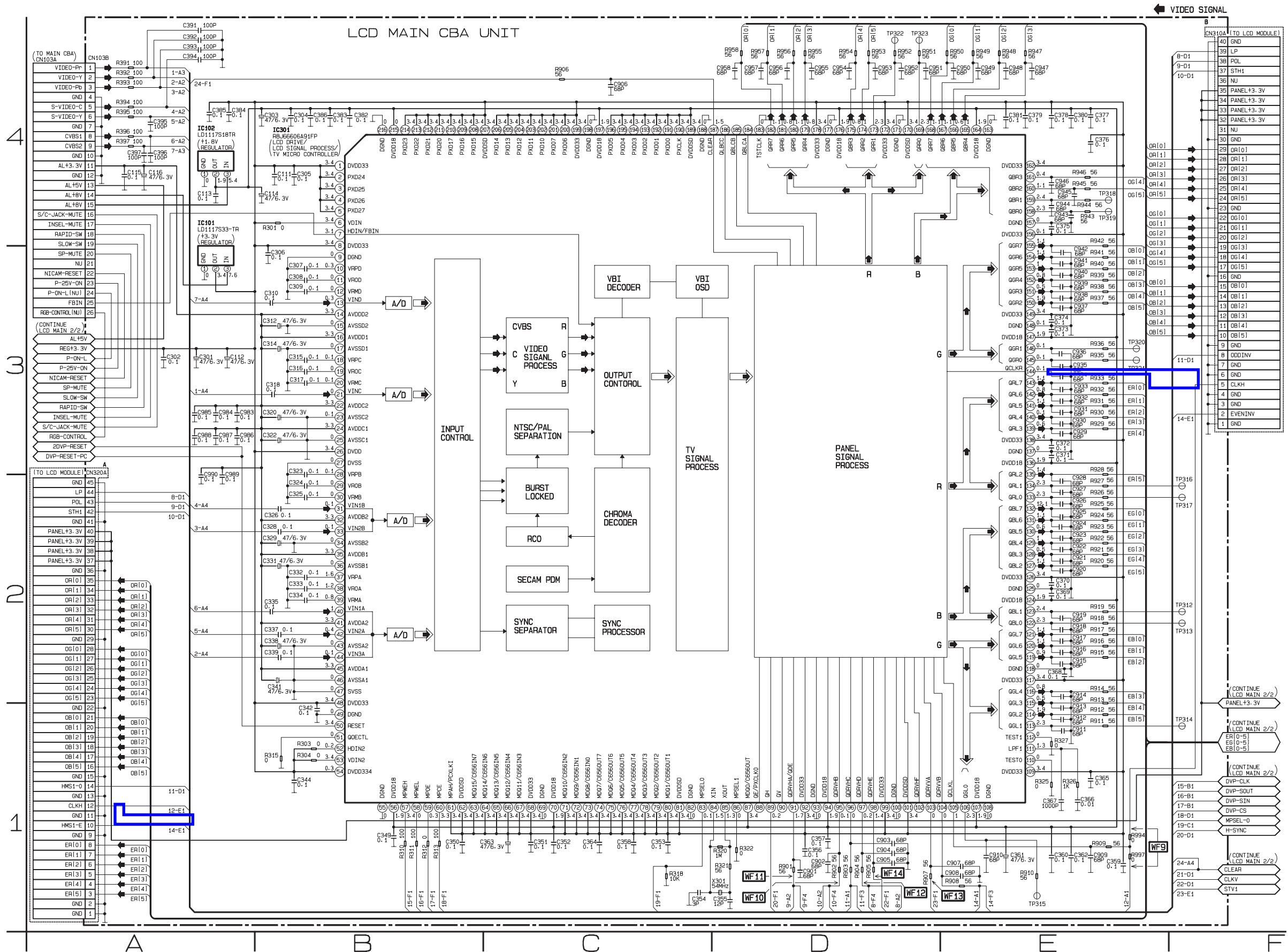
MODEL	MARK
LCD-A1504	A
LCD-A2004	B



LCD Main 1/2 Schematic Diagram

Comparison Chart of
Models and Marks

MODEL	MARK
LCD-A1504	A
LCD-A2004	B

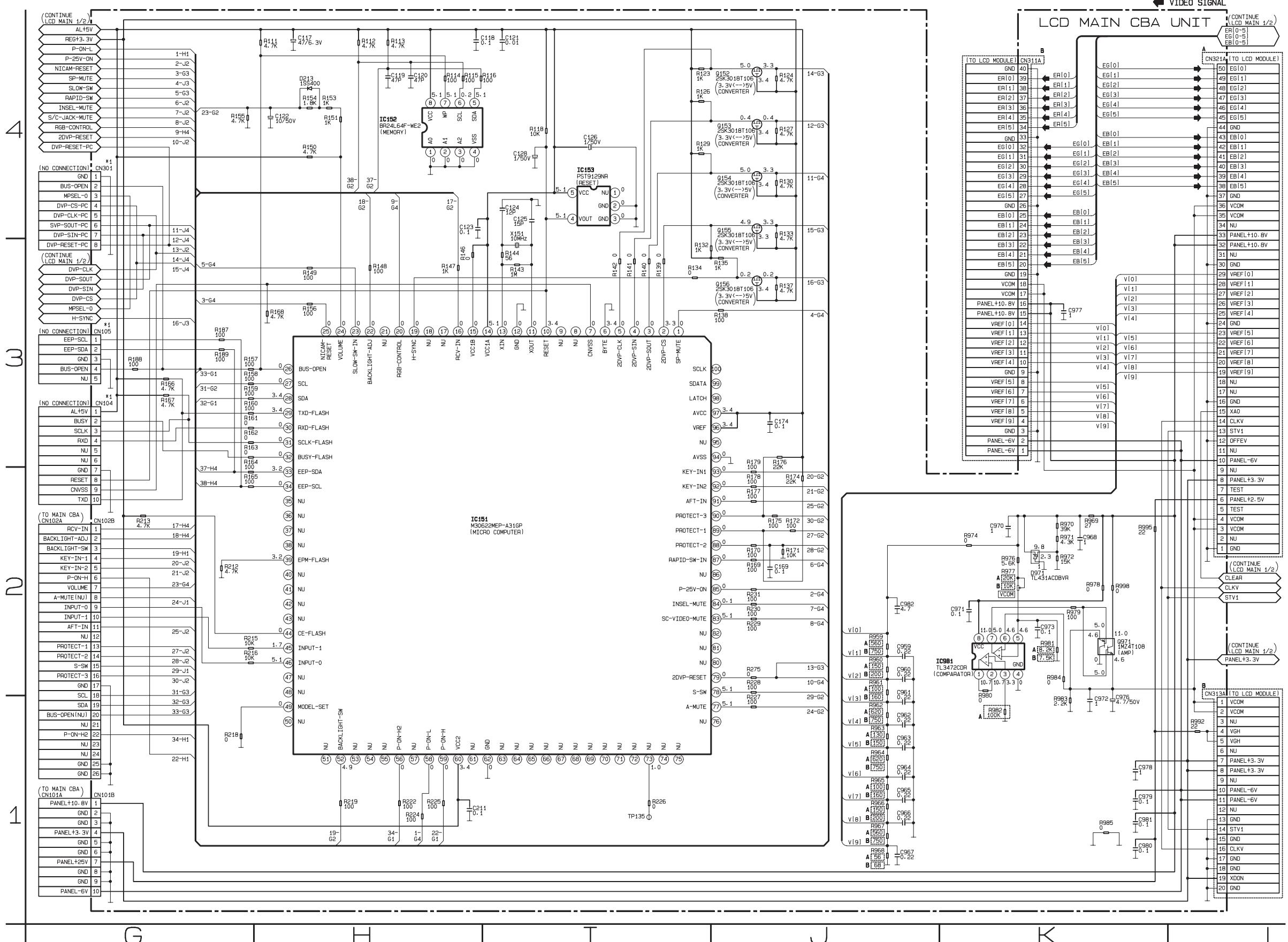


LCD Main 2/2 Schematic Diagram

*1 NOTE :
CN104, CN105, CN301 are used for adjustment at factory.

Comparison Chart of
Models and Marks

MODEL	MARK
LCD-A1504	A
LCD-A2004	B



Main CBA Top View

CAUTION !

For continued protection against fire hazard,
replace only with the same type fuse.

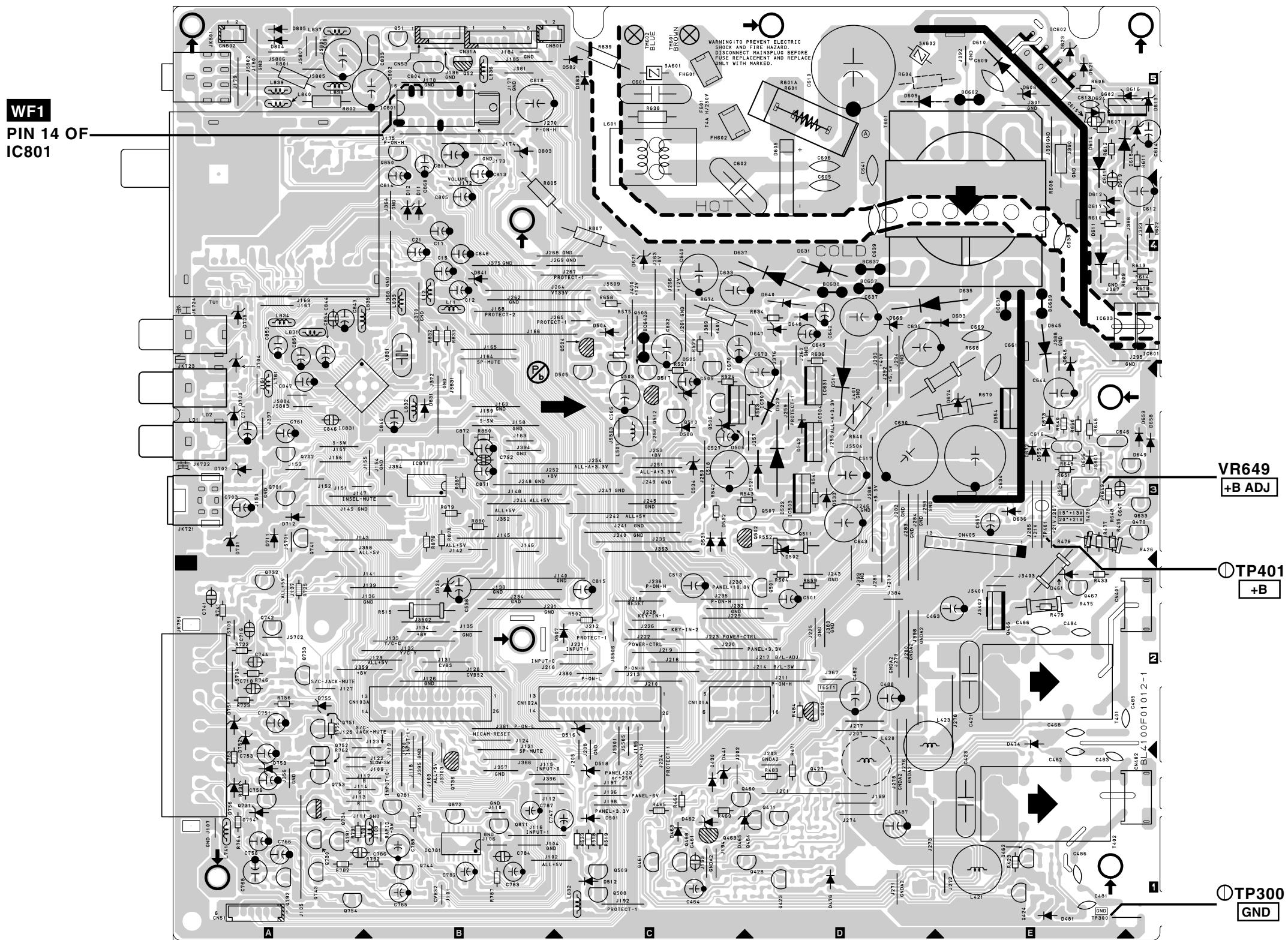
NOTE:

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

CAUTION !

Fixed voltage (or Auto voltage selectable) 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.

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 !

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.

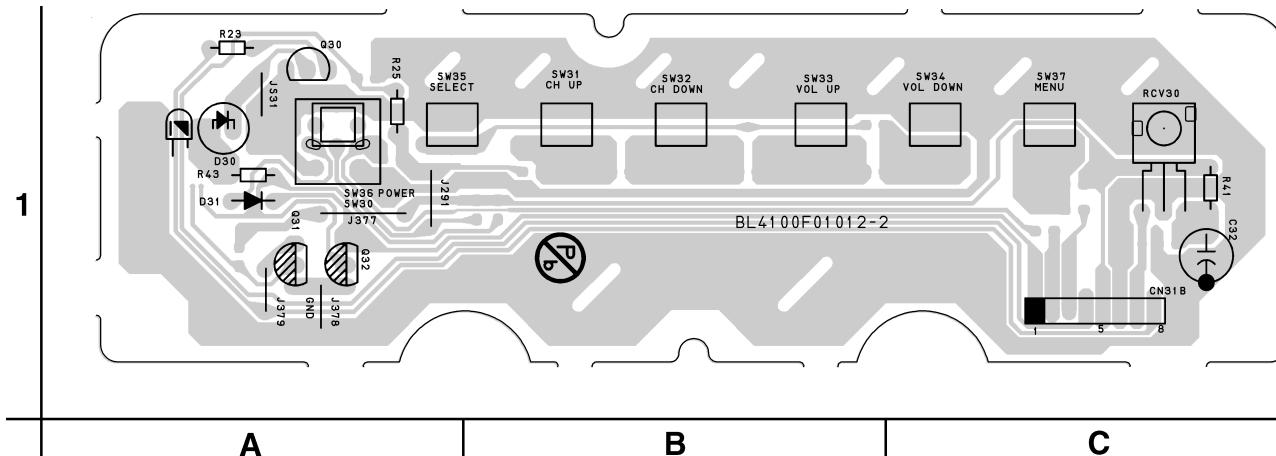
CAUTION !

Fixed voltage (or Auto voltage selectable) 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.

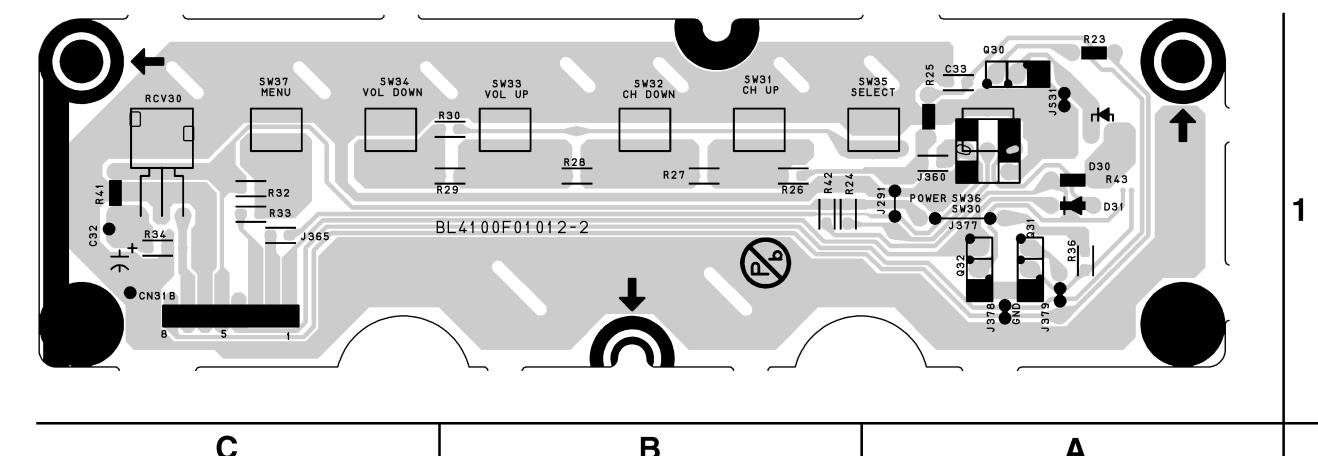
Because a hot chassis ground is present in the power
supply circuit, an isolation transformer must be used.
Also, in order to have the ability to increase the input
slowly, when troubleshooting this type power supply
circuit, a variable isolation transformer is required.



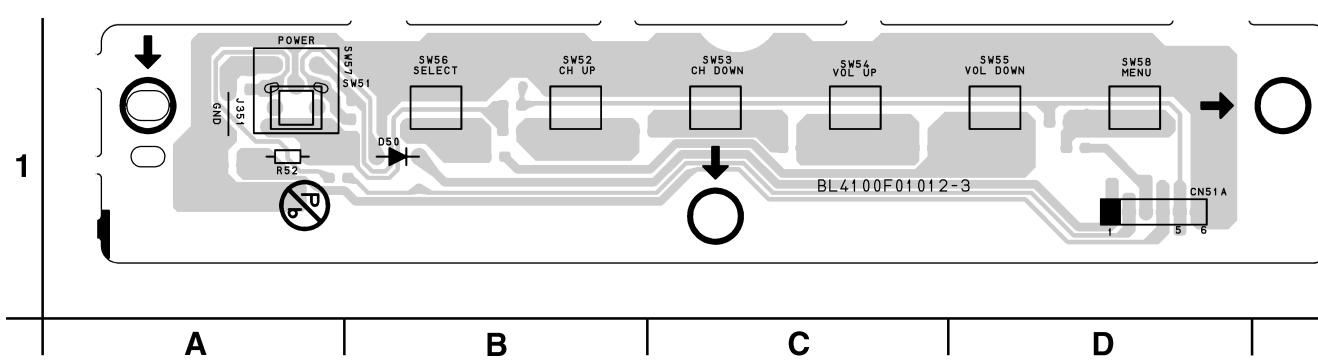
Function CBA Top View (A)



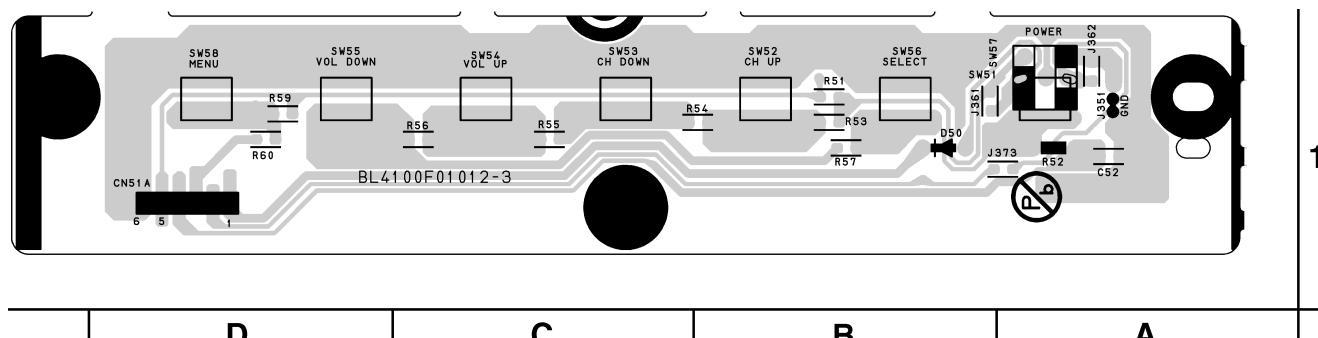
Function CBA Bottom View (A)



Function CBA Top View (B)



Function CBA Bottom View (B)



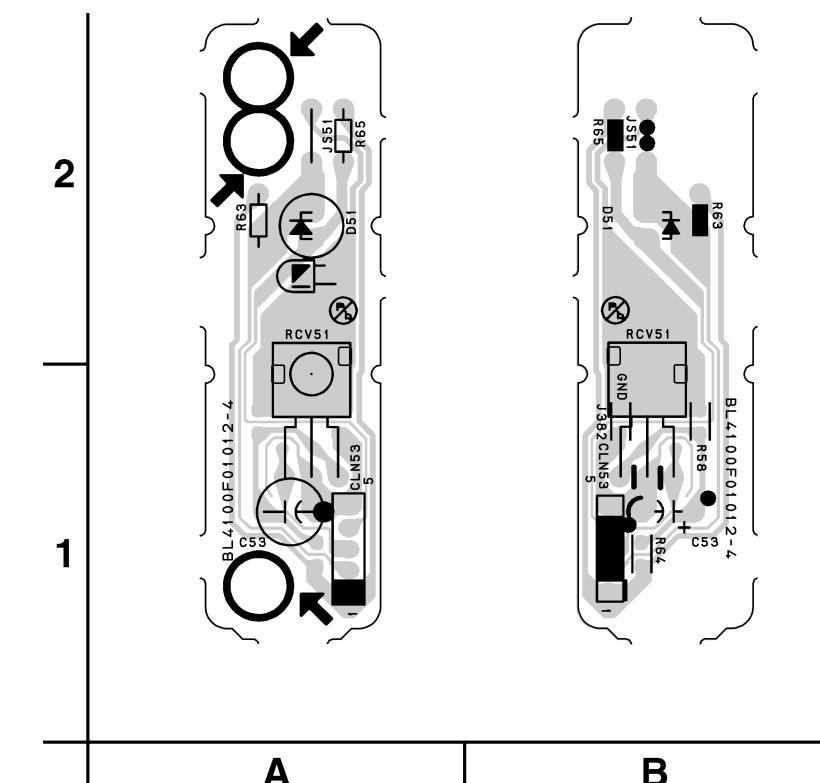
BL4100F01012-3

8-14

Comparison Chart of Models and Marks

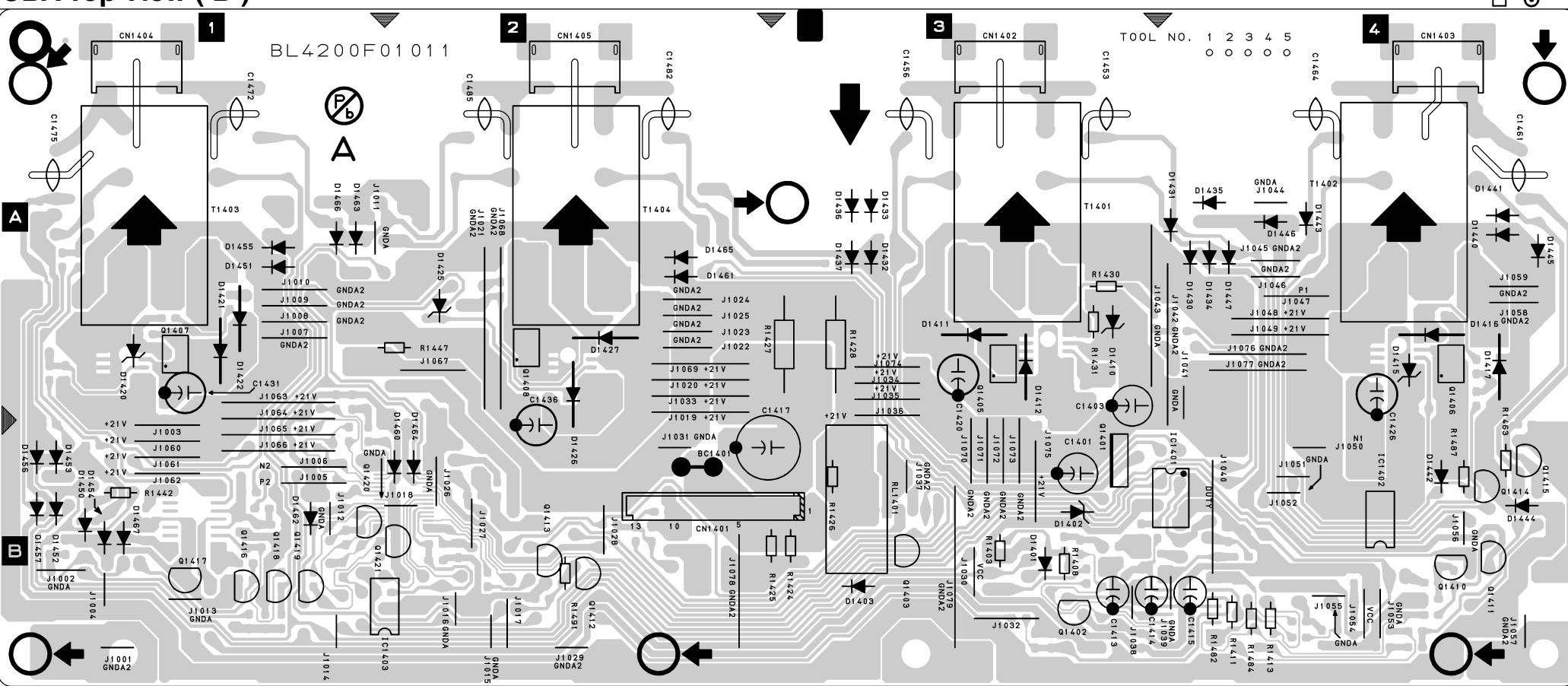
MODEL	MARK
LCD-A1504	A
LCD-A2004	B

IR Sensor CBA Top & Bottom View (B)



BL4100F01012-4

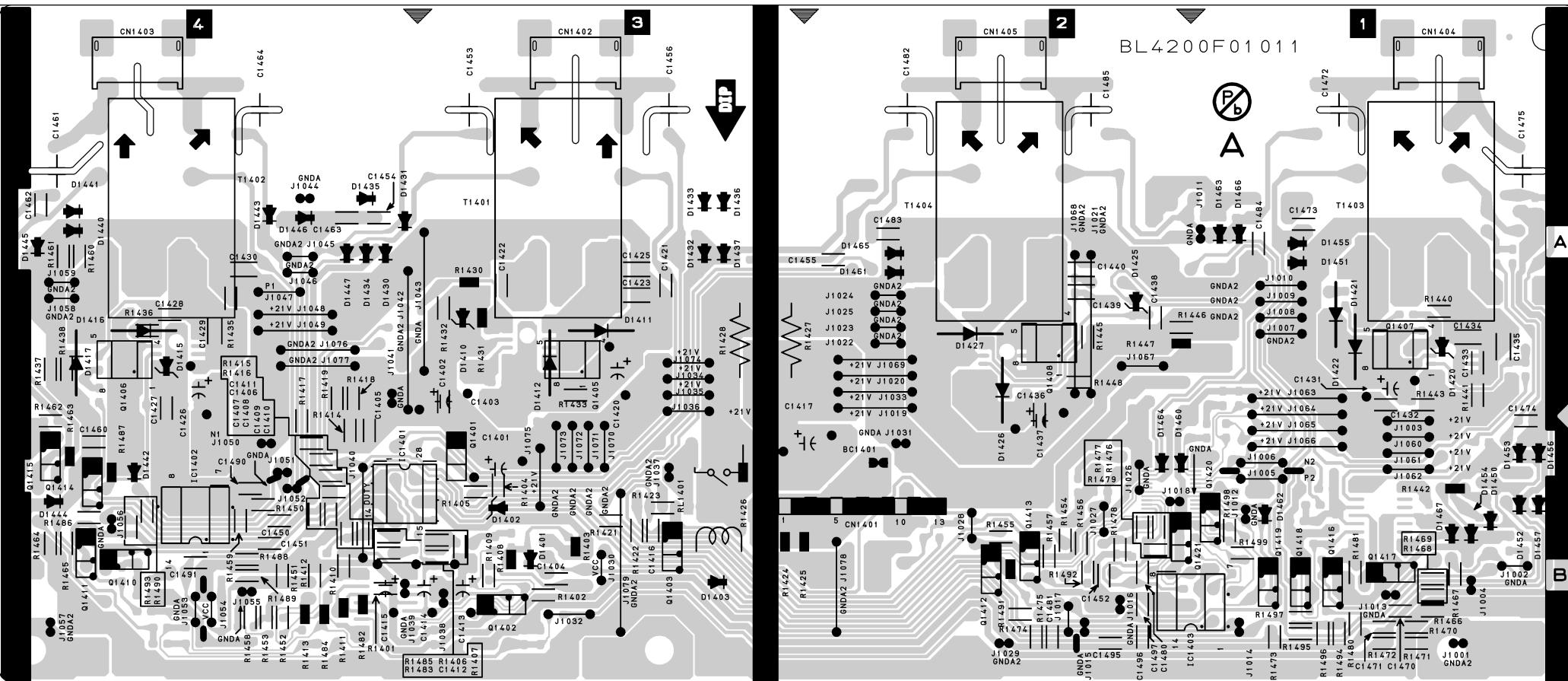
Inverter CBA Top View (B)



Comparison Chart of Models and Marks

MODEL	MARK
LCD-A1504	A
LCD-A2004	B

Inverter CBA Bottom View (B)

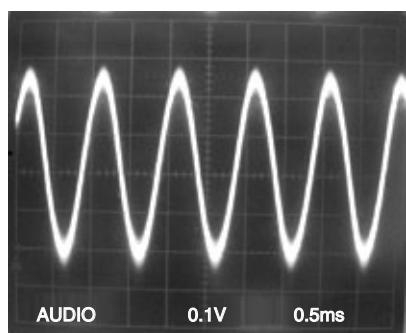


WAVEFORMS

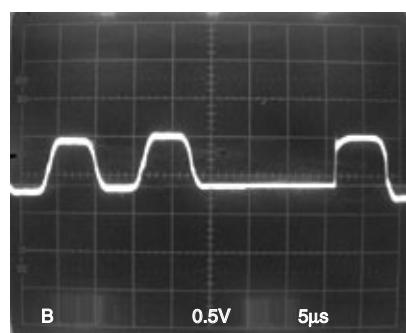
WF1 ~ WF8 = Waveforms to be observed at
Waveform check points.
(Shown in Schematic Diagram.)

Input: PAL Color Bar Signal (with 1kHz Audio Signal)

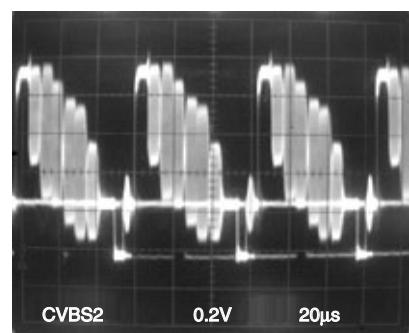
WF1 Pin 14 of IC801



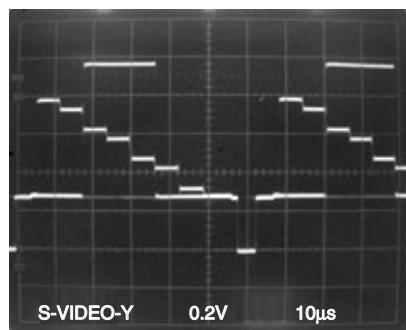
WF4 Q751 Emitter



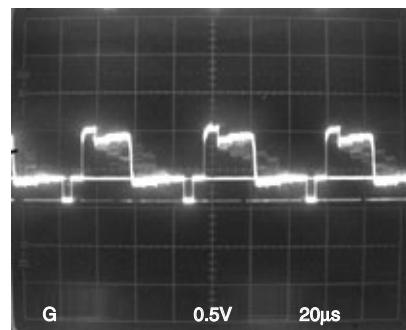
WF7 Q754 Emitter



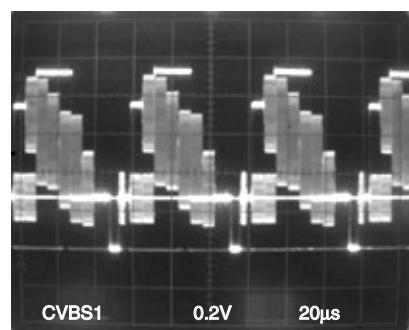
WF2 Q701 Emitter



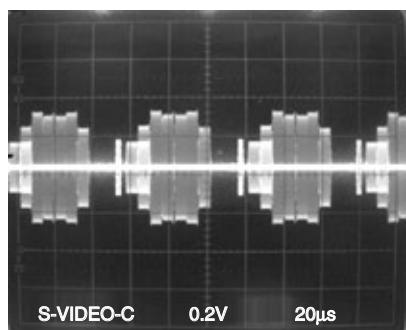
WF5 Q752 Emitter



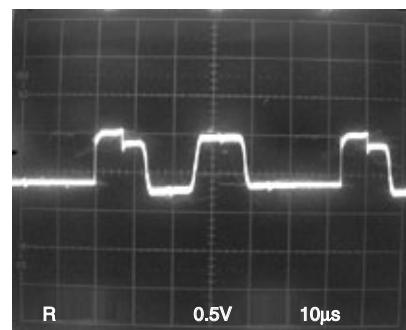
WF8 Q781 Emitter



WF3 Q702 Emitter



WF6 Q753 Emitter



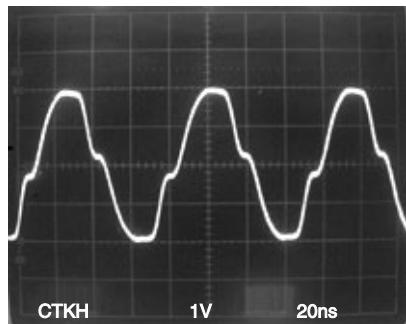
WF9 ~ WF14 = Waveforms to be observed at
Waveform check points.
(Shown in Schematic Diagram.)

Input: PAL Color Bar Signal (with 1kHz Audio Signal)

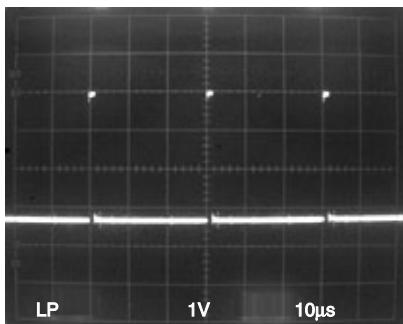
**Comparison Chart of
Models and Marks**

MODEL	MARK
LCD-A1504	A
LCD-A2004	B

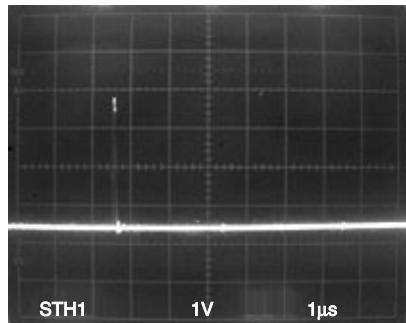
WF9 R997 (A)
R994 (B)



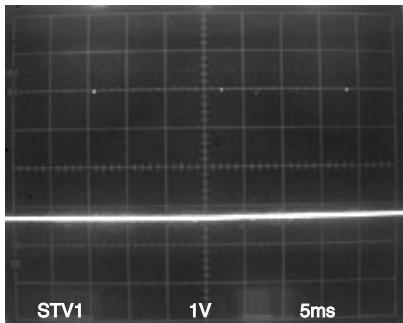
WF12 R904



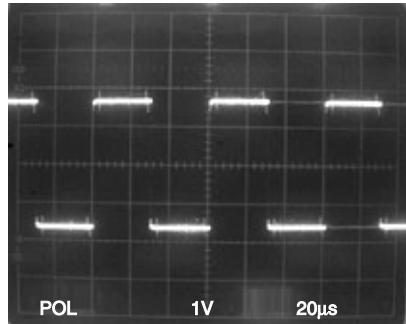
WF10 R902



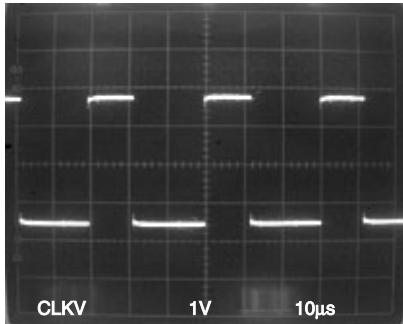
WF13 R907



WF11 R901



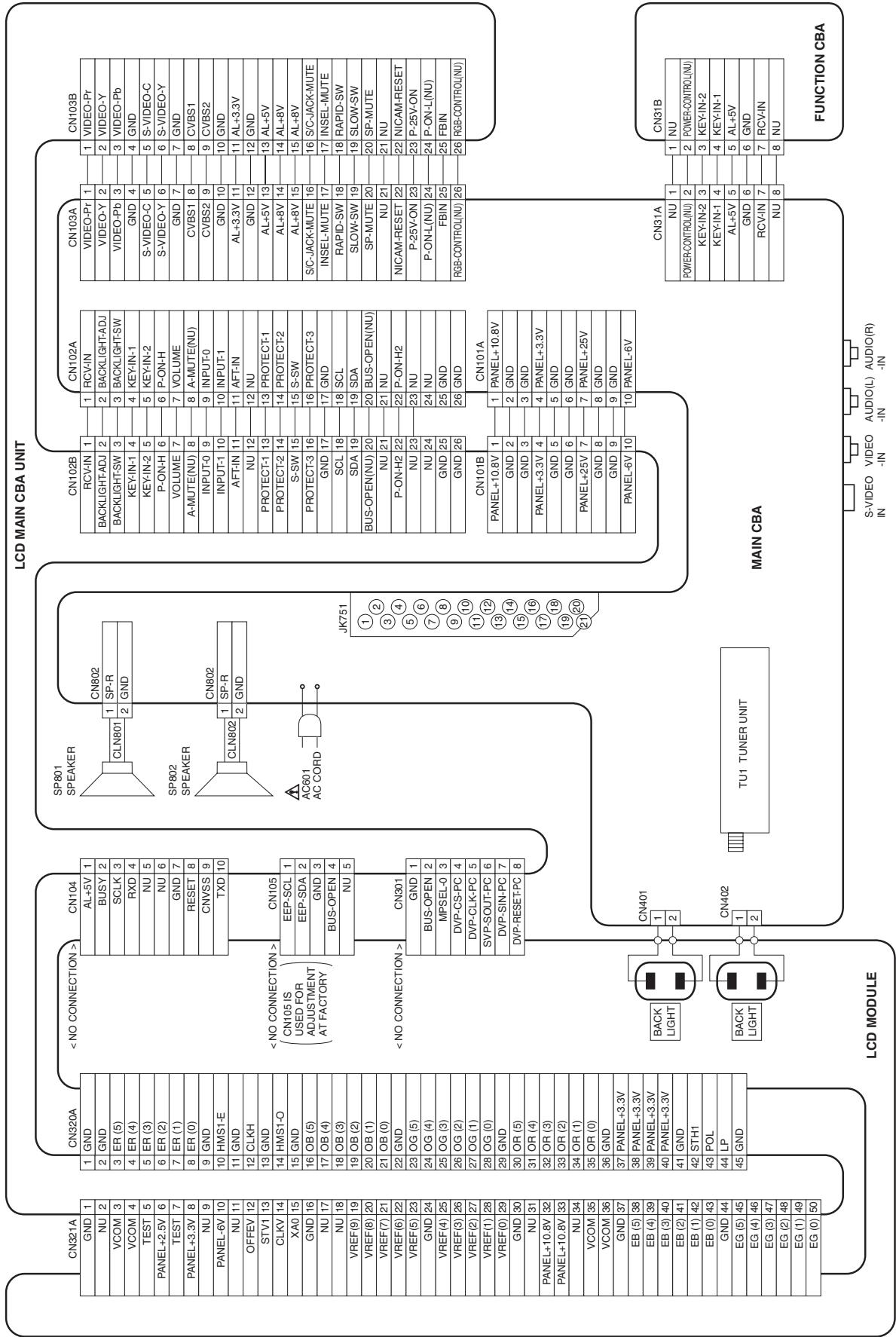
WF14 R905



WIRING DIAGRAMS (A)

Comparison Chart of
Models & Marks

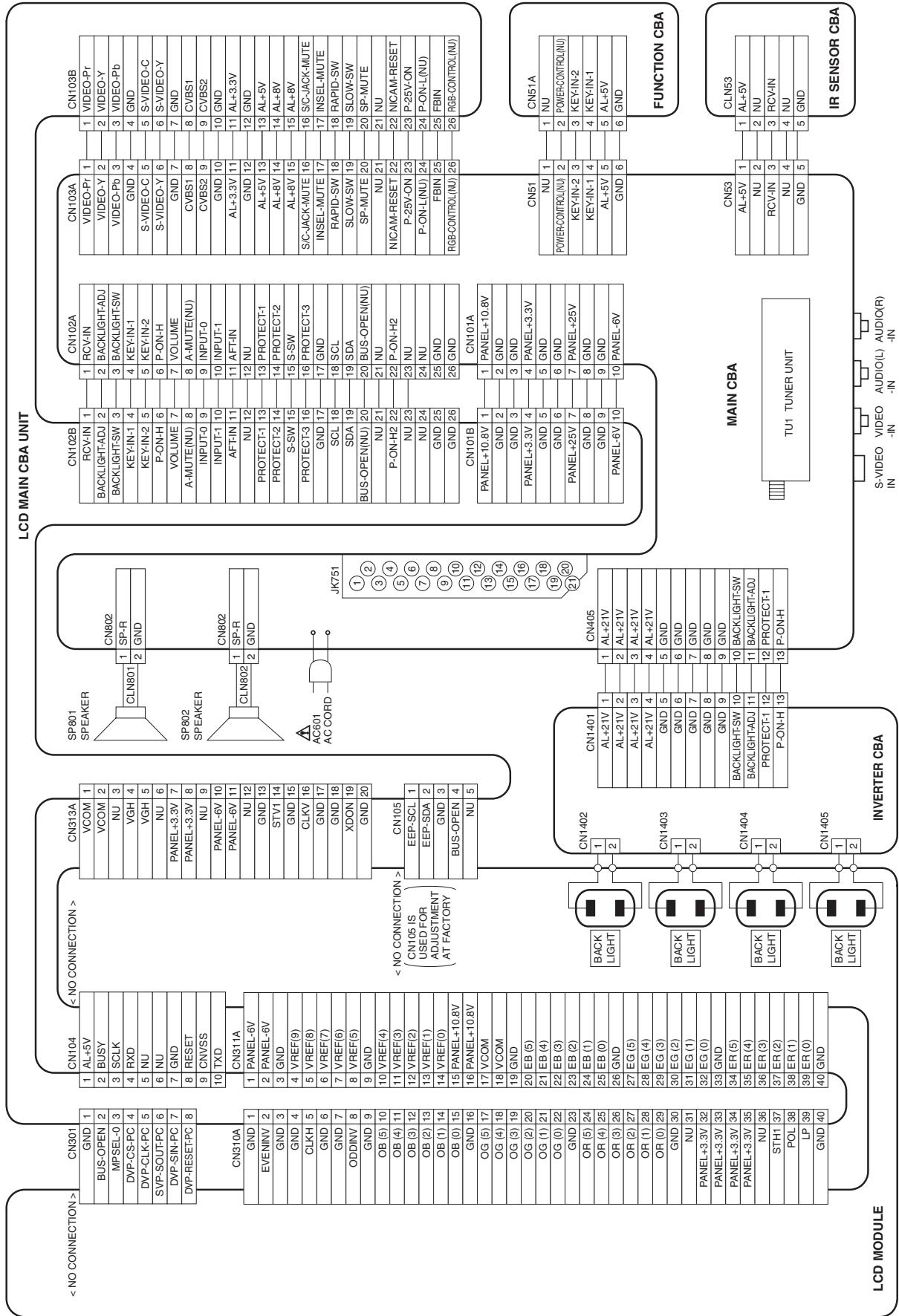
Model	Mark
LCD-A1504	A
LCD-A2004	B



WIRING DIAGRAMS (B)

Comparison Chart of
Models & Marks

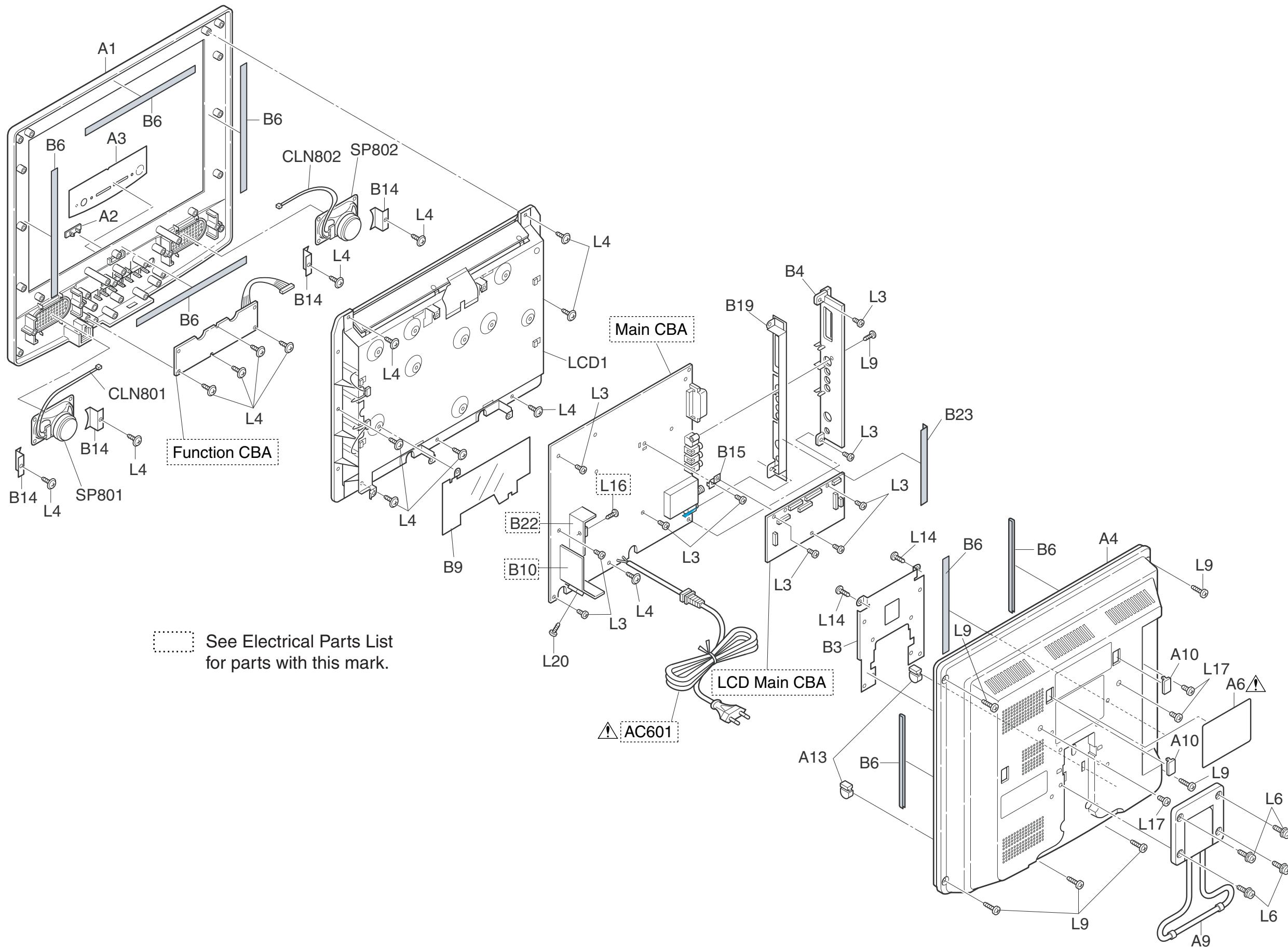
Model	Mark
LCD-A1504	A
LCD-A2004	B



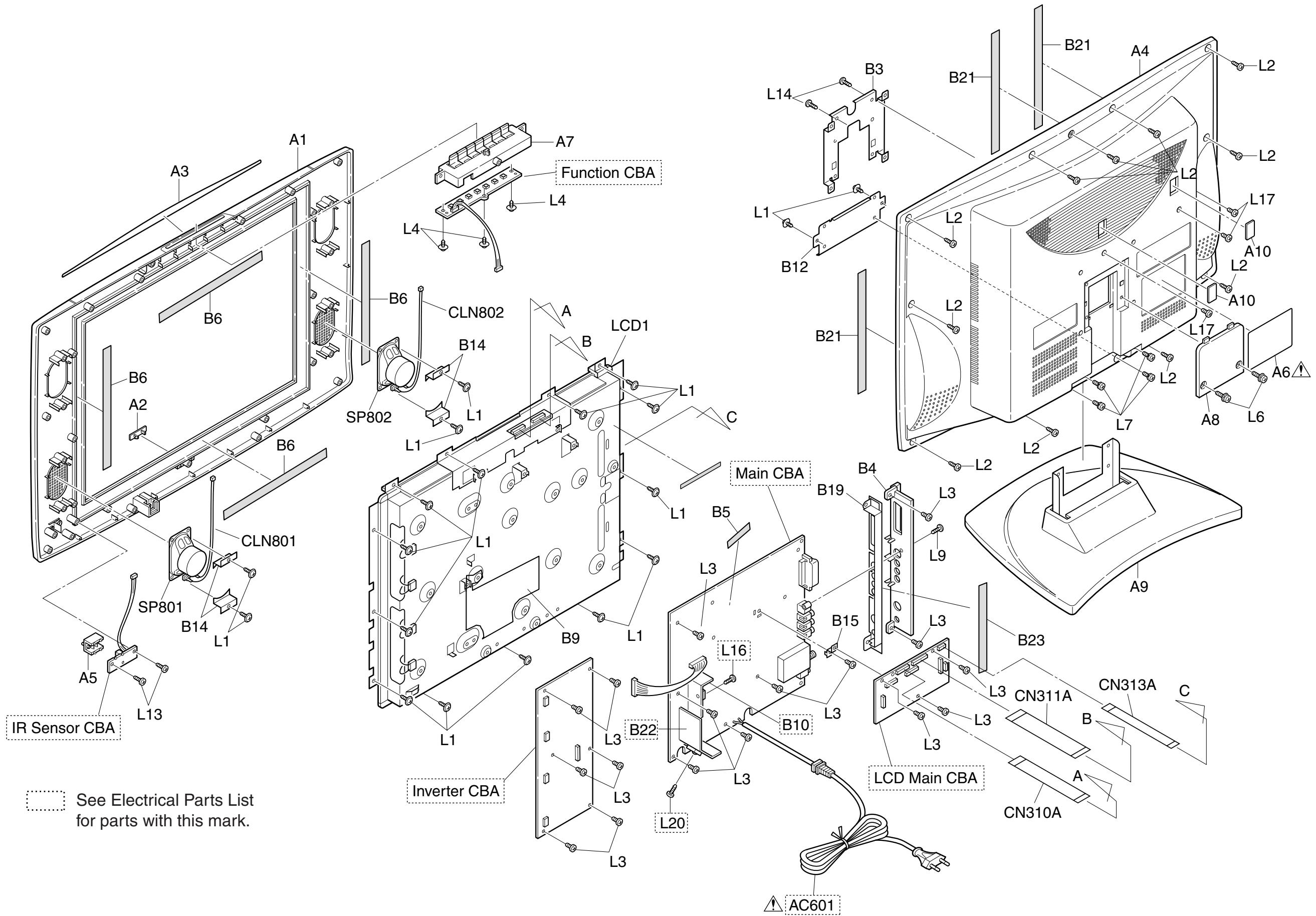
EXPLODED VIEWS

Cabinet

[LCD-A1504]

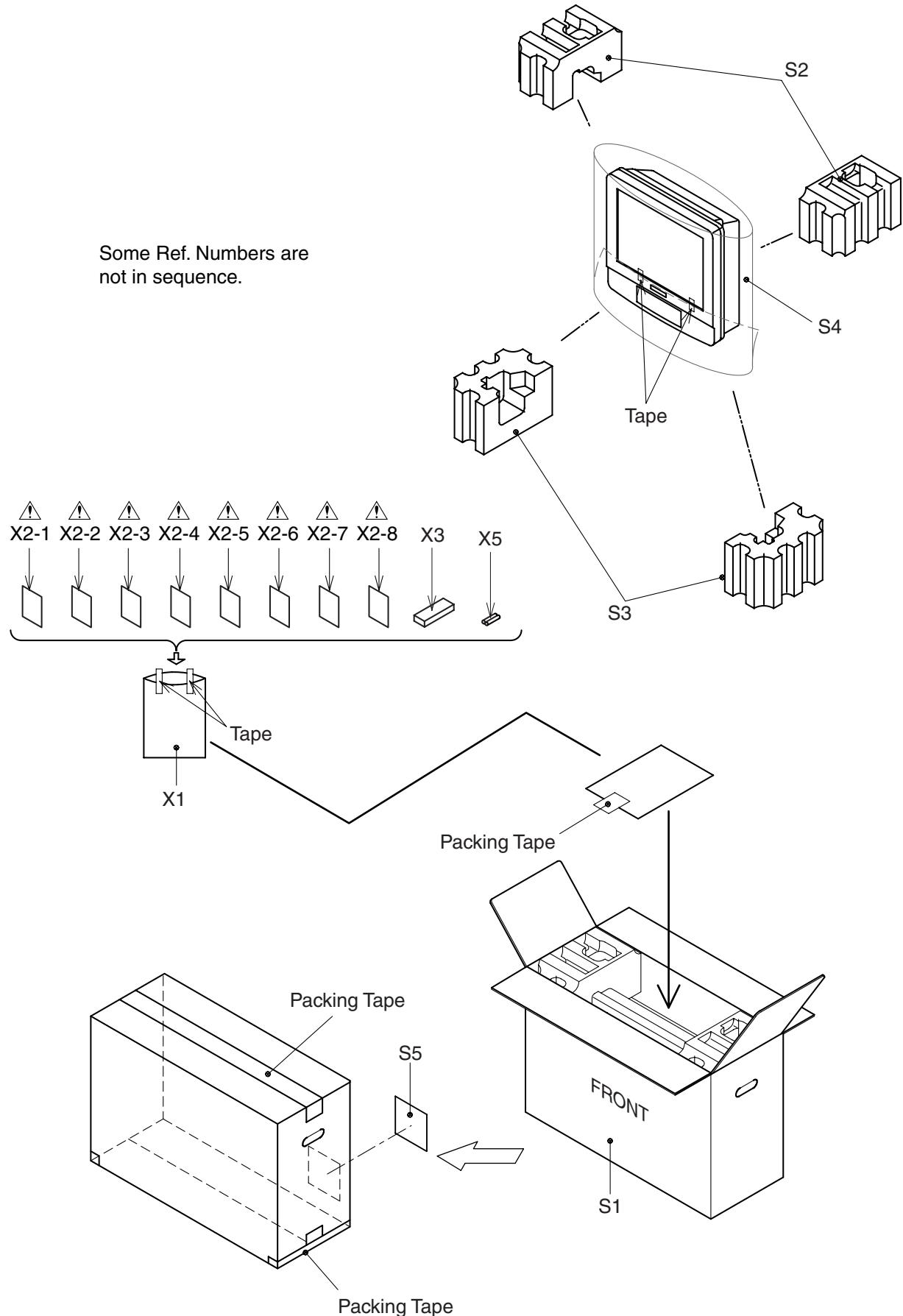


[LCD-A2004]

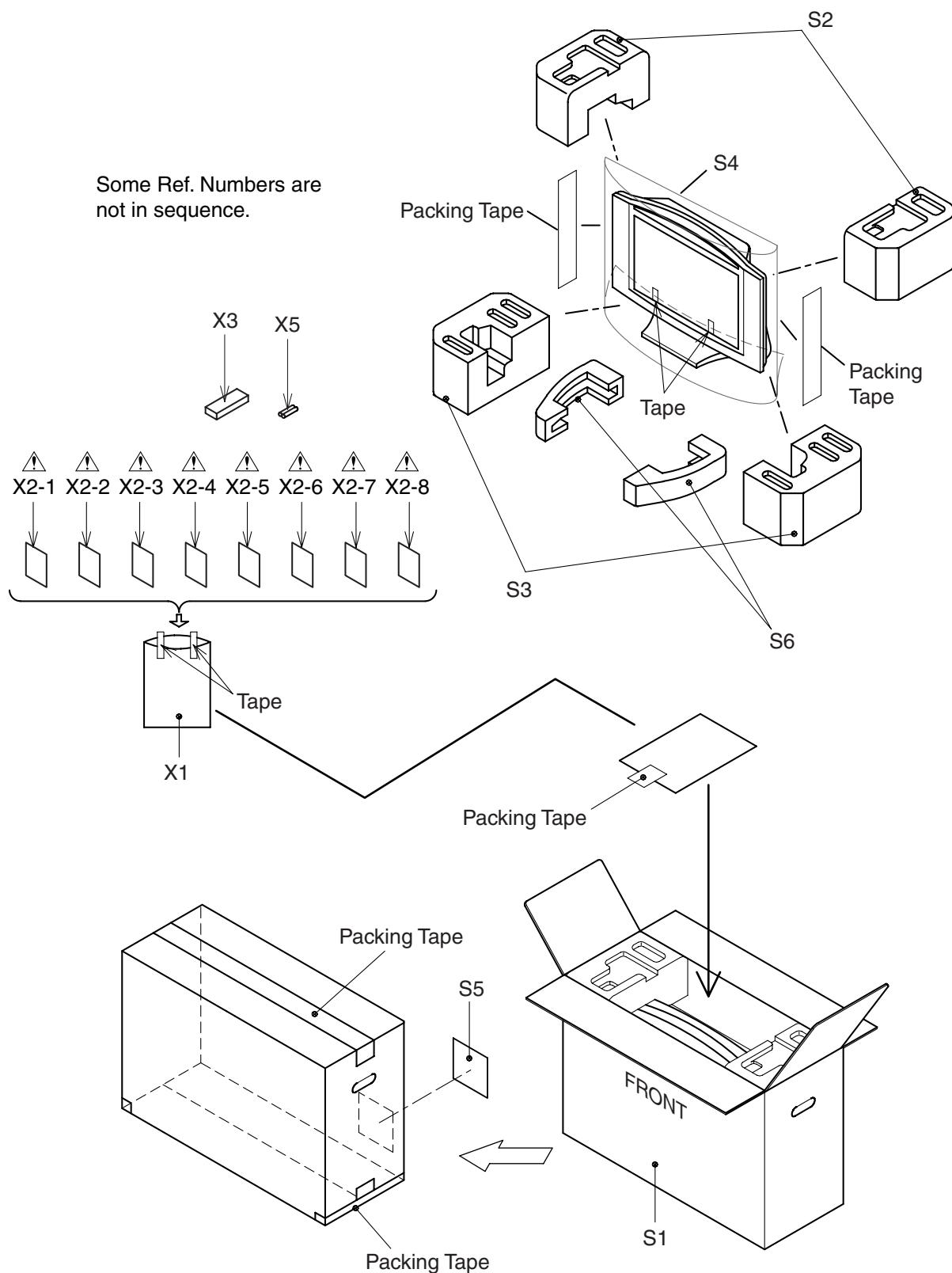


Packing

[LCD-A1504]



[LCD-A2004]



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.

NOTE: Parts that are not assigned part numbers (-----) are not available.

[LCD-A1504]

Ref. No.	Description	Part No.
A1	FRONT CABINET L4100EA	1EM220073
A2	BRAND BADGE L0230JA-FUNAI~	0EM409021A
A3	CONTROL PLATE L4100EA	1EM320137
A4	REAR CABINET L4100EA	1EM020116
A6	RATING LABEL L4100EA	-----
A9	PHOTO STAND ASSEMBLY L0114UE	0EMN02343A
A10	CONNECTER CAP L4100EA	1EM420634
A13	RUBBER FOOT L0200UA	0EM302002
B3	15V STAND HOLDER L4100EA	1EM320139
B4	JACK HOLDER L4100EA	1EM120097
B6	CLOTH(10X190XT0.3) L0200UA	1EM420019
B9	15V INSULATION SHEET L4100EA	1EM320142A
B14	SPEAKER HOLDER L0110UA	0EM407855C
B15	DIGITAL PCB HOLDER L4100EA	1EM420568
B19	JACK SHIELD L4100EA	1EM320140
B21	CLOTH(10X180XT0.5) L0336JG	0EM408827
B23	CLOTH(12X125XT:0.5) L0101JB	0EM408489
CLN801	SPEAKER WIRE WX1L4100-002	WX1L4100-002
CLN802	WIRE ASSEMBLY	WX1L9200-001
L3	SCREW, S-TIGHT M3X8 BIND HEAD+	GBMS3080
L4	SCREW, P-TIGHT M3X10 WASHER HEAD+	GCMP3100
L6	DOUBLE SEMS SCREW M4X12 L0110UA	0EM408039
L9	SCREW, P-TIGHT 3X10 BIND HEAD+	GBK3100
L14	P-TIGHT SCREW 3X8 BIND +	GBMP3080
L17	SCREW, S-TIGHT M3X8 BIND HEAD + BLK	GBKS3080
LCD1	LCD MODULE ASSEMBLY UB500XE	1FSA10028
SP801	SPEAKER S0407F10	DSD0807XQ002
SP802	SPEAKER S0407F10	DSD0807XQ002
PACKING		
S1	CARTON L4100EA	1EM420604
S2	STYROFOAM TOP L4100EA	1EM020123
S3	STYROFOAM BOTTOM L4100EA	1EM020124
S4	SET BAG L0110UA	0EM301908
S5	SERIAL NO. LABEL L4200EA	-----
ACCESSORIES		
X1	BAG POLYETHYLENE 235X365XT0.03	0EM408420
X2-1	OWNER'S MANUAL LCD-A1504-EN~	1EMN20204
X2-2	OWNER'S MANUAL LCD-A1504-FR~	1EMN20225
X2-3	OWNER'S MANUAL LCD-A1504-GE~	1EMN20218
X2-4	OWNER'S MANUAL LCD-A1504-IT~	1EMN20219
X2-5	OWNER'S MANUAL LCD-A1504-SP~	1EMN20228
X2-6	OWNER'S MANUAL LCD-A1504-DU~	1EMN20227
X2-7	OWNER'S MANUAL LCD-A1504-SW~	1EMN20226
X2-12	OWNERS MANUAL LCD-A1504"GR"	1EMN20237
X3	REMOTE CONTROL 192/ERC001/NE309RD	NE309RD
X5	DRY BATTERY R6P/2S or	XB0M451T0001
	DRY BATTERY(SUNRISE) R6SSE/2S	XB0M451MS002

[LCD-A2004]

Ref. No.	Description	Part No.
A1	FRONT CABINET L4200EA	1EM020125
A2	BRAND BADGE L0230JA-FUNAI~	0EM409021A
A3	CONTROL PLATE L4200EA	1EM220077
A4	REAR CABINET L4200EA	1EM020116
A5	SENSOR/LED LENS L0301UB	1EM220004
A6	RATING LABEL L4200EA	-----
A7	FUNCTION KNOB L4200EA	1EM320157
A8	REAR COVER L4200EA	1EM320158
A9	TILT STAND ASSEMBLY L0301UB	1EMN20039
A10	CONNECTER CAP L4200EA	1EM420585
B3	20V STAND HOLDER L4200EA	1EM320141
B4	JACK HOLDER L4100EA	1EM120097
B5	CLOTH(10X30XT0.5) B5900UA	0EM404486
B6	CLOTH(15X190XT:0.5) L0100JA	0EM407894
B9	20V INSULATION SHEET L4200EA	1EM320146
B12	20V TILT STAND HOLDER L4200EA	1EM320145
B14	SPEAKER HOLDER L0110UA	0EM407855C
B15	DIGITAL PCB HOLDER L4100EA	1EM420568
B19	JACK SHIELD L4100EA	1EM320140
B21	CLOTH(10X180XT0.5) L0336JG	0EM408827
B23	CLOTH(12X125XT:0.5) L0101JB	0EM408489
CLN801	SPEAKER WIRE WX1L4200-003	WX1L4200-003
CLN802	SPEAKER WIRE 2P 2P	WX1L0300-007
CN310A	FFC WIRE 40P WX1L4200-007	WX1L4200-007
CN311A	FFC WIRE 40P WX1L4200-007	WX1L4200-007
CN313A	FFC WIRE 20P WX1L4200-008	WX1L4200-008
L1	SCREW, P-TIGHT 3X12 WASHER HEAD+	GCMP3120
L2	SCREW, P-TIGHT 3X12 BIND HEAD+ BLK	GBKP3120
L3	SCREW, S-TIGHT M3X8 BIND HEAD+	GBMS3080
L4	SCREW, P-TIGHT M3X10 WASHER HEAD+	GCMP3100
L6	DOUBLE SEMS SCREW M4X9 L0130UA	0EM408146
L7	DOUBLE SEMS SCREW M4X12 + BLAK	FPK34120
L9	SCREW, P-TIGHT 3X10 BIND HEAD+	GBK3100
L13	SCREW, P-TIGHT 3X12 BIND HEAD+	GBMP3120
L14	P-TIGHT SCREW 3X8 BIND +	GBMP3080
L17	SCREW, S-TIGHT M3X8 BIND HEAD + BLK	GBKS3080
LCD1	LCD MODULE ASSEMBLY UC000XE	1FSA10030
SP801	SPEAKER S0407F10	DSD0807XQ002
SP802	SPEAKER S0407F10	DSD0807XQ002
PACKING		
S1	CARTON L4200EA	1EM420606
S2	STYROFOAM TOP L0301UB	1EM020018A
S3	STYROFOAM BOTTOM L0301UB	1EM020019
S4	SET BAG L0301UB	1EM320014
S5	SERIAL NO. LABEL L4200EA	-----
S6	STYROFOAM STAND BOTTOM L0301UB	1EM020020A
ACCESSORIES		
X1	BAG POLYETHYLENE 235X365XT0.03	0EM408420
X2-1	OWNER'S MANUAL LCD-A1504-EN~	1EMN20204
X2-2	OWNER'S MANUAL LCD-A1504-FR~	1EMN20225
X2-3	OWNER'S MANUAL LCD-A1504-GE~	1EMN20218
X2-4	OWNER'S MANUAL LCD-A1504-IT~	1EMN20219
X2-5	OWNER'S MANUAL LCD-A1504-SP~	1EMN20228
X2-6	OWNER'S MANUAL LCD-A1504-DU~	1EMN20227
X2-7	OWNER'S MANUAL LCD-A1504-SW~	1EMN20226
X2-12	OWNERS MANUAL LCD-A1504"GR"	1EMN20237
X3	REMOTE CONTROL 192/ERC001/NE309RD	NE309RD
X5	DRY BATTERY R6P/2S or	XB0M451T0001
	DRY BATTERY(SUNRISE) R6SSE/2S	XB0M451MS002

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 are 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%

Comparison Chart of Models and Marks

Model	Mark
LCD-A1504	A
LCD-A2004	B

LCD MAIN CBA UNIT

Ref. No.	Mark	Description	Part No.
	A	LCD MAIN CBA UNIT	1ESA10479
	B	LCD MAIN CBA UNIT	1ESA10487

MMA CBA

Ref. No.	Mark	Description	Part No.
	A	MMA CBA	1ESA10481
	B	MMA CBA Consists of the following:	1ESA10489

		MAIN CBA FUNCTION CBA IR SENSOR CBA	----- ----- -----
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MAIN CBA

Ref. No.	Mark	Description	Part No.
		MAIN CBA Consists of the following:	-----

CAPACITORS

C11		CHIP CERAMIC CAP(1608) B K 0.01μF/50V	CHD1JK30B103
C12		ELECTROLYTIC CAP 100μF/6.3V M or	CE0KMASDL101
		ELECTROLYTIC CAP 100μF/6.3V M	CE0KMASTL101
C14		CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C15		ELECTROLYTIC CAP 100μF/10V M or	CE1AMASDL101
		ELECTROLYTIC CAP 100μF/10V M	CE1AMASTL101
C16		CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C17		ELECTROLYTIC CAP 1μF/50V M or	CE1JMASDL010
		ELECTROLYTIC CAP 1μF/50V M or	CE1JMASDL1R0
		ELECTROLYTIC CAP 1μF/50V M	CE1JMASTL1R0
C18		CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C19		CHIP CERAMIC CAP. B K 820pF/50V	CHD1JK30B821
C20		CHIP CERAMIC CAP. B K 820pF/50V	CHD1JK30B821
C21		ELECTROLYTIC CAP 47μF/16V M or	CE1CMASDL470
		ELECTROLYTIC CAP 47μF/16V M	CE1CMASTL470
C421	A	PP CAP. 0.13μF/250V J	CT2E134MS041
C423	A	PP CAP. 0.13μF/250V J	CT2E134MS041
C440	A	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZ30F105

Ref. No.	Mark	Description	Part No.
C441	A	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZ30F105
C451	A	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZ30F105
C452	A	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZ30F105
C453	A	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZ30F105
C461	A	CERAMIC CAP.(AX) B K 0.1μF/50V	CA1J104TU011
C462	A	ELECTROLYTIC CAP. 220μF/16V M or	CE1CMASDL221
	A	ELECTROLYTIC CAP. 220μF/16V M	CE1CMASTL221
C463	A	ELECTROLYTIC CAP. 100μF/16V M or	CE1CMASDL101
	A	ELECTROLYTIC CAP. 100μF/16V M	CE1CMASTL101
C464	A	ELECTROLYTIC CAP. 2.2μF/50V M H7	CE1JMAVSL2R2
C466	A	CERAMIC CAP. SL D 10pF/ 3KV	CCD3FDASL100
C468	A	CERAMIC CAP. SL D 10pF/ 3KV	CCD3FDASL100
C469	A	CHIP CERAMIC CAP.(1608) B K 0.047μF/50V	CHD1JK30B473
C480	A	CHIP CERAMIC CAP.(1608) B K 0.047μF/50V	CHD1JK30B473
C481	A	CERAMIC CAP. SL D 10pF/ 3KV	CCD3FDASL100
C482	A	CERAMIC CAP. SL D 10pF/ 3KV	CCD3FDASL100
C483	A	CERAMIC CAP. SL D 10pF/ 3KV	CCD3FDASL100
C484	A	CERAMIC CAP. SL D 10pF/ 3KV	CCD3FDASL100
C485	A	CERAMIC CAP. SL D 10pF/ 3KV	CCD3FDASL100
C486	A	CERAMIC CAP. SL D 10pF/ 3KV	CCD3FDASL100
C487	A	ELECTROLYTIC CAP. 100μF/16V M or	CE1CMASDL101
	A	ELECTROLYTIC CAP. 100μF/16V M	CE1CMASTL101
C488	A	ELECTROLYTIC CAP. 100μF/16V M or	CE1CMASDL101
	A	ELECTROLYTIC CAP. 100μF/16V M	CE1CMASTL101
C501		ELECTROLYTIC CAP. 22μF/50V M or	CE1JMASDL220
		ELECTROLYTIC CAP. 22μF/50V M	CE1JMASTL220
C502		CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C503		CHIP CERAMIC CAP.(1608) B K 0.1μF/50V	CHD1JK30B104
C504	A	CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C505		ELECTROLYTIC CAP. 220μF/16V M or	CE1CMASDL221
		ELECTROLYTIC CAP. 220μF/16V M	CE1CMASTL221
C506		CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C507		CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C509		ELECTROLYTIC CAP. 100μF/10V M or	CE1AMASDL101
		ELECTROLYTIC CAP. 100μF/10V M	CE1AMASTL101
C510		CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C512		CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C513		ELECTROLYTIC CAP. 220μF/6.3V M or	CE0KMASDL221
		ELECTROLYTIC CAP. 220μF/6.3V M	CE0KMASTL221
C514		CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C517		ELECTROLYTIC CAP. 330μF/50V M or	CE1JMZNDL331
		ELECTROLYTIC CAP. 330μF/50V M	CE1JMZPDL331
C518		ELECTROLYTIC CAP. 470μF/16V M or	CE1CMASDL471
		ELECTROLYTIC CAP. 470μF/16V M	CE1CMASTL471
C519		CHIP CERAMIC CAP.(1608) B K 0.22μF/25V	CHD1EK30B224
C524		CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C527		ELECTROLYTIC CAP. 10μF/50V M or	CE1JMASDL100
		ELECTROLYTIC CAP. 10μF/50V M	CE1JMASTL100
C528		CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C533		CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C536		ELECTROLYTIC CAP. 330μF/6.3V M or	CE0KMASDL331
		ELECTROLYTIC CAP. 330μF/6.3V M	CE0KMASTL331
C539		CHIP CERAMIC CAP.(1608) CH J 100pF/50V	CHD1JJ3CH101
C601△		FILM CAP(MP) 0.1μF/250V K or	CT2E104DC011
△		LINE ACROSS CAP. 0.1U/250V or	CT2E104DC015

Ref. No.	Mark	Description	Part No.
R1483	B	CHIP RES.(1608) 1/10W J 680k Ω	RRXAJR5Z0684
R1484	B	CARBON RES. 1/4W J 10k Ω	RCX4JATZ0103
R1485	B	CHIP RES.(1608) 1/10W J 680k Ω	RRXAJR5Z0684
R1486	B	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R1487	B	CARBON RES. 1/4W J 10k Ω	RCX4JATZ0103
R1488	B	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R1489	B	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R1490	B	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R1491	B	CARBON RES. 1/4W J 10k Ω	RCX4JATZ0103
R1492	B	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R1493	B	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R1494	B	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R1495	B	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R1496	B	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R1497	B	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R1498	B	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R1499	B	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
MISCELLANEOUS			
BC1401	B	PCB JUMPER D0.6-P5.0	JW5.0T
RL1401	B	POWER RELAY SDT-S-112LMR	MRNDC12QN014
T1401 \triangle	B	INVERTER TRANS ETJV25ZB12AC	LTZ00CPMS004
T1402 \triangle	B	INVERTER TRANS ETJV25ZB12AC	LTZ00CPMS004
T1403 \triangle	B	INVERTER TRANS ETJV25ZB12AC	LTZ00CPMS004
T1404 \triangle	B	INVERTER TRANS ETJV25ZB12AC	LTZ00CPMS004

LCD-A1504/LCD-A2004
L4100EA/L4200EA
2005-2-23