

PHILIPS

24" LCD TV chassis PL13.25

Service Manual

Contents

24PFL4508/F4


PHILIPS

(Serial No.: ME1)

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IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all P&F Equipment. The service procedures recommended by P&F 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. P&F could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, P&F has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by P&F 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.

| |
|---|
| <p>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.</p> |
|---|

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SPECIFICATIONS

< TUNER/NTSC > (VHF/UHF Input)

ANT. Input ----- 75 Ω Unbal., F type

| Description | Condition | Unit | Nominal | Limit |
|------------------------|--------------------------------|------|---------|-------|
| 1. AFT Pull-In Range | --- | kHz | --- | +300 |
| | --- | kHz | --- | -300 |
| 2. Synchronizing Sens. | VHF Lo 67.25MHz (TV.ch.04) | dBu | 18 | 20 |
| | VHF Hi 265.25MHz (CA.ch.31) | dBu | 18 | 20 |
| | UHF 801.25MHz (TV.ch.69) | dBu | 18 | 23 |
| | | | | |
| 3. BEAT Confirmation | VHF Lo 67.25MHz (TV.ch.04) | dB | --- | 47 |

< LCD PANEL >

| Description | Condition | Unit | Nominal | Limit |
|----------------------------|------------|--------|-----------|-----------|
| 1. Native Pixel Resolution | Horizontal | pixels | 1366 | --- |
| | Vertical | pixels | 768 | --- |
| 2. Viewing Angle | Horizontal | ° | -85 to 85 | -75 to 75 |
| | Vertical | ° | -80 to 80 | -70 to 70 |

< VIDEO >

| Description | Condition | Unit | Nominal | Limit |
|---------------------------------|---|-------------------|---------|-------------|
| 1. Over Scan | Horizontal | % | 5 | 5 \pm 5 |
| | Vertical | % | 5 | 5 \pm 5 |
| 2. Color Temperature | AT 70% WHITE FIELD | °K | 12000 | --- |
| | x | | 0.272 | \pm 0.008 |
| | y | | 0.278 | \pm 0.008 |
| 3. Resolution (composite video) | Horizontal | line | 400 | --- |
| | Vertical | line | 350 | --- |
| 4. Brightness | AT 100% WHITE FIELD (AT RETAIL MODE) | cd/m ² | 300 | --- |

< AUDIO >

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

| Description | Condition | Unit | Nominal | Limit |
|-------------------------|---------------------------------------|------|-----------|--------------|
| 1. Audio Output Power | 500mVrms input Lch/Rch Vol: MAX | W | 5/5 | 4/4 |
| 2. Audio Distortion | 500mW: Lch/Rch | % | 1.5/1.5 | 3.0/3.0 |
| 3. Audio Freq. Response | -6dB: Lch | Hz | 70 to 10k | --- |
| | -6dB: Rch | Hz | 70 to 10k | --- |
| 4. Audio S/N | Lch/Rch | dB | --- | \geq 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.

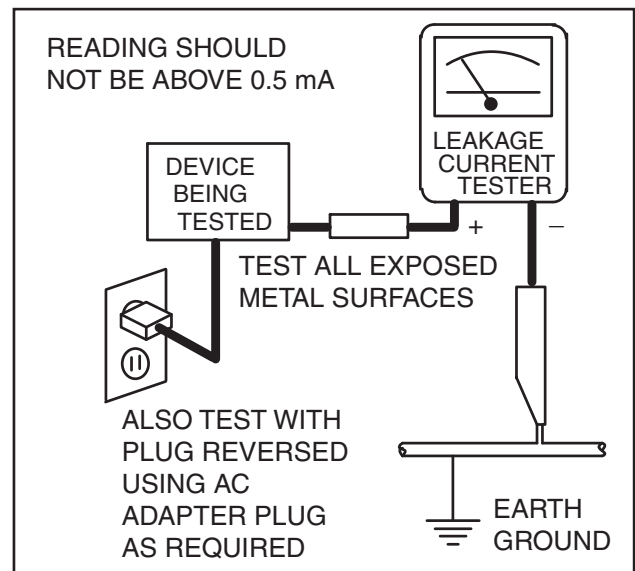
IMPORTANT SAFETY PRECAUTIONS

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 1.0 V 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 (11~13 lb) 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.** When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC supply outlet.
- L.** 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') |
|-----------------|---|
| 220 to 240 V | $\geq 3\text{mm}(d)$ $\geq 8\text{mm}(d')$ |

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.

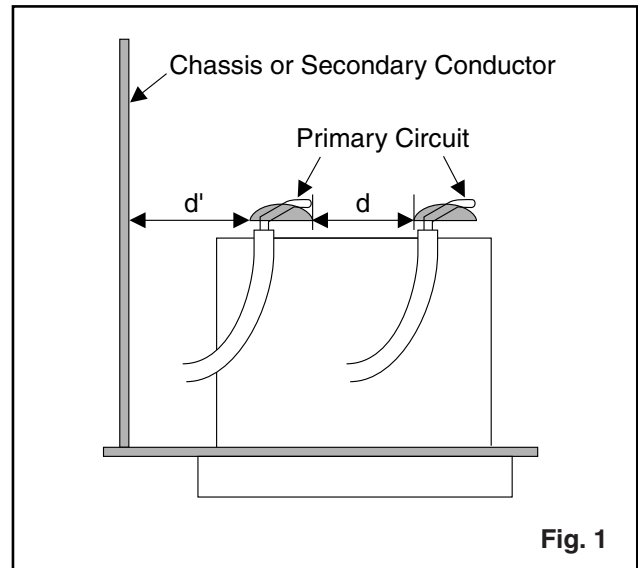


Fig. 1

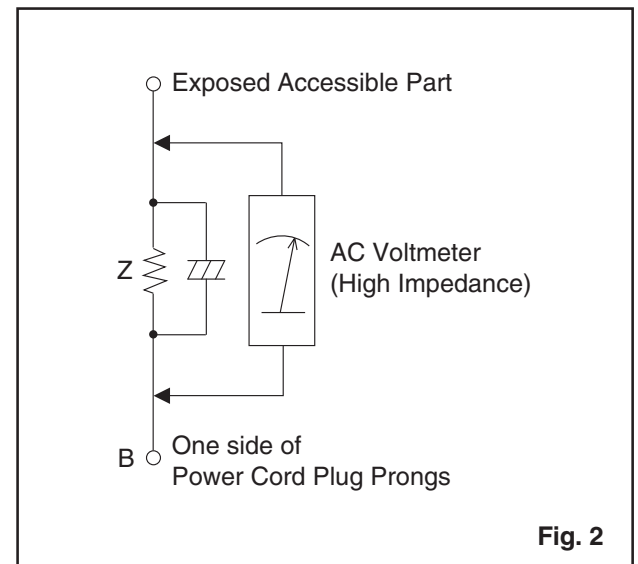


Fig. 2

Table 2: Leakage current ratings for selected areas

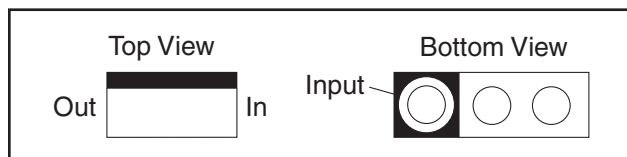
| AC Line Voltage | Load Z | Leakage Current (i) | One side of power cord plug prongs (B) to: |
|-----------------|--|---|--|
| 220 to 240 V | 2k Ω RES. Connected in parallel | $i \leq 0.7\text{mA AC Peak}$ $i \leq 2\text{mA DC}$ | RF or Antenna terminals |
| | 50k Ω RES. Connected in parallel | $i \leq 0.7\text{mA AC Peak}$ $i \leq 2\text{mA DC}$ | A/V Input, Output |

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

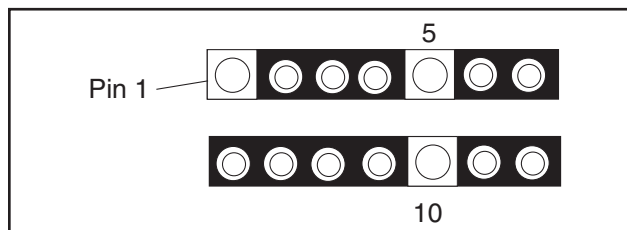
STANDARD NOTES FOR SERVICING

Circuit Board Indications

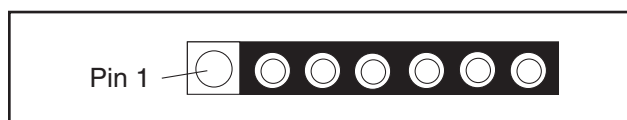
1. The output pin of the 3 pin Regulator ICs is indicated as shown.



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

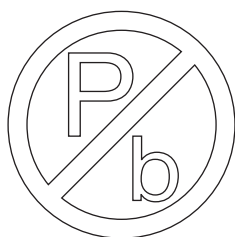


3. The 1st pin of every male connector is indicated as shown.



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)

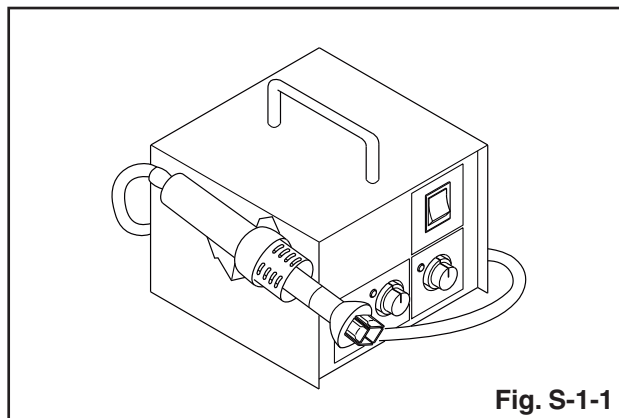


Fig. S-1-1

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.

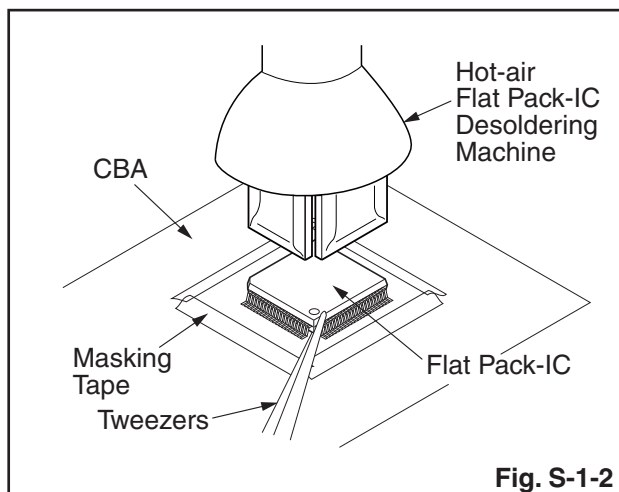
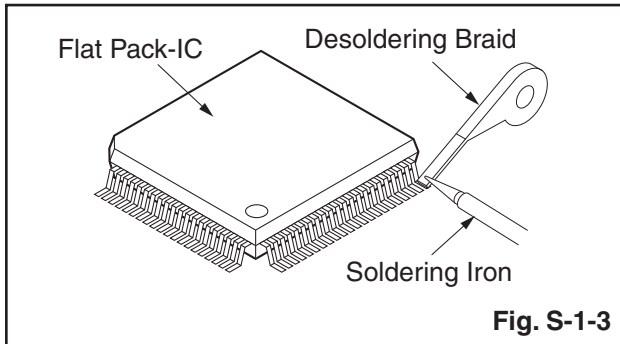


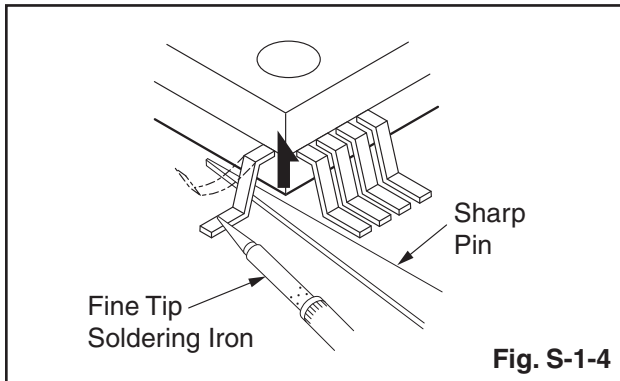
Fig. S-1-2

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)

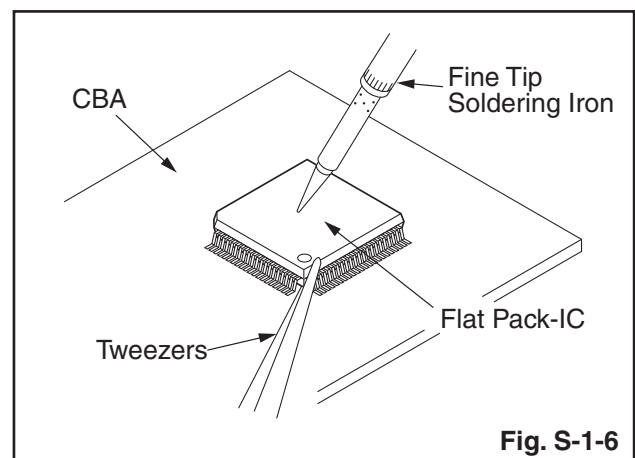
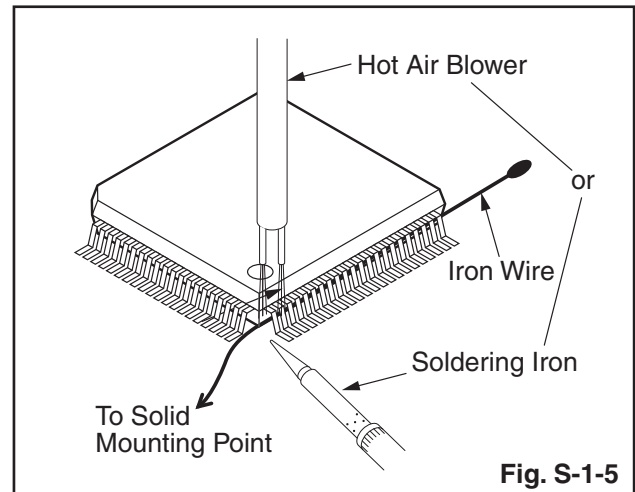


3. Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
4. Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

With Iron Wire:

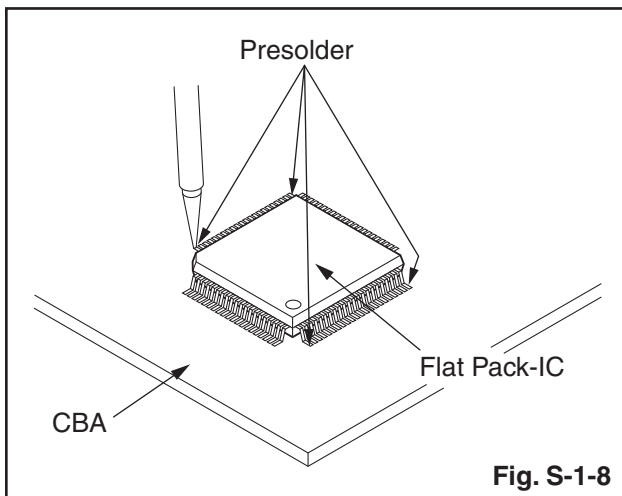
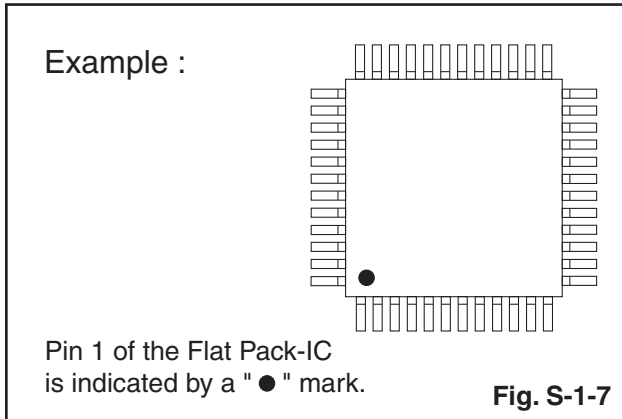
1. Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)
2. Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.
3. While heating the pins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

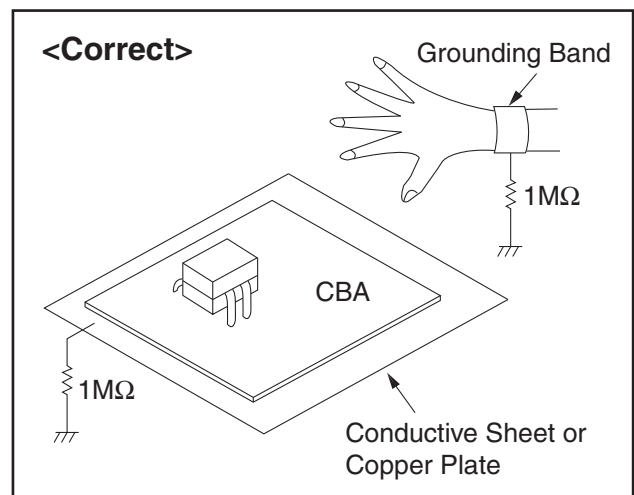
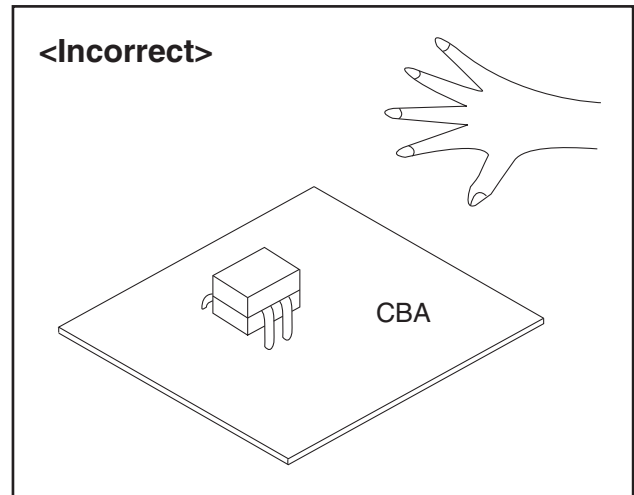
Electrostatic breakdown of the semi-conductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

1. Ground for Human Body

Be sure to wear a grounding band (1 M Ω) 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 M Ω) 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

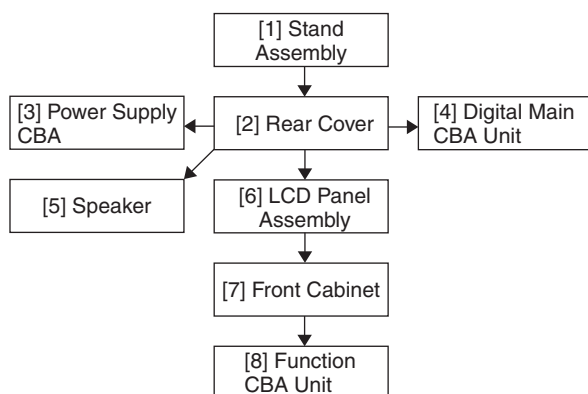
Screw Torque Specification

| Ref. No. | Part Number | Part Name | Tightening Torque |
|----------|-------------|------------------------------------|------------------------|
| L7 | GBHP3100 | SCREW P-TIGHT (M3X10 BIND HEAD+) | 6±1 kgf-cm |
| L23 | GBJS3060 | SCREW S-TIGHT (M3X6 BIND HEAD+) | 6±1 kgf-cm |
| L24 | GBJS3060 | SCREW S-TIGHT (M3X6 BIND HEAD+BLK) | 6±1 kgf-cm |
| SSK1 | 1ESA34003 | SCREW P-TIGHT (M4X25 BIND HEAD+) | (approx. 10±1 kgf-cm)* |

* For reference

1. Disassembly Flowchart

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



2. Disassembly Method

| Step/ Loc. No. | Part | Fig. No. | Removal | Note |
|----------------|-----------------------|----------|--|------|
| [1] | Stand Assembly | D1 | 3(S-1), Stand Neck | --- |
| [2] | Rear Cover | D1 | 8(S-2), 3(S-3) | 1 |
| [3] | Power Supply CBA | D2 D5 | 4(S-4), CN101, CN102, CN103, CN104, CN1001 | --- |
| [4] | Digital Main CBA Unit | D2 D5 | 4(S-5), CN9, CN20, CN21, Jack Holder | --- |
| [5] | Speaker | D3 | ----- | --- |
| [6] | LCD Panel Assembly | D3 | ----- | --- |
| [7] | Front Cabinet | D4 | 4(S-6), Decoration Plate | 2 |
| [8] | Function CBA Unit | D3 | Sensor Lens, Shield Plate, Control Plate | 2 |

↓ ↓ ↓ ↓ ↓
 (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 parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
 P = Spring, L = Locking Tab, S = Screw,
 H = Hex Screw, CN = Connector
 e.g. 2(S-2) = two Screws of (S-2),
 2(L-2) = two Locking Tabs of (L-2)
- (5) Refer to the following "Reference Notes in the Table."

Important precautions concerning the LCD Panel Assembly:

1. When you disassemble/re-assemble the Rear Cover

- Be careful not to break the hooks. If you pull with too much force, the hooks may be damaged.
- When assembling, be careful not to damage the X-PCB Board or the COF(Chip On Film).
- Make sure the hooks are securely in place when re-assembling.

2. When you disassemble/re-assemble the Front Cabinet or Function CBA Unit

- Be careful not to break the hooks. If you pull with too much force, the hooks may be damaged.
- When disassembling, first detach the hooks on each end on the bottom side, then detach the remaining hooks moving toward the center.
- Make sure the hooks are securely in place when assembling.
- Be careful not to scratch the display panel when assembling.
- The Function CBA Unit and Sensor Lens are fixed in place by the hooks. Make sure these hooks are not damaged. Make sure the Function CBA Unit and Sensor Lens are securely in place when re-assembling.
- The screw tightening torque must be 6kgf-cm (5.2lbf-in).
- After replacing the Front Cabinet or Function CBA Unit, make sure the tact switches operate normally.
- Make sure to replace the Control Plate to a new one when replacing the Front Cabinet.

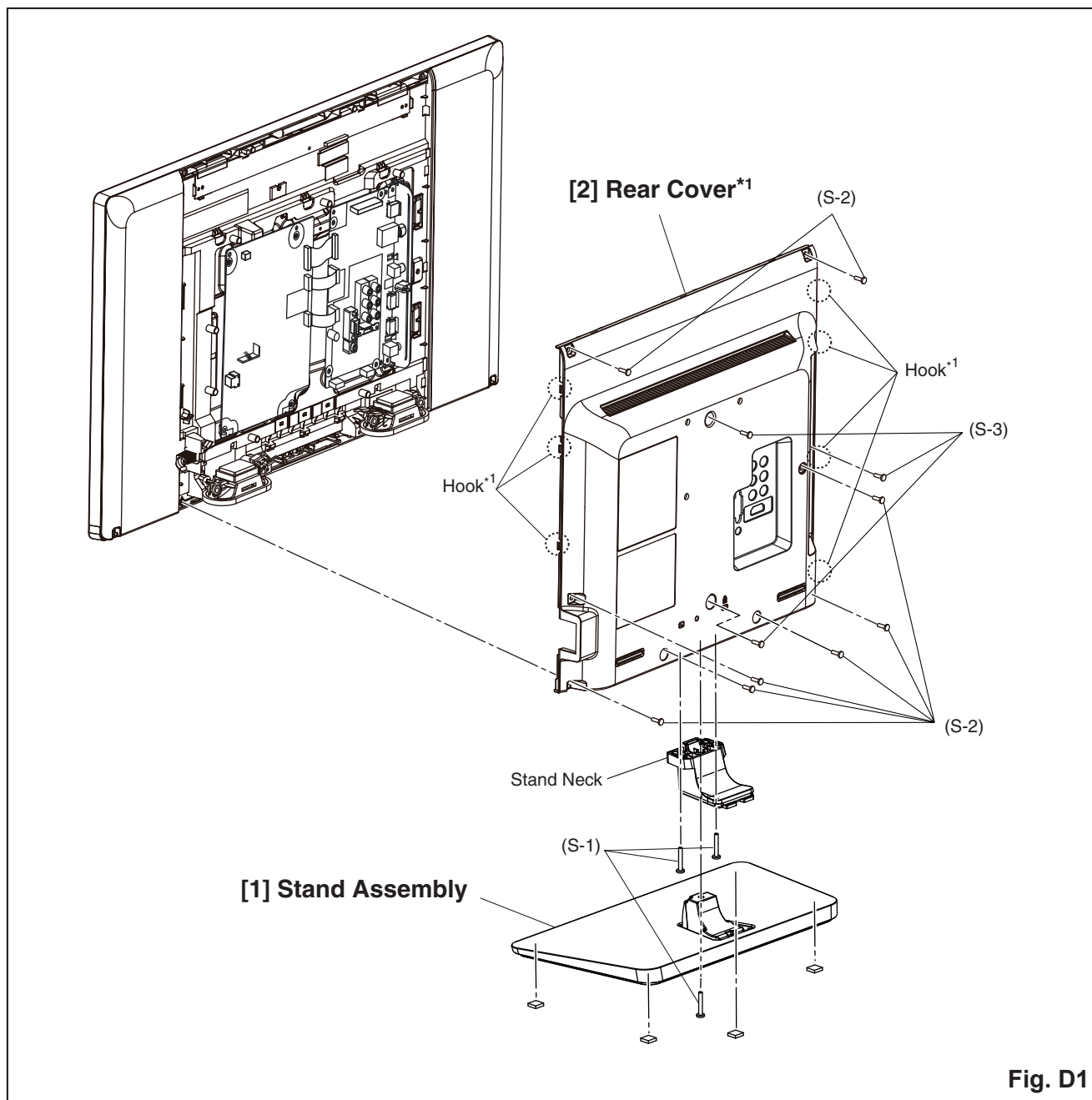
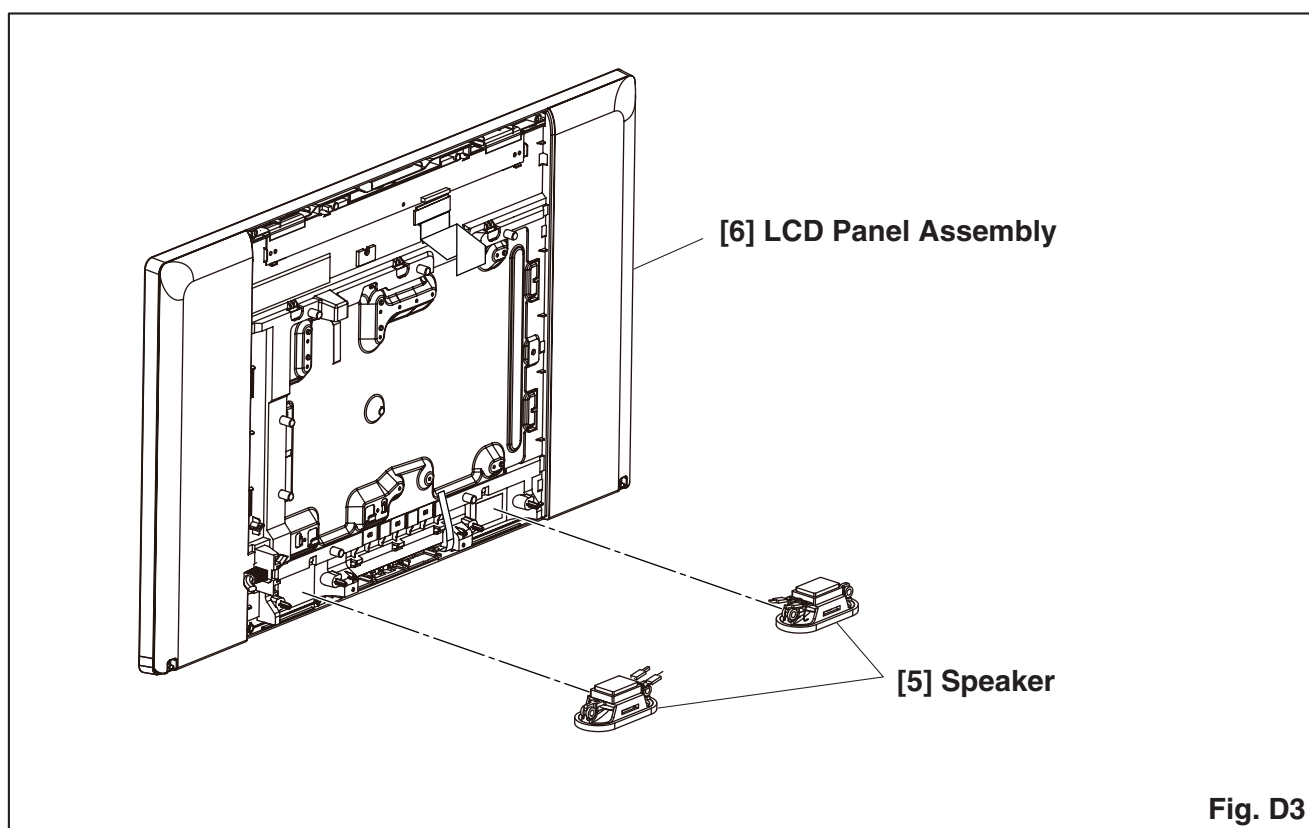
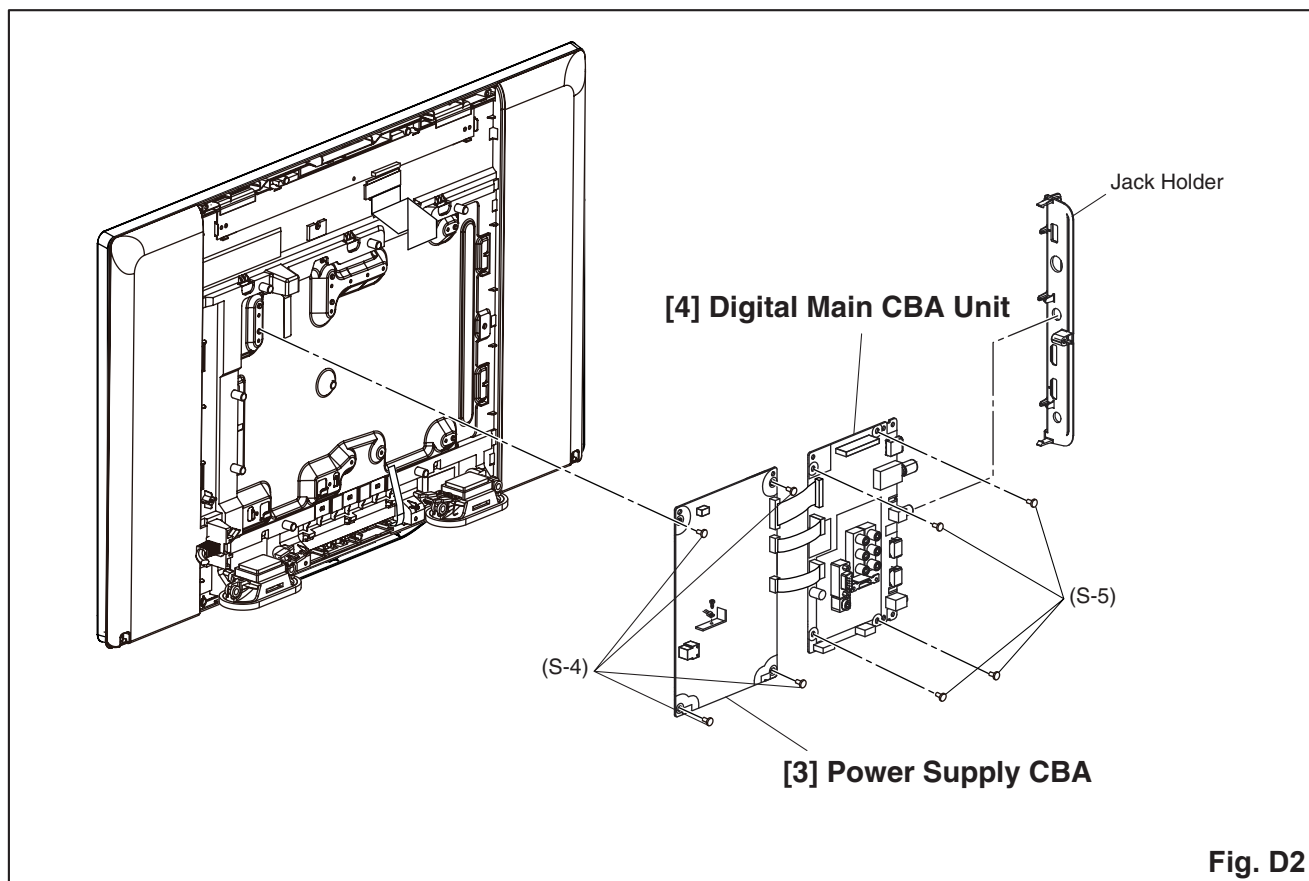


Fig. D1

***1: Make sure to read all the precautions on page 4-1 when you disassemble/re-assemble the Rear Cover.**



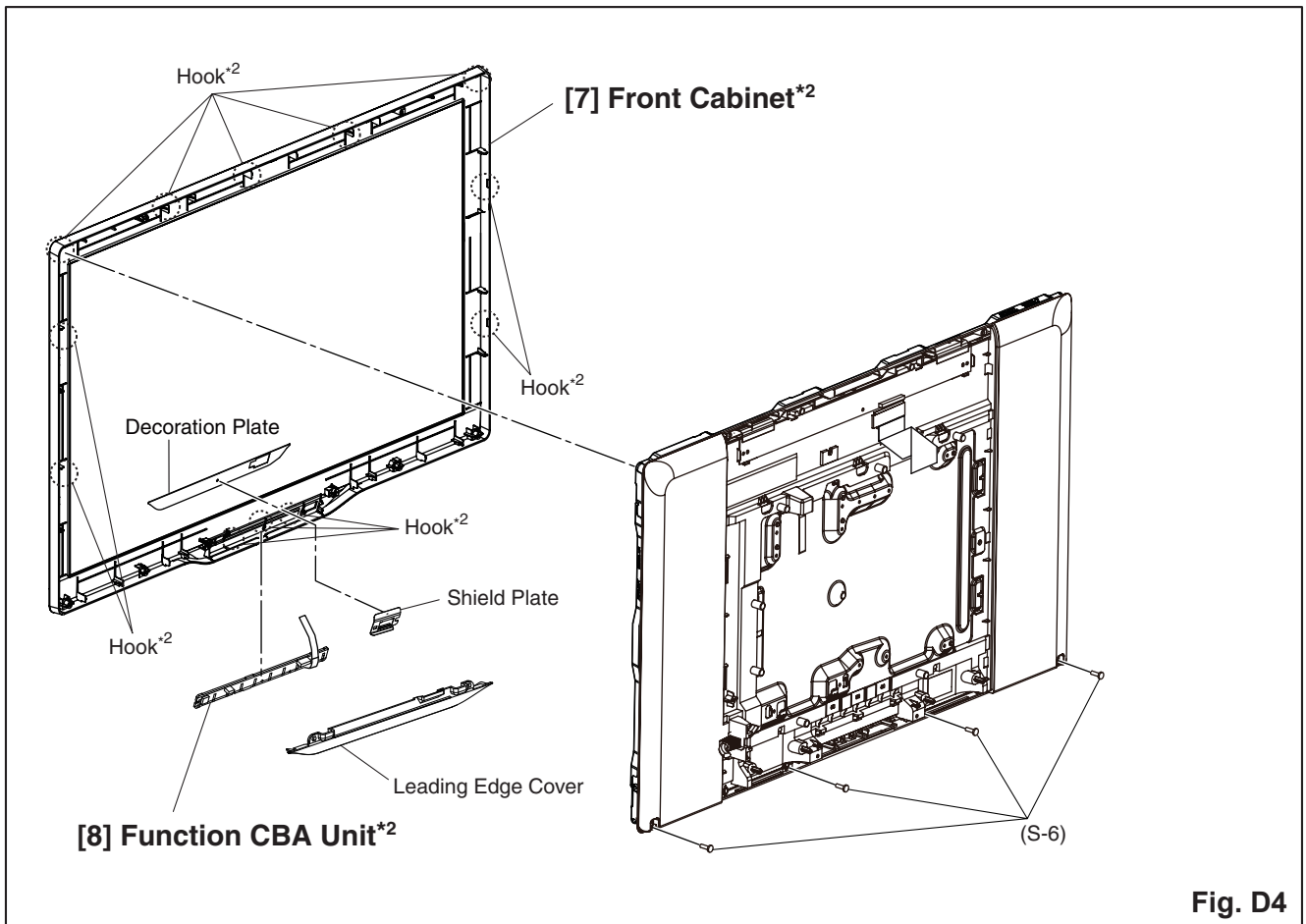
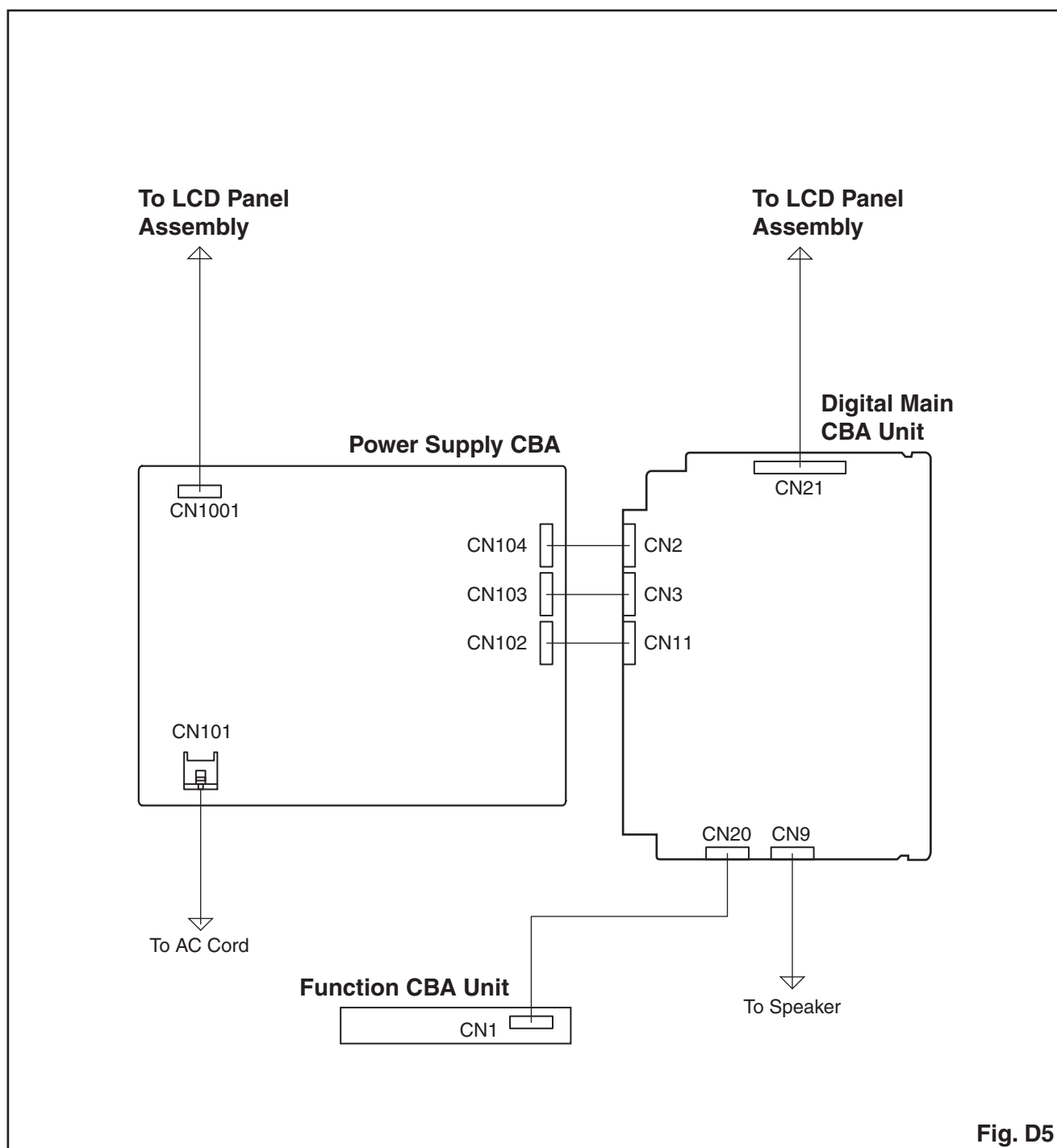


Fig. D4

***2: Make sure to read all the precautions on page 4-1 when you disassemble/re-assemble the Front Cabinet or Function CBA Unit.**

TV Cable Wiring Diagram



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

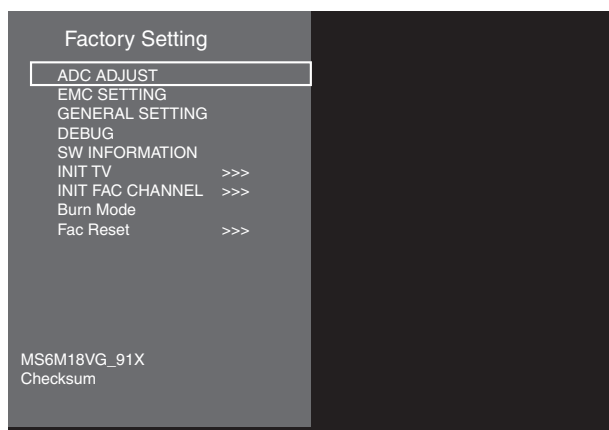
1. Remote control unit
2. Color Analyzer, CA-310 (KONICA MINOLTA Luminance meter) or measuring instrument as good as CA-310.

How to set up the service mode:

Service mode:

1. Turn the power on.
2. Press [MENU], [1], [1], [4] and [7] buttons on the remote control unit in this order to enter the service mode. The Factory Setting menu appears in the screen.

Example:



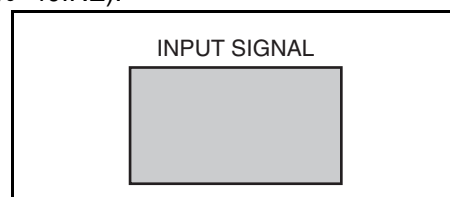
The White Balance Adjustment should be performed when replacing the LCD Module or Digital Main CBA Unit.

White Balance Adjustment

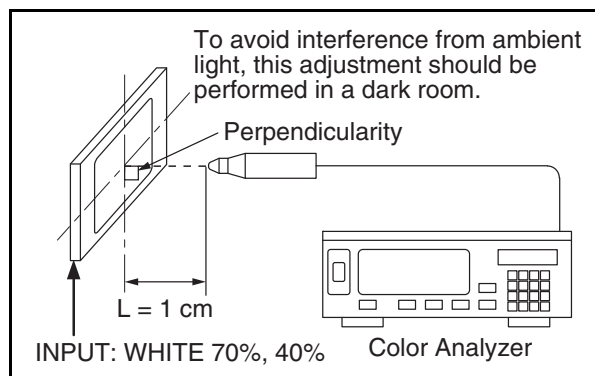
Purpose: To mix red and blue beams correctly for pure white.

Symptom of Misadjustment: White becomes bluish or reddish.

1. Operate the unit for more than 60 minutes.
2. Input the White Raster (70%=70IRE, 40%=40IRE).



3. Enter the service mode.
4. Press [2] button on the remote control unit to display the “GENERAL SETTING” menu.
5. Select “W/B ADJUST” and press [OK] button to display the “W/B ADJUST” menu.
6. Select a color mode (“R-GAIN”, “B-GAIN”, “R-OFFSET” or “B-OFFSET”).
7. Set the color analyzer at the CHROMA mode and zero point calibration. Bring the optical receptor pointing at the center of the LCD-Panel.



Note: The optical receptor must be set perpendicularly to the LCD Panel surface.

8. In each color mode, press [◀] or [▶] button to adjust the color temperature becomes 12000°K ($x = 0.272$ / $y = 0.278 \pm 0.008$).
9. Select “COPY ALL” and press [OK] button.
10. To cancel or to exit from the White Balance Adjustment, press [EXIT] button.

HOW TO INITIALIZE THE LCD TV

The purpose of initialization is to place the set in a new out of box condition. The customer will be prompted to select a language and program channels after the set has been initialized.

To put the program back at the factory-default, initialize the LCD TV using the following procedure.

1. Turn the power on.
2. Enter the service mode. (Refer to page 5-1.)
 - To cancel the service mode, press [EXIT] button on the remote control unit.
3. Select "Fac Reset" and [OK] button on the remote control unit.

The TV set will go off and turn back on automatically when initialization completes.

FIRMWARE RENEWAL MODE

Equipment Required

- a. USB storage device
- b. Remote Control Unit

Firmware Update Procedure

[Preparation]

1. Prepare USB storage device.
2. Copy F/W-file to USB storage device.
Note: Make sure to use the blank USB Storage.
3. Make sure that the F/W-file's name is
"bin_6m182_VG.bin".

[Update procedure]

1. Turn the power on.
2. Insert USB storage device with F/W to TV set.
3. Press the [MENU] button on the remote control unit to display Menu.
4. Select "OPTION".
5. Select "Software Update (USB)" and press [OK] button.
The message "Are you sure?" will appear in the screen.
6. Press [◀] button to select "YES".
7. Updating starts.
Note: Do not turn off the TV set and do not remove the USB storage device while this procedure.
8. The TV set will go off and turn back on automatically when update completes.

[Confirmation of update]

1. Enter the service mode. (Refer to page 5-1.)
2. Shift the cursor down to "SW INFORMATION" and then press the [OK] button.
3. Check the "BUILD TIME" section.

TROUBLESHOOTING

[Power Supply Section]

FLOW CHART NO.1

The power cannot be turned on.

Is the fuse (F602) normal?

No

See FLOW CHART No.2 <The fuse blows out.>

Yes

Is normal state restored when once unplugged power cord is plugged again after several seconds?

No

Check if there is any leak or short-circuit on the primary circuit component and repair it if defective.
(C605, D601, D602, D603, D604, D605, D608, D609, D612, D613, D616, D617, D618, IC602, Q601, Q602, R603, T601)

Yes

Is the STB+5V line voltage normal?

No

Check each rectifying circuit of the secondary circuit and repair it if defective.

Yes

FLOW CHART NO.2

The fuse blows out.

Check if there is any leak or short-circuit on the primary circuit component and repair it if defective.

Check if there is any leak or short-circuit on the each rectifying circuit component of secondary side and repair it if defective.

Make sure to repair the primary circuit component before replacing the fuse (F602).

FLOW CHART NO.3

When the output voltage fluctuates.

Does the photocoupler circuit on the secondary side operate normally?

No

Check D404, IC301, IC601 and their periphery circuit. Repair it if defective.

Yes

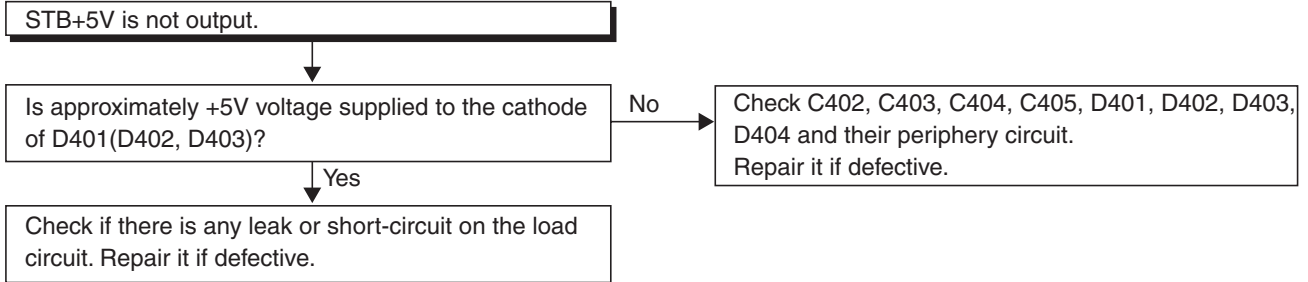
Check D608, D609, D612, D613, IC602, Q601, Q602 and their periphery circuit. Repair it if defective.

FLOW CHART NO.4

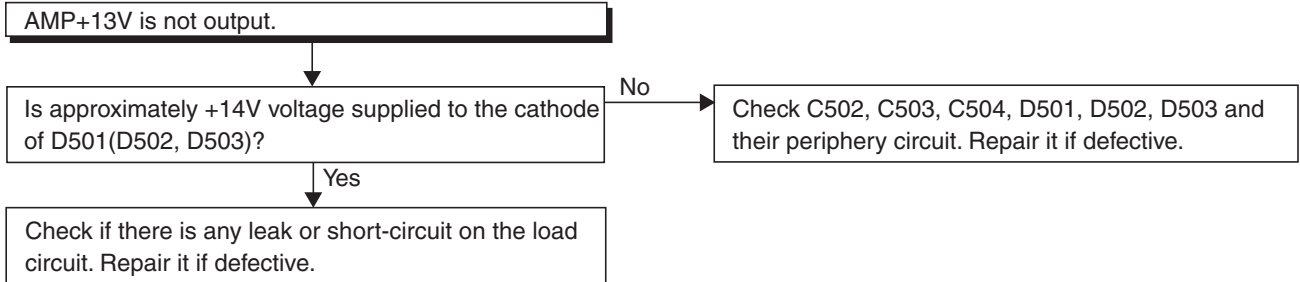
When buzz sound can be heard in the periphery of power circuit.

Check if there is any short-circuit on the rectifying diode and the circuit in each rectifying circuit of the secondary side. Repair it if defective. (D401, D402, D403, D501, D502, D503, Q401, Q501)

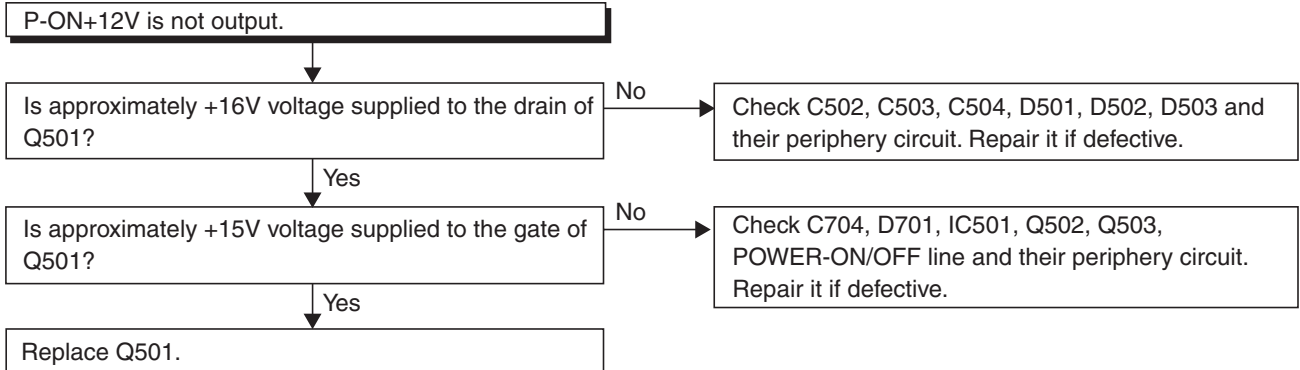
FLOW CHART NO.5



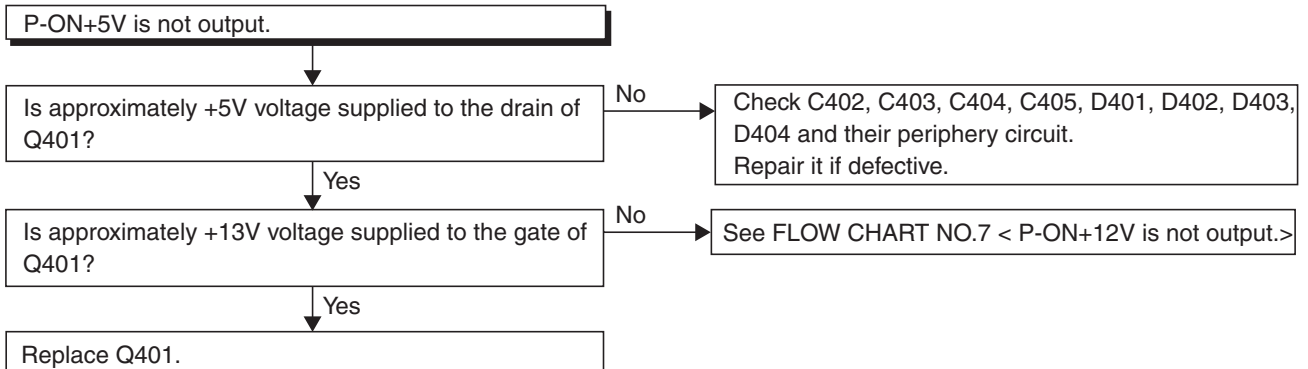
FLOW CHART NO.6



FLOW CHART NO.7

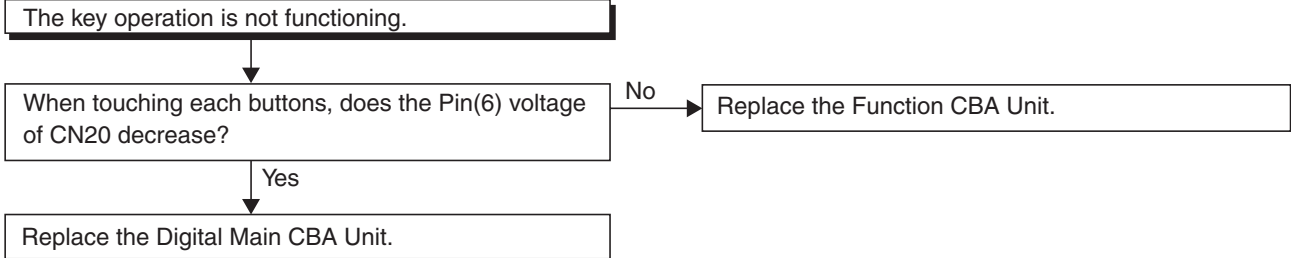


FLOW CHART NO.8

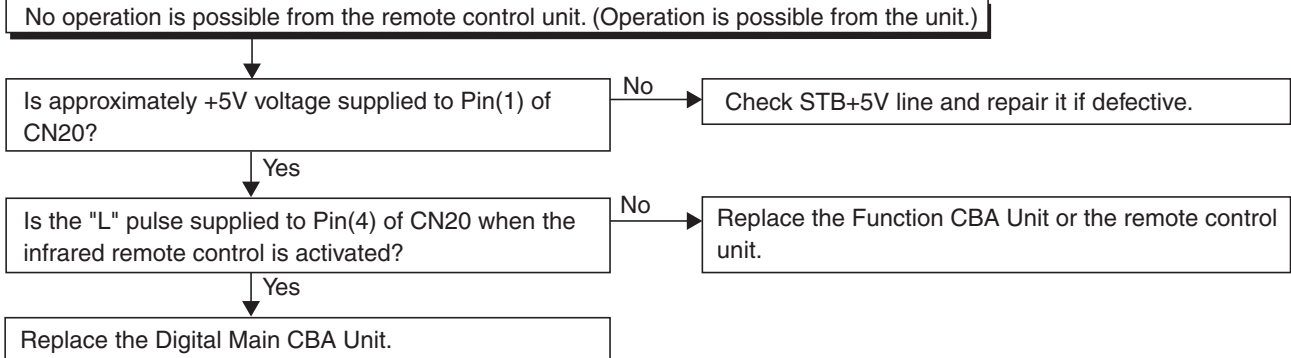


[Video Signal Section]

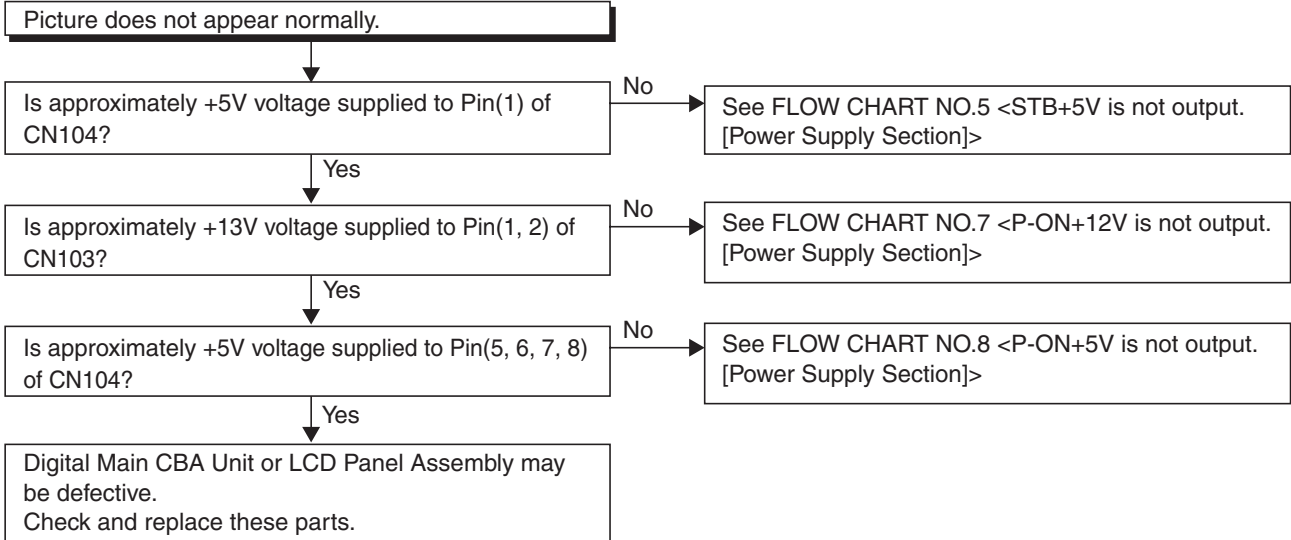
FLOW CHART NO.1



FLOW CHART NO.2

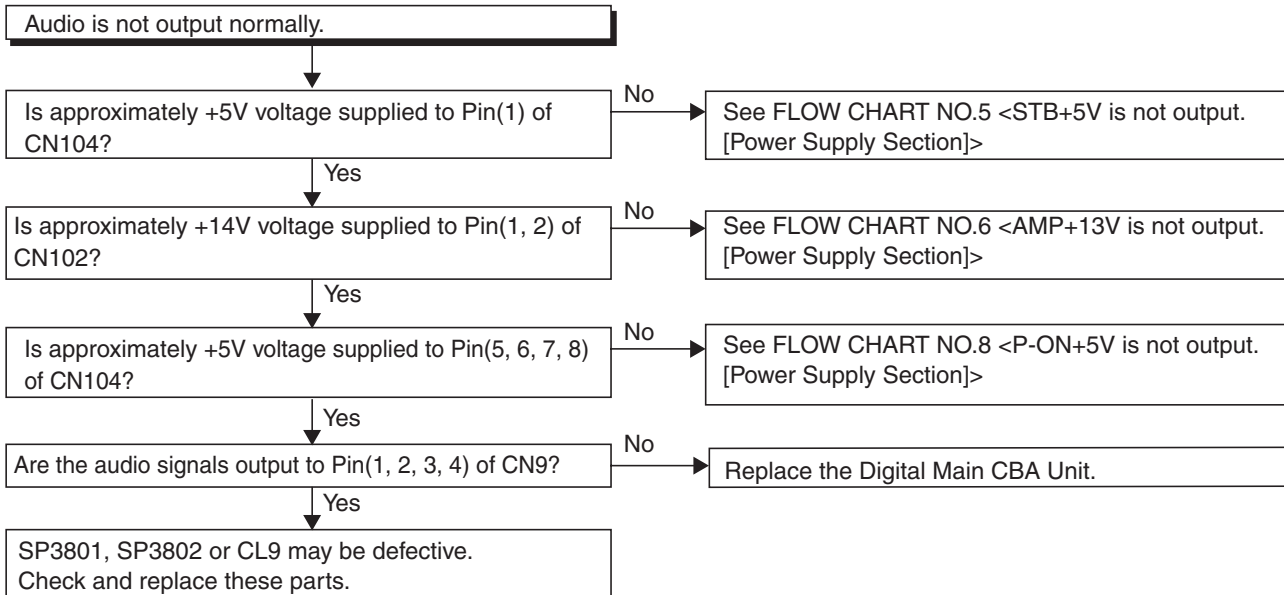


FLOW CHART NO.3



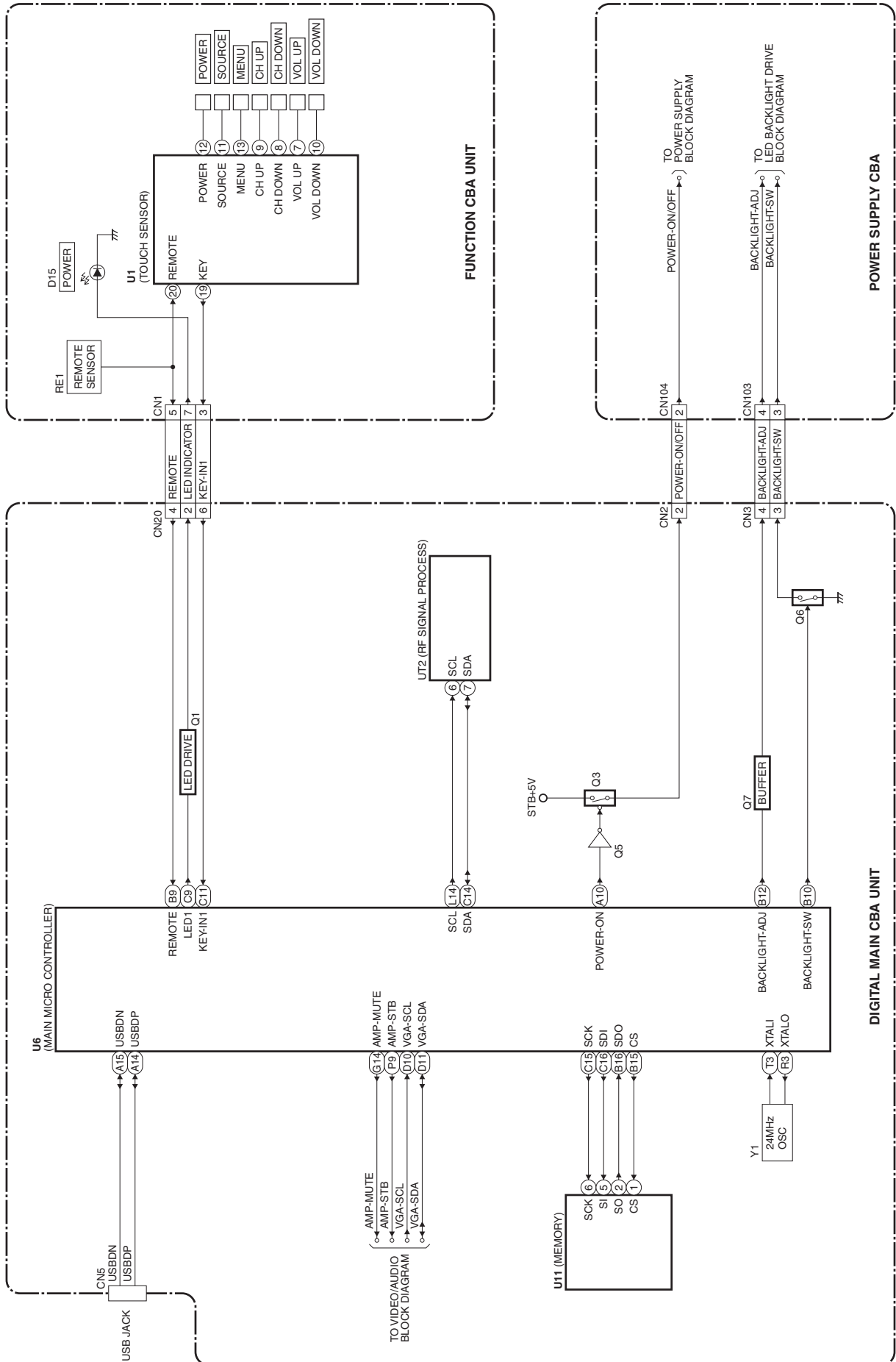
[Audio Signal Section]

FLOW CHART NO.1

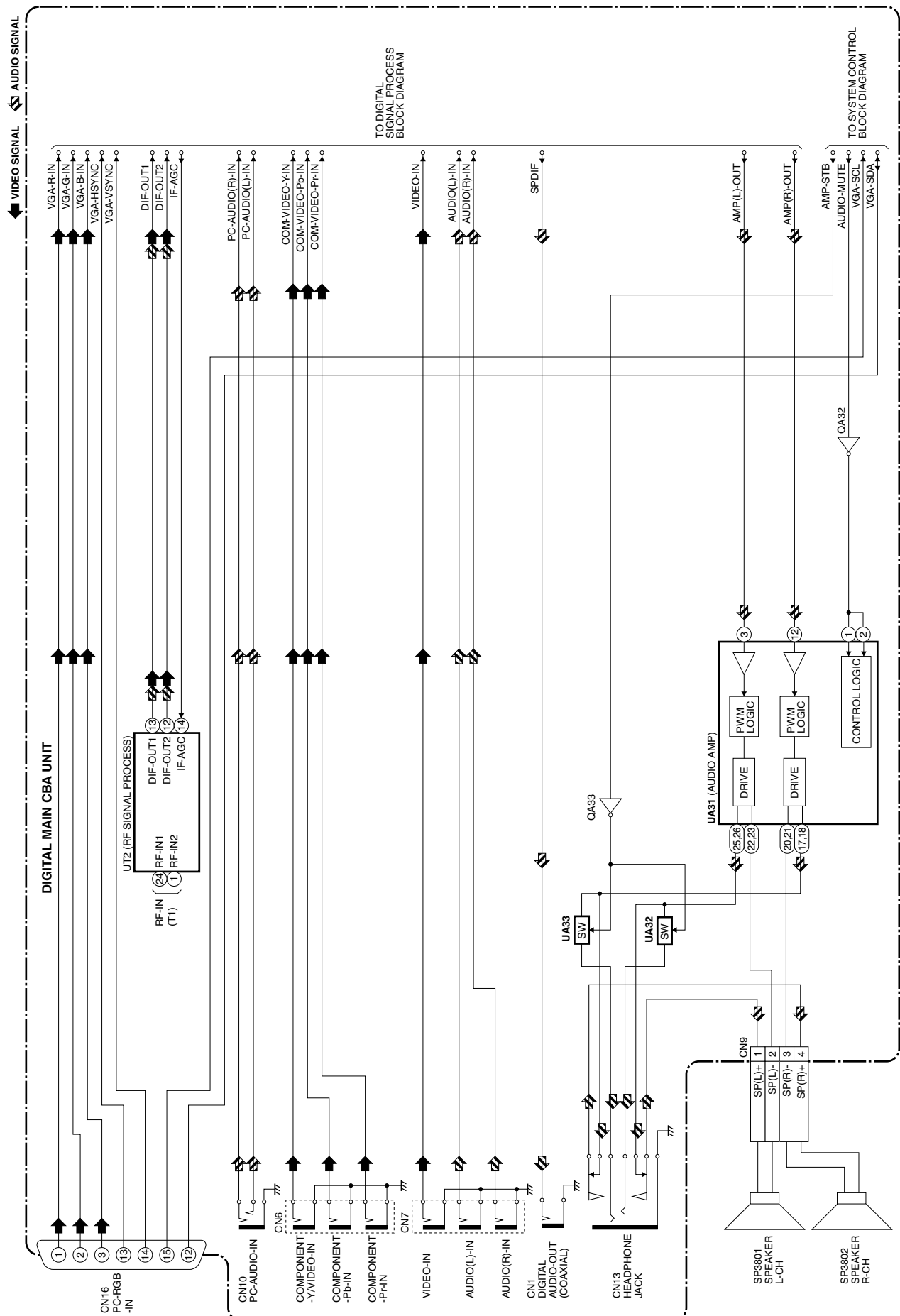


BLOCK DIAGRAMS

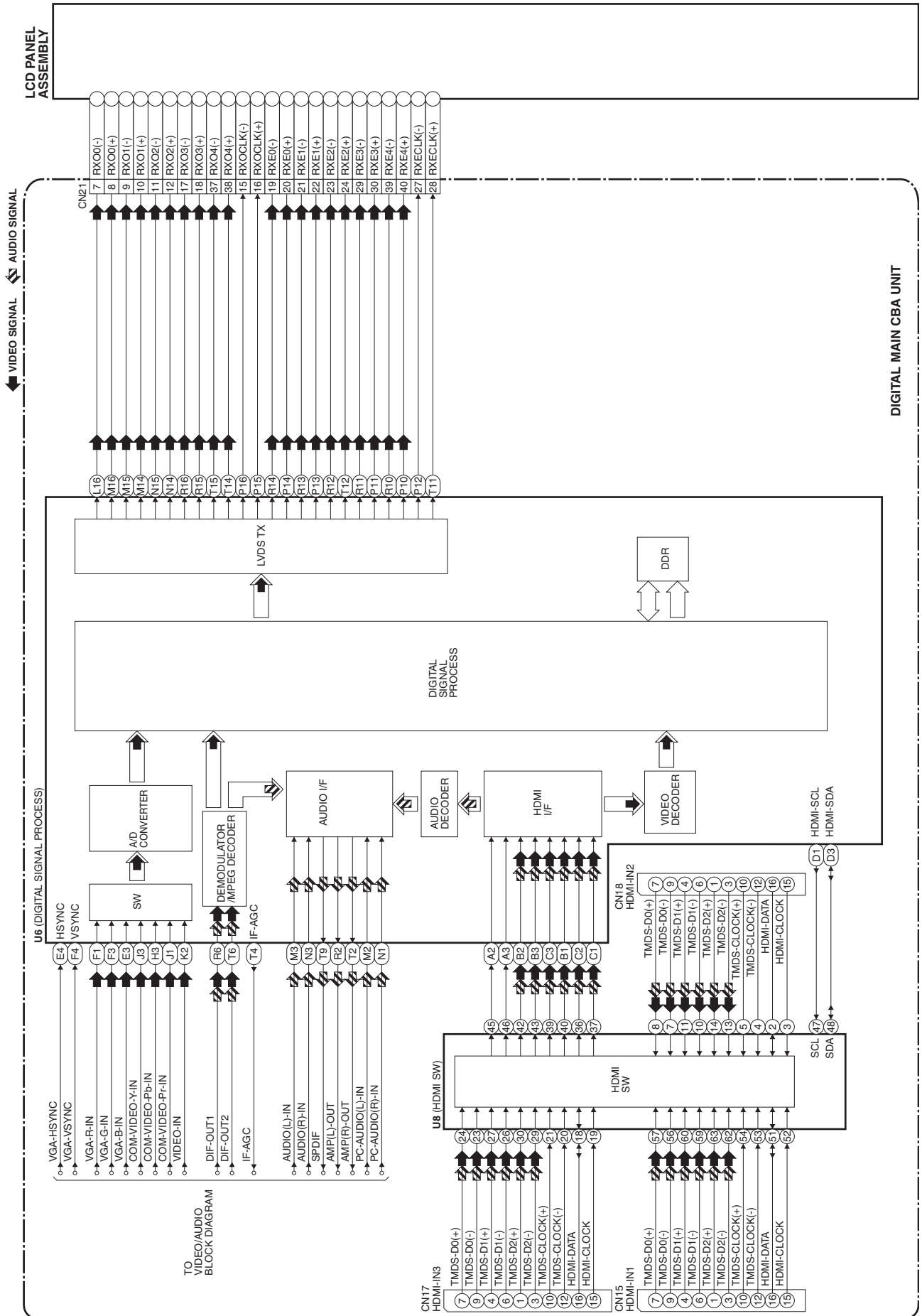
1. System Control Block Diagram



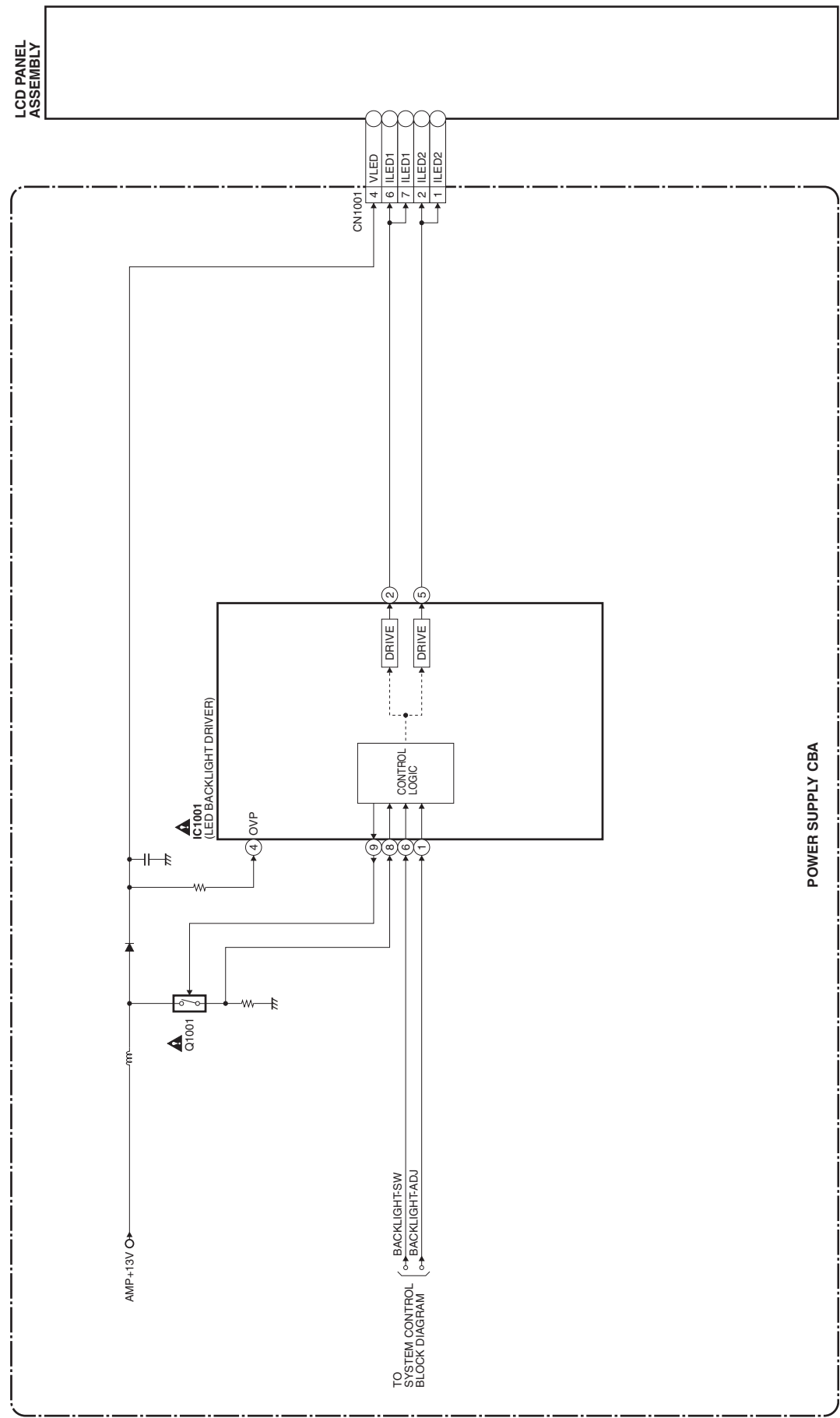
2. Video/Audio Block Diagram



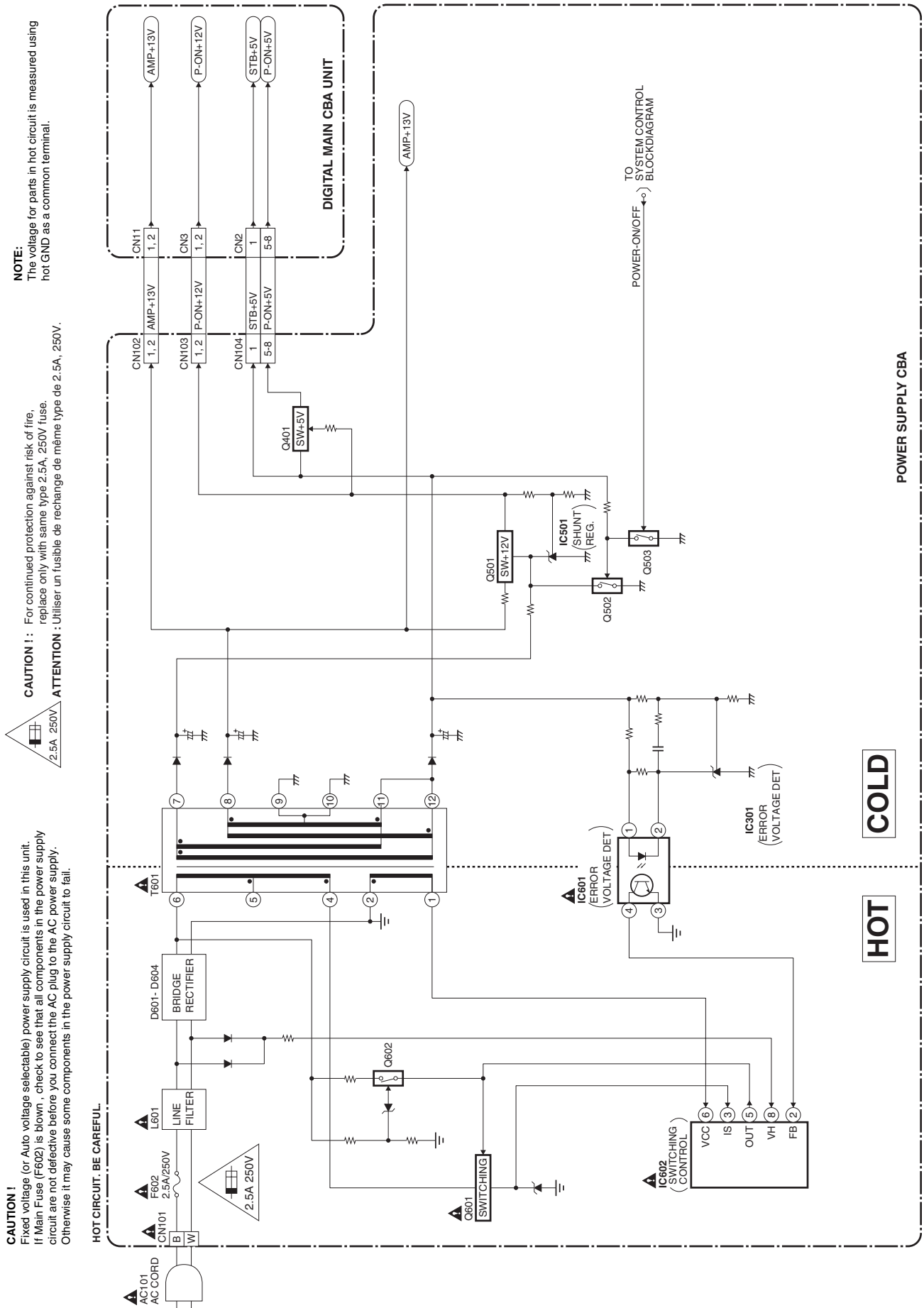
3. Digital Signal Process Block Diagram



4. LED Backlight Drive Block Diagram



5. Power Supply Block Diagram



SCHEMATIC DIAGRAMS / CBA AND TEST POINTS

Standard Notes

WARNING

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.
6. This schematic diagrams are masterized version that should cover the entire PL13.21 chassis models. Thus some parts in detail illustrated on this schematic diagrams may vary depend on the model within the PL13.21 chassis.
Please refer to the parts lists for each models.
7. The Circuit Board layout illustrated on this service manual is the latest version for this chassis at the moment of making this service manual.
Depend on the mass production date of each model, the actual layout of each Board may differ slightly from this version.

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.

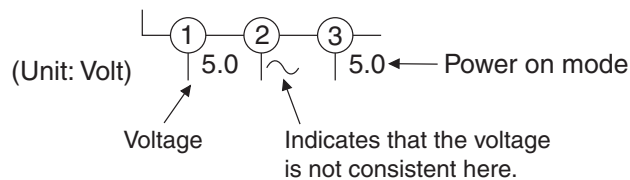
If Main Fuse (F601) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

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.:

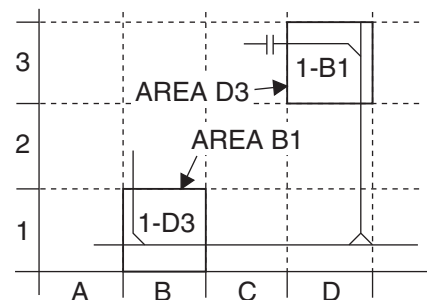


5. How to read converged lines

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

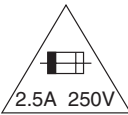
- ⊙ : Indicates a test point with a jumper wire across a hole in the PCB.
- : Used to indicate a test point with a component lead on foil side.
- ⊘ : Used to indicate a test point with no test pin.
- : Used to indicate a test point with a test pin.

The reference number of parts on Schematic Diagrams/CBA can be retrieved by application search function.

Power Supply Schematic Diagram

CAUTION !

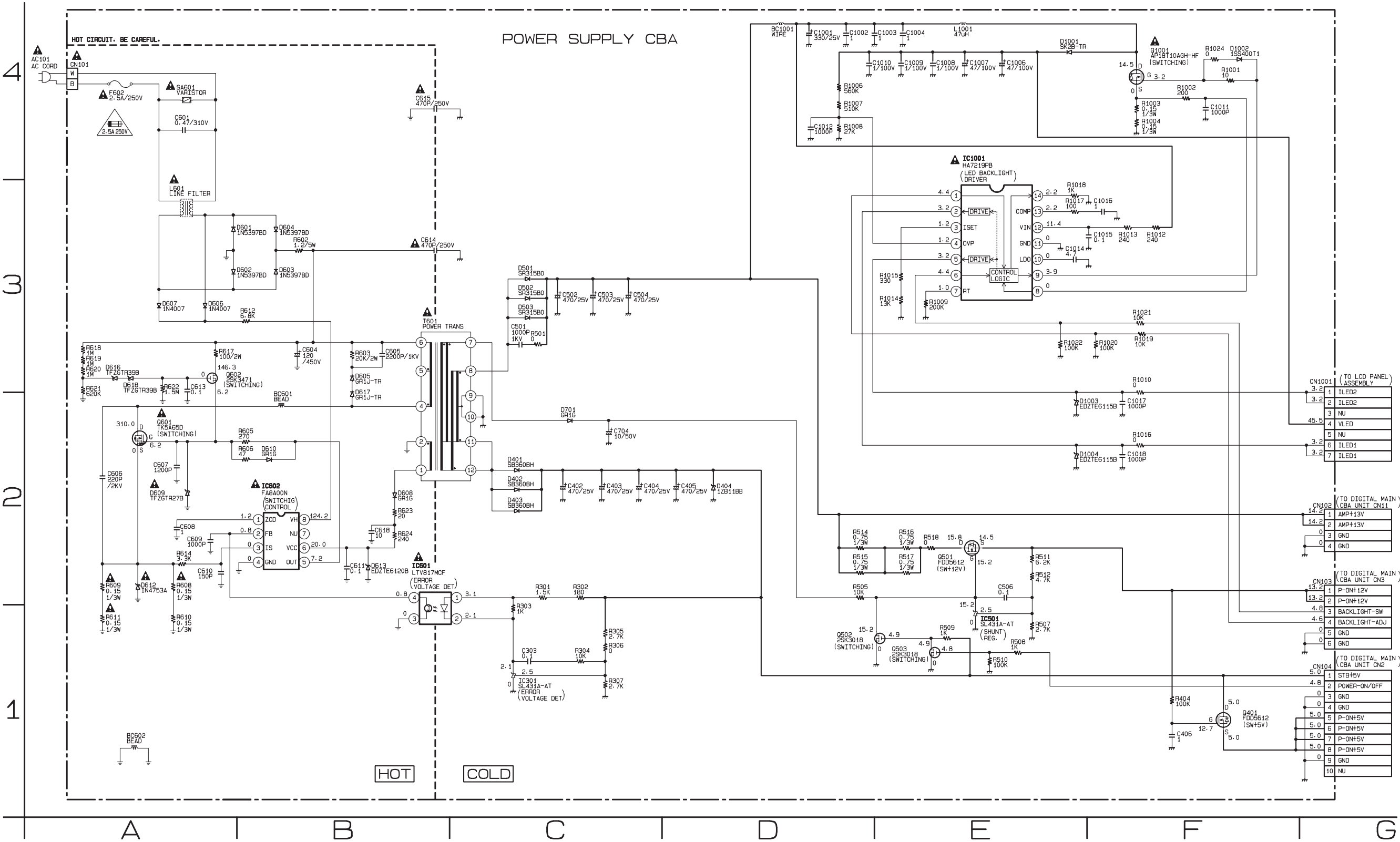
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F602) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.



CAUTION ! : For continued protection against risk of fire,
replace only with same type 2.5A, 250V fuse.
ATTENTION : Utiliser un fusible de rechange de même type de 2.5A, 250V.

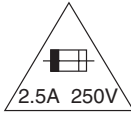
NOTE:

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



Power Supply CBA Top View

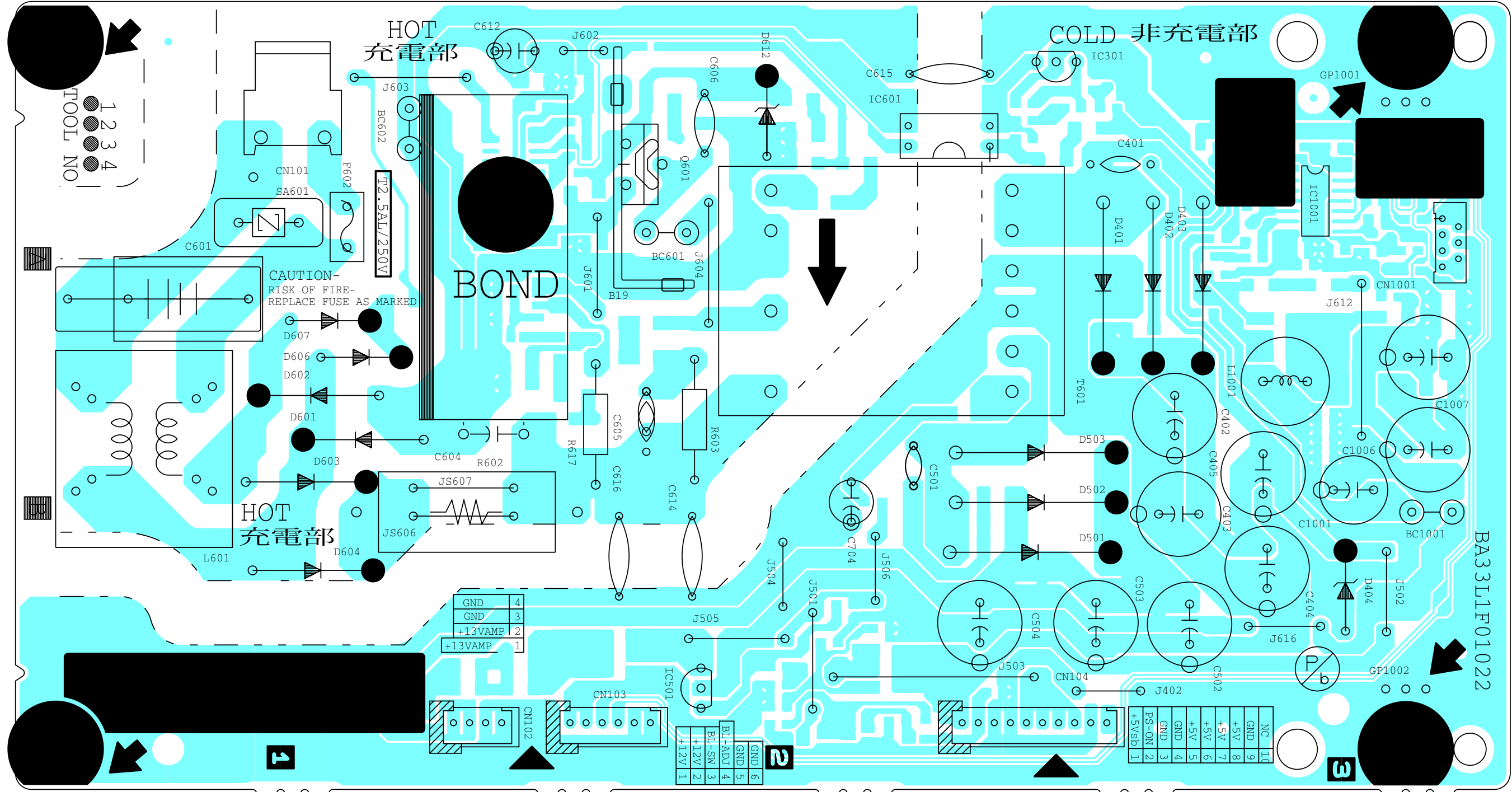
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F602) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.



CAUTION ! : For continued protection against risk of fire,
replace only with same type 2.5A, 250V fuse.
ATTENTION : Utiliser un fusible de rechange de même type de 2.5A, 250V.

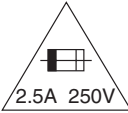
Because a hot chassis ground is present in the power supply circuit, an isolation transformer must be used when repairing.
Also, in order to have the ability to increase the input slowly, when troubleshooting this type of power supply circuit, a variable isolation transformer is required.

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



Power Supply CBA Bottom View

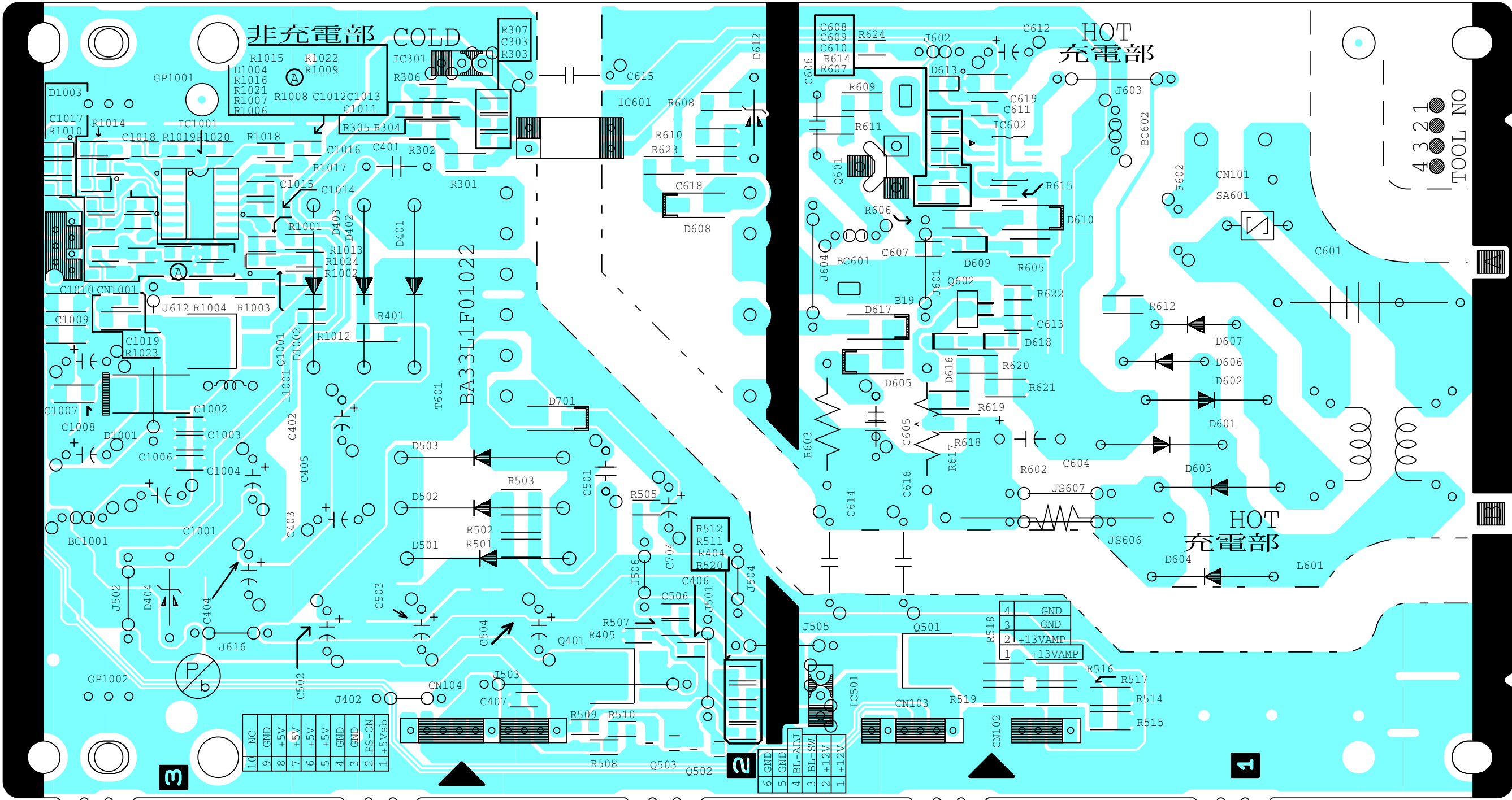
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F602) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.



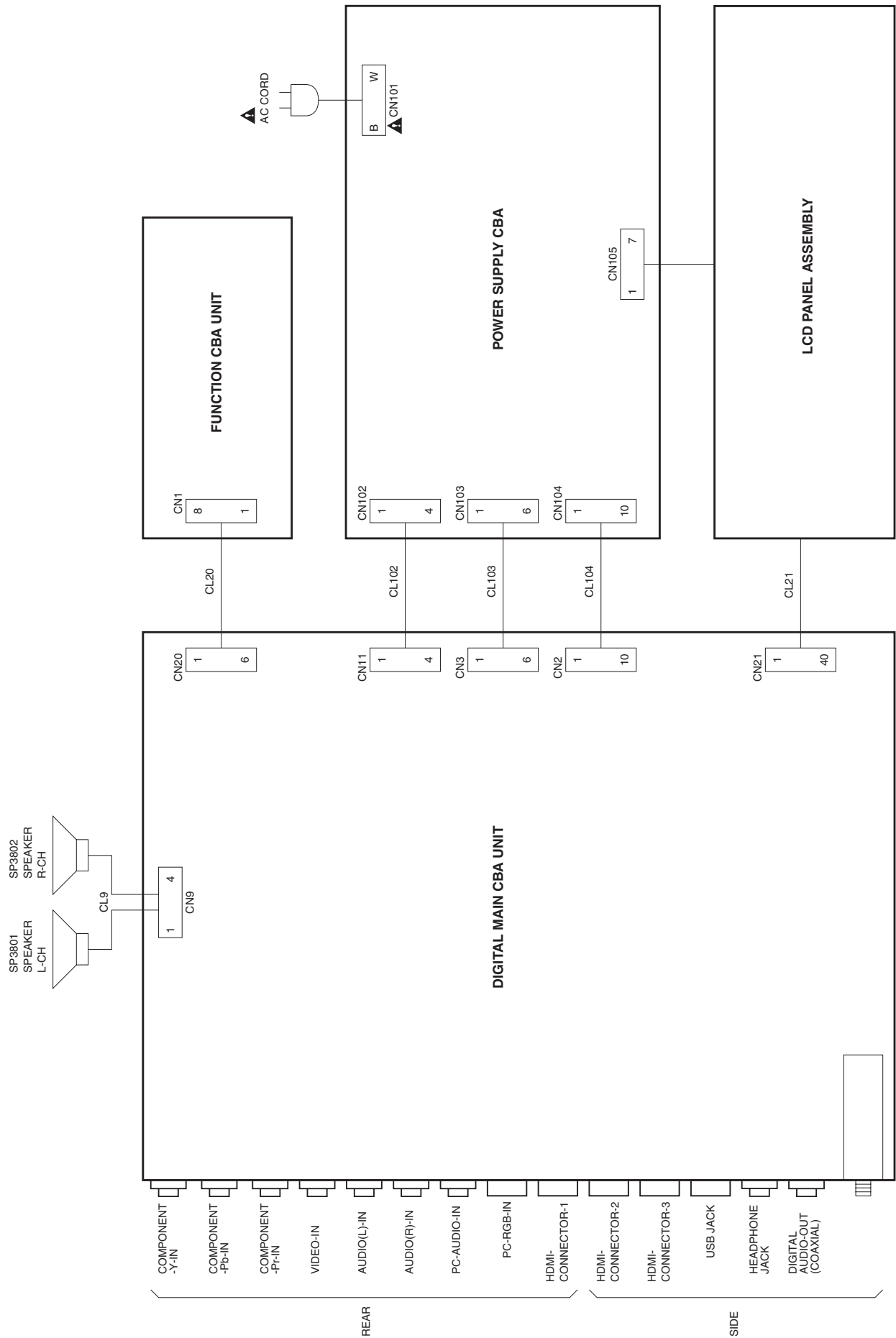
CAUTION ! : For continued protection against risk of fire,
replace only with same type 2.5A, 250V fuse.
ATTENTION : Utiliser un fusible de rechange de même type de 2.5A, 250V.

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

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

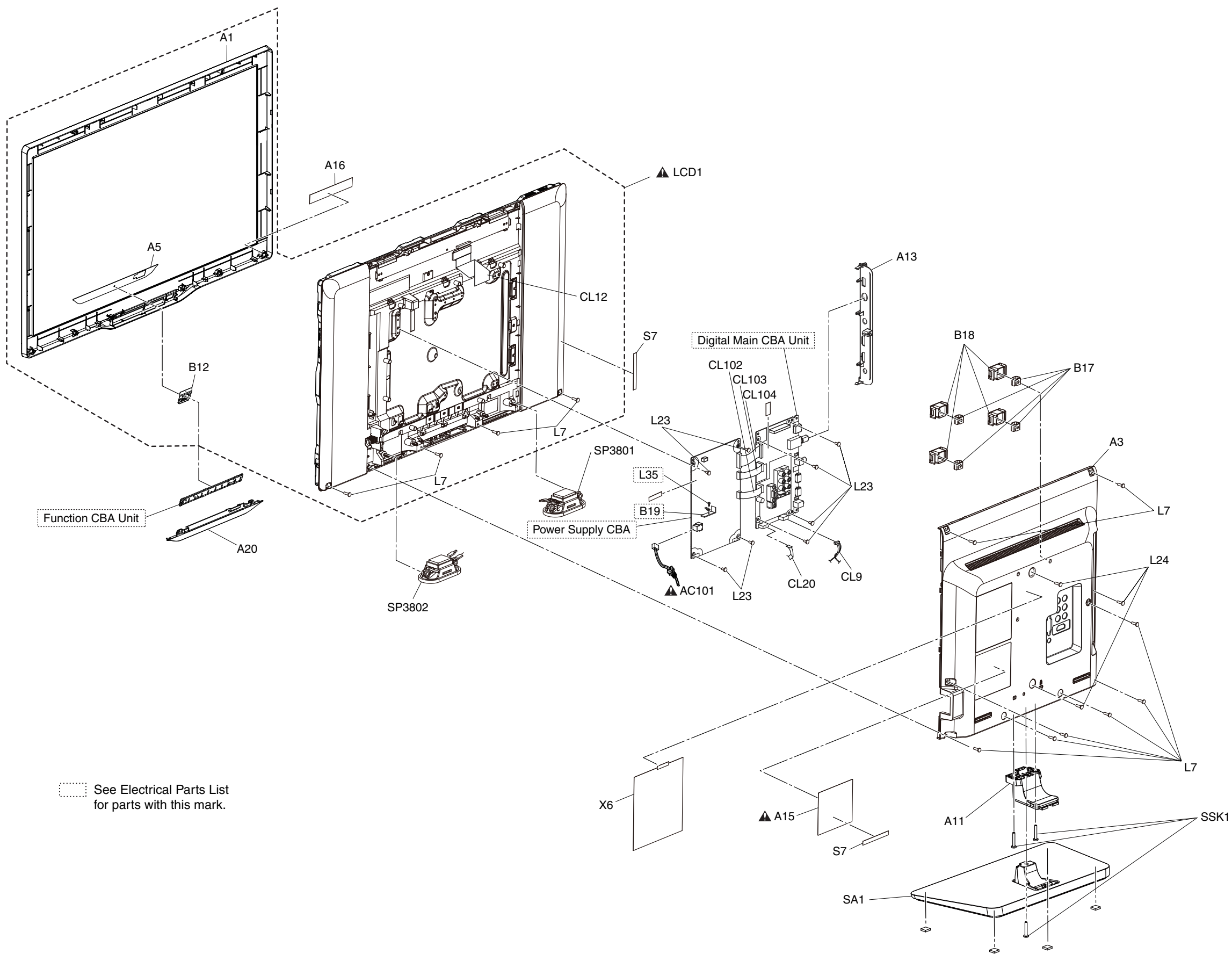


WIRING DIAGRAM



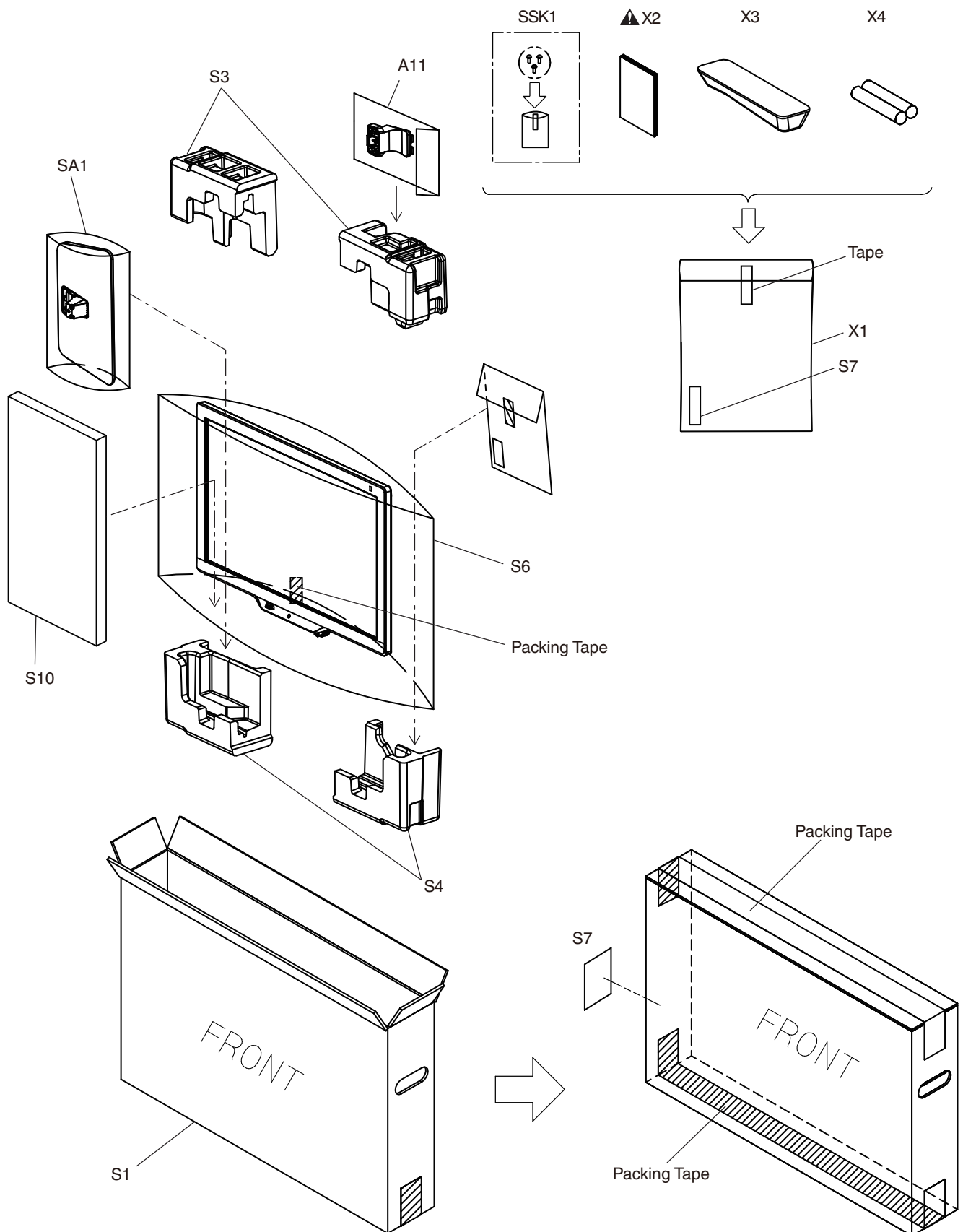
EXPLODED VIEWS

Cabinet



Packing

Some Ref. Numbers are
not in sequence.



PARTS LIST [24PFL4508/F4 (Serial No.: ME1)]

Mechanical Parts

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.

| Ref. No. | Description | Part No. |
|------------------|---|--------------|
| A3 | REAR COVER A30L0PT | 1EM128398 |
| A11 | STAND NECK A31M2UT | 1EM228000A |
| A13 | JACK HOLDER A30F0PT | 1EM335081 |
| A15▲ | RATING LABEL A30LZZT | ----- |
| A16 | LOGO LABEL A30M0PT | ----- |
| A20 | LEADING EDGE COVER A31M2UT | 1EM228001 |
| AC101▲ | AC CORD W/O A GND WIRE TIS/1740/ ANTITRACKIN | WAY172ZHN002 |
| B17 | WALL MOUNT BRACKET A11N0UH | 1EM434637 |
| B18 | WALL MOUNT COVER A2170UT | 1EM332137 |
| CL9 | SPK WIRE ASSEMBLY 4P/190&50MM/ YW&BK&RD | WX1A30L0C102 |
| CL20 | IR_KEY WIRE ASSEMBLY 6P8P/100MM/ RED&BLK | WX1A30M0C104 |
| CL102 | +13AMP WIRE ASSEMBLY 4P/95MM/ RED&BLK | WX1A30M0C103 |
| CL103 | BL WIRE ASSEMBLY 6P/95MM/26AWG/BK | WX1A30M0C102 |
| CL104 | POWER WIRE ASSEMBLY 10P/95MM/ RED&BLK | WX1A30M0C101 |
| L7 | SCREW P-TIGHT 3X10 BIND HEAD+ | GBHP3100 |
| L23 | SCREW S-TIGHT M3X6 BIND HEAD+ | GBJS3060 |
| L24 | S-TIGHT SCREW M3X6 BIND HEAD+BLACK | GBHS3060 |
| SA1 | STAND ASSEMBLY A31L2UT | 1ESA34645 |
| SP3801 | SPEAKER MAGNETIC 8Ω/5W S0307F31 | DS08080XQ001 |
| SP3802 | SPEAKER MAGNETIC 8Ω/5W S0307F31 | DS08080XQ001 |
| SSK1 | STAND SCREW KIT A31M2UT | 1ESA34003 |
| PACKING | | |
| S1 | CARTON A30LZZT | 2EMC00048 |
| S3 | STYROFOAM TOP A31L2UT | 1EM030565 |
| S4 | STYROFOAM BOTTOM A31L2UT | 1EM030566 |
| S6 | SET BAG A21N0UT | 1EM334732 |
| S7 | SERIAL NO. LABEL A01PBUH | ----- |
| S10 | PAD(380X180X20) A31L2UT | 2EMC00123 |
| ACCESSORY | | |
| X1 | POLYETHYLENE BAG HDPE 180X340XT0.03 | 1EM435579 |
| X2▲ | OWNERS MANUAL A30MZZT | 2EMN00019 |
| X3 | REMOTE CONTROL UNIT YKF335-003 | URMT41JHG001 |
| X4 | BATTERY R03-B500/01S | XB0M451CZB01 |
| X6 | QUICK START GUIDE A30MZZT | 2EMN00022 |

LCD PANEL ASSEMBLY

| Ref. No. | Description | Part No. |
|----------|------------------------------------|--------------|
| LCD1▲ | LCD PANEL ASSEMBLY | U3AL0PB |
| | Consists of the following | |
| A1 | FRONT CABINET A31L2UT | 1EM030447 |
| A5 | DECORATION PLATE A31M2UT | 1EM228002 |
| B12 | SHIELD PLATE A31M2UT | 1EM334002 |
| CL12 | WIRE ASSEMBLY LVDS 24W 40PIN/100MM | WX1A33L1C106 |
| L7 | SCREW P-TIGHT 3X10 BIND HEAD+ | GBHP3100 |
| | LCD MODULE 24INCH | ----- |

Electrical Parts

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%

DIGITAL MAIN CBA UNIT

| Ref. No. | Description | Part No. |
|----------|-----------------------|--------------|
| | DIGITAL MAIN CBA UNIT | UPBMATCVT037 |

FUNCTION CBA UNIT

| Ref. No. | Description | Part No. |
|----------|-------------------|--------------|
| | FUNCTION CBA UNIT | UPB000CVT013 |

POWER SUPPLY CBA

| Ref. No. | Description | Part No. |
|-------------------|--|--------------|
| | POWER SUPPLY CBA | A30L0MPW-001 |
| CAPACITORS | | |
| C303 | CAP CHIP 1608 K/X7R/0.1µF/50V | CHD104EYA032 |
| C402 | ELECTROLYTIC CAP. 470µF/25V M(105C) | CE1EMASTH471 |
| C403 | ELECTROLYTIC CAP. 470µF/25V M(105C) | CE1EMASTH471 |
| C404 | ELECTROLYTIC CAP. 470µF/25V M(105C) | CE1EMASTH471 |
| C405 | ELECTROLYTIC CAP. 470µF/25V M(105C) | CE1EMASTH471 |
| C406 | CHIP CERAMIC CAP.(1608) B K 1µF/25V | CHD1EK30B105 |
| C501 | CERAMIC CAP. 1000pF/1kV | CCD3AKA0R102 |
| C502 | ELECTROLYTIC CAP. 470µF/25V M(105C) | CE1EMASTH471 |
| C503 | ELECTROLYTIC CAP. 470µF/25V M(105C) | CE1EMASTH471 |
| C504 | ELECTROLYTIC CAP. 470µF/25V M(105C) | CE1EMASTH471 |
| C506 | CAP CHIP 1608 K/X7R/0.1µF/50V | CHD104EYA032 |
| C601 | CAP METALLIZED FILM 0.47µF/310V /K/LE-MX | CTA4740DC001 |
| C604 | CAP ELE 120µF/450V/M/105 | CV9E121M02W1 |
| C605 | CAP CERAMIC HV 2200pF/1kV B K | CA3A222TE006 |
| C606 | CERAMIC CAP. 220pF/2kV | CA3D221PAN04 |
| C607 | CAP CHIP 1608 K/X7R/0.0012µF/50V | CHD122EYA032 |
| C608 | CHIP CERAMIC CAP.(1608) B K 1µF/25V | CHD1EK30B105 |
| C609 | CAP CHIP 1608 K/X7R/0.001µF/50V | CHD102EYA032 |
| C610 | CAP CHIP 1608 J/C0G/150pF/50V | CHD151EYA030 |
| C611 | CAP CHIP 1608 K/X7R/0.1µF/50V | CHD104EYA032 |
| C613 | CAP CHIP 1608 K/X7R/0.1µF/50V | CHD104EYA032 |
| C614 | CAP CERAMIC 470pF/250V KX | CA2E471MR100 |
| C615 | CAP CERAMIC 470pF/250V KX | CA2E471MR100 |
| C618 | CAP CHIP 3216 B K 10µF/25V | CA1E106MR082 |
| C704 | ELECTROLYTIC CAP. 10µF/50V M(105C) | CE1JMASTH100 |
| C1001 | CAP ELECTROLYTIC 330µF/25V M/105 | CE1EMASTH331 |
| C1002 | CHIP CERAMIC CAP.(1608) B K 1µF/25V | CHD1EK30B105 |
| C1003 | CHIP CERAMIC CAP.(1608) B K 1µF/25V | CHD1EK30B105 |
| C1004 | CHIP CERAMIC CAP.(1608) B K 1µF/25V | CHD1EK30B105 |

| Ref. No. | Description | Part No. |
|----------|--|--------------|
| C1006 | ELECTROLYTIC CAP SK100M470YZZP50R | CE2AMASTH470 |
| C1007 | ELECTROLYTIC CAP SK100M470YZZP50R | CE2AMASTH470 |
| C1008 | CHIP CERAMIC CAP.(3216) X7R K 1.0µF/100V | CA2A105MR080 |
| C1009 | CHIP CERAMIC CAP.(3216) X7R K 1.0µF/100V | CA2A105MR080 |
| C1010 | CHIP CERAMIC CAP.(3216) X7R K 1.0µF/100V | CA2A105MR080 |
| C1011 | CAP CHIP 1608 K/X7R/0.001µF/50V | CHD102EYA032 |
| C1012 | CAP CHIP 1608 K/X7R/0.001µF/50V | CHD102EYA032 |
| C1014 | CHIP CERAMIC CAP. B K 4.7µF/6.3V | CA0K475TE072 |
| C1015 | CAP CHIP 1608 Z/Y5V/0.1µF/50V | CHD104EYA036 |
| C1016 | CHIP CERAMIC CAP.(1608) B K 1µF/25V | CHD1EK30B105 |
| C1017 | CAP CHIP 1608 K/X7R/0.001µF/50V | CHD102EYA032 |
| C1018 | CAP CHIP 1608 K/X7R/0.001µF/50V | CHD102EYA032 |

CONNECTORS

| | | |
|--------|------------------------------------|--------------|
| CN101 | CONNECTOR S2P3-VH (LF)(SN) | JCVHC02JG002 |
| CN102 | CONNECTOR PRINT OSU JS-1125-04(K) | J3JT04CHY001 |
| CN103 | CONNECTOR PRINT OSU JS-1125-06(K) | J3JT06CHY001 |
| CN104 | CONNECTOR PRINT OSU C S 1-440054-0 | J344C10AP001 |
| CN1001 | CONNECTOR PRINT MES 07 S 1.0-11-7P | JC1107JSH001 |

DIODES

| | | |
|-------|---------------------------------|--------------|
| D401 | DIODE SCHOTTKY SB360BH | NDWZ000SB360 |
| D402 | DIODE SCHOTTKY SB360BH | NDWZ000SB360 |
| D403 | DIODE SCHOTTKY SB360BH | NDWZ000SB360 |
| D404 | DIODE ZENER 1ZB11BB | NDWZ0001ZB11 |
| D501 | DIODE SHOTTKY SR315B0 | NDW0000SR315 |
| D502 | DIODE SHOTTKY SR315B0 | NDW0000SR315 |
| D503 | DIODE SHOTTKY SR315B0 | NDW0000SR315 |
| D601 | DIODE 1N5397BD | NDL1001N5397 |
| D602 | DIODE 1N5397BD | NDL1001N5397 |
| D603 | DIODE 1N5397BD | NDL1001N5397 |
| D604 | DIODE 1N5397BD | NDL1001N5397 |
| D605 | DIODE FAST RECOVERY SMD GR1J-TR | ND1Z00GR1JTR |
| D606 | RECTIFIER DIODE 1N4007 | NDQZ001N4007 |
| D607 | RECTIFIER DIODE 1N4007 | NDQZ001N4007 |
| D608 | DIODE FAST RECOVERY SMD GR1G | ND1Z00GR1GTR |
| D609 | ZENER DIODE SMD TFZGTR27B | QD1B000TFZ27 |
| D610 | DIODE FAST RECOVERY SMD GR1G | ND1Z00GR1GTR |
| D612 | DIODE ZENER 1N4753A B0 36V | NDLZ01N4753A |
| D613 | ZENER DIODE EDZTE61 20B | QD1B000EDZ20 |
| D616 | ZENER DIODE SMD TFZGTR39B | QD1B000TFZ39 |
| D617 | DIODE FAST RECOVERY SMD GR1J-TR | ND1Z00GR1JTR |
| D618 | ZENER DIODE SMD TFZGTR39B | QD1B000TFZ39 |
| D701 | DIODE FAST RECOVERY SMD GR1G | ND1Z00GR1GTR |
| D1001 | DIODE SCHOTTKY SMD SK2B-TR | ND1Z00SK2BTR |
| D1002 | SWITCHING DIODE 1SS400T1 | ND1Z001SS400 |
| D1003 | ZENER DIODE EDZTE6115B | QD1B000EDZ15 |
| D1004 | ZENER DIODE EDZTE6115B | QD1B000EDZ15 |

ICS

| | | |
|--------|--|--------------|
| IC301 | IC SHUNT REGULATOR SL431A-AT | NSZBA0TAUK01 |
| IC501 | IC SHUNT REGULATOR SL431A-AT | NSZBA0TAUK01 |
| IC601 | PHOTO COUPLER LTV817MCF | NPECLTV817MF |
| IC602 | IC SWITCHING FA8A00N/SOP-8/8PIN | QSCA0T0FD010 |
| IC1001 | IC LED BACKLIGHT CONTROLLER HA7219PB/SOP/14PIN | NSCA0T00H005 |

COILS

| | | |
|-------|---|--------------|
| L601 | COIL LINE FILTER JLB20154/18MH | LLEG0Z0XB022 |
| L1001 | COIL SEALED POWER INDUCTORS CWKBNP-470K | LLF4700KV002 |

TRANSISTORS

| | | |
|------|---------------------------|--------------|
| Q401 | FET MOS FDD5612/Z | NF2ZFDD56120 |
| Q501 | FET MOS FDD5612/Z | NF2ZFDD56120 |
| Q502 | FET 2SK3018 T106 | QF1Z02SK3018 |
| Q503 | FET 2SK3018 T106 | QF1Z02SK3018 |
| Q601 | FET MOS TK5A65D LS1FNDQ(M | QEEZTK5A65DM |
| Q602 | FET MOS 2SK3471 TE12L F | QF1Z02SK3471 |

| Ref. No. | Description | Part No. |
|----------------------|----------------------------------|--------------|
| Q1001▲ | FET MOS SMD AP18T10AGH-HF | NF2Z18T10AGH |
| RESISTORS | | |
| R301 | RES CHIP 3216 1/4W J 1.5k Ω | RRJ152WAL004 |
| R302 | RES CHIP 3216 1/4W J 180 Ω | RRJ181WAL004 |
| R303 | RES CHIP 1608 1/10W F 1.00k Ω | RT1001RYL002 |
| R304 | RES CHIP 1608 1/10W F 10k Ω | RT1002RYL002 |
| R305 | RES CHIP 1608 1/10W F 2.70k Ω | RT2701RYL002 |
| R306 | RES CHIP 1608 1/10W 0 Ω | RRJ000WAL002 |
| R307 | RES CHIP 1608 1/10W F 2.70k Ω | RT2701RYL002 |
| R404 | RES CHIP 1608 1/10W J 100k Ω | RRJ104RYL002 |
| R501 | RES CHIP 3216 1/4W J 0 Ω | RRJ000WAL004 |
| R505 | RES CHIP 1608 1/10W F 10k Ω | RT1002RYL002 |
| R507 | RES CHIP 1608 1/10W F 2.70k Ω | RT2701RYL002 |
| R508 | RES CHIP 1608 1/10W J 1k Ω | RRJ102RYL002 |
| R509 | RES CHIP 1608 1/10W J 1k Ω | RRJ102RYL002 |
| R510 | RES CHIP 1608 1/10W J 100k Ω | RRJ104RYL002 |
| R511 | RES CHIP 1608 1/10W F 6.20k Ω | RT6201RYL002 |
| R512 | CHIP RES.(1608) 1/10W F 4.7k Ω | RRXAFR5Z0472 |
| R514 | RES CHIP 3216 1/3W J 0.75 Ω | RRJR75RYL008 |
| R515 | RES CHIP 3216 1/3W J 0.75 Ω | RRJR75RYL008 |
| R516 | RES CHIP 3216 1/3W J 0.75 Ω | RRJR75RYL008 |
| R517 | RES CHIP 3216 1/3W J 0.75 Ω | RRJR75RYL008 |
| R518 | RES CHIP 3216 1/4W J 0 Ω | RRJ000WAL004 |
| R602 | RES CEMENT 5W/J1.2 Ω | RWJ1R2PAK007 |
| R603 | METAL OXIDE FILM RES. 2W J 20k Ω | RN02203ZU001 |
| R605 | RES CHIP 3216 1/4W J 270 Ω | RRJ271WAL004 |
| R606 | RES CHIP 3216 1/4W J 47 Ω | RRJ470WAL004 |
| R608▲ | RES CHIP 3216 1/3W J 0.15 Ω | RRJR15RYL008 |
| R609▲ | RES CHIP 3216 1/3W J 0.15 Ω | RRJR15RYL008 |
| R610 | RES CHIP 3216 1/3W J 0.15 Ω | RRJR15RYL008 |
| R611▲ | RES CHIP 3216 1/3W J 0.15 Ω | RRJR15RYL008 |
| R612 | RES CHIP 3216 1/4W J 6.8k Ω | RRX4682HH034 |
| R614 | RES CHIP 1608 1/10W J 3.3k Ω | RRJ332RYL002 |
| R617 | METALOXIDE RES 2W J 100Ω | RNJ101PAK002 |
| R618 | RES CHIP 3216 1/4W J 1.0M Ω | RRJ105WAL004 |
| R619 | RES CHIP 3216 1/4W J 1.0M Ω | RRJ105WAL004 |
| R620 | RES CHIP 3216 1/4W J 1.0M Ω | RRJ105WAL004 |
| R621 | RES CHIP 3216 1/4W J 620k Ω | RRX4624HH034 |
| R622 | RES CHIP 1608 1/10W J 1.5M Ω | RRJ155RYL002 |
| R623 | RES CHIP 3216 1/4W J 20 Ω | RRJ200WAL004 |
| R624 | RES CHIP 1608 1/10W J 240 Ω | RRJ241RYL002 |
| R1001 | RES CHIP 1608 1/10W J 10 Ω | RRJ100RYL002 |
| R1002 | RES CHIP 1608 1/10W J 200 Ω | RRJ201RYL002 |
| R1003 | RES CHIP 3216 1/3W J 0.15 Ω | RRJR15RYL008 |
| R1004 | RES CHIP 3216 1/3W J 0.15 Ω | RRJR15RYL008 |
| R1006 | RES CHIP 1608 1/10W F 560k Ω | RT5603RYL002 |
| R1007 | RES CHIP 1608 1/10W F 510k Ω | RT5103RYL002 |
| R1008 | RES CHIP 1608 1/10W F 27k Ω | RT2702RYL002 |
| R1009 | RES CHIP 1608 1/10W F 200k Ω | RT2003RYL002 |
| R1010 | RES CHIP 1608 1/10W 0 Ω | RRJ000WAL002 |
| R1012 | RES CHIP 1608 1/10W J 240 Ω | RRJ241RYL002 |
| R1013 | RES CHIP 1608 1/10W J 240 Ω | RRJ241RYL002 |
| R1014 | RES CHIP 1608 1/10W F 13k Ω | RT1302RYL002 |
| R1015 | RES CHIP 1608 1/10W F 330 Ω | RT3300RYL002 |
| R1016 | RES CHIP 1608 1/10W 0 Ω | RRJ000WAL002 |
| R1017 | RES CHIP 1608 1/10W F 100 Ω | RT1000RYL002 |
| R1018 | RES CHIP 1608 1/10W J 1k Ω | RRJ102RYL002 |
| R1019 | RES CHIP 1608 1/10W J 10k Ω | RRJ103RYL002 |
| R1020 | RES CHIP 1608 1/10W J 100k Ω | RRJ104RYL002 |
| R1021 | RES CHIP 1608 1/10W J 10k Ω | RRJ103RYL002 |
| R1022 | RES CHIP 1608 1/10W J 100k Ω | RRJ104RYL002 |
| R1024 | RES CHIP 1608 1/10W 0 Ω | RRJ000WAL002 |
| MISCELLANEOUS | | |
| B19 | HEAT SINK PNI A11N5UH | 1EM435557A |
| BC601 | BEADS INDUCTOR FBR07HA121SB-00 | LLBF00STU030 |
| BC602 | BEADS INDUCTOR FBR07HA121SB-00 | LLBF00STU030 |
| BC1001 | WIRE CP STP-S-0.50 | XZ40F0REN001 |

| Ref. No. | Description | Part No. |
|----------|-------------------------------|--------------|
| F602▲ | FUSE TIME RAG SLT250V2.5A | PDGSLB0NG252 |
| L35 | SCREW B-TIGHT D3X8 BIND HEAD+ | GBJB3080 |
| SA601▲ | VARISTOR/Q TVR10471KS42Y | NVQKTVR10471 |
| T601▲ | TRANS POWER LC11 24W-1Z | LTT2PE0TR003 |

REVISION HISTORY

Chassis PL13.25

- 2013/05/17 24PFL4508/F4 (Serial No.: ME1) added

COMPARISON LIST OF MODEL NAMES

Chassis PL13.25

24PFL4508/F4 (ME1) A30LZZT