

**Service
Service
Service**

21PV385/01/07/39/58

Service Manual

Contents

Chapter	/01	PAL-BG, EURO
Sec. 1: Adjustment Procedure	/07	PAL I, UK/IRELAND
Schematic Diagrams and CBA's	/39	PAL/SECAM-BG+PAL/SECAM-L/L',FRANCE
Exploded Views	/58	PAL-BG/DK+SECAM-BG/DK,EAST-EURO
Mechanical and Electrical Parts Lists		
Sec. 2: Standard Maintenance		
Mechanism Alignment Procedures		
Disassembly / Assembly of Mechanism		
Deck Exploded Views		

Survey of versions:

VN: 1B

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.



MAIN SECTION

TV-VCR COMBINATION

Sec. 1: Main Section

- Adjustment Procedures
- Schematic Diagrams and CBA's
- Exploded Views
- Mechanical and Electrical Parts List

TABLE OF CONTENTS

IMPORTANT SAFETY PRECAUTIONS	1-1-1
STANDARD NOTES FOR SERVICING	1-2-1
PREPARATION FOR SERVICING	1-3-1
OPERATING CONTROLS AND FUNCTIONS	1-4-1
CABINET DISASSEMBLY INSTRUCTIONS.....	1-5-1
ELECTRICAL ADJUSTMENT INSTRUCTIONS.....	1-6-1
BLOCK DIAGRAMS	1-7-1
SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS	1-8-1
WAVEFORMS.....	1-9-1
WIRING DIAGRAM	1-10-1
SYSTEM CONTROL TIMING CHARTS	1-11-1
IC PIN FUNCTION DESCRIPTIONS	1-12-1
LEAD IDENTIFICATIONS	1-13-1
ELECTRICAL PARTS LIST	1-14-1
EXPLODED VIEWS	1-15-1
MECHANICAL PARTS LIST	1-16-1

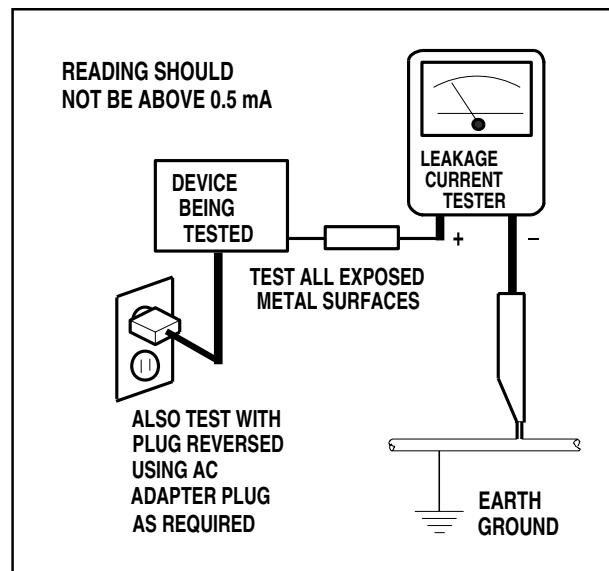
IMPORTANT SAFETY PRECAUTIONS

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

Safety Precautions for TV Circuit

1. **Before returning an instrument to the customer,** always make a safety check of the entire instrument, including, but not limited to, the following items:
 - a. Be sure that no built-in protective devices are defective and have been defeated during servicing. (1) Protective shields are provided on this chassis to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience. (2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including but not limited to, 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 picture tube and the cabinet mask, (2) excessively wide cabinet ventilation slots, and (3) an improperly fitted and/or incorrectly secured cabinet back cover.
 - c. **Antenna Cold Check** - With the instrument AC plug removed from any AC source, connect an electrical jumper across the two AC plug prongs. Place the instrument AC switch in the on position. Connect one lead of an ohmmeter to the AC plug prongs tied together and touch the other ohmmeter lead in turn to each tuner antenna input exposed terminal screw and, if applicable, to the coaxial connector. If the measured resistance is less than 1.0 megohm or greater than 5.2 megohm, an abnormality exists that must be corrected before the instrument is returned to the customer. Repeat this test with the instrument AC switch in the off position.
 - d. **Leakage Current Hot Check** - With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leak-

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



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

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

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

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

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

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

5. Hot Chassis Warning -

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

Precautions during Servicing

- A. Parts identified by the () symbol are critical for safety.
Replace only with part number specified.
- B. In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.
Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.
- C. Use specified internal wiring. Note especially:
 - 1) Wires covered with PVC tubing
 - 2) Double insulated wires
 - 3) High voltage leads
- D. Use specified insulating materials for hazardous live parts. Note especially:
 - 1) Insulation Tape
 - 2) PVC tubing
 - 3) Spacers
 - 4) Insulators for transistors.
- E. When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.
- F. Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)
- G. Check that replaced wires do not contact sharp edged or pointed parts.

- H. When a power cord has been replaced, check that 5~6 kg of force in any direction will not loosen it.
- I. Also check areas surrounding repaired locations.
- J. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.
- K. Crimp type wire connector

When replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, in order to prevent shock hazards, perform carefully and precisely the following steps.

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 VCR connectors, first, disconnect the AC plug from AC supply socket.

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	$\geq 3\text{mm}(d)$ $\geq 6 \text{ mm}(d')$

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.

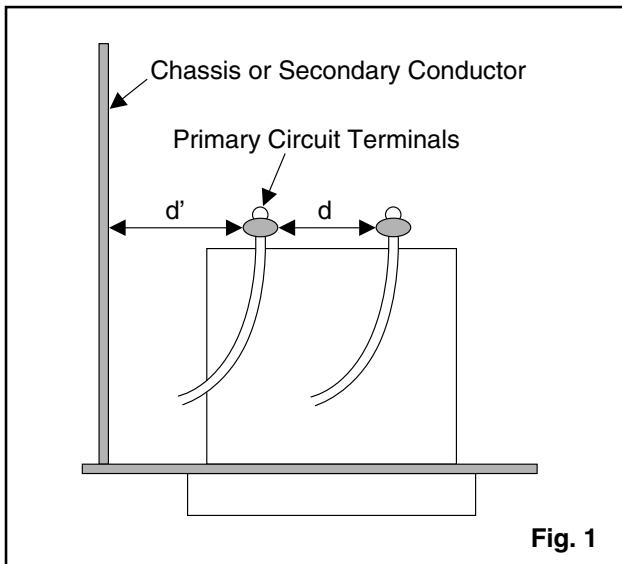


Fig. 1

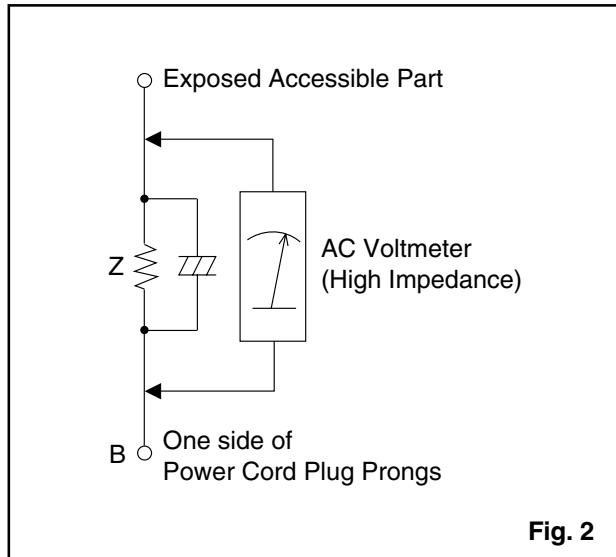


Fig. 2

Table 2: Leakage current ratings for selected areas

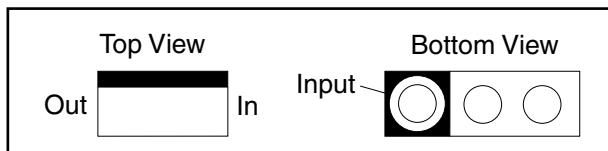
AC Line Voltage	Load Z	Leakage Current (i)	One side of power cord plug prongs (B) to:
220 to 240 V	2k Ω RES. Connected in parallel	$i \leq 0.7\text{mA}$ AC Peak $i \leq 2\text{mA}$ DC	RF or Antenna terminals
	50k Ω RES. Connected in parallel	$i \leq 0.7\text{mA}$ AC Peak $i \leq 2\text{mA}$ DC	A/V Input,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

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

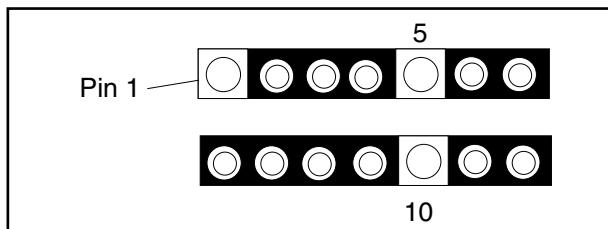
STANDARD NOTES FOR SERVICING

Circuit Board Indications

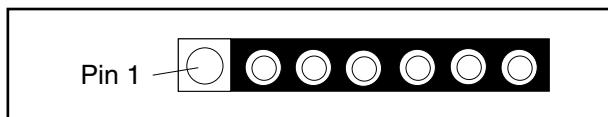
1. The output pin of the 3 pin Regulator ICs is indicated as shown:



2. For other ICs, pin 1 and every 5th pin is indicated as shown:

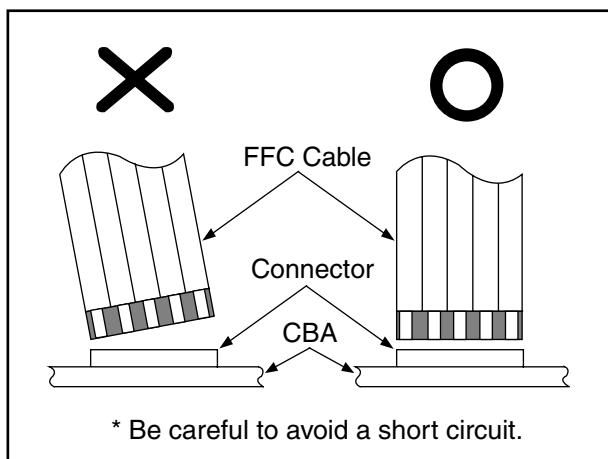


3. The 1st pin of every pin connector are indicated as shown:



Instructions for Connectors

1. When you connect or disconnect FFC cable (connector), be sure to disconnect the AC cord.
2. FFC cable (connector) should be inserted parallel into the connector, not at an angle.

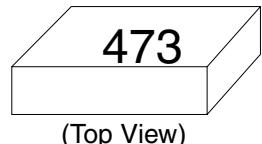


[CBA= Circuit Board Assembly]

How to Read the Values of the Rectangular Type Chip Components

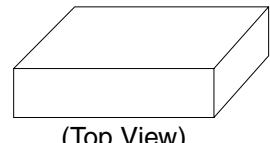
Example:

- (a) Resistor



$$= 473 = 47 [k\Omega]$$

- (b) Capacitor



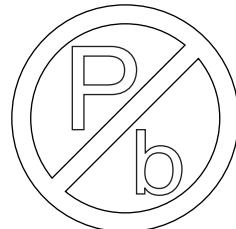
= Not Shown

Caution:

Once chip parts (Resistors, Capacitors, Transistors, etc.) are removed, they must not be reused. Always use a new part.

Pb (Lead) Free Solder

Pb free mark will be found on PCBs used 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

Replacement Procedures for Leadless (Chip) Components

The Following Procedures are Recommended for the Replacement of the Leadless Components Used in this Unit.

1. Preparation for replacement

1.1. Pb free solder

- a. Soldering Iron
Use a soldering iron for Pb free solder.
- b. Solder
Be sure to use Pb free solder.
- c. Soldering time
Do not apply heat for more than 4 seconds.
- d. Preheating
Leadless capacitor must be preheated before installation. (130°C~150°C, for about two minutes.)

1.2. Standard solder

- a. Soldering Iron
Use a pencil-type soldering iron (less than 30 watts).
- b. Solder
Eutectic solder (Tin 63%, Lead 37%) is recommended.
- c. Soldering time
Do not apply heat for more than 4 seconds.
- d. Preheating
Leadless capacitor must be preheated before installation. (130°C~150°C, for about two minutes.)

Notes:

- a. Leadless components must not be reused after removal.
- b. Excessive mechanical stress and rubbing for the component electrode must be avoided.

2. Removing the leadless component

Grasp the leadless component body with tweezers and alternately apply heat to both electrodes. When the solder on both electrodes has melted, remove leadless component with a twisting motion.

Notes:

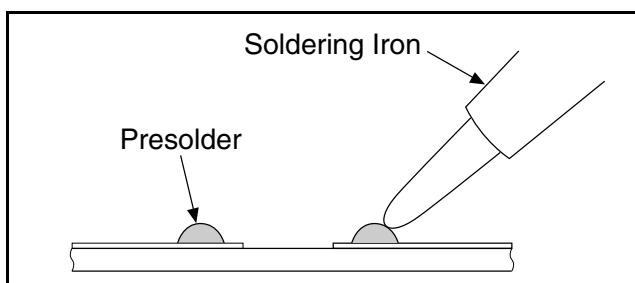
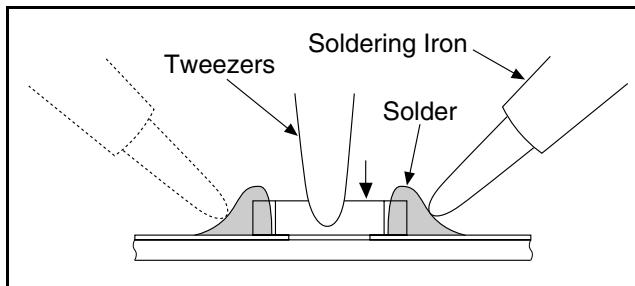
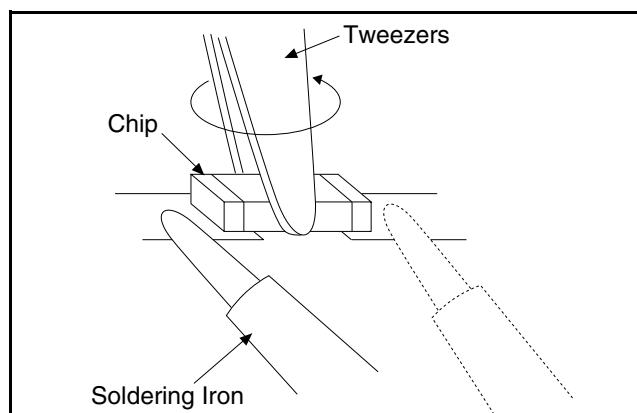
- a. Do not attempt to lift the component off the board until the component is completely disconnected from the board by the twisting action.
- b. Take care not to break the copper foil on the printed board

3. Installing the leadless component

- a. Presolder the contact points of the circuit board.
- b. Press the part downward with tweezers and solder both electrodes as shown below.

Note:

Do not glue the replacement leadless component to the circuit board.



How to Remove / Install Flat Pack IC

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 apply the hot air to the chip parts around the Flat Pack-IC for over 6 seconds as damage may occur to the chip parts. 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 solder lands under the IC when removing it.

1. Removal

With Hot - Air Flat Pack - IC Desoldering Machine:

- a. Prepare the Hot - Air Flat Pack - IC Desoldering Machine, then apply hot air to Flat Pack - IC (about 5~6 seconds). (Fig. S-1-1)
- b. Remove the Flat Pack- IC with tweezers while applying the hot air.

With Soldering Iron:

- a. 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)
- b. 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)

With Iron Wire:

- a. 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)

- b. Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.
- c. Pull up on the wire as the solder melts so as to lift the IC leads from the CBA contact pads, while heating the pins using a fine tip soldering iron or hot air blower.

Note:

When using a soldering iron, care must be taken to ensure that the Flat Pack - IC is not being held by glue, or when it is removed from the CBA, it may be damaged if force is used.

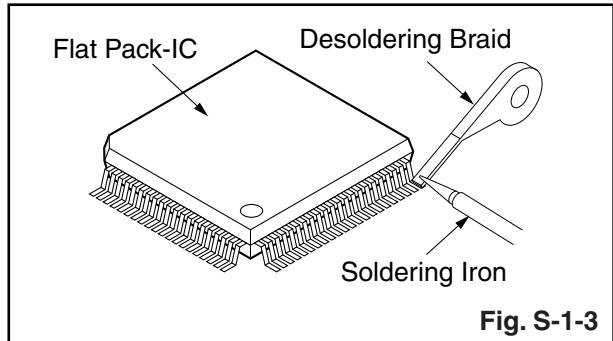


Fig. S-1-3

2. Installation

- a. 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.
- b. The "●" mark on the Flat Pack - IC indicates pin 1 (See Fig. S-1-6). Make sure this mark matches the 1 on the CBA when positioning for installation. Then pre - solder the four corners of the Flat Pack-IC (See Fig. S-1-7).
- c. Solder all pins of the Flat Pack - IC. Make sure that none of the pins have solder bridges.

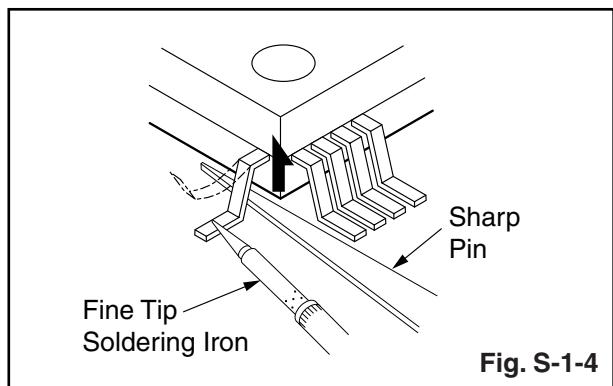


Fig. S-1-4

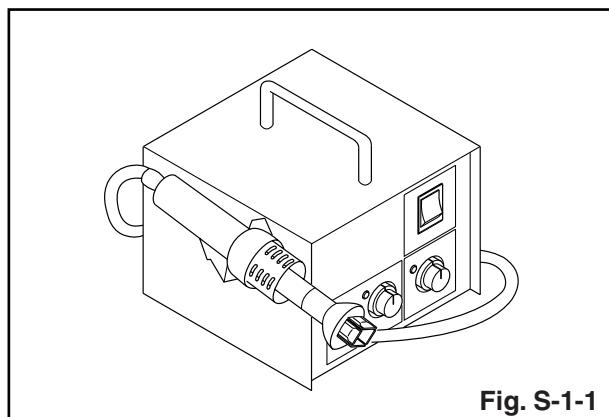


Fig. S-1-1

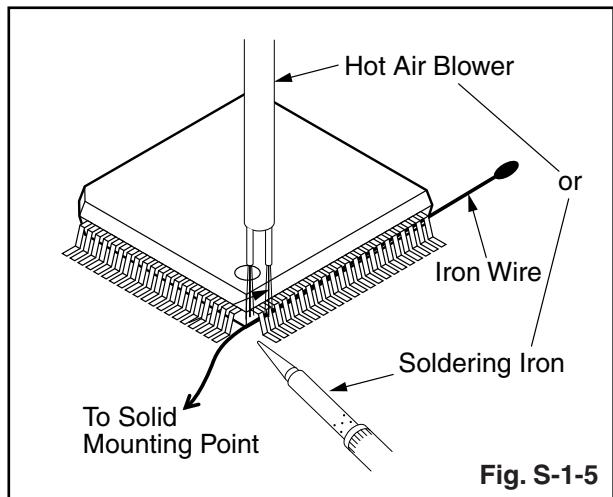


Fig. S-1-5

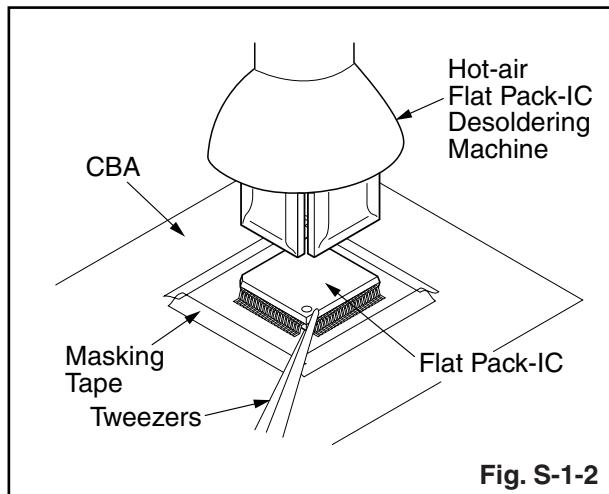


Fig. S-1-2

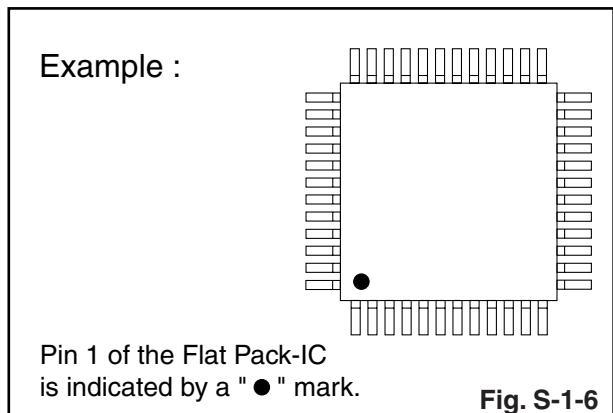
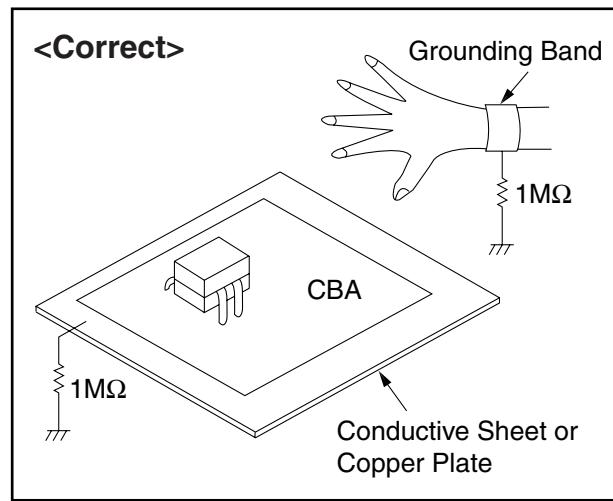
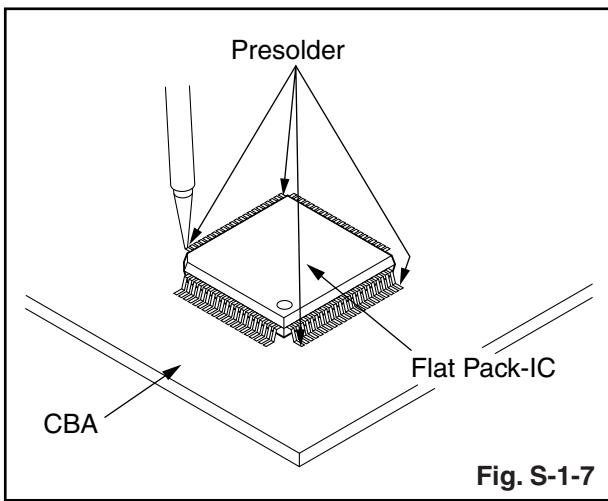


Fig. S-1-6



Instructions for Handling Semiconductors

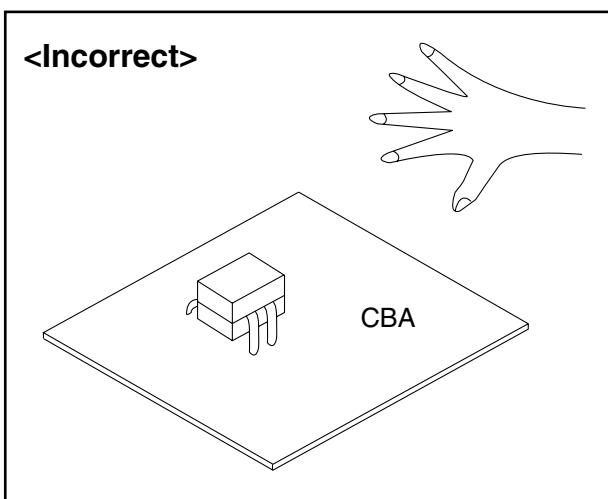
Electrostatic breakdown of the semiconductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

Ground for Human Body

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

Ground for Work Bench

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



PREPARATION FOR SERVICING

How to Enter the Service Mode

Caution: 1

- Optical sensors system are used for Tape Start and End Sensor on this equipment. Read this page carefully and prepare as described on this page before starting to service; otherwise, the unit may operate unexpectedly.

Preparing: 1

- Cover Q202 (START SENSOR) and Q201 (END SENSOR) with Insulation Tape or enter the service mode to activate Sensor Inhibition automatically.

Note: Avoid playing, rewinding or fast forwarding the tape to its beginning or end, because both Tape End Sensors are not active.

How to Enter the Service Mode

- Turn the power on. (Use main power on the TV unit.)
- Press [STANDBY/ON], [2], [7], [1], and [MUTE] buttons on the remote control unit in that order within 5 seconds. When entering the service mode, "4" will display at corners of the screen.
- During the service mode, electrical adjustment mode can be selected by remote control key.

Details are as follows.

Key	Adjustment Mode
MENU	Picture adjustment mode: Press the MENU button to change from BRT (Bright), *CNT (Contrast), *COL (Color), *TNT(Tint) and SHP(SHARP). Press P+/P- key to adjust Initial Value. *Marked items are not necessary to adjust normally.
△ -	SECAM Black Level adjustment mode: See adjustment instructions page 1-6-4. Cut-Off adjustment mode: See adjustment instructions page 1-6-5. White Balance adjustment mode: See adjustment instructions page 1-6-6.
0	C-Trap adjustment mode: See adjustment instructions page 1-6-3.
1	DSPC adjustment mode: See adjustment instructions page 1-6-3.
2	H adjustment mode: See adjustment instructions page 1-6-2.
3	Head switching point adjustment mode (Auto adjustment): See adjustment instructions page 1-6-8.
4	Auto record mode: Perform recording (15 Sec.)-->Stop-->Rewind (Zero return) automatically.
5	Head switching point adjustment mode (Manual adjustment): See adjustment instructions page 1-6-8.

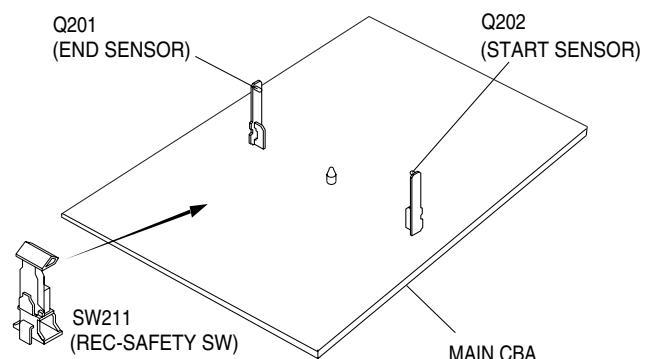
Key	Adjustment Mode
6	No need to use.
7	No need to use.
8	H. Shift adjustment mode: See adjustment instructions page 1-6-5.
9	V.size/V. shift adjustment: See adjustment instructions page 1-6-4.

Caution: 2

- The deck mechanism assembly is mounted on the Main CBA directly, and SW211 (REC-SAFETY SW) is mounted on the Main CBA. When deck mechanism assembly is removed from the Main CBA due to servicing, this switch can not be operated automatically.

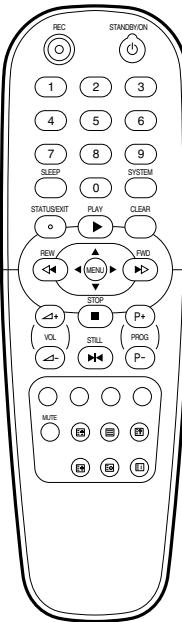
Preparing: 2

- To eject the tape, press the STOP/EJECT button on the unit (or Remote Control).
- When you want to record during the Service mode, press the Rec button while depressing SW211 (REC-SAFETY SW) on the Main CBA.



OPERATING CONTROLS AND FUNCTIONS

The remote control



REC To record the TV channel selected at this moment or press repeatedly to start a One-Touch Recording.

STANDBY/ON To switch off or on, interrupt menu function.

0..9 Press to select channels at TVCR.

SLEEP To select the switch-off time in 30 minutes intervals.

SYSTEM To change Video (colour) system. (21PV385/39, 58)
Doesn't work on these models. (21PV385/01, 07)

STATUS/EXIT To access or remove the TVCR's on-screen status display. To exit on-screen menus.

CLEAR To delete last entry. To clear a programmed recording (TIMER). To reset the elapsed time counter in the playback, recording or stop mode.

STILL To stop the tape and play back a picture step by step. (except for during fast forwarding and fast rewinding)

MENU To call up main menu of TVCR.

FWD When tape playback is stopped, press to fast forward the tape at high speed. During playback, press to fast forward the tape while the picture stays on the screen. To store or confirm entry in the menu. Press to adjust the controls of TVCR menu.

REW When tape playback is stopped, press to rewind the tape at high speed. During playback, press to rewind the tape while the picture stays on the screen. To return the cursor in the menu. Press to adjust the controls of TVCR menu.

PLAY To play back a tape, select an item in the menu of TVCR.

STOP To stop the tape, select an item in the menu of TVCR.

VOL + **VOL -** To adjust the volume.

PROG P+ **PROG P-** To select the programme number. During playback, press to adjust the tracking.

MUTE To eliminate the TV's sound. Press again to restore the volume.

Red button / Green button / Yellow button/ Blue button / Doesn't work on these models.

To switch Teletext on or off, or transparent mode

Enlarge font

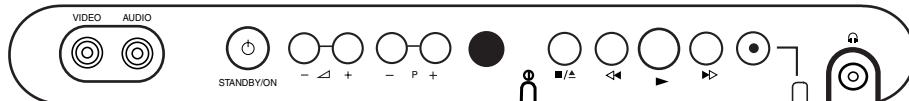
Select Teletext sub-page

Recall hidden information

Stop page changes

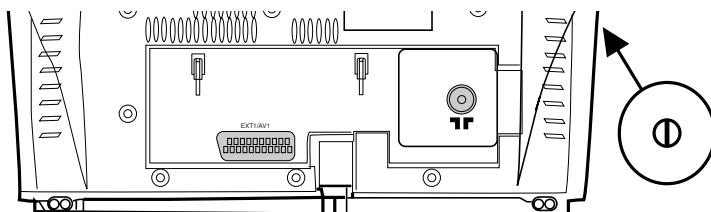
Go back to start page

Front of your TVCR



- STANDBY/ON:** To switch off or on, interrupt menu function.
- Volume:** In connection with the button **P-/-P+** to adjust the volume.
- P-/-P+ Programme number:** To select the programme number. During playback, press to adjust the tracking. To remove vertical jitter in a Still picture.
- Record:** To record the programme currently selected.
- Playback:** To play a recorded cassette.
- Pause/Stop, eject cassette:** To stop the tape; If this key is depressed while in STOP, the cassette is then ejected from the machine.
- When tape playback is stopped, press to fast forward the tape at hight speed.**
- When tape playback is stoped, press to rewind the tape at hight speed.**
- Sockets on the front:**
 - White socket / AUDIO input socket:** To connect a camcorder or video game machine (audio).
 - Yellow socket / VIDEO input socket:** To connect a camcorder or video game machine (video).
 - Small socket / socket for headphones:** To connect headphones.

Back of your TVCR



- Aerial input socket:** To connect the aerial cable.
 - EXT1/AV Scart socket :** To connect a satellite receiver, decoder, TV-Video Combi, etc
 - Power switch:** To switch the TV-Video Combi off.
- Caution:** If you switch off using the power switch, TIMER-recordings are impossible!

The control lights at the front of machine

STANDBY **Standby light:** lights up when the TV-Video Combi has been switched on by means of the main switch.

RECORD **Recording light:** lights up during recording.

FAST blink: RECORDING PAUSE; TIMER RECORDING NOT STAND-BY.

SLOW blink: TIMER RECORDING is stored in a timer block.

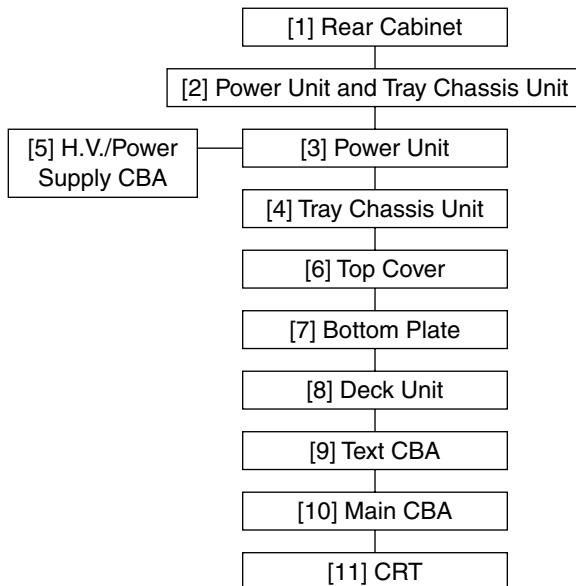
CABINET DISASSEMBLY INSTRUCTIONS

1. Disassembly Flowchart

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

Caution !!

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



2. Disassembly Method

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/ *UNHOOK/ UNLOCK/RELEASE/ UNPLUG/ DESOLDER	Note
[1]	Rear Cabinet	1,2,5	7(S-1), 2(S-2), *CN151	1
[2]	Power Unit and Tray Chassis Unit	3,4,5	Anode Cap, *CN501, *CN551, *CN601, CRT CBA, Power Knob	2
[3]	Power Unit	3,5	*CN502, *CN552, *CN602	3
[4]	Tray Chassis Unit	3	-----	-
[5]	H.V./Power Supply CBA	3	6(S-3)	4
[6]	Top Cover	3	5(S-4), CL604	5
[7]	Bottom Plate	3	(S-5)	6

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/ *UNHOOK/ UNLOCK/RELEASE/ UNPLUG/ DESOLDER	Note
[8]	Deck Unit	3, 5	7(S-6), (S-7), (S-8), Desolder *CN201, CL401, CL402, CL403	7
[9]	Text CBA	3, 5	(S-9), Text Holder, *CN751, *CN752	8
[10]	Main CBA	3	4(S-10)	9
[11]	CRT	4	4(S-11)	10

↓ ↓ ↓ ↓ ↓
(1) (2) (3) (4) (5)

(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 Screw (S-2)

(5): Refer to the following "Reference Notes in the Table."

Reference Notes in the Table

1. Removal of the Rear Cabinet.
Remove seven screws (S-1) and two screws (S-2). Disconnect connector CN151 and remove the Rear Cabinet.

Caution !!

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

2. Removal of the Power Unit and Tray Chassis Unit.
Discharge the Anode Lead of the CRT with the CRT Ground before removing the Anode Cap.
Disconnect the following: Anode Cap, CN501, CN551, CN601, CRT CBA, and Power Knob. Then pull the Power Unit and Tray Chassis Unit out backward.

3. Removal of the Power Unit.
Disconnect connectors CN502, CN552, and CN602. Then slide the Power Unit out.

4. Removal of the H.V./Power Supply CBA.
Remove six screws (S-3) and pull up the H.V./Power Supply CBA.

5. Removal of the Top Cover.
Remove five screws (S-4) and CL604, and remove the Top Shield.
6. Removal of the Bottom Plate.
Remove a screw (S-5). Then slide the Bottom Plate out front.
7. Removal of the Deck Unit.
Remove seven screws (S-6), screw (S-7) and screw (S-8). Then, desolder connectors (CN201, CL401, CL402, CL403) and lift up the Deck Unit.
8. Removal of the Text CBA.
Remove a screw (S-9) and Text Holder, and disconnect connectors CN751 and CN752. Then, lift the Text CBA up.
9. Removal of the Main CBA.
Remove four screws (S-10) and pull up the Main CBA.
10. Removal of the CRT.
Remove four screws (S-11) and pull the CRT backward.

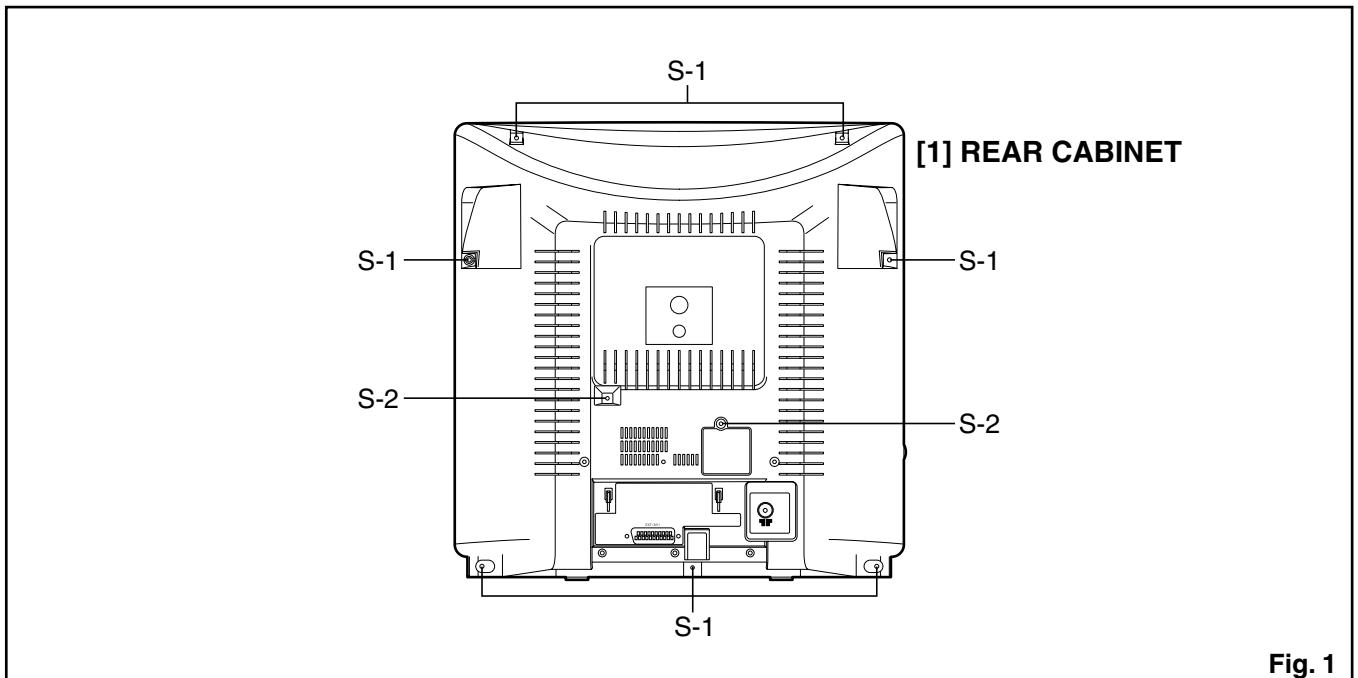


Fig. 1

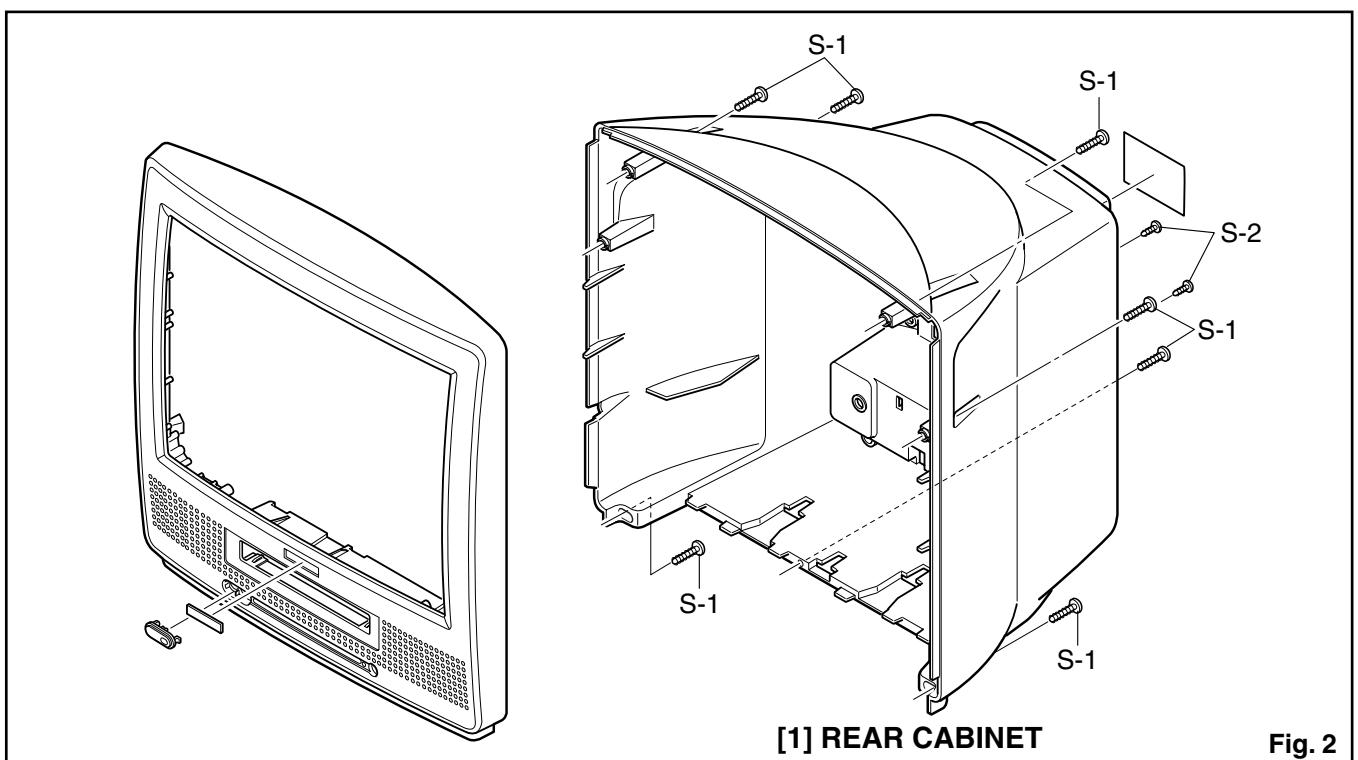
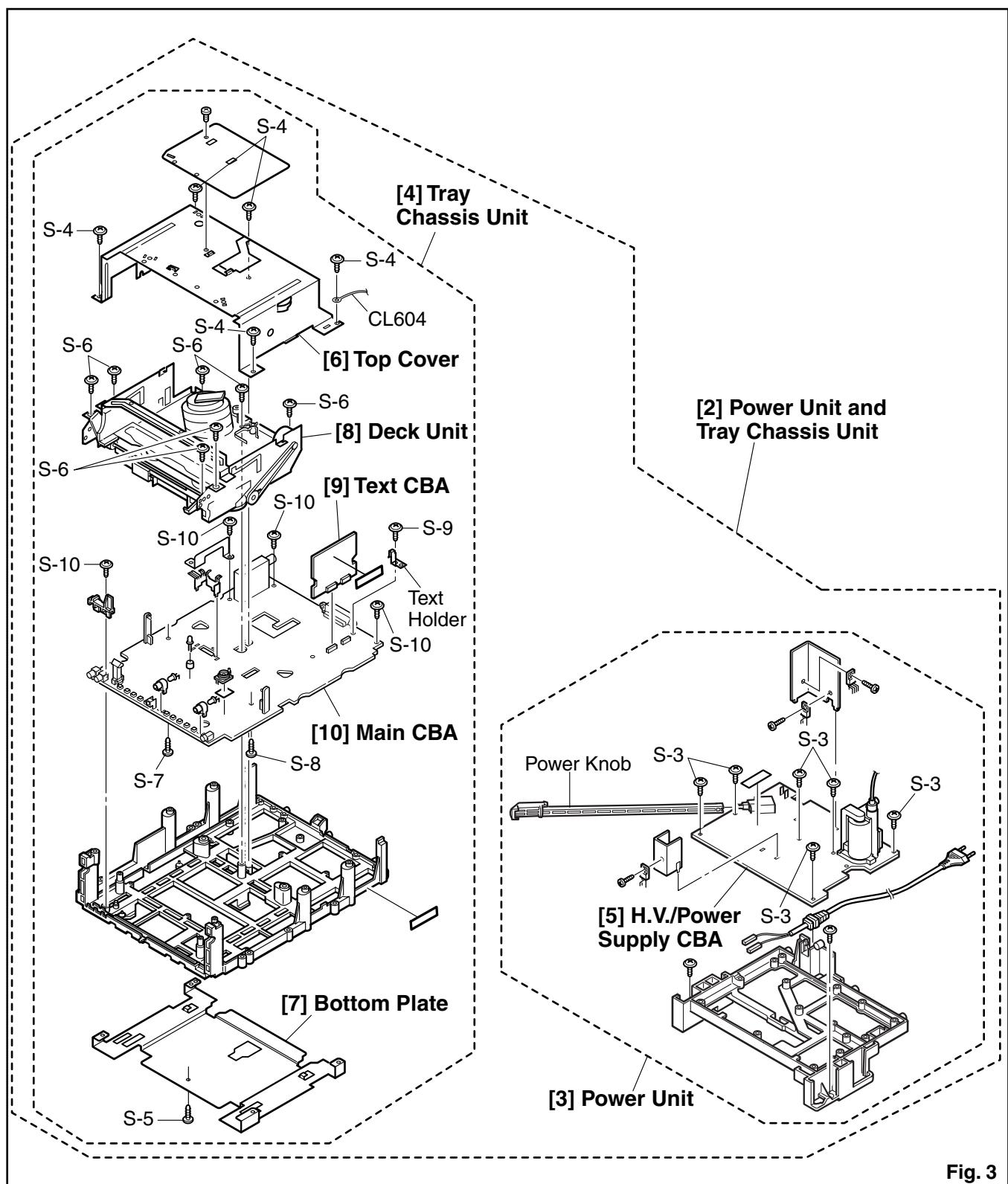


Fig. 2



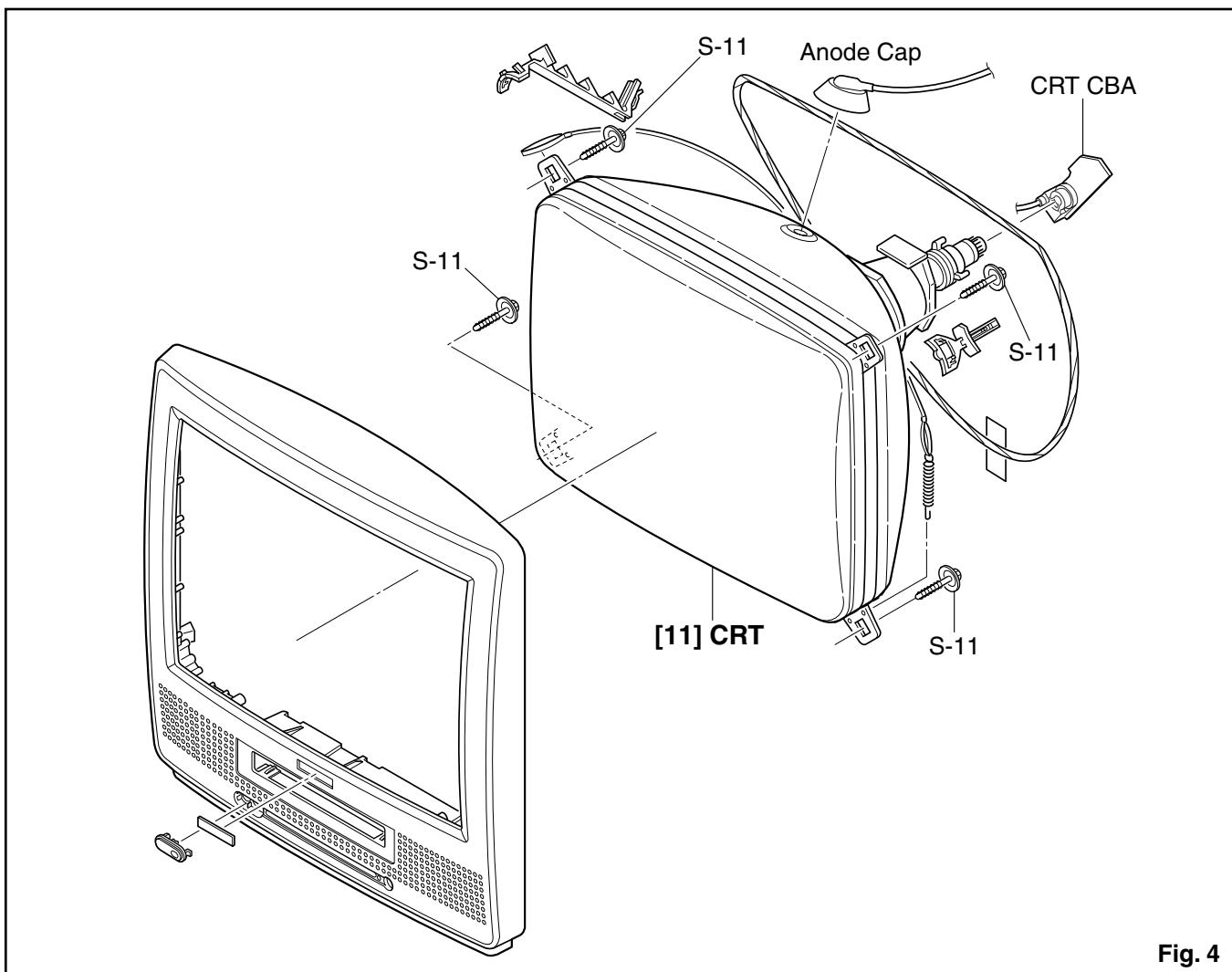


Fig. 4

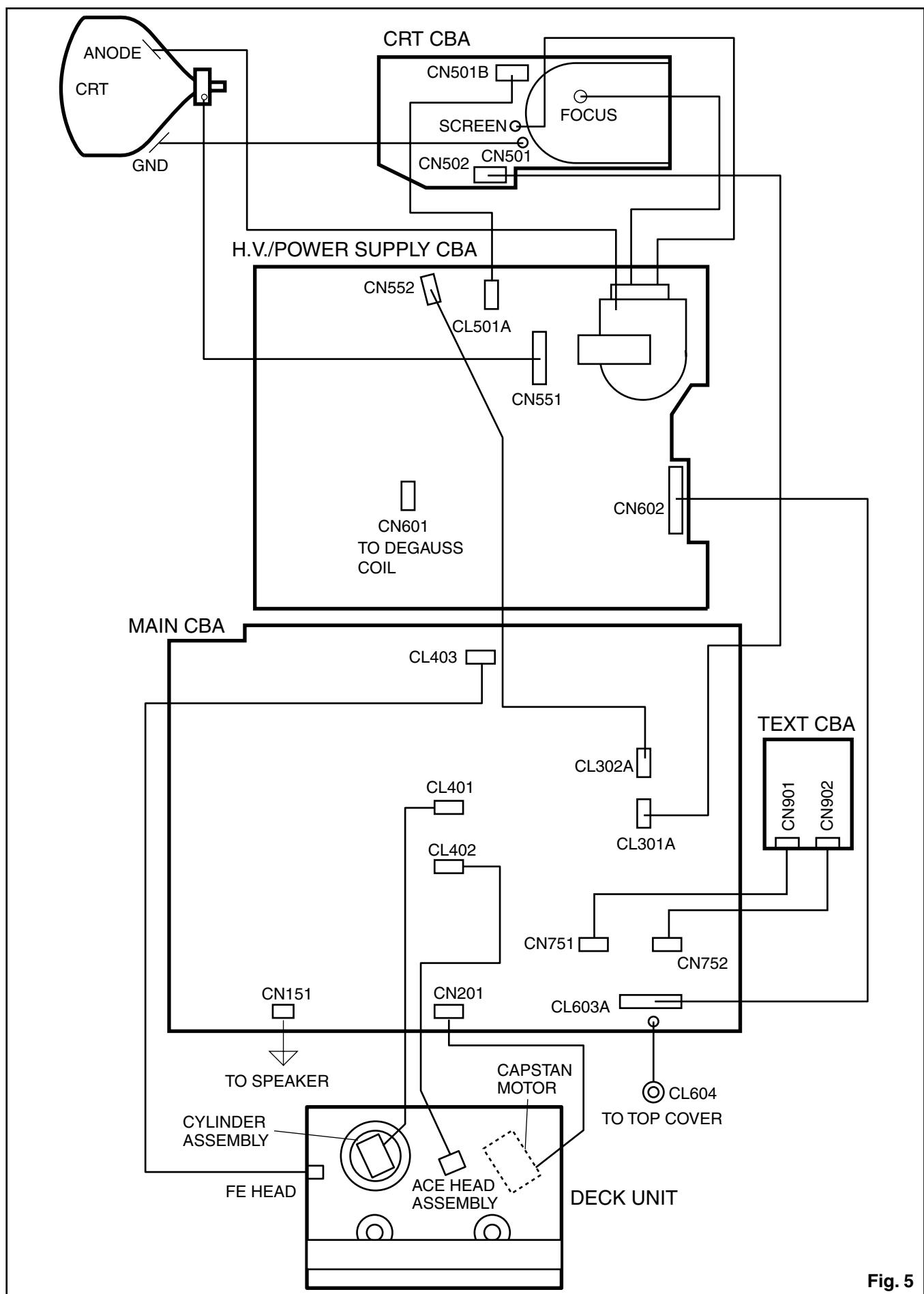


Fig. 5

ELECTRICAL ADJUSTMENT INSTRUCTIONS

General Note:

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

NOTE:

Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

Test Equipment Required

1. PAL Pattern Generator (Color Bar, Monoscope, Black Raster, White Raster, Sympte)
2. SECAM Pattern Generator (Gray Scale)
3. AC Milli Voltmeter (RMS)
4. Alignment Tape (9965 000 14514), Blank Tape (E180)
5. DC Voltmeter
6. Oscilloscope: Dual-trace with 10:1 probe,
V-Range: 0.001~50V/Div,
F-Range: DC~AC-60MHz
7. Frequency Counter
8. Plastic Tip Driver
9. RF input (at each broadcasting system)
Receiving Channel : VHF Low
Input level : 80dB μ V
10. Ext.input
FRONT VIDEO-IN JACK or REAR SCART JACK

How to Set up the Service mode:

NOTE:

After replacing the IC202 (Memory) or Main CBA, the set value in IC202 (Memory) will be lost. So it is necessary to set up or adjust in the Service mode after its replacement.

Service Mode:

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

How to set up the option code

1. Enter the Service mode.
2. Press the [STATUS/EXIT] button on the remote control unit. The option code appears on the display.
3. If needed, input the option code as shown below using number buttons on the remote control unit.

Model	Option Code
21PV385/07	0176
21PV385/01	0178
21PV385/58	0179
21PV385/39	0177

4. To reset the software, press [PAUSE] and [5] buttons on the remote control unit.
The option code is changed.

1. DC114V (+B) Adjustment

Purpose: To obtain correct operation.

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

Test point	Adj. Point	Mode	Input
TP503 (+B), TP504 (GND)	VR601	RF (or Ext.)	Color Bar
Tape	M. EQ.	Spec.	
---	DC Voltmeter, Plastic Tip Driver	+114±0.5V DC	

Note: TP503(+B), TP504(GND), VR601 --- H.V./Power Supply CBA

1. Connect the unit to AC Power Outlet. (exact AC230V)
2. Input a color bar signal from RF (or Ext.) input and leave it for at least 20 minutes.
3. Connect DC Volt Meter to TP503(+B) and TP504(GND).
4. Adjust VR601 so that the voltage of TP503(+B) becomes +114±0.5V DC.

2. H Adjustment

Purpose: To get correct horizontal position and size of screen image.

Symptom of Misadjustment: Horizontal position and size of screen image may not be properly displayed.

Test point	Adj. Point	Mode	Input
R590	P+/P-	buttons	Ext.
Tape	M. EQ.	Spec.	
---	Frequency Counter	15.625kHz±75Hz	

Note: R590 --- H.V./Power Supply CBA

1. Connect Frequency Counter to R590.
2. Set the unit to the Ext. mode and no input is necessary. Enter the Service mode.
(See page 1-6-10.)
3. Operate the unit for at least 20 minutes.
4. Press [2] button on the remote control unit and select H-Adj mode.
5. Press [P+/P-] buttons on the remote control unit so that the display will change [0] to [7.]
At this moment, choose display [0] to [7] when the Frequency counter display is closest to 15.625kHz±75Hz.
6. Turn the power off and on again.

3. C-Trap Adjustment

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

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

Test point	Adj. Point	Mode	Input
J349F3 (B-OUT)	P+/P- buttons	RF (or Ext.)	Color Bar
Tape	M. EQ.	Spec.	
---	Oscilloscope, Pattern Generator	200mVp-p Max.	

Figure

Fig. 1

Note: J349F3 (B-Out)--- Main CBA

1. Connect Oscilloscope to J349F3.
2. Input a color bar signal from RF (or Ext.) input.
Enter the Service mode. (See page 1-6-10.)
3. Press [0] button on the remote control unit and select C-TRAP mode.
4. Press [P+/P-] buttons on the remote control unit so that the carrier leakage B-Out (4.43MHz) value becomes minimum on the oscilloscope.
5. Turn the power off and on again.

4. How to measure the standard V-ENV value of Digital Studio Picture Control

Purpose: To set the recording condition appropriate for the recording tape.

Symptom of Misadjustment: Recording or playing back picture quality may fall. The picture will be tinted.

1. Insert a new tape (type: E180) for the DSPC alignment into the TV/VCR.
2. Input the black raster signal from the video input jack (VIDEO-IN).
3. Enter the service mode. (See page 1-6-10.)

4. To enter the DSPC mode, press [1] button on the remote control unit. Recording starts automatically and "DSPC" appears on the display.

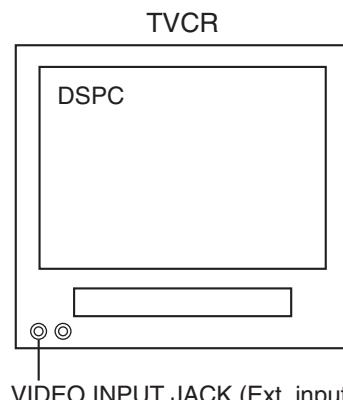


Fig. 2

5. Recording continues for 10 seconds in SP mode.
Note: Since the reference value of LP V-ENV is computed from the reference value of SP V-ENV, there is no need to survey it.
6. The tape is rewinded to the recording start point.
7. The unit enters the play mode automatically and the V-ENV levels of each the reference value of SP mode and the computing value of LP mode are memorized into the EEPROM.
8. "OK" or "NG" appears on upper left corner of the screen with blueback.
In case of "OK": "OK" (green) is indicated without ejecting tape.
In case of "NG": "NG" (red) is indicated with ejecting tape.

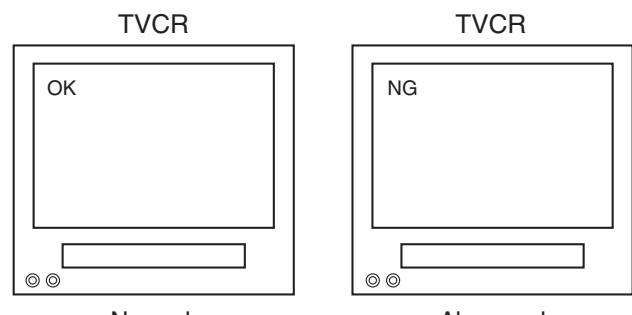


Fig. 3

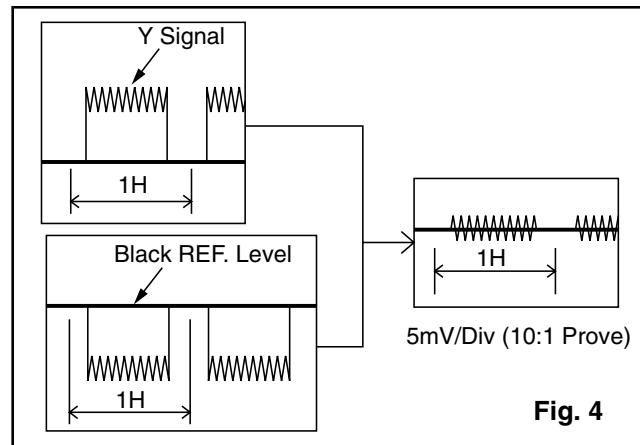
5. SECAM Black Level Adjustment

Purpose: To set Black Level of the SECAM signal R-Y/B-Y to Ref. level.

Symptom of Misadjustment: If Black Level of the SECAM signal R-Y/B-Y is incorrect, the picture is bluish or reddish in grayscale compared with PAL signal.

Test point	Adj. Point	Mode	Input
J361G4	P+/P- buttons	Ext.	SECAM Gray Scale
Tape	M. EQ.		Spec.
---	Pattern Generator, Analog Oscilloscope (unusable Digital Oscilloscope)		---

1. Degauss the CRT and allow CRT to operate for 20 minutes before starting the alignment.
2. Input the SECAM Gray Scale signal from Ext. input.
3. Enter the service mode. (See page 1-6-10.)
4. To enter the C/D/S mode, press [\triangle] on the remote control unit.
5. To select SBR (SECAM Black Level R-Y), press [6] button on the remote control unit.
6. Press [P+/P-] buttons to adjust Y signal to the black ref. level.
7. To select SBB (SECAM Black Level B-Y), press [7] button on the remote control unit.
8. Press [P+/P-] buttons to adjust Y signal to the black ref. level.



6. V. Size Adjustment

Purpose: To obtain correct vertical height of screen image.

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

Test point	Adj. Point	Mode	Input
Screen	P+/P- buttons	RF (or Ext.)	Monoscope
Tape	M. EQ.		Spec.
---	Pattern Generator		90±5%

1. Enter the Service mode. (See page 1-6-10.) Press [9] button on the remote control unit and select V-S mode. (Press [9] button then display will change to V-P and V-S).
2. Input monoscope pattern and leave it for at least 20 minutes.
3. Press [P+/P-] buttons on the remote control unit so that the monoscope pattern is 90±5% of display size and the circle is round.

7. V. Shift Adjustment

Purpose: To obtain correct vertical position of screen image.

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

Test point	Adj. Point	Mode	Input
Screen	P+/P- buttons	RF (or Ext.)	Monoscope
Tape	M. EQ.		Spec.
---	Pattern Generator		90±5%

1. Enter the Service mode. (See page 1-6-10.) Press [9] button on the remote control unit and select V-P mode. (Press [9] button then display will change to V-P and V-S).
2. Input monoscope pattern and leave it for at least 20 minutes.
3. Press [P+/P-] buttons on the remote control unit so that the top and bottom of the monoscope pattern are equal to each other.

8. H. Shift Adjustment

Purpose: To obtain correct horizontal position and size of screen image.

Symptom of Misadjustment: Horizontal position and size of screen image may not be properly displayed.

Test point	Adj. Point	Mode	Input
Screen	P+/P- buttons	RF (or Ext.)	Monoscope
Tape	M. EQ.	Spec.	
---	Pattern Generator	90±5%	

1. Enter the Service mode. (See page 1-6-10.)
Press [8] button on the remote control unit and select H-P mode.
2. Input monoscope pattern and leave it for at least 20 minutes.
3. Press [P+/P-] buttons on the remote control unit so that the left and right side of the monoscope pattern are equal to each other.
4. Turn the power off and on again.

9. Cut-off Adjustment

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

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

Test point	Adj. Point	Mode	Input
Screen	Screen-Control, P+/P-buttons	RF (or Ext.)	Black Raster
Tape	M. EQ.	Spec.	
---	Pattern Generator	See Reference Notes below	

Notes:

Screen Control (FBT) --- H.V./Power Supply CBA

FBT= Fly Back Transformer

Use the Remote Control Unit

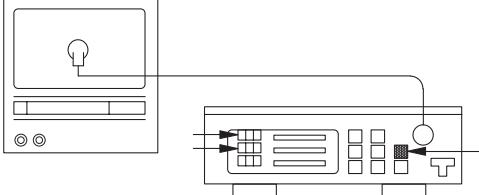
1. Degauss the CRT and allow CRT to operate for 20 minutes before starting the alignment.
2. Set the screen control to minimum position. Input the Black raster signal from RF (or Ext.) input.
3. Enter the service mode. (See page 1-6-10.)
Dimmed horizontal line appears on the CRT.
4. To enter the C/D/S mode, press the [▲ -] button on the remote control unit.
5. To enter the CUT OFF (R) mode, press [1] button on the remote control unit.
6. Turn the screen control up until dimmed horizontal line appears.
7. Press the [P+/P-] buttons until the horizontal line becomes white.

8. To enter the CUT OFF (G) mode, press [2] button on the remote control unit.
9. Press the [P+/P-] buttons until the horizontal line becomes white.
10. To enter the CUT OFF (B) mode, press [3] button on the remote control unit.
11. Press the [P+/P-] buttons until the horizontal line becomes white.
12. Turn the screen control so that the horizontal line adjusted white looks lightly.
13. Turn the power off and on again.

10. 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	Screen-Control, P+/P-buttons	RF (or Ext.)	White Raster (APL 100%)
Tape	M. EQ.		Spec.
---	Pattern Generator, Color analyzer		See below
Figure			
 <p>Fig. 5</p>			

Note: Use remote control unit

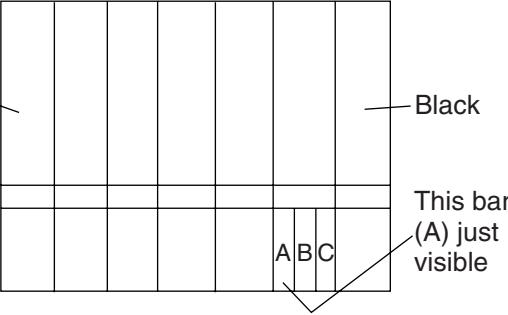
1. Operate the unit more than 20 minutes.
2. Face the unit to east. Degauss the CRT using Degaussing Coil.
3. Input the White Raster (APL 100%).
4. Set the color analyzer to the CHROMA mode and after zero point calibration, bring the optical receptor to the center on the tube surface (CRT).
5. Enter the Service mode. Press [] button on the remote control.
6. Press [4] button on the remote control unit for Red adjustment. Press [5] button on the remote control unit for Blue adjustment.
7. In each color mode, Press [P+/P-] buttons to adjust the values of color.
8. Adjusting Red and Blue color so that the temperature becomes 8500K ($x : 290 / y : 300 \pm 3\%$).
9. At this time, Re-check that Horizontal line is white. If not, Re-adjust Cut-off Adjustment until the Horizontal Line becomes pure white.
10. Turn off and on again to return to normal mode. Receive APL 100% white signal and Check Chroma temperatures become 8500K ($x : 290 / y : 300 \pm 3\%$).

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

11. Sub-Brightness Adjustment

Purpose: To get proper brightness.

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

Test point	Adj. Point	Mode	Input
Screen	P+/P- buttons	RF (or Ext.)	SYMPTE
Tape	M. EQ.		Spec.
---	Pattern Generator		See below
Figure			
 <p>Fig. 6</p>			

Note: Bar (A) in Fig. 7 --- 0 IRE

1. Enter the service mode. (See page 1-6-10.) Then input SYMPTE signal from RF (or Ext.) input and leave it for at least 20 minutes.
2. Press [MENU] button. (Each time [MENU] button is pressed, display will change BRT, CNT, COL, TNT, and SHP in that order.) Select BRT and press [P+/P-] buttons so that the bar (A) in Fig. 6 is just visible.
3. Turn the power off and on again.

12. Setting for CONTRAST, COLOR, TINT and SHARP Data Values

General

1. Enter the Service mode. (See page 1-6-10)
2. Press [MENU] button. (Each time [MENU] button is pressed, display will change BRT, CNT, COL, TNT, and SHP in that order.)

CONTRAST (CNT)

1. Press [MENU] button on the remote control unit. Then select CNT display.
2. Press [P+/P-] buttons on the remote control unit so that the value of "CONTRAST" (CNT) becomes 83.

COLOR (COL)

1. Press [MENU] button on the remote control unit. Then select "COLOR" (COL) display.
2. Press [P+/P-] buttons on the remote control unit so that the value of "COLOR" (COL) becomes 65.

TINT (TNT)

1. Press [MENU] button on the remote control unit. Then select "TINT" (TNT) display.
2. Press [P+/P-] buttons on the remote control unit so that the value of "TINT" (TNT) becomes 68.

SHARP (SHP)

1. Press [MENU] button on the remote control unit. Then select "SHARP" (SHP) display.
2. Press [P+/P-] buttons on the remote control unit and select "0."

13. Focus Adjustment

Purpose: Set the optimum Focus.

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

Test point	Adj. Point	Mode	Input
Screen	Focus Control	RF (or Ext.)	Monoscope
Tape	M. EQ.		Spec.
---	Pattern Generator		See below.

Note: Focus VR (FBT) --- H.V./Power Supply CBA

FBT= Fly Back Transformer

1. Operate the unit more than 30 minutes.
2. Face the unit to the East and degauss the CRT using a Degaussing Coil.
3. Input the monoscope pattern.
4. Adjust the Focus Control on the FBT to obtain clear picture.

14. Head Switching Position Adjustment

Purpose: Determine the Head Switching Position during Playback.

Symptom of Misadjustment: May cause Head Switching Noise or Vertical Jitter in the picture.

Note: Unit reads Head Switching Position automatically and displays it on the screen (Upper Left Corner).

Manual Adjustment

1. Enter the service mode. (See page 1-6-10.)
2. Playback the test tape (9965 000 14514).
3. Press the number [5] button on the remote control unit.
4. The Head Switching position will display on the screen; if adjustment is necessary follow step 4. 7.0H (448 μ s) is preferable.
5. Press [P+/P-] buttons on the remote control unit if necessary. The value will be changed in 0.5H steps up or down. Adjustable range is up to 9.5H. If the value is beyond adjustable range, the display will change as:
Lower out of range: 0.0H
Upper out of range: -.-H
6. Turn the power off and on again.

Auto Adjustment

1. Load the test tape (9965 000 14514) that have been recorded the Head Switching Position Value.
2. Enter the service mode.
3. Press [3] button on the remote control unit in the tape stop mode. The unit playback and adjust the Head Switching Position automatically.
4. The adjusting report appears on upper left corner of the screen with blueback.
In case of adjusting correctly: the Head Switching Position Value recorded in the test tape (9965 000 14514) is indicated with green.
In case of adjusting incorrectly: "NG" (red) is indicated with ejecting tape.

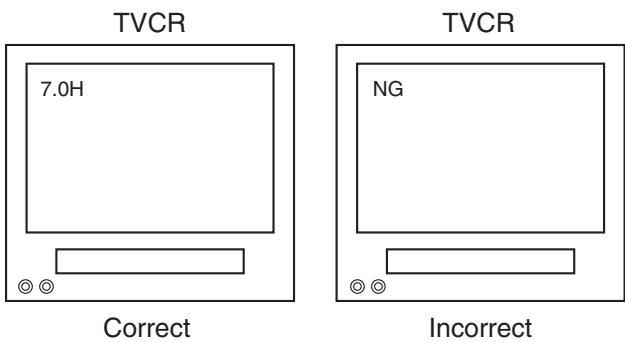
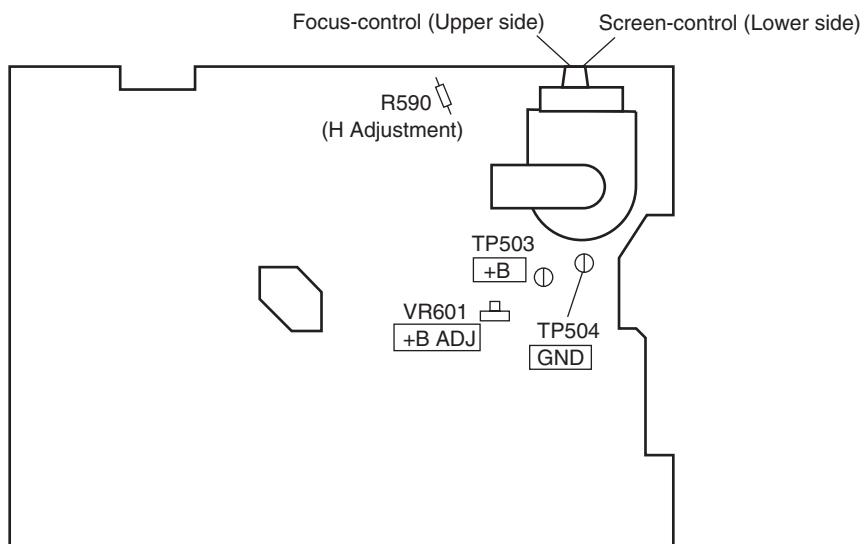


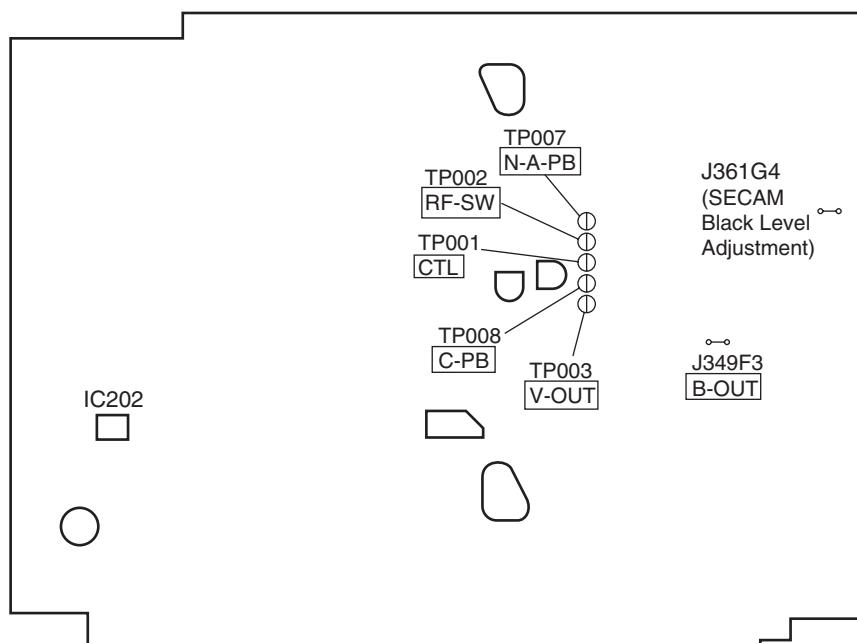
Fig. 7

Adjustment Points and Test Points

H.V./Power Supply CBA Top View



Main CBA Top View



TEST POINT INFORMATION

Ⓐ: Indicates a test point with a jumper wire across a hole in the PCB.

TEST POINTS NOT USED IN ELECTRICAL ADJUSTMENTS

Test Point	Used in:	Page No.
TP001	Mechanical Alignment Procedures	2-3-3
TP002	Mechanical Alignment Procedures	2-3-3, 2-3-4
TP008	Mechanical Alignment Procedures	2-3-3, 2-3-4
TP503	Electrical Adjustment Instructions	1-6-1
TP504	Electrical Adjustment Instructions	1-6-1

BLOCK DIAGRAMS

Servo/System Control Block Diagram

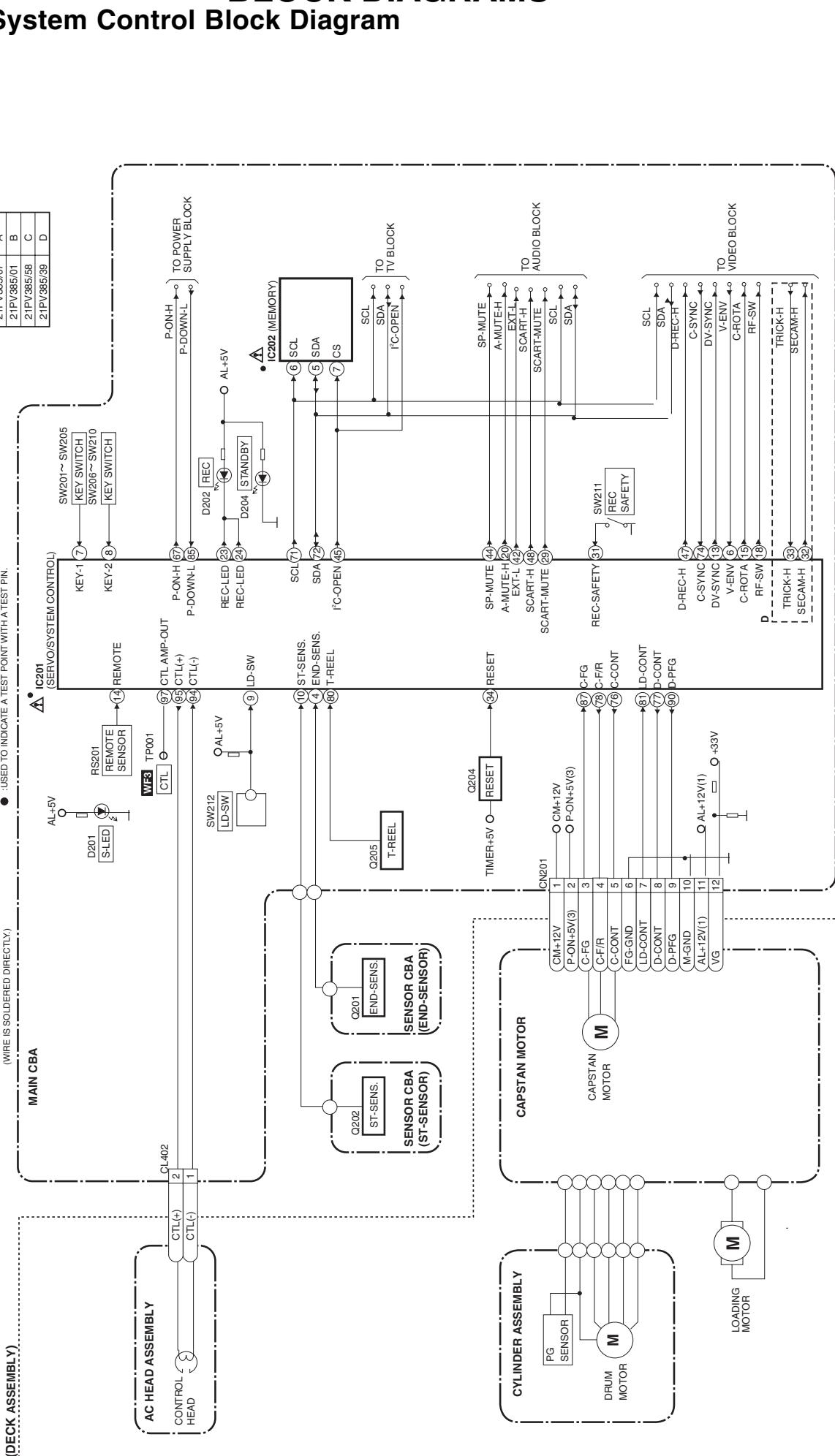
Comparison Chart of
Models & Marks

Model	Mark
2IPV385/07	A
2IPV385/01	B
2IPV385/58	C
2IPV385/99	D

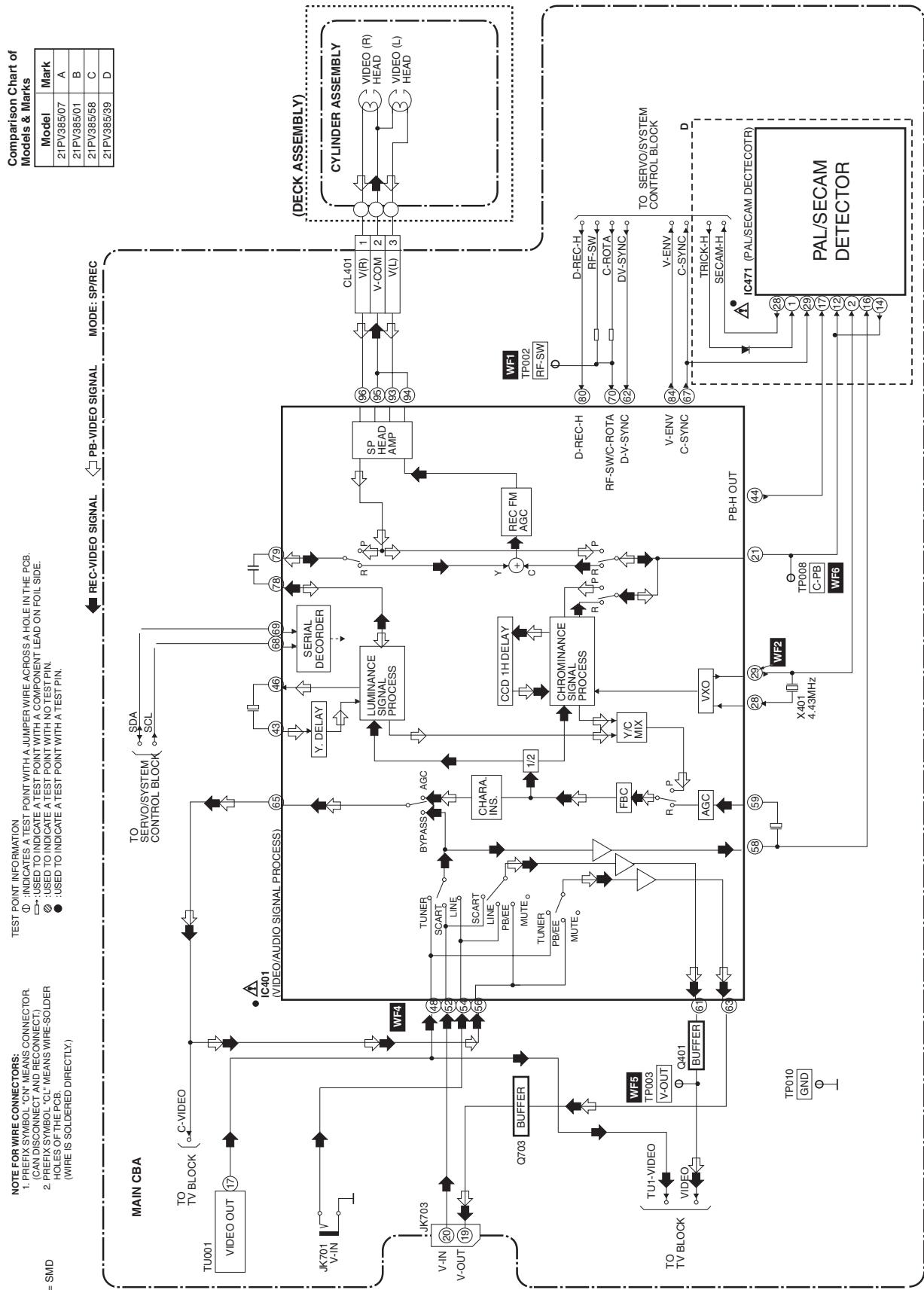
NOTE FOR WIRE CONNECTORS:
 1. PREFIX SYMBOL "CN" MEANS CONNECTOR.
 2. PREFIX SYMBOL "CL" MEANS WIRE-SOLDER
 HOLES OF THE PCB.
 (WIRE IS SOLDERED DIRECTLY.)

"●" = SMD

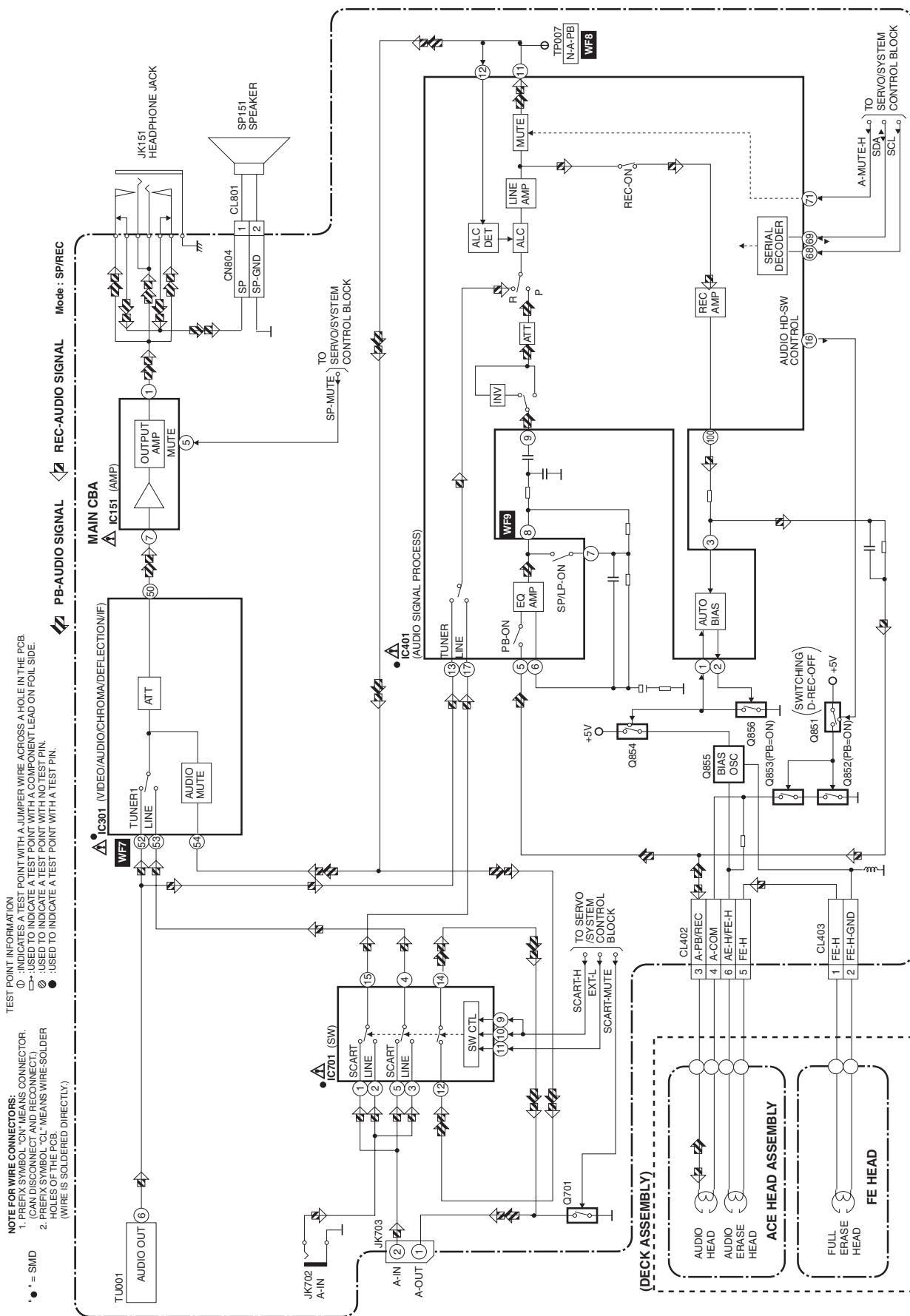
TEST POINT INFORMATION
 ○ : INDICATE A TEST POINT WITH A LUMPER WIRE ACROSS A HOLE IN THE PCB.
 □ : USED TO INDICATE A TEST POINT WITH A COMPONENT LEAD ON FOIL SIDE.
 ◇ : USED TO INDICATE A TEST POINT WITH NO TEST PIN.
 ● : USED TO INDICATE A TEST POINT WITH A TEST PIN.



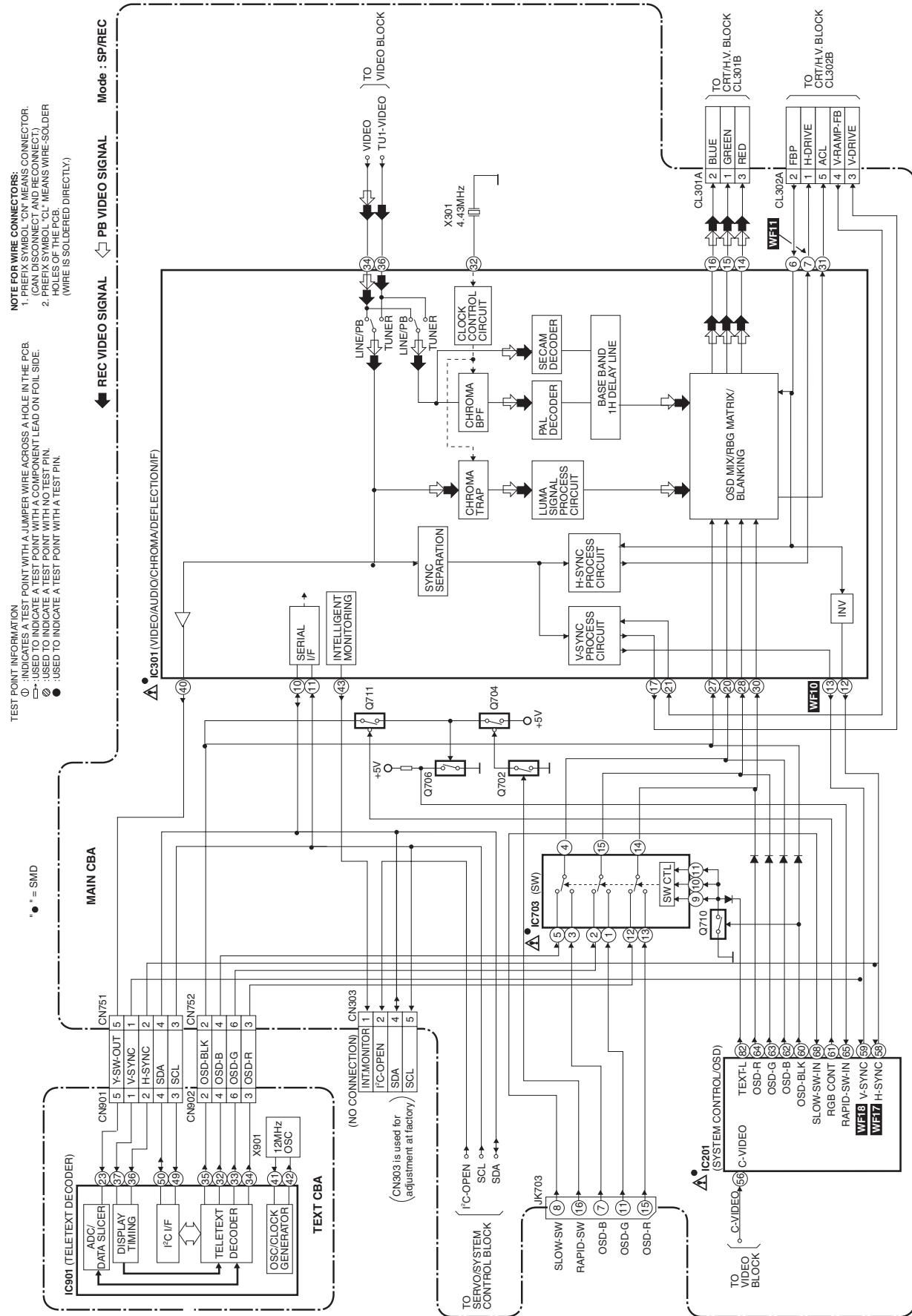
Video Block Diagram



Audio Block Diagram



TV Block Diagram

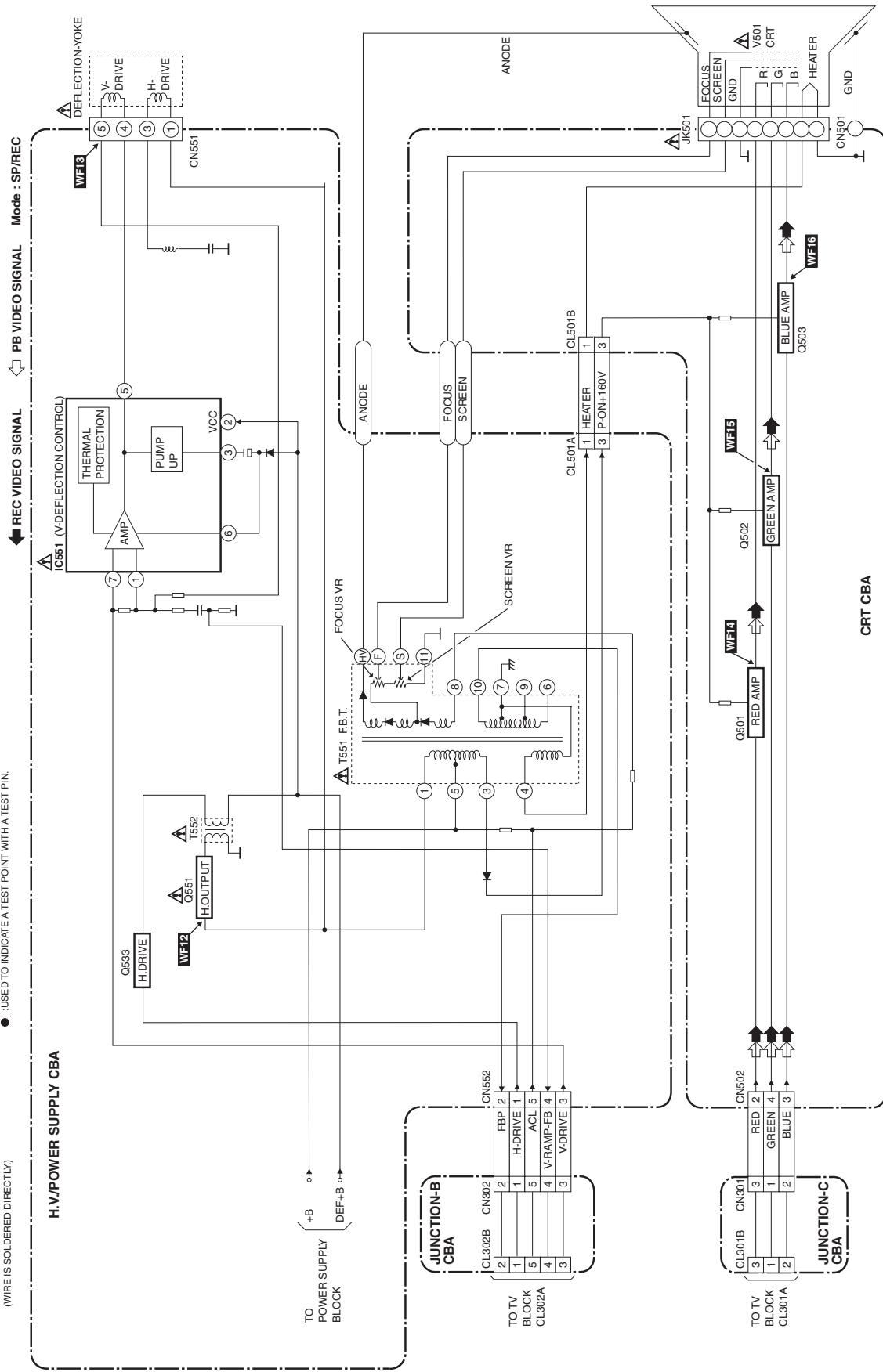


CRT/H.V. Block Diagram

NOTE FOR WIRE CONNECTORS:
 1. PREFIX SYMBOL "CN" MEANS CONNECTOR.
 (CAN DISCONNECT AND RECONNECT).
 2. PREFIX SYMBOL "CL." MEANS WIRE SOLDER
 HOLES OF THE PCB.
 (WIRE IS SOLDERED DIRECTLY).

TEST POINT INFORMATION

① : 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.



Power Supply Block Diagram

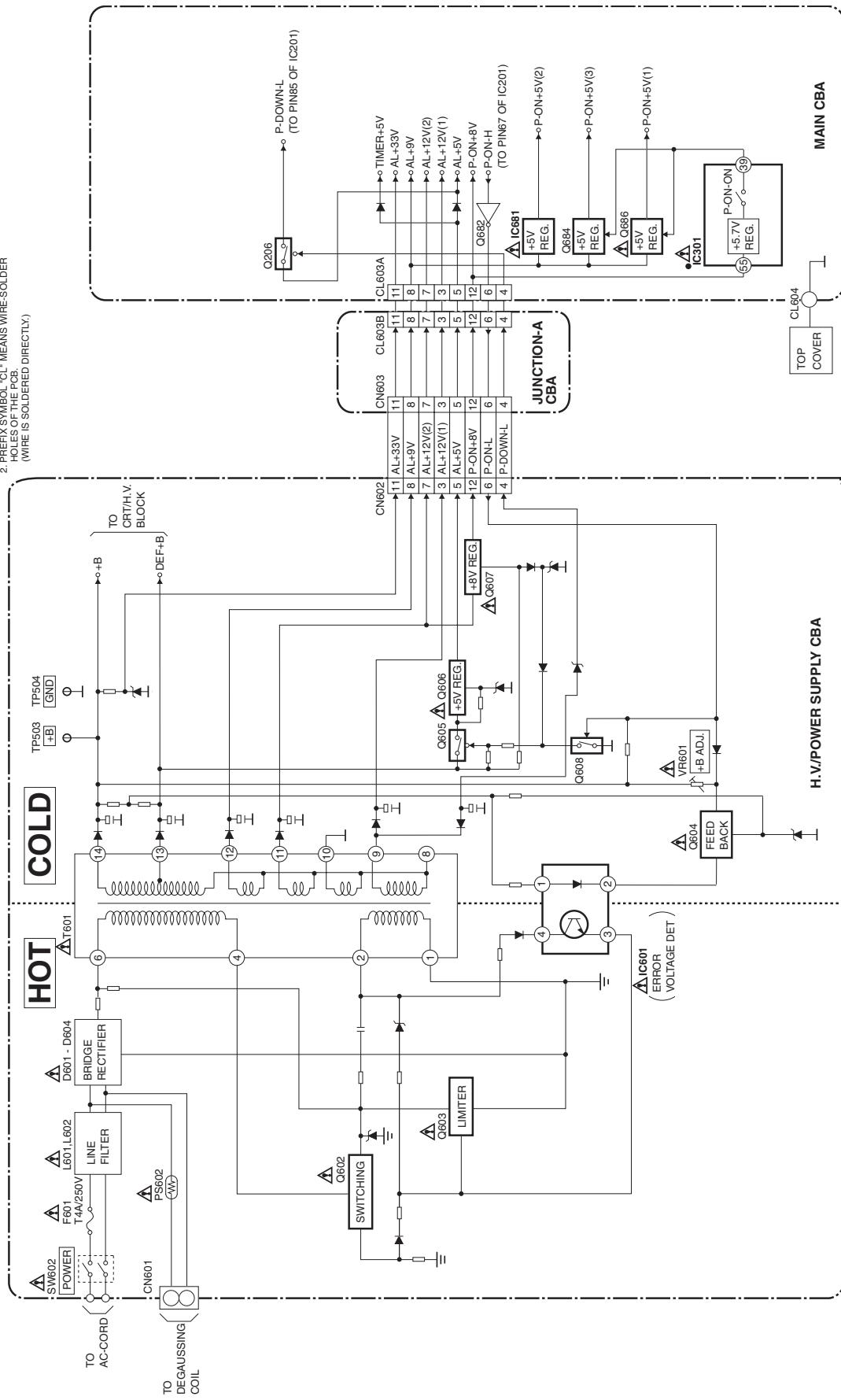
TEST POINT INFORMATION

- ① : 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.

NOTE FOR WIRE CONNECTORS:

1. PREFIX SYMBOL "CN" MEANS CONNECTOR (CAN DISCONNECT AND RECONNECT).
2. PREFIX SYMBOL "CL" MEANS WIRE-SOLDER HOLES OF THE PCB (WIRE IS SOLDERED DIRECTLY).

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



MECHANICAL TROUBLE INDICATOR

1, Each Malfunction Indication

If the MONITOR is turned ON right after the Mechanical Malfunction occurs or POWER SAFETY/X-RAY is turned ON, display the following character to show Malfunction after the EJECT display.

Immediately preceding Malfunction	Display character
REEL Malfunction	R
DRUM Malfunction	D
CASSETTE LOADING Malfunction	C
TAPE LOADING Malfunction	T
P-SAFETY 1	1
P-SAFETY 2	2
X-RAY	X

Example: If REEL Malfunction

EJECT R

2, Each Malfunction evaluation method

X-RAY protect

If X-RAY port becomes continuously 2.5V or more for 120 msec. (4 times 40 msec. interval), the unit shall immediately turn OFF the POWER/MONITOR and switch over to the Mechanical Malfunction mode with POWER OFF.

(To return from this mode shall become possible only by POWER Key as in the case of the Mechanical Malfunction).

POWER SAFETY

1) POWER SAFETY 1

If P-SAFETY 1 port becomes continuously 2.5V or less for 120 msec. (4 times 40 msec. interval) when MONITOR is ON, the unit shall be assumed to be the Power Malfunction 1 and immediately turn OFF the POWER/MONITOR and switch over the Mechanical Malfunction mode with POWER OFF.

(To return from this mode shall become possible only by POWER Key as in the case of the Mechanical Malfunction).

* However the POWER SAFETY 1 function shall be disabled during 500 msec. right after the MONITOR turns ON.

2) POWER SAFETY 2

If P-SAFETY 2 port becomes continuously 2.5V or less for 120 msec. (4 times 40 msec. interval) when P-ON-H port is ON, the unit shall be assumed to be the Power Malfunction 2 and immediately turn OFF the POWER/MONITOR and switch over the Mechanical Malfunction mode with POWER OFF.

(To return from this mode shall become possible only by POWER Key as in the case of the Mechanical Malfunction).

* However the POWER SAFETY 2 function shall be disabled during 500 msec. right after the P-ON-H port turns ON.

Mechanical Malfunction determination

1) REEL Malfunction detection

Countermeasure for REEL and CAPSTAN motor rotation malfunction (Except CASSETTE LOADING function)

After the Malfunction detection with REEL/CAPSTAN sensor, the unit shall switch over to STOP (B) and be REEL Mechanical Malfunction.

- a) If the T-REEL pulse is not impressed after a lapse of 7 sec. at SP, 14 sec. at LP, or more in the REEL Rotation Mode like PLAY/REC, FS/RS Mode, and the T-REEL or S-REEL pulse is not impress after a lapse of 4 sec. or more in REEL Rotation Mode of FF/REW, it shall be assumed to stop the rotation and switch over to STOP (B) position, then POWER be turned OFF and the unit be REEL Mechanical Malfunction. (T-REEL and S-REEL for the models on S-REEL and only T-REEL for other models)
- b) If the C-FG pulse is not impressed for a lapse of 1 sec. or more during the CAPSTAN MOTOR rotation, it shall be MOTOR Rotation Malfunction (REEL Malfunction).

2) DRUM Malfunction detection

Detect the DRUM rotation at the D-FG input terminal.

If the variation of D-FG input level is not detected for a lapse of 1 sec. or more when D-CONT is "H", it shall be assumed to be Rotation Malfunction and be DRUM Malfunction.

When detect Drum Malfunction, POWER shall be turned OFF after the unit switches over to STOP (B) Mode.

3) Countermeasure for TAPE LOADING Malfunction

Detect the Malfunction with the LOADING Switch.

a) TAPE LOADING Malfunction

If LD-SW does not go to the established position after a lapse of 7 sec. or more from TAPE LOADING or TAPE UNLOADING start, the LOADING function shall immediately be stopped and POWER be turned OFF, and inform the Timer about the LOADING Mechanical Malfunction.

b) LD-SW Position Malfunction at each mode

When the unit operates at each mode, even if the LD-SW position changes from the established one in its mode, it keeps the function according to its mode.

4) Countermeasure for CASSETTE LOADING Malfunction

a) CASSETTE IN operating Malfunction

If LD-SW does not go to SB position after a lapse of 5 sec. or more from the CASSETTE insertion start, the unit starts the CASSETTE OUT operation.

After switch over to CASSETTE OUT operation and then a laps of 5 sec. or more from the CASSETTE OUT operation start, if LD-SW does not go to the EJ position or if START Sensor and END Sensor does not turn "ON" at the EJ position, the unit starts again to insert CASSETTE.

(However in S-INH state, the START/END Sensor shall be disabled).

b) CASSETTE OUT operating Malfunction

After a lapse of 5 sec. or more from CASSETTE OUT operation start, if LD-SW does not go to the EJ position or if START Sensor and END Sensor does not turn "ON" at the EJ position, the unit starts to insert CASSETTE.

(However in S-INH state, the START/END Sensor shall be disabled).



When the unit switches over to CASSETTE insertion at CASSETTE IN or CASSETTE OUT Malfunction, if LD-SW does not go to the SB position after a lapse of 5 sec. or more from CASSETTE insertion start, the function shall immediately be stopped and POWER be turned OFF, and the unit be CASSETTE LOADING Malfunction.

c) When POWER is turned ON, if the CL position or GC position cannot be detected after 5 sec. LD-REV operation and 5 sec. LD-FWD operation, the function shall immediately be stopped and POWER be turned OFF, and the unit be CASSETTE LOADING Malfunction.

d) When POWER is turned ON without CASSETTE (EJ position) and LD-SW is monitored all the time, if the CL or GC position is detected continuously for 1 sec. or more, the POWER shall be turned OFF and the unit be CASSETTE LOADING Malfunction.

Countermeasure for Mechanical Malfunction

If the unit detects Mechanical Malfunction, turn the POWER OFF. If the unit is Mechanical Malfunction, Key input except POWER key shall be disabled and CASSETTE insertion disabled. When POWER Key is entered, the POWER is turned ON and the unit switches over the EJECT Mode. (Return with POWER ON)

SCHEMATIC DIAGRAMS / CBA'S 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.

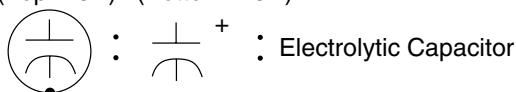
Capacitor Temperature Markings

Mark	Capacity change rate	Standard temperature	Temperature range
(B)	±10%	20°C	-25~+85°C
(F)	+30 - 80%	20°C	-25~+85°C
(SR)	±15%	20°C	-25~+85°C
(Y)	±22.5%	20°C	-25~+85°C

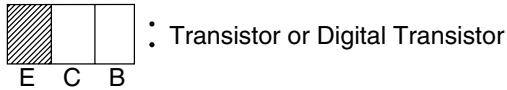
Capacitors and transistors are represented by the following symbols.

< PCB Symbols >

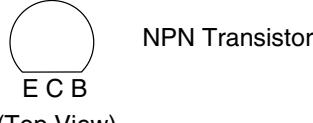
(Top View) (Bottom View)



(Bottom View)



(Top View)



(Top View)



(Top View)



(Top View)



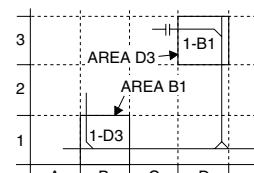
Notes:

- 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.
- 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.
- Prefix symbol "CN" means "connector" (can disconnect and reconnect).
Prefix symbol "CL" means "wire-solder holes of the PCB" (wire is soldered directly).
- How to read converged lines.

1-D3

 Distinction Area
 Line Number
 (1 to 3 digits)

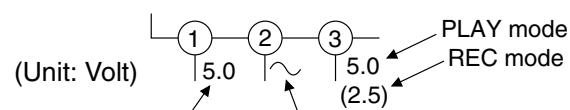
Examples:



(1). "1-D3" means that line number "1" goes to area "D3."

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

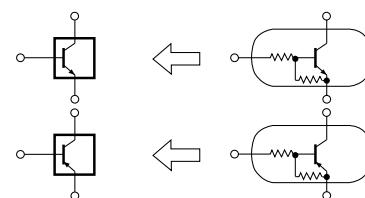
- All resistance values are indicated in ohms ($K=10^3$, $M=10^6$).
- Resistor wattages are 1/4W or 1/6W unless otherwise specified.
- All capacitance values are indicated in μF ($P=10^{-6} \mu F$).
- All voltages are DC voltages unless otherwise specified.
- Voltage indications for PLAY and REC modes on the schematics are as shown below.



The same voltage for both PLAY & REC modes. Indicates that the voltage is not consistent here.

< Schematic Diagram Symbols >

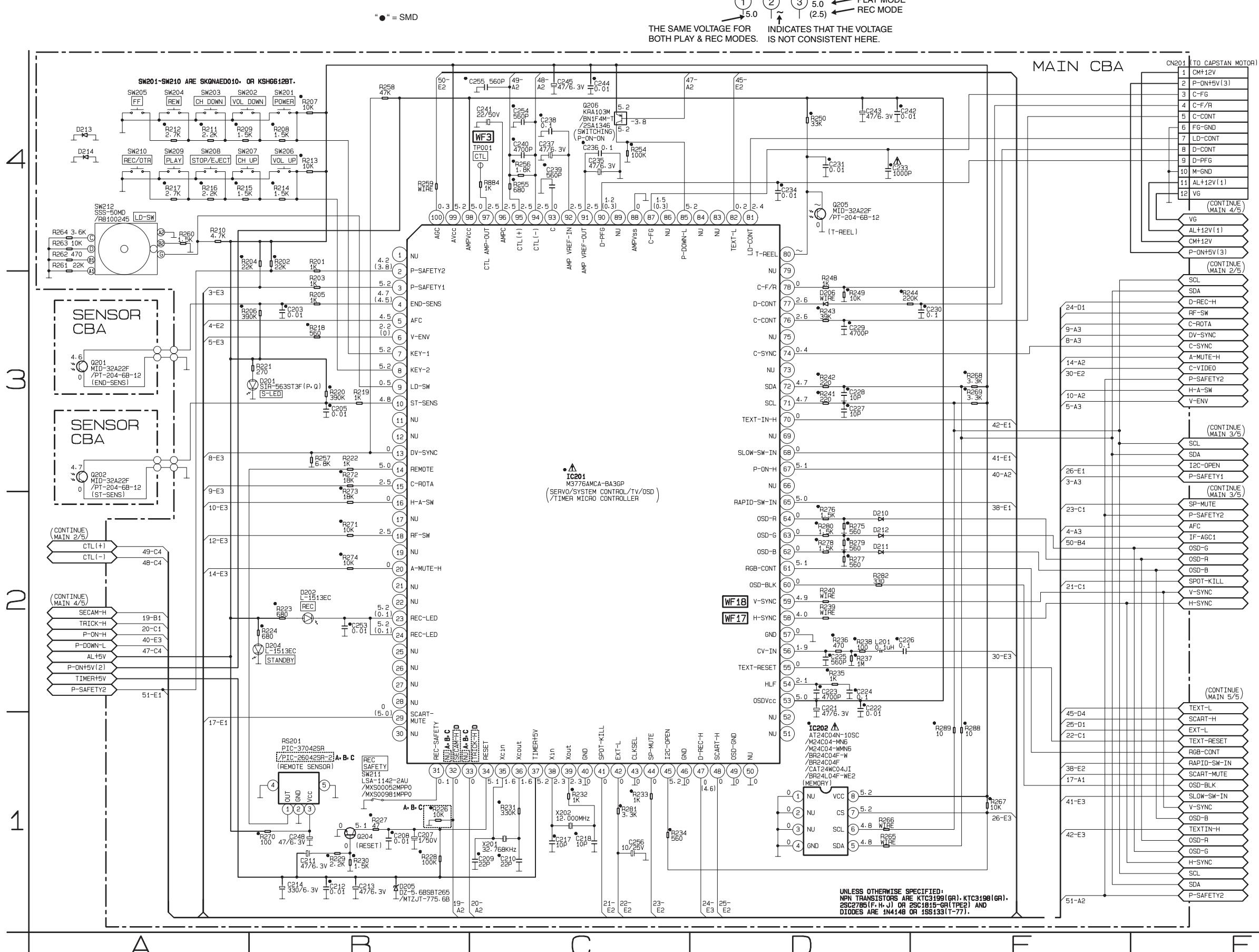
Digital Transistor



Main 1/5 Schematic Diagram Parts Location Guide

Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		CONNECTOR		RESISTORS		RESISTORS	
C203	B-3	CN201	F-4	R220	B-3	R268	E-3
C205	B-3	DIODES		R221	B-3	R269	E-3
C207	B-1	D201	B-3	R222	B-3	R270	B-1
C208	B-1	D202	B-2	R223	B-2	R271	B-2
C209	C-1	D204	B-2	R224	B-2	R272	B-3
C210	C-1	D205	B-1	R226	B-1	R273	B-2
C211	B-1	D206	D-3	R227	B-1	R274	B-2
C212	B-1	D210	D-2	R228	B-1	R275	D-2
C213	B-1	D211	D-2	R229	B-1	R276	D-2
C214	B-1	D212	D-2	R230	B-1	R277	D-2
C217	C-1	D213	A-4	R231	C-1	R278	D-2
C218	C-1	D214	A-4	R232	C-1	R279	D-2
C221	D-2	ICS		R233	C-1	R280	D-2
C222	D-2	IC201	C-3	R234	C-1	R281	C-1
C223	D-2	IC202	D-1	R235	D-2	R282	D-2
C224	D-2	COIL		R236	D-2	R288	E-1
C225	D-2	L201	D-2	R237	D-2	R289	E-1
C226	D-2	TRANSISTORS		R238	D-2	R884	C-4
C227	D-3	Q204	B-1	R239	D-2	SWITCHES	
C228	D-3	Q205	D-4	R240	D-2	SW201	B-4
C229	D-3	Q206	C-4	R241	D-3	SW202	A-4
C230	E-3	RESISTORS		R242	D-3	SW203	A-4
C231	D-4	R201	B-4	R243	D-3	SW204	A-4
C233	D-4	R202	B-4	R244	D-3	SW205	A-4
C234	D-4	R203	B-3	R248	D-3	SW206	B-4
C235	C-4	R204	B-4	R249	D-3	SW207	A-4
C236	C-4	R205	B-3	R250	D-4	SW208	A-4
C237	C-4	R206	B-3	R254	C-4	SW209	A-4
C238	C-4	R207	B-4	R255	C-4	SW210	A-4
C239	C-4	R208	B-4	R256	C-4	SW211	B-1
C240	C-4	R209	A-4	R257	B-3	SW212	A-4
C241	C-4	R210	A-4	R258	B-4	TEST POINT	
C242	D-4	R211	A-4	R259	B-4	TP001	C-4
C243	D-4	R212	A-4	R260	A-4	CRYSTAL OSCILATORS	
C244	C-4	R213	B-4	R261	A-4	X201	C-1
C245	C-4	R214	B-4	R262	A-4	X202	C-1
C248	B-1	R215	A-4	R263	A-4	MISCELLANEOUS	
C253	B-2	R216	A-4	R264	A-4	RS201	B-1
C254	C-4	R217	A-4	R265	D-1		
C255	C-4	R218	B-3	R266	D-1		
C256	C-1	R219	B-3	R267	E-1		

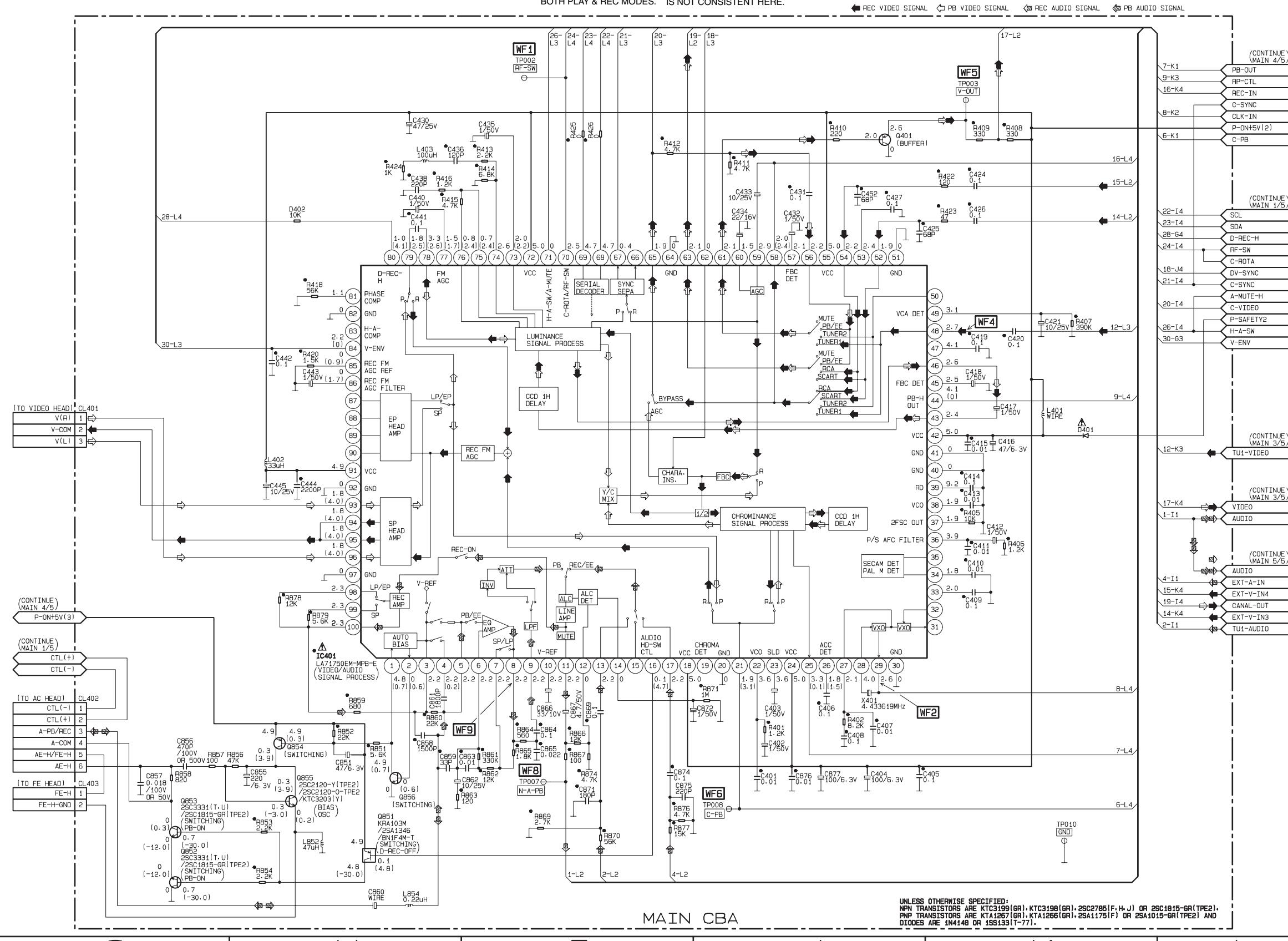
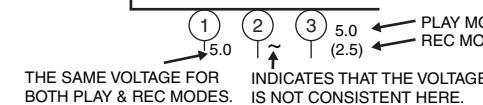
Main 1/5 Schematic Diagram



Main 2/5 Schematic Diagram

Voltage indications for PLAY and REC modes on the Schematic Diagrams are as shown below:

"●" = SMD



UNLESS OTHERWISE SPECIFIED:
NPN TRANSISTORS ARE KTC3199(GR), KTC3198(GR), 2SC2785(F,H,J) OR 2SC1815-6R(TPE2),
PNP TRANSISTORS ARE KTA1267(GR), KTA1266(GR), 2SA1175(F) OR 2SA1015-GR(TPE2) AND
DIODES ARE IN4148 OR 1SS133(T-77).

Main 2/5 Schematic Diagram Parts Location Guide

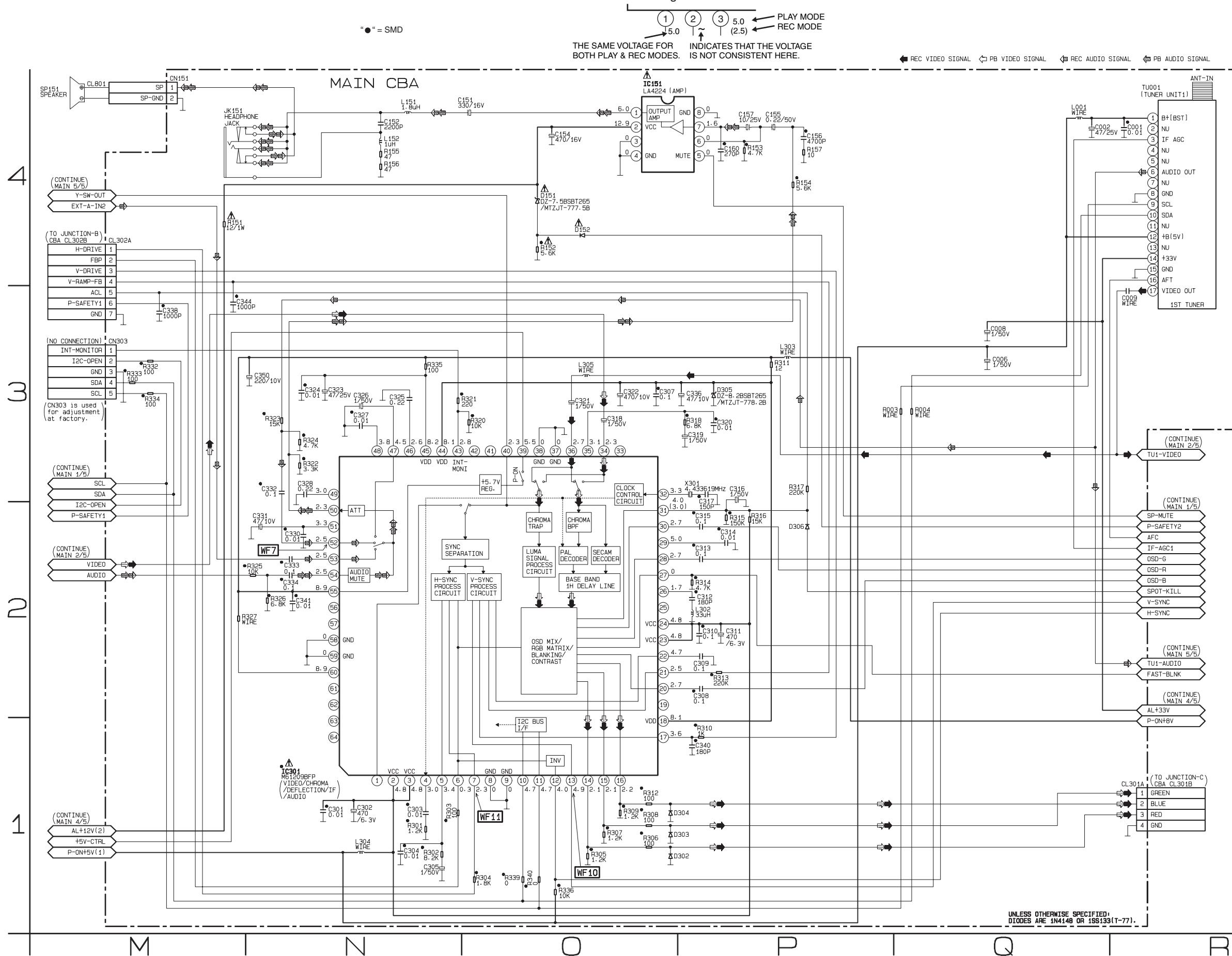
Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		CAPACITORS		TRANSISTORS		RESISTORS	
C401	J-1	C445	H-2	Q401	J-4	R861	I-1
C402	J-1	C452	J-4	Q851	H-1	R862	I-1
C403	J-1	C851	H-1	Q852	G-1	R863	H-1
C404	J-1	C855	H-1	Q853	G-1	R864	I-1
C405	J-1	C856	G-1	Q854	H-1	R865	I-1
C406	J-1	C857	G-1	Q855	H-1	R866	I-1
C407	J-1	C858	H-1	Q856	H-1	R867	I-1
C408	J-1	C859	H-1	RESISTORS		R869	I-1
C409	K-2	C860	H-1	R401	J-1	R870	I-1
C410	K-2	C861	H-2	R402	J-1	R871	J-2
C411	K-2	C862	H-1	R405	K-2	R874	I-1
C412	K-2	C863	I-1	R406	K-2	R876	I-1
C413	K-2	C864	I-1	R407	K-3	R877	I-1
C414	K-2	C865	I-1	R408	K-4	R878	H-2
C415	K-3	C866	I-1	R409	K-4	R879	H-2
C416	K-3	C867	I-1	R410	J-4	CRYSTAL OSCILATOR	
C417	K-3	C869	I-1	R411	J-4	X401	J-2
C418	K-3	C871	I-1	R412	I-4	TEST POINTS	
C419	K-3	C872	J-1	R413	I-4	TP002	I-4
C420	K-3	C874	I-1	R414	I-4	TP003	K-4
C421	K-3	C875	I-1	R415	H-4	TP007	I-1
C424	K-4	C876	J-1	R416	H-4	TP008	J-1
C425	J-4	C877	J-1	R418	H-3	TP010	K-1
C426	K-4	CONNECTORS		R420	H-3		
C427	J-4	CL401	G-3	R422	K-4		
C430	H-4	CL402	G-2	R423	K-4		
C431	J-4	CL403	G-1	R424	H-4		
C432	J-4	DIODES		R425	I-4		
C433	J-4	D401	K-3	R426	I-4		
C434	J-4	D402	H-4	R851	H-1		
C435	I-4	IC		R852	H-1		
C436	H-4	IC401	H-2	R853	H-1		
C438	H-4	COILS		R854	H-1		
C440	H-4	L401	K-3	R856	H-1		
C441	H-4	L402	H-3	R857	G-1		
C442	H-3	L403	H-4	R858	G-1		
C443	H-3	L852	H-1	R859	H-1		
C444	H-2	L854	H-1	R860	H-1		

Main 3/5 Schematic Diagram Parts Location Guide

Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		CAPACITORS		RESISTORS	
C001	R-4	C332	N-3	R156	N-4
C002	Q-4	C333	N-2	R157	P-4
C006	Q-3	C334	N-2	R301	N-1
C008	Q-3	C336	P-3	R302	N-1
C009	R-3	C338	M-3	R303	N-1
C151	O-4	C340	P-1	R304	O-1
C152	N-4	C341	N-2	R305	O-1
C154	O-4	C344	M-3	R306	O-1
C155	P-4	C350	N-3	R307	O-1
C156	P-4	CONNECTORS		R308	O-1
C157	P-4	CL301A	R-1	R309	O-1
C160	P-4	CL302A	M-4	R310	P-1
C301	N-1	CN151	M-4	R311	P-3
C302	N-1	CN303	M-3	R312	O-1
C303	N-1	DIODES		R313	P-2
C304	N-1	D151	O-4	R314	P-2
C305	N-1	D152	O-4	R315	P-2
C307	O-3	D302	O-1	R316	P-2
C308	P-2	D303	O-1	R317	P-3
C309	P-2	D304	O-1	R318	P-3
C310	P-2	D305	P-3	R320	O-3
C311	P-2	D306	P-2	R321	N-3
C312	P-2	ICS		R322	N-3
C313	P-2	IC151	O-4	R323	N-3
C314	P-2	IC301	N-1	R324	N-3
C315	P-2	COILS		R325	N-2
C316	P-3	L001	Q-4	R326	N-2
C317	P-3	L151	N-4	R327	M-2
C318	O-3	L152	N-4	R332	M-3
C319	P-3	L302	P-2	R333	M-3
C320	P-3	L303	P-3	R334	M-3
C321	O-3	L304	N-1	R335	N-3
C322	O-3	L305	O-3	R336	O-1
C323	N-3	RESISTORS		R339	O-1
C324	N-3	R003	Q-3	R340	O-1
C325	N-3	R004	Q-3	CRYSTAL OSCILATOR	
C326	N-3	R151	M-4	X301	P-3
C327	N-3	R152	O-4	MISCELLANEOUS	
C328	N-3	R153	P-4	JK151	M-4
C330	N-2	R154	P-4	TU001	R-4
C331	N-2	R155	N-4		

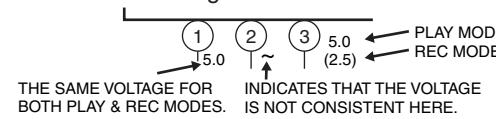
Main 3/5 Schematic Diagram

Voltage indications for PLAY and REC modes of the Schematic Diagrams are as shown below:



Main 4/5 Schematic Diagram

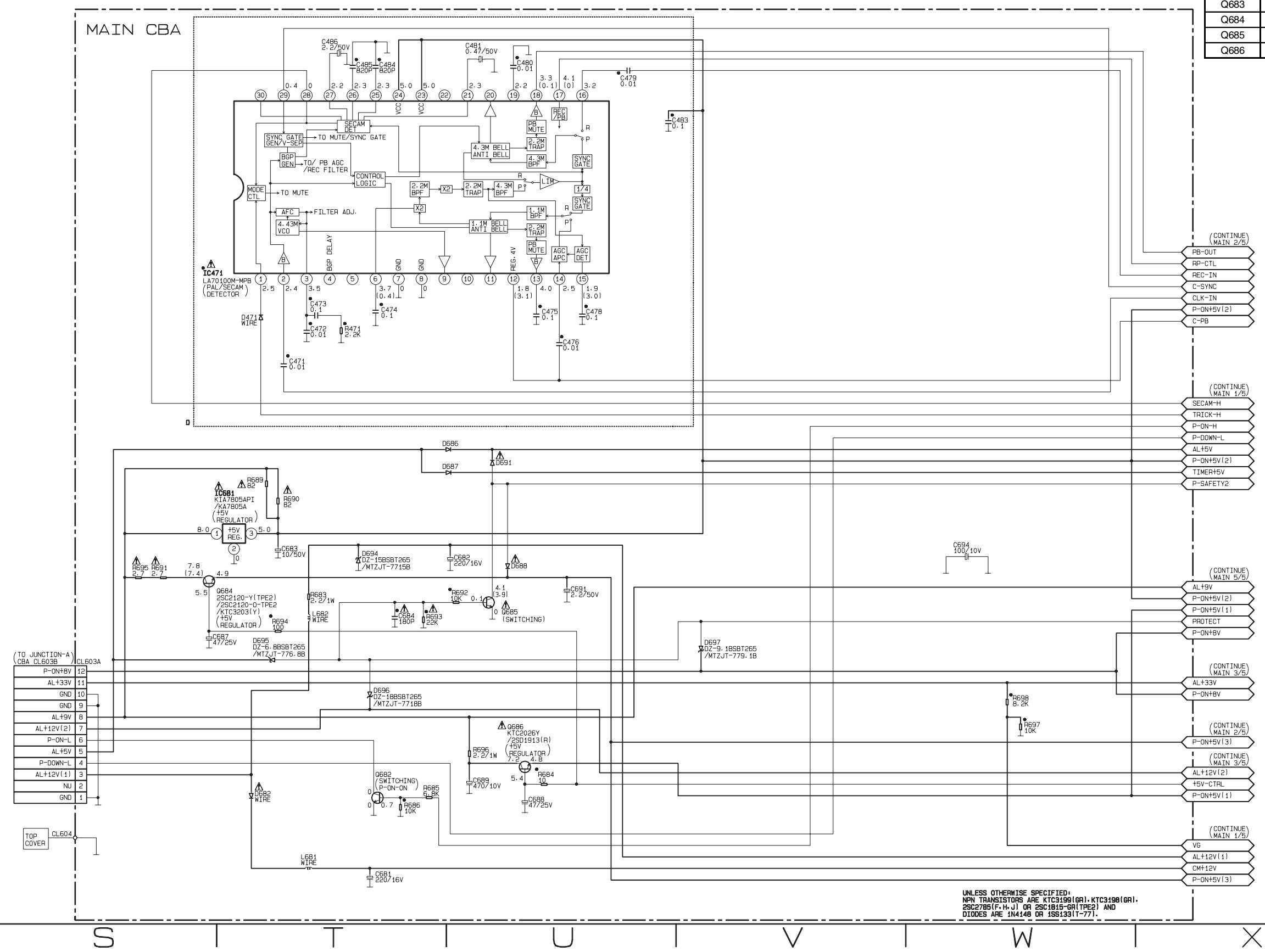
Voltage indications for PLAY and REC modes on the Schematic Diagrams are as shown below:



VOLTAGE CHART (Power off mode)			
Ref. No.	1	2	3
IC681	3.2	0	1.9
Ref. No.	E	C	B
Q681	9.8	5.9	9.7
Q682	0	7.9	0
Q683	0	9.7	0
Q684	0.1	3.1	0
Q685	0	0.6	0
Q686	0	3.1	0

Comparison Chart of Models and Marks

MODEL	MARK
21PV385/07	A
21PV385/01	B
21PV385/58	C
21PV385/39	D



UNLESS OTHERWISE SPECIFIED:
NPN TRANSISTORS ARE KTC3198(GR), KTC3198(GR)
2SC2785(F-H,J) OR 2SC1815-GR(TPE2) AND
DIODES ARE 1N4148 OR 1SS133(T-77).

Main 4/5 Schematic Diagram Parts Location Guide

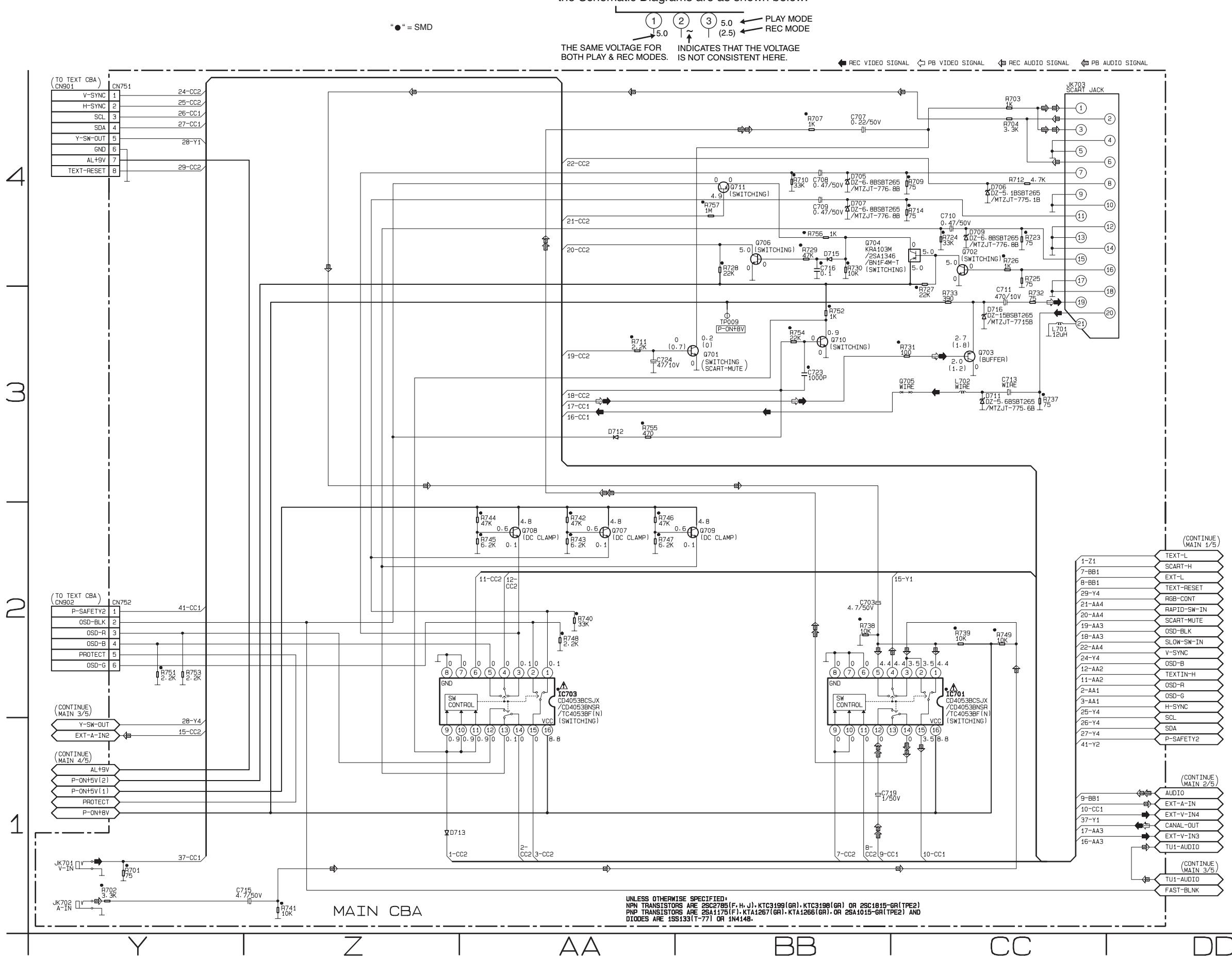
Ref No.	Position	Ref No.	Position
CAPACITORS		DIODES	
C471	T-3	D691	U-2
C472	T-3	D694	T-2
C473	T-3	D695	T-2
C474	T-3	D696	T-2
C475	U-3	D697	V-2
C476	U-3	ICS	
C478	U-3	IC471	T-3
C479	U-4	IC681	T-2
C480	U-4	COILS	
C481	U-4	L681	T-1
C483	U-3	L682	T-2
C484	T-4	TRANSISTORS	
C485	T-4	Q682	T-1
C486	T-4	Q684	S-2
C681	T-1	Q685	U-2
C682	U-2	Q686	U-1
C683	T-2	RESISTORS	
C684	T-2	R471	T-3
C687	S-2	R683	T-2
C688	U-1	R684	U-1
C689	U-1	R685	T-1
C691	U-2	R686	T-1
C694	W-2	R689	T-2
CONNECTORS		R690	T-2
CL603A	S-2	R691	S-2
CL604	S-1	R692	U-2
DIODES		R693	T-2
D471	T-3	R694	T-2
D682	T-1	R695	S-2
D686	U-3	R696	T-1
D687	U-2	R697	W-1
D688	U-2	R698	W-1

Main 5/5 Schematic Diagram Parts Location Guide

Ref No.	Position	Ref No.	Position
CAPACITORS		RESISTORS	
C703	BB-2	R703	CC-4
C707	BB-4	R704	CC-4
C708	BB-4	R707	BB-4
C709	BB-4	R709	CC-4
C710	CC-4	R710	BB-4
C711	CC-3	R711	AA-3
C713	CC-3	R712	CC-4
C715	Z-1	R714	CC-4
C716	BB-4	R723	CC-4
C719	BB-1	R724	CC-4
C723	BB-3	R725	CC-4
C724	AA-3	R726	CC-4
CONNECTORS		R727	CC-3
CN751	Y-4	R728	BB-4
CN752	Y-2	R729	BB-4
DIODES		R730	BB-4
D705	BB-4	R731	CC-3
D706	CC-4	R732	CC-3
D707	BB-4	R733	CC-3
D709	CC-4	R737	CC-3
D711	CC-3	R738	BB-2
D712	AA-3	R739	CC-2
D713	Z-1	R740	AA-2
D715	BB-4	R741	Z-1
D716	CC-3	R742	AA-2
ICS		R743	AA-2
IC701	CC-2	R744	AA-2
IC703	AA-2	R745	AA-2
COILS		R746	AA-2
L701	CC-3	R747	AA-2
L702	CC-3	R748	AA-2
TRANSISTORS		R749	CC-2
Q701	BB-3	R751	Y-2
Q702	CC-4	R752	BB-3
Q703	CC-3	R753	Y-2
Q704	BB-4	R754	BB-3
Q705	CC-3	R755	AA-3
Q706	BB-4	R756	BB-4
Q707	AA-2	R757	BB-4
Q708	AA-2	TEST POINT	
Q709	BB-2	TP009	BB-3
Q710	BB-3	MISCELLANEOUS	
Q711	BB-4	JK701	Y-1
RESISTORS		JK702	Y-1
R701	Y-1	JK703	CC-4
R702	Y-1		

Main 5/5 Schematic Diagram

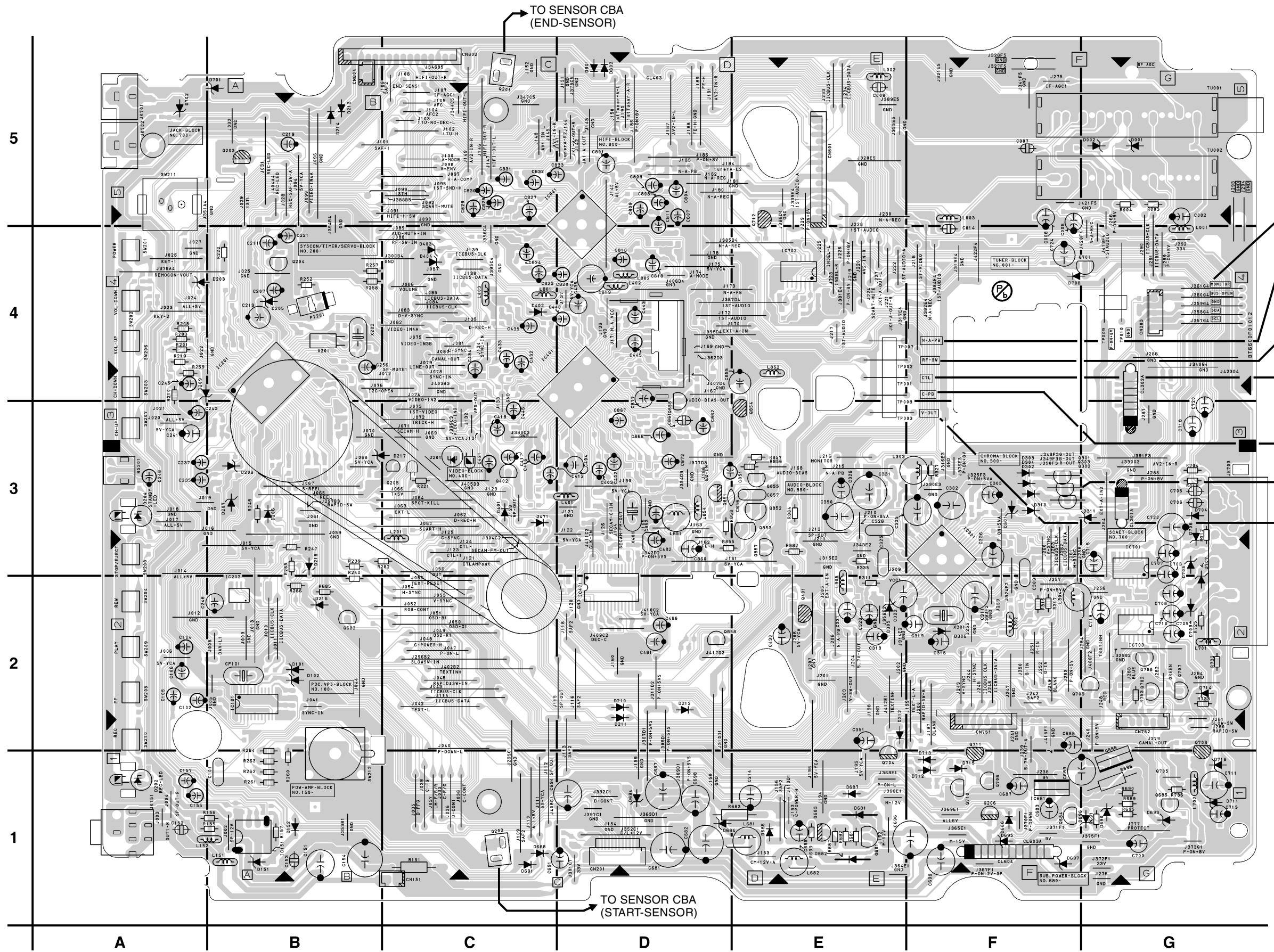
Voltage indications for PLAY and REC modes of the Schematic Diagrams are as shown below:



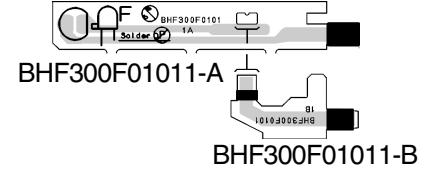
Main CBA Parts Location Guide

Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS																			
C001	G-5	C303	F-3	C420	C-3	C724	F-4	D471	C-3	Q686	G-2	R228	B-4	R305	F-3	R689	G-1	R857	E-3
C002	G-5	C304	F-3	C421	C-3	C851	E-3	Q685	G-1	Q701	G-4	R229	B-4	R306	F-3	R690	G-1	R858	D-3
C006	F-4	C305	F-3	C424	C-4	C855	D-4	D682	E-1	Q702	G-2	R230	B-4	R307	F-3	R691	G-1	R859	D-4
C008	F-4	C307	F-2	C425	C-4	C856	E-3	D686	F-1	Q703	G-2	R231	B-4	R308	F-3	R692	G-1	R860	D-3
C009	E-5	C308	F-3	C426	C-4	C857	E-3	D687	E-1	Q704	E-1	R232	B-4	R309	F-3	R693	G-1	R861	D-3
C151	B-1	C309	F-2	C427	C-4	C858	D-3	D688	C-1	Q705	G-1	R233	B-4	R310	F-2	R694	F-2	R862	D-3
C152	A-1	C310	F-2	C430	E-2	C859	D-3	D691	C-1	Q706	F-1	R234	B-4	R311	E-2	R695	G-1	R863	D-3
C154	B-1	C311	F-2	C431	C-4	C860	D-3	D694	D-1	Q707	G-2	R235	B-3	R312	F-3	R696	G-1	R864	D-3
C155	A-1	C312	F-2	C432	C-4	C861	D-3	D695	F-1	Q708	G-2	R236	B-3	R313	F-3	R697	D-1	R865	D-3
C156	B-1	C313	F-2	C433	C-4	C862	D-3	D696	F-1	Q709	F-2	R237	B-3	R314	F-2	R698	D-1	R866	D-3
C157	A-1	C314	F-2	C434	C-4	C863	D-3	D697	F-1	Q710	F-1	R238	B-3	R315	F-2	R701	A-5	R867	D-3
C160	B-1	C315	F-2	C435	C-4	C864	D-3	D705	G-3	Q711	F-2	R239	B-3	R316	F-2	R702	A-5	R869	D-4
C203	C-5	C316	F-2	C436	C-4	C865	D-3	D706	G-3	Q851	D-3	R240	B-3	R317	F-2	R703	G-3	R870	D-4
C205	C-1	C317	F-2	C438	C-4	C866	D-3	D707	G-3	Q852	E-3	R241	B-3	R318	F-2	R704	G-3	R871	D-3
C207	B-4	C318	E-2	C440	D-4	C867	D-3	D709	G-2	Q853	E-3	R242	B-3	R320	E-2	R707	G-3	R874	D-4
C208	B-4	C319	F-2	C441	D-4	C869	D-3	D711	G-1	Q854	E-3	R243	B-3	R321	E-2	R709	G-3	R876	D-3
C209	B-4	C320	F-2	C442	D-4	C871	D-3	D712	F-1	Q855	E-3	R244	B-3	R322	E-3	R710	G-2	R877	D-3
C210	B-4	C321	E-2	C443	D-4	C872	D-3	D713	F-1	Q856	D-3	R248	B-3	R323	E-3	R711	F-4	R878	D-4
C211	B-4	C322	E-2	C444	D-4	C874	D-3	D715	F-1	RESISTORS		R249	B-3	R324	E-3	R712	G-3	R879	D-4
C212	B-4	C323	E-2	C445	D-4	C875	D-3	D716	G-1	R003	G-5	R250	B-3	R325	E-3	R714	G-2	R884	E-3
C213	B-4	C324	E-2	C452	C-4	C876	D-4	ICS		R004	G-5	R254	B-3	R326	E-3	R723	G-2	SWITCHES	
C214	E-1	C325	E-3	C471	D-3	C877	D-3	IC151	B-1	R151	C-1	R255	B-3	R327	F-3	R724	G-2	SW201	A-4
C217	B-4	C326	E-3	C472	C-2	CONNECTORS		IC201	B-4	R152	B-1	R256	B-3	R332	G-4	R725	G-2	SW202	A-4
C218	C-4	C327	E-3	C473	C-3	CL301A	G-3	IC202	B-2	R153	B-1	R257	B-4	R333	G-4	R726	G-2	SW203	A-4
C221	B-4	C328	E-3	C474	D-2	CL302A	G-4	IC301	F-3	R154	B-1	R258	B-4	R334	G-4	R727	F-2	SW204	A-2
C222	B-4	C330	E-3	C475	D-3	CL401	D-4	IC401	C-4	R155	B-1	R259	A-4	R335	E-3	R728	F-1	SW205	A-2
C223	B-4	C331	E-3	C476	D-3	CL402	D-3	IC471	D-2	R156	B-1	R260	B-1	R336	F-2	R729	F-1	SW206	A-4
C224	B-3	C332	E-3	C478	D-3	CL403	D-5	IC681	F-1	R157	B-1	R261	B-1	R339	F-3	R730	E-2	SW207	A-3
C225	B-3	C333	E-3	C479	C-3	CL603A	F-1	IC701	G-3	R201	A-4	R262	B-1	R340	F-3	R731	G-2	SW208	A-3
C226	C-3	C334	E-3	C480	D-2	CL604	F-1	IC703	G-2	R202	A-4	R263	B-1	R401	D-3	R732	G-2	SW209	A-2
C227	B-3	C336	F-3	C481	D-2	CN151	C-1	COILS		R203	A-4	R264	B-1	R402	D-3	R733	G-2	SW210	A-2
C228	B-3	C338	G-4	C483	D-2	CN201	D-1	L001	G-4	R204	A-4	R265	B-3	R405	C-3	R737	G-1	SW211	A-5
C229	B-3	C340	F-3	C484	D-2	CN303	G-4	L151	B-1	R205	A-4	R266	B-2	R406	C-3	R738	G-2	SW212	B-1
C230	B-3	C341	E-3	C485	D-2	CN751	F-2	L152	A-1	R206	A-4	R267	B-2	R407	C-3	R739	G-2	CRYSTAL OSCILATORS	
C231	C-3	C344	G-4	C486	D-2	CN752	G-2	L201	C-3	R207	A-4	R268	B-3	R408	E-2	R740	G-2	X201	B-4
C233	B-3	C350	E-3	C681	D-1	DIODES		L302	F-2	R208	A-4	R269	B-2	R409	E-2	R741	G-2	X202	B-4
C234	B-3	C401	D-3	C682	D-1	D151	B-1	L303	E-3	R209	A-4	R270	A-3	R410	E-2	R742	G-2	X301	F-2
C235	A-3	C402	D-3	C683	F-1	D152	B-1	L304	F-2	R210	A-4	R271	B-4	R411	C-4	R743	G-2	X401	D-3
C236	B-3	C403	D-3	C684	G-1	D201	C-3	L305	E-2	R211	A-4	R272	B-4	R412	C-4	R744	G-2	TEST POINTS	
C237	A-3	C404	D-3	C687	F-1	D202	A-1	L401	D-3	R212	A-2	R273	B-4	R413	C-4	R745	G-2	TP001	E-4
C238	A-3	C405	D-3	C688	F-2	D204	A-3	L402	D-4	R213	B-4	R274	B-4	R414	C-4	R746	G-2	TP002	E-4
C239	B-3	C406	D-3	C689	F-1	D205	B-4	L403	C-4	R214	A-4	R275	B-3	R415	C-4	R747	G-2	TP003	E-3
C240	B-3	C407	D-3	C691	C-1	D206	B-3	L681	E-1	R215	A-4	R276	B-3	R416	C-4	R748	G-2	TP007	E-4
C241	A-3	C408	D-3	C694	C-1	D210	D-2	L682	E-1	R216	A-3	R277	B-3	R418	D-4	R749	G-2	TP008	E-3
C242	A-3	C409	D-3	C703	G-3	D211	D-2	L701	G-2	R217	A-2	R278	B-3	R420	D				

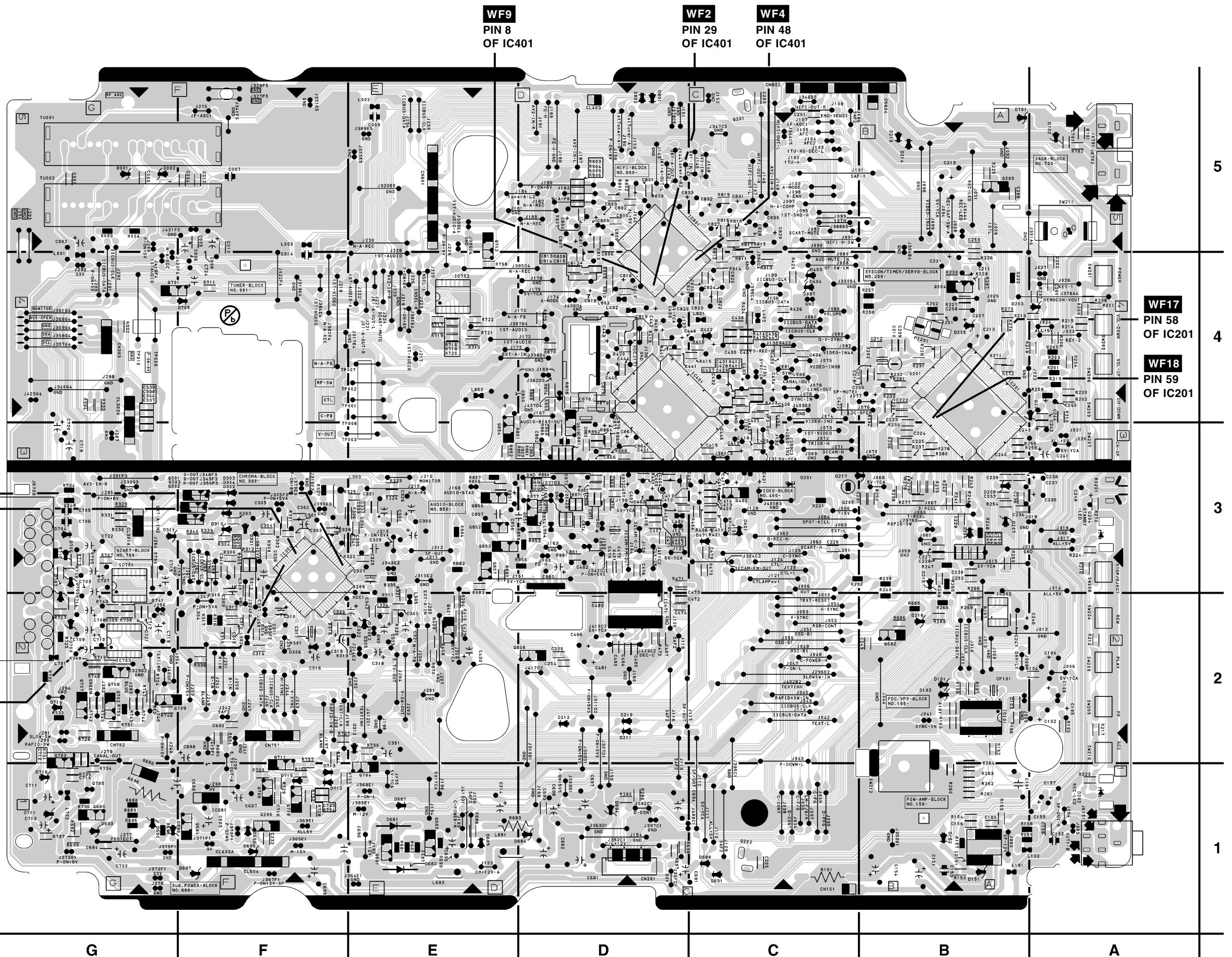
Main CBA Top View



Sensor CBA Top View

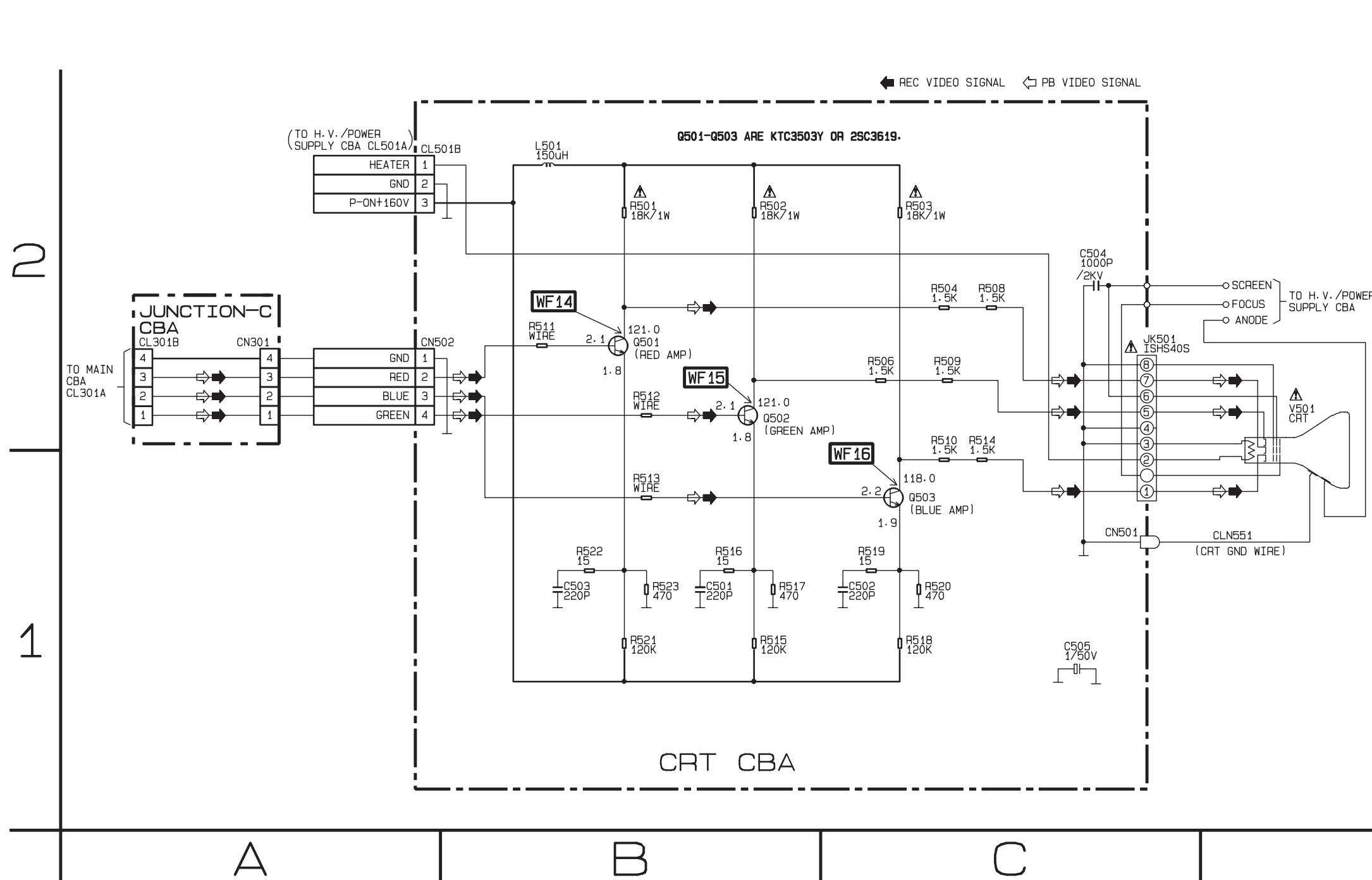
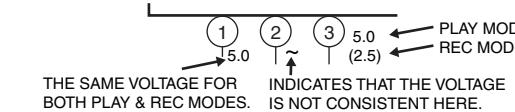


Main CBA Bottom View



CRT Schematic Diagram

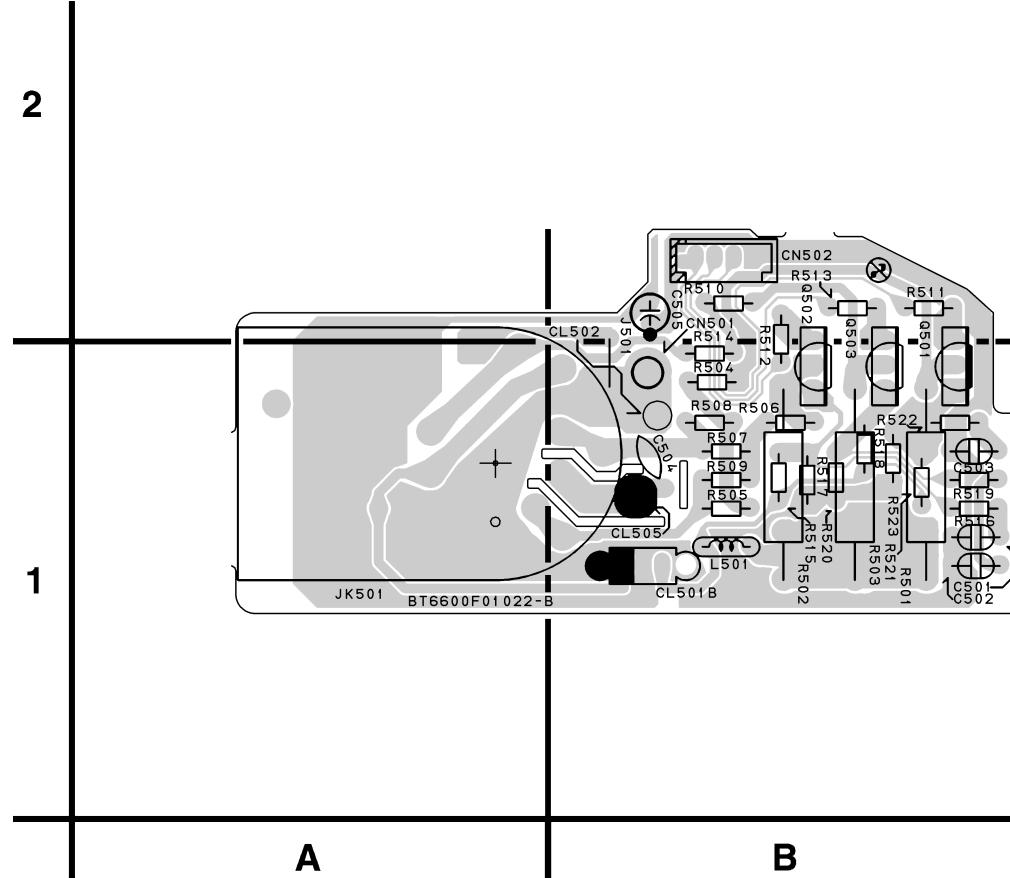
Voltage indications for PLAY and REC modes on the Schematic Diagrams are as shown below:



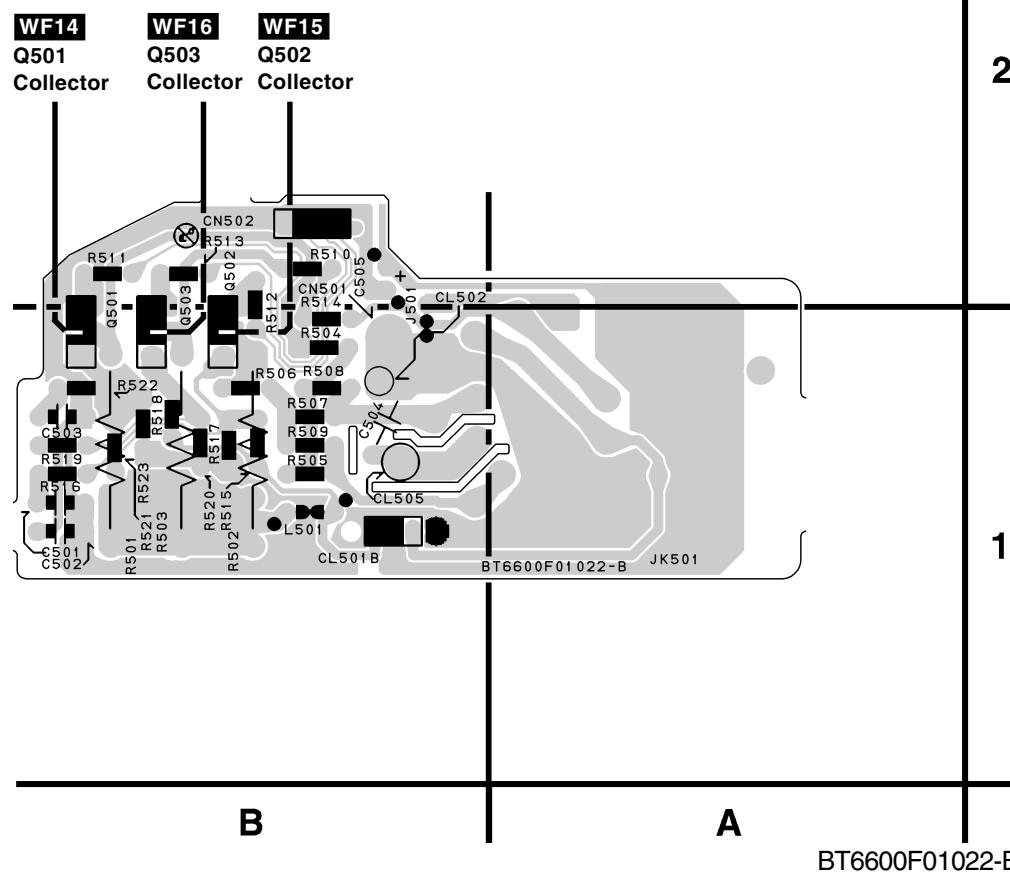
CRT SCHEMATIC DIAGRAM
PARTS LOCATION GUIDE

Ref No.	Position
CAPACITORS	
C501	B-1
C502	C-1
C503	B-1
C504	C-2
C505	C-1
CONNECTORS	
CL501B	A-2
CN501	C-1
CN502	A-2
COIL	
L501	B-2
TRANSISTORS	
Q501	B-2
Q502	B-2
Q503	C-1
RESISTORS	
R501	B-2
R502	B-2
R503	C-2
R504	C-2
R506	C-2
R508	C-2
R509	C-2
R510	C-1
R511	B-2
R512	B-2
R513	B-1
R514	C-1
R515	B-1
R516	B-1
R517	B-1
R518	C-1
R519	C-1
R520	C-1
R521	B-1
R522	B-1
R523	B-1
MISCELLANEOUS	
JK501	C-2

CRT CBA Top View



CRT CBA Bottom View



H.V./Power Supply 1/2 Schematic Diagram Parts Location Guide

Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		DIODES		RESISTORS	
C602	B-1	D630	D-3	R632	C-2
C604	A-1	D631	D-2	R633	C-1
C611	A-2	D634	D-2	R634	C-1
C613	B-3	D635	D-2	R635	C-2
C614	A-3	D636	D-1	R636	C-1
C615	B-2	D637	D-1	R637	C-1
C616	A-3	D638	D-2	R638	C-2
C618	C-2	D641	C-3	R639	C-2
C619	C-3	D642	D-3	R640	D-3
C621	C-3	IC		R641	D-3
C622	C-3	IC601	B-2	R642	D-2
C624	C-2	COILS		R643	D-3
C625	C-3	L601	B-1	R644	D-3
C626	C-3	L602	B-1	R645	C-2
C627	C-3	L603	C-3	R646	D-3
C629	D-3	TRANSISTORS		R647	D-3
C630	E-3	Q602	A-3	R649	D-2
C632	D-2	Q603	B-2	R651	D-2
C633	D-2	Q604	B-2	R652	D-3
C634	D-1	Q605	D-3	R653	D-2
C636	C-3	Q606	D-3	R654	C-2
CONNECTORS		Q607	D-2	R655	C-1
CN601	A-2	Q608	D-2	R656	C-1
CN602	E-3	RESISTORS		R657	D-1
DIODES		R601	A-1	R658	C-2
D601	B-2	R602	B-1	R659	C-2
D602	B-2	R603	B-1	R660	D-3
D603	B-2	R604	B-2	R661	C-1
D604	B-2	R605	B-2	R662	B-3
D605	B-2	R611	B-3	R663	D-3
D609	B-2	R612	B-3	SWITCH	
D610	B-3	R613	A-2	SW602	A-1
D612	A-2	R615	B-2	MISCELLANEOUS	
D615	C-2	R616	A-2	BC602	A-3
D616	E-2	R617	A-2	BC604	C-3
D617	C-3	R618	B-2	BC605	C-3
D618	C-3	R619	B-2	F601	A-1
D619	B-3	R620	B-3	PS602	A-2
D620	C-3	R621	B-3	SA601	A-1
D622	C-1	R622	B-3	T601	B-3
D623	C-1	R624	B-3	TM601	A-1
D624	C-1	R626	C-1	TM602	A-1
D625	C-1	R627	B-2	VARIABLE RESISTOR	
D626	C-3	R628	C-3	VR601	C-2
D627	C-1	R629	C-3		
D629	D-3	R631	C-2		

H.V./Power Supply 1/2 Schematic Diagram

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.

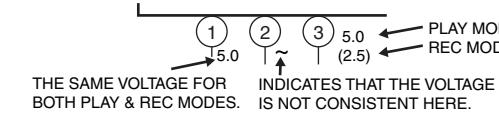
CAUTION

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

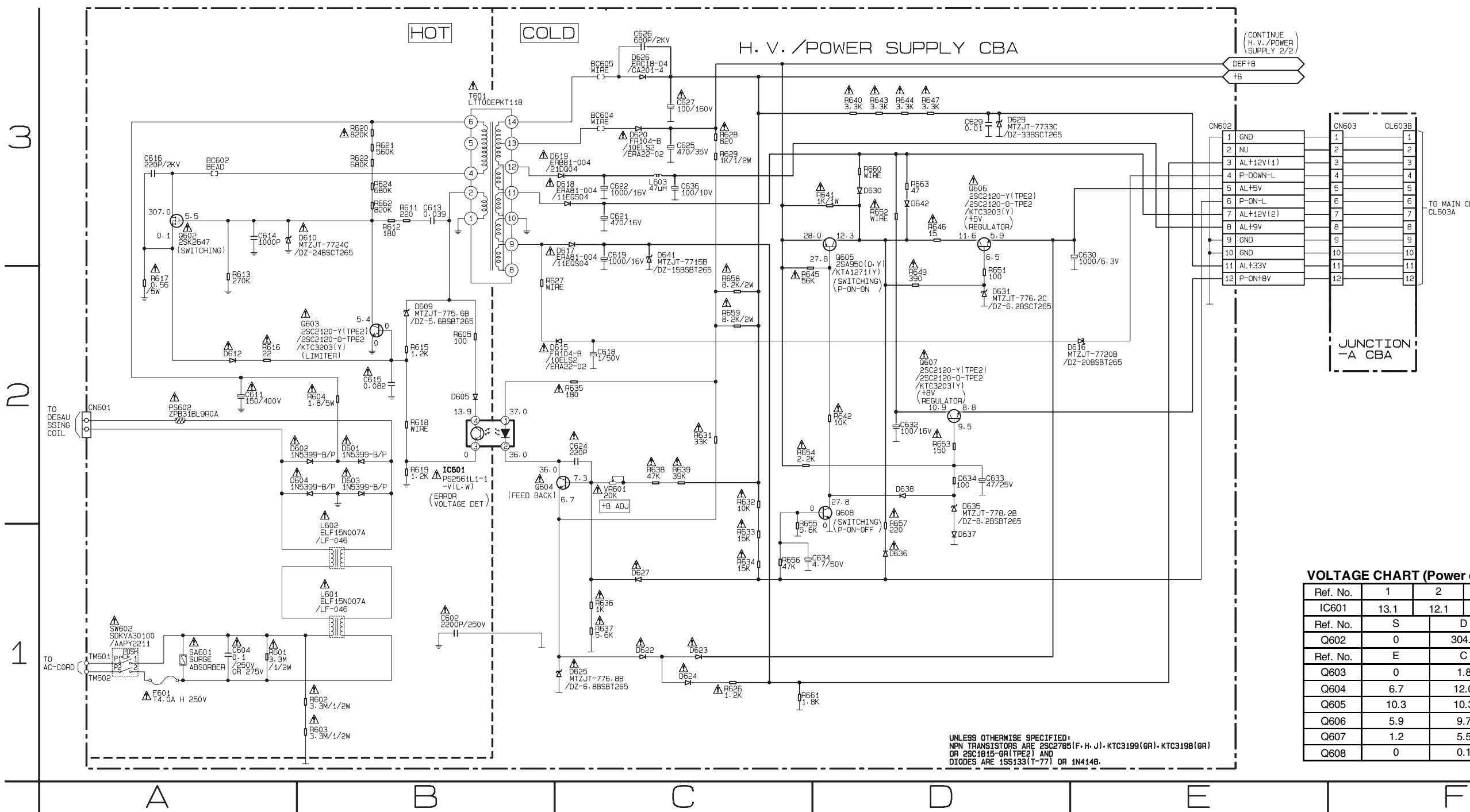
NOTE :

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

Voltage indications for PLAY and REC modes on the Schematic Diagrams are as shown below:

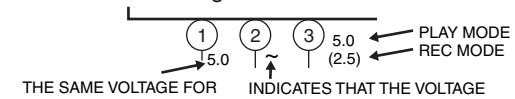


THE SAME VOLTAGE FOR BOTH PLAY & REC MODES. INDICATES THAT THE VOLTAGE IS NOT CONSISTENT HERE.



H.V./Power Supply 2/2 Schematic Diagram

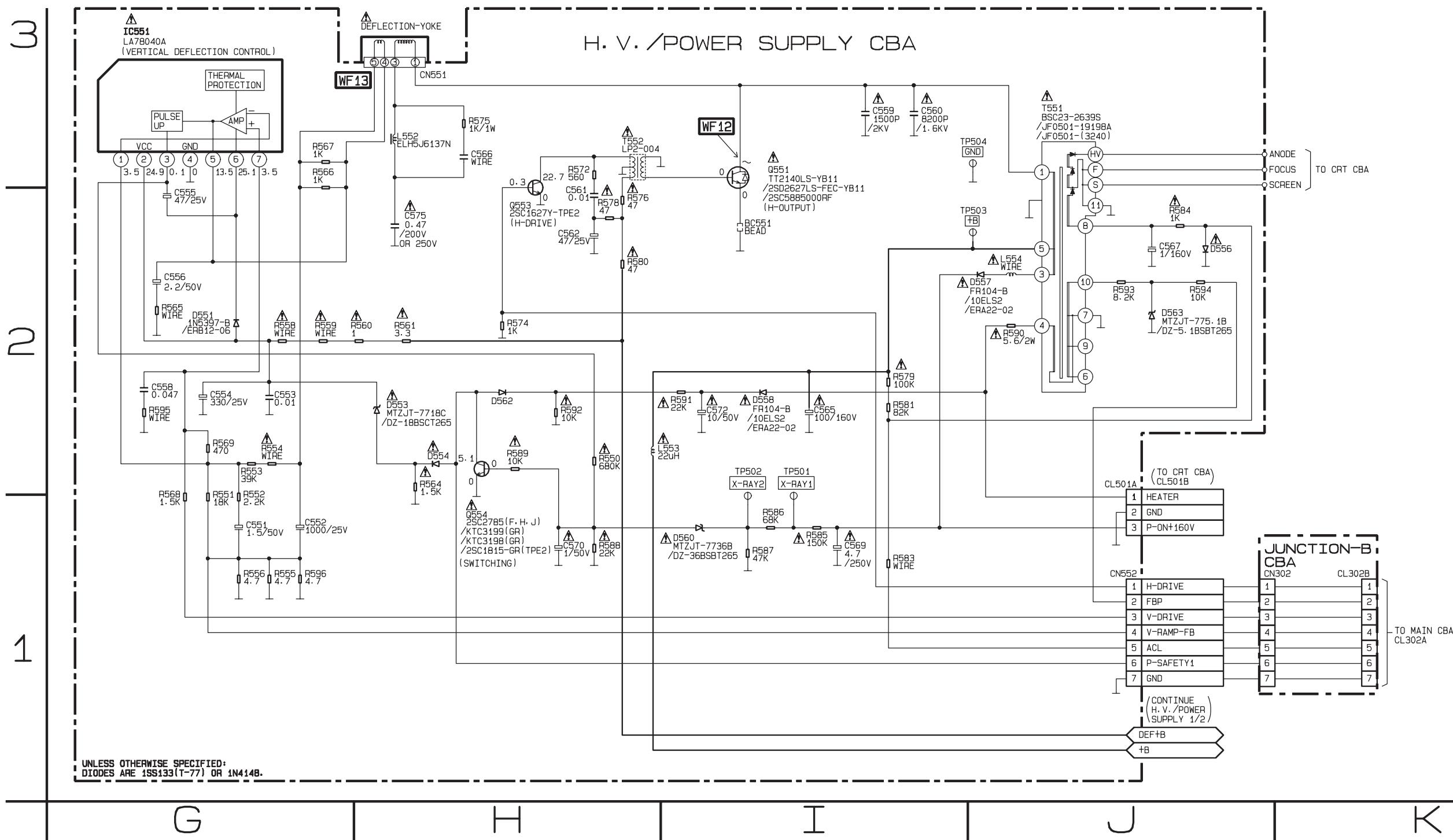
Voltage indications for PLAY and REC modes on the Schematic Diagrams are as shown below:



THE SAME VOLTAGE FOR BOTH PLAY & REC MODES. INDICATES THAT THE VOLTAGE IS NOT CONSISTENT HERE.

H.V./POWER SUPPLY 2/2 SCHEMATIC DIAGRAM PARTS LOCATION GUIDE

Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS											
C551	G-1	C569	I-1	D558	I-2	R550	H-2	R567	G-3	R586	I-1
C552	G-1	C570	H-1	D560	I-1	R551	G-1	R568	G-1	R587	I-1
C553	G-2	C572	I-2	D562	H-2	R552	G-1	R569	G-2	R588	H-1
C554	G-2	C575	H-2	D563	J-2	R553	G-2	R572	H-3	R589	H-2
C555	G-2	CONNECTORS		IC		R554	G-2	R574	H-2	R590	J-2
C556	G-2	CL501A	J-2	IC551	G-3	R555	G-1	R575	H-3	R591	I-2
C558	G-2	CN551	H-3	COILS		R556	G-1	R576	H-2	R592	H-2
C559	I-3	CN552	J-1	L552	H-3	R558	G-2	R578	H-2	R593	J-2
C560	I-3	DIODES		L553	I-2	R559	G-2	R579	I-2	R594	J-2
C561	H-2	D551	G-2	L554	J-2	R560	H-2	R580	H-2	R595	G-2
C562	H-2	D553	H-2	TRANSISTORS		R561	H-2	R581	I-2	R596	G-1
C565	I-2	D554	H-2	Q551	I-2	R564	H-2	R583	I-1	MISCELLANEOUS	
C566	H-3	D556	J-2	Q553	H-2	R565	G-2	R584	J-2	BC551	I-2
C567	J-2	D557	J-2	Q554	H-1	R566	G-3	R585	I-1	T551	J-3



H.V./Power Supply CBA Top View

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.

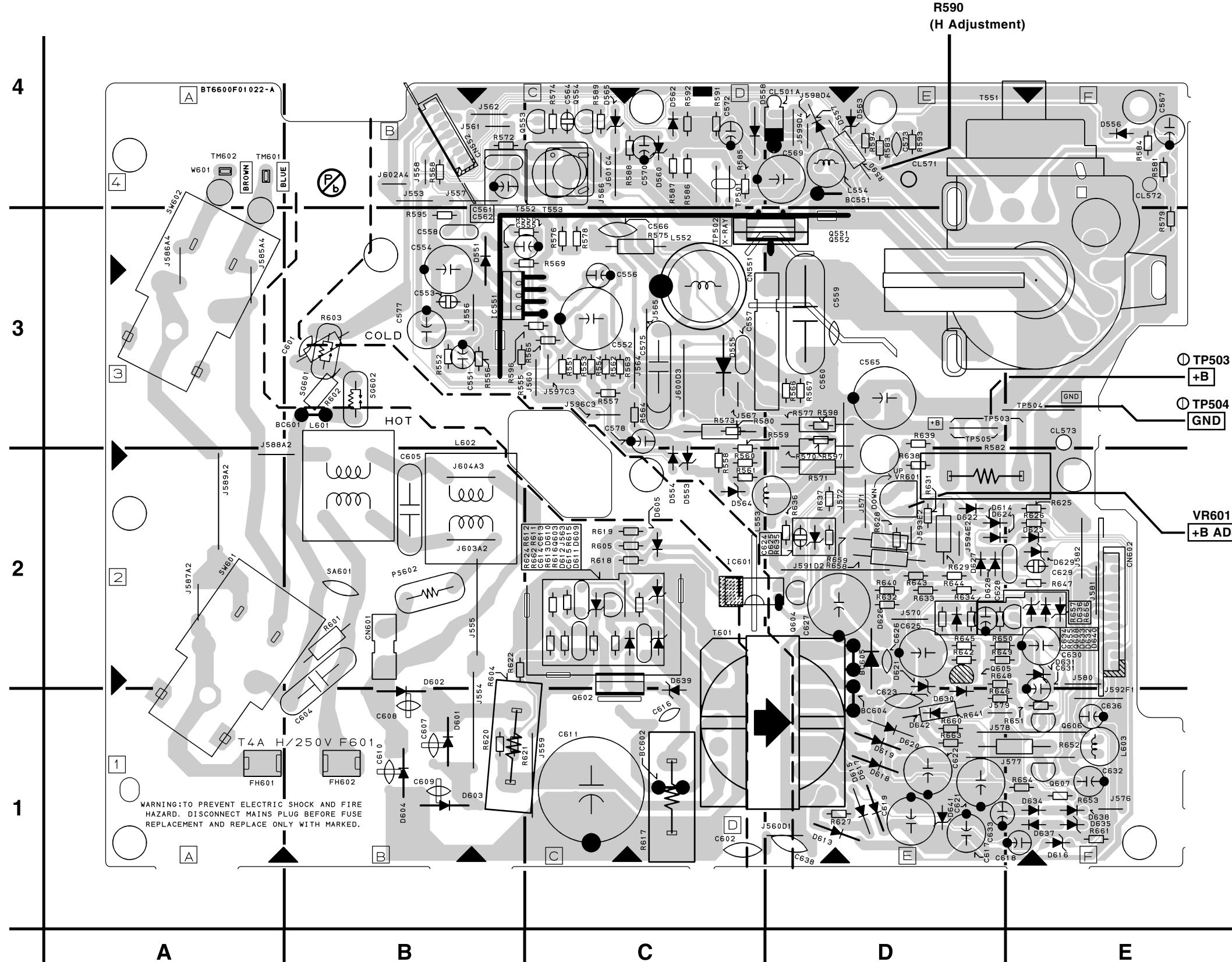
CAUTION

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

NOTE :

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

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



H.V./Power Supply CBA Bottom View

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.

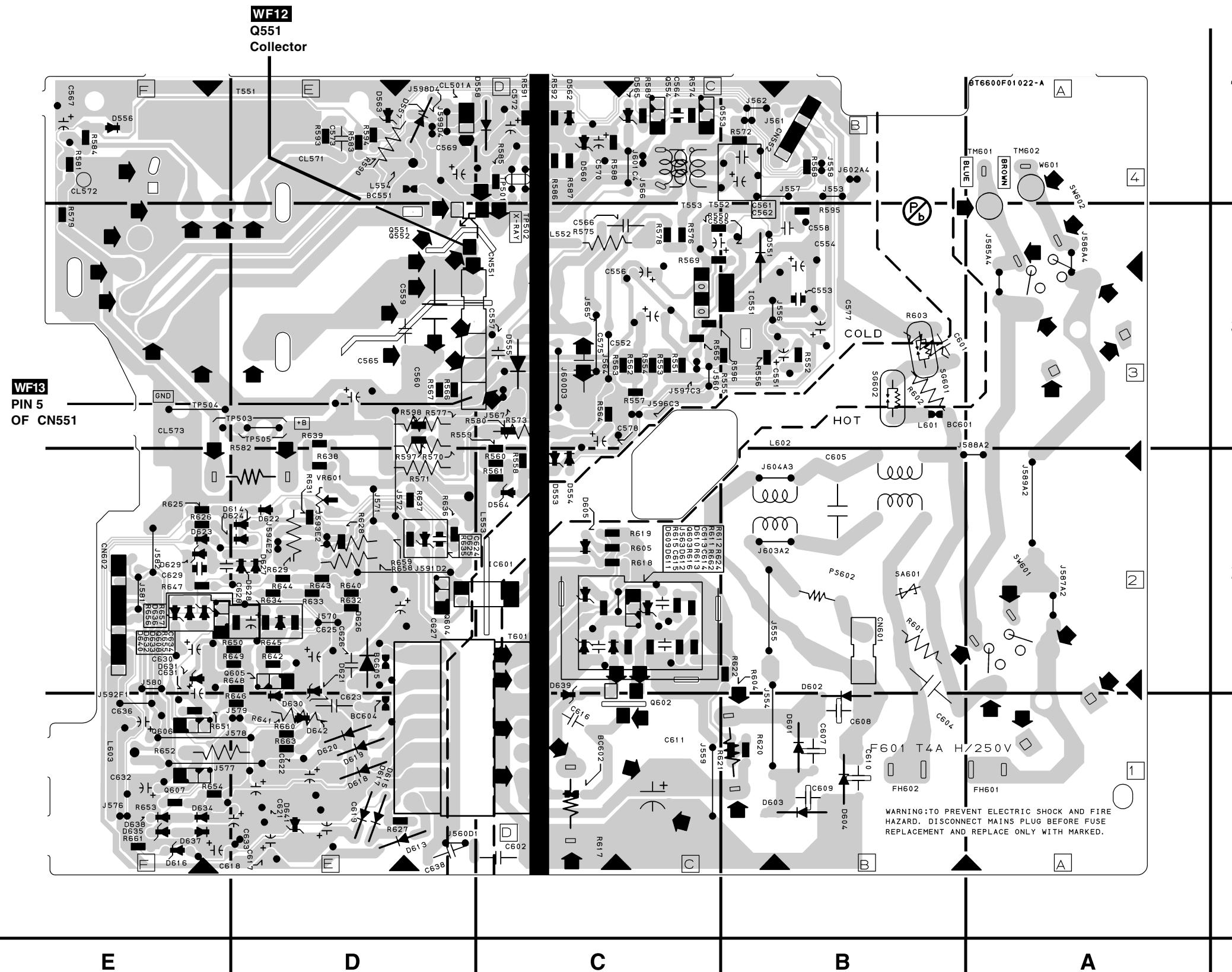
CAUTION

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

NOTE :

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

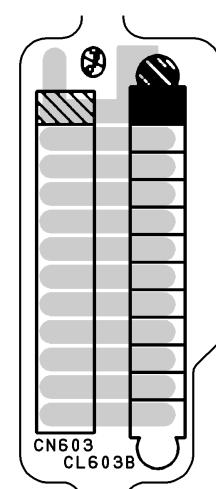
BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT, AN ISOLATION TRANSFORMER MUST BE USED. ALSO, IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY, WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT, A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.



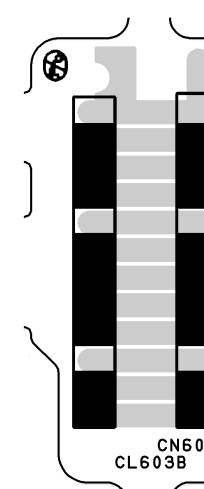
H.V./Power Supply CBA Parts Location Guide

Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS							
C551	B-3	D601	B-1	R553	C-3	R628	D-2
C552	C-3	D602	B-2	R554	C-3	R629	D-2
C553	B-3	D603	B-1	R555	B-3	R631	D-2
C554	B-3	D604	B-1	R556	B-3	R632	D-2
C555	B-3	D605	C-2	R558	C-2	R633	D-2
C556	C-3	D609	C-2	R559	D-3	R634	D-2
C558	B-3	D610	C-2	R560	C-2	R635	D-2
C559	D-3	D612	C-2	R561	C-2	R636	D-2
C560	D-3	D615	D-1	R564	C-3	R637	D-2
C561	B-3	D616	E-1	R565	C-3	R638	D-2
C562	B-3	D617	D-1	R566	D-3	R639	D-3
C565	D-3	D618	D-1	R567	D-3	R640	D-2
C566	C-3	D619	D-1	R568	B-4	R641	D-1
C567	E-4	D620	D-1	R569	C-3	R642	D-2
C569	D-4	D622	D-2	R572	B-4	R643	D-2
C570	C-4	D623	E-2	R574	C-4	R644	D-2
C572	C-4	D624	D-2	R575	C-3	R645	D-2
C575	C-3	D625	D-2	R576	C-3	R646	D-1
C602	C-1	D626	D-2	R578	C-3	R647	E-2
C604	B-1	D627	D-2	R579	E-3	R649	D-2
C611	C-1	D629	E-2	R580	C-3	R651	E-1
C613	C-2	D630	D-1	R581	E-4	R652	E-1
C614	C-2	D631	E-2	R583	D-4	R653	E-1
C615	C-2	D634	E-1	R584	E-4	R654	E-1
C616	C-1	D635	E-1	R585	C-4	R655	E-2
C618	D-1	D636	E-2	R586	C-4	R656	E-2
C619	D-1	D637	E-1	R587	C-4	R657	E-2
C621	D-1	D638	E-1	R588	C-4	R658	D-2
C622	D-1	D641	D-1	R589	C-4	R659	D-2
C624	C-2	D642	D-1	R590	D-4	R660	D-1
C625	D-2	ICS		R591	C-4	R661	E-1
C626	D-2	IC551	B-3	R592	C-4	R662	C-2
C627	D-2	IC601	C-2	R593	D-4	R663	D-1
C629	E-2	COILS		R594	D-4	SWITCH	
C630	E-2	L552	C-3	R595	B-3	SW602	A-2
C632	E-1	L553	C-2	R596	B-3	TEST POINTS	
C633	D-1	L554	D-4	R601	B-2	TP501	C-4
C634	E-2	L601	B-3	R602	B-3	TP502	C-3
C636	E-1	L602	B-3	R603	B-3	TP503	D-3
CONNECTORS		L603	E-1	R604	B-2	TP504	E-3
CL501A	D-4	TRANSISTORS		R605	C-2	MISCELLANEOUS	
CN551	C-3	Q551	D-3	R611	C-2	BC551	D-4
CN552	B-4	Q553	B-4	R612	C-2	BC602	C-1
CN601	B-2	Q554	C-4	R613	C-2	BC604	D-1
CN602	E-2	Q602	C-1	R615	C-2	BC605	D-2
DIODES							
		Q603	C-2	R616	C-2	F601	B-1
D551	B-3	Q604	D-2	R617	C-1	PS602	B-2
D553	C-2	Q605	D-2	R618	C-2	SA601	B-2
D554	C-2	Q606	E-1	R619	C-2	T551	D-4
D556	E-4	Q607	E-1	R620	B-1	T552	B-3
D557	D-4	Q608	E-2	R621	B-1	T601	C-2
D558	C-4	RESISTORS		R622	B-2	TM601	A-4
D560	C-4	R550	C-3	R624	C-2	TM602	A-4
D562	C-4	R551	C-3	R626	E-2	VARIABLE RESISTOR	
D563	D-4	R552	B-3	R627	D-1	VR601	D-2

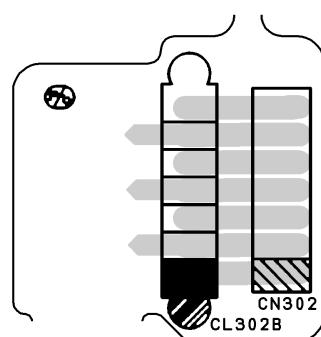
Junction-A CBA Top View



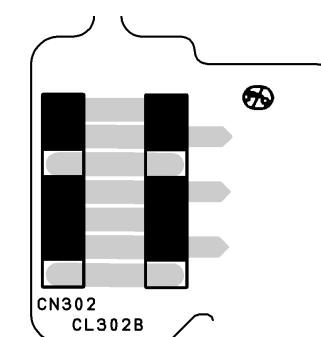
Junction-A CBA Bottom View



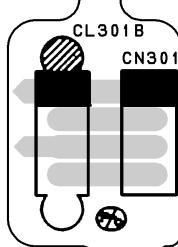
Junction-B CBA Top View



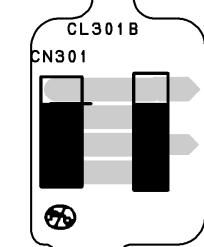
Junction-B CBA Bottom View



Junction-C CBA Top View



Junction-C CBA Bottom View



A

B

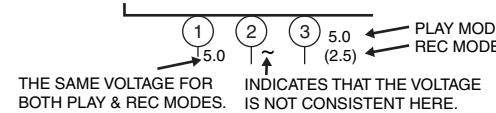
C

D

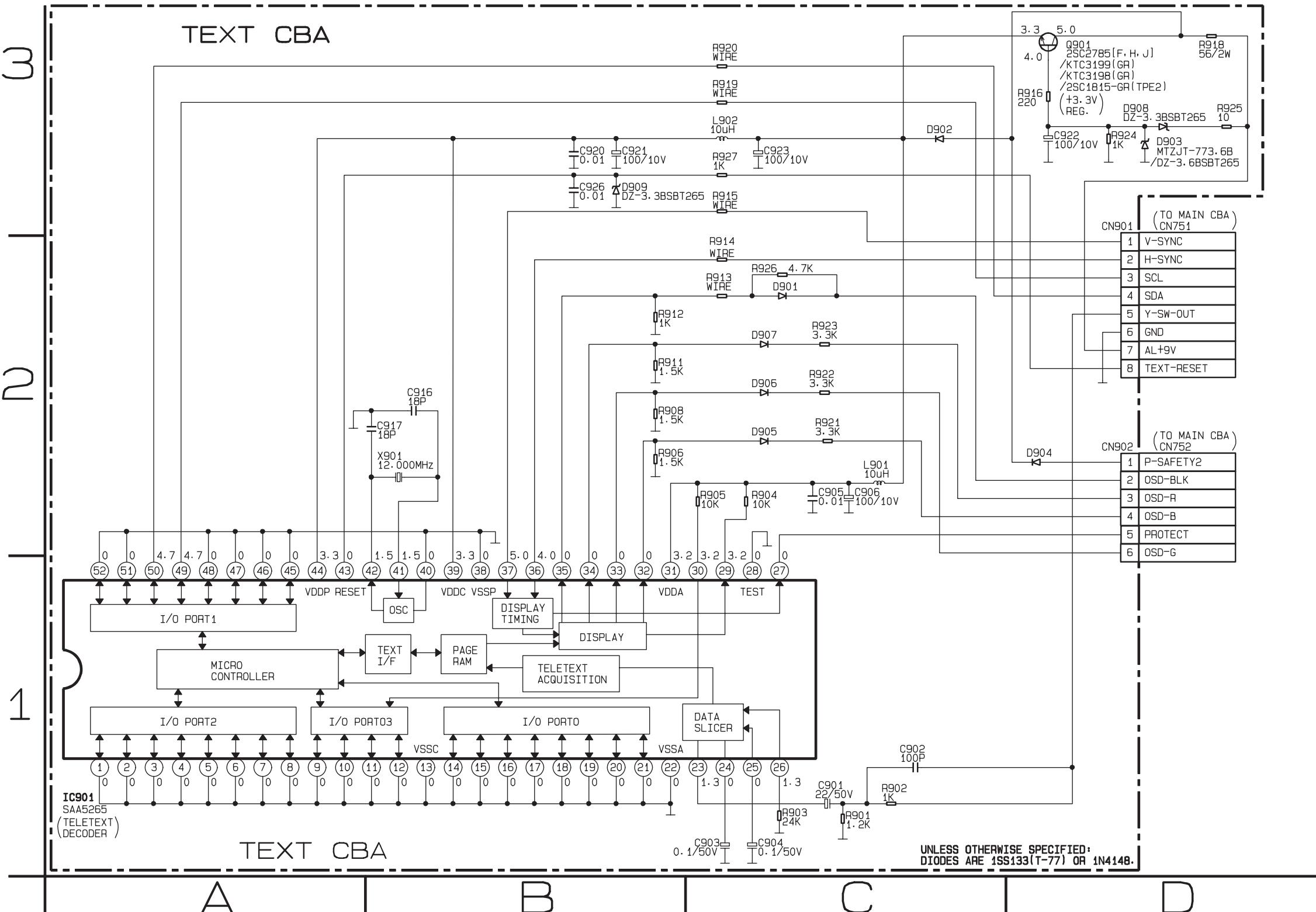
BT6600F01012

Text Schematic Diagram

Voltage indications for PLAY and REC modes on the Schematic Diagrams are as shown below:



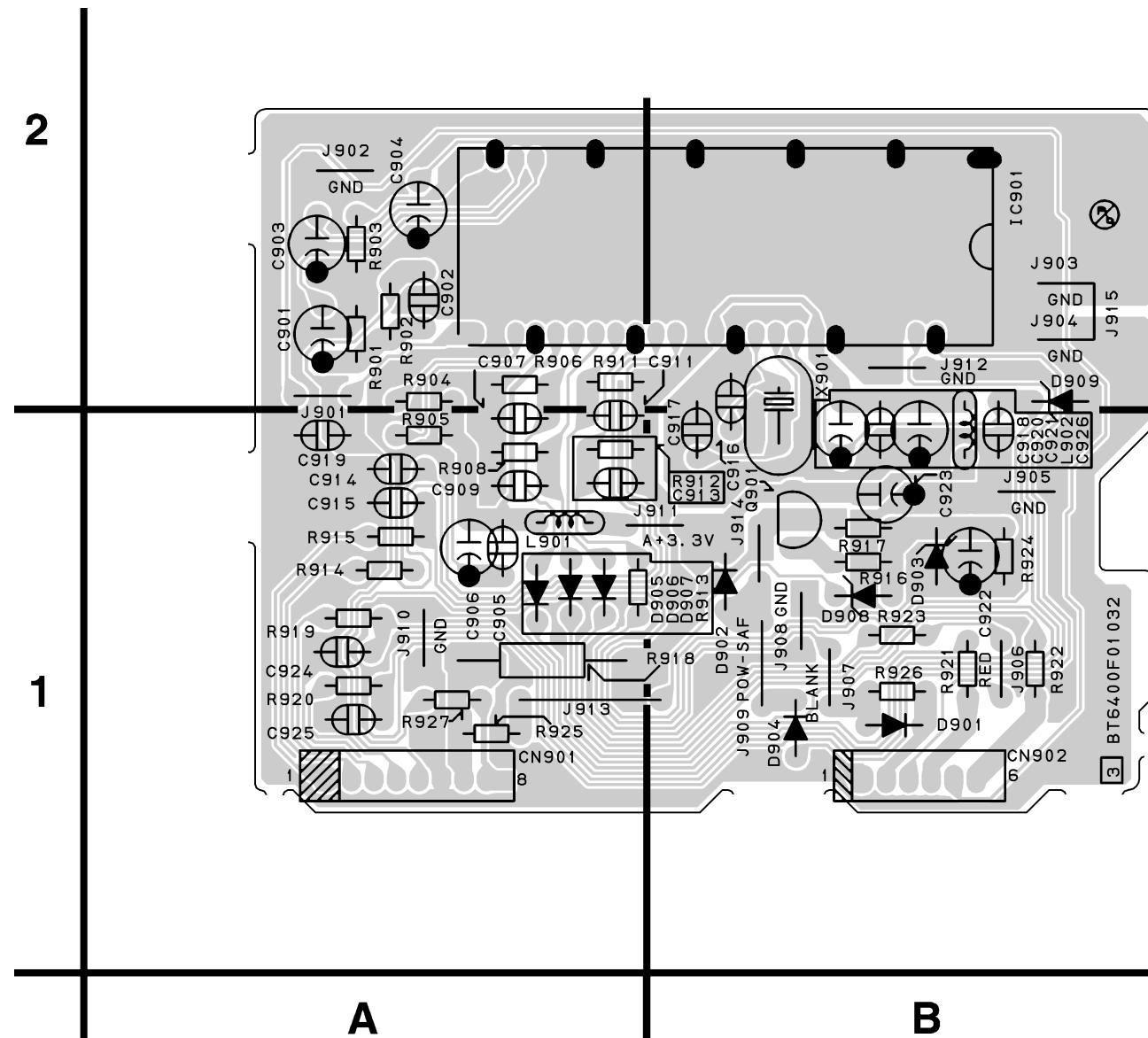
TEXT CBA



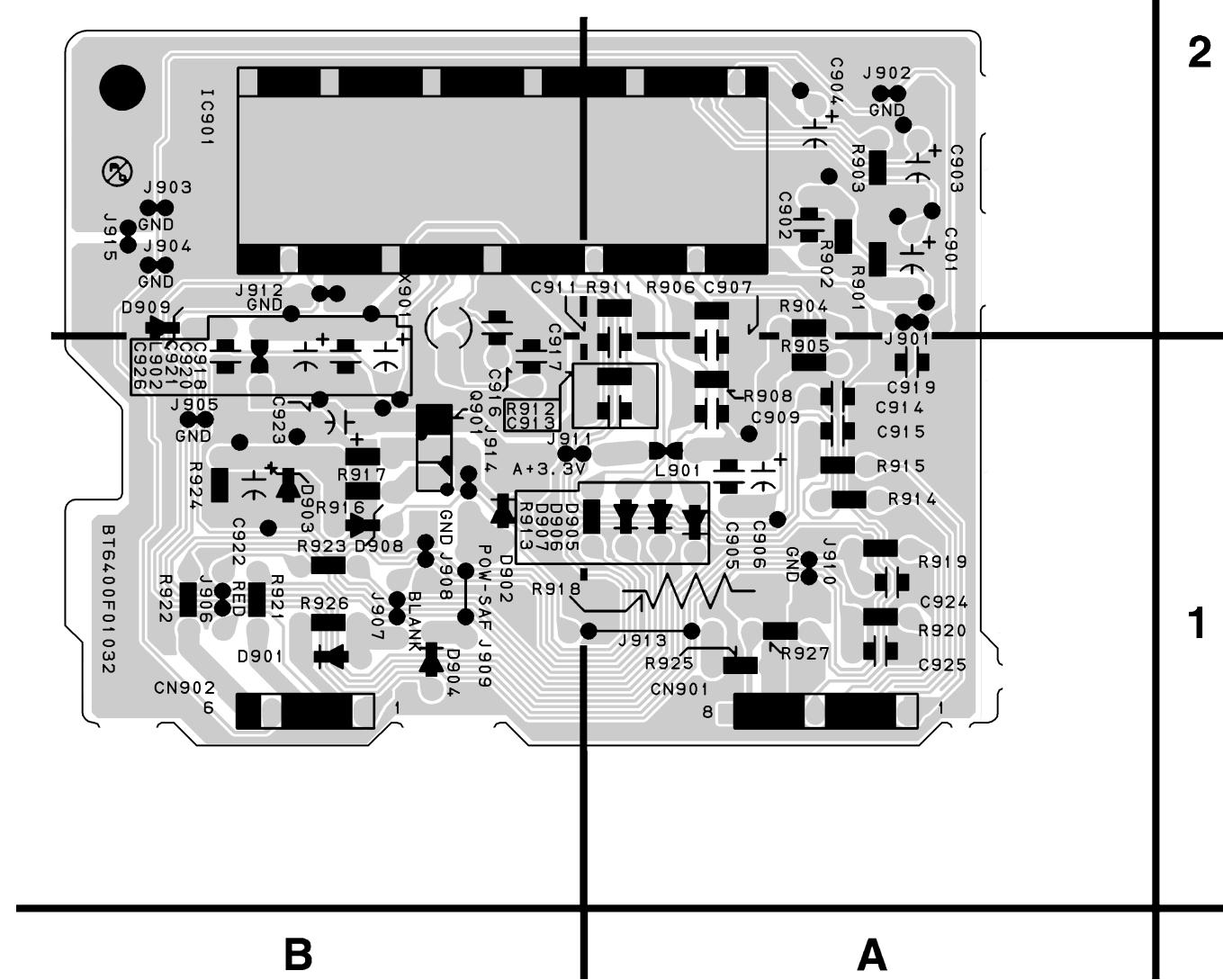
TEXT SCHEMATIC DIAGRAM
PARTS LOCATION GUIDE

Ref No.	Position
CAPACITORS	
C901	C-1
C902	C-1
C903	C-1
C904	C-1
C905	C-2
C906	C-2
C916	B-2
C917	B-2
C920	B-3
C921	B-3
C922	D-3
C923	C-3
C926	B-3
CONNECTORS	
CN901	D-3
CN902	D-2
DIODES	
D901	C-2
D902	C-3
D903	D-3
D904	D-2
D905	C-2
D906	C-2
D907	C-2
D908	D-3
D909	B-3
IC	
IC901	A-1
COILS	
L901	C-2
L902	C-3
TRANSISTOR	
Q901	D-3
RESISTORS	
R901	C-1
R902	C-1
R903	C-1
R904	C-2
R905	C-2
R906	B-2
R908	B-2
R911	B-2
R912	B-2
R913	C-2
R914	C-2
R915	C-3
R916	D-3
R918	D-3
R919	C-3
R920	C-3
R921	C-2
R922	C-2
R923	C-2
R924	D-3
R925	D-3
R926	C-2
R927	C-3
CRYSTAL OSCILLATOR	
X901	B-2

Text CBA Top View



Text CBA Bottom View

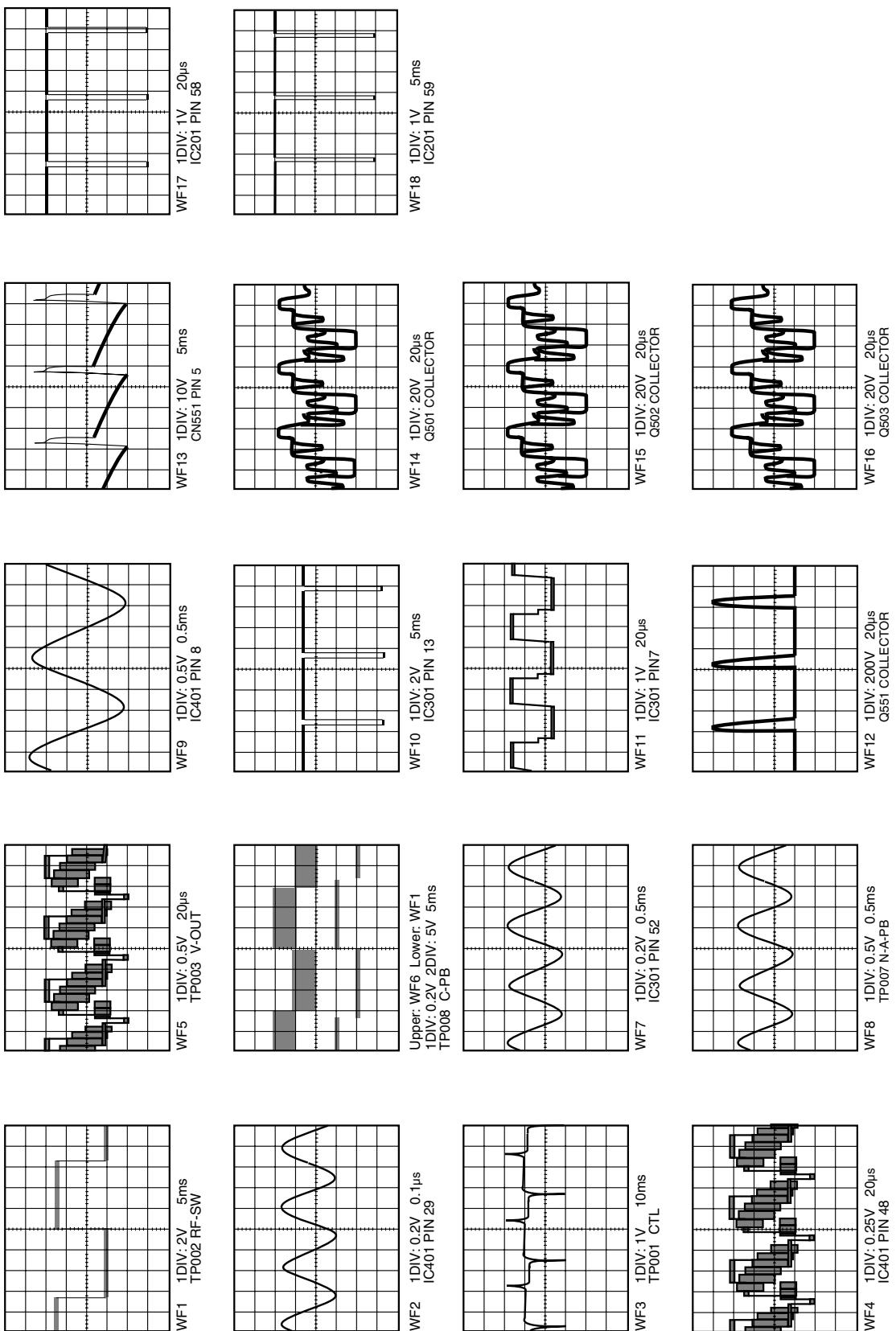


TEXT CBA PARTS LOCATION GUIDE

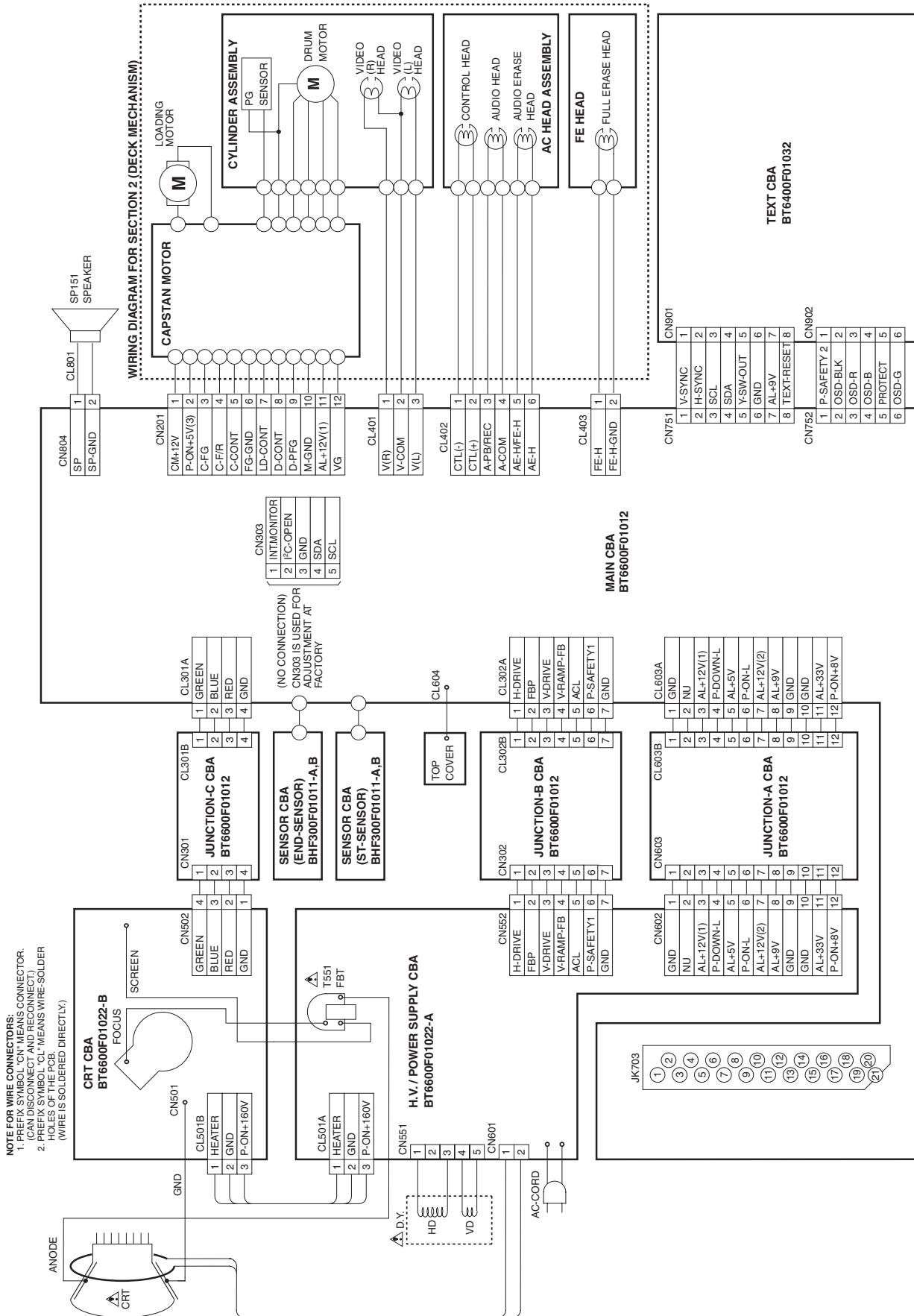
Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	
CAPACITORS					CAPACITORS					
C901	A-2	C926	B-1	D908	B-1	R903	A-2	R919	A-1	
C902	A-2	CONNECTORS					R904	A-2	R920	A-1
C903	A-2	CN901	A-1	IC					R905	A-1
C904	A-2	CN902	B-1	IC901	B-2	R906	A-2	R921	B-1	
C905	A-1	DIODES					R908	A-1	R923	B-1
C906	A-1	D901	B-1	L901	A-1	R911	A-2	R924	B-1	
C916	B-1	D902	B-1	L902	B-1	R912	B-1	R925	A-1	
C917	B-1	D903	B-1	TRANSISTOR					R913	B-1
C920	B-1	D904	B-1	Q901	B-1	R914	A-1	R926	B-1	
C921	B-1	D905	B-1	RESISTORS					R915	A-1
C922	B-1	D906	B-1	R901	A-2	R916	B-1	CRYSTAL OSCILLATOR		
C923	B-1	D907	B-1	R902	A-2	R918	B-1	X901 B-2		

WAVEFORMS

WAVEFORM NOTES
 INPUT: COLORBAR SIGNAL
 OTHER CONTROLS: CENTER POSITION
 VOLTAGES SHOWN ARE RANGE OF
 OSCILLOSCOPE SETTING

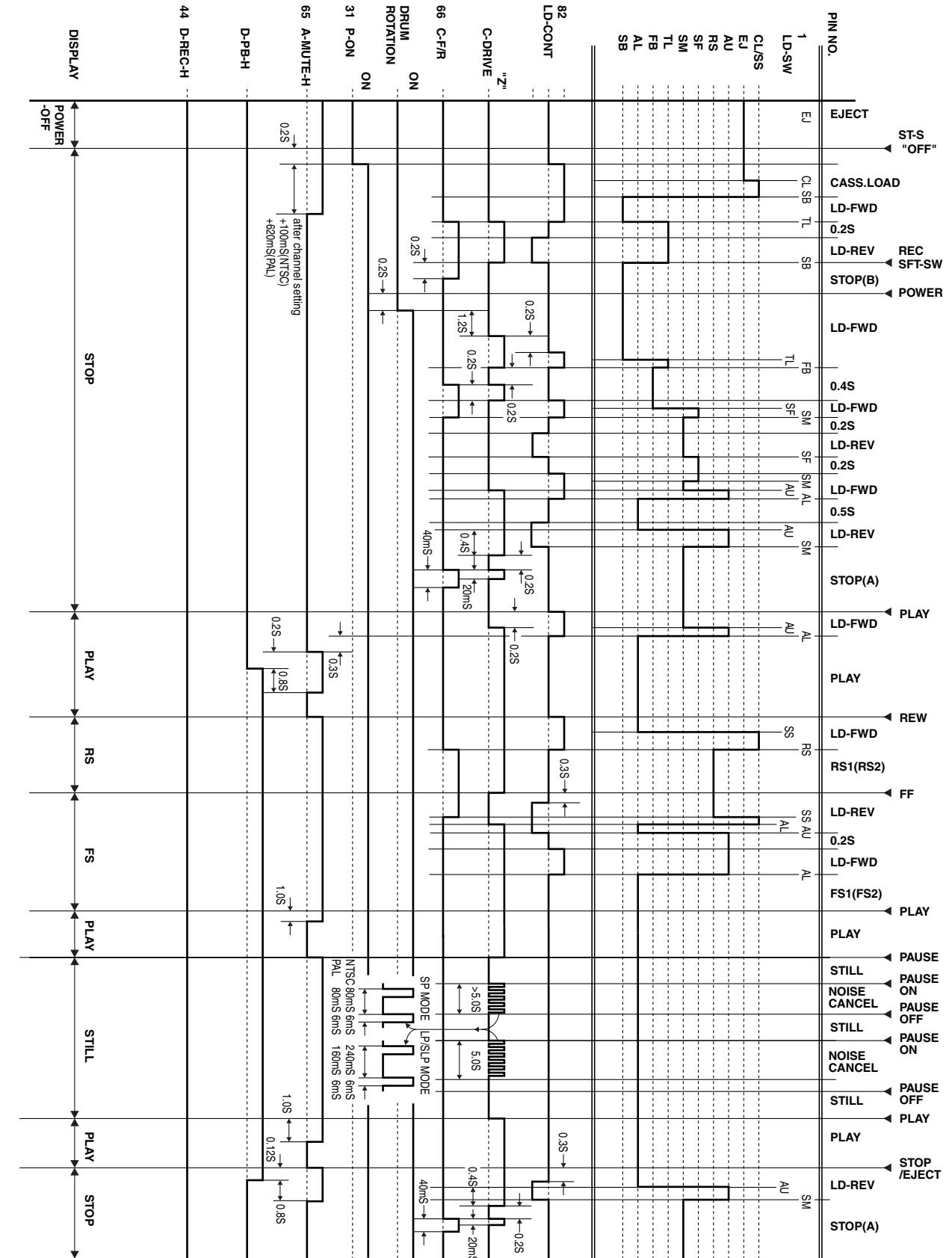


WIRING DIAGRAM



SYSTEM CONTROL TIMING CHARTS

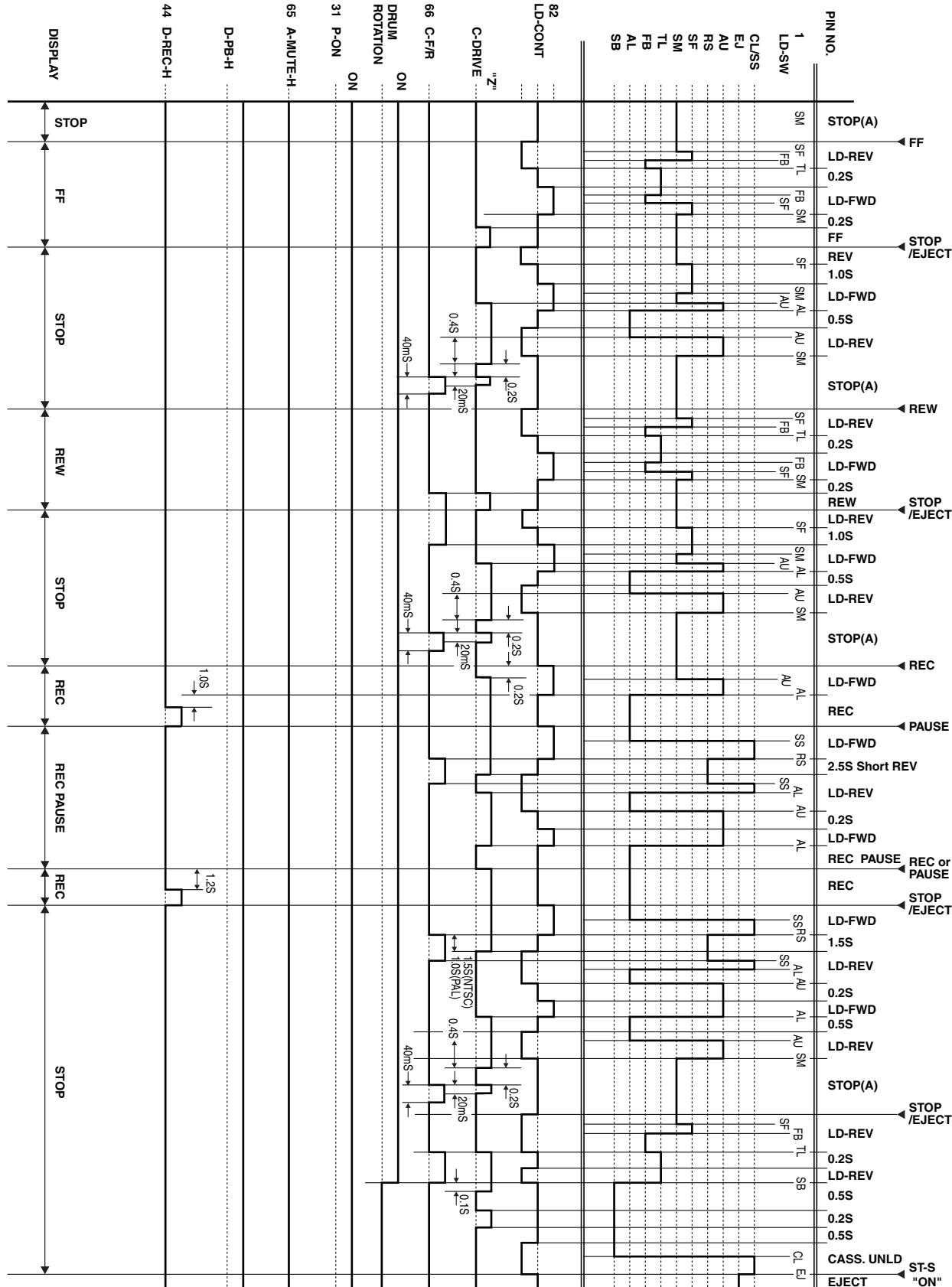
Chart 1



1. EJECT (POWER OFF) -> CASSETTE IN (POWER ON) -> STOP(B) -> STOP(A) -> PLAY -> RS -> FS -> PLAY -> STILL(N-CANCEL) -> PLAY -> STOP(A)

Chart 2

2. STOP(A) -> FF -> STOP(A) ->REW -> STOP(A) -> REC -> PAUSE -> PAUSE or REC -> STOP(A) -> EJECT



IC PIN FUNCTION DESCRIPTIONS

Comparison Chart of Models and Marks

Model	Mark
21PV385/07	A
21PV385/01	B
21PV385/58	C
21PV385/39	D

IC 201 (TV/VCR Micro Controller)

"H" ≥ 4.5V, "L" ≤ 1.0V

Pin No.	Mark	IN/OUT	Signal Name	Function
1		-	NU	Not Used
2		IN	P-SAFETY 2	Power Supply Failure Detection 2
3		IN	P-SAFETY 1	Power Supply Failure Detection 1
4		IN	END-SENS	End-Sensor
5		IN	AFC	Automatic Frequency Control Signal
6		IN	V-ENV	Video Envelope Input
7		IN	KEY-1	Key 1 Input
8		IN	KEY-2	Key 2 Input
9		IN	LD-SW	Loading Switch Input
10		IN	ST-SENS	Start-Sensor
11		-	NU	Not Used
12		-	NU	Not Used
13		IN/OUT	DV SYNC	Artificial V-Sync Output
14		IN	REMOTE	Remote Signal Input
15		OUT	C-ROTA	Color Phase Rotary Changeover Signal
16		OUT	H-A-SW	Video Head Amp Switching Pulse
17		-	NU	Not Used
18		OUT	RF-SW	Video Head Switching Pulse
19		-	NU	Not Used
20		OUT	A-MUTE-H	Audio Mute Control Signal (Mute = "H")
21		-	NU	Not Used
22		-	NU	Not Used
23		OUT	REC-LED	Recording LED Control Signal
24		OUT	REC-LED	Recording LED Control Signal

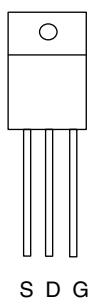
Pin No.	Mark	IN/OUT	Signal Name	Function
25		-	NU	Not Used
26		-	NU	Not Used
27		-	NU	Not Used
28		-	NU	Not Used
29		OUT	SCART-MUTE	RAPID-Switch Input Signal from Scart Jack
30		-	NU	Not Used
31		IN	REC-SAFETY	Record Protection Tab Detection
32	A,B,C	-	NU	Not Used
	D	IN	SECAM-H	SECAM Mode at High
33	A,B,C	-	NU	Not Used
	D	IN/OUT	TRICK-H	Special Playback = "H" in SECAM Mode
34		IN	RESET	System Reset Signal (Reset="L")
35		IN	XCIN	Sub Clock 32 kHz
36		OUT	XCOUT	Sub Clock 32 kHz
37		-	TIMER+5V	Vcc
38		IN	XIN	Main Clock Input
39		OUT	XOUT	Main Clock Output
40		-	GND	GND
41		OUT	SPOT-KILL	Counter-measure for Spot
42		OUT	EXT-L	External Input or Playback = Output
43		IN	CLKSEL	Clock Select (GND)
44		OUT	SP-MUTE	Speaker Mute Signal
45		IN/OUT	I2C-OPEN	White Balance Adjust Mode Judgment
46		-	GND	GND
47		OUT	D-REC-H	Delayed Record Signal
48		OUT	SCART-H	Switching Signal of Scart Jack and RCA Jack
49		-	OSD-GND	OSD GND
50		-	NU	Not Used
51		-	NU	Not Used
52		-	NU	Not Used

Pin No.	Mark	IN/OUT	Signal Name	Function
53		-	OSDVcc	OSDVcc
54		-	HLF	HLF
55		OUT	TEXT-RESET	Tele Text Reset
56		IN	CV-IN	Video Signal Input
57		-	GND	GND
58		IN	H-SYNC	H-SYNC Input
59		IN	V-SYNC	V-SYNC Input
60		OUT	OSD-BLK	Output for Picture Cut off
61		OUT	RGB-CONT	RGB Control Signal
62		OUT	OSD-B	Blue Output
63		OUT	OSD-G	Green Output
64		OUT	OSD-R	Red Output
65		IN	RAPID-SW-IN	RAPID-Switch Input Signal
66		-	NU	Not Used
67		OUT	P-ON-H	Power On Signal at High
68		IN	SLOW-SW-IN	Slow Switch Input Signal
69		-	NU	Not Used
70		OUT	TEXT-IN-H	Tele Text Input Signal at High
71		OUT	SCL	E2PROM/CHROMA IC Tuner Communication Clock
72		IN/OUT	SDA	E2PROM/CHROMA IC Tuner Communication Data
73		-	NU	Not Used
74		IN	C-SYNC	C-Sync Input
75		-	NU	Not Used
76		OUT	C-CONT	Capstan Motor Control Signal
77		OUT	D-CONT	Drum Motor Control Signal
78		OUT	C-F/R	Capstan Motor FWD/REV Control Signal (FWD="L"/REV="H")
79		-	NU	Not Used
80		IN	T-REEL	Take Up Reel Rotation Signal
81		IN/OUT	LD-CONT	Loading Motor Control Signal
82		OUT	TEXT-L	Teletext Control Signal

Pin No.	Mark	IN/OUT	Signal Name	Function
83		-	NU	Not Used
84		-	NU	Not Used
85		IN	P-DOWN-L	Power Voltage Down Detector Signal at Low
86		-	NU	Not Used
87		IN	C-FG	Capstan Motor Rotation Detection Pulse
88		-	AMPVss	AMPVss (GND)
89		-	NU	Not Used
90		IN	D-PFG	Drum Motor Phase/Frequency Generator
91		OUT	AMP VREF-OUT	Standard Voltage Output
92		IN	AMP VREF-IN	Standard Voltage Input
93		-	C	C Terminal
94		IN/OUT	CTL (-)	CTL (-)
95		IN/OUT	CTL (+)	CTL (+)
96		-	AMPC	AMPC
97		OUT	CTL AMP-OUT	Control Amp Output
98		-	AMPVcc	AMPVcc
99		-	AVcc	A/D Converter Power Input/Standard Voltage Input
100		IN	AGC	Tuner IF Output Signal

LEAD IDENTIFICATIONS

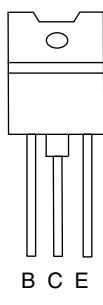
2SK2647



S D G

S: Souce
D: Drain
G: Gate

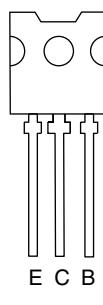
2SC5885000RF
TT2140LS-YB11



B C E

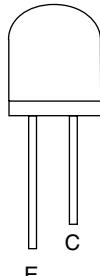
E: Emitter
C: Collector
B: Base

2SC3619
KTC3503Y



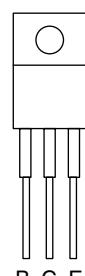
E C B

MID-32A22F
PT204-6B-12



E

2SD1913(R)
KTC2026Y

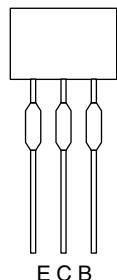


B C E

LA78040A

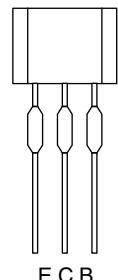


IN G OUT



2SA1346
2SC1815-GR(TPE2)
2SC2120-O(TPE2)
2SC2120-Y(TPE2)
2SC3331(T,U)
KRA103M
KTA1266(GR)
KTC3203(Y)

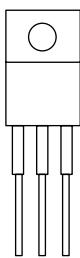
E C B



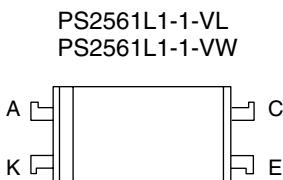
2SA1015-GR(TPE2)
2SA1175(F)
2SA950(Y,O)
2SC1627Y-TPE2
2SC2785(F,H,J)
2SD2627LS-FEC-YB11
BN1F4M-T
KTA1267(GR)
KTA1271(Y)
KTC3198(GR)
KTC3199(GR)

E C B

KA7805A
KIA7805API

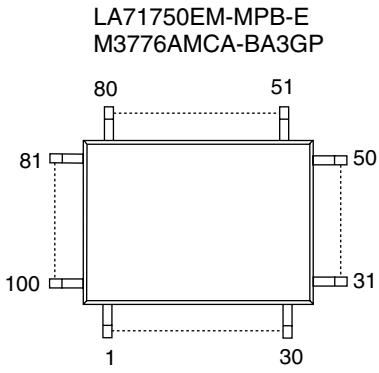
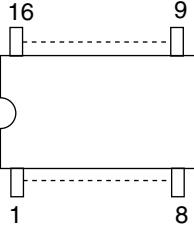


IN G OUT



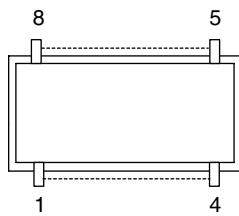
A C
K E

CD4053BCSJX
CD4053BNSR
TC4053BF(N)



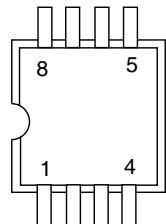
LA71750EM-MPB-E
M3776AMCA-BA3GP

LA4224

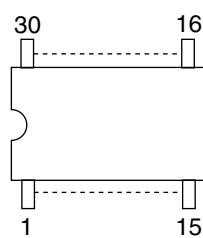


8 5
1 4

AT24C04N-10SC
BR24C04F
BR24C04F-W
BR24L04F-WE2
CAT24WC04JI
M24C04-MN6
M24C04-WMN6

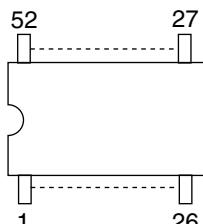


8 5
1 4



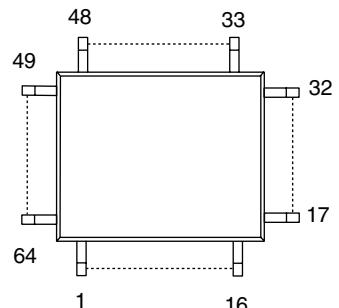
30 16
1 15

SAA5265



52 27
1 26

M61209BFP



48 33
49 32
1 16
64 17

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:

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

ELECTRICAL PARTS LIST				21PV385/01	21PV385/07	21PV385/39	21PV385/58
Pos.	▲ 12 NC	Description					
		MMA CBA		1	1	1	1
		Consists of the following					
		MAIN CBA		1	1	1	1
		JUNCTION A CBA		1	1	1	1
		JUNCTION B CBA		1	1	1	1
		JUNCTION C CBA		1	1	1	1
		SENSOR CBA		1	1	1	1
		SENSOR CBA		1	1	1	1
		POWER CBA		1	1	1	1
		CRT CBA		1	1	1	1
		TEXT CBA		1	1	1	1
		MAIN CBA					
		CAPACITORS					
C001		CHIP CERAMIC CAP.(MELF) F Z 0.01UF/16V		1	1	1	1
C002		ELECTROLYTIC CAP. 47UF/25V M		1	1	1	1
C006		ELECTROLYTIC CAP. 1UF/50V M		1	1	1	1
C008		ELECTROLYTIC CAP. 1UF/50V M		1	1	1	1
C009		PCB JUMPER D0.6-P5.0		1	1	1	1
C151		ELECTROLYTIC CAP. 330UF/16V M		1	1	1	1
C152		CERAMIC CAP.(AX) X M 2200PF/16V		1	1	1	1
C154		ELECTROLYTIC CAP. 470UF/16V M		1	1	1	1
C155		ELECTROLYTIC CAP. 0.22UF/50V M H7		1	1	1	1
C156		CHIP CERAMIC CAP.(1608) B K 4700PF/50V		1	1	1	1
C157		ELECTROLYTIC CAP. 10UF/25V M H7		1	1	1	1
C160		CHIP CERAMIC CAP.(1608) CH J 270PF/50V		1	1	1	1
C203		CHIP CERAMIC CAP.(MELF) F Z 0.01UF/16V		1	1	1	1
C205		CHIP CERAMIC CAP.(MELF) F Z 0.01UF/16V		1	1	1	1
C207		ELECTROLYTIC CAP. 1UF/50V M H7		1	1	1	1
C208		CHIP CERAMIC CAP.(MELF) F Z 0.01UF/16V		1	1	1	1
C209		CHIP CERAMIC CAP.(1608) CH J 22PF/50V		1	1	1	1
C210		CHIP CERAMIC CAP.(1608) CH J 22PF/50V		1	1	1	1
C211		ELECTROLYTIC CAP. 47UF/6.3V M H7		1	1	1	1
C212		CHIP CERAMIC CAP.(MELF) F Z 0.01UF/16V		1	1	1	1
C213		ELECTROLYTIC CAP. 47UF/6.3V M H7		1	1	1	1
C214		ELECTROLYTIC CAP. 330UF/6.3V M		1	1	1	1
C217		CHIP CERAMIC CAP. CH D 10PF/50V		1	1	1	1
C218		CHIP CERAMIC CAP. CH D 10PF/50V		1	1	1	1
C221		ELECTROLYTIC CAP. 47UF/6.3V M H7		1	1	1	1
C222		CHIP CERAMIC CAP.(MELF) F Z 0.01UF/16V		1	1	1	1
C223		CHIP CERAMIC CAP.(MELF) Y K 4700PF/16V		1	1	1	1
C224		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V		1	1	1	1
C225		CHIP CERAMIC CAP. CH J 560PF/50V		1	1	1	1
C226		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V		1	1	1	1

ELECTRICAL PARTS LIST					
Pos.	▲ 12 NC	Description	21PV385/01	21PV385/07	21PV385/39
C227		CHIP CERAMIC CAP. CH D 10PF/50V	1	1	1
C228		CHIP CERAMIC CAP. CH D 10PF/50V	1	1	1
C229		CHIP CERAMIC CAP.(MELF) Y K 4700PF/16V	1	1	1
C230		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V	1	1	1
C231		CHIP CERAMIC CAP.(MELF) F Z 0.01UF/16V	1	1	1
C233	▲ 9965 000 09764	CHIP CERAMIC CAP.(MELF) Y K 1000PF/35V	1	1	1
C234		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V	1	1	1
C235		ELECTROLYTIC CAP. 47UF/6.3V M H7	1	1	1
C236		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V	1	1	1
C237		ELECTROLYTIC CAP. 47UF/6.3V M H7	1	1	1
C238		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V	1	1	1
C239		CHIP CERAMIC CAP. CH J 560PF/50V	1	1	1
C240		CHIP CERAMIC CAP.(MELF) Y K 4700PF/16V	1	1	1
C241		ELECTROLYTIC CAP. 22UF/50V M	1	1	1
C242		CHIP CERAMIC CAP.(MELF) F Z 0.01UF/16V	1	1	1
C243		ELECTROLYTIC CAP. 47UF/6.3V M H7	1	1	1
C244		CHIP CERAMIC CAP.(MELF) F Z 0.01UF/16V	1	1	1
C245		ELECTROLYTIC CAP. 47UF/6.3V M H7	1	1	1
C248		ELECTROLYTIC CAP. 47UF/6.3V M H7	1	1	1
C253		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V	1	1	1
C254		CHIP CERAMIC CAP. CH J 560PF/50V	1	1	1
C255		CHIP CERAMIC CAP. CH J 560PF/50V	1	1	1
C256		ELECTROLYTIC CAP. 10UF/25V M H7	1	1	1
C301		CHIP CERAMIC CAP.(MELF) F Z 0.01UF/16V	1	1	1
C302		ELECTROLYTIC CAP. 470UF/6.3V M	1	1	1
C303		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V	1	1	1
C304		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V	1	1	1
C305		ELECTROLYTIC CAP. 1UF/50V M	1	1	1
C307		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V	1	1	1
C308		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V	1	1	1
C309		FILM CAP.(P) 0.1UF/50V J	1	1	1
C310		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V	1	1	1
C311		ELECTROLYTIC CAP. 470UF/6.3V M	1	1	1
C312		CHIP CERAMIC CAP.(MELF) B K 180PF/50V	1	1	1
C313		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V	1	1	1
C314		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V	1	1	1
C315		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V	1	1	1
C316		ELECTROLYTIC CAP. 1UF/50V M	1	1	1
C317		CHIP CERAMIC CAP. CH J 150PF/50V	1	1	1
C318		ELECTROLYTIC CAP. 1UF/50V M	1	1	1
C319		ELECTROLYTIC CAP. 1UF/50V M	1	1	1
C320		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V	1	1	1
C321		ELECTROLYTIC CAP. 1UF/50V M	1	1	1
C322		ELECTROLYTIC CAP. 470UF/10V M	1	1	1
C323		ELECTROLYTIC CAP. 47UF/25V M	1	1	1
C324		CHIP CERAMIC CAP.(MELF) F Z 0.01UF/16V	1	1	1
C325		FILM CAP.(P) 0.22UF/50V J	1	1	1
C326		ELECTROLYTIC CAP. 1UF/50V M	1	1	1
C327		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V	1	1	1
C328		FILM CAP.(P) 0.22UF/50V J	1	1	1
C330		CHIP CERAMIC CAP.(MELF) F Z 0.01UF/16V	1	1	1
C331		ELECTROLYTIC CAP. 47UF/10V M	1	1	1
C332		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V	1	1	1
C333		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V	1	1	1
C334		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V	1	1	1
C336		ELECTROLYTIC CAP. 47UF/10V M	1	1	1
C338		CHIP CERAMIC CAP.(MELF) Y K 1000PF/35V	1	1	1
C340		CHIP CERAMIC CAP.(MELF) B K 180PF/50V	1	1	1
C341		CHIP CERAMIC CAP.(MELF) F Z 0.01UF/16V	1	1	1

ELECTRICAL PARTS LIST				21PV385/01	21PV385/07	21PV385/39	21PV385/58
Pos.	▲ 12 NC	Description					
C344		CHIP CERAMIC CAP.(MELF) Y K 1000PF/35V		1	1	1	1
C350		ELECTROLYTIC CAP. 220UF/10V M		1	1	1	1
C401		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V		1	1	1	1
C402		ELECTROLYTIC CAP. 1UF/50V M H7		1	1	1	1
C403		ELECTROLYTIC CAP. 1UF/50V M H7		1	1	1	1
C404		ELECTROLYTIC CAP. 100UF/6.3V H7		1	1	1	1
C405		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V		1	1	1	1
C406		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V		1	1	1	1
C407		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V		1	1	1	1
C408		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V		1	1	1	1
C409		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V		1	1	1	1
C410		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V		1	1	1	1
C411		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V		1	1	1	1
C412		ELECTROLYTIC CAP. 1UF/50V M H7		1	1	1	1
C413		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V		1	1	1	1
C414		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V		1	1	1	1
C415		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V		1	1	1	1
C416		ELECTROLYTIC CAP. 47UF/6.3V M H7		1	1	1	1
C417		ELECTROLYTIC CAP. 1UF/50V M H7		1	1	1	1
C418		ELECTROLYTIC CAP. 1UF/50V M H7		1	1	1	1
C419		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V		1	1	1	1
C420		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V		1	1	1	1
C421		ELECTROLYTIC CAP. 10UF/25V M H7		1	1	1	1
C424		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V		1	1	1	1
C425		CHIP CERAMIC CAP. CH J 68PF/50V		1	1	1	1
C426		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V		1	1	1	1
C427		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V		1	1	1	1
C430		ELECTROLYTIC CAP. 47UF/25V M		1	1	1	1
C431		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V		1	1	1	1
C432		ELECTROLYTIC CAP. 1UF/50V M H7		1	1	1	1
C433		ELECTROLYTIC CAP. 10UF/25V M H7		1	1	1	1
C434		ELECTROLYTIC CAP. 22UF/16V M H7		1	1	1	1
C435		ELECTROLYTIC CAP. 1UF/50V M H7		1	1	1	1
C436		CHIP CERAMIC CAP. CH J 120PF/50V		1	1	1	1
C438		CHIP CERAMIC CAP. CH J 220PF/50V		1	1	1	1
C440		ELECTROLYTIC CAP. 1UF/50V M H7		1	1	1	1
C441		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V		1	1	1	1
C442		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V		1	1	1	1
C443		ELECTROLYTIC CAP. 1UF/50V M H7		1	1	1	1
C444		CHIP CERAMIC CAP. B K 2200PF/50V		1	1	1	1
C445		ELECTROLYTIC CAP. 10UF/25V M H7		1	1	1	1
C452		CHIP CERAMIC CAP. CH J 68PF/50V		1	1	1	1
C471		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V					1
C472		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V					1
C473		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V					1
C474		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V					1
C475		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V					1
C476		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V					1
C478		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V					1
C479		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V					1
C480		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V					1
C481		ELECTROLYTIC CAP. 0.47UF/50V M H7					1
C483		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V					1
C484		CHIP CERAMIC CAP. CH J 820PF/25V					1
C485		CHIP CERAMIC CAP. CH J 820PF/25V					1
C486		ELECTROLYTIC CAP. 2.2UF/50V M H7					1
C681		ELECTROLYTIC CAP. 220UF/16V M		1	1	1	1
C682		ELECTROLYTIC CAP. 220UF/16V M		1	1	1	1
C683		ELECTROLYTIC CAP. 10UF/50V M		1	1	1	1

ELECTRICAL PARTS LIST					
Pos.	▲ 12 NC	Description	21PV385/01	21PV385/07	21PV385/39
C684	▲ 9965 000 23541	CHIP CERAMIC CAP.(MELF) B K 180PF/50V	1	1	1
C687		ELECTROLYTIC CAP. 47UF/25V M	1	1	1
C688		ELECTROLYTIC CAP. 47UF/25V M	1	1	1
C689		ELECTROLYTIC CAP. 470UF/10V M	1	1	1
C691		ELECTROLYTIC CAP. 2.2UF/50V M	1	1	1
C694		ELECTROLYTIC CAP. 100UF/10V M	1	1	1
C703		ELECTROLYTIC CAP. 4.7UF/50V M	1	1	1
C707		ELECTROLYTIC CAP. 0.22UF/50V M	1	1	1
C708		ELECTROLYTIC CAP. 0.47UF/50V M	1	1	1
C709		ELECTROLYTIC CAP. 0.47UF/50V M	1	1	1
C710		ELECTROLYTIC CAP. 0.47UF/50V M	1	1	1
C711		ELECTROLYTIC CAP. 470UF/10V M	1	1	1
C713		PCB JUMPER D0.6-P5.0	1	1	1
C715		ELECTROLYTIC CAP. 4.7UF/50V M	1	1	1
C716		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V	1	1	1
C719		ELECTROLYTIC CAP. 1UF/50V M	1	1	1
C723		CHIP CERAMIC CAP.(MELF) Y K 1000PF/35V	1	1	1
C724		ELECTROLYTIC CAP. 47UF/10V M	1	1	1
C851		ELECTROLYTIC CAP. 47UF/6.3V M H7	1	1	1
C855		ELECTROLYTIC CAP. 220UF/6.3V M H7	1	1	1
C856		CERAMIC CAP. B K 470PF/100V	1	1	1
C857		FILM CAP.(P) 0.018UF/50V J	1	1	1
C858		CHIP CERAMIC CAP. B K 1500PF/50V	1	1	1
C859		CHIP CERAMIC CAP.(MELF) SL J 33PF/50V	1	1	1
C860		PCB JUMPER D0.6-P5.0	1	1	1
C861		CERAMIC CAP.(AX) X M 1800PF/16V	1	1	1
C862		ELECTROLYTIC CAP. 10UF/25V M H7	1	1	1
C863		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V	1	1	1
C864		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V	1	1	1
C865		CHIP CERAMIC CAP.(1608) B K 0.022UF/25V	1	1	1
C866		ELECTROLYTIC CAP. 33UF/10V H7	1	1	1
C867		ELECTROLYTIC CAP. 4.7UF/50V M H7	1	1	1
C869		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V	1	1	1
C871		CHIP CERAMIC CAP.(MELF) B K 180PF/50V	1	1	1
C872		ELECTROLYTIC CAP. 1UF/50V M H7	1	1	1
C874		CHIP CERAMIC CAP.(1608) F Z 0.1UF/25V	1	1	1
C875		CHIP CERAMIC CAP. CH J 220PF/50V	1	1	1
C876		CHIP CERAMIC CAP.(1608) B K 0.01UF/50V	1	1	1
C877		ELECTROLYTIC CAP. 100UF/6.3V H7	1	1	1
CONNECTORS					
CL301A	9965 000 18158	LEAD WIRE 4P/450	1	1	1
CL302A	9965 000 24199	LEAD WIRE 7P/280	1	1	1
CL603A	9965 000 24179	LEAD WIRE 12P/190	1	1	1
CL604	9965 000 18088	WIRE ASSEMBLY 1P/45	1	1	1
CL801	9965 000 13828	WIRE ASSEMBLY (SPEAKER) 2P/200	1	1	1
CN151	9965 000 13844	STRAIGHT CONNECTOR BASE 00 8283 0212 00 000	1	1	1
CN201	9965 000 13840	FFC/FPC CONNECTOR, 12P 04 6232 112 103 800	1	1	1
CN303	9965 000 13841	CONNECTOR BASE, 5P TUC-P05P-B1	1	1	1
CN751	9965 000 13842	CONNECTOR BASE, 8P TUC-P08P-B1	1	1	1
CN752	9965 000 13843	CONNECTOR BASE, 6P TUC-P06P-B1	1	1	1
DIODES					
D151	▲ 9965 000 13848	ZENER DIODE MTZJT-777.5B	1	1	1
D152	▲ 4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1
D201	9965 000 05250	LED SIR-563ST3F P	1	1	1
D202	9965 000 13846	LED(RED) L-1513EC	1	1	1
D204	9965 000 13846	LED(RED) L-1513EC	1	1	1
D205	4822 130 33948	ZENER DIODE MTZJT-775.6B	1	1	1
D210	4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1
D211	4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1

ELECTRICAL PARTS LIST

Pos.	▲ 12 NC	Description				
			21PV385/01	21PV385/07	21PV385/39	21PV385/58
D212	4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1	1
D213	4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1	1
D214	4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1	1
D302	4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1	1
D303	4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1	1
D304	4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1	1
D305	9965 000 11153	ZENER DIODE MTZJT-778.2B	1	1	1	1
D306	4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1	1
D401	▲ 4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1	1
D402	9965 000 09896	CARBON RES. 1/4W J 10K OHM	1	1	1	1
D471		PCB JUMPER D0.6-P5.0				1
D682	▲	PCB JUMPER D0.6-P10.0	1	1	1	1
D686	4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1	1
D687	4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1	1
D688	▲ 4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1	1
D691	▲ 4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1	1
D694	9965 000 18091	ZENER DIODE MTZJT-7715B	1	1	1	1
D695	9965 000 23556	ZENER DIODE MTZJT-776.8B	1	1	1	1
D696	9965 000 13882	ZENER DIODE MTZJT-7718B	1	1	1	1
D697	9965 000 24180	ZENER DIODE MTZJT-779.1B	1	1	1	1
D705	9965 000 23556	ZENER DIODE MTZJT-776.8B	1	1	1	1
D706	9965 000 12904	ZENER DIODE DZ-5.1BSBT265	1	1	1	1
D707	9965 000 23556	ZENER DIODE MTZJT-776.8B	1	1	1	1
D709	9965 000 23556	ZENER DIODE MTZJT-776.8B	1	1	1	1
D711	4822 130 33948	ZENER DIODE MTZJT-775.6B	1	1	1	1
D712	4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1	1
D713	4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1	1
D715	4822 130 32778	SWITCHING DIODE 1SS133(T-77)	1	1	1	1
D716	9965 000 18091	ZENER DIODE MTZJT-7715B	1	1	1	1
IC's						
IC151	▲ 9965 000 13853	AUDIO AMP LA4224	1	1	1	1
IC201	▲ 9965 000 24181	MICRO COMPUTER M3776AMCA-BA3GP	1	1	1	1
IC202	▲ 9965 000 13030	IC:MEMORY BR24C04F-W	1	1	1	1
IC301	▲ 9965 000 18093	IC:CHROMA/IF 1 CHIP M61209BFP	1	1	1	1
IC401	▲ 9965 000 12180	IC:Y/C/A LA71750EM-MPB-E	1	1	1	1
IC471	▲ 9965 000 12255	IC:SECAM LA70100M-MPB				1
IC681	▲ 9965 000 13851	VOLTAGE REGULATOR KIA7805API	1	1	1	1
IC701	▲ 9965 000 13852	IC:SWITCH TC4053BF(N)	1	1	1	1
IC703	▲ 9965 000 13852	IC:SWITCH TC4053BF(N)	1	1	1	1
COILS						
L001		PCB JUMPER D0.6-P5.0	1	1	1	1
L151	9965 000 18094	INDUCTOR 1.8UH-J-26T	1	1	1	1
L152	9965 000 13856	INDUCTOR 1.0UH-J-26T	1	1	1	1
L201	9965 000 13857	INDUCTOR 0.10UH-K-26T	1	1	1	1
L302	9965 000 13858	INDUCTOR 33UH-J-26T	1	1	1	1
L303		PCB JUMPER D0.6-P7.5	1	1	1	1
L304		PCB JUMPER D0.6-P7.5	1	1	1	1
L305		PCB JUMPER D0.6-P5.0	1	1	1	1
L401		PCB JUMPER D0.6-P5.0	1	1	1	1
L402	9965 000 13858	INDUCTOR 33UH-J-26T	1	1	1	1
L403	9965 000 13893	INDUCTOR 100UH-J-26T	1	1	1	1
L681		PCB JUMPER D0.6-P7.5	1	1	1	1
L682		PCB JUMPER D0.6-P7.5	1	1	1	1
L701	9965 000 13860	INDUCTOR 12UH-J-26T	1	1	1	1
L702		PCB JUMPER D0.6-P5.0	1	1	1	1
L852	9965 000 05705	INDUCTOR 47UH-K-5FT	1	1	1	1
L854	9965 000 18095	INDUCTOR 0.22UH-K-26T	1	1	1	1
TRANSISTORS						
Q204	9965 000 05643	TRANSISTOR 2SC2785(F)	1	1	1	1

ELECTRICAL PARTS LIST

Pos.	▲ 12 NC	Description	21PV385/01	21PV385/07	21PV385/39	21PV385/58
Q205	9965 000 20922	PHOTO TRANSISTOR MID-32A22F	1	1	1	1
Q206	4822 130 10145	RES. BUILT-IN TRANSISTOR KRA103M	1	1	1	1
Q401	4822 130 42959	TRANSISTOR KTA1266(GR)	1	1	1	1
Q682	9965 000 05643	TRANSISTOR 2SC2785(F)	1	1	1	1
Q684	4822 130 42292	TRANSISTOR 2SC2120-Y(TPE2)	1	1	1	1
Q685	▲ 9965 000 05643	TRANSISTOR 2SC2785(F)	1	1	1	1
Q686	▲ 9965 000 13863	TRANSISTOR 2SD1913(R)	1	1	1	1
Q701	9965 000 05643	TRANSISTOR 2SC2785(F)	1	1	1	1
Q702	9965 000 05643	TRANSISTOR 2SC2785(F)	1	1	1	1
Q703	4822 130 42959	TRANSISTOR KTA1266(GR)	1	1	1	1
Q704	4822 130 10145	RES. BUILT-IN TRANSISTOR KRA103M	1	1	1	1
Q705		PCB JUMPER D0.6-P5.0	1	1	1	1
Q706	9965 000 05643	TRANSISTOR 2SC2785(F)	1	1	1	1
Q707	9965 000 05643	TRANSISTOR 2SC2785(F)	1	1	1	1
Q708	9965 000 05643	TRANSISTOR 2SC2785(F)	1	1	1	1
Q709	9965 000 05643	TRANSISTOR 2SC2785(F)	1	1	1	1
Q710	9965 000 05643	TRANSISTOR 2SC2785(F)	1	1	1	1
Q711	4822 130 42959	TRANSISTOR KTA1266(GR)	1	1	1	1
Q851	4822 130 10145	RES. BUILT-IN TRANSISTOR KRA103M	1	1	1	1
Q852	4822 130 10097	TRANSISTOR 2SC3331(T)	1	1	1	1
Q853	4822 130 10097	TRANSISTOR 2SC3331(T)	1	1	1	1
Q854	4822 130 42959	TRANSISTOR KTA1266(GR)	1	1	1	1
Q855	4822 130 42292	TRANSISTOR 2SC2120-Y(TPE2)	1	1	1	1
Q856	9965 000 05643	TRANSISTOR 2SC2785(F)	1	1	1	1
RESISTORS						
R003		PCB JUMPER D0.6-P5.0	1	1	1	1
R004		PCB JUMPER D0.6-P5.0	1	1	1	1
R151	▲ 9965 000 24182	METAL OXIDE FILM RES. 1W J 12 OHM	1	1	1	1
R152	▲ 9965 000 09940	CHIP RES.(1608) 1/10W J 5.6K OHM	1	1	1	1
R153		CHIP RES.(1608) 1/10W J 4.7K OHM	1	1	1	1
R154		CHIP RES.(1608) 1/10W J 5.6K OHM	1	1	1	1
R155		CARBON RES. 1/4W J 47 OHM	1	1	1	1
R156		CARBON RES. 1/4W J 47 OHM	1	1	1	1
R157		CARBON RES. 1/4W J 10 OHM	1	1	1	1
R201		CARBON RES. 1/4W J 1K OHM	1	1	1	1
R202		CHIP RES.(1608) 1/10W J 22K OHM	1	1	1	1
R203		CARBON RES. 1/4W J 1K OHM	1	1	1	1
R204		CHIP RES.(1608) 1/10W J 22K OHM	1	1	1	1
R205		CARBON RES. 1/4W J 1K OHM	1	1	1	1
R206		CHIP RES.(1608) 1/10W J 390K OHM	1	1	1	1
R207		CHIP RES.(1608) 1/10W J 10K OHM	1	1	1	1
R208		CHIP RES.(1608) 1/10W J 1.5K OHM	1	1	1	1
R209		CHIP RES.(1608) 1/10W J 1.5K OHM	1	1	1	1
R210		CARBON RES. 1/4W G 4.7K OHM	1	1	1	1
R211		CHIP RES.(1608) 1/10W J 2.2K OHM	1	1	1	1
R212		CHIP RES.(1608) 1/10W J 2.7K OHM	1	1	1	1
R213		CHIP RES.(1608) 1/10W J 10K OHM	1	1	1	1
R214		CHIP RES.(1608) 1/10W J 1.5K OHM	1	1	1	1
R215		CHIP RES.(1608) 1/10W J 1.5K OHM	1	1	1	1
R216		CHIP RES.(1608) 1/10W J 2.2K OHM	1	1	1	1
R217		CHIP RES.(1608) 1/10W J 2.7K OHM	1	1	1	1
R218		CHIP RES.(1608) 1/10W J 560 OHM	1	1	1	1
R219		CARBON RES. 1/4W J 1K OHM	1	1	1	1
R220		CHIP RES.(1608) 1/10W J 390K OHM	1	1	1	1
R221		CARBON RES. 1/4W J 270 OHM	1	1	1	1
R222		CARBON RES. 1/4W J 1K OHM	1	1	1	1
R223		CHIP RES.(1608) 1/10W J 680 OHM	1	1	1	1
R224		CHIP RES.(1608) 1/10W J 680 OHM	1	1	1	1
R226		CHIP RES.(1608) 1/10W J 10K OHM	1	1	1	1

ELECTRICAL PARTS LIST				21PV385/01	21PV385/07	21PV385/39	21PV385/58
Pos.	▲ 12 NC	Description					
R227		CHIP RES.(1608) 1/10W J 47 OHM		1	1	1	1
R228		CHIP RES.(1608) 1/10W J 100K OHM		1	1	1	1
R229		CHIP RES.(1608) 1/10W J 2.2K OHM		1	1	1	1
R230		CHIP RES.(1608) 1/10W J 1.5K OHM		1	1	1	1
R231		CHIP RES.(1608) 1/10W J 330K OHM		1	1	1	1
R232		CHIP RES.(1608) 1/10W J 1K OHM		1	1	1	1
R233		CHIP RES.(1608) 1/10W J 1K OHM		1	1	1	1
R234		CHIP RES.(1608) 1/10W J 560 OHM		1	1	1	1
R235		CHIP RES.(1608) 1/10W J 1K OHM		1	1	1	1
R236		CHIP RES.(1608) 1/10W J 470 OHM		1	1	1	1
R237		CHIP RES.(1608) 1/10W J 1M OHM		1	1	1	1
R238		CHIP RES.(1608) 1/10W J 100 OHM		1	1	1	1
R239		PCB JUMPER D0.6-P5.0		1	1	1	1
R240		PCB JUMPER D0.6-P5.0		1	1	1	1
R241		CHIP RES.(1608) 1/10W J 220 OHM		1	1	1	1
R242		CHIP RES.(1608) 1/10W J 220 OHM		1	1	1	1
R243		CHIP RES.(1608) 1/10W J 39K OHM		1	1	1	1
R244		CHIP RES.(1608) 1/10W J 220K OHM		1	1	1	1
R248		CARBON RES. 1/4W J 1K OHM		1	1	1	1
R249		CHIP RES.(1608) 1/10W J 10K OHM		1	1	1	1
R250		CHIP RES.(1608) 1/10W J 33K OHM		1	1	1	1
R254		CHIP RES.(1608) 1/10W J 100K OHM		1	1	1	1
R255		CHIP RES.(1608) 1/10W J 680 OHM		1	1	1	1
R256		CHIP RES.(1608) 1/10W J 1.8K OHM		1	1	1	1
R257		CARBON RES. 1/4W J 6.8K OHM		1	1	1	1
R258		CARBON RES. 1/4W J 47K OHM		1	1	1	1
R259		PCB JUMPER D0.6-P5.0		1	1	1	1
R260		CARBON RES. 1/4W G 1.5K OHM		1	1	1	1
R261		CARBON RES. 1/4W G 22K OHM		1	1	1	1
R262		CARBON RES. 1/4W G 470 OHM		1	1	1	1
R263		CARBON RES. 1/4W G 10K OHM		1	1	1	1
R264		CARBON RES. 1/4W G 3.6K OHM		1	1	1	1
R265		PCB JUMPER D0.6-P5.0		1	1	1	1
R266		PCB JUMPER D0.6-P5.0		1	1	1	1
R267		CHIP RES.(1608) 1/10W J 10K OHM		1	1	1	1
R268		CHIP RES.(1608) 1/10W J 3.3K OHM		1	1	1	1
R269		CHIP RES.(1608) 1/10W J 3.3K OHM		1	1	1	1
R270		CHIP RES.(1608) 1/10W J 100 OHM		1	1	1	1
R271		CHIP RES.(1608) 1/10W J 10K OHM		1	1	1	1
R272		CHIP RES.(1608) 1/10W J 18K OHM		1	1	1	1
R273		CHIP RES.(1608) 1/10W J 18K OHM		1	1	1	1
R274		CHIP RES.(1608) 1/10W J 10K OHM		1	1	1	1
R275		CHIP RES.(1608) 1/10W J 560 OHM		1	1	1	1
R276		CHIP RES.(1608) 1/10W J 1.5K OHM		1	1	1	1
R277		CHIP RES.(1608) 1/10W J 560 OHM		1	1	1	1
R278		CHIP RES.(1608) 1/10W J 1.5K OHM		1	1	1	1
R279		CHIP RES.(1608) 1/10W J 560 OHM		1	1	1	1
R280		CHIP RES.(1608) 1/10W J 1.5K OHM		1	1	1	1
R281		CHIP RES.(1608) 1/10W J 3.3K OHM		1	1	1	1
R282		CARBON RES. 1/4W J 330 OHM		1	1	1	1
R288		CHIP RES.(1608) 1/10W J 10 OHM		1	1	1	1
R289		CHIP RES.(1608) 1/10W J 10 OHM		1	1	1	1
R301		CHIP RES.(1608) 1/10W J 1.2K OHM		1	1	1	1
R302		CHIP RES.(1608) 1/10W J 8.2K OHM		1	1	1	1
R303		CHIP RES.(1608) 1/10W J 100 OHM		1	1	1	1
R304		CHIP RES.(1608) 1/10W J 1.8K OHM		1	1	1	1
R305		CHIP RES.(1608) 1/10W J 1.2K OHM		1	1	1	1
R306		CHIP RES.(1608) 1/10W J 100 OHM		1	1	1	1
R307		CHIP RES.(1608) 1/10W J 1.2K OHM		1	1	1	1

ELECTRICAL PARTS LIST			21PV385/01	21PV385/07	21PV385/39	21PV385/58
Pos.	▲ 12 NC	Description				
R308		CHIP RES.(1608) 1/10W J 100 OHM	1	1	1	1
R309		CHIP RES.(1608) 1/10W J 1.2K OHM	1	1	1	1
R310		CHIP RES.(1608) 1/10W J 1K OHM	1	1	1	1
R311		CARBON RES. 1/4W J 12 OHM	1	1	1	1
R312		CHIP RES.(1608) 1/10W J 100 OHM	1	1	1	1
R313		CHIP RES.(1608) 1/10W J 220K OHM	1	1	1	1
R314		CHIP RES.(1608) 1/10W J 4.7K OHM	1	1	1	1
R315		CHIP RES.(1608) 1/10W J 150K OHM	1	1	1	1
R316		CARBON RES. 1/4W J 15K OHM	1	1	1	1
R317		CARBON RES. 1/4W J 220K OHM	1	1	1	1
R318		CHIP RES.(1608) 1/10W J 6.8K OHM	1	1	1	1
R320		CHIP RES.(1608) 1/10W J 10K OHM	1	1	1	1
R321		CHIP RES.(1608) 1/10W J 220 OHM	1	1	1	1
R322		CHIP RES.(1608) 1/10W J 3.3K OHM	1	1	1	1
R323		CHIP RES.(1608) 1/10W J 15K OHM	1	1	1	1
R324		CHIP RES.(1608) 1/10W J 4.7K OHM	1	1	1	1
R325		CHIP RES.(1608) 1/10W J 10K OHM	1	1	1	1
R326		CHIP RES.(1608) 1/10W J 6.8K OHM	1	1	1	1
R327		PCB JUMPER D0.6-P5.0	1	1	1	1
R332		CHIP RES.(1608) 1/10W J 100 OHM	1	1	1	1
R333		CHIP RES.(1608) 1/10W J 100 OHM	1	1	1	1
R334		CHIP RES.(1608) 1/10W J 100 OHM	1	1	1	1
R335		CARBON RES. 1/4W J 100 OHM	1	1	1	1
R336		CHIP RES.(1608) 1/10W J 10K OHM	1	1	1	1
R339		CHIP RES.(1608) 1/10W 0 OHM	1	1	1	1
R340		CHIP RES.(1608) 1/10W 0 OHM	1	1	1	1
R401		CHIP RES.(1608) 1/10W J 1.2K OHM	1	1	1	1
R402		CHIP RES.(1608) 1/10W J 8.2K OHM	1	1	1	1
R405		CHIP RES.(1608) 1/10W J 10K OHM	1	1	1	1
R406		CHIP RES.(1608) 1/10W J 1.2K OHM	1	1	1	1
R407		CHIP RES.(1608) 1/10W J 390K OHM	1	1	1	1
R408		CHIP RES.(1608) 1/10W J 330 OHM	1	1	1	1
R409		CHIP RES.(1608) 1/10W J 330 OHM	1	1	1	1
R410		CHIP RES.(1608) 1/10W J 220 OHM	1	1	1	1
R411		CHIP RES.(1608) 1/10W J 4.7K OHM	1	1	1	1
R412		CHIP RES.(1608) 1/10W J 4.7K OHM	1	1	1	1
R413		CHIP RES.(1608) 1/10W J 2.2K OHM	1	1	1	1
R414		CHIP RES.(1608) 1/10W J 6.8K OHM	1	1	1	1
R415		CHIP RES.(1608) 1/10W J 4.7K OHM	1	1	1	1
R416		CHIP RES.(1608) 1/10W J 1.2K OHM	1	1	1	1
R418		CHIP RES.(1608) 1/10W J 56K OHM	1	1	1	1
R420		CHIP RES.(1608) 1/10W J 1.5K OHM	1	1	1	1
R422		CHIP RES.(1608) 1/10W J 120 OHM	1	1	1	1
R423		CHIP RES.(1608) 1/10W J 47 OHM	1	1	1	1
R424		CHIP RES.(1608) 1/10W J 1K OHM	1	1	1	1
R425		CHIP RES.(1608) 1/10W 0 OHM	1	1	1	1
R426		CHIP RES.(1608) 1/10W 0 OHM	1	1	1	1
R471		CHIP RES.(1608) 1/10W J 2.2K OHM				1
R683		METAL OXIDE FILM RES. 1W J 2.2 OHM	1	1	1	1
R684		CHIP RES.(1608) 1/10W J 10 OHM	1	1	1	1
R685		CARBON RES. 1/4W J 6.8K OHM	1	1	1	1
R686		CHIP RES.(1608) 1/10W J 10K OHM	1	1	1	1
R689	▲	9965 000 20938 CARBON RES. 1/4W J 82 OHM	1	1	1	1
R690	▲	9965 000 20938 CARBON RES. 1/4W J 82 OHM	1	1	1	1
R691	▲	9965 000 24183 CARBON RES. 1/4W J 2.7 OHM	1	1	1	1
R692		CHIP RES.(1608) 1/10W J 10K OHM	1	1	1	1
R693	▲	9965 000 23544 CHIP RES.(1608) 1/10W J 22K OHM	1	1	1	1
R694		CHIP RES.(1608) 1/10W J 100 OHM	1	1	1	1
R695	▲	9965 000 24183 CARBON RES. 1/4W J 2.7 OHM	1	1	1	1

ELECTRICAL PARTS LIST				21PV385J01	21PV385J07	21PV385J39	21PV385J58
Pos.	▲ 12 NC	Description					
R696		METAL OXIDE FILM RES. 1W J 2.2 OHM		1	1	1	1
R697		CHIP RES.(1608) 1/10W J 10K OHM		1	1	1	1
R698		CHIP RES.(1608) 1/10W J 8.2K OHM		1	1	1	1
R701		CHIP RES.(1608) 1/10W J 75 OHM		1	1	1	1
R702		CHIP RES.(1608) 1/10W J 3.3K OHM		1	1	1	1
R703		CARBON RES. 1/4W J 1K OHM		1	1	1	1
R704		CARBON RES. 1/4W J 3.3K OHM		1	1	1	1
R707		CHIP RES.(1608) 1/10W J 1K OHM		1	1	1	1
R709		CHIP RES.(1608) 1/10W J 75 OHM		1	1	1	1
R710		CHIP RES.(1608) 1/10W J 33K OHM		1	1	1	1
R711		CHIP RES.(1608) 1/10W J 2.2K OHM		1	1	1	1
R712		CARBON RES. 1/4W J 4.7K OHM		1	1	1	1
R714		CHIP RES.(1608) 1/10W J 75 OHM		1	1	1	1
R723		CHIP RES.(1608) 1/10W J 75 OHM		1	1	1	1
R724		CHIP RES.(1608) 1/10W J 33K OHM		1	1	1	1
R725		CARBON RES. 1/4W J 75 OHM		1	1	1	1
R726		CHIP RES.(1608) 1/10W J 1K OHM		1	1	1	1
R727		CHIP RES.(1608) 1/10W J 22K OHM		1	1	1	1
R728		CHIP RES.(1608) 1/10W J 22K OHM		1	1	1	1
R729		CHIP RES.(1608) 1/10W J 47K OHM		1	1	1	1
R730		CHIP RES.(1608) 1/10W J 10K OHM		1	1	1	1
R731		CHIP RES.(1608) 1/10W J 100 OHM		1	1	1	1
R732		CARBON RES. 1/4W J 75 OHM		1	1	1	1
R733		CARBON RES. 1/4W J 390 OHM		1	1	1	1
R737		CHIP RES.(1608) 1/10W J 75 OHM		1	1	1	1
R738		CHIP RES.(1608) 1/10W J 10K OHM		1	1	1	1
R739		CHIP RES.(1608) 1/10W J 10K OHM		1	1	1	1
R740		CHIP RES.(1608) 1/10W J 33K OHM		1	1	1	1
R741		CHIP RES.(1608) 1/10W J 10K OHM		1	1	1	1
R742		CHIP RES.(1608) 1/10W J 47K OHM		1	1	1	1
R743		CHIP RES.(1608) 1/10W J 6.2K OHM		1	1	1	1
R744		CHIP RES.(1608) 1/10W J 47K OHM		1	1	1	1
R745		CHIP RES.(1608) 1/10W J 6.2K OHM		1	1	1	1
R746		CHIP RES.(1608) 1/10W J 47K OHM		1	1	1	1
R747		CHIP RES.(1608) 1/10W J 6.2K OHM		1	1	1	1
R748		CHIP RES.(1608) 1/10W J 2.2K OHM		1	1	1	1
R749		CHIP RES.(1608) 1/10W J 10K OHM		1	1	1	1
R751		CHIP RES.(1608) 1/10W J 2.2K OHM		1	1	1	1
R752		CHIP RES.(1608) 1/10W J 1K OHM		1	1	1	1
R753		CARBON RES. 1/4W J 2.2K OHM		1	1	1	1
R754		CHIP RES.(1608) 1/10W J 22K OHM		1	1	1	1
R755		CHIP RES.(1608) 1/10W J 470 OHM		1	1	1	1
R756		CHIP RES.(1608) 1/10W J 1K OHM		1	1	1	1
R757		CHIP RES.(1608) 1/10W J 1M OHM		1	1	1	1
R851		CHIP RES.(1608) 1/10W J 5.6K OHM		1	1	1	1
R852		CHIP RES.(1608) 1/10W J 22K OHM		1	1	1	1
R853		CHIP RES.(1608) 1/10W J 2.2K OHM		1	1	1	1
R854		CHIP RES.(1608) 1/10W J 2.2K OHM		1	1	1	1
R856		CARBON RES. 1/4W J 47K OHM		1	1	1	1
R857		CARBON RES. 1/4W J 100 OHM		1	1	1	1
R858		CARBON RES. 1/4W J 820 OHM		1	1	1	1
R859		CHIP RES.(1608) 1/10W J 680 OHM		1	1	1	1
R860		CHIP RES.(1608) 1/10W J 22K OHM		1	1	1	1
R861		CHIP RES.(1608) 1/10W J 330K OHM		1	1	1	1
R862		CHIP RES.(1608) 1/10W J 12K OHM		1	1	1	1
R863		CHIP RES.(1608) 1/10W J 120 OHM		1	1	1	1
R864		CHIP RES.(1608) 1/10W J 560 OHM		1	1	1	1
R865		CHIP RES.(1608) 1/10W J 1.8K OHM		1	1	1	1
R866		CHIP RES.(1608) 1/10W J 12K OHM		1	1	1	1

ELECTRICAL PARTS LIST					
Pos.	▲ 12 NC	Description	21PV385/01	21PV385/07	21PV385/39
R867		CHIP RES.(1608) 1/10W J 100 OHM	1	1	1
R869		CHIP RES.(1608) 1/10W J 2.7K OHM	1	1	1
R870		CHIP RES.(1608) 1/10W J 56K OHM	1	1	1
R871		CHIP RES.(1608) 1/10W J 1M OHM	1	1	1
R874		CHIP RES.(1608) 1/10W J 4.7K OHM	1	1	1
R876		CHIP RES.(1608) 1/10W J 4.7K OHM	1	1	1
R877		CHIP RES.(1608) 1/10W J 15K OHM	1	1	1
R878		CHIP RES.(1608) 1/10W J 12K OHM	1	1	1
R879		CHIP RES.(1608) 1/10W J 5.6K OHM	1	1	1
R884		CARBON RES. 1/4W J 1K OHM	1	1	1
SWITCHES					
SW201	9965 000 14390	TACT SWITCH SKQNAED010	1	1	1
SW202	9965 000 14390	TACT SWITCH SKQNAED010	1	1	1
SW203	9965 000 14390	TACT SWITCH SKQNAED010	1	1	1
SW204	9965 000 14390	TACT SWITCH SKQNAED010	1	1	1
SW205	9965 000 14390	TACT SWITCH SKQNAED010	1	1	1
SW206	9965 000 14390	TACT SWITCH SKQNAED010	1	1	1
SW207	9965 000 14390	TACT SWITCH SKQNAED010	1	1	1
SW208	9965 000 14390	TACT SWITCH SKQNAED010	1	1	1
SW209	9965 000 14390	TACT SWITCH SKQNAED010	1	1	1
SW210	9965 000 14390	TACT SWITCH SKQNAED010	1	1	1
SW211	9965 000 12192	LEAF SWITCH MXS00052MPP0	1	1	1
SW212	9965 000 16626	ROTARY MODE SWITCH SSS-50MD	1	1	1
MISCELLANEOUS					
8016	2422 070 98211	MAINS CORD EUR 2A5 1M7 JH BK B	1		1
8016	2422 070 98218	MAINS CORD UK 5A 1M8 BK B		1	
1005	3143 027 10191	TUN IF V+U PLL IEC BGDKI 03	1	1	1
1005	3143 027 10201	TUN IF V+U PLL IEC BGDKIL 03			1
5000	3143 021 00041	DEG COIL FUNAI 21"	1	1	1
8000	3143 021 00051	GROUND WIRE 21"	1	1	1
JK151	9965 000 13855	HEADPHONE JACK MSJ-035-10A B	1	1	1
JK701	9965 000 18160	RCA JACK(YELLOW) MTJ-032-05B-20	1	1	1
JK702	9965 000 18161	RCA JACK(WHITE) MTJ-032-05B-22	1	1	1
JK703	9965 000 13854	SKIRT JACK 21P HRC-21V-02P	1	1	1
RS201	9965 000 18162	REMOCON RECEIVE UNIT PIC-37042SR	1	1	1
TB3	9965 000 18113	HEAD SHIELD S T6400RA	1	1	1
TB7	9965 000 18114	LED HOLDER T6400RA	1	1	1
TB21	9965 000 08566	BUSH, LED(F) H3700UD	1	1	1
TP001		PCB JUMPER D0.6-P12.5	1	1	1
TP002		PCB JUMPER D0.6-P12.5	1	1	1
TP003		PCB JUMPER D0.6-P12.5	1	1	1
TP007		PCB JUMPER D0.6-P10.0	1	1	1
TP008		PCB JUMPER D0.6-P12.5	1	1	1
TP009		PCB JUMPER D0.6-P12.5	1	1	1
TP010		PCB JUMPER D0.6-P22.5	1	1	1
X201	9965 000 09200	X'TAL 32.768KHZ(20PPM)	1	1	1
X202	9965 000 12194	X'TAL 12.000MHZ	1	1	1
X301	9965 000 13869	X'TAL 4.433619MHZ	1	1	1
X401	9965 000 05629	X'TAL 4.433619MHZ	1	1	1
JUNCTION A CBA					
CN603	9965 000 24184	CONNECTOR 12P TUC-P12X-B1	1	1	1
JUNCTION B CBA					
CN302	9965 000 13872	CONNECTOR, 7P TUC-P07X-B1	1	1	1
JUNCTION C CBA					
CN301	9965 000 05261	CONNECTOR 4P TUC-P04X-B1	1	1	1
SENSOR CBA					
TRANSISTORS					
Q201	9965 000 20922	PHOTO TRANSISTOR MID-32A22F	1	1	1
Q202	9965 000 20922	PHOTO TRANSISTOR MID-32A22F	1	1	1

ELECTRICAL PARTS LIST				21PV385/01	21PV385/07	21PV385/39	21PV385/58
Pos.	▲ 12 NC	Description					
POWER CBA							
Consists of the following							
H.V./POWER SUPPLY CBA							
CRT CBA							
H.V./POWER SUPPLY CBA							
COILS							
BC551		9965 000 13874	BEAD INDUCTORS FBA04HA600VB-00	1	1	1	1
BC602		9965 000 13875	BEAD INDUCTORS FBR07HA121TB-00	1	1	1	1
BC604			PCB JUMPER D0.6-P5.0	1	1	1	1
BC605			PCB JUMPER D0.6-P5.0	1	1	1	1
CAPACITORS							
C551			ELECTROLYTIC CAP. 1.5UF/50V M LL	1	1	1	1
C552			ELECTROLYTIC CAP. 1000UF/25V M	1	1	1	1
C553			CERAMIC CAP.(AX) B K 0.01UF/50V	1	1	1	1
C554			ELECTROLYTIC CAP. 330UF/25V M	1	1	1	1
C555			ELECTROLYTIC CAP. 47UF/25V M	1	1	1	1
C556			ELECTROLYTIC CAP. 2.2UF/50V M	1	1	1	1
C558			FILM CAP.(P) 0.047UF/50V J	1	1	1	1
C559	▲	9965 000 22651	CERAMIC CAP. R K 1500PF/2KV(HR)	1	1	1	1
C560	▲	9965 000 22648	P.P. CAP 0.0082UF/1.6K J	1	1	1	1
C561			FILM CAP.(P) 0.01UF/50V J	1	1	1	1
C562			ELECTROLYTIC CAP. 47UF/25V M	1	1	1	1
C565	▲	9965 000 22655	ELECTROLYTIC CAP. 100UF/160V M	1	1	1	1
C566			PCB JUMPER D0.6-P10.0	1	1	1	1
C567			ELECTROLYTIC CAP. 1UF/160V M	1	1	1	1
C569	▲	9965 000 22656	ELECTROLYTIC CAP. 4.7UF/250V M	1	1	1	1
C570	▲	9965 000 13908	ELECTROLYTIC CAP. 1UF/50V M	1	1	1	1
C572	▲	9965 000 14852	ELECTROLYTIC CAP. 10UF/50V M	1	1	1	1
C575	▲	9965 000 22646	P.P. CAP 0.47UF/200V J	1	1	1	1
C602	▲	2020 554 90173	SAFETY CAP. 2200PF/250V KX	1	1	1	1
C604	▲	9965 000 14280	METALLIZED FILM CAP. 0.1UF/250V	1	1	1	1
C611	▲	9965 000 22647	ELECTROLYTIC CAP. 150UF/400V(LQ TYPE)	1	1	1	1
C613			FILM CAP.(P) 0.039UF/50V J	1	1	1	1
C614			FILM CAP.(P) 0.001UF/50V J	1	1	1	1
C615	▲	9965 000 22658	FILM CAP.(P) 0.082UF/50V J	1	1	1	1
C616			CERAMIC CAP. R K 220PF/2KV(HR)	1	1	1	1
C618			ELECTROLYTIC CAP. 1UF/50V M	1	1	1	1
C619			ELECTROLYTIC CAP. 1000UF/16V M	1	1	1	1
C621			ELECTROLYTIC CAP. 470UF/16V M	1	1	1	1
C622			ELECTROLYTIC CAP. 1000UF/16V M	1	1	1	1
C624	▲	9965 000 24200	CERAMIC CAP.(AX) B J 220PF/50V	1	1	1	1
C625			ELECTROLYTIC CAP. 470UF/35V M	1	1	1	1
C626			CERAMIC CAP. R K 680PF/2KV(HR)	1	1	1	1
C627	▲	9965 000 22655	ELECTROLYTIC CAP. 100UF/160V M	1	1	1	1
C629			CERAMIC CAP.(AX) B K 0.01UF/50V	1	1	1	1
C630			ELECTROLYTIC CAP. 1000UF/6.3V M	1	1	1	1
C632			ELECTROLYTIC CAP. 100UF/16V M	1	1	1	1
C633			ELECTROLYTIC CAP. 47UF/25V M	1	1	1	1
C634			ELECTROLYTIC CAP. 4.7UF/50V M	1	1	1	1
C636			ELECTROLYTIC CAP. 100UF/10V M	1	1	1	1
CONNECTORS							
CL501A		9965 000 18172	LEAD WIRE 3P/260	1	1	1	1
CN551		9965 000 13876	CONNECTOR BASE, 5P TV-50P-05-V3	1	1	1	1
CN552		9965 000 13912	CONNECTOR BASE, 7P TUC-P07P-B1	1	1	1	1
CN601		9965 000 13877	CONNECTOR BASE, 2P TV-50P-02-V3	1	1	1	1
CN602		9965 000 24187	CONNECTOR BASE 12P TUC-P12P-B1	1	1	1	1
DIODES							
D551		9965 000 13847	DIODE 1N5397-B	1	1	1	1
D553	▲	4822 130 10884	ZENER DIODE MTZJT-7718C	1	1	1	1

ELECTRICAL PARTS LIST				21PV385/01	21PV385/07	21PV385/39	21PV385/58
Pos.	▲ 12 NC	Description					
D554	▲ 4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
D556	▲ 4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
D557	▲ 9965 000 13880	DIODE FR104-B		1	1	1	1
D558	▲ 9965 000 13880	DIODE FR104-B		1	1	1	1
D560	▲ 9965 000 13881	ZENER DIODE MTZJT-7736B		1	1	1	1
D562	▲ 4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
D563	9965 000 12904	ZENER DIODE DZ-5.1BSBT265		1	1	1	1
D601	▲ 9965 000 13883	DIODE 1N5399-B/P		1	1	1	1
D602	▲ 9965 000 13883	DIODE 1N5399-B/P		1	1	1	1
D603	▲ 9965 000 13883	DIODE 1N5399-B/P		1	1	1	1
D604	▲ 9965 000 13883	DIODE 1N5399-B/P		1	1	1	1
D605	4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
D609	4822 130 33948	ZENER DIODE MTZJT-775.6B		1	1	1	1
D610	▲ 9965 000 18164	ZENER DIODE MTZJT-7724C		1	1	1	1
D612	▲ 4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
D615	▲ 9965 000 13880	DIODE FR104-B		1	1	1	1
D616	9965 000 11210	ZENER DIODE MTZJT-7720B		1	1	1	1
D617	▲ 4822 130 83194	SCHOTTKY BARRIER DIODE 11EQS04		1	1	1	1
D618	▲ 4822 130 83194	SCHOTTKY BARRIER DIODE 11EQS04		1	1	1	1
D619	▲ 4822 130 80601	SCHOTTKY BARRIER DIODE ERB81-004		1	1	1	1
D620	▲ 9965 000 13880	DIODE FR104-B		1	1	1	1
D622	▲ 4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
D623	▲ 4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
D624	▲ 4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
D625	▲ 9965 000 23556	ZENER DIODE MTZJT-776.8B		1	1	1	1
D626	9965 000 13885	FAST RECOVERY DIODE CA201-4		1	1	1	1
D627	▲ 4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
D629	4822 130 81729	ZENER DIODE MTZJT-7733C		1	1	1	1
D630	4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
D631	9965 000 24189	ZENER DIODE MTZJT-776.2C		1	1	1	1
D634	9965 000 19520	CARBON RES. 1/4W J 100 OHM		1	1	1	1
D635	9965 000 11153	ZENER DIODE MTZJT-778.2B		1	1	1	1
D636	▲ 4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
D637	4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
D638	4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
D641	9965 000 18091	ZENER DIODE MTZJT-7715B		1	1	1	1
D642	4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
MISCELLANEOUS							
F601	▲ 9965 000 13890	FUSE 4A/250V 215004		1	1	1	1
FH601	4822 256 10461	FUSE HOLDER MSF-015		1	1	1	1
FH602	4822 256 10461	FUSE HOLDER MSF-015		1	1	1	1
IC's							
IC551	▲ 9965 000 18120	VERTICAL OUTPUT IC LA78040A		1	1	1	1
IC601	▲ 9965 000 23546	PHOTOCOUPLER PS2561L1-1-VL		1	1	1	1
COILS							
L552	9965 000 18165	LINEALITY COIL ELH5J6137N		1	1	1	1
L553	▲ 9965 000 18121	CHOKE COIL 22UH-K		1	1	1	1
L554	▲	PCB JUMPER D0.6-P7.5		1	1	1	1
L601	▲ 9965 000 13894	LINE FILTER ELF15N007A		1	1	1	1
L602	▲ 9965 000 13894	LINE FILTER ELF15N007A		1	1	1	1
L603	9965 000 05627	CHOKE COIL 47UH-K		1	1	1	1
PB1	9965 000 18166	POWER PCB HOLDER T6500RA		1	1	1	1
PB4	9965 000 18156	21V POW HEAT SINK PAL PHLT6500RA		1	1	1	1
PB5	9965 000 18123	13V P H/S PAL PHM ASSEMBLY T6400RA		1	1	1	1
PL1	9965 000 08646	SCREW, P-TIGHT 3X12 WASHER HEAD+		1	1	1	1
PL2	9965 000 12171	SCREW, B-TIGHT M3X8 BIND HEAD+		1	1	1	1
PS602	▲ 9965 000 13896	THERMISTOR ZPB31BL9R0A		1	1	1	1
TRANSISTORS							
Q551	▲ 9965 000 18167	TRANSISTOR TT2140LS-YB11		1	1	1	1

ELECTRICAL PARTS LIST				21PV385/01	21PV385/07	21PV385/39	21PV385/58
Pos.	▲ 12 NC	Description					
Q553	▲ 9965 000 13899	TRANSISTOR 2SC1627Y-TPE2		1	1	1	1
Q554	▲ 9965 000 05643	TRANSISTOR 2SC2785(F)		1	1	1	1
Q602	▲ 9965 000 13901	MOS FET 2SK2647		1	1	1	1
Q603	▲ 4822 130 42292	TRANSISTOR 2SC2120-Y(TPE2)		1	1	1	1
Q604	▲ 9965 000 05643	TRANSISTOR 2SC2785(F)		1	1	1	1
Q605	4822 130 63665	TRANSISTOR 2SA950(O)		1	1	1	1
Q606	▲ 4822 130 42292	TRANSISTOR 2SC2120-Y(TPE2)		1	1	1	1
Q607	▲ 4822 130 42292	TRANSISTOR 2SC2120-Y(TPE2)		1	1	1	1
Q608	9965 000 05643	TRANSISTOR 2SC2785(F)		1	1	1	1
RESISTORS							
R550	▲ 9965 000 14867	CARBON RES. 1/4W J 680K OHM		1	1	1	1
R551		CARBON RES. 1/4W J 18K OHM		1	1	1	1
R552		CARBON RES. 1/4W J 2.2K OHM		1	1	1	1
R553		CARBON RES. 1/4W J 39K OHM		1	1	1	1
R554	▲	PCB JUMPER D0.6-P5.0		1	1	1	1
R555		CARBON RES. 1/4W J 4.7 OHM		1	1	1	1
R556		CARBON RES. 1/4W J 4.7 OHM		1	1	1	1
R558	▲	PCB JUMPER D0.6-P5.0		1	1	1	1
R559	▲	PCB JUMPER D0.6-P5.0		1	1	1	1
R560	▲ 9965 000 19516	CARBON RES. 1/4W J 1 OHM		1	1	1	1
R561	▲ 9965 000 24204	CARBON RES. 1/4W J 3.3 OHM		1	1	1	1
R564	▲ 9965 000 19598	CARBON RES. 1/4W J 1.5K OHM		1	1	1	1
R565		PCB JUMPER D0.6-P5.0		1	1	1	1
R566		CARBON RES. 1/4W J 1K OHM		1	1	1	1
R567		CARBON RES. 1/4W J 1K OHM		1	1	1	1
R568		CARBON RES. 1/4W J 1.5K OHM		1	1	1	1
R569		CARBON RES. 1/4W J 470 OHM		1	1	1	1
R572		CARBON RES. 1/4W J 560 OHM		1	1	1	1
R574		CARBON RES. 1/4W J 1K OHM		1	1	1	1
R575		METAL OXIDE FILM RES. 1W J 1K OHM		1	1	1	1
R576	▲ 9965 000 09887	CARBON RES. 1/4W J 47 OHM		1	1	1	1
R578	▲ 9965 000 09887	CARBON RES. 1/4W J 47 OHM		1	1	1	1
R579	▲ 9965 000 19602	CARBON RES. 1/4W J 100K OHM		1	1	1	1
R580	▲ 9965 000 09887	CARBON RES. 1/4W J 47 OHM		1	1	1	1
R581		CARBON RES. 1/4W J 82K OHM		1	1	1	1
R583		PCB JUMPER D0.6-P5.0		1	1	1	1
R584	▲ 9965 000 22680	CARBON RES. 1/4W J 1K OHM		1	1	1	1
R585	▲ 9965 000 22661	CARBON RES. 1/4W J 150K OHM		1	1	1	1
R586		CARBON RES. 1/4W J 68K OHM		1	1	1	1
R587		CARBON RES. 1/4W J 47K OHM		1	1	1	1
R588	▲ 9965 000 22684	CARBON RES. 1/4W J 22K OHM		1	1	1	1
R589	▲ 9965 000 09896	CARBON RES. 1/4W J 10K OHM		1	1	1	1
R590	▲ 9965 000 22677	METAL OXIDE FILM RES. 2W J 5.6 OHM		1	1	1	1
R591	▲ 9965 000 22684	CARBON RES. 1/4W J 22K OHM		1	1	1	1
R592	▲ 9965 000 09896	CARBON RES. 1/4W J 10K OHM		1	1	1	1
R593		CARBON RES. 1/4W J 8.2K OHM		1	1	1	1
R594		CARBON RES. 1/4W J 10K OHM		1	1	1	1
R595		PCB JUMPER D0.6-P5.0		1	1	1	1
R596		CARBON RES. 1/4W J 4.7 OHM		1	1	1	1
R601	▲ 9965 000 22668	ANTI-SURGE RESISTOR 1/2W J 3.3M OHM		1	1	1	1
R602	▲ 9965 000 22668	ANTI-SURGE RESISTOR 1/2W J 3.3M OHM		1	1	1	1
R603	▲ 9965 000 22668	ANTI-SURGE RESISTOR 1/2W J 3.3M OHM		1	1	1	1
R604	▲ 9965 000 14277	CEMENT RESISTOR 5W K 1.8 OHM		1	1	1	1
R605		CARBON RES. 1/4W J 100 OHM		1	1	1	1
R611		CARBON RES. 1/4W J 220 OHM		1	1	1	1
R612		CARBON RES. 1/4W J 180 OHM		1	1	1	1
R613		CARBON RES. 1/4W J 270K OHM		1	1	1	1
R615		CARBON RES. 1/4W J 1.2K OHM		1	1	1	1
R616	▲ 9965 000 22663	CARBON RES. 1/4W J 22 OHM		1	1	1	1

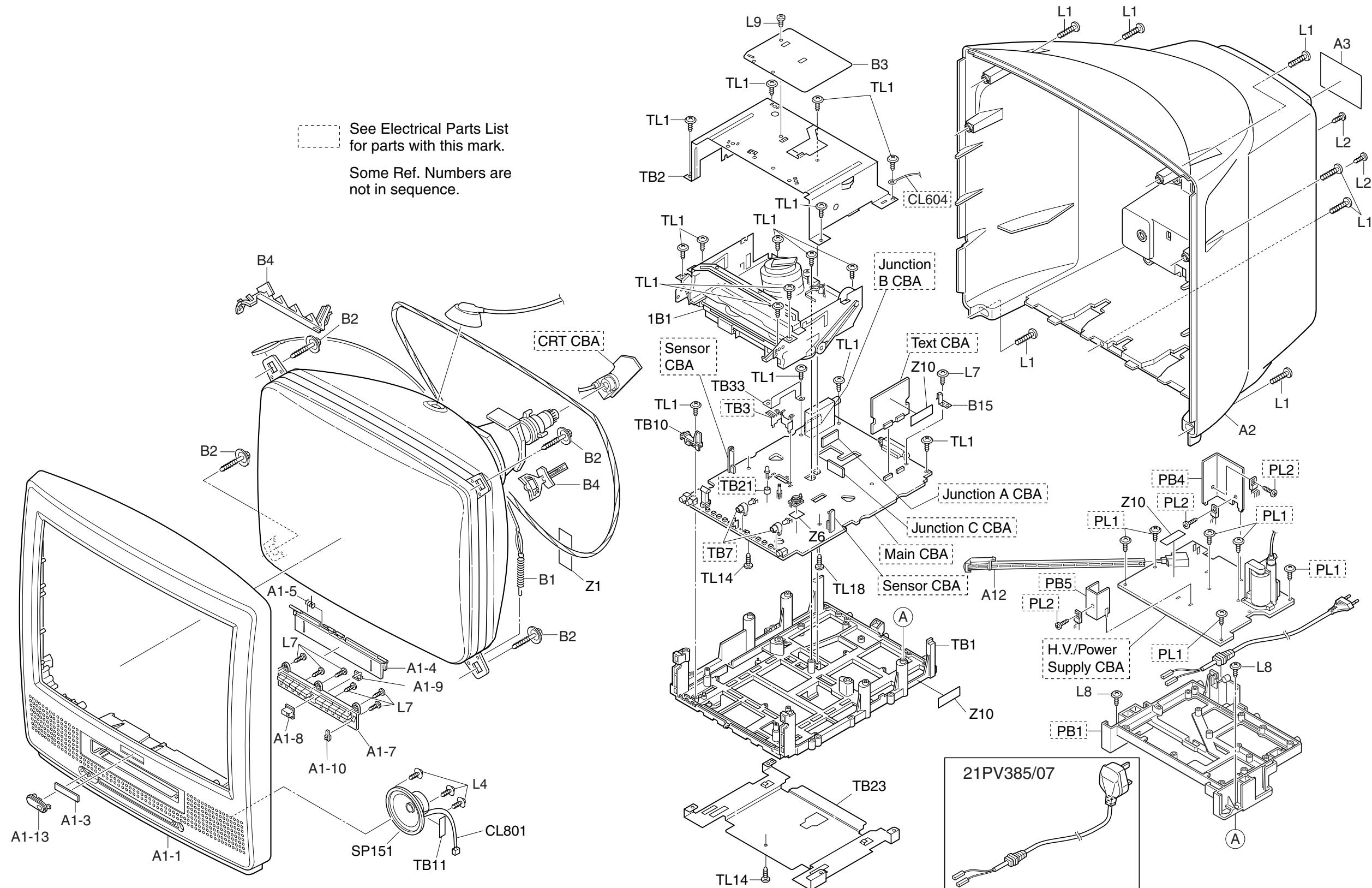
ELECTRICAL PARTS LIST					
Pos.	▲ 12 NC	Description	21PV385/01	21PV385/07	21PV385/39
R617	▲ 9965 000 18168	CEMENT RES. 5W K 0.56 OHM	1	1	1
R618		PCB JUMPER D0.6-P5.0	1	1	1
R619		CARBON RES. 1/4W J 1.2K OHM	1	1	1
R620	▲ 9965 000 24196	CARBON RES. 1/4W J 820K OHM	1	1	1
R621		CARBON RES. 1/4W J 560K OHM	1	1	1
R622		CARBON RES. 1/4W J 680K OHM	1	1	1
R624		CARBON RES. 1/4W J 680K OHM	1	1	1
R626	▲ 9965 000 15270	CARBON RES. 1/4W J 1.2K OHM	1	1	1
R627		PCB JUMPER D0.6-P5.0	1	1	1
R628	▲ 9965 000 19514	CARBON RES. 1/4W J 820 OHM	1	1	1
R629		CARBON RES. 1/2W J 1K OHM	1	1	1
R631	▲ 9965 000 22687	CARBON RES. 1/4W J 33K OHM	1	1	1
R632	▲ 9965 000 09896	CARBON RES. 1/4W J 10K OHM	1	1	1
R633	▲ 9965 000 19518	CARBON RES. 1/4W J 15K OHM	1	1	1
R634	▲ 9965 000 19518	CARBON RES. 1/4W J 15K OHM	1	1	1
R635	▲ 9965 000 22682	CARBON RES. 1/4W J 180 OHM	1	1	1
R636	▲ 9965 000 14870	CARBON RES. 1/4W G 1K OHM	1	1	1
R637	▲ 9965 000 23547	CARBON RES. 1/4W G 5.6K OHM	1	1	1
R638	▲ 9965 000 23548	CARBON RES. 1/4W G 47K OHM	1	1	1
R639	▲ 9965 000 23549	CARBON RES. 1/4W G 39K OHM	1	1	1
R640	▲ 9965 000 12891	CARBON RES. 1/4W J 3.3K OHM	1	1	1
R641	▲ 9965 000 24197	METAL OXIDE FILM RES. 1W J 1K OHM	1	1	1
R642	▲ 9965 000 09896	CARBON RES. 1/4W J 10K OHM	1	1	1
R643	▲ 9965 000 12891	CARBON RES. 1/4W J 3.3K OHM	1	1	1
R644	▲ 9965 000 12891	CARBON RES. 1/4W J 3.3K OHM	1	1	1
R645	▲ 9965 000 22667	CARBON RES. 1/4W J 56K OHM	1	1	1
R646	▲ 9965 000 22660	CARBON RES. 1/4W J 15 OHM	1	1	1
R647	▲ 9965 000 12891	CARBON RES. 1/4W J 3.3K OHM	1	1	1
R649	▲ 9965 000 22688	CARBON RES. 1/4W J 390 OHM	1	1	1
R651		CARBON RES. 1/4W J 100 OHM	1	1	1
R652	▲	PCB JUMPER D0.6-P15.0	1	1	1
R653	▲ 9965 000 22681	CARBON RES. 1/4W J 150 OHM	1	1	1
R654	▲ 9965 000 22664	CARBON RES. 1/4W J 2.2K OHM	1	1	1
R655		CARBON RES. 1/4W J 5.6K OHM	1	1	1
R656		CARBON RES. 1/4W J 47K OHM	1	1	1
R657	▲ 9965 000 22683	CARBON RES. 1/4W J 220 OHM	1	1	1
R658	▲ 9965 000 22678	METAL OXIDE FILM RES. 2W J 8.2K OHM	1	1	1
R659	▲ 9965 000 22678	METAL OXIDE FILM RES. 2W J 8.2K OHM	1	1	1
R660		PCB JUMPER D0.6-P5.0	1	1	1
R661		CARBON RES. 1/4W J 1.8K OHM	1	1	1
R662		CARBON RES. 1/4W J 820K OHM	1	1	1
R663		CARBON RES. 1/4W J 47 OHM	1	1	1
SA601	▲ 9965 000 20946	SURGE ABSORBER 470V+-10PER	1	1	1
SW602	▲ 9965 000 13902	POWER SWITCH SDKVA30100	1	1	1
T551	▲ 9965 000 18169	FLYBACK TRANS BSC23-2639S	1	1	1
T552	▲ 9965 000 18170	HORIZONTAL DRIVE TRANS LP2-004	1	1	1
T601	▲ 9965 000 24205	SWITCHING TRANS 04704	1	1	1
TB11	9965 000 24206	CLOTH(10X30XT:0.3) T5300UA	1	1	1
TM601	9965 000 22702	TAB 42018	1	1	1
TM602	9965 000 22702	TAB 42018	1	1	1
TP501		PCB JUMPER D0.6-P7.5	1	1	1
TP502		PCB JUMPER D0.6-P7.5	1	1	1
TP503		PCB JUMPER D0.6-P15.0	1	1	1
TP504		PCB JUMPER D0.6-P15.0	1	1	1
VR601	▲ 9965 000 23550	CARBON P.O.T. 20K OHM B	1	1	1
CRT CBA					
CAPACITORS					
C501		CERAMIC CAP.(AX) B K 220PF/50V	1	1	1
C502		CERAMIC CAP.(AX) B K 220PF/50V	1	1	1

ELECTRICAL PARTS LIST				21PV385/01	21PV385/07	21PV385/39	21PV385/58
Pos.	▲ 12 NC	Description					
C503		CERAMIC CAP.(AX) B K 220PF/50V		1	1	1	1
C504		CERAMIC CAP. B K 1000PF/2KV		1	1	1	1
C505		ELECTROLYTIC CAP. 1UF/50V M H7		1	1	1	1
CONNECTORS							
CN501	9965 000 13911	PIN CONNECTOR 005P-5100		1	1	1	1
CN502	9965 000 05247	CONNECTOR BASE, 4P TUC-P04P-B1		1	1	1	1
JK501	▲ 9965 000 18173	CRT SOCKET ISHS40S		1	1	1	1
COILS							
L501	9965 000 18174	INDUCTOR 150UH-J-5FT		1	1	1	1
TRANSISTORS							
Q501	9965 000 23551	TRANSISTOR KTC3503Y		1	1	1	1
Q502	9965 000 23551	TRANSISTOR KTC3503Y		1	1	1	1
Q503	9965 000 23551	TRANSISTOR KTC3503Y		1	1	1	1
RESISTORS							
R501	▲ 4822 053 10183	METAL OXIDE FILM RES. 1W J 18K OHM		1	1	1	1
R502	▲ 4822 053 10183	METAL OXIDE FILM RES. 1W J 18K OHM		1	1	1	1
R503	▲ 4822 053 10183	METAL OXIDE FILM RES. 1W J 18K OHM		1	1	1	1
R504		CARBON RES. 1/4W J 1.5K OHM		1	1	1	1
R506		CARBON RES. 1/4W J 1.5K OHM		1	1	1	1
R508		CARBON RES. 1/4W J 1.5K OHM		1	1	1	1
R509		CARBON RES. 1/4W J 1.5K OHM		1	1	1	1
R510		CARBON RES. 1/4W J 1.5K OHM		1	1	1	1
R511		PCB JUMPER D0.6-P5.0		1	1	1	1
R512		PCB JUMPER D0.6-P5.0		1	1	1	1
R513		PCB JUMPER D0.6-P5.0		1	1	1	1
R514		CARBON RES. 1/4W J 1.5K OHM		1	1	1	1
R515		CARBON RES. 1/4W J 120K OHM		1	1	1	1
R516		CARBON RES. 1/4W J 15 OHM		1	1	1	1
R517		CARBON RES. 1/4W J 470 OHM		1	1	1	1
R518		CARBON RES. 1/4W J 120K OHM		1	1	1	1
R519		CARBON RES. 1/4W J 15 OHM		1	1	1	1
R520		CARBON RES. 1/4W J 470 OHM		1	1	1	1
R521		CARBON RES. 1/4W J 120K OHM		1	1	1	1
R522		CARBON RES. 1/4W J 15 OHM		1	1	1	1
R523		CARBON RES. 1/4W J 470 OHM		1	1	1	1
TEXT CBA							
CAPACITORS							
C901		ELECTROLYTIC CAP. 22UF/50V M		1	1	1	1
C902		CERAMIC CAP.(AX) B K 100PF/50V		1	1	1	1
C903		ELECTROLYTIC CAP. 0.1UF/50V M		1	1	1	1
C904		ELECTROLYTIC CAP. 0.1UF/50V M		1	1	1	1
C905		CERAMIC CAP.(AX) Y M 0.01UF/16V		1	1	1	1
C916		CERAMIC CAP.(AX) CH J 18PF/50V		1	1	1	1
C917		CERAMIC CAP.(AX) CH J 18PF/50V		1	1	1	1
C920		CERAMIC CAP.(AX) Y M 0.01UF/16V		1	1	1	1
C921		ELECTROLYTIC CAP. 100UF/10V M		1	1	1	1
C922		ELECTROLYTIC CAP. 100UF/10V M		1	1	1	1
C923		ELECTROLYTIC CAP. 100UF/10V M		1	1	1	1
C926		CERAMIC CAP.(AX) Y M 0.01UF/16V		1	1	1	1
CONNECTORS							
CN901	9965 000 13916	CONNECTOR, 8P TUC-P08X-B1		1	1	1	1
CN902	9965 000 13917	CONNECTOR, 6P TUC-P06X-B1		1	1	1	1
DIODES							
D901	4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
D902	4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
D903	9965 000 18140	ZENER DIODE MTZJT-773.6B		1	1	1	1
D904	4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
D905	4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1
D906	4822 130 32778	SWITCHING DIODE 1SS133(T-77)		1	1	1	1

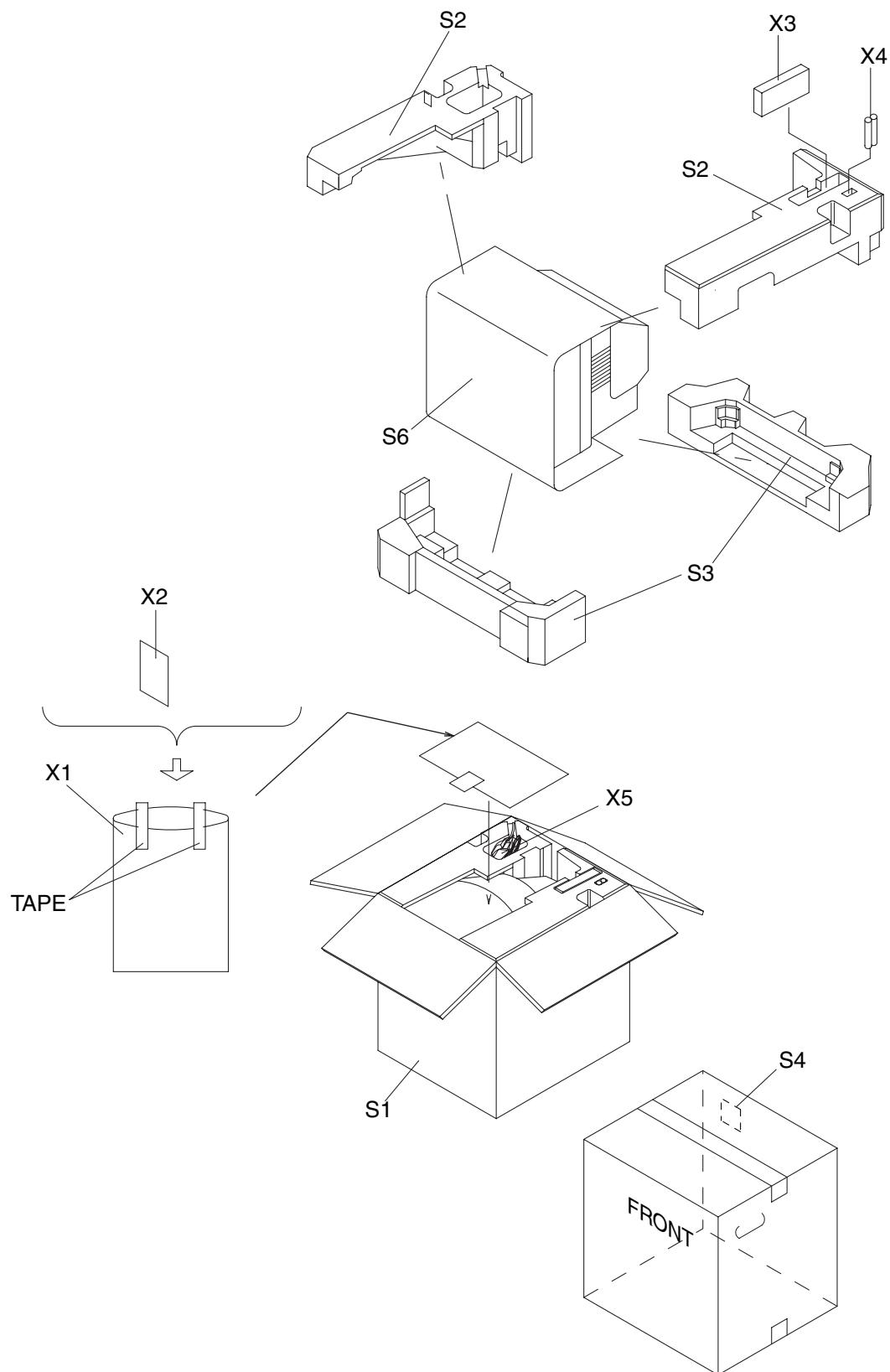
ELECTRICAL PARTS LIST					21PV385/01	21PV385/07	21PV385/39	21PV385/58
Pos.	▲ 12 NC	Description						
D907	4822 130 32778	SWITCHING DIODE 1SS133(T-77)			1	1	1	1
D908	9965 000 18119	ZENER DIODE DZ-3.3BSBT265			1	1	1	1
D909	9965 000 18119	ZENER DIODE DZ-3.3BSBT265			1	1	1	1
IC's								
IC901	9965 000 18141	IC:TEXT SAA5265			1	1	1	1
COILS								
L901	9965 000 18142	INDUCTOR 10UH-J-26T			1	1	1	1
L902	9965 000 18142	INDUCTOR 10UH-J-26T			1	1	1	1
TRANSISTORS								
Q901	9965 000 05643	TRANSISTOR 2SC2785(F)			1	1	1	1
RESISTORS								
R901		CARBON RES. 1/4W J 1.2K OHM			1	1	1	1
R902		CARBON RES. 1/4W J 1K OHM			1	1	1	1
R903		CARBON RES. 1/4W J 24K OHM			1	1	1	1
R904		CARBON RES. 1/4W J 10K OHM			1	1	1	1
R905		CARBON RES. 1/4W J 10K OHM			1	1	1	1
R906		CARBON RES. 1/4W J 1.5K OHM			1	1	1	1
R908		CARBON RES. 1/4W J 1.5K OHM			1	1	1	1
R911		CARBON RES. 1/4W J 1.5K OHM			1	1	1	1
R912		CARBON RES. 1/4W J 1K OHM			1	1	1	1
R913		PCB JUMPER D0.6-P5.0			1	1	1	1
R914		PCB JUMPER D0.6-P5.0			1	1	1	1
R915		PCB JUMPER D0.6-P5.0			1	1	1	1
R916		CARBON RES. 1/4W J 220 OHM			1	1	1	1
R918		METAL OXIDE FILM RES. 2W J 56 OHM			1	1	1	1
R919		PCB JUMPER D0.6-P5.0			1	1	1	1
R920		PCB JUMPER D0.6-P5.0			1	1	1	1
R921		CARBON RES. 1/4W J 3.3K OHM			1	1	1	1
R922		CARBON RES. 1/4W J 3.3K OHM			1	1	1	1
R923		CARBON RES. 1/4W J 3.3K OHM			1	1	1	1
R924		CARBON RES. 1/4W J 1K OHM			1	1	1	1
R925		CARBON RES. 1/4W J 10 OHM			1	1	1	1
R926		CARBON RES. 1/4W J 4.7K OHM			1	1	1	1
R927		CARBON RES. 1/4W J 1K OHM			1	1	1	1
X901	9965 000 12194	X'TAL 12.000MHZ			1	1	1	1

EXPLODED VIEWS

Cabinet



Packing



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:**

Pos.1 consists of	A1-1	A1-8
	A1-3	A1-9
	A1-4	A1-10
	A1-5	L7
	A1-7	

Pos.	Pos. Expl. View	▲ 12 NC	Description	MECHANICAL PARTS LIST			
				21PV385/01	21PV385/07	21PV385/39	21PV385/58
MECHANICAL PARTS LIST							
0001	*)	3143 027 60521	FRONT ASSY 21PV385/01/07/58	1	1		1
0001	*)	3143 027 60531	FRONT ASSY 21PV385/39			1	
0001	A1-1		FRONT CABINET 21"	1	1	1	1
0011	A1-3		WORDMARK SILVER	1	1	1	1
0005	A1-4		CASSETTE DOOR 21"	1	1	1	1
0006	A1-5		LEG SPRING	1	1	1	1
0009	A1-7		FUNCTION KNOB 21"	1	1	1	1
0012	A1-8		SENSOR WINDOW 21"	1	1	1	1
0008	A1-9		LED LENS 21" (L)	1	1	1	1
0007	A1-10		LED LENS 21" (R)	1	1	1	1
0013	L4		PL PAN SCR 3X12 WITH WASH10	1	1	1	1
0059	L7	4822 502 14109	SCR PAN TORX TAP ST ZN BK 3X10	1	1	1	1
0002	B4	4822 402 10159	BRACKET ==>20/21"	1	1	1	1
0004	B1	3143 021 20031	TENSION SPRING	1	1	1	1
0015		3143 027 50351	CABLE CLAMP	1	1	1	1
0030	B3	3143 021 20091	SHIELD PLATE 21"	1	1	1	1
0031	B15	3143 021 20021	TE HOLDER	1	1	1	1
0055	L1	4822 502 14062	SCREW	1	1	1	1
0056	L2		TORX HEAD TAPPING SCREW M4X12	1	1	1	1
0057	L8		FLAT HEAD SCREW 4X18	1	1	1	1
0058	L9		SHIELD PLATE SCREW M3X4	1	1	1	1
0070	A2	3143 027 50321	REAR CABINET 21"	1	1	1	1
0071	A12	3143 027 50311	POWER BUTTON 21"	1	1	1	1
0072	A1-13	3143 027 50331	JACK COVER	1	1	1	1
1010	(SP151+ CL801)	9965 000 18286	SPEAKER ASSY 21"	1	1	1	1
1100			CRT A51EAL135X09 (LGPD) B	1	1	1	1
0054	B2		CRT FIXING SCREW (EJOT K70X25)	1	1	1	1
0010		4822 502 14109	SCR PAN TORX TAP ST ZN BK 3X10	1	1	1	1
TB2	TB2		TOP COVER T6300RA	1	1	1	1
TB10	TB10	9965 000 18157	RCA HOLDER(B) T6500RA	1	1	1	1
TB11	TB11	9965 000 24206	CLOTH(10X30XT:0.3) T5300UA	1	1	1	1
TB23	TB23		BOTTOM PLATE T6300RA	1	1	1	1
TB33	TB33		EARTH HOLDER(TU) T6310EZ	1	1	1	1
TL1	TL1	9965 000 08646	SCREW, P-TIGHT 3X12 WASHER HEAD+	1	1	1	1
TL14	TL14	9965 000 12171	SCREW, B-TIGHT M3X8 BIND HEAD+	1	1	1	1
TL18	TL18	9965 000 13027	SCREW, P-TIGHT M3X8 BIND HEAD+	1	1	1	1
PACKING							
0150	X3	9965 000 18139	RC RT351/111	1	1	1	1
0450	S1		BOX FOLDED 21PV385	1	1	1	1
0453	S2		STYROFOAM TOP 21"	1	1	1	1
0454	S2		STYROFOAM BOTTOM 21"	1	1	1	1

MECHANICAL PARTS LIST					21PV385/01	21PV385/07	21PV385/39	21PV385/58
Pos.	Pos. Expl. View	▲ 12 NC	Description					
0455	X1		BAG (==>MAINS CORD)		1	1	1	1
0469	S6		TOPFOIL		1	1	1	1
		3143 023 20011	TEST TAPE FL6K(S)		1	1	1	1
		3143 023 20021	TEST TAPE FL6NS8		1	1	1	1
		3143 023 20051	TEST TAPE E-120 HS		1	1	1	1
		3143 023 20041	TEST TAPE FL6M		1	1	1	1

DECK MECHANISM SECTION

TV-VCR COMBINATION

Sec. 2: Deck Mechanism Section

- Standard Maintenance
- Mechanism Alignment Procedures
- Disassembly / Assembly of Mechanism
- Deck Exploded Views
- Deck Parts List

TABLE OF CONTENTS

STANDARD MAINTENANCE	2-1-1
SERVICE FIXTURE AND TOOLS	2-2-1
MECHANICAL ALIGNMENT PROCEDURES	2-3-1
DISASSEMBLY / ASSEMBLY PROCEDURES OF DECK MECHANISM.....	2-4-1
ALIGNMENT PROCEDURES OF MECHANISM	2-5-1
DECK EXPLODED VIEWS.....	2-6-1
DECK PARTS LIST	2-7-1

STANDARD MAINTENANCE

Service Schedule of Components

This maintenance chart shows you the standard of replacement and cleaning time for each part. Because those may replace depending on environment and purpose for use, use the chart for reference.

H: Hours ○: Cleaning ●: Replace

Deck		Periodic Service Schedule			
Ref.No.	Part Name	1,000 H	2,000 H	3,000 H	4,000 H
B2	Cylinder Assembly	○	●	○	●
B3	Loading Motor Assembly			●	
B8	Pulley Assembly		●		●
B587	Tension Lever Assembly		●		●
B31	ACE Head Assembly			●	
B573, B574	Reel (SP)(D2), Reel (TU)(D2)			●	
B37	Capstan Motor		●		●
B52	Cap Belt		●		●
B73	FE Head			●	
B133, B134	Idler Gear, Idler Arm		●		●
B410	Pinch Arm(A) Assembly		●		●
B414	M Brake (SP) Assembly		●		●
B416	M Brake (TU) Assembly		●		●
B525	LDG Belt		●		●
B569 (2 head only)	Cam Holder		●		●
B593 (4 head, 4 head HiFi only)	Cam Holder Assembly		●		●

Notes:

- 1.Clean all parts for the tape transport (Upper Drum with Video Head / Pinch Roller / ACE Head / FE Head) using 90% Isopropyl Alcohol.
- 2.After cleaning the parts, do all DECK ADJUSTMENTS.
- 3.For the reference numbers listed above, refer to Deck Exploded Views.

Cleaning

Cleaning of Video Head

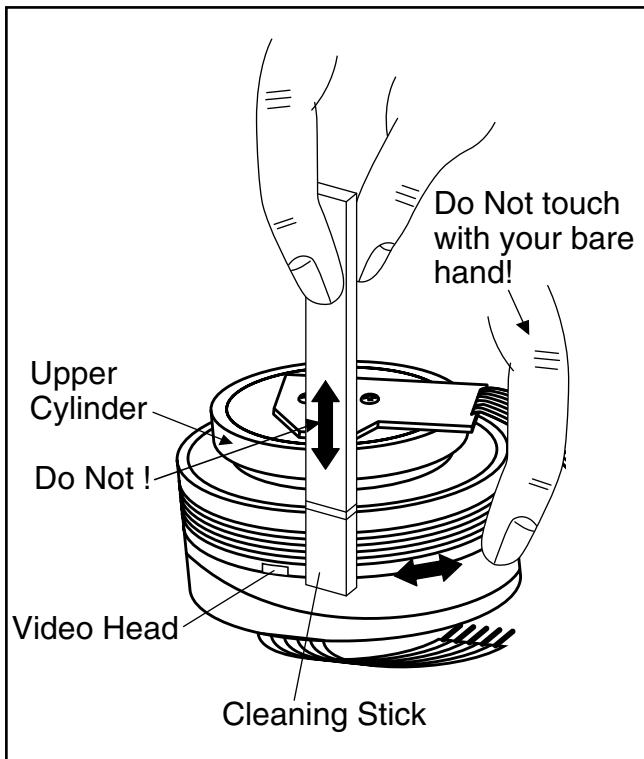
Clean the head with a head cleaning stick or chamois cloth.

Procedure

1. Remove the top cabinet.
2. Put on a glove (thin type) to avoid touching the upper and lower drum with your bare hand.
3. Put a few drops of 90% Isopropyl alcohol on the head cleaning stick or on the chamois cloth and, by slightly pressing it against the head tip, turn the upper drum to the right and to the left.

Notes:

1. The video head surface is made of very hard material, but since it is very thin, avoid cleaning it vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit.
3. Do not reuse a stained head cleaning stick or a stained chamois cloth.



Cleaning of ACE Head

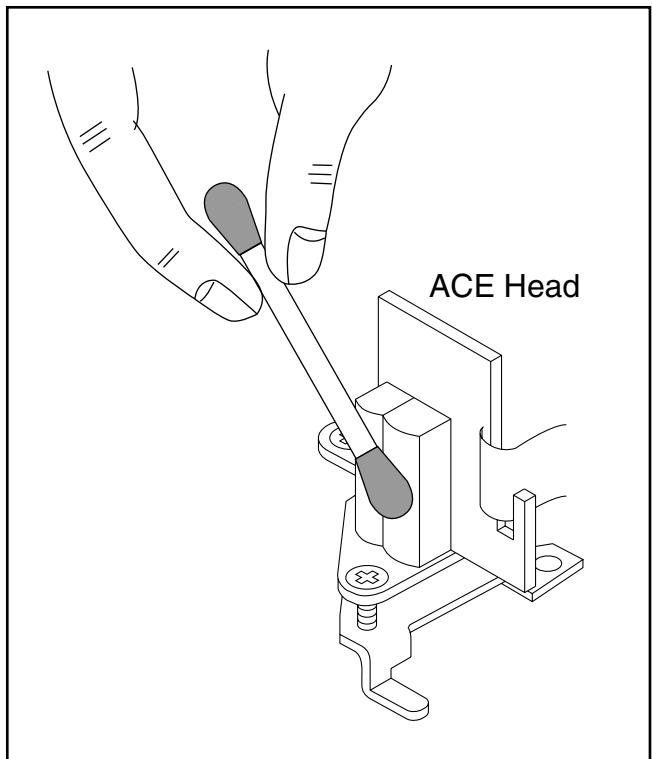
Clean the head with a cotton swab.

Procedure

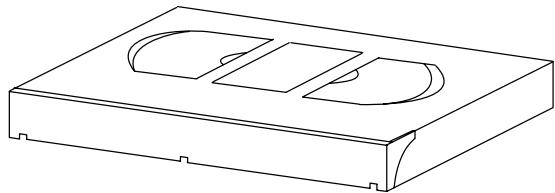
1. Remove the top cabinet.
2. Dip the cotton swab in 90% isopropyl alcohol and clean the ACE Head. Be careful not to damage the upper drum and other tape running parts.

Notes:

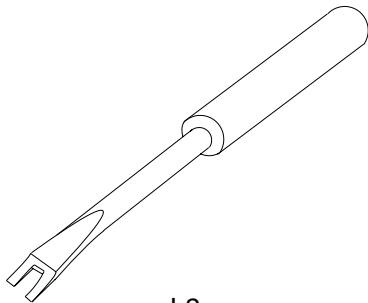
1. Avoid cleaning the ACE Head vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit or damage may occur.



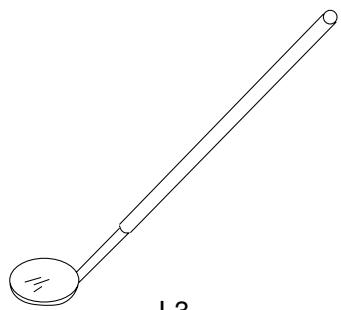
SERVICE FIXTURE AND TOOLS



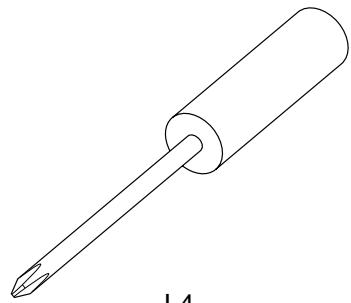
J-1-1, J-1-2



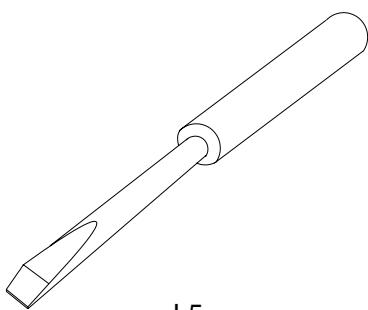
J-2



J-3



J-4



J-5

Ref. No.	Name	Part No.	Adjustment
J-1-1	Alignment Tape	9965 000 14514	Head Adjustment of ACE Head
J-1-2	Alignment Tape	9965 000 14516 (2 Head model) 9965 000 14515 (4 Head model)	Azimuth and X Value Adjustment of ACE Head / Adjustment of Envelope Waveform
J-2	Guide Roller Adj. Screwdriver	Available Locally	Guide Roller
J-3	Mirror	Available Locally	Tape Transportation Check
J-4	Azimuth Adj. Screwdriver +	Available Locally	ACE Head Height
J-5	Flat Screwdriver -	Available Locally	X Value

MECHANICAL ALIGNMENT PROCEDURES

Explanation of alignment for the tape to correctly run starts on the next page. Refer to the information below on this page if a tape gets stuck, for example, in the mechanism due to some electrical trouble of the unit.

Service Information

A. Method for Manual Tape Loading/Unloading

To load a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Top Case and Front Assembly.
3. Insert a cassette tape. Though the tape will not be automatically loaded, make sure that the cassette tape is all the way in at the inlet of the Cassette Holder. To confirm this, lightly push the cassette tape further in and see if the tape comes back out, by a spring motion, just as much as you have pushed in.
4. Turn the LDG Belt in the appropriate direction shown in Fig. M1 for a minute or two to complete this task.

To unload a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Top Case and Front Assembly.
3. Make sure that the Moving guide preparations are in the Eject Position.
4. Turn the LDG Belt in the appropriate direction shown in Fig. M1 until the Moving guide preparations come to the Eject Position. Stop turning when the preparations begin clicking or can not be moved further. However, the tape will be left wound around the cylinder.
5. Turn the LDG Belt in the appropriate direction continuously, and the cassette tape will be ejected. Allow a minute or two to complete this task.

B. Method to place the Cassette Holder in the tape-loaded position without a cassette tape

1. Disconnect the AC Plug.
2. Remove the Top Case and Front Assembly.
3. Turn the LDG Belt in the appropriate direction shown in Fig. M1. Release the locking tabs shown in Fig. M1 and continue turning the LDG Belt until the Cassette Holder comes to the tape-loaded position. Allow a minute or two to complete this task.

Top View

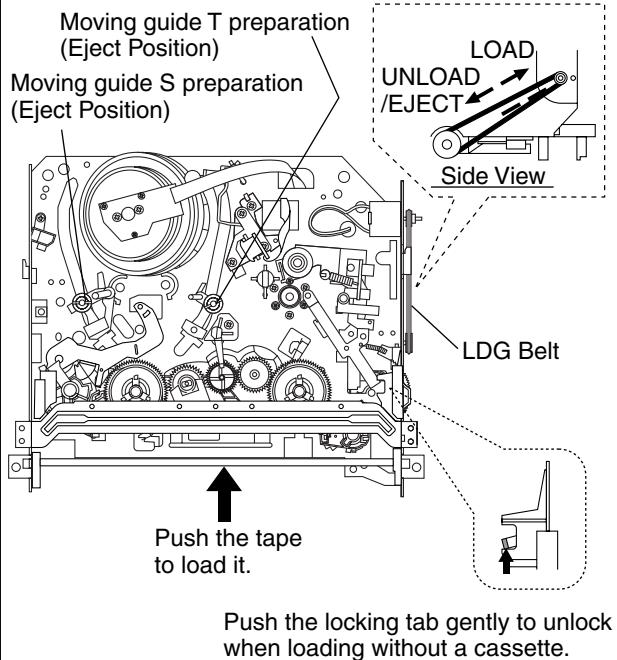


Fig. M1

Bottom View

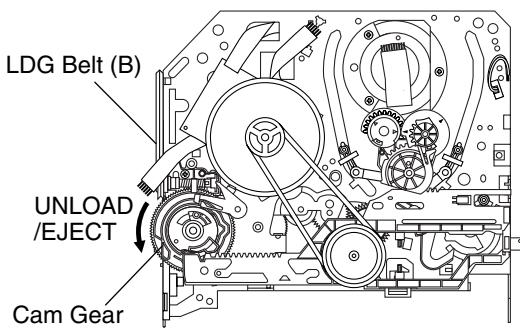


Fig. M2

1. Tape Interchangeability Alignment

Note:

To do these alignment procedures, make sure that the Tracking Control Circuit is set to the preset position every time a tape is loaded or unloaded. (Refer to page 2-3-4, procedure 1-C, step 2.)

Equipment required:

Dual Trace Oscilloscope

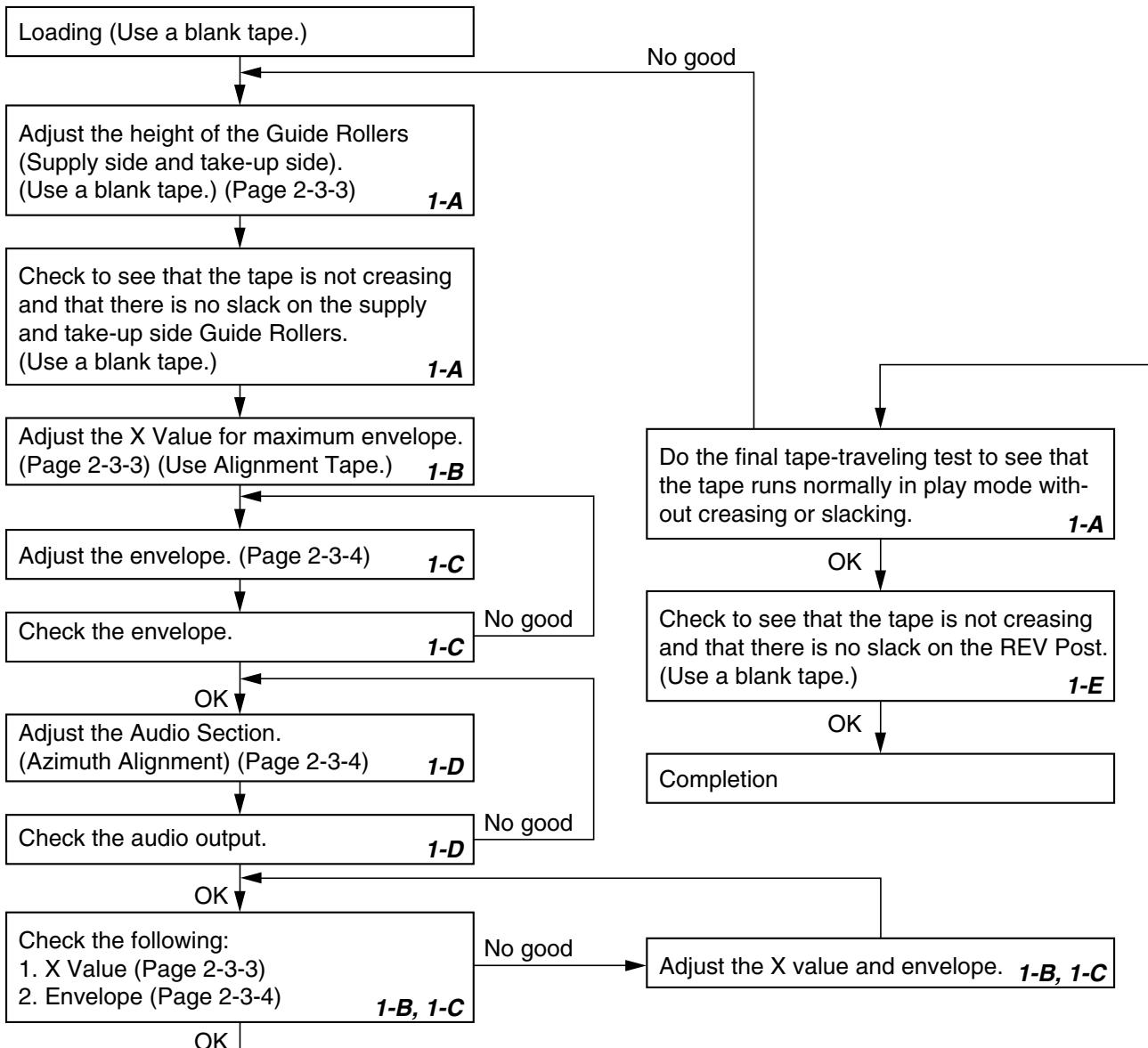
VHS Alignment Tape (9965 000 14516)

Guide Roller Adj. Screwdriver

Flat Screwdriver (Purchase Locally)

Note: Before starting this Mechanical Alignment, do all Electrical Adjustment procedures.

Flowchart of Alignment for tape traveling



1-A. Preliminary/Final Checking and Alignment of Tape Path

Purpose:

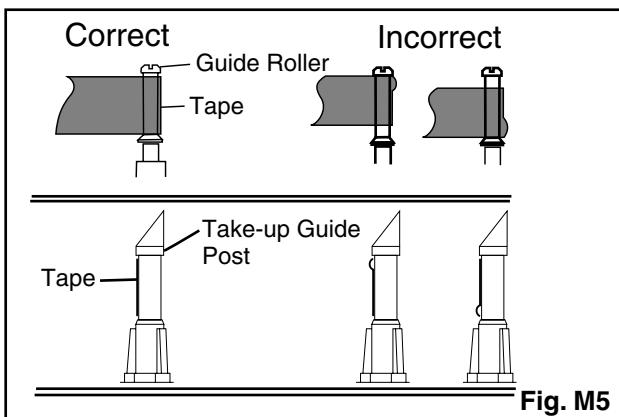
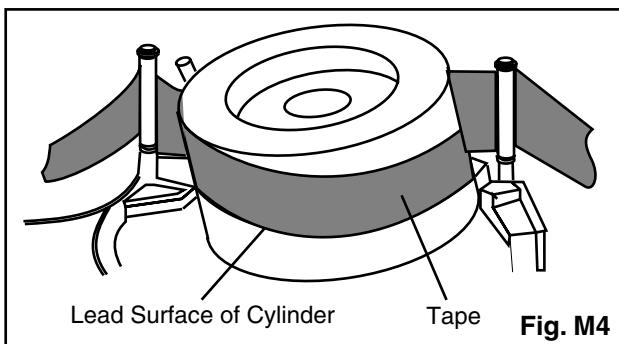
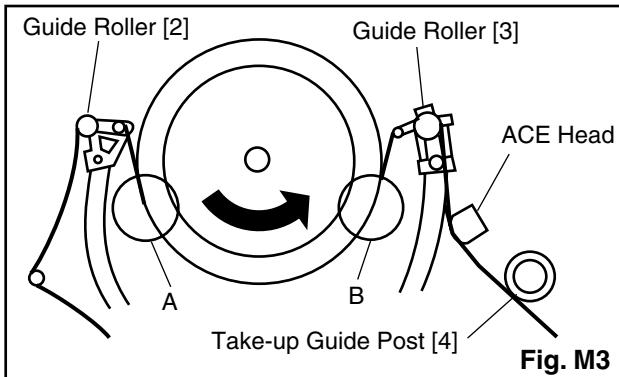
To make sure that the tape path is well stabilized.

Symptom of Misalignment:

If the tape path is unstable, the tape will be damaged.

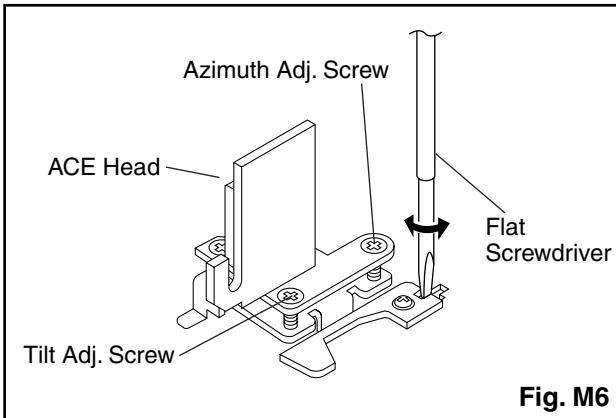
Note: Do not use an Alignment Tape for this procedure. If the unit is not correctly aligned, the tape may be damaged.

1. Playback a blank cassette tape and check to see that the tape runs without creasing at Guide Rollers [2] and [3], and at points A and B on the lead surface. (Refer to Fig. M3 and M4.)
2. If creasing is apparent, align the height of the guide rollers by turning the top of Guide Rollers [2] and [3] with a Guide Roller Adj. Screwdriver. (Refer to Fig. M3 and M5.)



3. Check to see that the tape runs without creasing at Take-up Guide Post [4] or without snaking between Guide Roller [3] and ACE Head. (Fig. M3 and M5)

4. If creasing or snaking is apparent, adjust the Tilt Adj. Screw of the ACE Head. (Fig. M6)



1-B. X Value Alignment

Purpose:

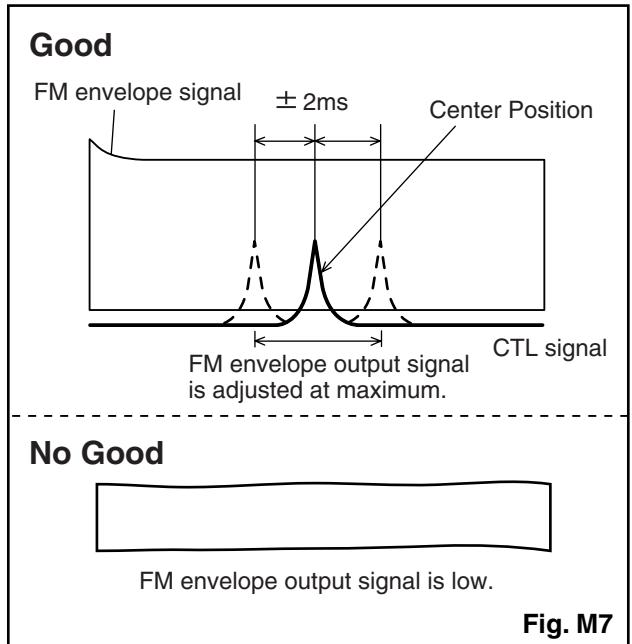
To obtain maximum PB FM envelope signal at the preset position of the Tracking Control Circuit, align the Horizontal Position of the ACE Head.

Symptom of Misalignment:

If the Horizontal Position of the ACE Head is not properly aligned, maximum PB FM envelope cannot be obtained at the preset position of the Tracking Control Circuit.

1. Connect the oscilloscope to TP008 (C-PB) and TP001 (CTL) on the Main CBA. Use TP002 (RF-SW) as a trigger.
2. Playback the Gray Scale of the Alignment Tape (9965 000 14516) and confirm that the PB FM signal is present.
3. Set the Tracking Control Circuit to the preset position by pressing CH UP button on the remote control unit then "PLAY" button on the unit. (Refer to note on bottom of page 2-3-4.)
4. Use the Flat Screwdriver so that the PB FM signal at TP008 (C-PB) is maximum. (Fig. M6)

5. To shift the CTL waveform, press CH UP or CH DOWN button on the remote control unit. Then make sure that the maximum output position of PB FM envelope signal become within $\pm 2\text{ms}$ from preset position.



6. Set the Tracking Control Circuit to the preset position by pressing CH UP button on the remote control unit. and then "PLAY" button.

1-C. Checking/Adjustment of Envelope Waveform

Purpose:

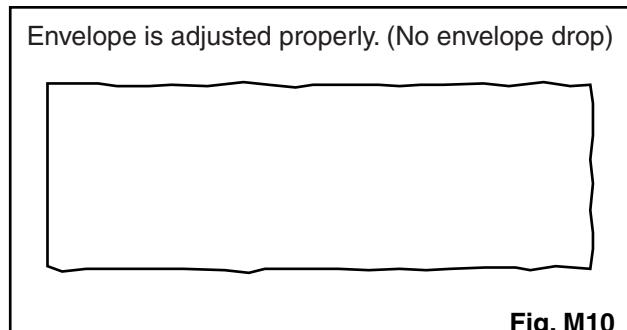
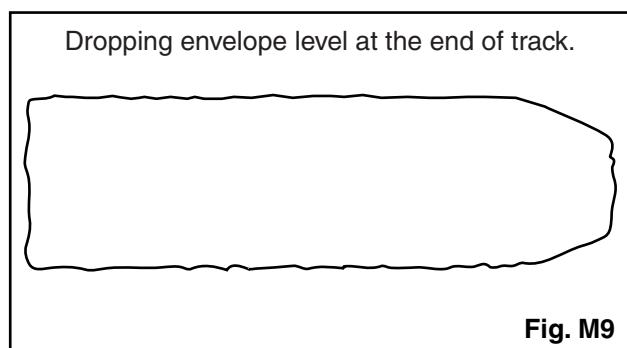
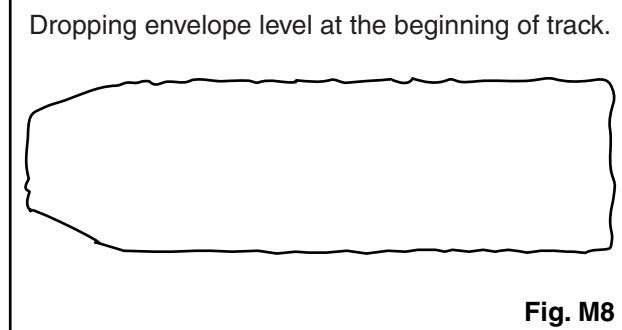
To achieve a satisfactory picture, adjust the PB FM envelope becomes as flat as possible.

Symptom of Misalignment:

If the envelope output is poor, noise will appear in the picture. The tracking will then lose precision and the playback picture will be distorted by any slight variation of the Tracking Control Circuit.

1. Connect the oscilloscope to TP008 (C-PB) on the Main CBA. Use TP002 (RF-SW) as a trigger.
2. Playback the Gray Scale on the Alignment Tape (9965 000 14516). Set the Tracking Control Circuit to the preset position by pressing CH UP button and then "PLAY" button on the unit. Adjust the height of Guide Rollers [2] and [3] (Fig. M3, Page 2-3-3) watching the oscilloscope display so that the envelope becomes as flat as possible. To do this adjustment, turn the top of the Guide Roller with the Guide Roller Adj. Screwdriver.
3. If the envelope is as shown in Fig. M7, adjust the height of Guide Roller [2] (Refer to Fig. M3) so that the waveform looks like the one shown in Fig. M9.
4. If the envelope is as shown in Fig. M8, adjust the height of Guide Roller [3] (Refer to Fig. M3) so that the waveform looks like the one shown in Fig. M9.

5. When Guide Rollers [2] and [3] (Refer to Fig. M3) are aligned properly, there is no envelope drop either at the beginning or end of track as shown in Fig. M9.



Note: Upon completion of the adjustment of Guide Rollers [2] and [3] (Refer to Fig. M3), check the X Value by pushing the CH UP or DOWN buttons alternately, to check the symmetry of the envelope. Check the number of pushes to ensure preset position. The number of pushes CH UP button to achieve 1/2 level of envelope should match the number of pushes CH DOWN button from center. If required, redo the "X Value Alignment."

1-D. Azimuth Alignment of Audio/Control/ Erase Head

Purpose:

To correct the Azimuth alignment so that the Audio/Control/Erase Head meets tape tracks properly.

Symptom of Misalignment:

If the position of the Audio/Control/Erase Head is not properly aligned, the Audio S/N Ratio or Frequency Response will be poor.

1. Connect the oscilloscope to the audio output jack on the rear side of the deck.
2. Playback the alignment tape (9965 000 14516) and confirm that the audio signal output level is 6kHz.
3. Adjust Azimuth Adj. Screw so that the output level on the AC Voltmeter or the waveform on the oscilloscope is at maximum. (Fig. M6)

Note: Upon completion of the adjustment of Azimuth Adj. Screw, check the X Value by pushing the CH UP or DOWN buttons alternately, to check the symmetry of the envelope. Check the number of pushes to ensure preset position. The number of pushes CH UP button to achieve 1/2 level of envelope should match the number of pushes CH DOWN button from center. If required, redo the "X Value Alignment."

1-E. E. Checking and Alignment of Tape Path during reversing

Purpose:

To make sure that the tape path is well stabilized during reversing.

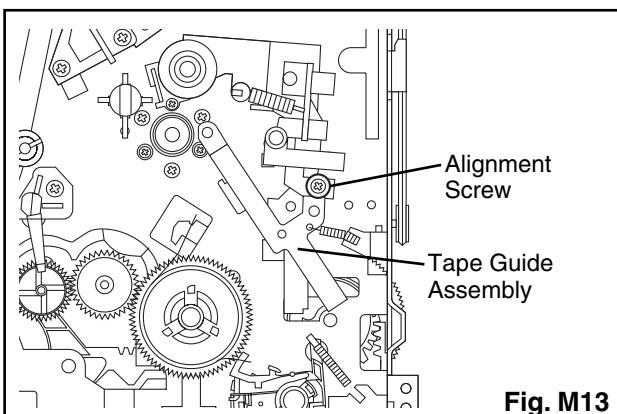
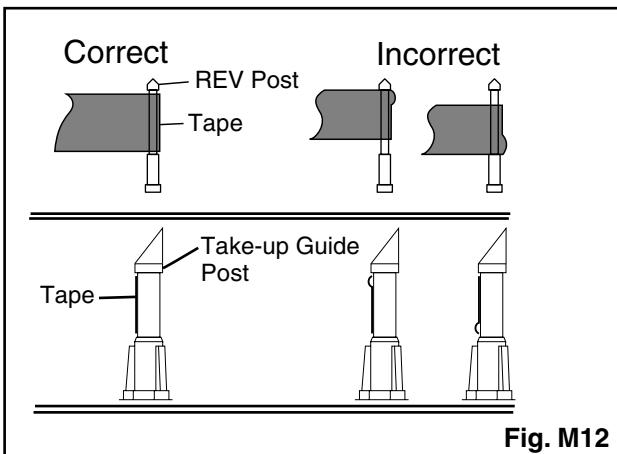
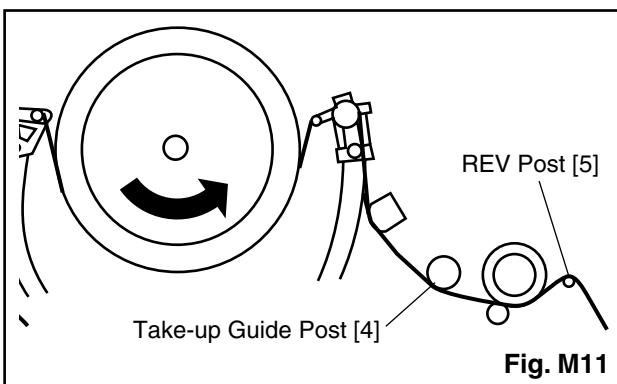
Symptom of Misalignment:

If the tape path is unstable during reversing, the tape will be damaged.

Note: Do not use an Alignment Tape for this procedure. If the unit is not correctly aligned, the tape may be damaged.

1. Insert a black cassette tape into the tray and set the unit to REV. Then confirm if the tape has been curled up or bent at the Take-up Guide Post[4] or REV Post[5]. (Refer to Fig. M11 and M12.)

2. When the tape has been curled up or bent, turn the alignment screw to adjust the height of REV Post. (Refer to Fig. M11 and M13.)



DISASSEMBLY/ASSEMBLY PROCEDURES OF DECK MECHANISM

Before following the procedures described below, be sure to remove the deck assembly from the cabinet. (Refer to CABINET DISASSEMBLY INSTRUCTIONS on page 1-5-1 of Main Section.)

All the following procedures, including those for adjustment and replacement of parts, should be done in Eject mode; see the positions of [41] and [42] in Fig. DM1 on page 2-4-3. When reassembling, follow the steps in reverse order.

STEP /LOC. No.	START- ING No.	PART	REMOVAL		INSTALLATION ADJUSTMENT CONDITION
			Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	
[1]	[1]	Guide Holder A	T	DM3	2(S-1)
[2]	[1]	Cassette Holder Assembly	T	DM4	(S-10)
[3]	[2]	Slider (SP)	T	DM5	(S-1A), *(L-1)
[4]	[2]	Slider (TU)	T	DM5	*(L-2)
[5]	[4]	Lock Lever	T	DM5	*(L-3), *(P-1)
[6]	[2]	Cassette Plate	T	DM5	
[7]	[7]	Cylinder Assembly	T	DM1, DM6	Desolder, 3(S-2)
[8]	[8]	Loading Motor Assembly	T	DM1, DM7	Desolder, LDG Belt, 2(S-3)
[9]	[9]	ACE Head Assembly	T	DM1, DM7	(S-4)
[10]	[2]	Tape Guide Arm Assembly	T	DM1, DM8-1	*(P-2)
[11]	[10]	C Door Opener	T	DM1, DM8-1	(S-4A), *(L-4)
[12]	[11]	Pinch Arm (B)	T	DM1, DM8-1, DM8-2	*(P-3)
[13]	[12]	Pinch Arm (A) Assembly	T	DM1, DM8-1, DM8-2	
[14]	[14]	FE Head	T	DM1, DM9	(S-5)
[15]	[15]	Prism	T	DM1, DM9	(S-6)
[16]	[2],[15]	Sensor Gear	T	DM1, DM9	
[17]	[2]	Slider Shaft	T	DM10	*(L-5)
[18]	[17]	C Drive Lever (SP)	T	DM10	
[19]	[17]	C Drive Lever (TU)	T	DM10	(S-7), *(P-4)
[20]	[7],[8], [10]	Capstan Motor	B	DM2, DM11	3(S-8), Cap Belt
[21]	[21]	Clutch Assembly	B	DM2, DM12	(C-1)
[22]	[22]	Cam Holder Assembly	B	DM2, DM12	*(L-6)
[23]	[23]	Cam Gear (B)	B	DM2, DM12	(C-2), *(P-5)
[24]	[24]	Mode Gear	B	DM2, DM13-1	(C-3)
[25]	[21],[23], [24]	Mode Lever	B	DM2, DM13-1, DM13-2	(C-4), *(L-8)
[26]	[22]	Worm Holder	B	DM2, DM13-1	(S-9), *(L-9), *(L-10)
[27]	[26]	Pulley Assembly	B	DM2, DM13-1	
[28]	[25],[26]	Cam Gear (A)	B	DM2, DM13-1, DM13-2	
[29]	[25]	Idler Gear	B	DM1, DM14	
[30]	[29]	Idler Arm	B	DM1, DM14	*(L-11)
[31]	[25]	BT Arm	B	DM2, DM14	*(P-6)

STEP /LOC. No.	START- ING No.	PART	REMOVAL		INSTALLATION ADJUSTMENT CONDITION
			Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	
[32]	[25]	Loading Arm (SP) Assembly	B	DM2, DM14	(+)Refer to Alignment Sec.Page 2-5-1
[33]	[32]	Loading Arm (TU) Assembly	B	DM2, DM14	(+)Refer to Alignment Sec.Page 2-5-1
[34]	[2],[25]	M Brake (TU) Assembly	T	DM1, DM15	*(P-7), Brake Belt
[35]	[2],[25]	M Brake (SP) Assembly	T	DM1, DM15	*(P-8)
[36]	[35]	Tension Lever Assembly	T	DM1, DM15	
[37]	[36]	T Lever Holder	T	DM15	*(L-12)
[38]	[34]	Reel (TU)(D2)	T	DM1, DM15	
[39]	[38]	M Gear	T	DM1, DM15	
[40]	[36]	Reel (SP)(D2)	T	DM1, DM15	
[41]	[32],[36]	Moving Guide S Preparation	T	DM1, DM16	
[42]	[33]	Moving Guide T Preparation	T	DM1, DM16	
[43]	[19]	TG Post Assembly	T	DM1, DM16	*(L-13)
[44]	[28]	Rack Assembly	R	DM17	*(P-9)
[45]	[44]	F Door Opener	R	DM17	
[46]	[46]	Cleaner Assembly	T	DM1, DM6	
[47]	[46]	CL Post	T	DM6	*(L-14)

↓ ↓ ↓ ↓ ↓ ↓ ↓
(1) (2) (3) (4) (5) (6) (7)

(1): Follow steps in sequence. When reassembling, follow the steps in reverse order.

These numbers are also used as identification (location) No. of parts in the figures.

(2): Indicates the part to start disassembling with in order to disassemble the part in column (1).

(3): Name of the part

(4): Location of the part: T=Top B=Bottom R=Right L=Left

(5): Figure Number

(6): Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.

P=Spring, W=Washer, C=Cut Washer, S=Screw, *=Unhook, Unlock, Release, Unplug, or Desolder

e.g., 2(L-2) = two Locking Tabs (L-2).

(7): Adjustment Information for Installation

(+):Refer to Deck Exploded Views for lubrication.

Top View

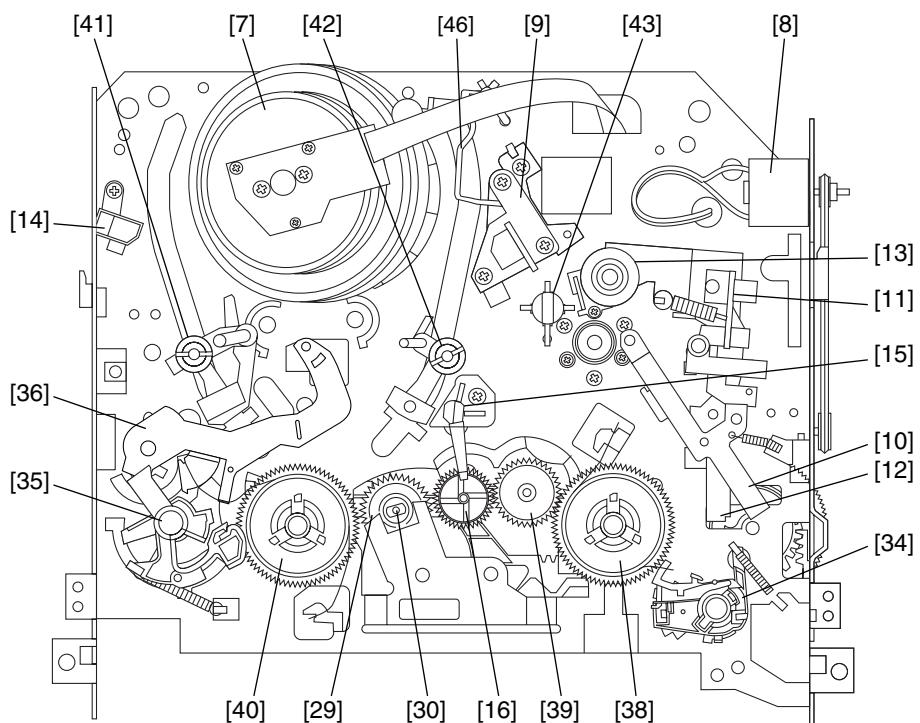


Fig. DM1

Bottom View

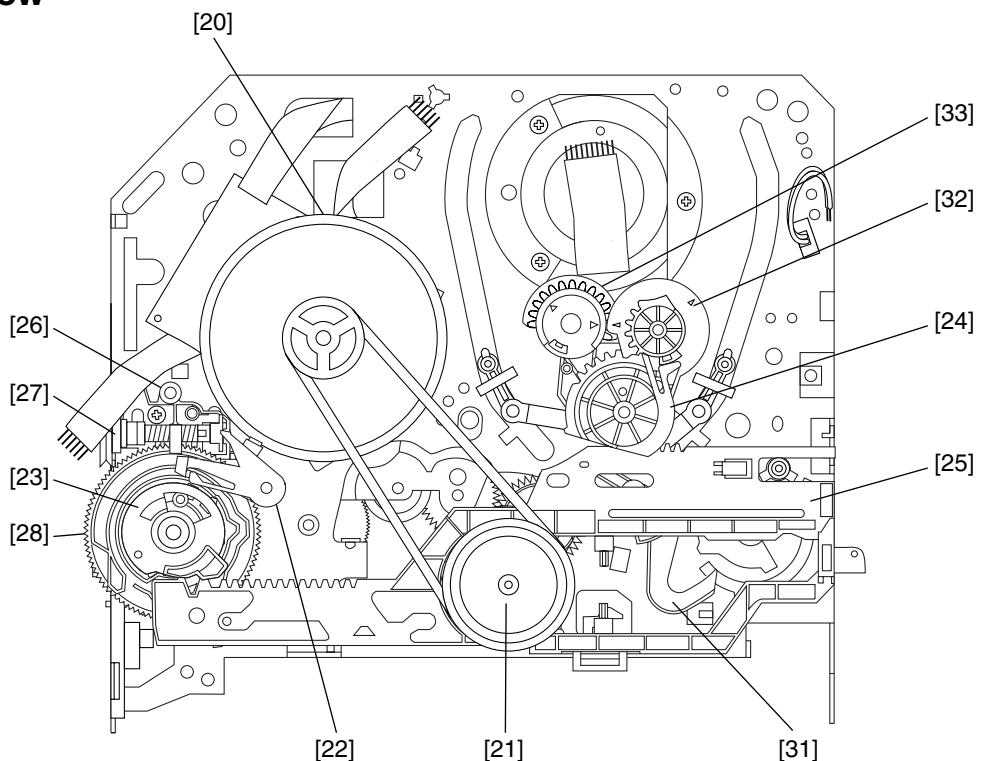
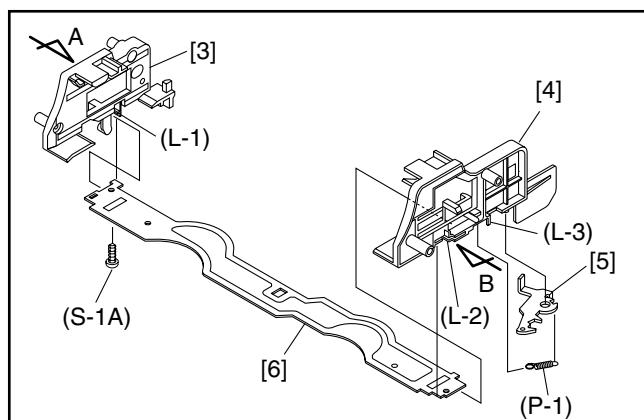
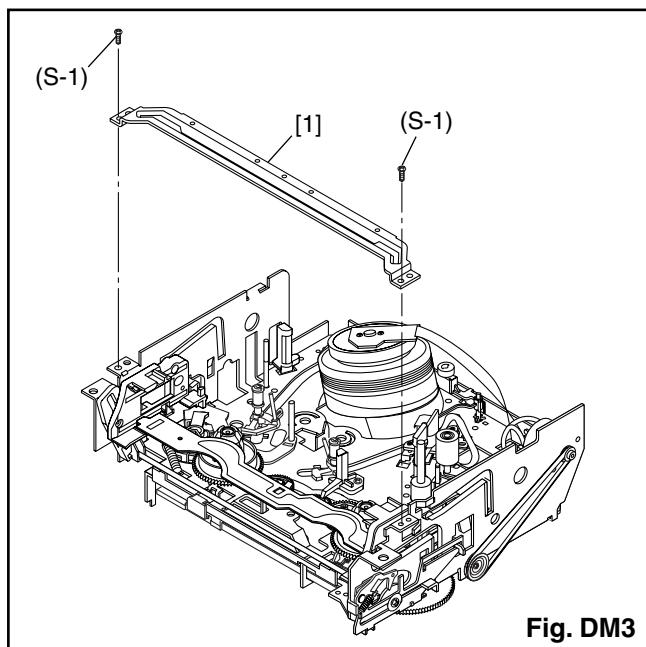
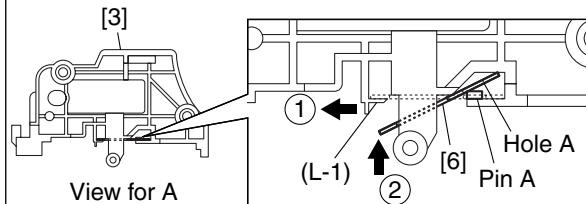


Fig. DM2



Installation of [3] and [6]

First, insert [6] diagonally in [3] as shown below. Then, install [6] in [3] while pushing (L-1) in a direction of arrow. After installing [6] in [3], confirm that pin A of [3] enters hole A of [6] properly.



Installation of [4] and [6]

Install [6] in [4] while pulling (L-2) in a direction of arrow. After installing [6] in [4], confirm that pin B of [4] enters hole B of [6] properly.

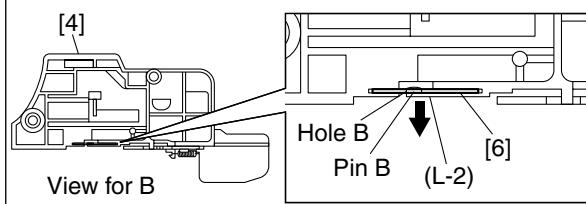
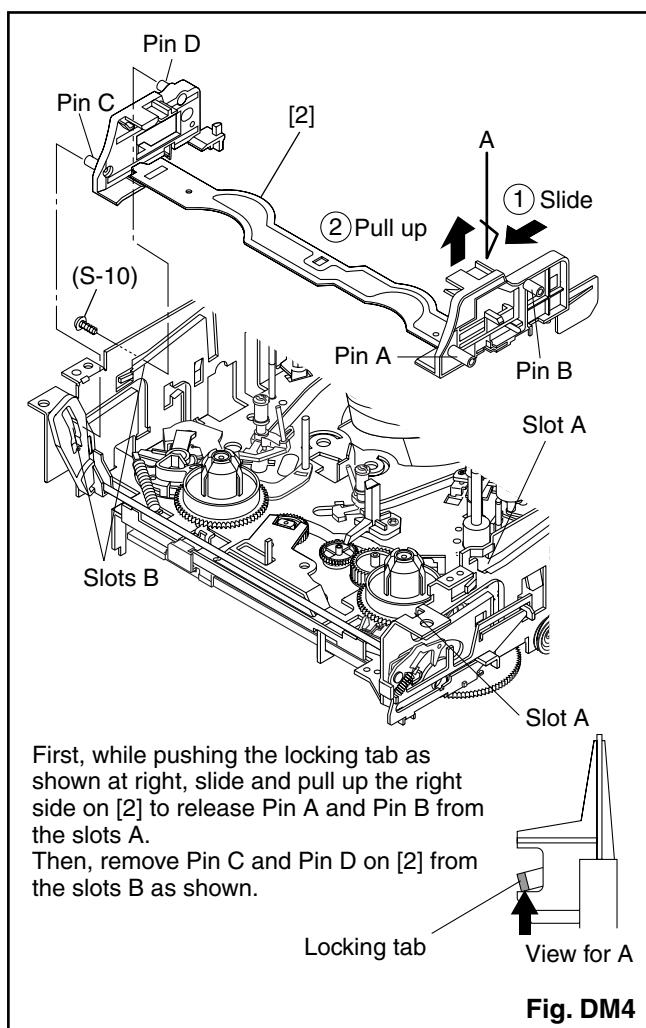
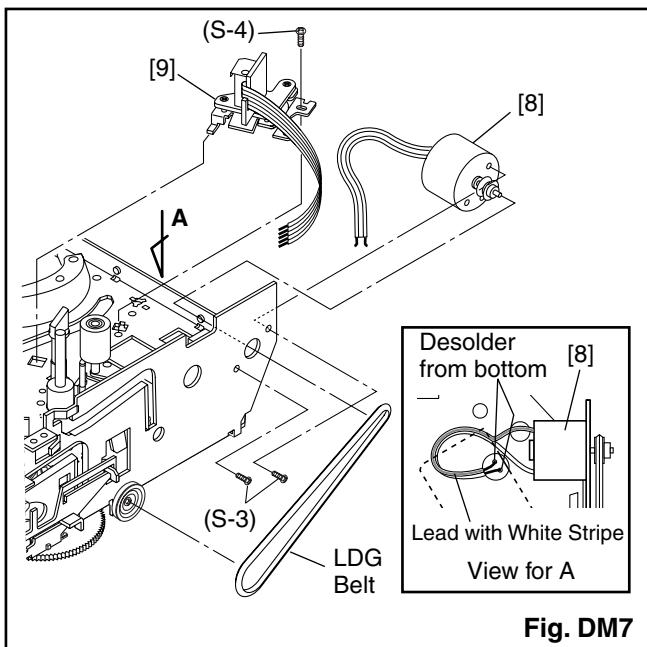
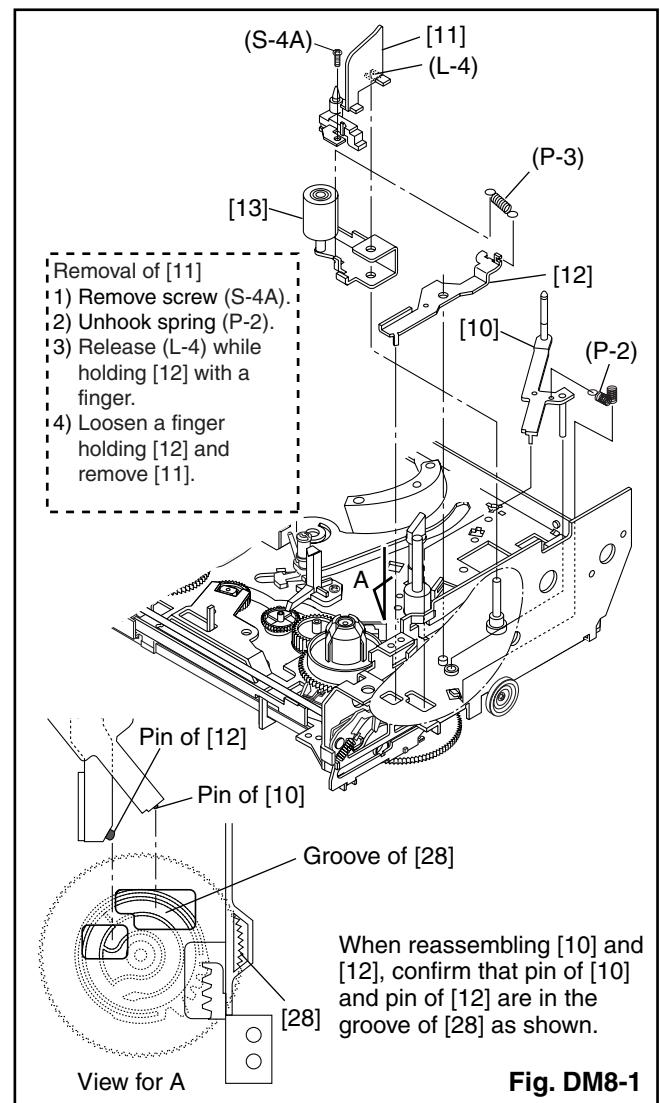
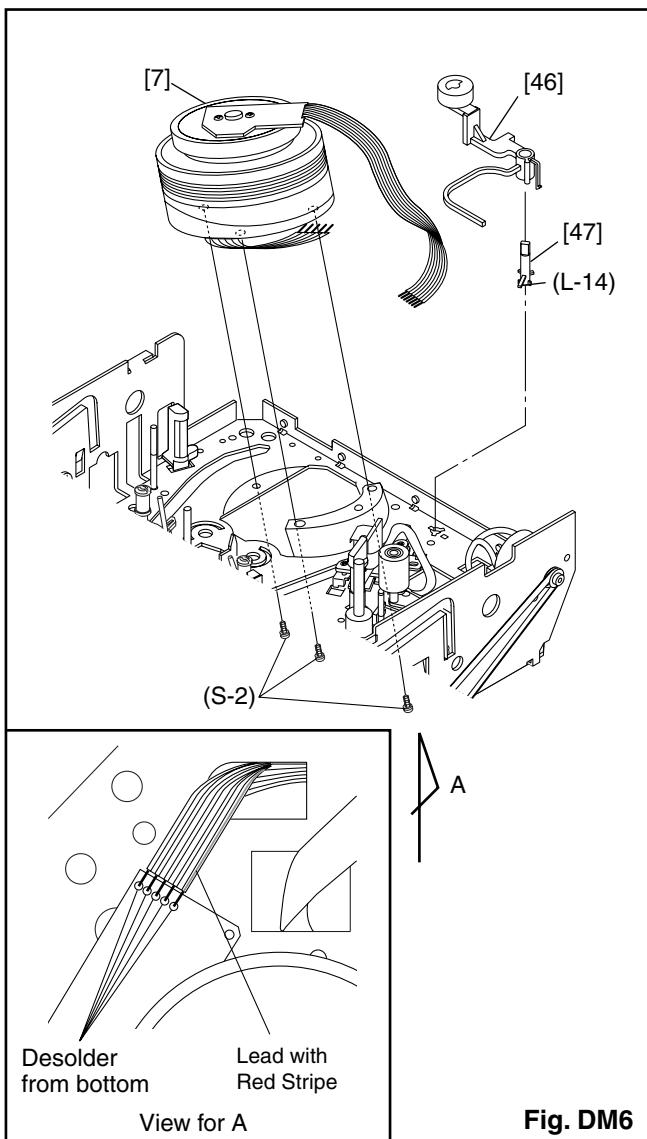


Fig. DM5





Installation of [13] and [12]

Hook spring (P-3) up to [12] and [13], then install them to the specified position so that [12] will be floated slightly while holding [12] and [13]. (Refer to Fig. A.)

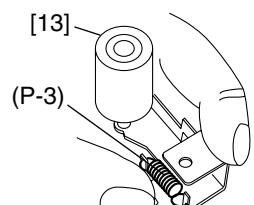


Fig. A

Install pin of [12] in groove of [28]. (Refer to Fig. B.)

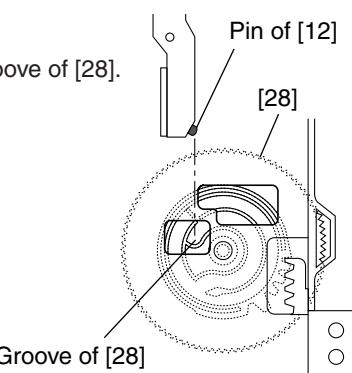


Fig. B (Top view)

Hold [12] and [13] till groove of pin of chassis looks and fit [13] in notch of chassis. Then, turn a few [13] while holding [12]. (Refer to Fig. C.)

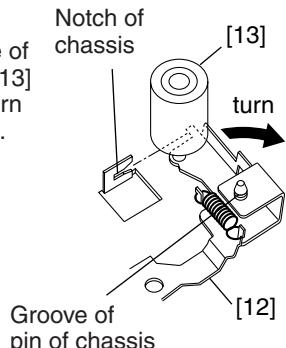


Fig. C

Install [11] and [10] while holding [12]. (Refer to Fig. DM8-1.)

Fig. DM8-2

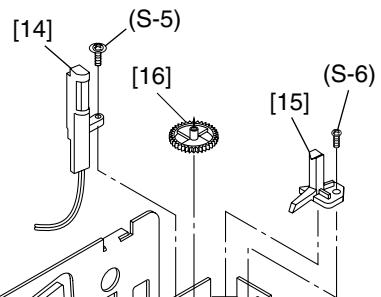


Fig. DM9

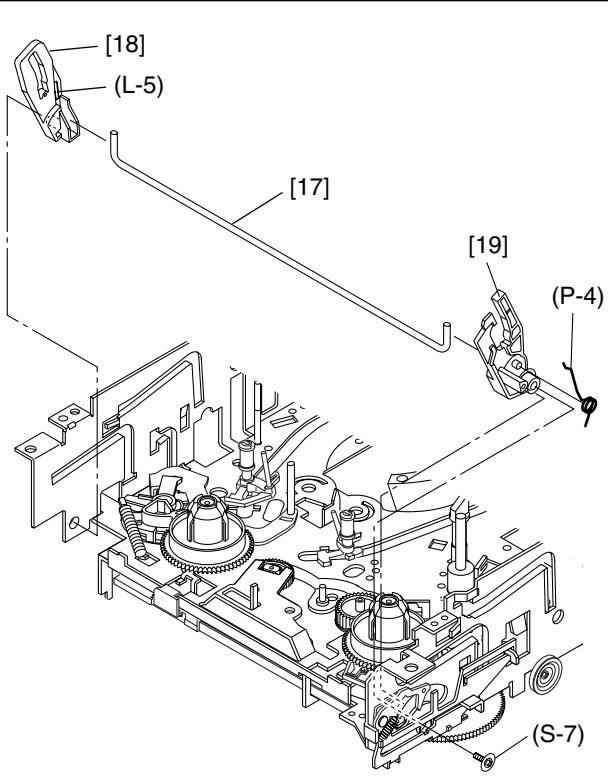


Fig. DM10

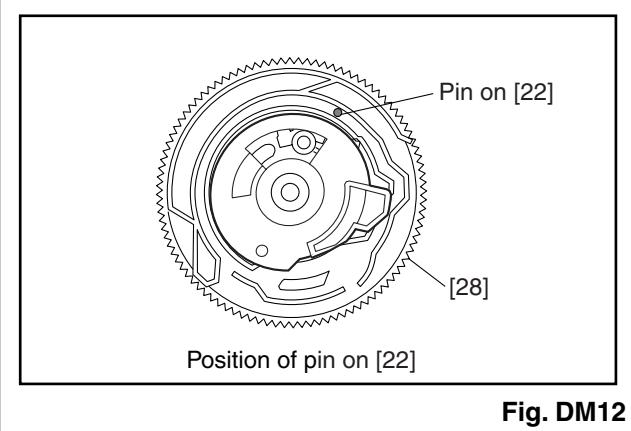
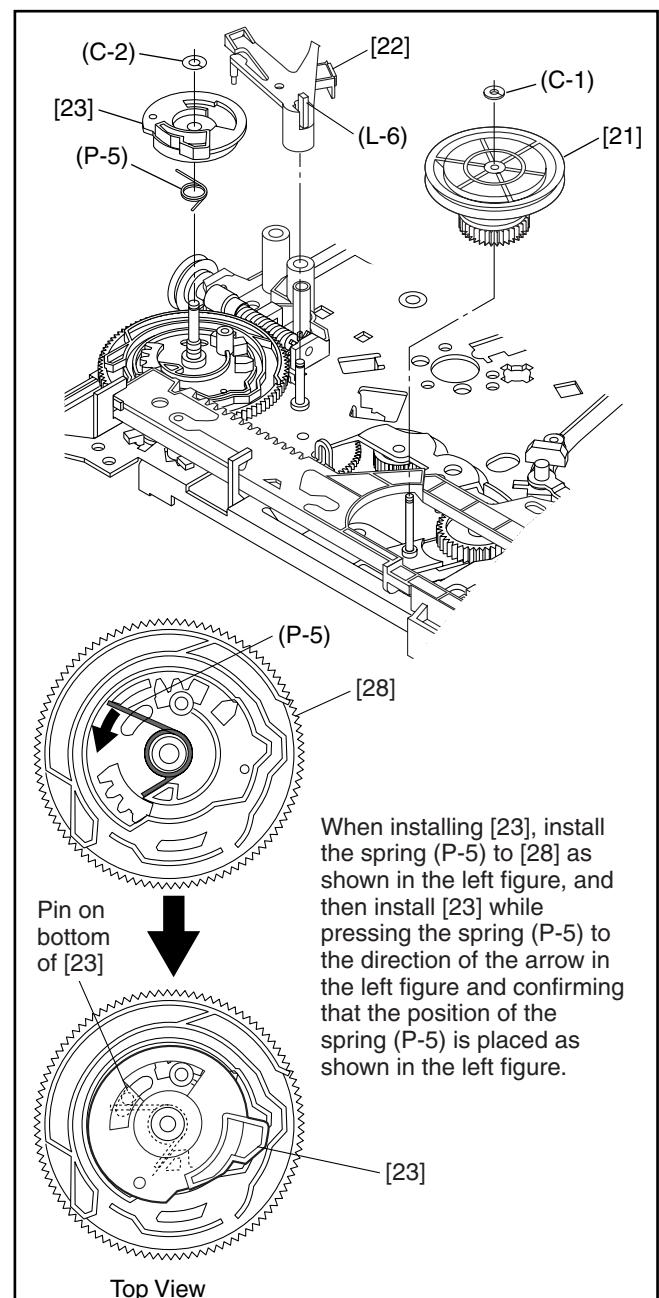
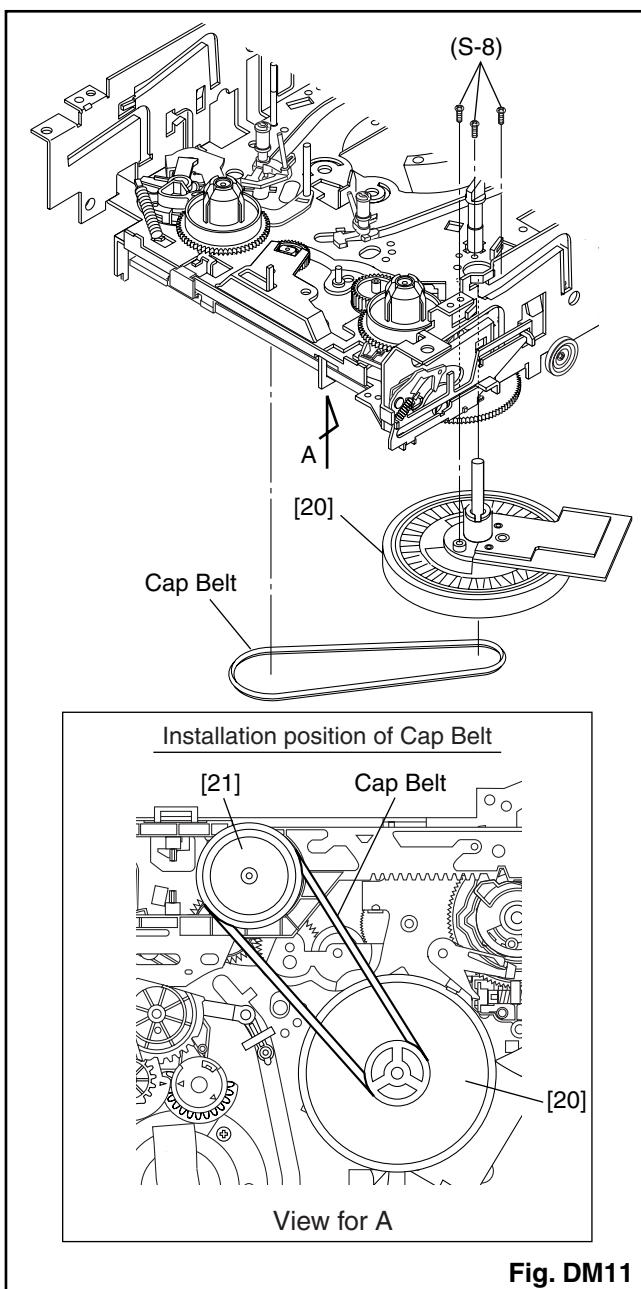
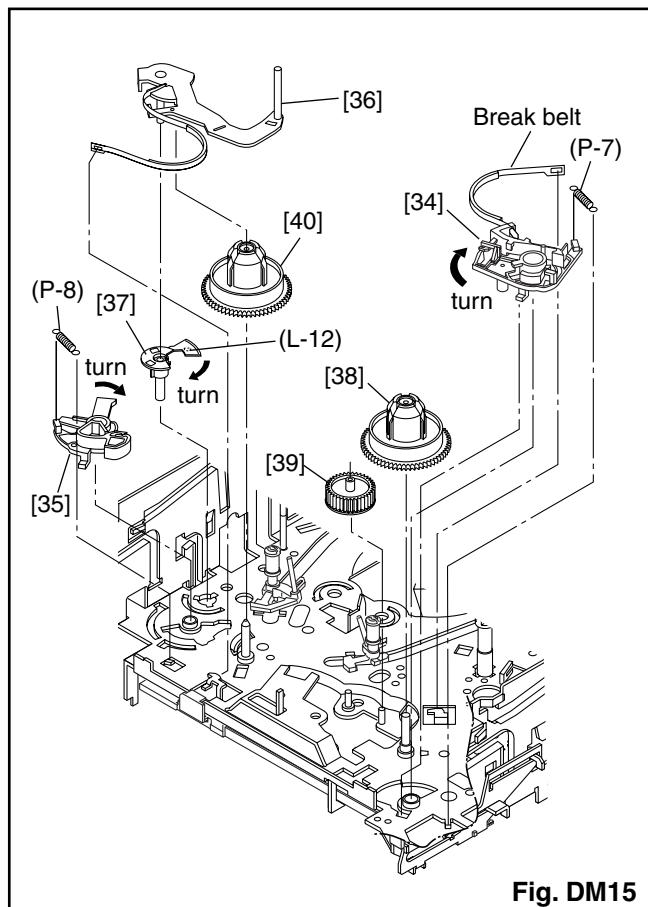
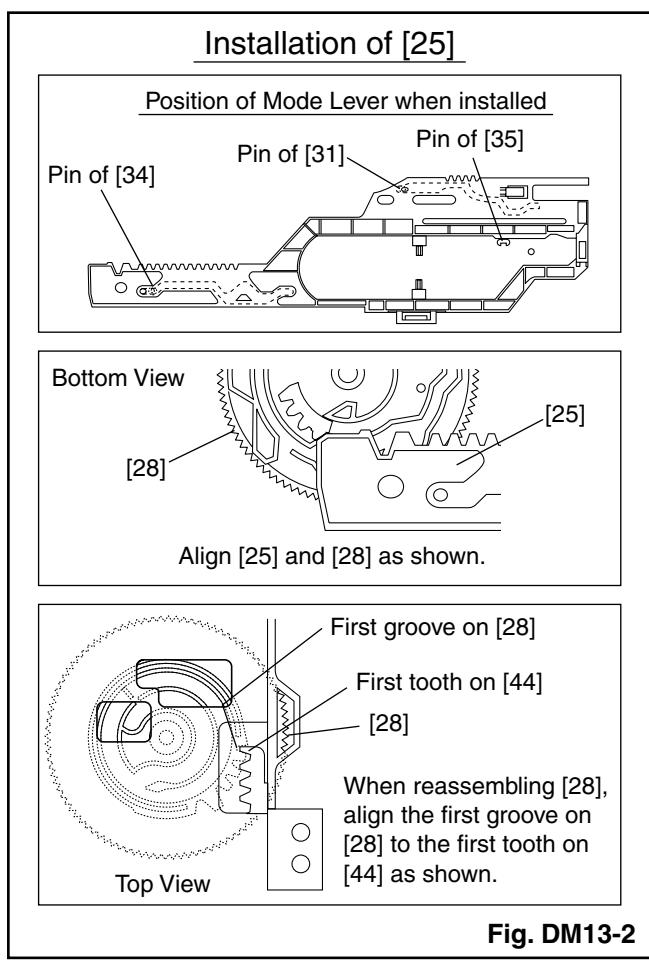
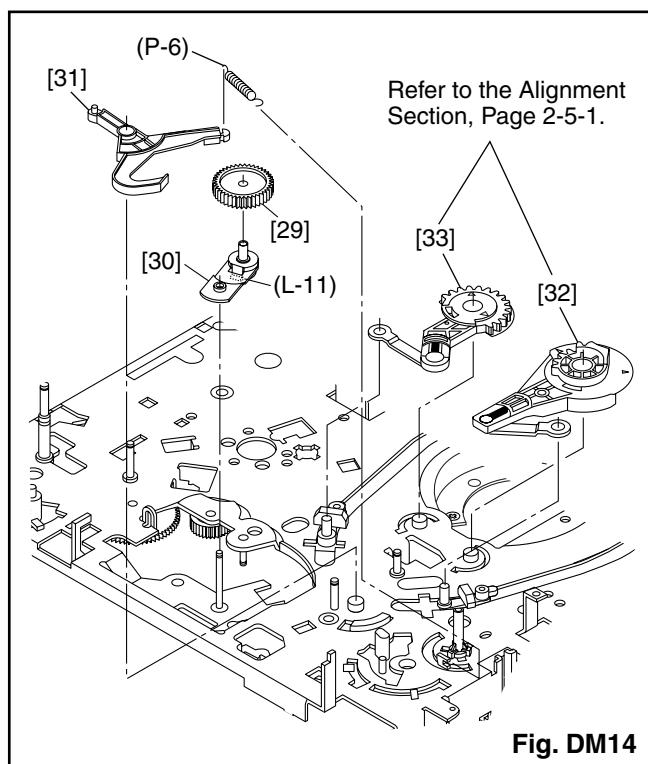
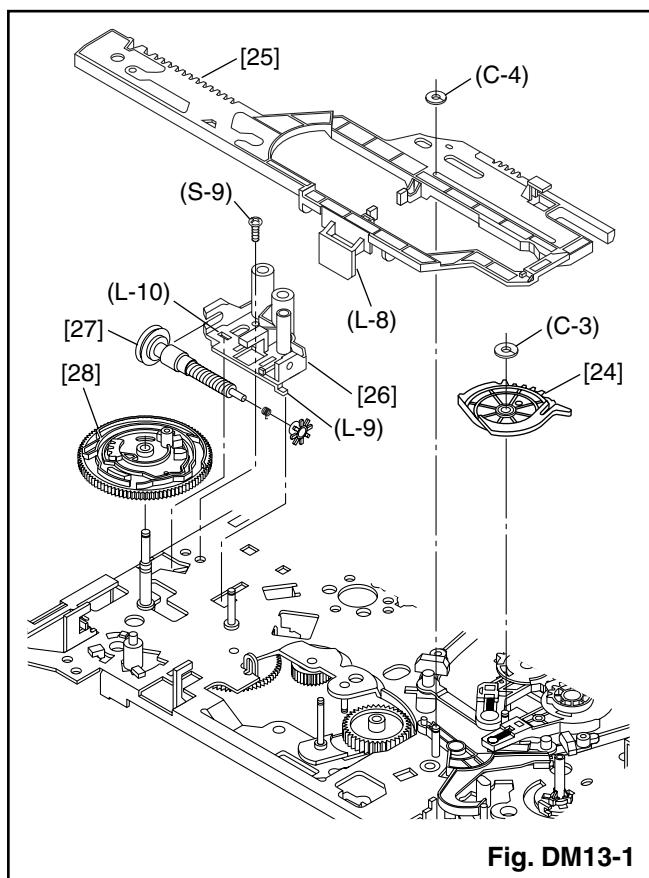


Fig. DM12



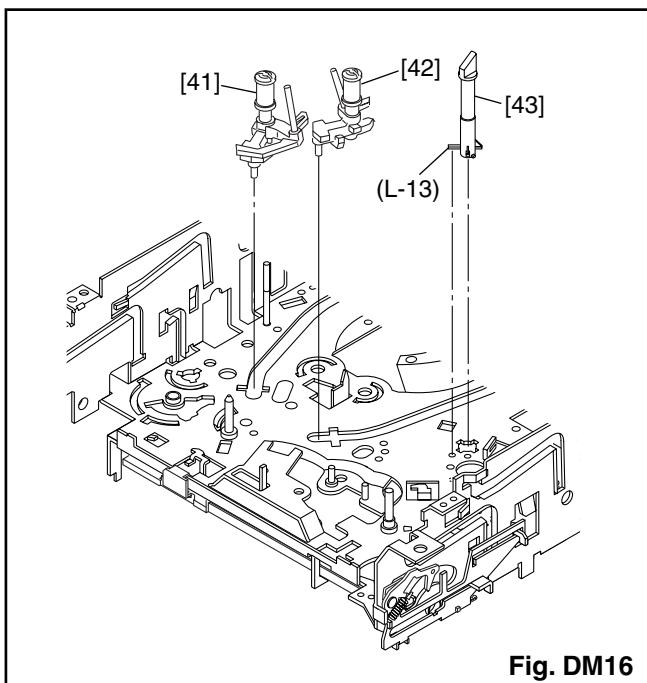


Fig. DM16

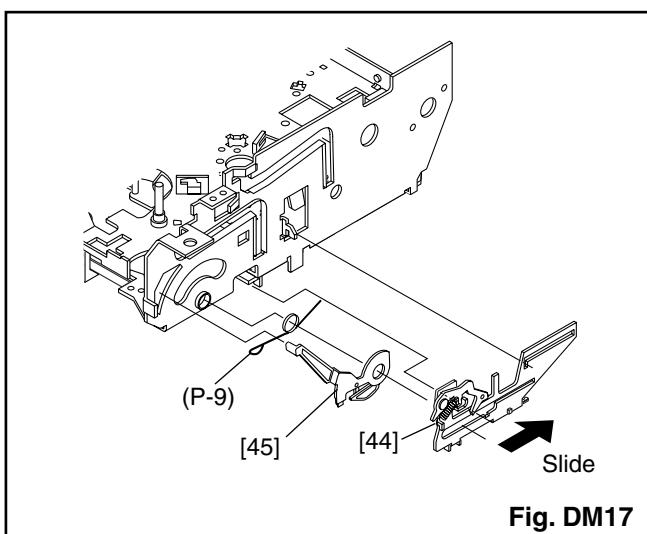


Fig. DM17

ALIGNMENT PROCEDURES OF MECHANISM

The following procedures describe how to align the individual gears and levers that make up the tape loading/unloading mechanism. Since information about the state of the mechanism is provided to the System Control Circuit only through the Mode Switch, it is essential that the correct relationship between individual gears and levers be maintained.

All alignments are to be performed with the mechanism in Eject mode, in the sequence given. Each procedure assumes that all previous procedures have been completed.

IMPORTANT:

If any one of these alignments is not performed properly, even if off by only one tooth, the unit will unload or stop and it may result in damage to the mechanical or electrical parts.

Alignment points in Eject Position

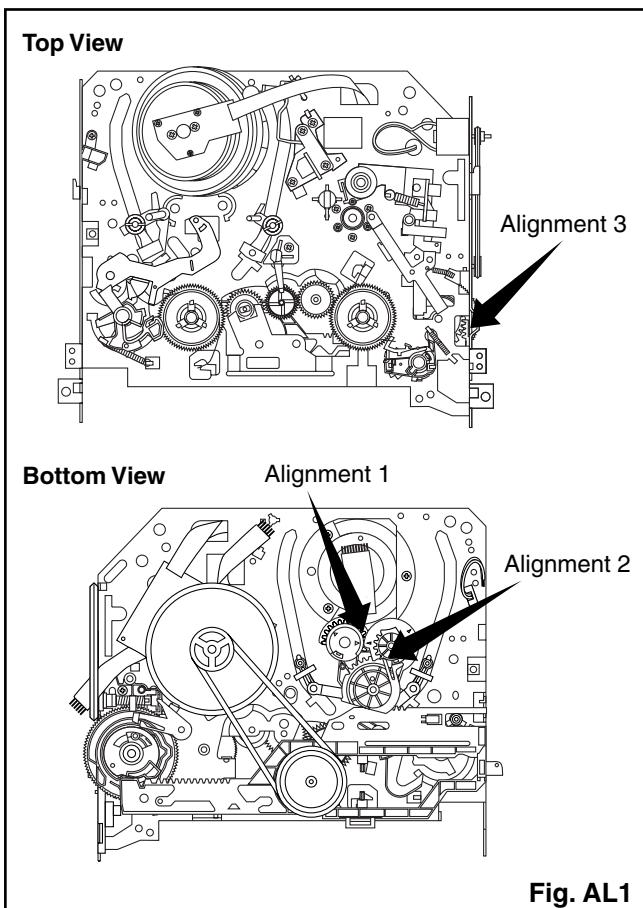


Fig. AL1

Alignment 1

Loading Arm (SP) and (TU) Assembly

Install Loading Arm (SP) and (TU) Assembly so that their triangle marks point to each other as shown in Fig. AL2.

Alignment 2

Mode Gear

Keeping the two triangles pointing at each other, install the Loading Arm (SP) Assembly so that the last tooth of the gear meets the most inside teeth of the Mode Gear. See Fig. AL2.

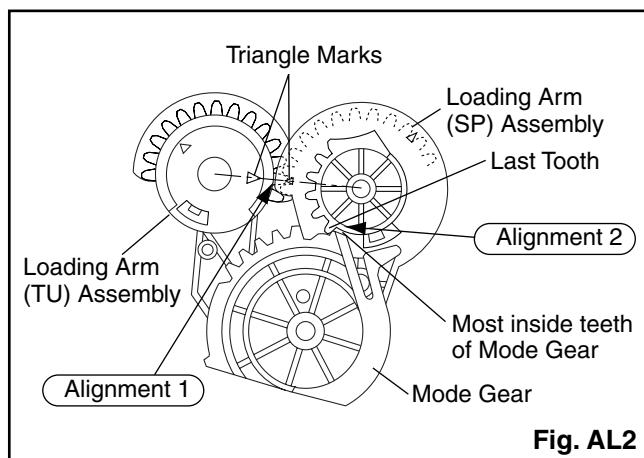


Fig. AL2

Alignment 3

Cam Gear (A), Rack Assembly

Install the Rack Assembly so that the first tooth on the gear of the Rack Assembly meets the first groove on the Cam Gear (A) as shown in Fig. AL3.

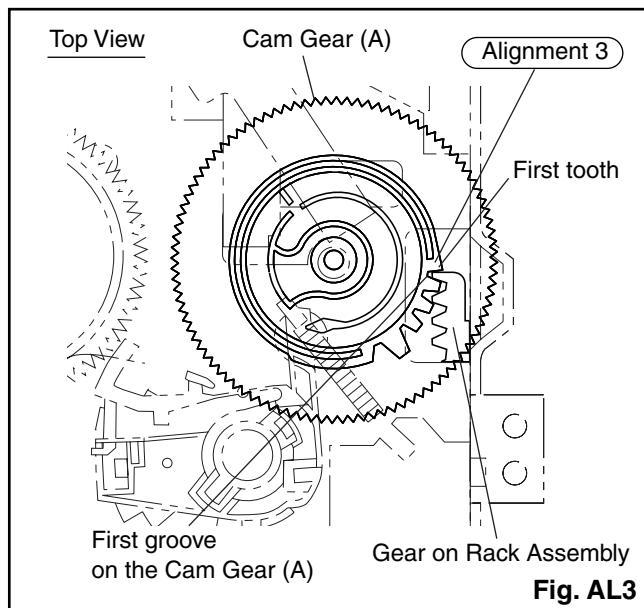
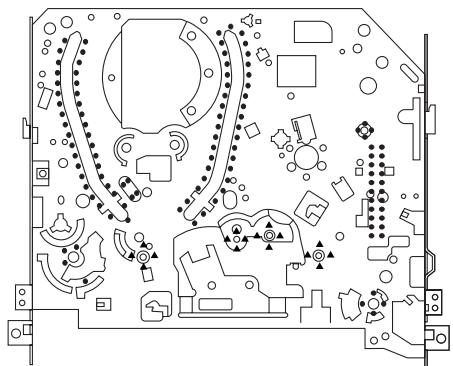
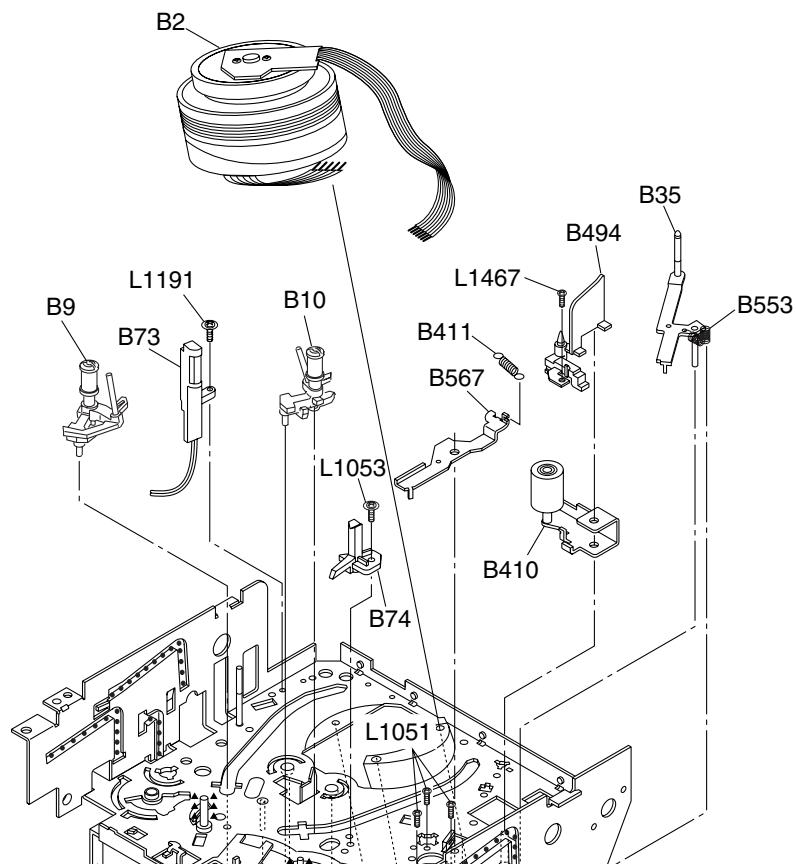


Fig. AL3

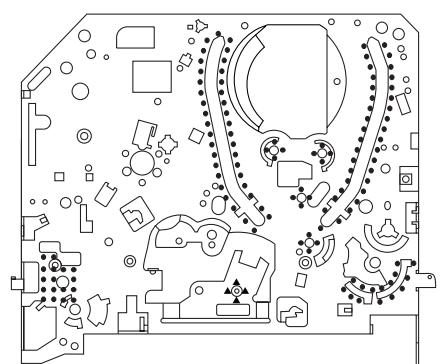
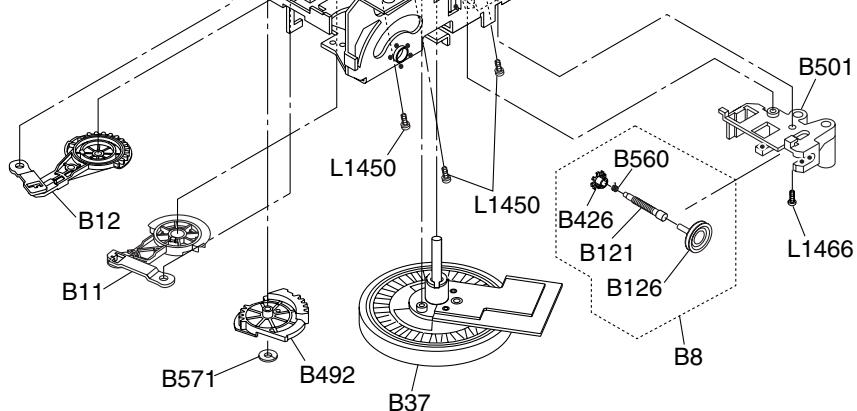
DECK EXPLODED VIEWS

Deck Mechanism View 1

Mark	Description
•••••	Floil G-684G or Multemp MH-D (Blue grease)
▲▲▲▲▲	SLIDUS OIL #150



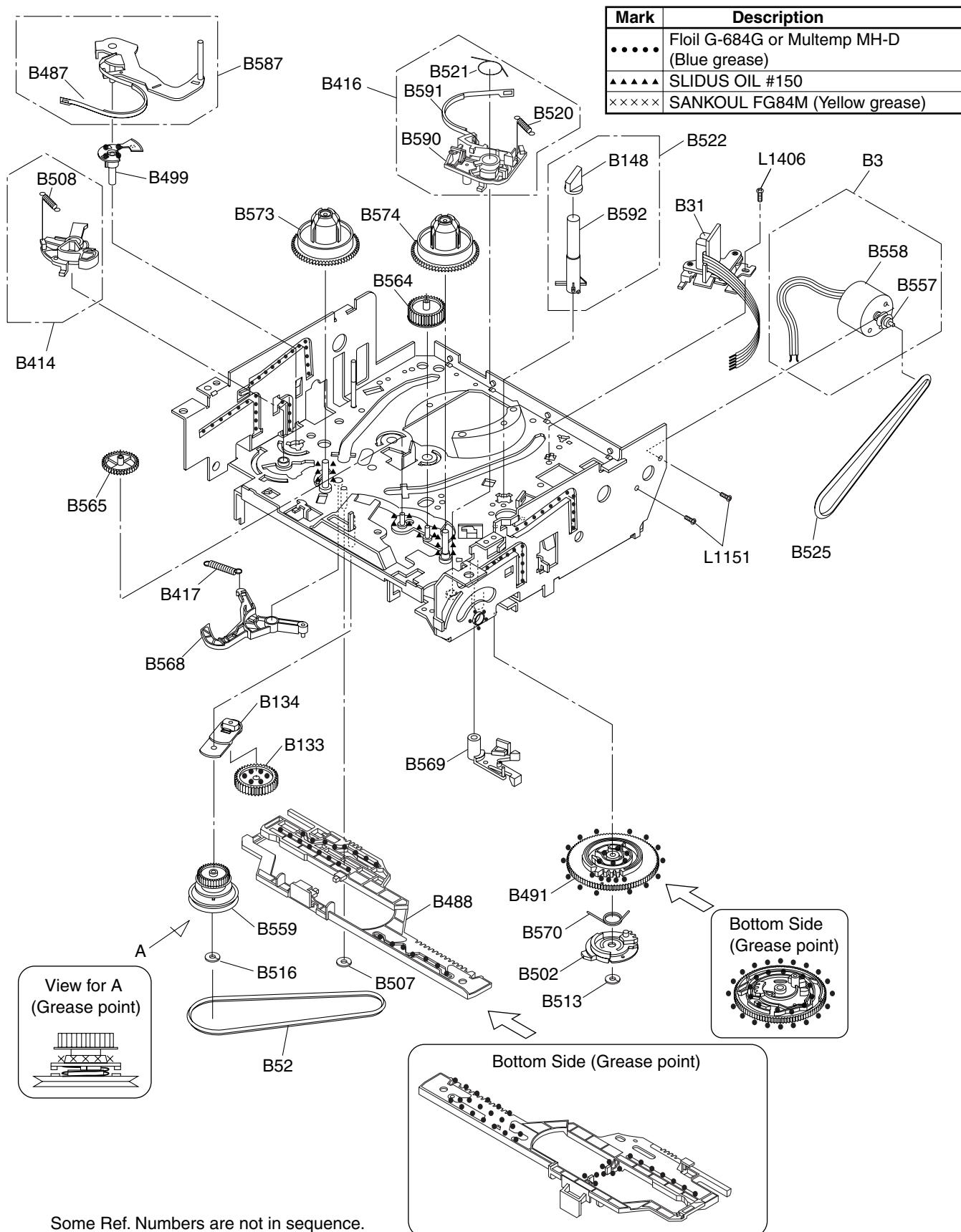
Chassis Assembly
Top View (Lubricating Point)



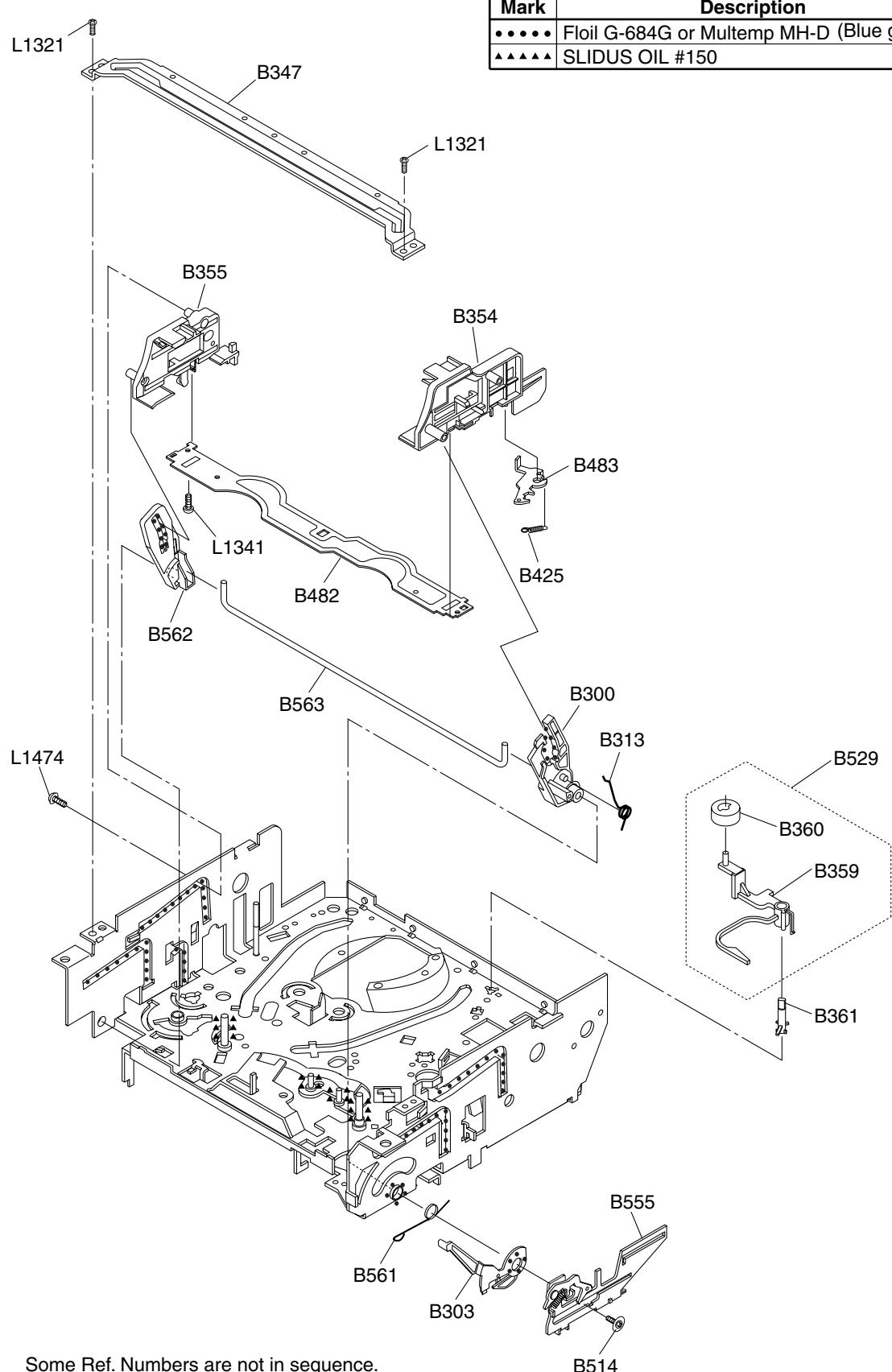
Chassis Assembly
Bottom View (Lubricating Point)

Some Ref. Numbers are not in sequence.

Deck Mechanism View 2



Deck Mechanism View 3



Mark	Description
•••••	Foil G-684G or Multemp MH-D (Blue grease)
▲▲▲▲▲	SLIDUS OIL #150

DECK PARTS LIST		
Pos.	▲ 12 NC	Description
B2	9965 000 23417	CYLINDER ASS.
B3	9965 000 17217	LOADING MOTOR ASS.
B8	9965 000 17191	PULLEY ASS.
B9	9965 000 16632	MOVING GUIDE S PREP.
B10	9965 000 16633	MOVING GUIDE T PREP.
B11	9965 000 16634	LOADING ARM(TU) ASS.
B12	9965 000 16635	LOADING ARM(SP) ASS.
B31	9965 000 23553	AC HEAD ASS.
B35	9965 000 23382	TAPE GUIDE ARM ASS.
B37	9965 000 23554	CAPSTAN MOTOR
B52	9965 000 08593	CAP BELT
B73	9965 000 12210	FE HEAD ASS.
B74	9965 000 08555	PRISM
B121	9965 000 16640	WORM
B126	9965 000 18128	PULLEY
B133	9965 000 17193	IDLER GEAR
B134	9965 000 17194	IDLER ARM
B148	9965 000 12368	TG CAP
B300	9965 000 16643	C DRIVE LEVER(TU)
B303	9965 000 18129	F DOOR OPENER
B313	9965 000 16645	C DRIVE SPRING
B347	9965 000 08445	GUIDE HOLDER A
B354	9965 000 18130	SLIDER(TU)
B355	9965 000 23555	SLIDER(SP)
B359	9965 000 08449	CLEANER LEVER
B360	9965 000 06561	CLEANER ROLLER
B361	9965 000 08450	CL POST
B410	9965 000 16648	PINCH ARM(A) ASS.
B411	9965 000 16649	PINCH SPRING
B414	9965 000 23419	M BRAKE(SP) ASS.
B416	9965 000 17196	M BRAKE(TU) ASS.
B417	9965 000 24008	TENSION SPG
B425	9965 000 08457	LOCK LEVER SPRING
B426	9965 000 08458	KICK PULLEY
B482	9965 000 16653	CASSETTE PLATE
B483	9965 000 16654	LOCK LEVER
B487	9965 000 16655	BAND BRAKE(SP)
B488	9965 000 23420	MODE LEVER
B491	9965 000 17199	CAM GEAR(A)
B492	9965 000 16658	MODE GEAR
B494	9965 000 16659	C DOOR OPENER
B499	9965 000 16660	T LEVER HOLDER
B501	9965 000 16661	WORM HOLDER
B502	9965 000 17200	CAM GEAR(B)
B507	9965 000 05342	REEL WASHER 5*2.1*0.5
B508	9965 000 08470	S BRAKE SPRING
B513	9965 000 17201	CAM WASHER
B514	9965 000 08641	SCREW RACK
B516	9965 000 05342	REEL WASHER 5*2.1*0.5
B520	9965 000 17202	TU BRAKE SPRING
B521	9965 000 16662	REV BRAKE SPRING

DECK PARTS LIST		
Pos.	▲ 12 NC	Description
B522	9965 000 12373	TG POST ASS.
B525	9965 000 12230	LDG BELT
B529	9965 000 08504	CLEANER ASS.
B553	9965 000 12233	REV SPRING
B555	9965 000 16663	RACK ASS.
B557	9965 000 08519	MOTOR PULLEY U5
B558	9965 000 18131	LOADING MOTOR
B559	9965 000 17204	CLUTCH ASS.
B560	9965 000 08522	KICK SPRING
B561	9965 000 08523	F DOOR SPRING
B562	9965 000 16665	C DRIVE LEVER(SP)
B563	9965 000 16666	SLIDER SHAFT
B564	9965 000 17205	M GEAR
B565	9965 000 17206	SENSOR GEAR
B567	9965 000 16669	PINCH ARM(B)
B568	9965 000 16670	BT ARM
B569	9965 000 17207	CAM HOLDER(F)
B570	9965 000 12240	CAM RACK SPRING(HI)
B571	4822 532 13159	P.S.W CUT 1.6X4.0X0.5T
B573	9965 000 17208	REEL(SP)(D2)
B574	9965 000 17209	REEL(TU)(D2)
B587	9965 000 16674	TENSION LEVER ASS.
B590	9965 000 18132	BRAKE ARM(TU)
B591	9965 000 17210	BAND BRAKE(TU)
B592	9965 000 17211	TG POST
L1051	9965 000 05359	SCREW, B-TIGHT M2.6X6 PAN HEAD+
L1053	9965 000 05375	SCREW, S-TIGHT M2.6X8 WASHER HEAD+
L1151	9965 000 08642	SCREW, SEMS M2.6X4 PAN HEAD+
L1191	9965 000 05375	SCREW, S-TIGHT M2.6X8 WASHER HEAD+
L1321	4822 502 14009	SCREW, S-TIGHT M3X6 BIND HEAD+
L1341	9965 000 23375	SCREW, P-TIGHT M2X6 PAN HEAD+
L1406	9965 000 08643	AC HEAD SCREW
L1450	4822 502 14671	SCREW, SEMS M2.6X5 PAN HEAD+
L1466	9965 000 05364	SCREW, S-TIGHT M2.6X6 BIND HEAD+
L1467	9965 000 23376	SCREW M2.6X5 WASHER HEAD+
L1474	4822 502 14019	SCREW, P-TIGHT M2.6X12 WASHER HEAD+