



SERVICE MANUAL

Sec. 1: Main Section

- Specifications
- Preparation for Servicing
- Adjustment Procedures
- Schematic Diagrams
- CBA's

Sec. 2: Deck Mechanism Section

- Standard Maintenance
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- Disassembly/Assembly of Mechanism
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- Exploded views
- Parts List

VIDEO CASSETTE RECORDER

27A-850



MAIN SECTION

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- Specifications
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- Adjustment Procedures
- Schematic Diagrams
- CBA's

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SPECIFICATIONS

Description	Unit	Minimum	Nominal	Maximum	Remark
1. Video					
1-1. Video Output (PB)	Vp-p	0.8	1.0	1.2	FL6A
1-2. Video Output (R/P)	Vp-p	0.8	1.0	1.2	
1-3. Video S/N Y (R/P)	dB	40	45		SP Mode, W/O Burst
1-4. Video Color S/N AM (R/P)	dB	37	41		SP Mode
1-5. Video Color S/N PM (R/P)	dB	30	36		SP Mode
1-6. Resolution (PB)	Line	230	245		SP Mode
2. Servo					
2-1. Jitter Low	μsec		0.07	0.12	SP Mode
2-2. Wow & Flutter	%		0.3	0.5	SP Mode
3. Normal Audio					
3-1. Output (PB)	dBV	-9	-6	-3	SP Mode
3-2. Output (R/P)	dBV	-9	-6	-1.5	SP Mode
3-3. S/N (R/P)	dB	36	41		SP Mode
3-4. Distortion (R/P)	%		1.0	4.0	SP Mode
3-5. Freq. resp (R/P) at 200Hz	dB	-7	-4		SP Mode
(-20dB ref. 1kHz) at 6kHz	dB	-10	-4		SP Mode
4. Tuner					
4-1. Video output	Vp-p	0.8	1.0	1.2	E-E Mode
4-2. Video S/N	dB	39	42		E-E Mode
4-3. Audio output	dB	-10	-6	-2	E-E Mode
4-4. Audio S/N	dB	40	46		E-E Mode
5. Hi-Fi Audio					
5-1. Output	dBV	-12	-8	-4	SP Mode
5-2. Dynamic Range	dB	70	85		SP Mode
5-3. Freq. resp (6dB B.W)	Hz		20 ~ 20K		SP Mode

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

IMPORTANT SAFETY PRECAUTIONS

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 carefully 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 edges 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. Be careful that foreign objects (screws, solder droplets, etc.) do not remain inside the set.
- K. Crimp type wire connector
The power transformer uses crimp type connectors which connect the power cord and the primary side of the transformer. When replacing the transformer, follow these steps carefully and precisely to prevent shock hazards.
Replacement procedure
 - 1) Remove the old connector by cutting the wires at a point close to the connector.
Important: Do not re-use a connector. (Discard it.)
 - 2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.
 - 3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.
 - 4) Use a crimping tool to crimp the metal sleeve at its center. Be sure to crimp fully to the complete closure of the tool.
- L. When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC outlet.

Safety Check after Servicing

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

1. Clearance Distance

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

Table 1 : Ratings for selected area

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

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

2. Leakage Current Test

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

Measuring Method (Power ON) :

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

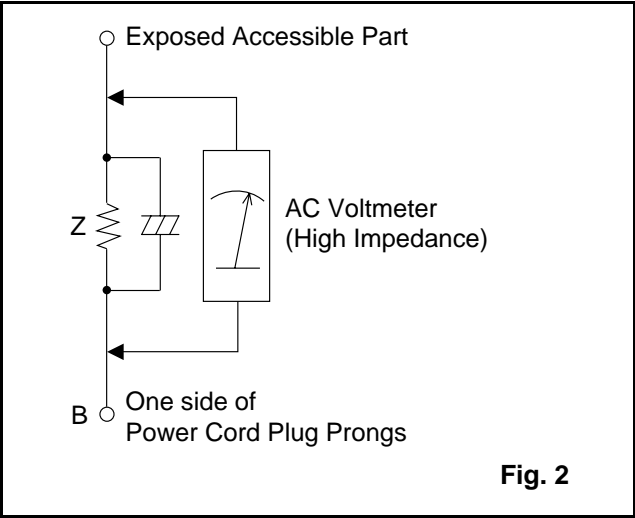
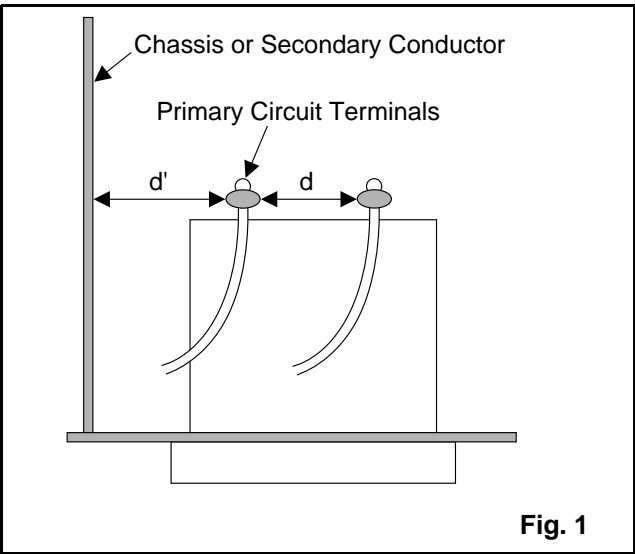


Table 2: Leakage current ratings for selected areas

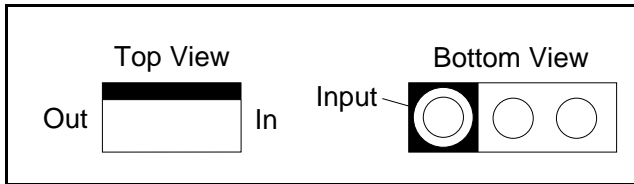
AC Line Voltage	Load Z	Leakage Current (i)	One side of power cord plug prongs (B) to:
230 V	2kΩ RES. Connected in parallel	$i \leq 0.7\text{mA AC Peak}$ $i \leq 2\text{mA DC}$	RF or Antenna terminals
	50kΩ RES. Connected in parallel	$i \leq 0.7\text{mA AC Peak}$ $i \leq 2\text{mA DC}$	A/V Input, Output

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

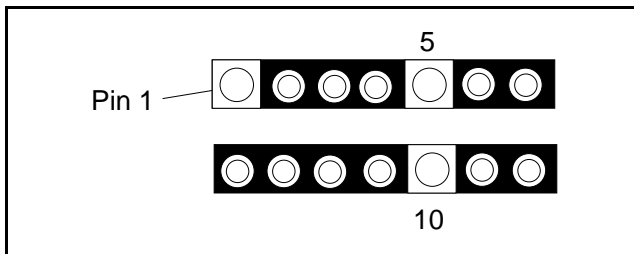
STANDARD NOTES FOR SERVICING

Circuit Board Indications

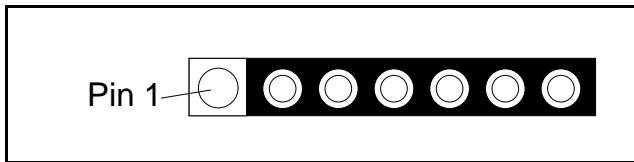
- a. The output pin of the 3 pin Regulator ICs is indicated as shown.



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

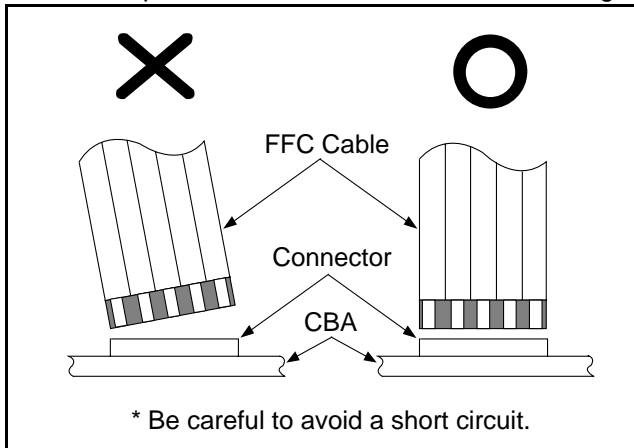


- c. The 1st pin of every male connector is indicated as shown.



Instructions for Connectors

- When you connect or disconnect the FFC (Flexible Foil Connector) cable, be sure to first disconnect the AC cord.
- FFC (Flexible Foil Connector) cable should be inserted parallel into the connector, not at an angle.

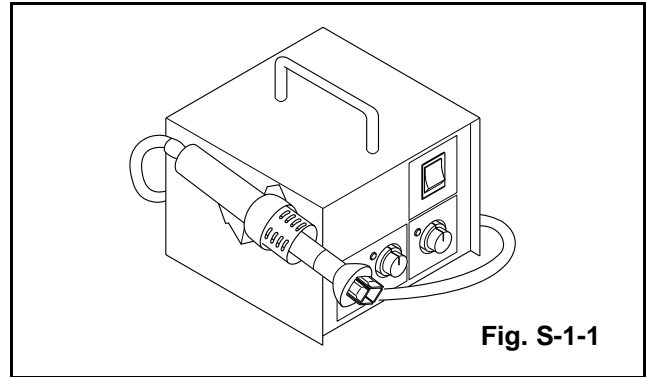


How to Remove / Install Flat Pack-IC

1. Removal

With Hot-Air Flat Pack-IC Desoldering Machine:

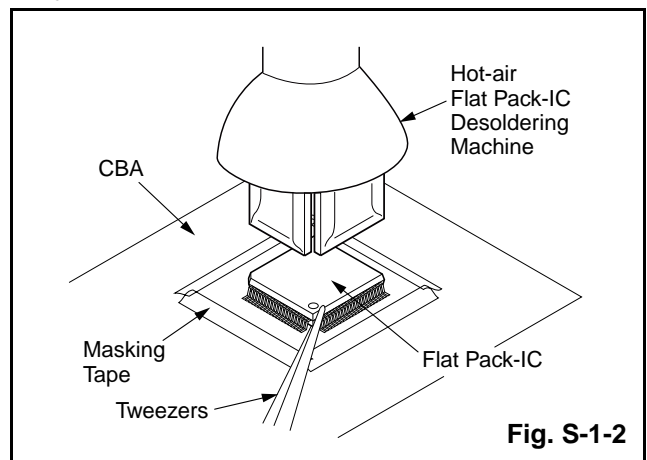
- (1) Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. S-1-1)



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

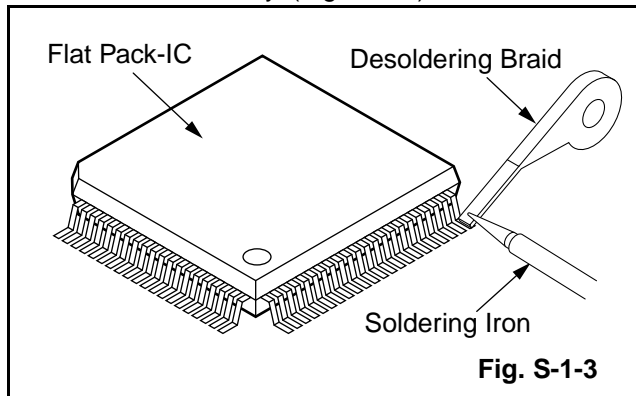
Caution:

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

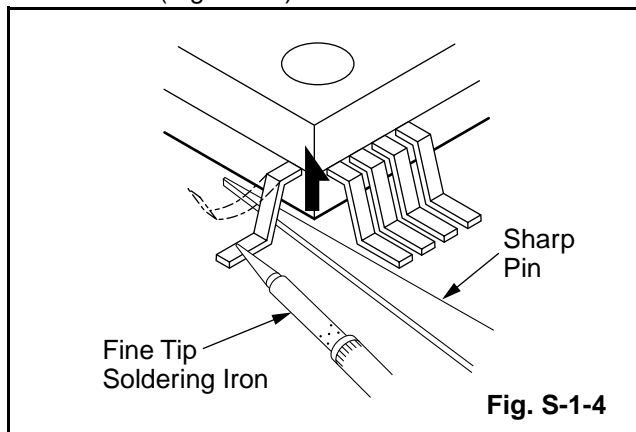


With Soldering Iron:

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



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



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

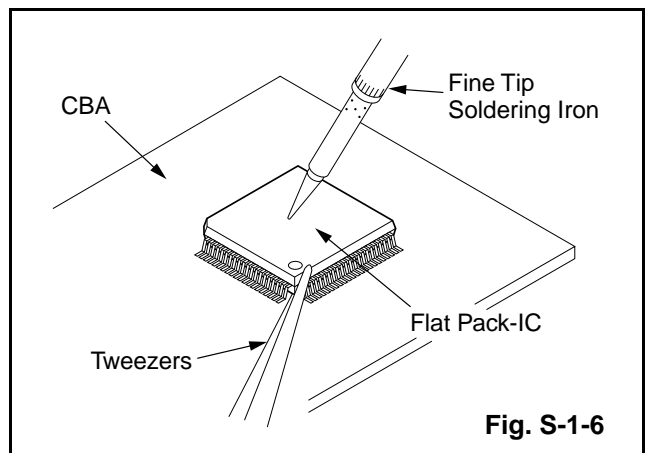
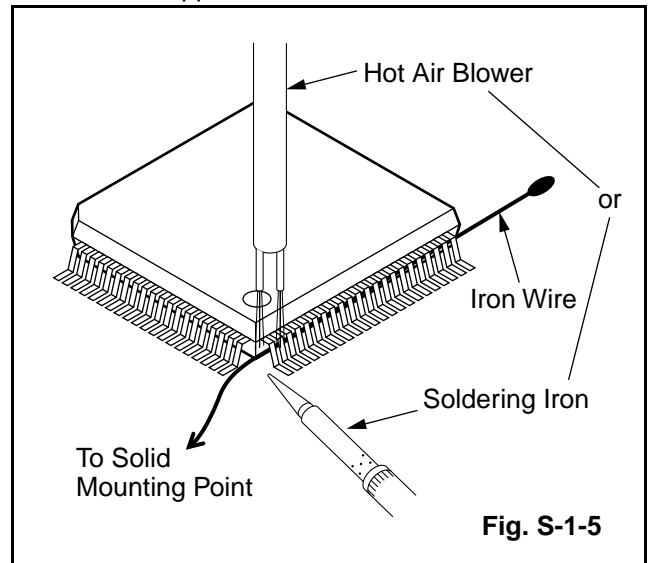
With Iron Wire:

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

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

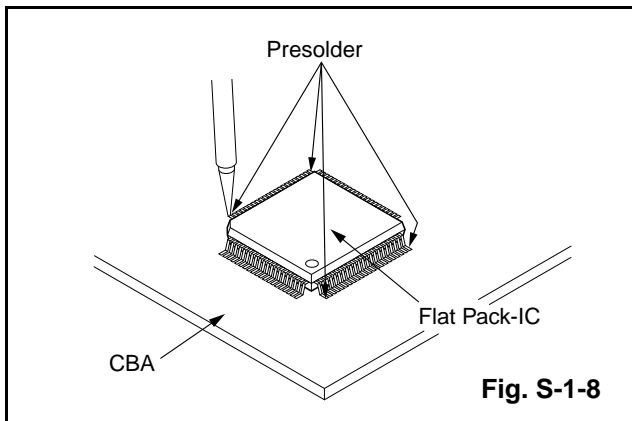
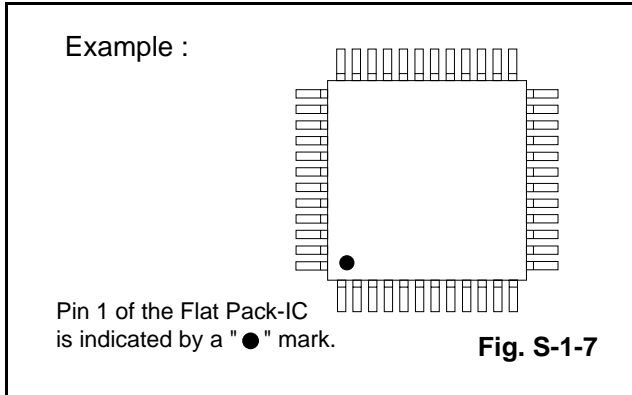
Note:

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



2. Installation

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



Instructions for Handling Semi-conductors

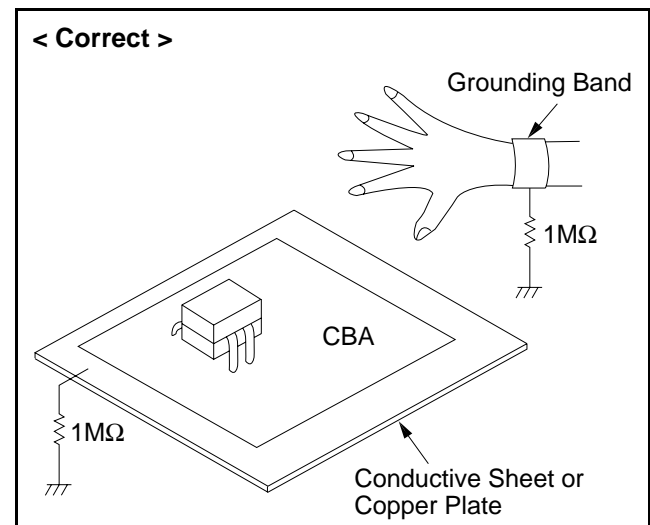
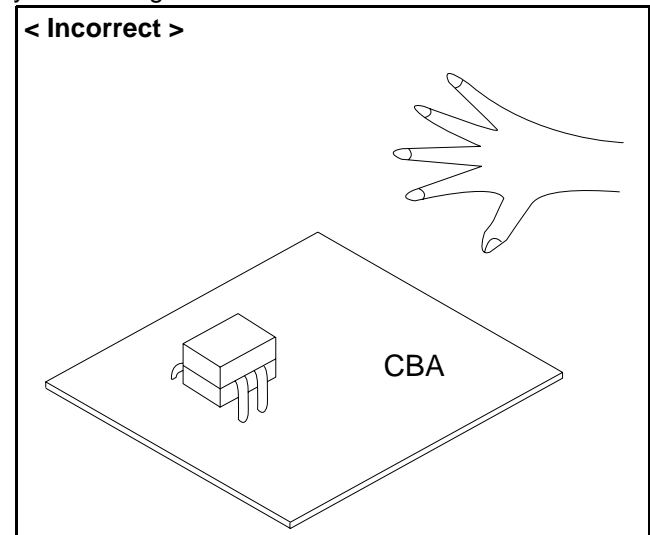
Electrostatic breakdown of the semi-conductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

1. Ground for Human Body

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

2. Ground for Workbench

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



PREPARATION FOR SERVICING

How to Enter the Service Mode

About Optical Sensors

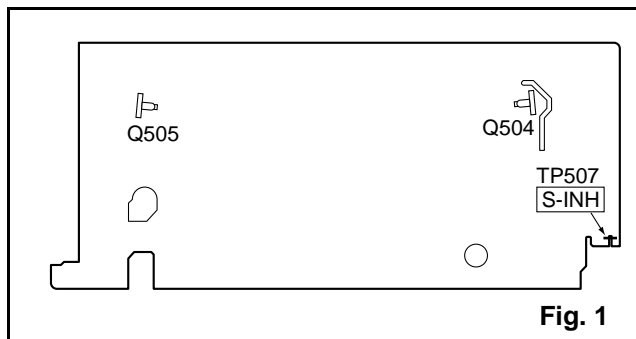
Caution:

An optical sensor system is used for the Tape Start and End Sensors on this equipment. Carefully read and follow the instructions below. Otherwise the unit may operate erratically.

What to do for preparation

Insert a tape into the Deck Mechanism Assembly and press the PLAY button. The tape will be loaded into the Deck Mechanism Assembly. Make sure the power is on, connect TP507 (SENSOR INHIBITION) to GND. This will stop the function of Tape Start Sensor, Tape End Sensor and Reel Sensors. (If these TPs are connected before plugging in the unit, the function of the sensors will stay valid.) See Fig. 1.

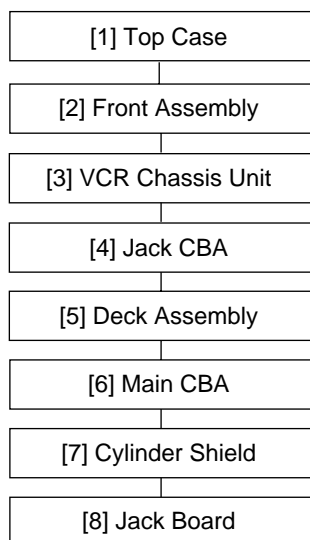
Note: Because the Tape End Sensors are inactive, do not run a tape all the way to the start or the end of the tape to avoid tape damage.



CABINET DISASSEMBLY INSTRUCTIONS

1. Disassembly Flowchart

This flowchart indicates the disassembly steps 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 originally.



2. Disassembly Method

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	Note
[1]	Top Case	1	7(S-1)	-
[2]	Front Assembly	2	*3(L-1),*4(L-2)	-
[3]	VCR Chassis Unit	3	5(S-2), 3(S-3), (S-4),	1
[4]	Jack CBA	4	Desolder, (S-5)	-
[5]	Deck Assembly	5,6	2(S-6), Desolder	2,3
[6]	Main CBA	5	*(L-3)	-
[7]	Cylinder Shield	5	2(S-7)	-
[8]	Jack Board	5	-----	-

↓
(1)

↓
(2)

↓
(3)

↓
(4)

↓
(5)

- (1): Identification (location) No. of parts in the figures
 (2): Name of the part
 (3): Figure Number for reference
 (4): Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
 P=Spring, L=Locking Tab, S=Screw, CN=Connector
 *=Unhook, Unlock, Release, Unplug, or Desolder
 e.g. 2(S-2) = two Screws (S-2),
 2(L-2) = two Locking Tabs (L-2)
 (5): Refer to "Reference Notes."

Reference Notes

CAUTION: Locking Tabs (L-1) and (L-2) are fragile. Be careful not to break them.

- Remove five Screws (S-2), three Screws (S-3) and Screw (S-4). Then, slowly lift the VCR Chassis Unit (Deck Assembly, Jack CBA and Main CBA) up.
- When reassembling, solder wire jumpers as shown in Fig. 5.
- Before installing the Deck Assembly, be sure to place the pin of LD-SW on Main CBA as shown in Fig. 6. Then, install the Deck Assembly while aligning the hole of Cam Gear with the pin of LD-SW, the shaft of Cam Gear with the hole of LD-SW as shown in Fig. 6.

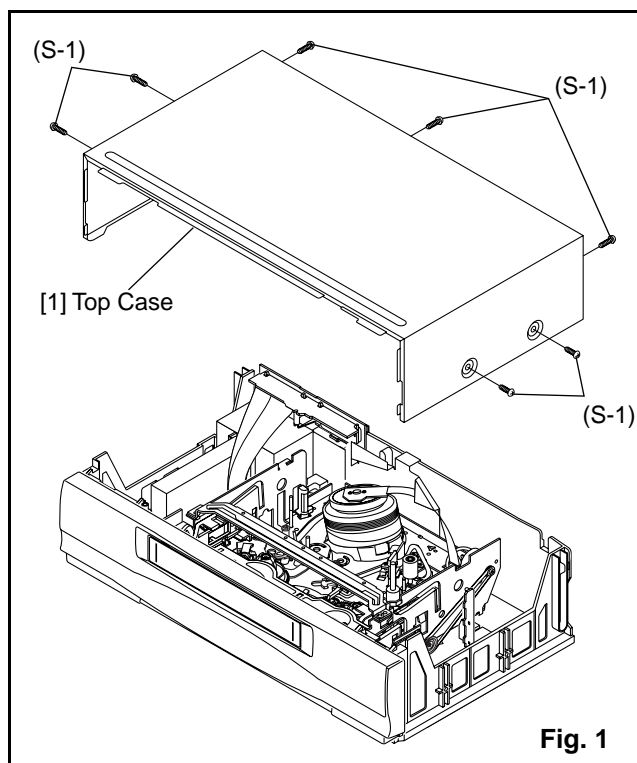
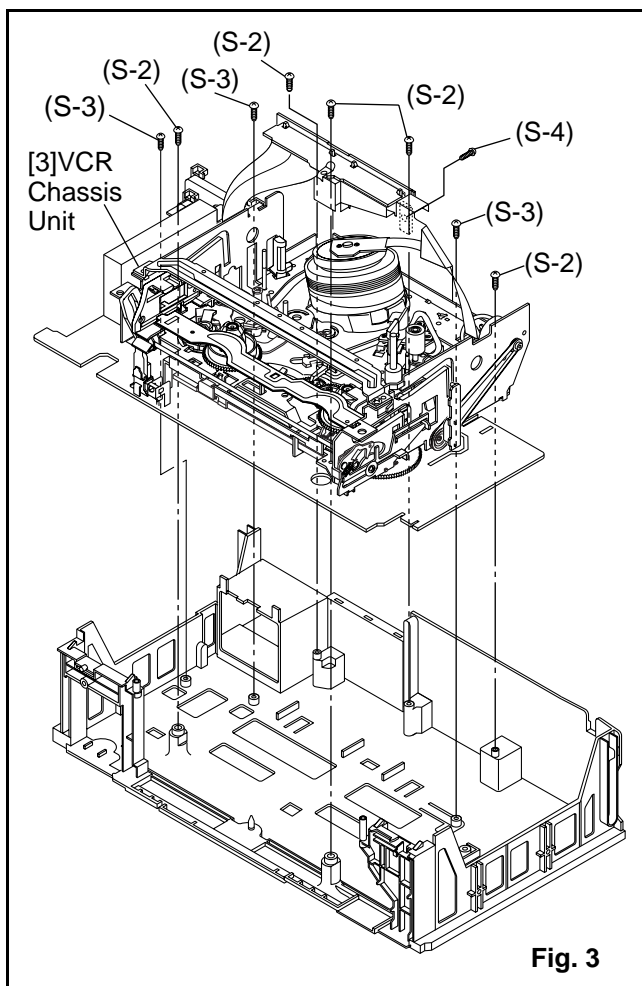
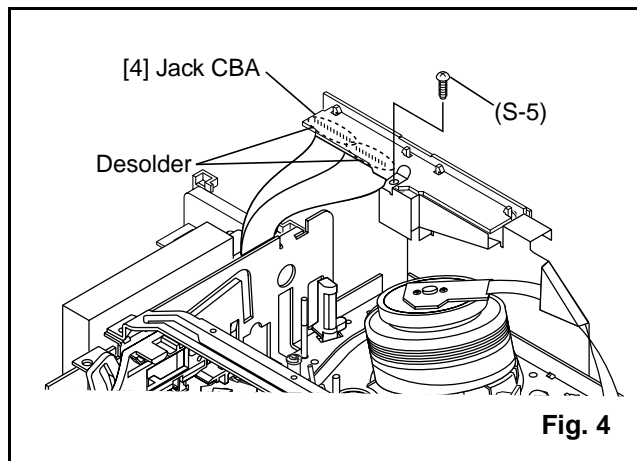
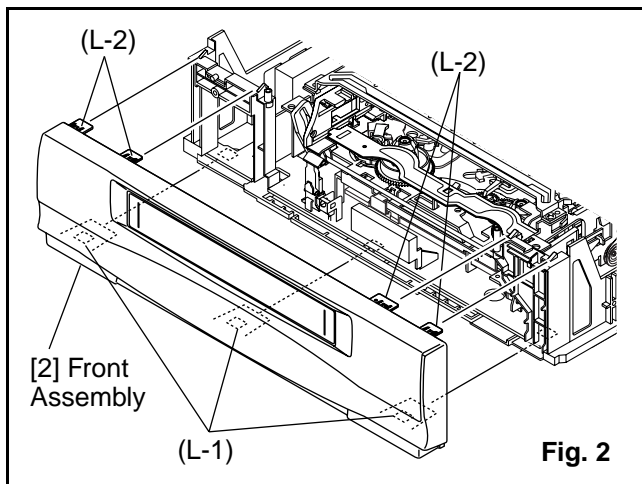


Fig. 1



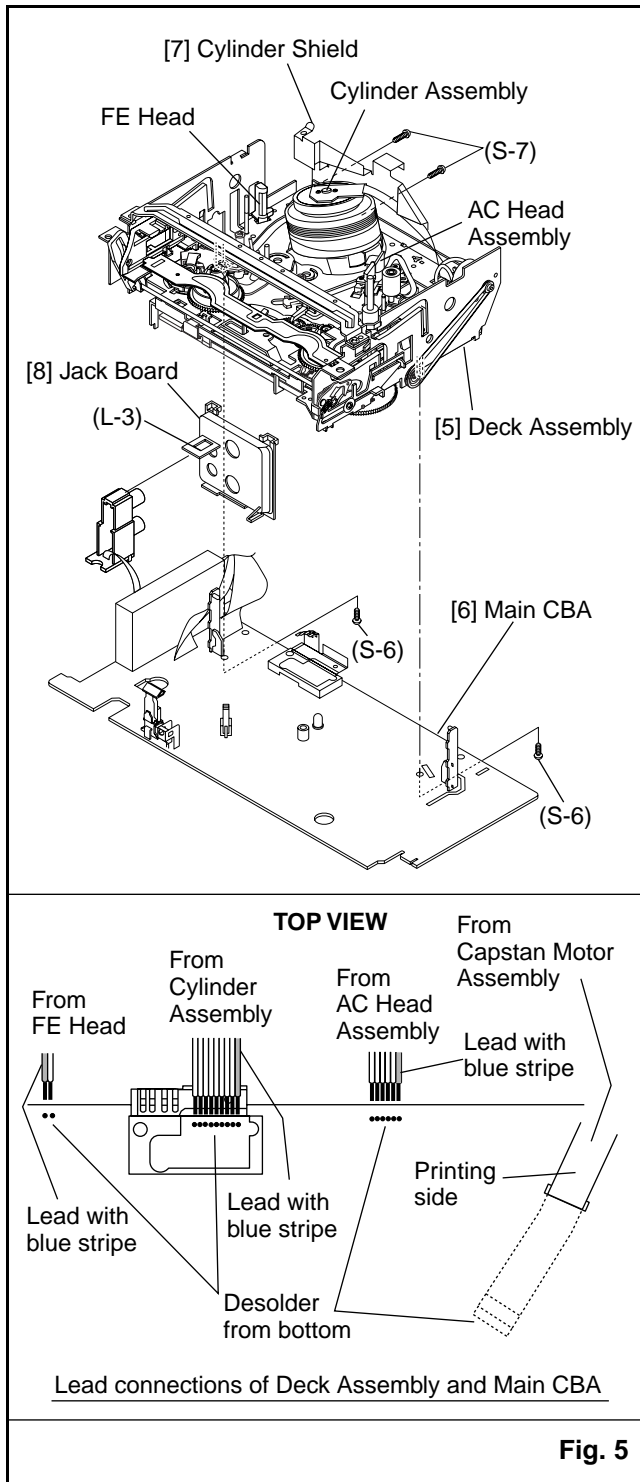


Fig. 5

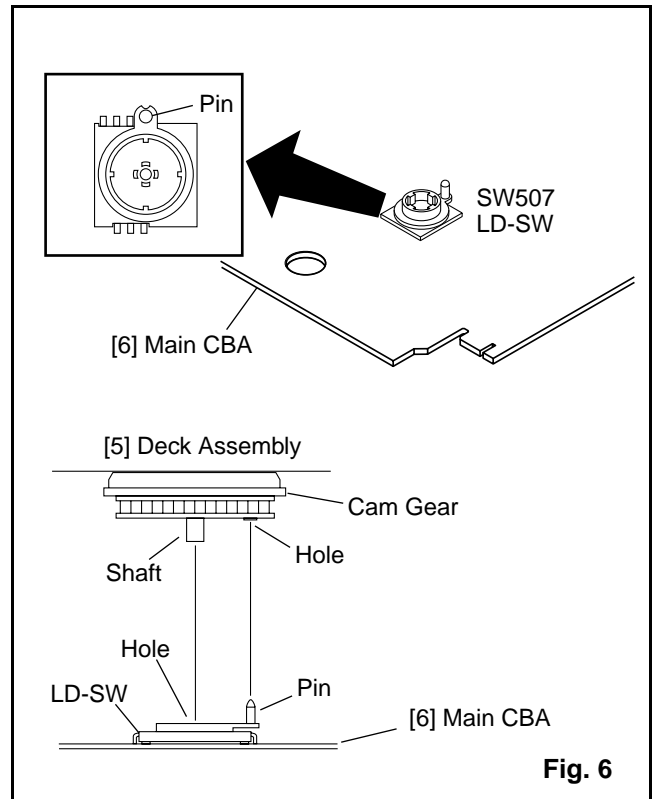


Fig. 6

ELECTRICAL ADJUSTMENT INSTRUCTIONS

General Note: "CBA" is an abbreviation for "Circuit Board Assembly."

NOTE:

1. Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to do these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.
2. To perform these alignment / confirmation procedures, make sure that the tracking control is set in the center position: Press either "▼" or "▲" button on the remote control unit first, then the "PLAY" button (Front Panel only).

Test Equipment Required

1. Oscilloscope: Dual-trace with 10:1 probe,
V-Range: 0.001~50V/Div.,
F-Range: DC~AC-20MHz
2. Alignment Tape (FL6A)

Head Switching Position Adjustment

Purpose:

To determine the Head Switching point during playback.

Symptom of Misadjustment:

May cause Head Switching noise or vertical jitter in the picture.

Test point	Adj. Point	Mode	Input
J23(V-OUT) TP502(RF-SW) GND	VR501 (Switching Point) (MAIN CBA)	PLAY (SP)	-----
Tape	Measurement Equipment	Spec.	
FL6A	Oscilloscope	6.5H±1H (412.7µs±60µs)	

Connections of Measurement Equipment

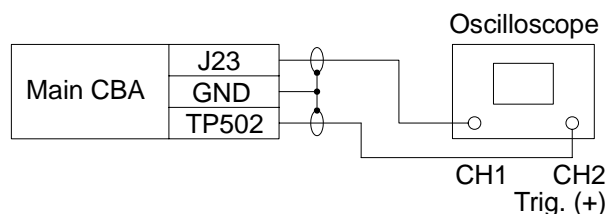
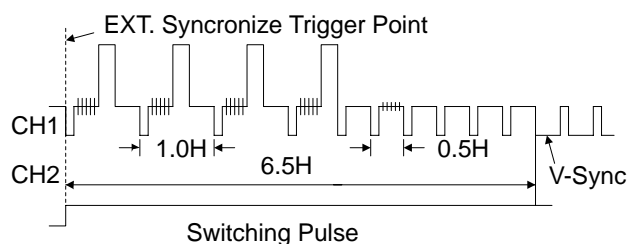


Figure 1

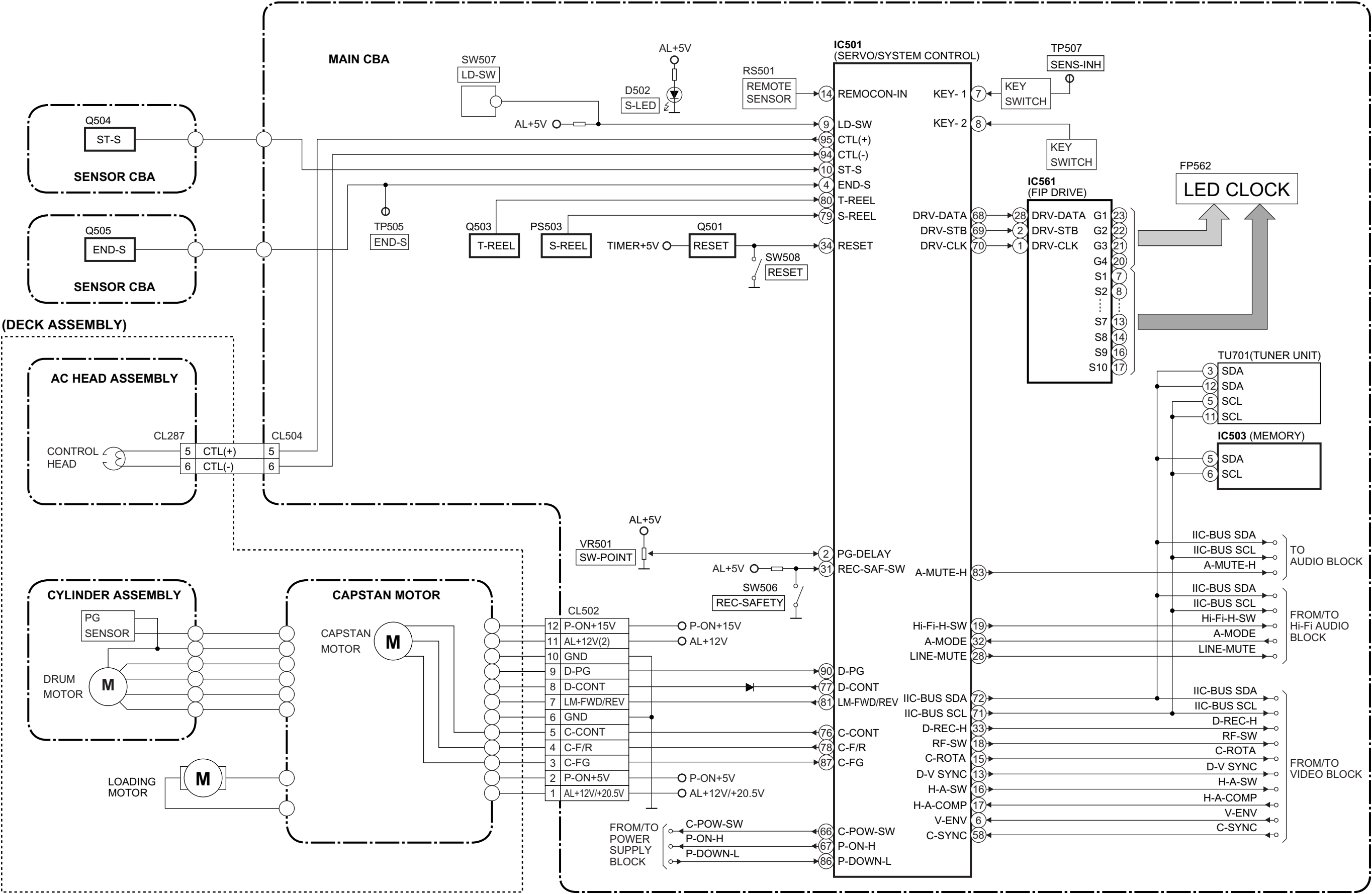


Reference Notes:

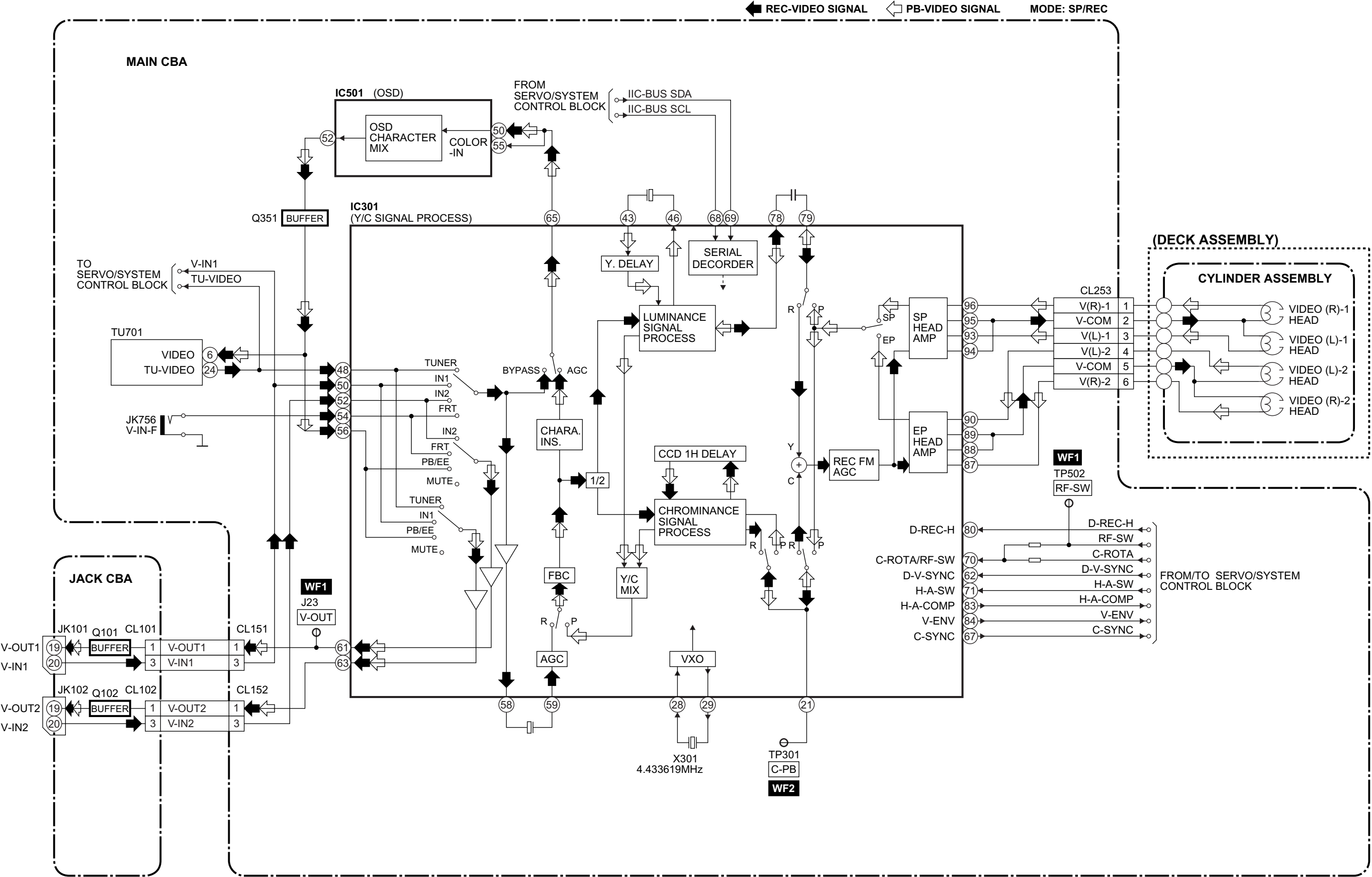
Playback the Alignment tape and adjust VR501 so that the V-sync front edge of the CH1 video output waveform is at the 6.5H(412.7µs) delayed position from the rising edge of the CH2 head switching pulse waveform.

BLOCK DIAGRAMS

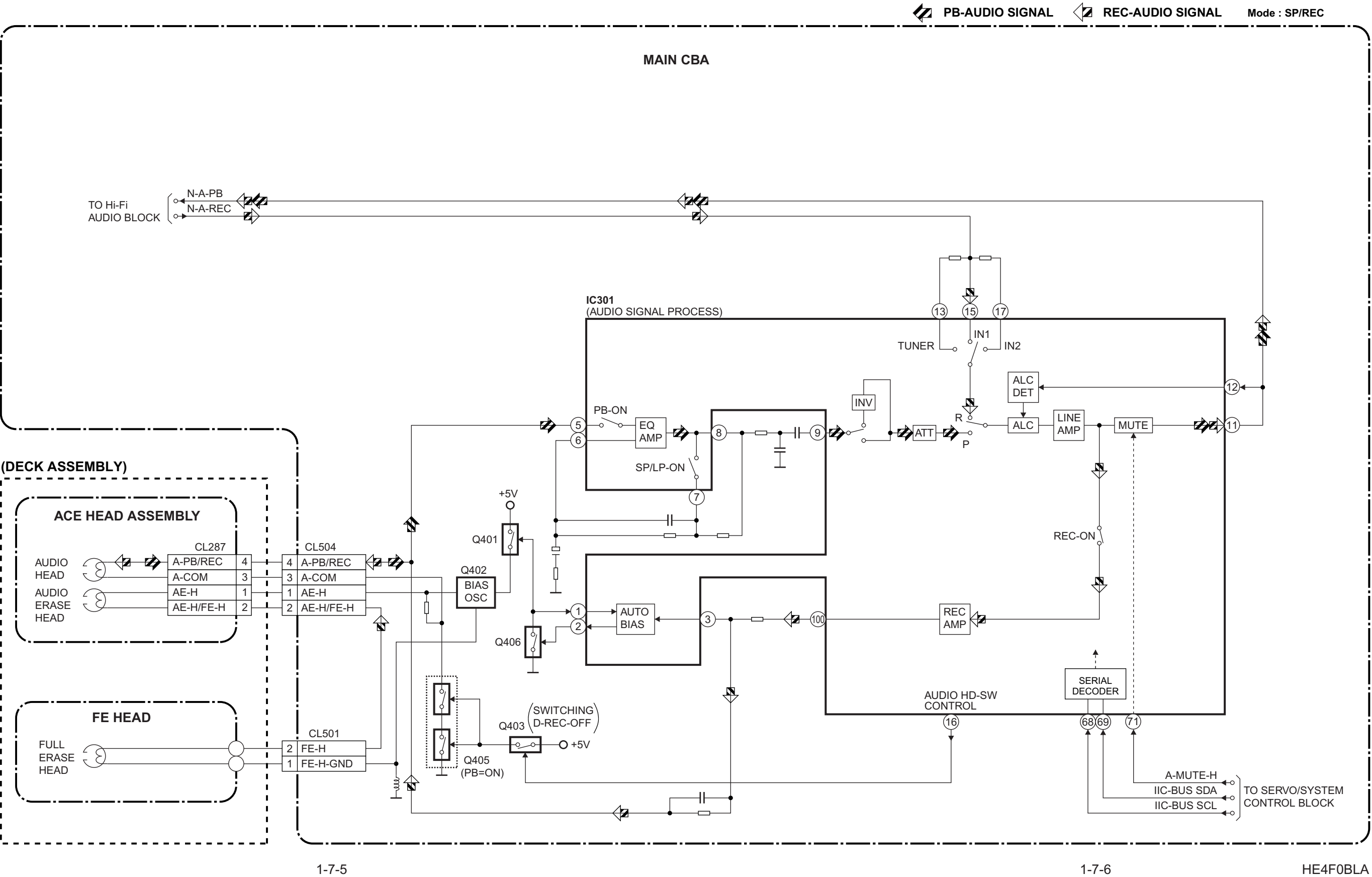
Servo/System Control Block Diagram



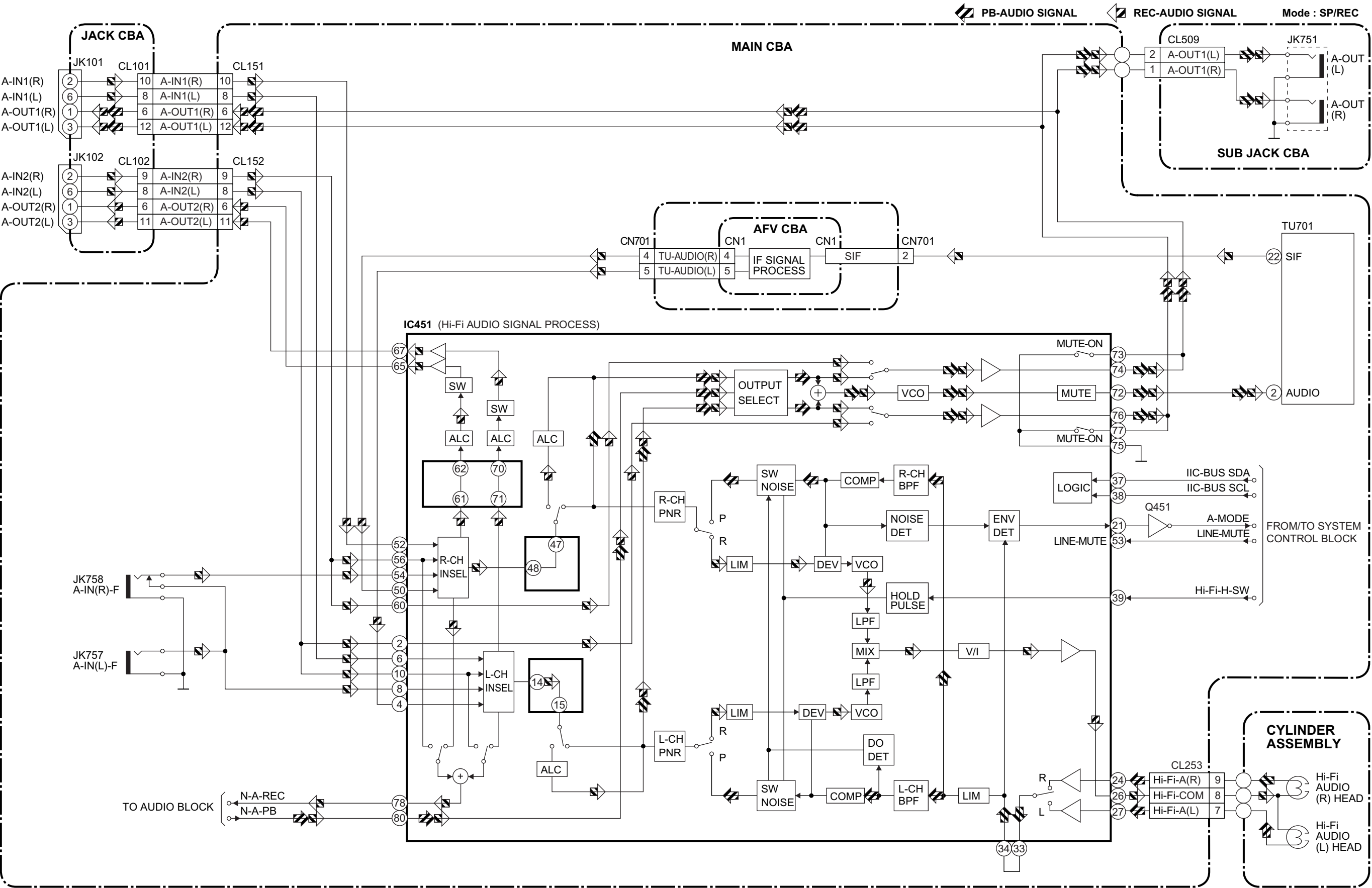
Video Block Diagram



Audio Block Diagram



Hi-Fi Audio Block Diagram

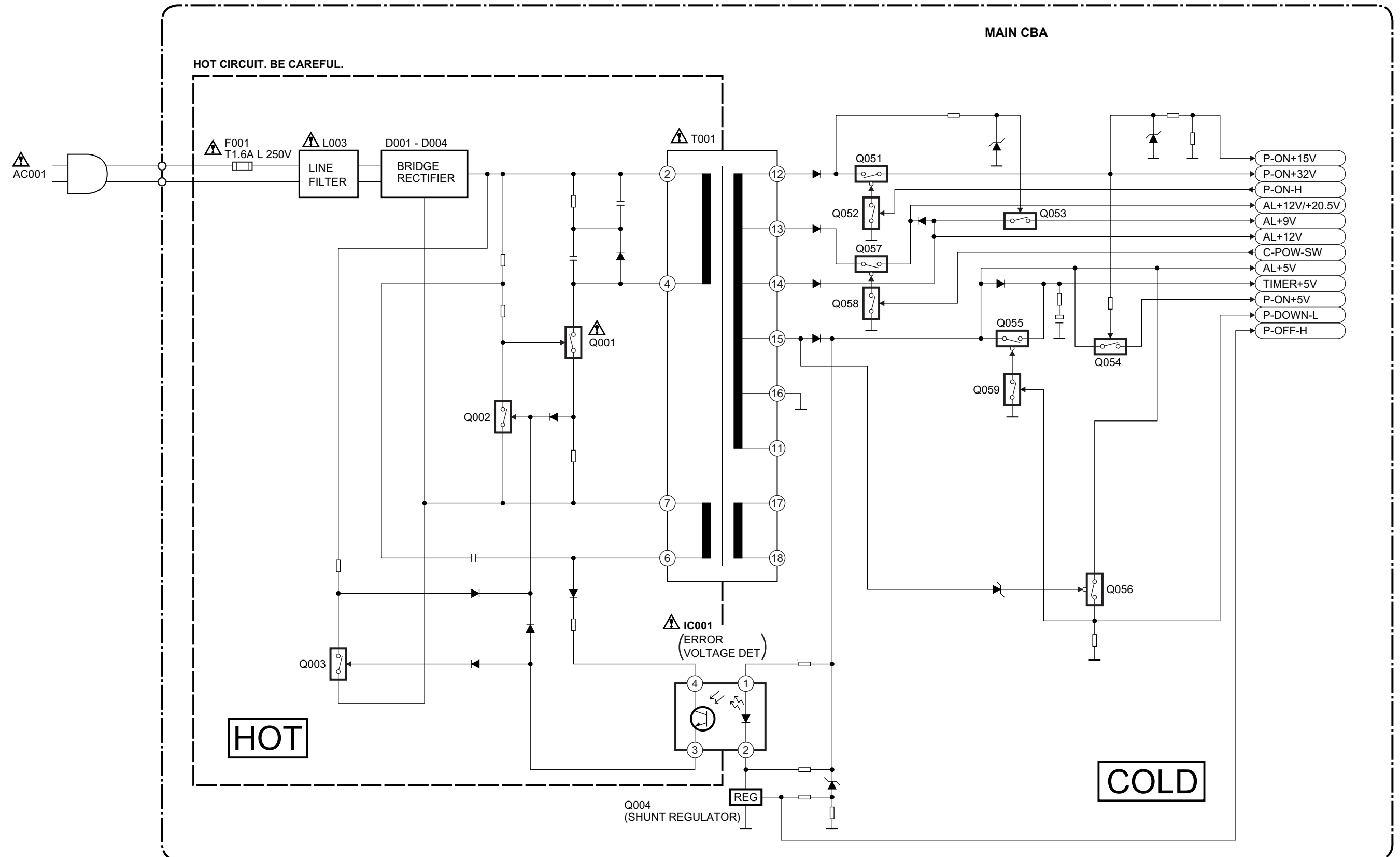


Power Supply Block Diagram

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

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE T1.6AL/250V FUSE.

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

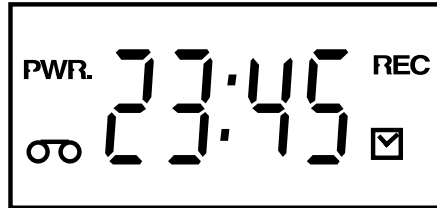


FUNCTION INDICATOR SYMBOLS









Note:

The following symbols will appear on the indicator panel to indicate the current mode or operation of the VCR. On-screen modes will also be momentarily displayed on the tv screen when you press the operation buttons.

Display panel



" H " = LED Light on, " L " = LED Light off

LED MODE	INDICATOR ACTIVE	
CASSETTE "IN"	"  "	ON
CASSETTE "OUT"	"  "	OFF
CLOCK	" 88:88 "	ON
POWER ON	" PWR. "	ON
REC	" REC "	ON
REC PAUSE	" REC "	Blinks at 0.8Hz interval
T-REC,OTR	"  "	ON (T-REC OFF,T-REC incomplete Blinks at 0.8Hz interval)
When reel and capstan mechanism is not functioning correctly	"  " " 1 "	Blinks at 0.8Hz interval
When tape loading mechanism is not functioning correctly	"  " " 2 "	Blinks at 0.8Hz interval
When cassette loading mechanism is not functioning correctly	"  " " 3 "	Blinks at 0.8Hz interval
When the drum is not working properly	"  " " 4 "	Blinks at 0.8Hz interval
P-ON Power safety detection	"  " " 5 "	Blinks at 0.8Hz interval
S-INH condition	All modes	Blinks at 0.8Hz interval

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

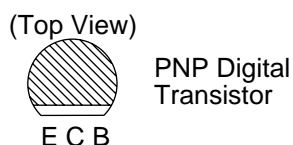
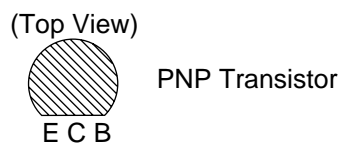
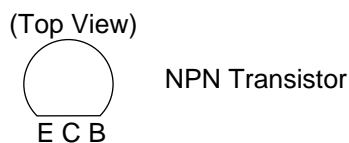
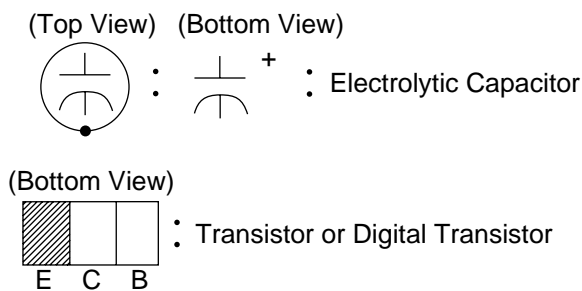
Mark	Capacity change rate	Standard temperature	Temperature range
(B)	±10%	20°C	-25~+85°C
(F)	+30 - 80%	20°C	-25~+85°C
(SR)	±15%	20°C	-25~+85°C
(Z)	+30 - 80%	20°C	-10~+70°C

Notes:

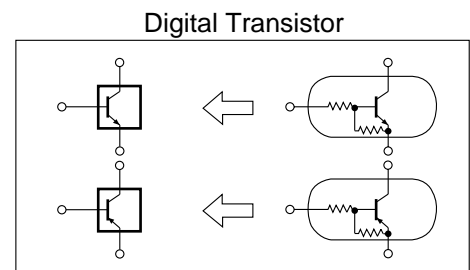
1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. All resistance values are indicated in ohms ($K=10^3$, $M=10^6$).
3. Resistor wattages are 1/4W or 1/6W unless otherwise specified.
4. All capacitance values are indicated in μF ($P=10^{-6} \mu F$).
5. All voltages are DC voltages unless otherwise specified.
6. Electrical parts such as capacitors, connectors, diodes, IC's, transistors, resistors, switches, and fuses are identified by four digits. The first two digits are not shown for each component. In each block of the diagram, there is a note such as shown below to indicate these abbreviated two digits.

Capacitors and transistors are represented by the following symbols.

CBA Symbols



Schematic Diagram Symbols



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

1. CAUTION:

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

2. CAUTION:

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

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

3. Note:

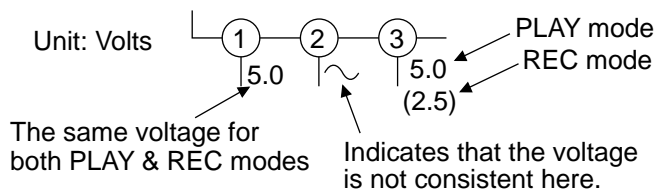
- (1) Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.
- (2) To maintain original function and reliability of repaired units, use only original replacement parts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

4. Wire Connectors

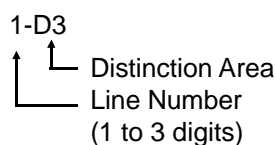
- (1) Prefix symbol "CN" means "connector" (can disconnect and reconnect).
- (2) Prefix symbol "CL" means "wire-solder holes of the PCB" (wire is soldered directly).

5. Mode: SP/REC

6. Voltage indications for PLAY and REC modes on the schematics are as shown below:

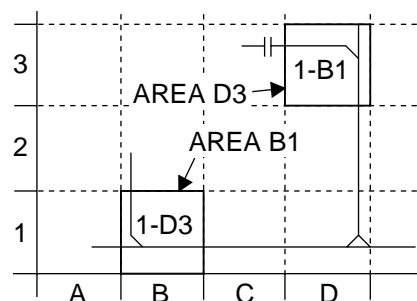


7. How to read converged lines



Examples:

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



8. Test Point Information

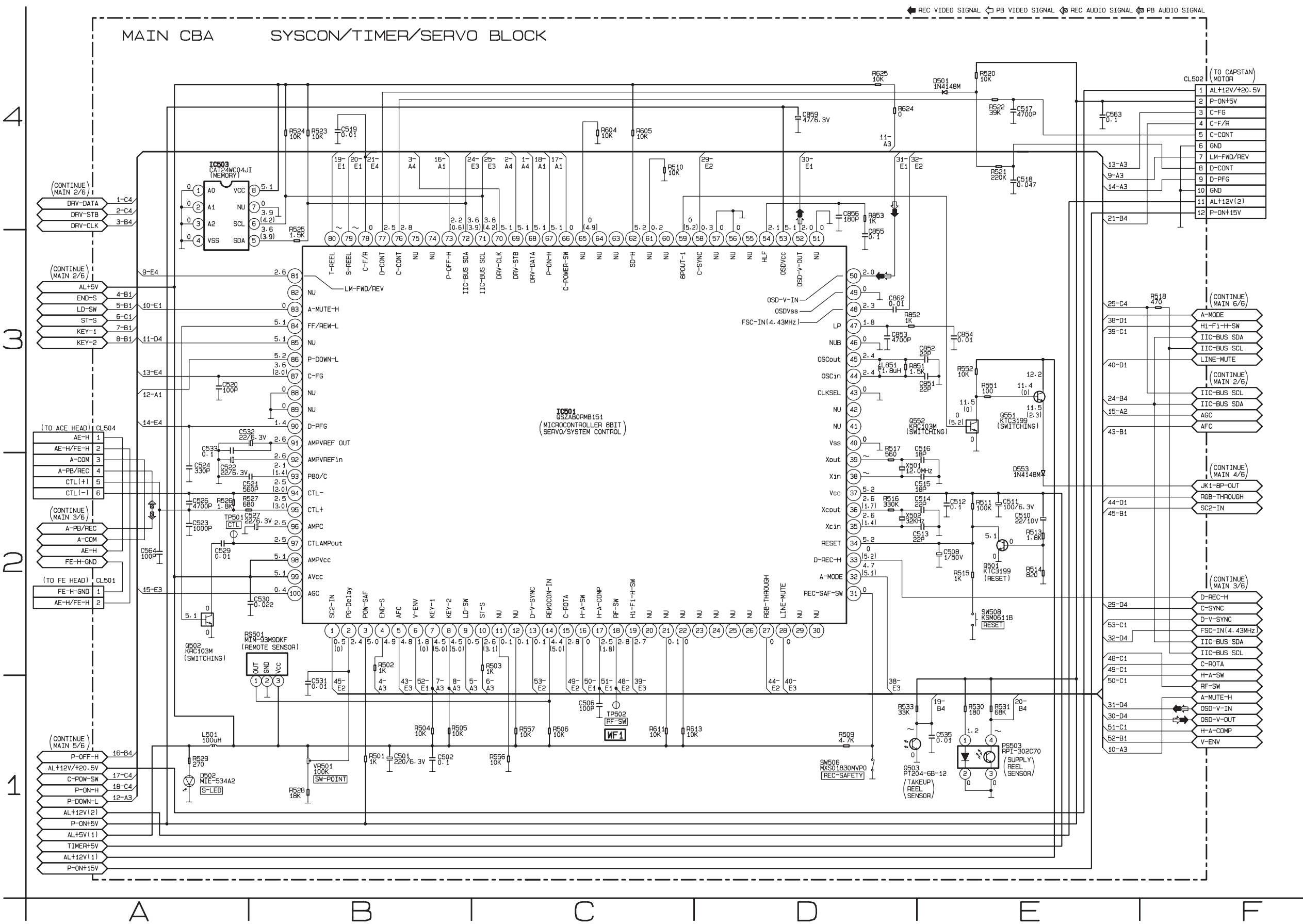
⊙ : Indicates a test point with a jumper wire across a hole in the PCB.

□→ : Used to indicate a test point with a component lead on foil side.

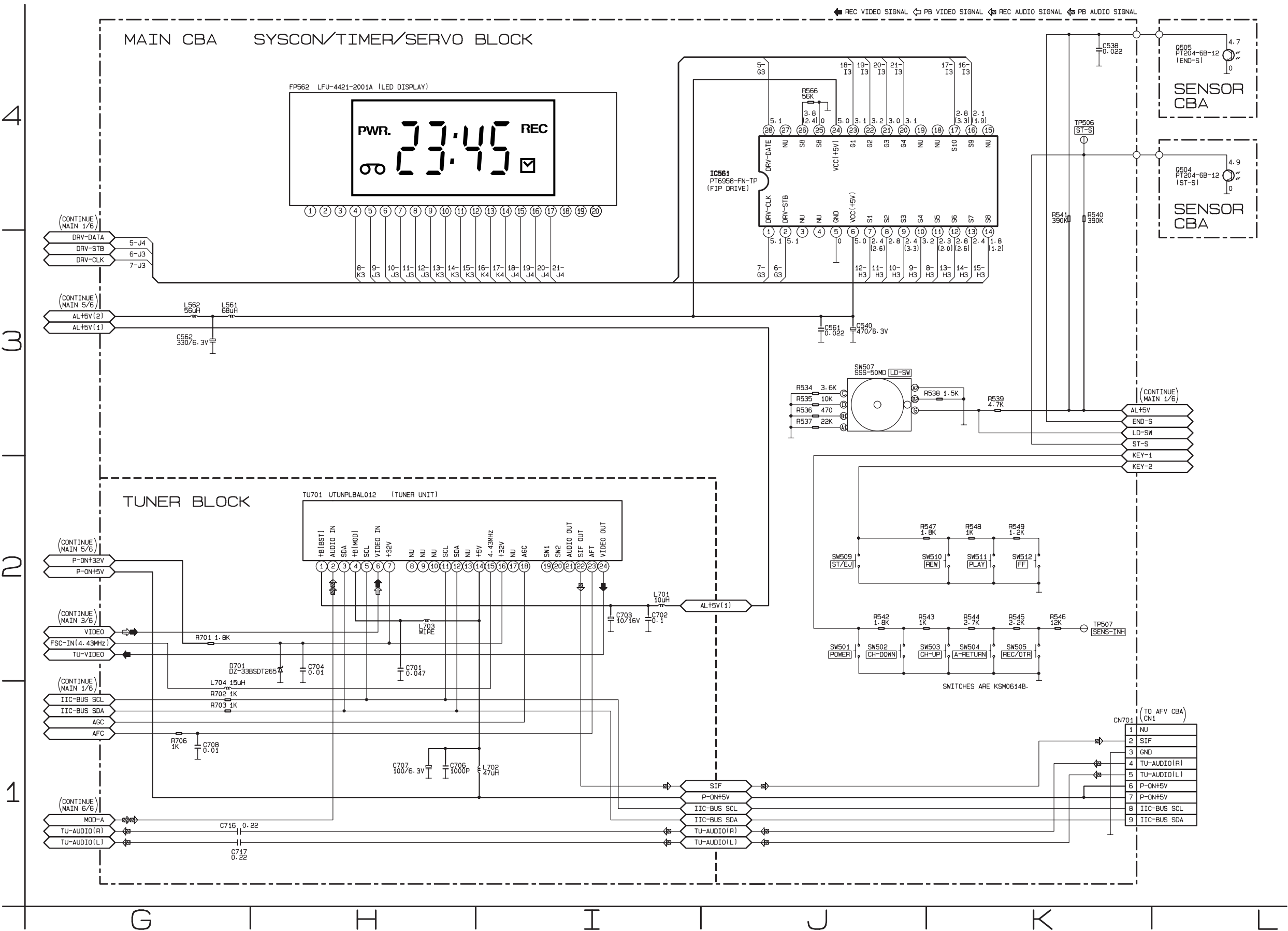
⊗ : Used to indicate a test point with no test pin.

● : Used to indicate a test point with a test pin.

Main 1/6 Schematic Diagram



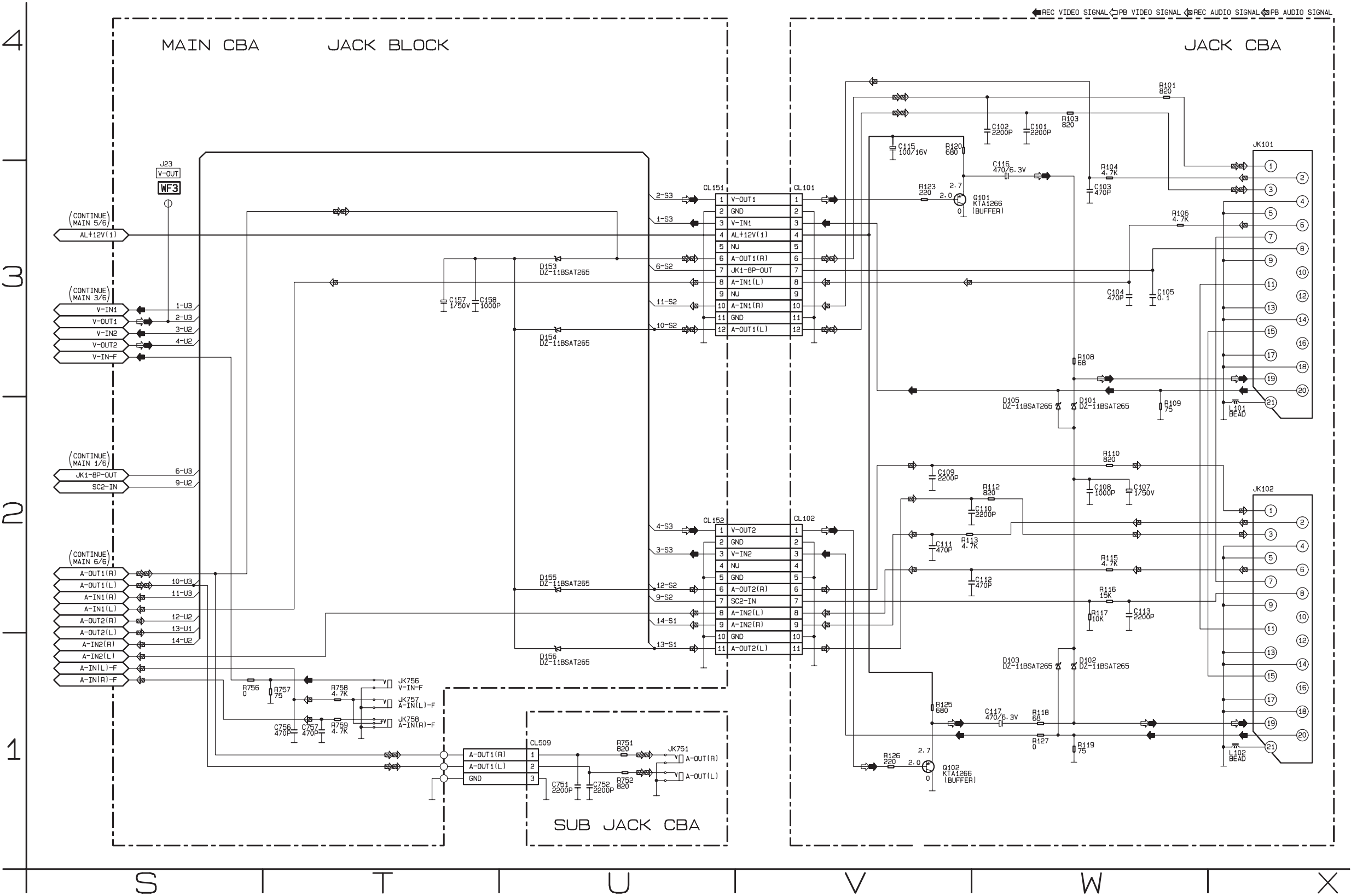
Main 2/6 & Sensor Schematic Diagram



4



Main 4/6 & Jack Schematic Diagram

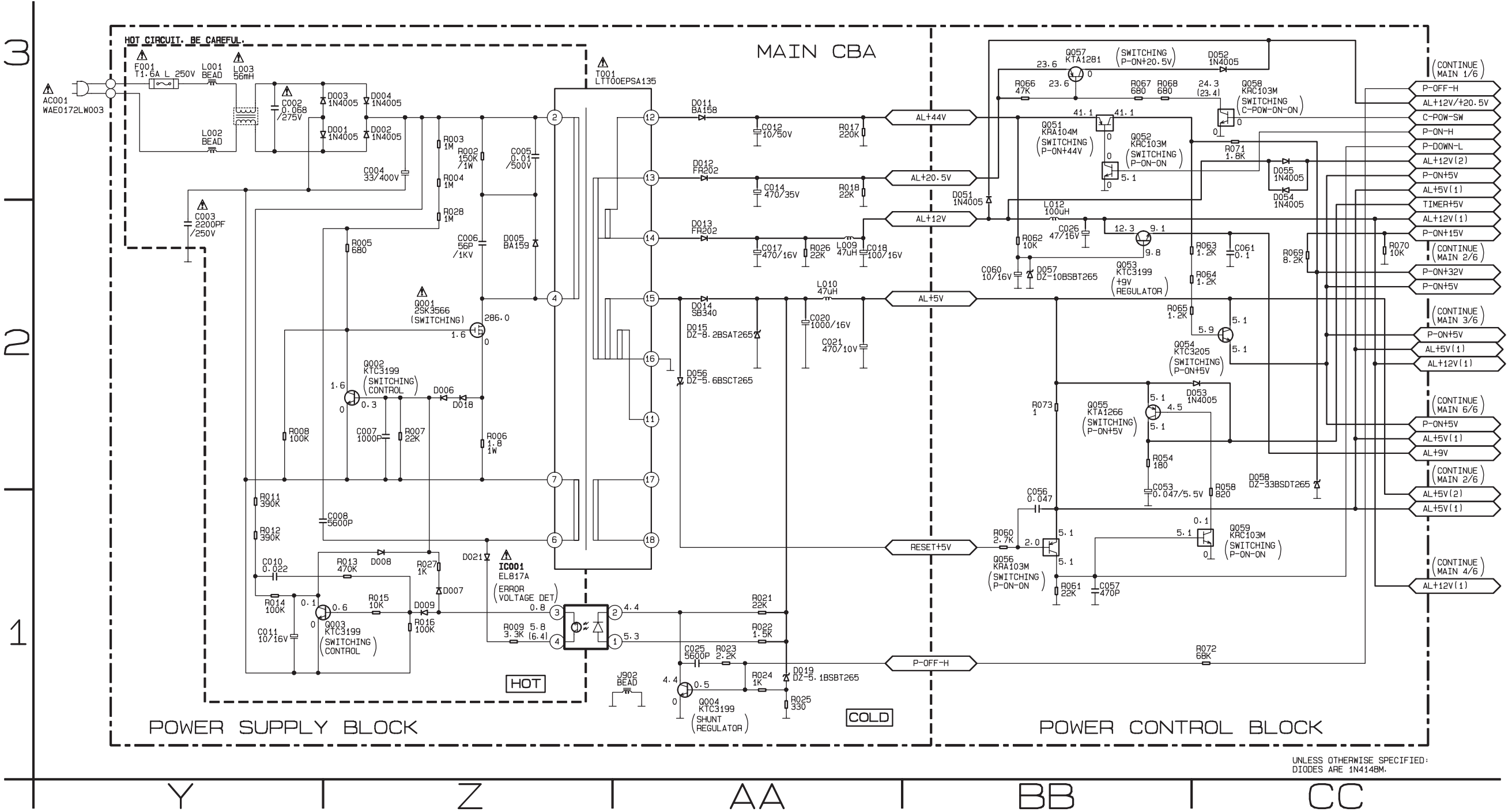


Main 5/6 Schematic Diagram

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

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

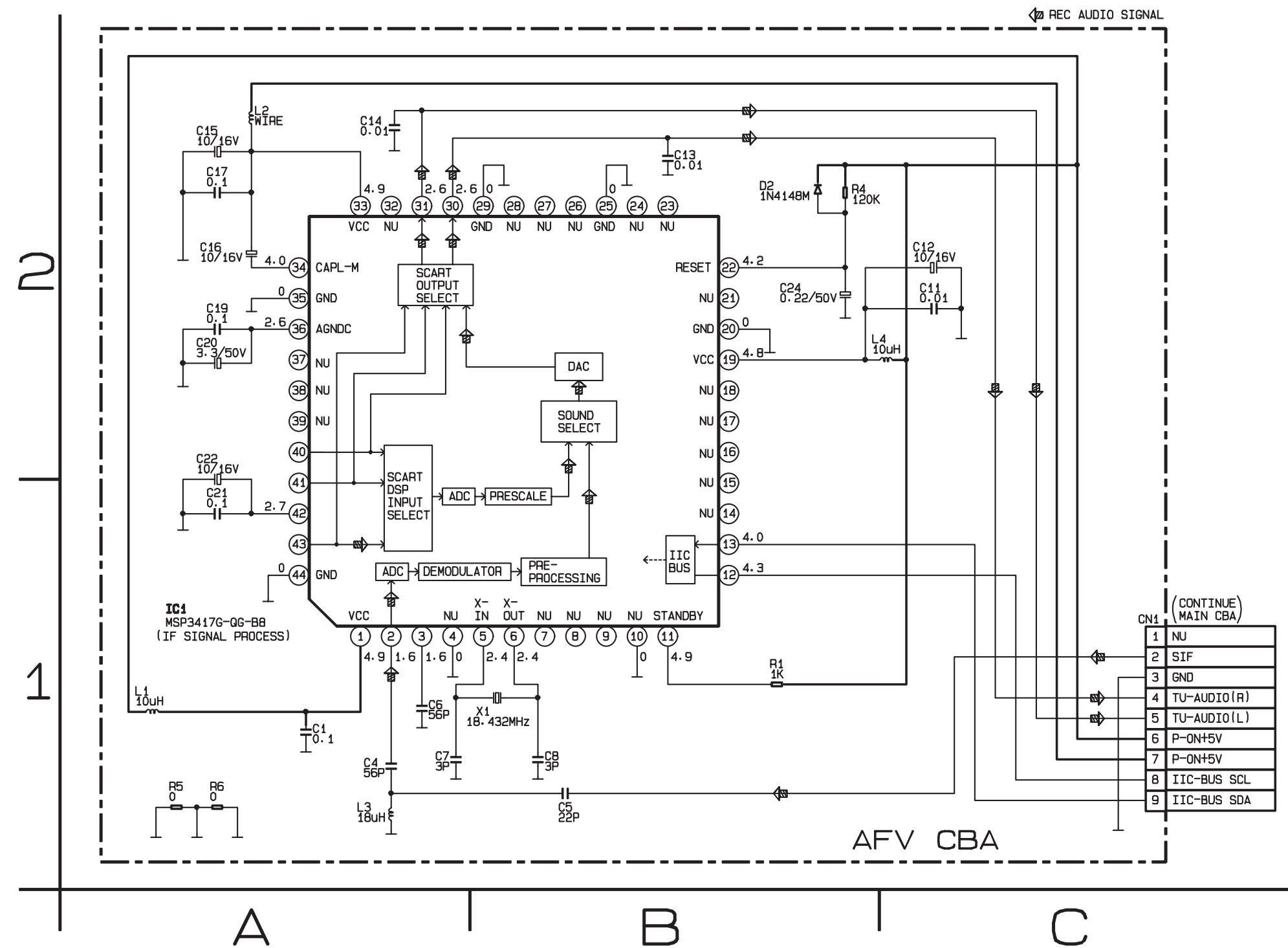
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F1001) is blown, check to see that all components in the power supply
circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.



4



AFV Schematic Diagram



Main CBA Top View

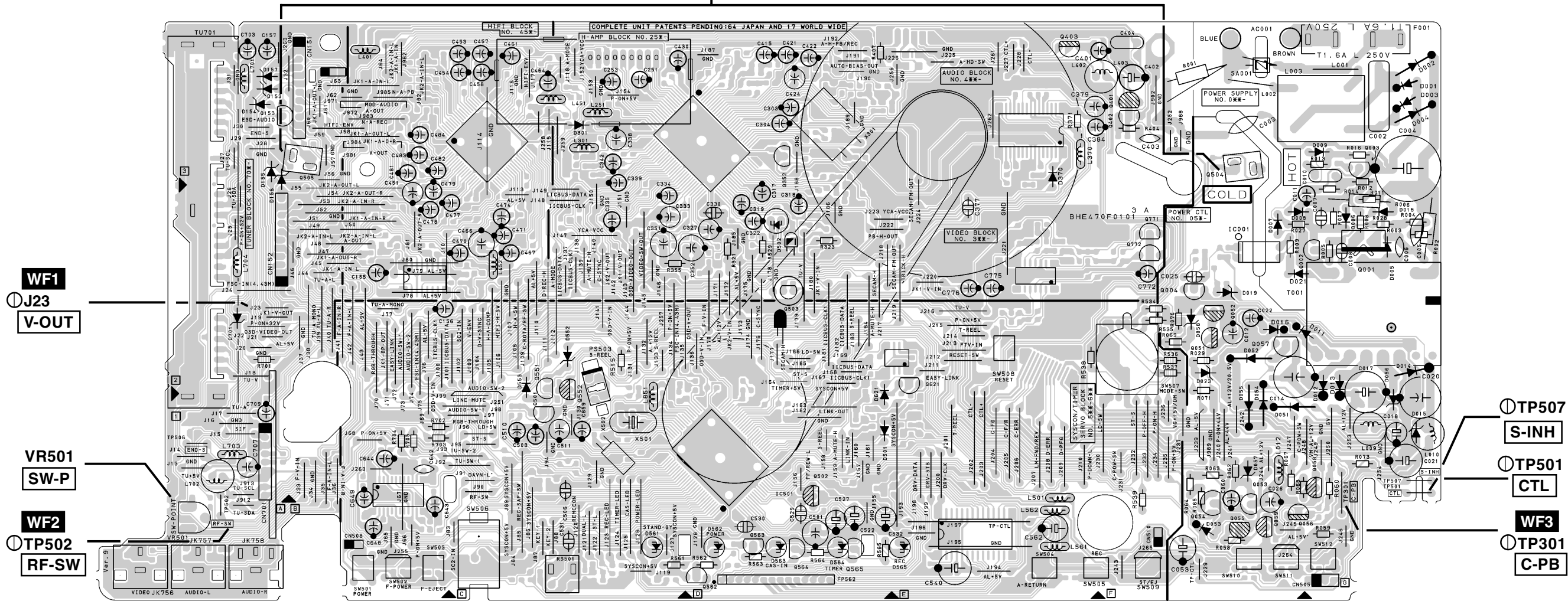
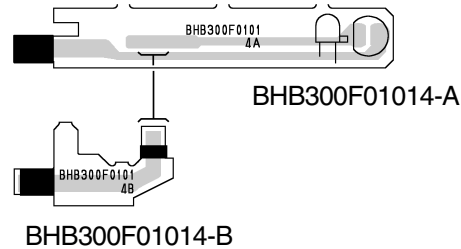
CAUTION !
For continued protection against fire hazard,
replace only with the same type fuse.

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

CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F1001) is blown, check to see that all components in the power supply
circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

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

Sensor CBA Top View



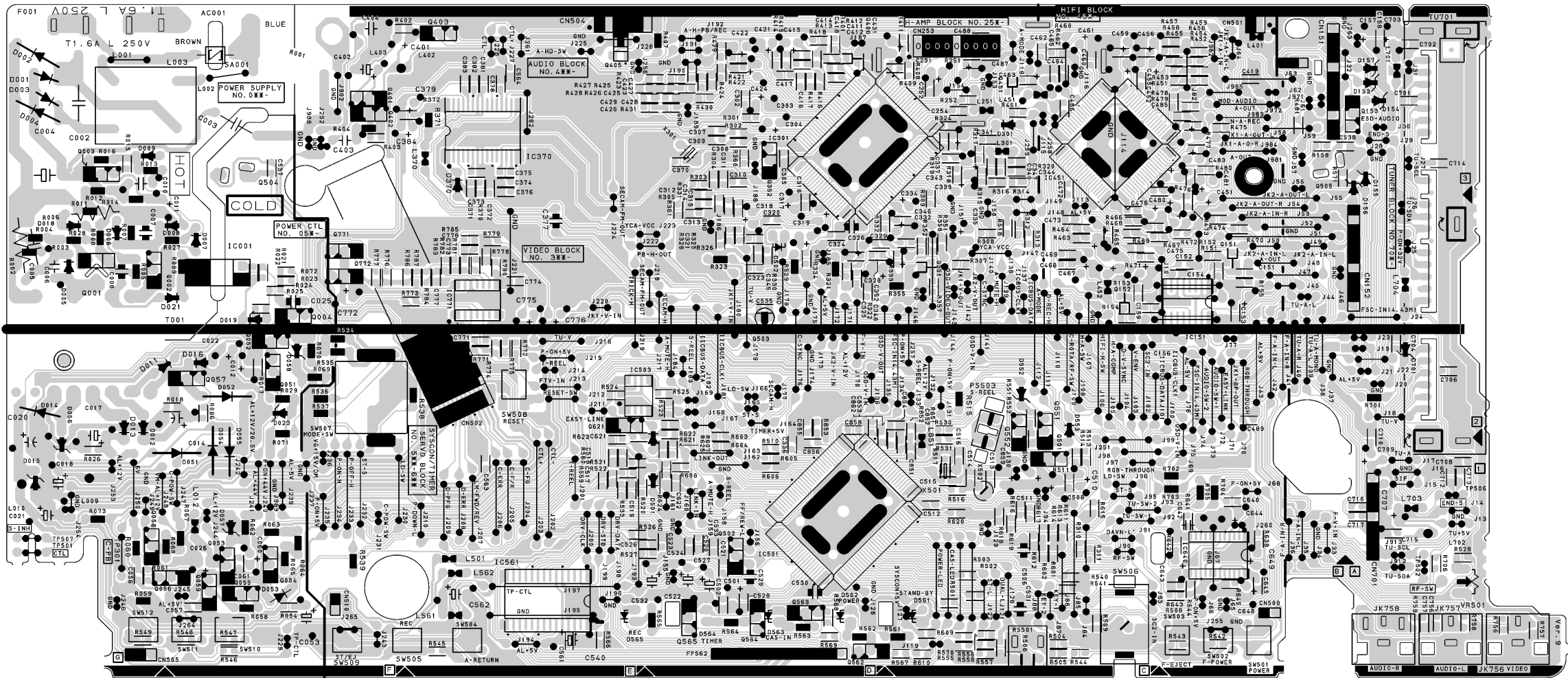
Main CBA Bottom View

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

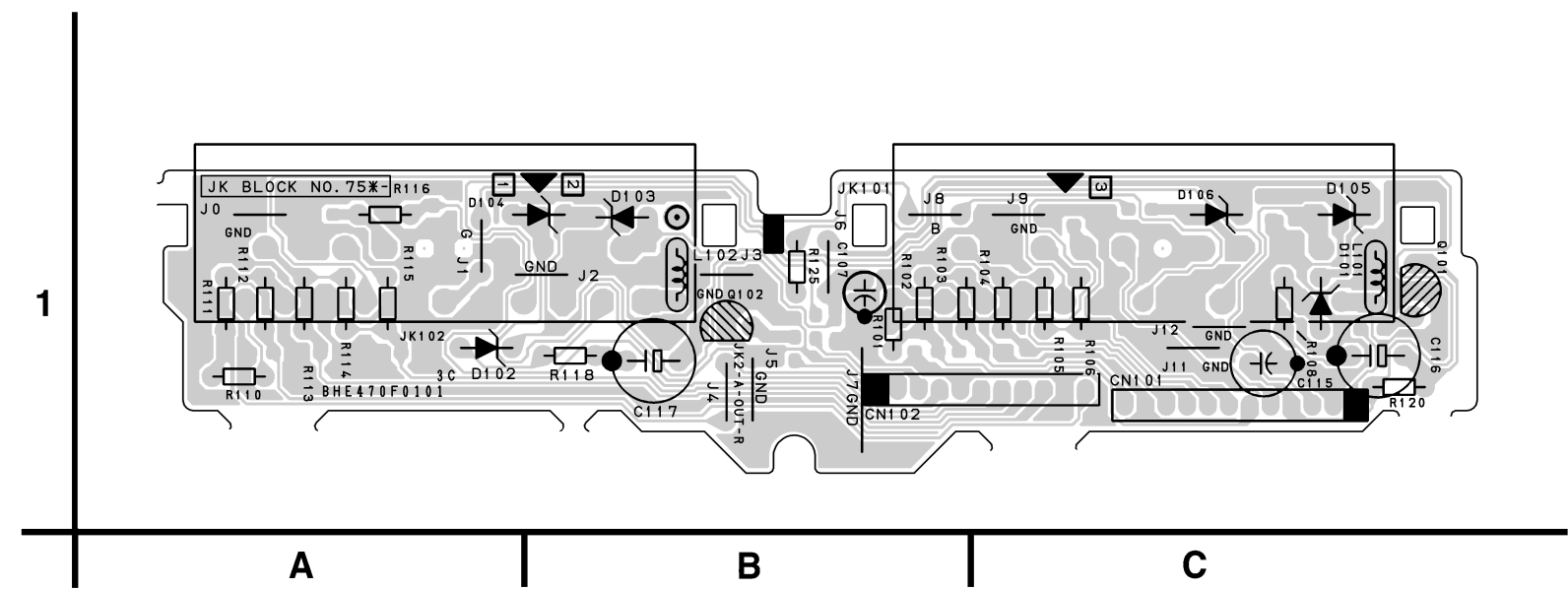
NOTE :
The voltage for parts in hot circuit is measured
using hot GND as a common terminal.

CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F1001) is blown, check to see that all components in the power supply
circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

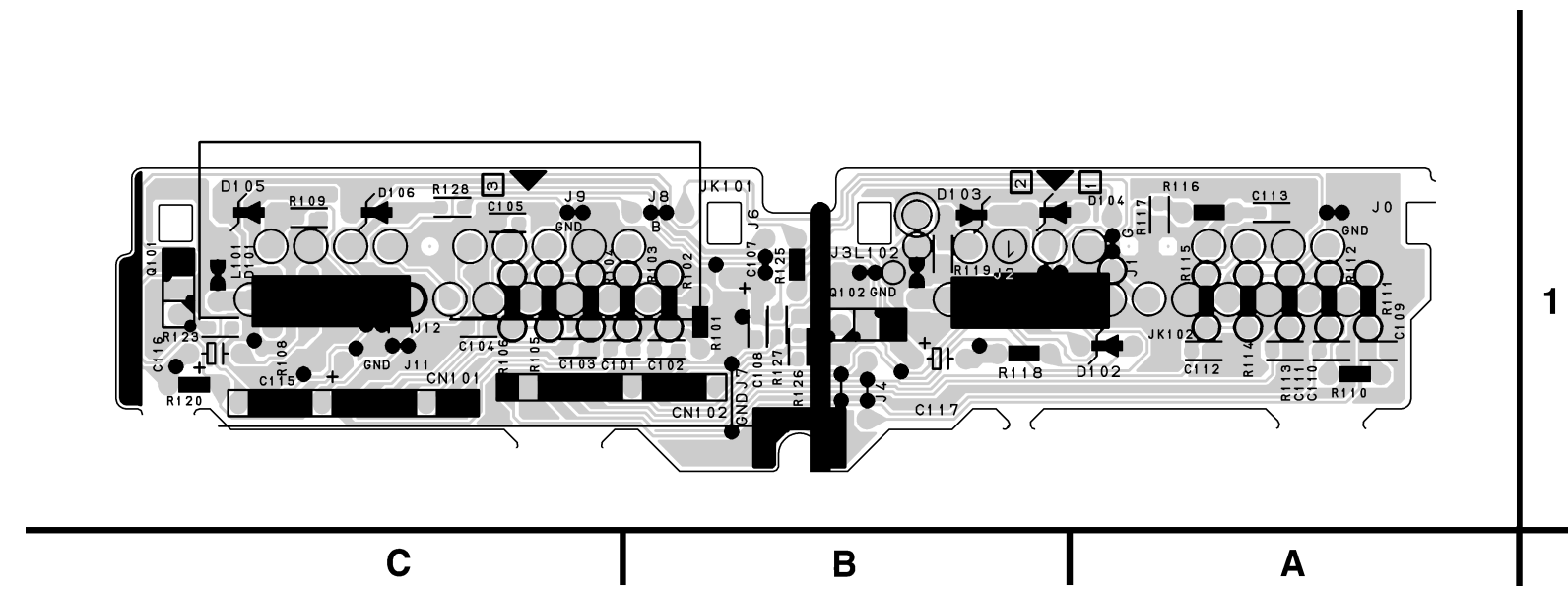
**BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER
SUPPLY CIRCUIT , AN ISOLATION TRANSFORMER MUST BE USED.
ALSO , IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT
SLOWLY , WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY
CIRCUIT , A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.**



Jack CBA Top View

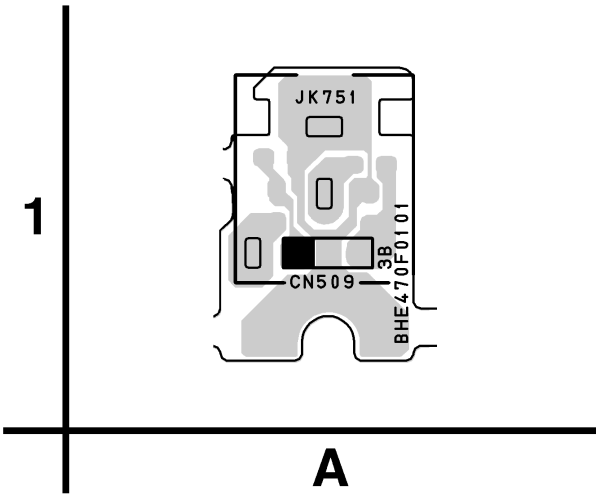


Jack CBA Bottom View

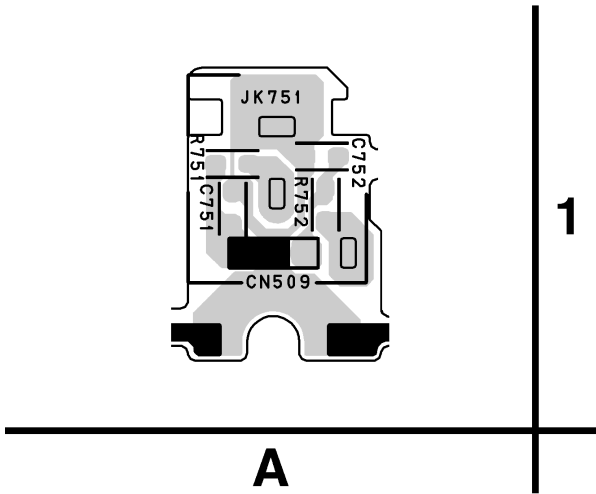


BHE470F01013-C

Sub Jack CBA Top View

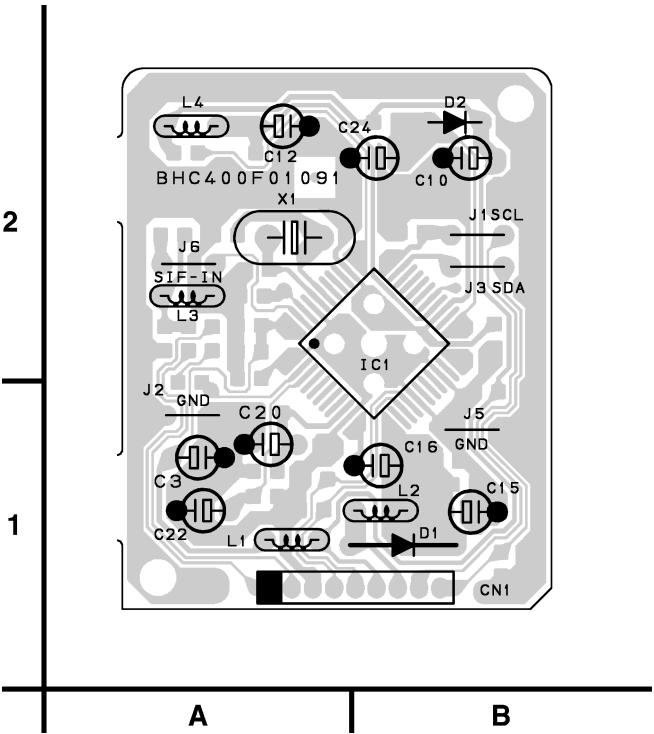


Sub Jack CBA Bottom View

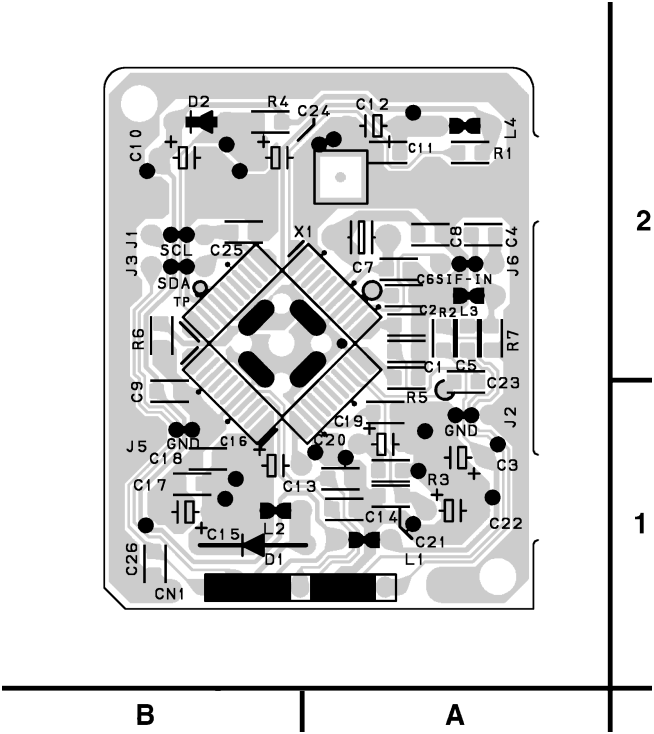


BHE470F01013-B

AFV CBA Top View



AFV CBA Bottom View

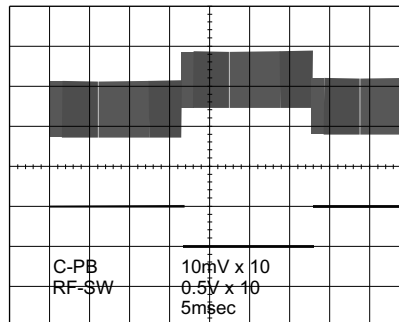


BHC400F01091

WAVEFORMS

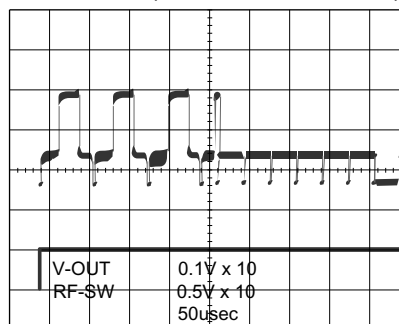
WF2 UPPER (TP301 of Main CBA)

WF1 LOWER (TP502 of Main CBA)

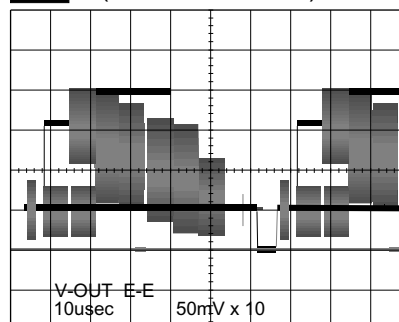


WF3 UPPER (J23 of Main CBA)

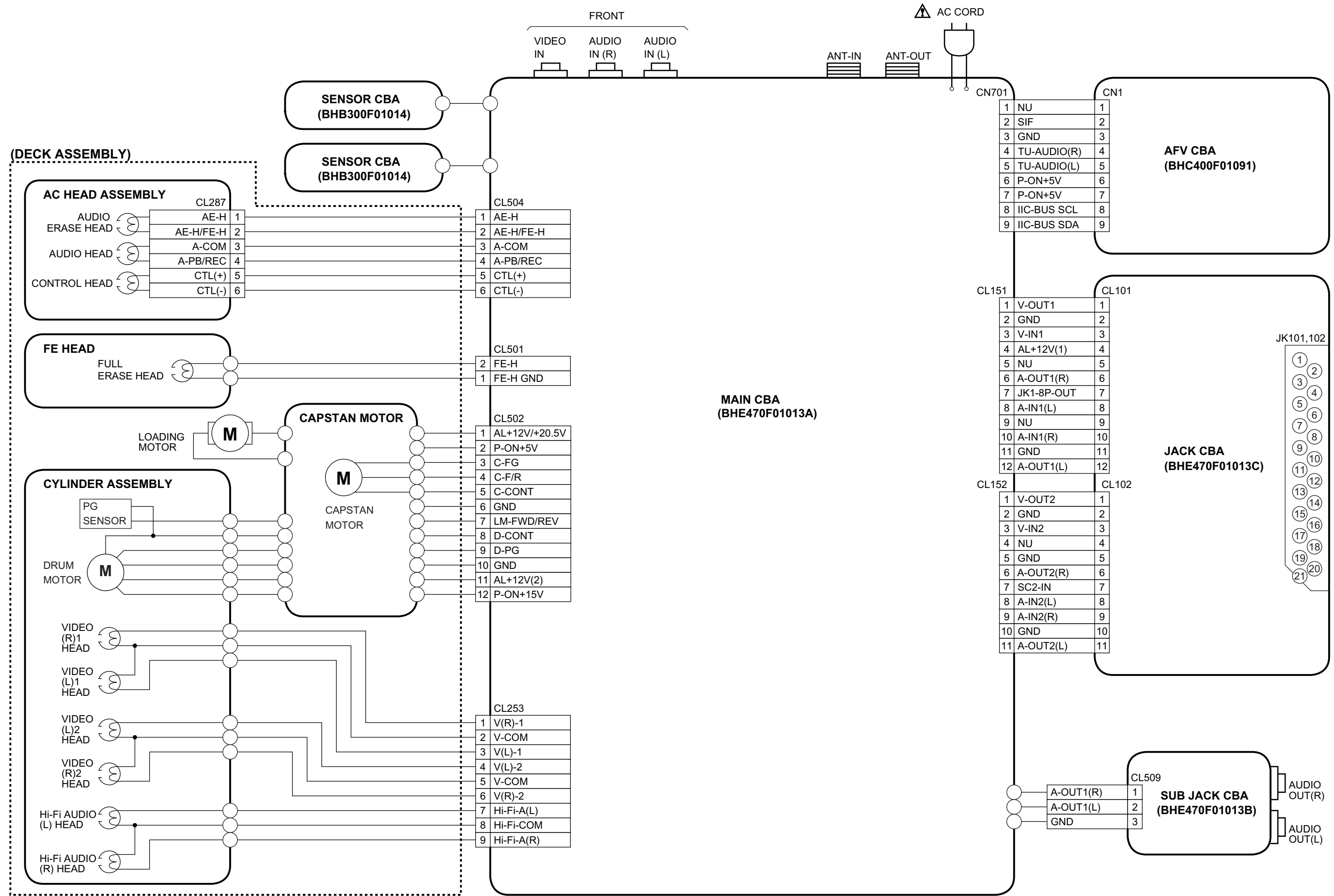
WF1 LOWER (TP502 of Main CBA)



WF3 (J23 of Main CBA)



WIRING DIAGRAM



IC PIN FUNCTION DESCRIPTIONS

IC501(SERVO / SYSTEM CONTROL IC)

“H” ≥ 4.5V, “L” ≤ 1.0V

Pin No.	IN/ OUT	Signal Name	Function	Active Level
1	IN	SC2-IN	Input Signal from Pin 8 of SCART2	A/D
2	IN	PG-DELAY	Video Head Switching Pulse Signal Adjusted Voltage	A/D
3	IN	POW-SAF	P-ON Power Detection Input Signal	A/D
4	IN	END-S	Tape End Position Detect Signal	A/D
5	IN	AFC	Automatic Frequency Control Signal	A/D
6	IN	V-ENV	Video Envelope Comparator Signal	A/D
7	IN	KEY-1	Key Scan Input Signal 1	A/D
8	IN	KEY-2	Key Scan Input Signal 2	A/D
9	IN	LD-SW	Deck Mode Position Detector Signal	A/D
10	OUT	ST-S	Tape Start Position Detector Signal	A/D
11	-	N.U.	Not Used	-
12	-	N.U.	Not Used	-
13	OUT	D-V- SYNC	Dummy V-sync Output	H/Hi-z
14	IN	REMOCON-IN	Remote Control Sensor	L
15	OUT	C-ROTA	Color Phase Rotary Changeover Signal	H/L
16	OUT	H-A-SW	Video Head Amp Switching Pulse	H/L
17	IN	H-A-COMP	Head Amp Comparator Signal	H/L
18	OUT	RF-SW	Video Head Switching Pulse	H/L
19	OUT	HiFi-H-SW	HiFi Audio Head Switching Pulse	H/L
20	-	N.U.	Not Used	-
	IN	DAVN-L	VPS/PDC Data Receive = “L”	L
21	-	N.U.	Not Used	-
22	-	N.U.	Not Used	-
23	-	N.U.	Not Used	-

Pin No.	IN/ OUT	Signal Name	Function	Active Level
24	-	N.U.	Not Used	-
25	-	N.U.	Not Used	-
26	-	N.U.	Not Used	-
27	OUT	RGB-THROUGH	SCART 2 RGB Through Control Signal	H/L
28	OUT	LINE MUTE	Audio Mute Control Signal	L
29	-	N.U.	Not Used	-
30	-	N.U.	Not Used	-
31	IN	REC-SAF-SW	Recording Safety SW Detect (With Record tab="L"/Without Record tab="H")	H
32	IN	A-MODE	Hi-Fi Tape Detection Signal	L
33	OUT	D-REC-H	Delayed Record Signal	L
34	IN	RESET	System Reset Signal (Reset="L")	L
35	IN	XC-IN	Sub Clock	-
36	OUT	XC-OUT	Sub Clock	-
37	-	Vcc	Vcc	-
38	IN	X-IN	Main Clock Input	-
39	OUT	X-OUT	Main Clock Input	-
40	-	Vss	Vss(GND)	-
41	-	N.U.	Not Used	-
42	-	N.U.	Not Used	-
43	IN	CLKSEL	Clock Select (GND)	L
44	IN	OSCIN	Clock Input for letter size	-
45	OUT	OSCOU	Clock Output for letter size	-
46	-	NUB	Not Used	-
47	-	LP	LP	-
48	IN	FSC-IN [4.43MHz]	4.43MHz Clock Input	-
49	-	OSDVss	OSDVss	-
50	IN	OSD-V-IN	OSD Video Signal Input	L
51	-	N.U.	Not Used	-
52	OUT	OSD-V-OUT	OSD Video Signal Output	L
53	-	OSDVcc	OSDVcc	-

Pin No.	IN/ OUT	Signal Name	Function	Active Level
54	-	HLF	LPF Connected Terminal (Slicer)	-
55	-	N.U.	Not Used	-
56	-	N.U.	Not Used	-
57	-	N.U.	Not Used	-
58	IN	C-SYNC	Composite Synchronized Pulse	PUL SE
59	OUT	8POUT-1	SCART 1 8Pin Output Control Signal	H/L
60	-	N.U.	Not Used	-
61	-	N.U.	Not Used	-
62	-	N.U.	Not Used	-
63	-	N.U.	Not Used	-
64	-	N.U.	Not Used	-
65	-	N.U.	Not Used	-
66	OUT	C-POWER-SW	Capstan Power Switching Signal	H/L
67	IN	P-ON-H	Power On Signal at High	H
68	OUT	DRV-DATA	LED Clock Driver IC Control Data	H/L
69	OUT	DRV-STB	LED Clock Driver IC Chip Select Signal	H/L
70	OUT	DRV-CLK	LED Clock Driver IC Control Clock	H/L
71	OUT	IIC BUS- SCL	I ² C BUS Control Clock	H/L
72	IN/ OUT	IIC BUS- SDA	I ² C BUS Control Data	H/L
73	OUT	P-OFF-H	Power Off at High	L
74	-	N.U.	Not Used	-
75	-	N.U.	Not Used	-
76	OUT	C-CONT	Capstan Motor Control Signal	PWM
77	OUT	D-CONT	Drum Motor Control Signal	PWM
78	OUT	C-F/R	Capstan Motor FWD/REV Control Signal (FWD="L"/REV="H")	H/L
79	IN	S-REEL	Supply Reel Rotation Signal	PUL SE
80	IN	T-REEL	Take Up Reel Rotation Signal	PUL SE
81	OUT	LM-FWD/REV	Loading Motor Control Signal	H/L/ Hi-z
82	-	N.U.	Not Used	-

Pin No.	IN/ OUT	Signal Name	Function	Active Level
83	OUT	A-MUTE-H	Audio Mute Control Signal (Mute = "H")	H
84	OUT	FF/REW-L	CTL Frequency Characteristics Switching Signal (FF/REW="L")	L
85	-	N.U.	Not Used	-
86	IN	P-DOWN-L	Power Voltage Down Detector Signal	L
87	IN	C-FG	Capstan Motor Rotation Detection Pulse	PUL SE
88	-	N.U.	Not Used	-
89	-	N.U.	Not Used	-
90	IN	D-PFG	Drum Motor Phase/ Frequency Generator	PUL SE
91	-	AMPVREF OUT	V-Ref for CTL AMP	-
92	-	AMPVREF _{IN}	V-Ref for CTL AMP	-
93	-	P80/C	P80/C Terminal	-
94	OUT	CTL -	Playback/Record Control Signal (-)	H/L
95	OUT	CTL +	Playback/Record Control Signal (+)	H/L
96	-	AMPC	CTL AMP Connected Terminal	-
97	-	CTLAMPout	To Monitor for CTL AMP Output	PUL SE
98	-	AMPVcc	AMPVcc	-
99	-	AVcc	A/D Converter Power Input/ Standard Voltage Input	-
100	IN	AGC	Tuner IF Output Signal	A/D

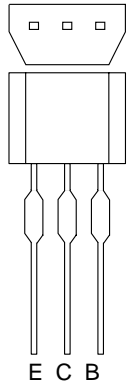
Notes:

Abbreviation for Active Level:

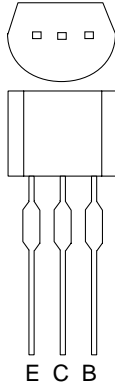
PWM -----Pulse Wide Modulation

A/D-----Analog - Digital Converter

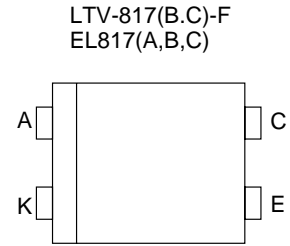
LEAD IDENTIFICATIONS



BN1L4M-T
BN1F4M-T
BA1F4M-T
KTA1266(GR)
KTC3199(Y,GR,BL)
2SC2785(J.H.F.K)
KRA103M
KRC103M
KRA104M
KTA1281(Y)

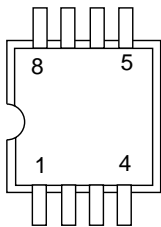


2SC1815-BL(TPE2)
2SC1815-Y(TPE2)
2SC1815-GR(TPE2)
2SC3266-Y(TPE2)
2SC2120-Y(TPE2)
KTC3203(Y)
2SC1815-BL(TPE2)
2SA1020(Y)
KTC3205(Y)
2SA1015-GR(TPE2)

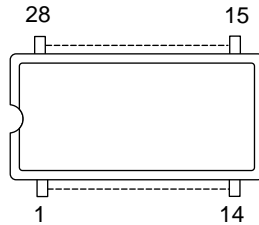


LTV-817(B,C)-F
EL817(A,B,C)

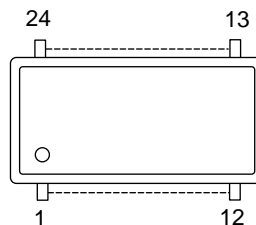
CAT24WC04JI
BR24C04F-W



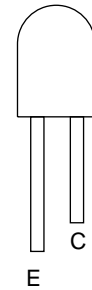
PT-6958-FN-TP



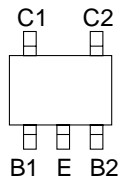
LC74793JM-TRM



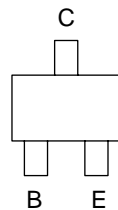
PT204-6B-12
MID-32A22



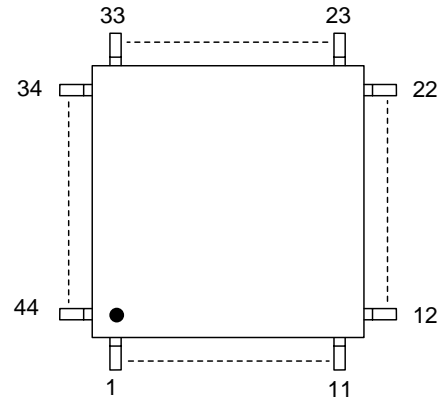
RN1511(TE85R)
FMG4A T148



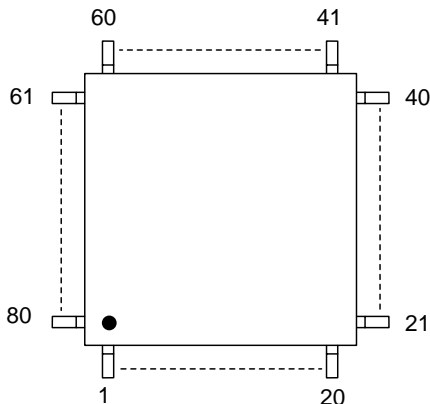
KTA1504GR-RTK
KTA1504Y-RTK
KTC3875Y-RTK
KRC103SRTK



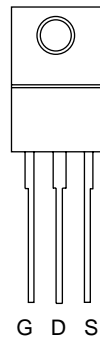
MSP3407G-QG-B8
MSP3407G-QG-B8-V3



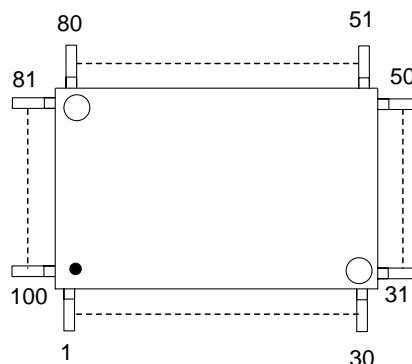
LA72648M



2SK3566



LA71750AM-MTB
QSZAB0RMB151



Note:

A: Anode
K: Cathode
E: Emitter
C: Collector
B: Base
R: Reference
S: Source
G: Gate
D: Drain

DECK MECHANISM SECTION

VIDEO CASSETTE RECORDER

27A-850

Sec. 2: Deck Mechanism Section

- **Standard Maintenance**
- **Alignment for Mechanism**
- **Disassembly/Assembly of Mechanism**
- **Alignment Procedures of Mechanism**

TABLE OF CONTENTS

Standard Maintenance	2-1-1
Service Fixtures and Tools	2-2-1
Mechanical Alignment Procedures	2-3-1
Disassembly / Assembly Procedures of Deck Mechanism	2-4-1
Alignment Procedures of Mechanism	2-4-8

STANDARD MAINTENANCE

Service Schedule of Components

H: Hours ○: Check ●: Change

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	AC Head Assembly			●	
B573,B574	Reel S, Reel T			●	
B37	Capstan Motor		●		●
B52	Cap Belt		●		●
*B73	FE Head Assembly			●	
B86	F Brake Assembly (HI)		●		●
B133	Idler Assembly (HI)		●		●
B410	Pinch Arm Assembly		●		●
B414	M Brake (SP) Assembly (HI)		●		●
B416	M Brake (TU) Assembly (HI)		●		●
B525	LDG Belt		●		●

Notes:

- 1.Clean all parts for the tape transport (Upper Drum with Video Head / Pinch Roller / Audio Control Head / Full Erase 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.
- * B73 ----- Recording Model only

Cleaning

Cleaning of Video Head

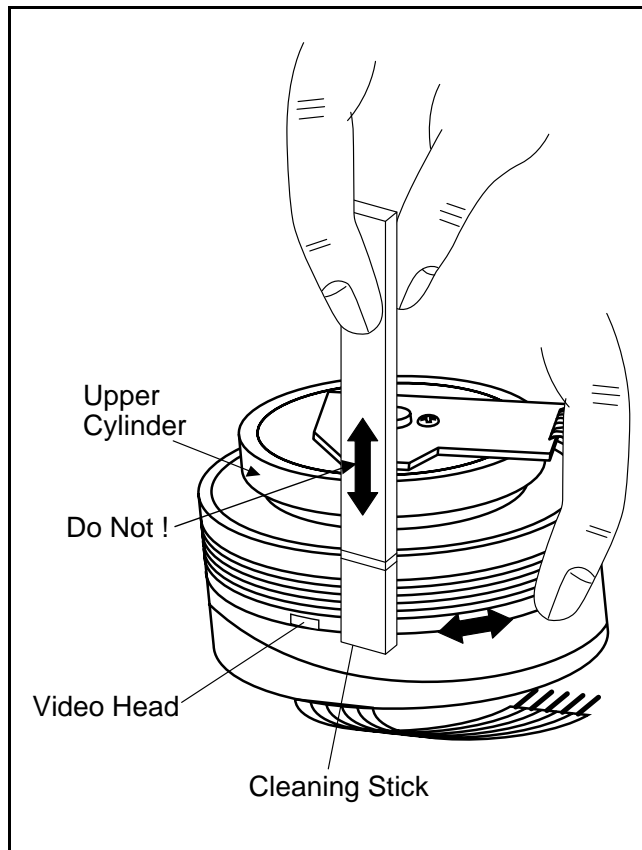
Clean the head with a head cleaning stick or chamois cloth.

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 Audio Control Head

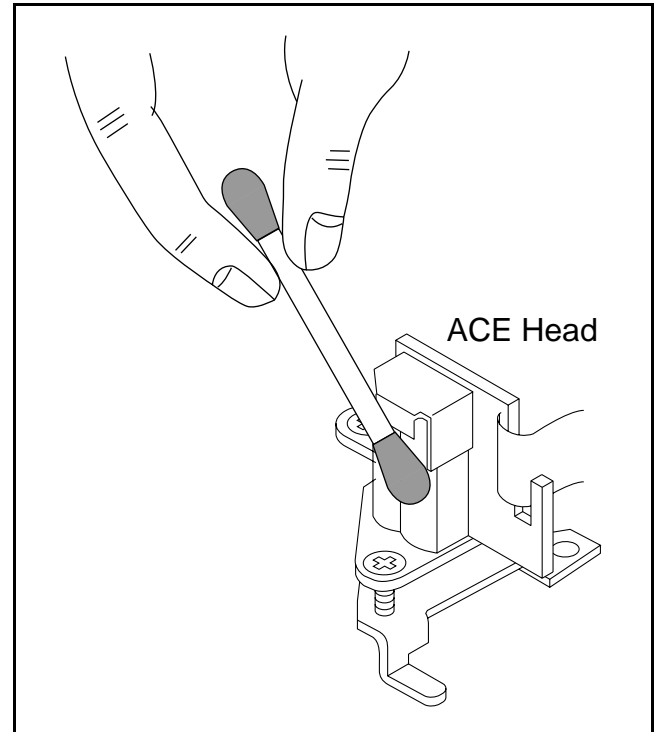
Clean the head with a cotton swab.

Procedure

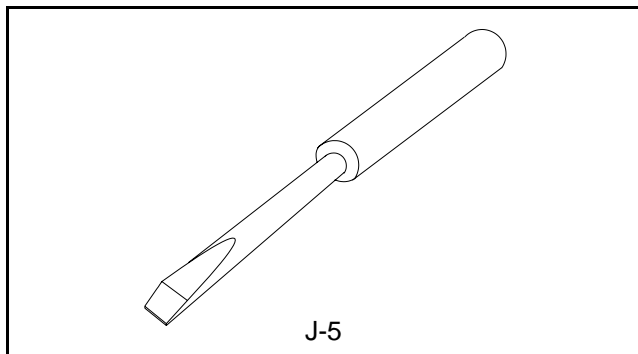
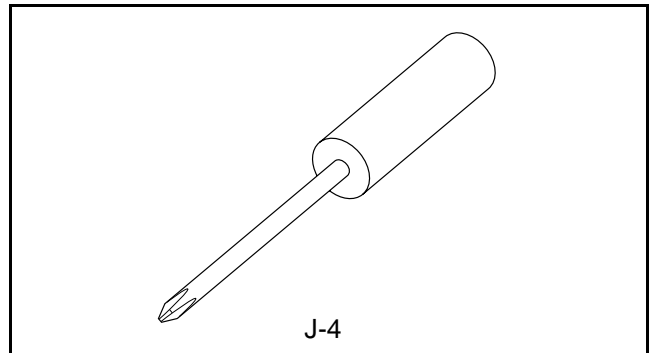
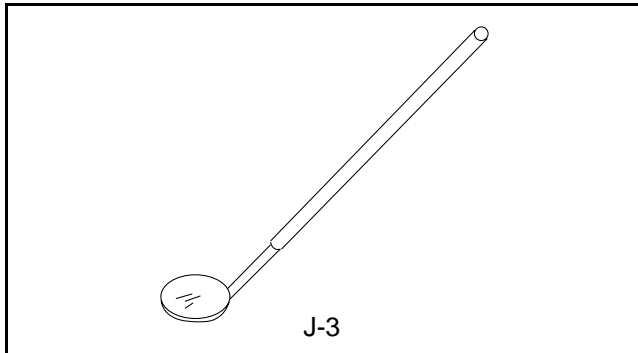
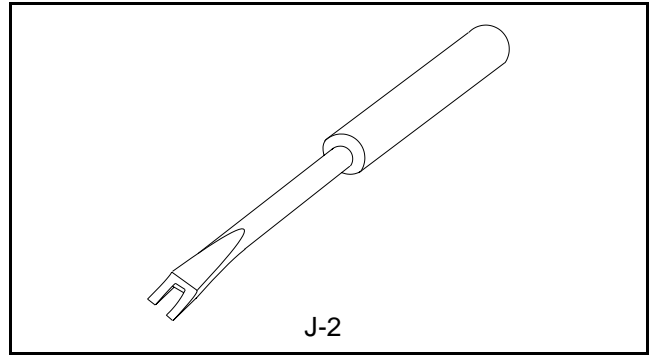
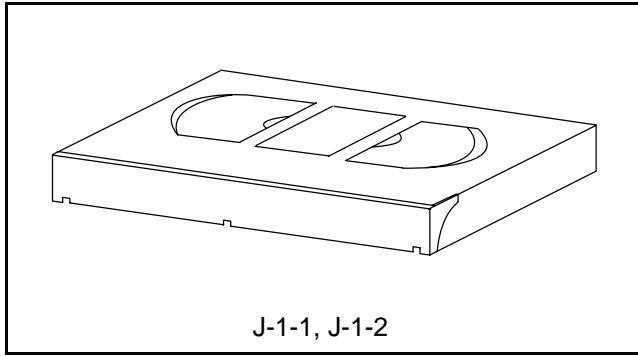
- 1.Remove the top cabinet.
- 2.Dip the cotton swab in 90% isopropyl alcohol and clean the audio control head. Be careful not to damage the upper drum and other tape running parts.

Notes:

- 1.Avoid cleaning the audio control head vertically.
- 2.Wait for the cleaned part to dry thoroughly before operating the unit or damage may occur.



SERVICE FIXTURE AND TOOLS



Ref. No.	Name	Part No.	Adjustment
J-1-1	Alignment Tape	FL6A	Head Adjustment of Audio Control Head
J-1-2	Alignment Tape	FL6N8 (1 speed only) FL6NS8 (2 speed only)	Azimuth and X Value Adjustment of Audio Control 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	A/C Head Height
J-5	X Value Adj.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:

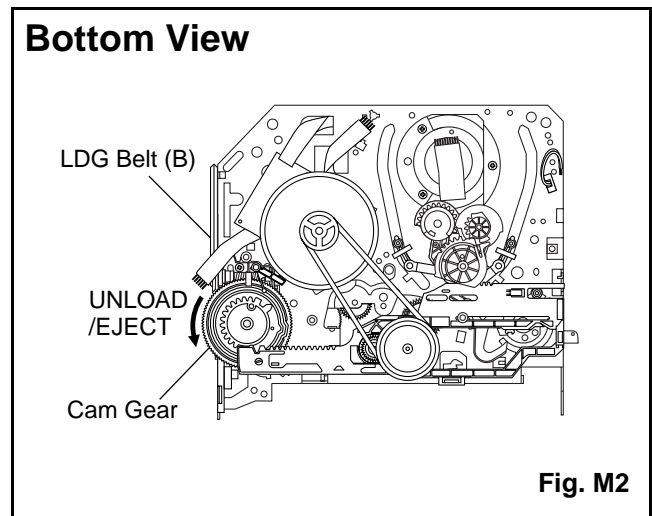
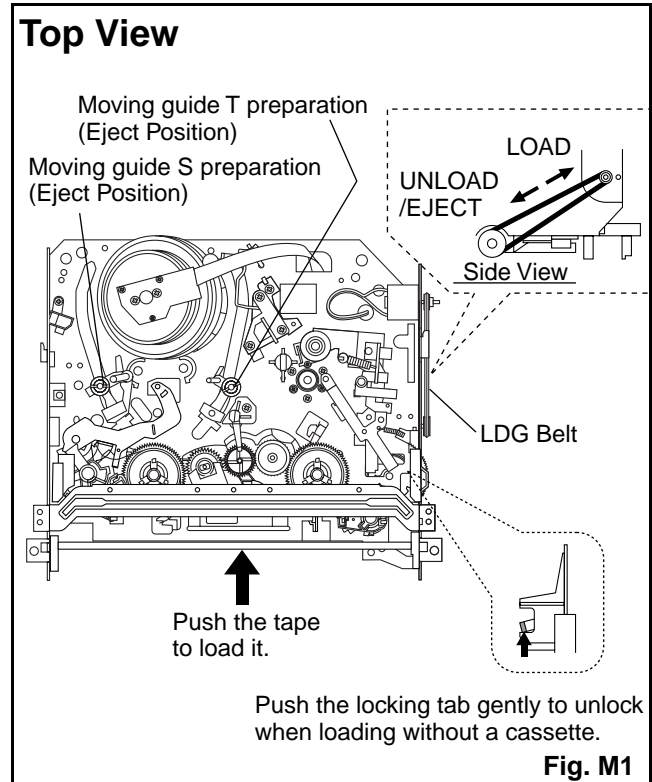
1. Disconnect the AC plug.
2. Remove the Top Case and Front Assembly.
3. Insert a cassette tape. Though the tape will not be automatically loaded, make sure that the cassette tape is all the way in at the inlet of the Cassette Holder. To confirm this, lightly push the cassette tape further in and see 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.



1.Tape Interchangeability Alignment

Note:

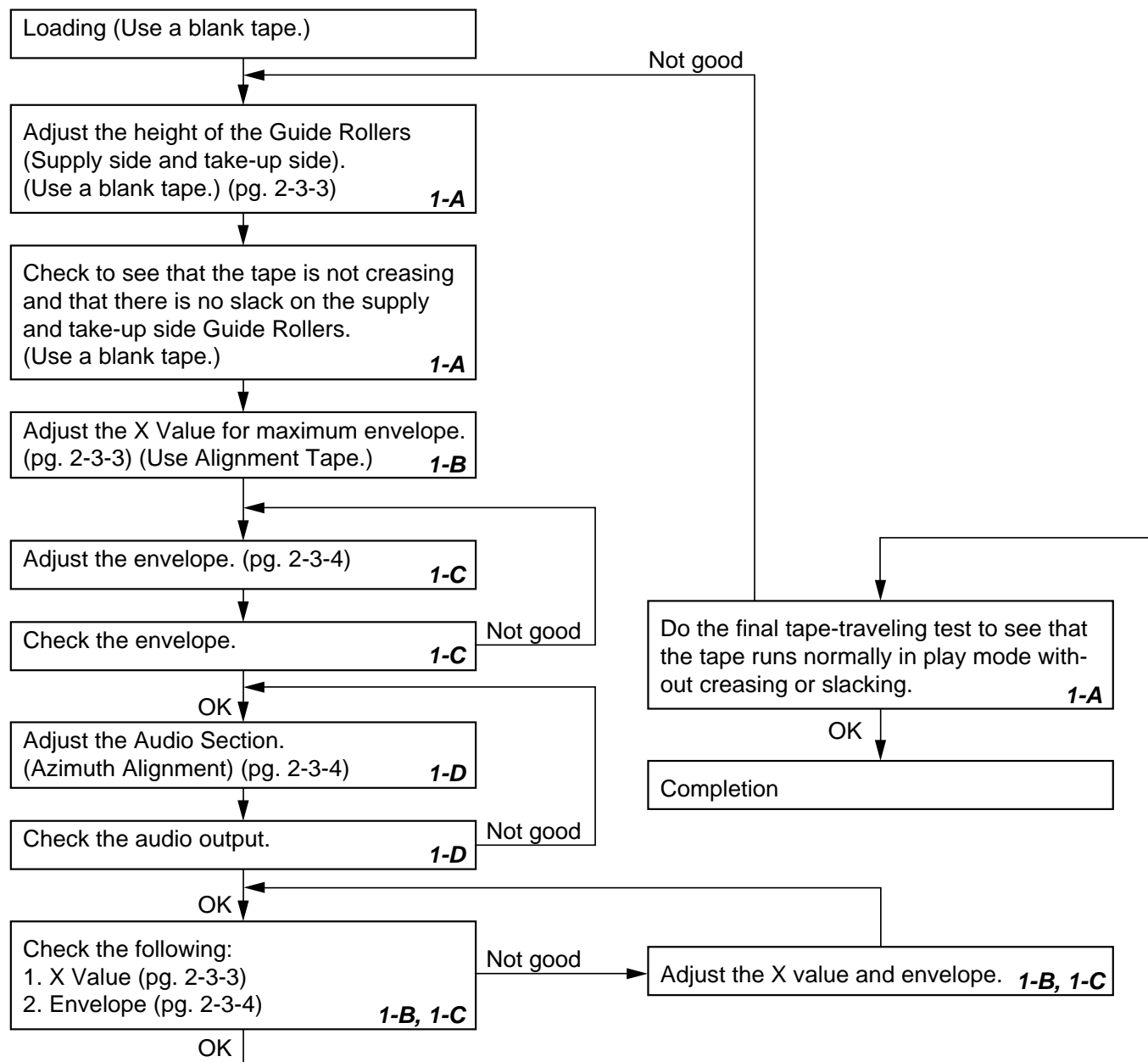
To do these alignment procedures, make sure that the Tracking Control Circuit is set to the center position every time a tape is loaded or unloaded. (Refer to page 2-3-4, procedure 1-C, step 2.)

Equipment required:

Dual Trace Oscilloscope
VHS Alignment Tape (FL6NS8)
Guide Roller Adj. Screwdriver
X-Value Adj. Screwdriver

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:

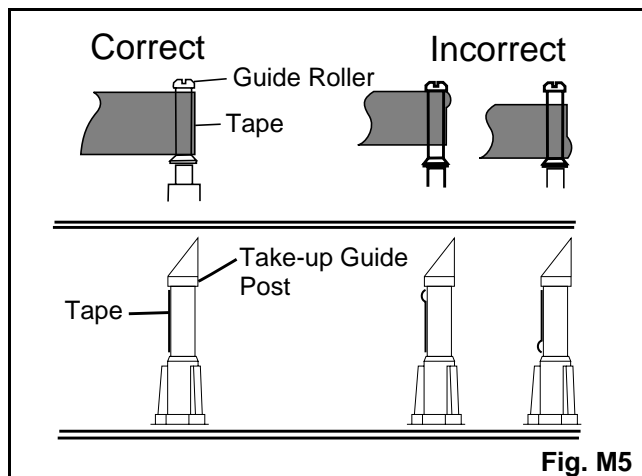
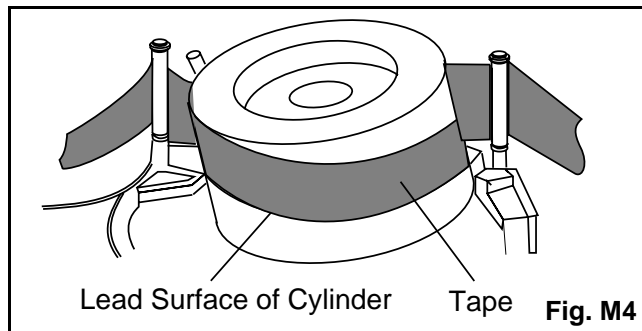
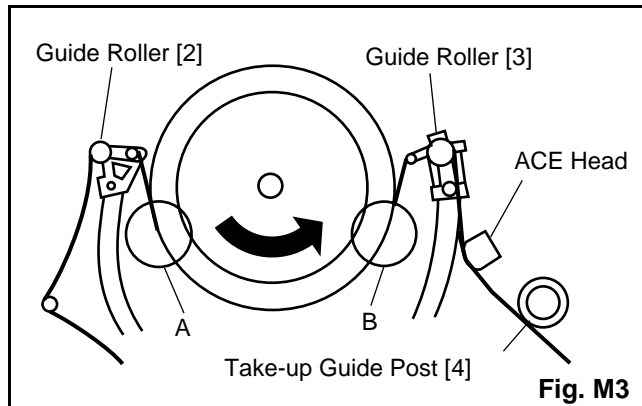
To make sure that the tape path is well stabilized.

Symptom of Misalignment:

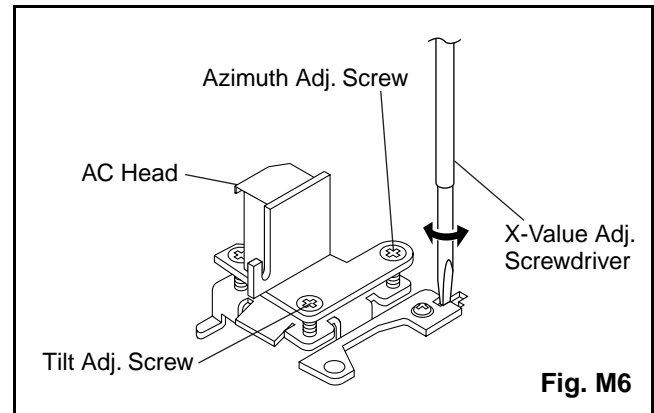
If the tape path is unstable, the tape will be damaged.

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 AC Head. (Fig. M3 and M5)
4. If creasing or snaking is apparent, adjust the Tilt Adj. Screw of the AC Head. (Fig. M6)



1-B. X Value Alignment

Purpose:

To align the Horizontal Position of the Audio/Control/Erase Head.

Symptom of Misalignment:

If the Horizontal Position of the Audio/Control/Erase Head is not properly aligned, maximum envelope cannot be obtained at the Neutral position of the Tracking Control Circuit.

1. Connect the oscilloscope to TP301 (C-PB) and TP501 (CTL) on the Main CBA. Use TP502 (RF-SW) as a trigger.
2. Playback the Gray Scale of the Alignment Tape (FL6NS8) and confirm that the PB FM signal is present.
3. Set the Tracking Control Circuit to the center position by pressing CH UP button then "PLAY" button on the unit. (Refer to note on bottom of page 2-3-4.)
4. Use the X-Value Adj. Screwdriver so that the PB FM signal at TP301 (C-PB) is maximum. (Fig. M6)
5. Press CH UP button on the unit until the CTL waveform has shifted by approx. +2msec. Make sure that the envelope is simply attenuated (shrinks in height) during this process so that you will know the envelope has been at its peak.

6. Press CH DOWN button on the unit until the CTL waveform has shifted from its original position (not the position achieved in step 5, but the position of CTL waveform in step 4) by approximately -2msec. Make sure that the envelope is simply attenuated (shrinks in height) once CTL waveform passes its original position and is further brought in the minus direction.
7. Set the Tracking Control Circuit to the center position by pressing CH UP button and then "PLAY" button.

1-C. Checking/Adjustment of Envelope Waveform

Purpose:

To achieve a satisfactory picture and precise tracking.

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 TP301 (C-PB) on the Main CBA. Use TP502 (RF-SW) as a trigger.
2. Playback the Gray Scale on the Alignment Tape (FL6NS8). Set the Tracking Control Circuit to the center 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 center 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 (FL6NS8) 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)

Dropping envelope level at the beginning of track.

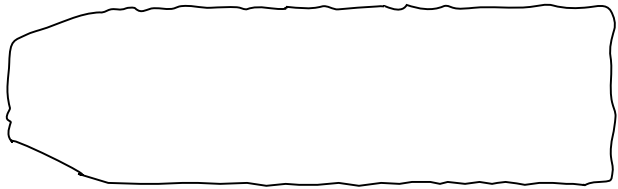


Fig. M7

Dropping envelope level at the end of track.

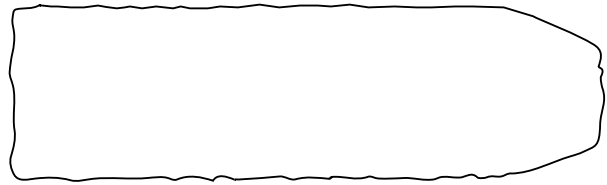


Fig. M8

Envelope is adjusted properly. (No envelope drop)

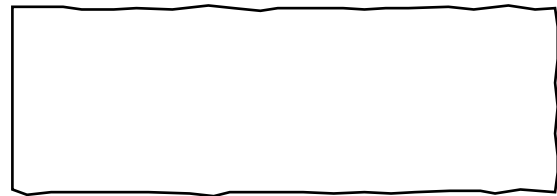


Fig. M9

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.)

All the following procedures, including those for adjustment and replacement of parts, should be done in Eject mode; see the positions of [44] and [45] 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
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[1]	[1]	Guide Holder A	T	DM3	2(S-1)	
[2]	[1]	Cassette Holder Assembly	T	DM4		
[3]	[2]	Slider (SP)	T	DM5	*(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	(S-1A)	
[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]	AC Head Assembly	T	DM1,DM7	(S-4)	
[10]	[2]	Tape Guide Arm Assembly	T	DM1,DM8	*(P-2)	
[11]	[10]	C Door Opener	T	DM1,DM8	*(L-4)	
[12]	[11]	Pinch Arm (B)	T	DM1,DM8	*(P-3)	
[13]	[12]	Pinch Arm Assembly	T	DM1,DM8		
[14]	[14]	FE Head Assembly	T	DM1,DM9	(S-5)	
[15]	[15]	Prism	T	DM1,DM9	(S-6)	
[16]	[2]	Slider Shaft	T	DM10	*(L-5)	
[17]	[16]	C Drive Lever (SP)	T	DM10		
[18]	[16]	C Drive Lever (TU)	T	DM10	(S-7), *(P-4)	
[19]	[19]	Capstan Motor	B	DM2,DM11	3(S-8), Cap Belt	
[20]	[20]	Clutch Assembly (HI)	B	DM2,DM12	(C-1)	
[21]	[20]	Center Gear	B	DM12		
*[22]	[22]	F Brake Assembly (HI)	B	DM2,DM12	*(L-6)	
[23]	[22]	Worm Holder	B	DM2,DM13	(S-9), *(L-7), *(L-8)	
[24]	[22]	Pulley Assembly (HI)	B	DM2,DM13		
[25]	[25]	Mode Gear	B	DM2,DM13	(C-2)	
[26]	[20],[25]	Mode Lever (HI)	B	DM2,DM13	(C-3)	
[27]	[22],[23], [26]	Cam Gear (A) (HI)	B	DM2,DM13	(C-4)	(+)Refer to Alignment Sec.Pg.2-4-8
[28]	[26]	TR Gear C	B	DM2,DM13	(C-5)	
[29]	[28]	TR Gear Spring	B	DM13		
[30]	[29]	TR Gear A/B	B	DM13		
[31]	[31]	FF Arm (HI)	B	DM1,DM13		
[32]	[26]	Idler Assembly (HI)	B	DM1,DM14	*(L-9)	
[33]	[26]	BT Arm	B	DM2,DM14	*(P-5)	

STEP /LOC. No.	START-ING No.	PART		Fig. No.	REMOVAL	INSTALLATION
					REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[34]	[26]	Loading Arm (SP) Assembly	B	DM2,DM14		(+)Refer to Alignment Sec.Pg.2-4-8
[35]	[34]	Loading Arm (TU) Assembly	B	DM2,DM14		(+)Refer to Alignment Sec.Pg.2-4-8
[36]	[16],[26]	M Brake (TU) Assembly (HI)	T	DM1,DM15		
[37]	[2],[26]	M Brake (SP) Assembly (HI)	T	DM1,DM15	*(P-6)	
[38]	[37]	Tension Lever Assembly	T	DM1,DM15		
[39]	[38]	T Lever Holder	T	DM15	*(L-10)	
[40]	[40]	M Gear (HI)	T	DM1,DM15	(C-6)	
[41]	[15],[40]	Sensor Gear (HI)	T	DM1,DM15	(C-7)	
[42]	[36],[40]	Reel T	T	DM1,DM15		
[43]	[38]	Reel S	T	DM1,DM15		
[44]	[34],[38]	Moving Guide S Preparation	T	DM1,DM16		
[45]	[35]	Moving Guide T Preparation	T	DM1,DM16		
[46]	[19]	TG Post Assembly	T	DM1,DM16	*(L-11)	
[47]	[27]	Rack Assembly	R	DM17		(+)Refer to Alignment Sec.Pg.2-4-8
[48]	[47]	F Door Opener	R	DM17		
[49]	[49]	Cleaner Assembly	T	DM1,DM6		
[50]	[49]	CL Post	T	DM6	*(L-12)	
(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.

*** [22] F Brake Assembly (HI) is not used in 2 head model.**

Top View

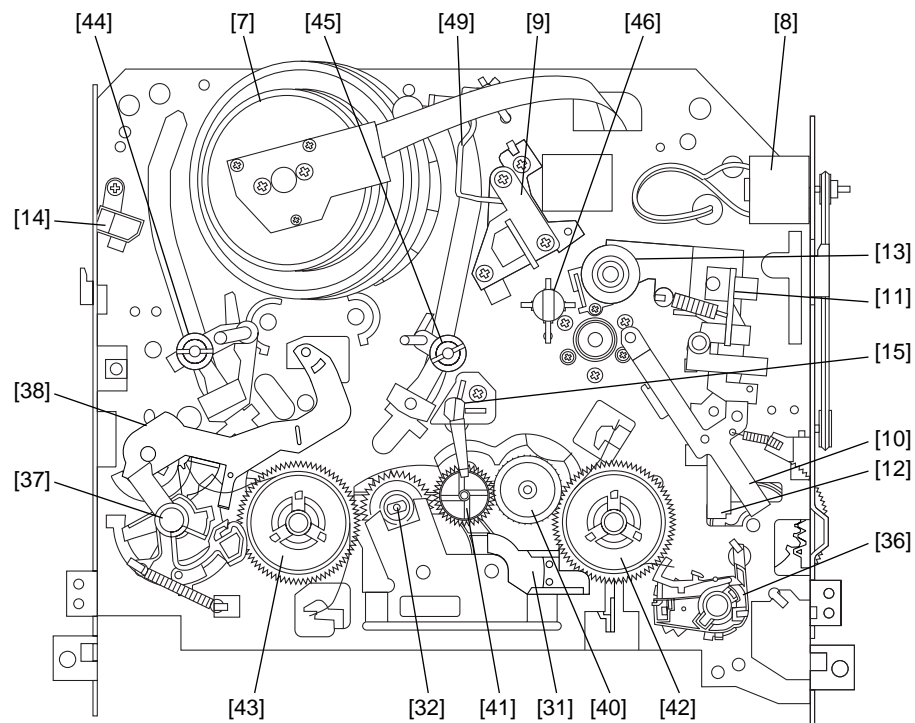


Fig. DM1

Bottom View

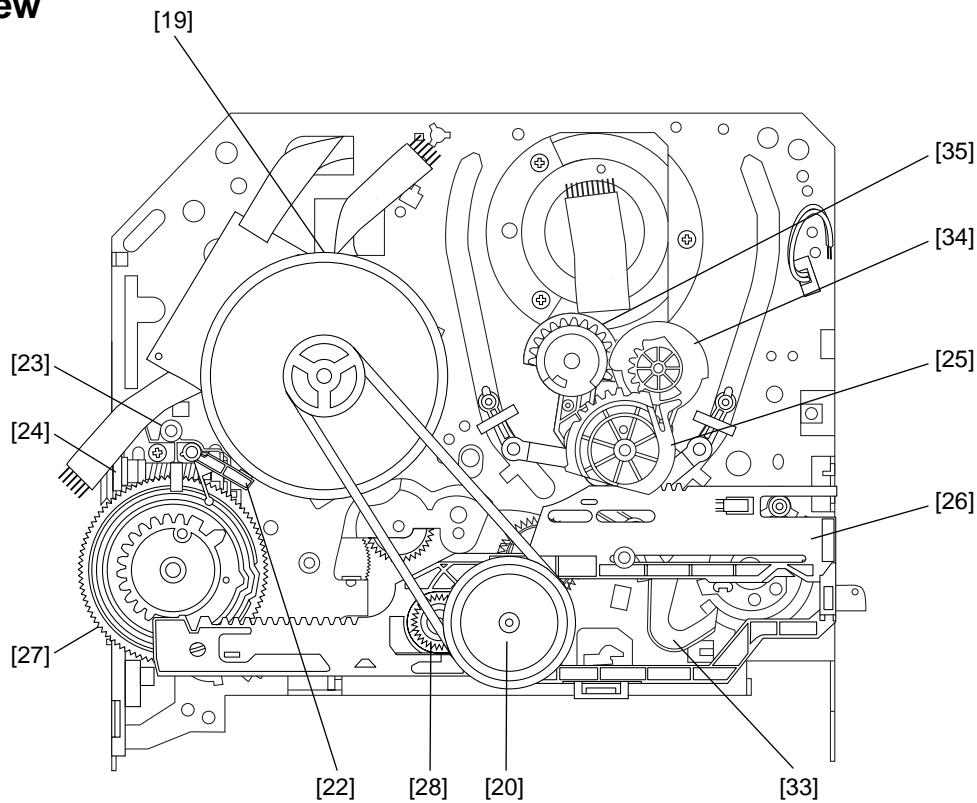
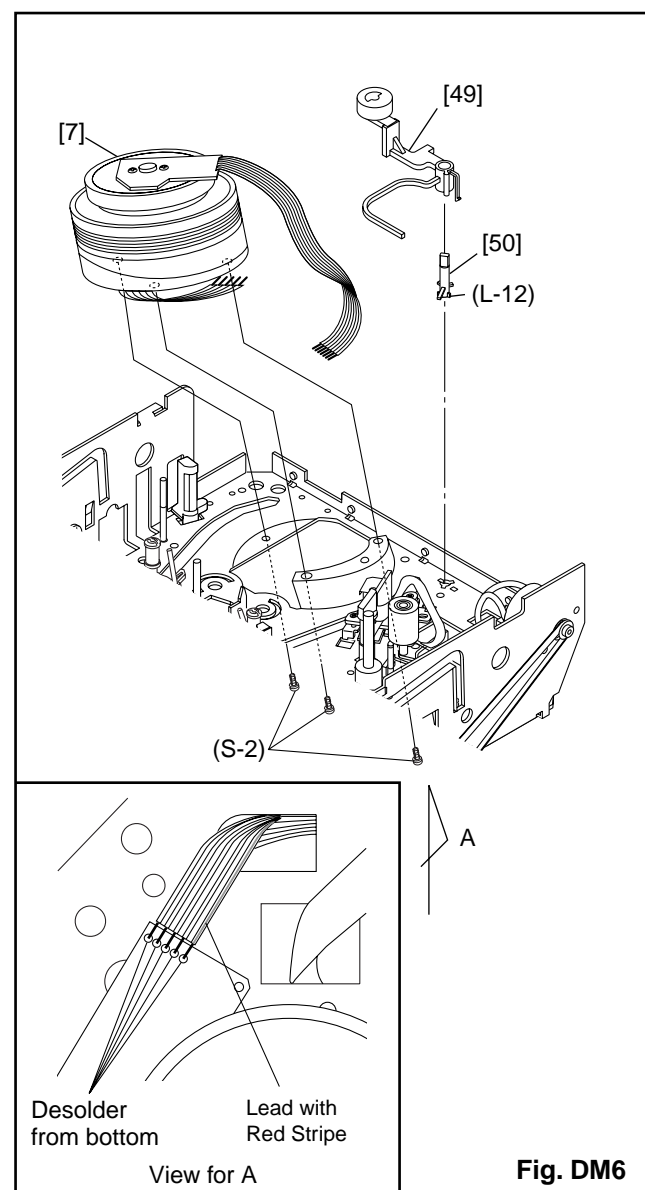
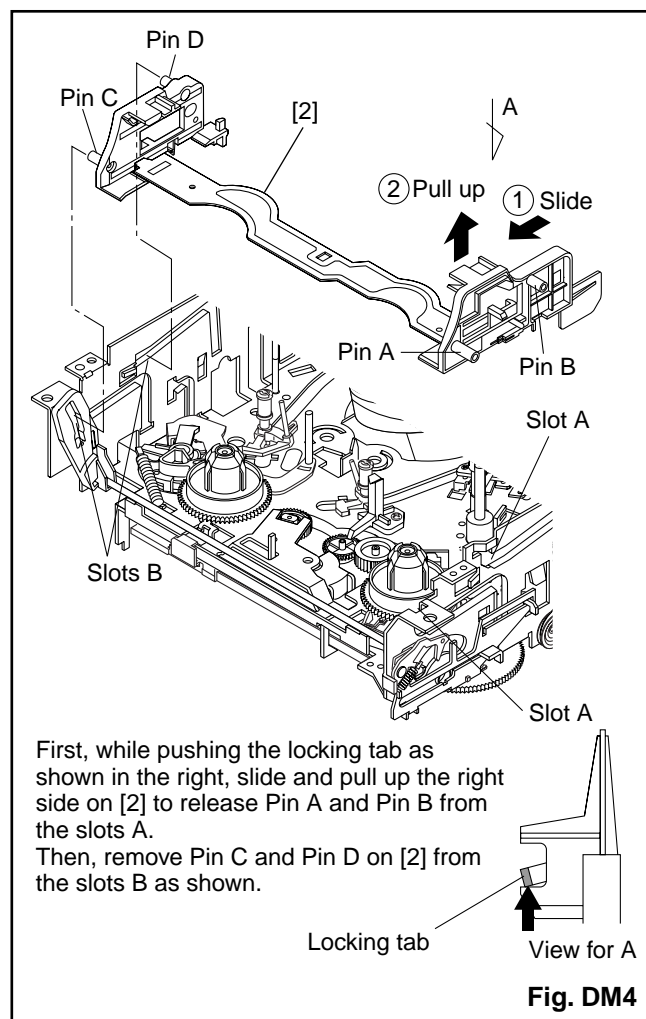
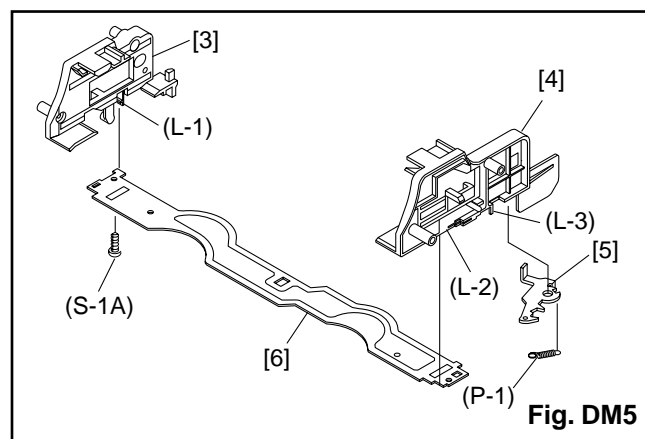
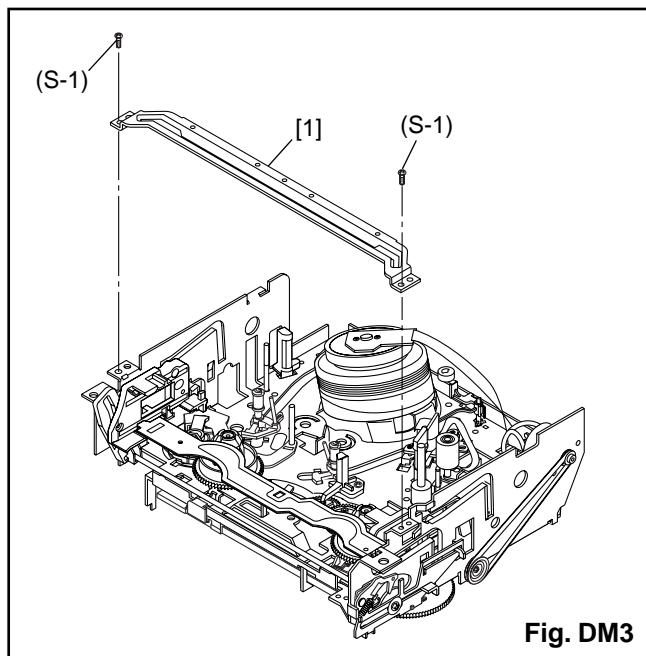
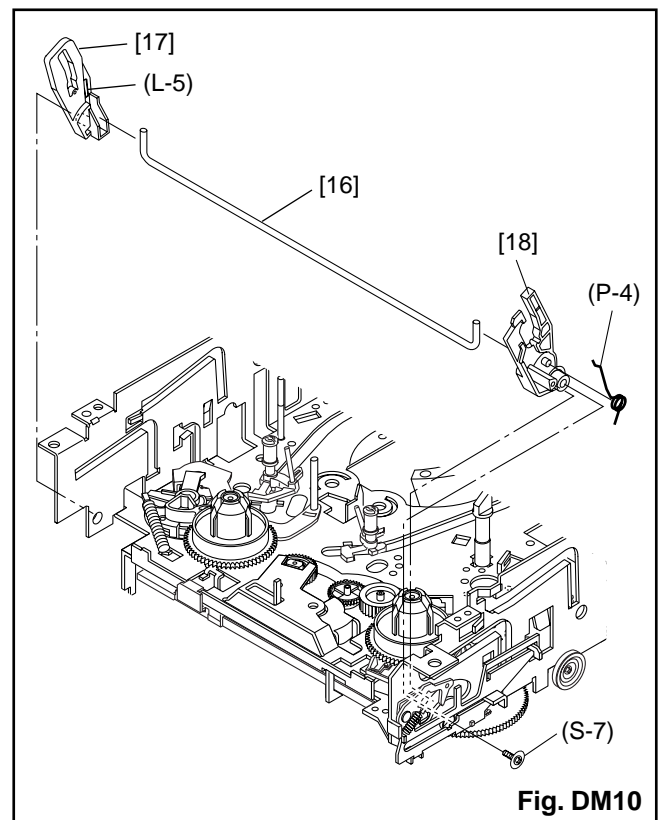
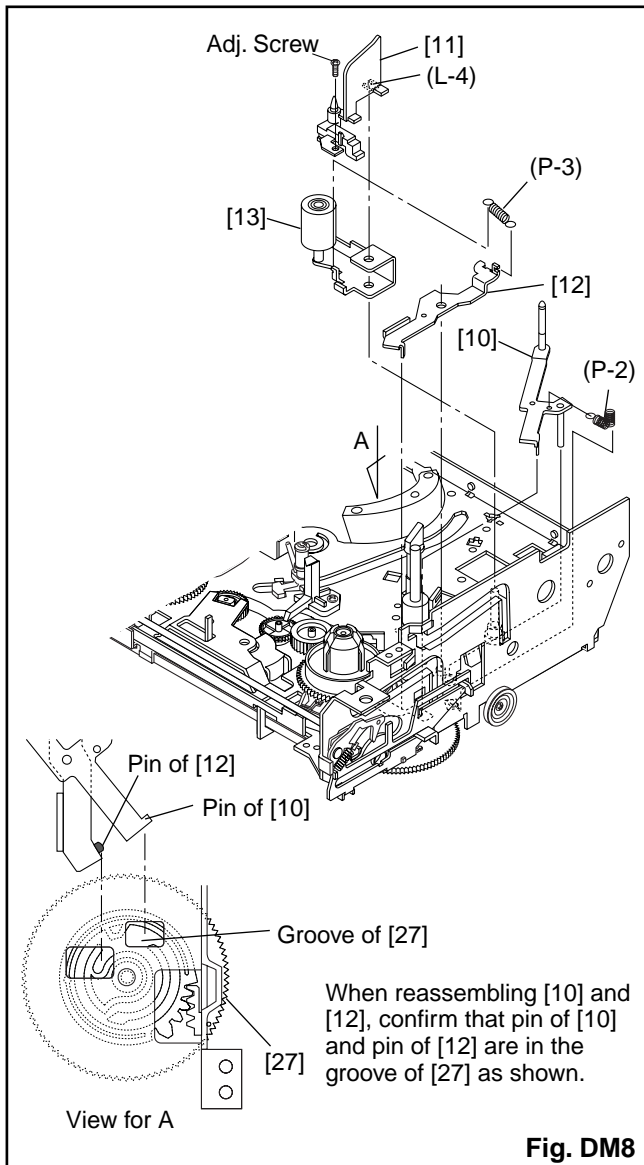
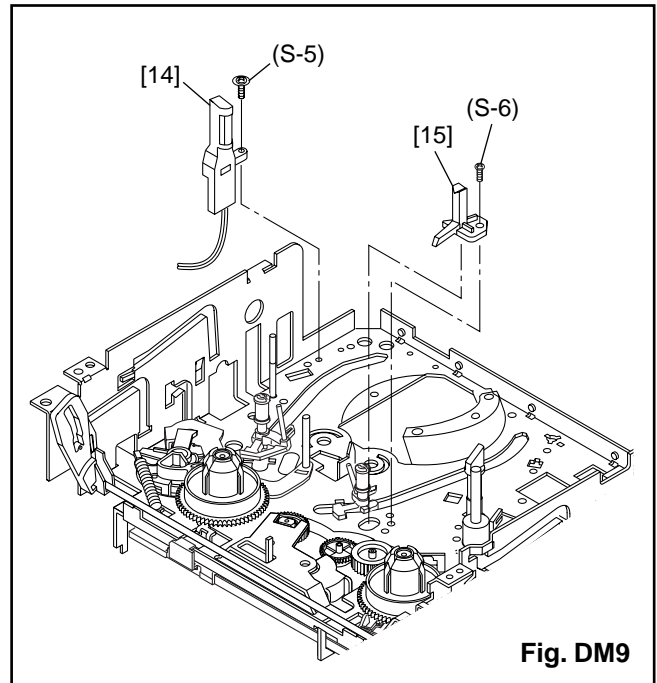
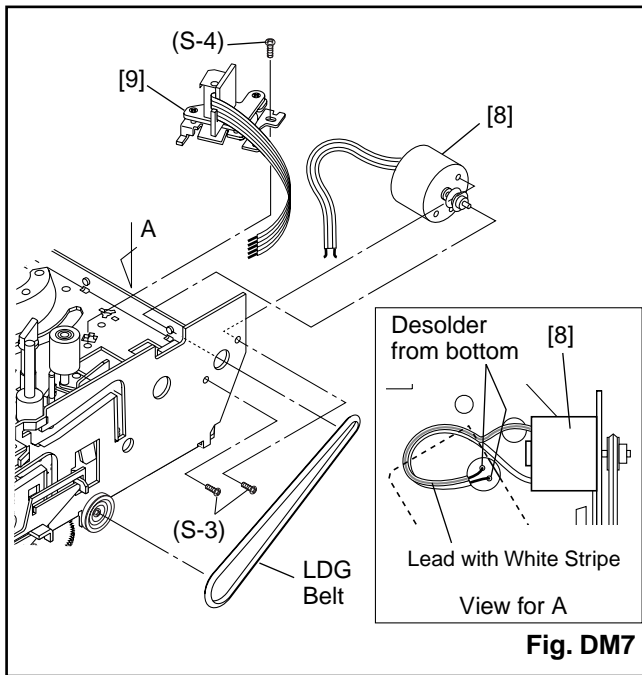
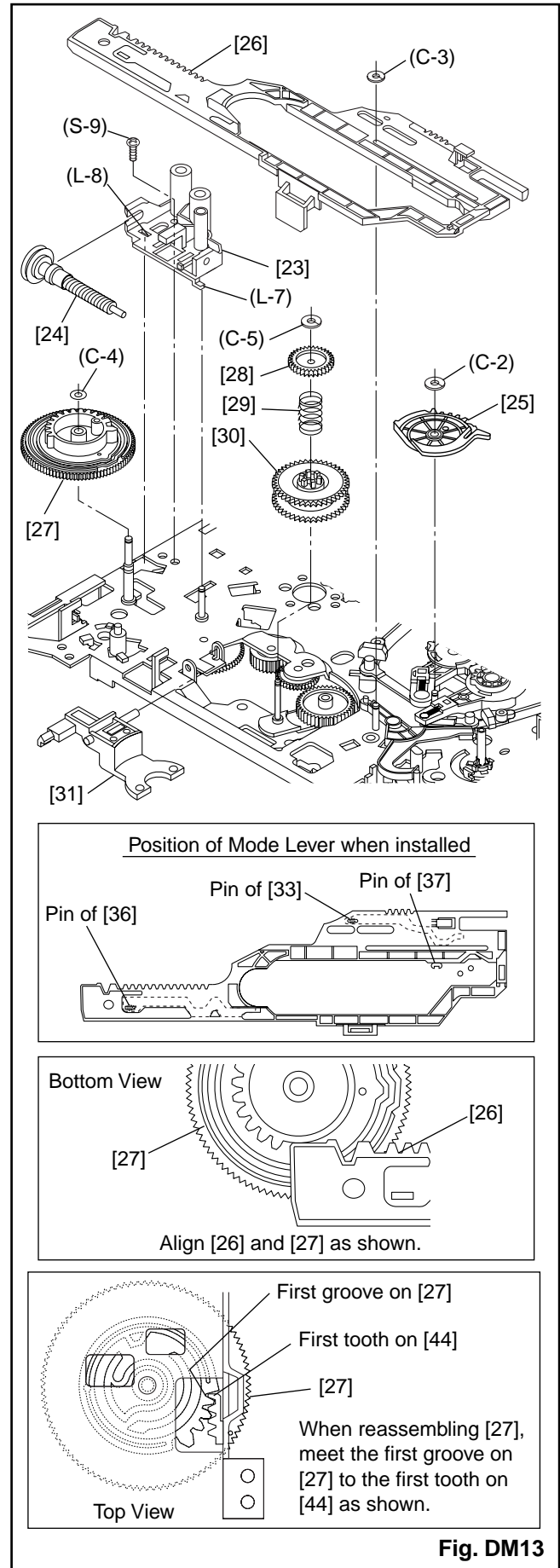
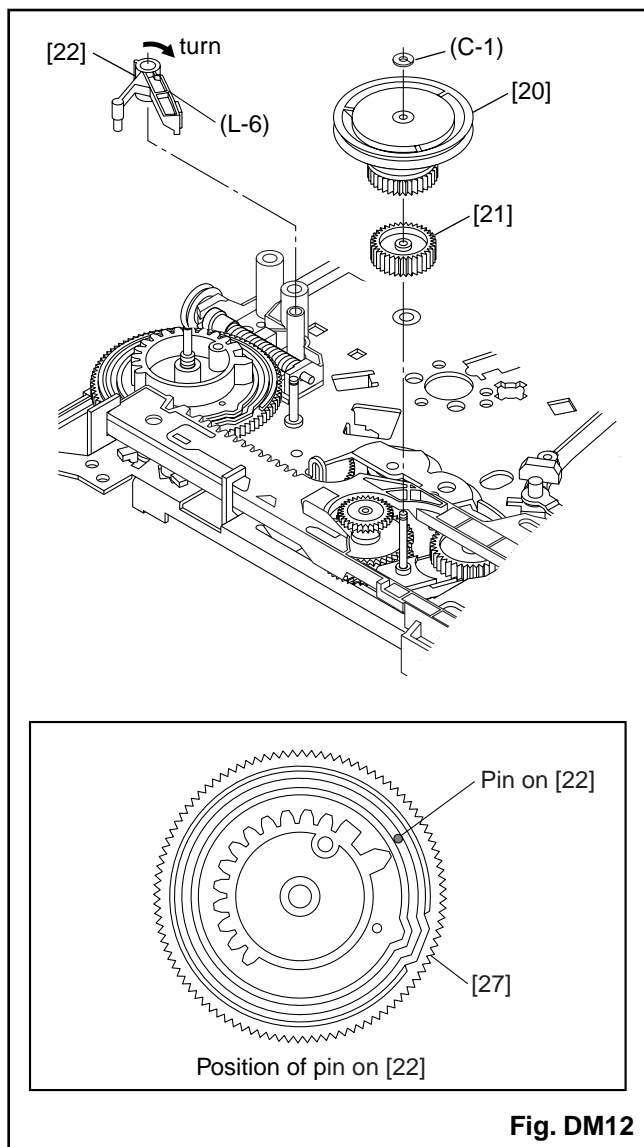
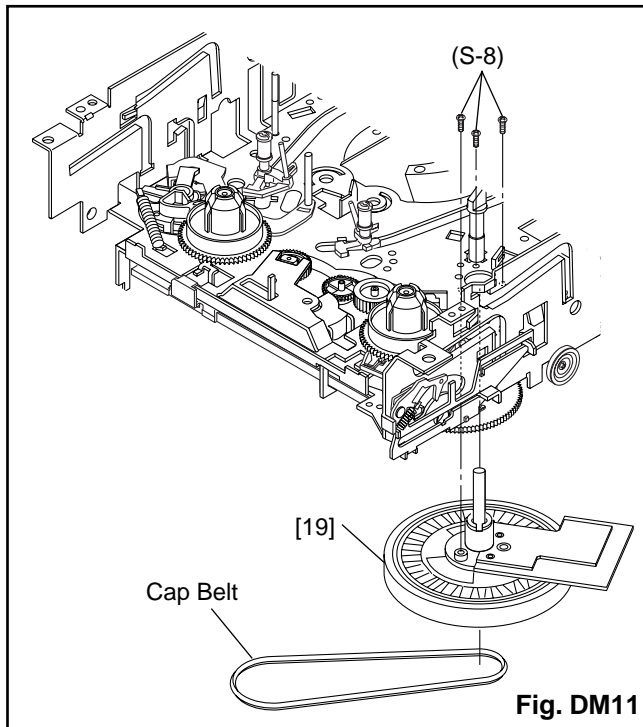
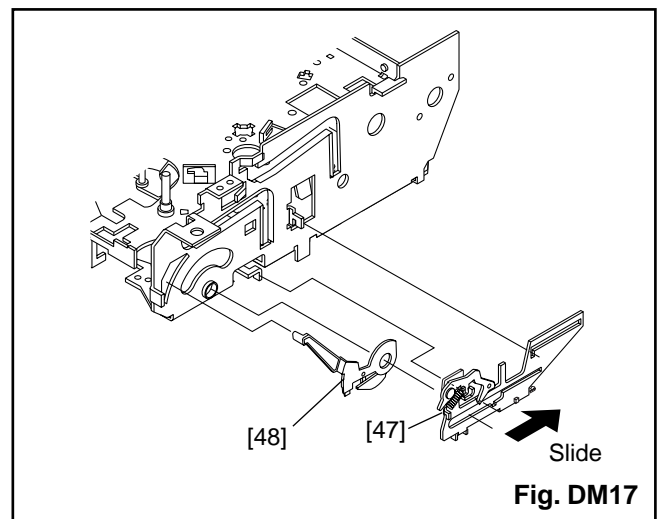
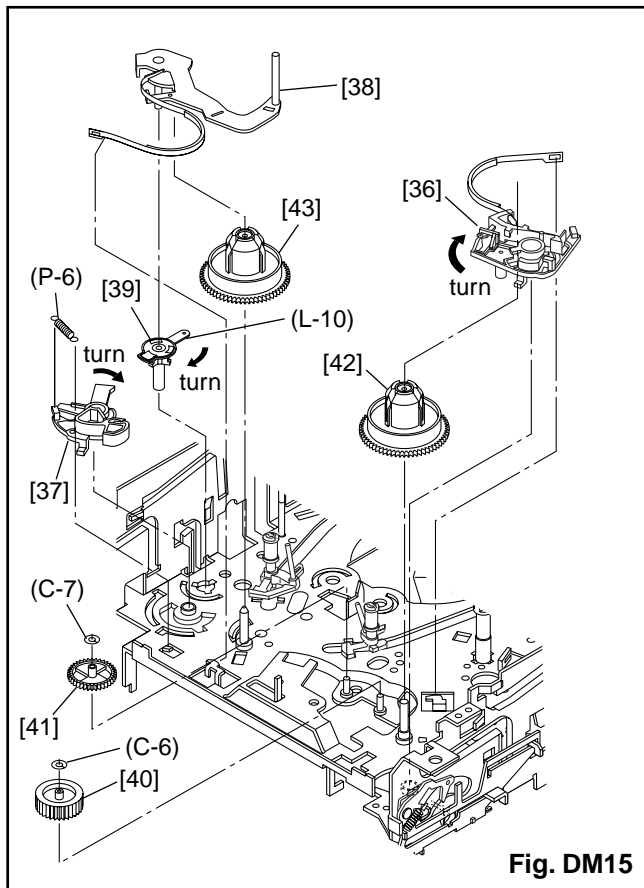
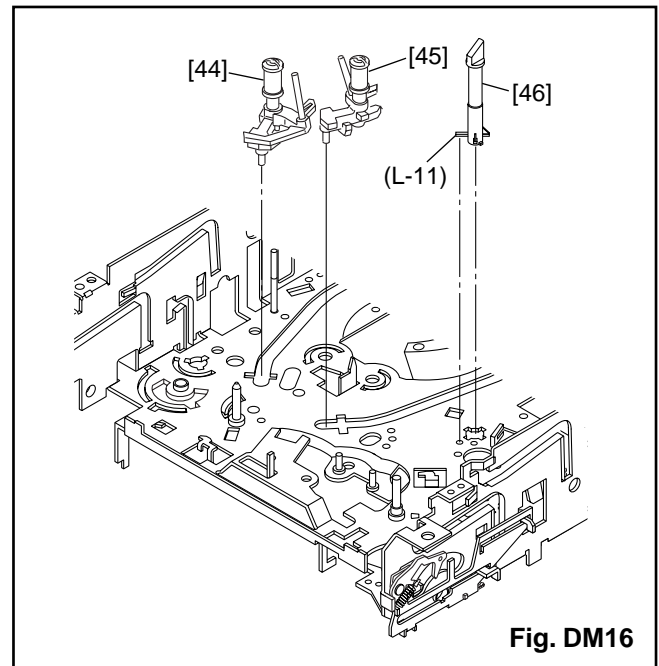
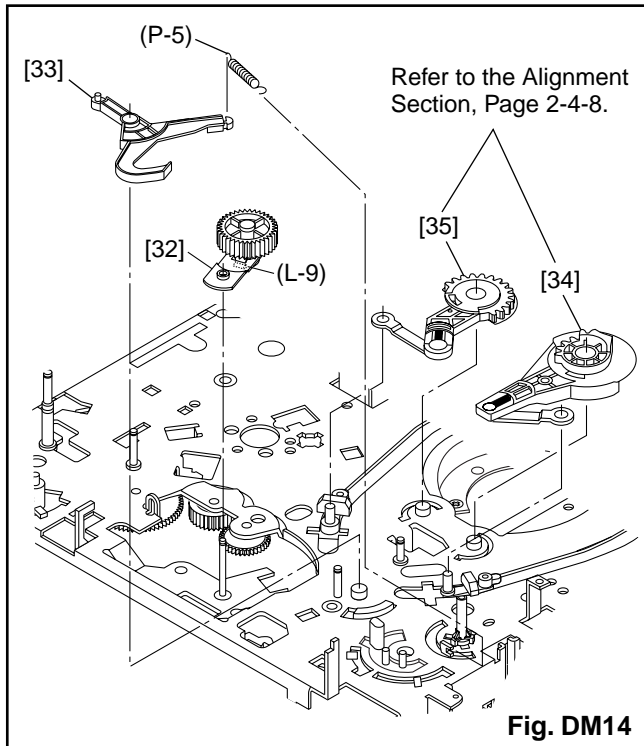


Fig. DM2









ALIGNMENT PROCEDURES OF MECHANISM

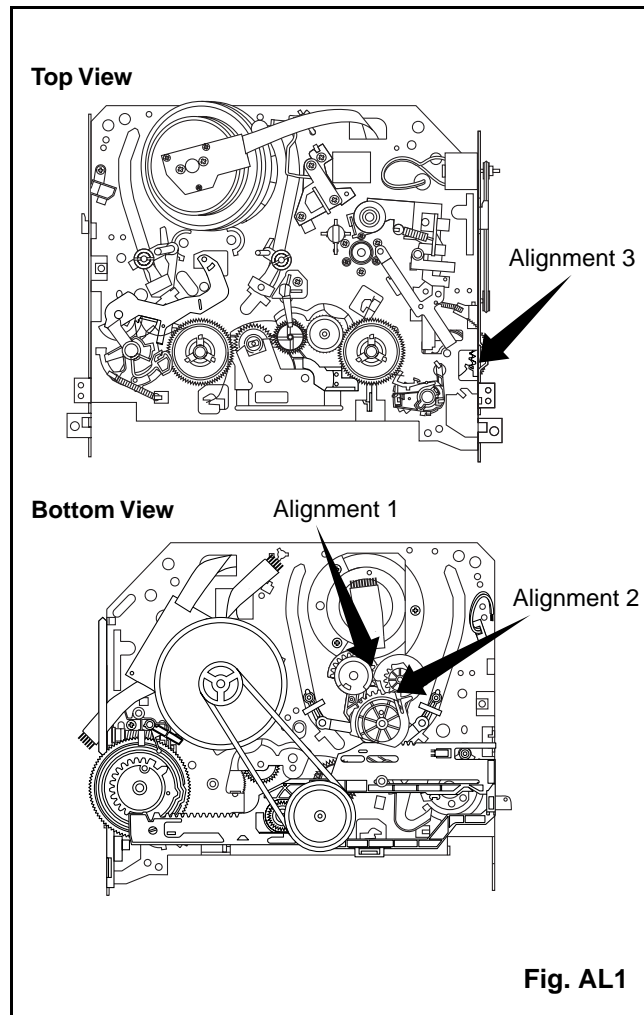
The following procedures describe how to align the individual gears and levers that make up the tape loading/unloading mechanism. Since information about the state of the mechanism is provided to the System Control Circuit only through the Mode Switch, it is essential that the correct relationship between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



Alignment 1

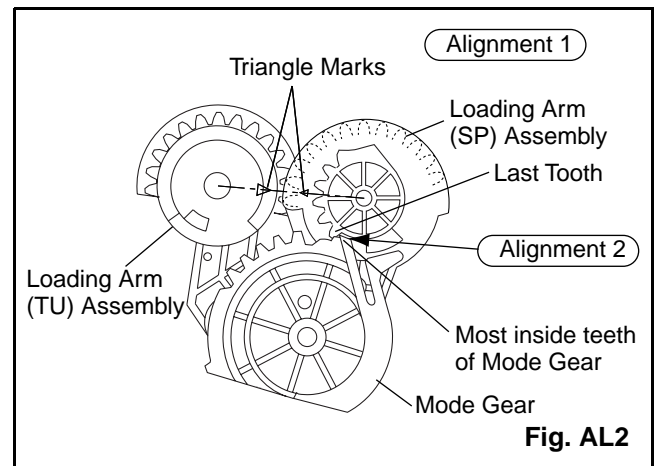
Loading Arm (SP) and (TU) Assembly

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

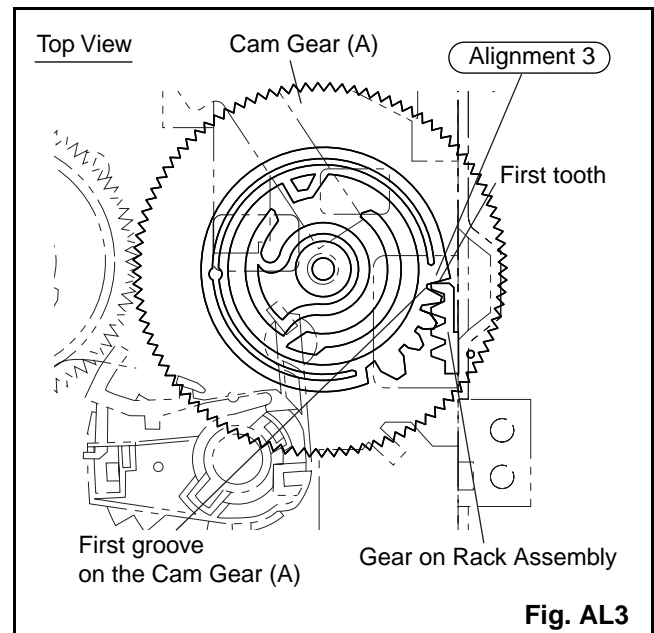
Keeping the two triangles pointing at each other, install the Loading Arm (SP) Assembly so that the last tooth of the gear meets the most inside teeth of the Mode Gear. See Fig. AL2.



Alignment 3

Cam Gear (A) (HI), 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) (HI) as shown in Fig. AL3.



EXPLODED VIEWS AND PARTS LIST SECTION

VIDEO CASSETTE RECORDER

27A-850

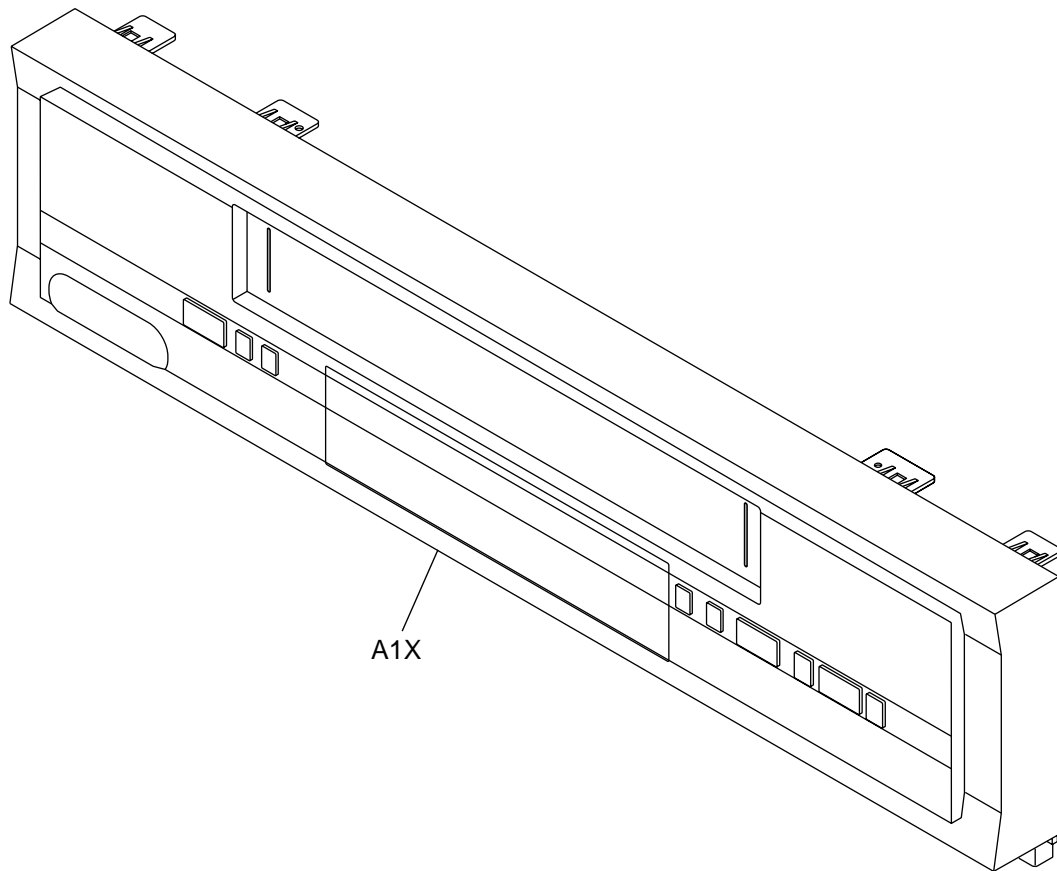
Sec. 3: Exploded views and Parts List Section	
● Exploded views	
● Parts List	

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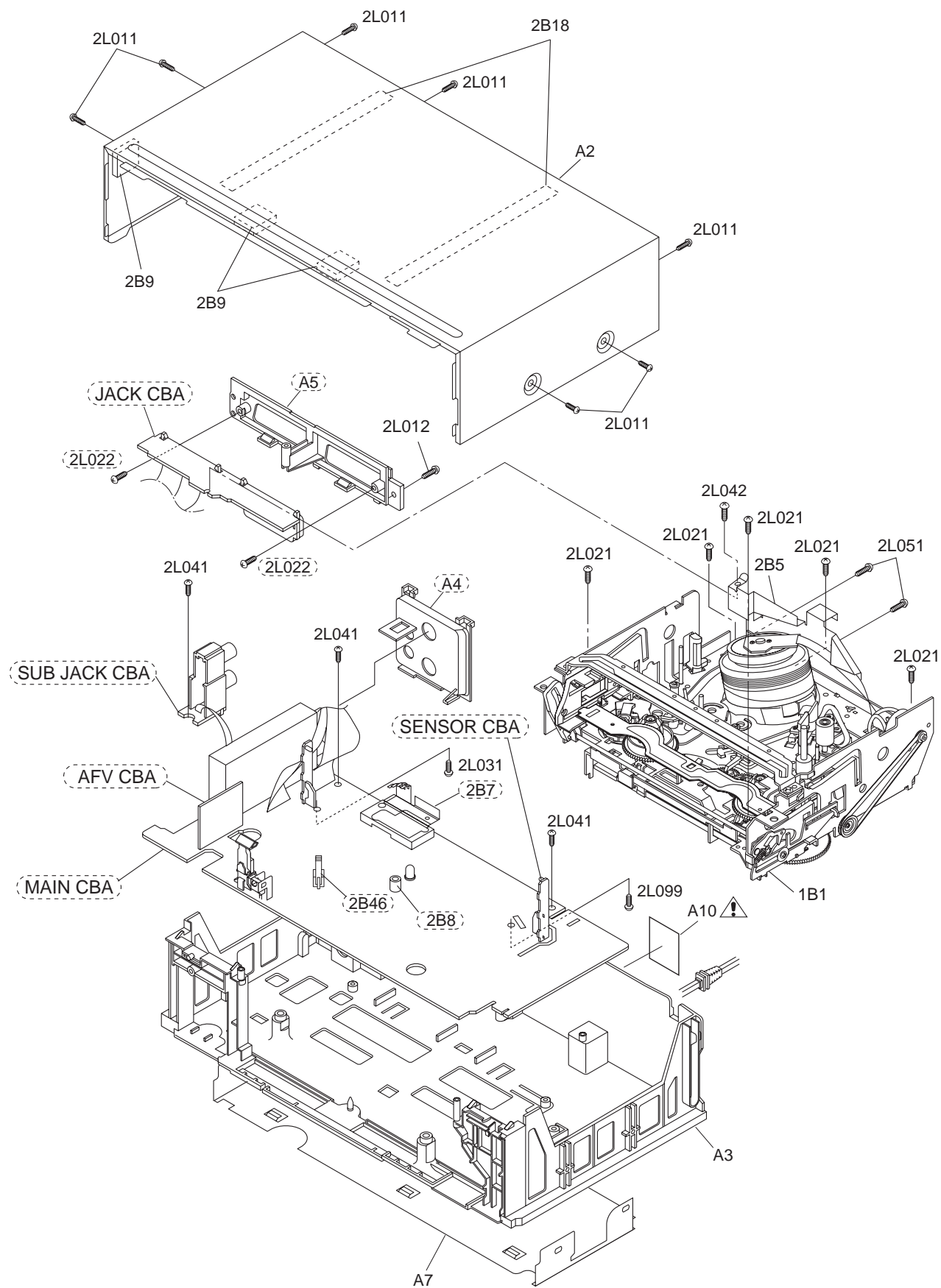
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Mechanical Parts List	3-2-1
Electrical Parts List	3-3-1
Deck Parts List	3-4-1

EXPLODED VIEWS

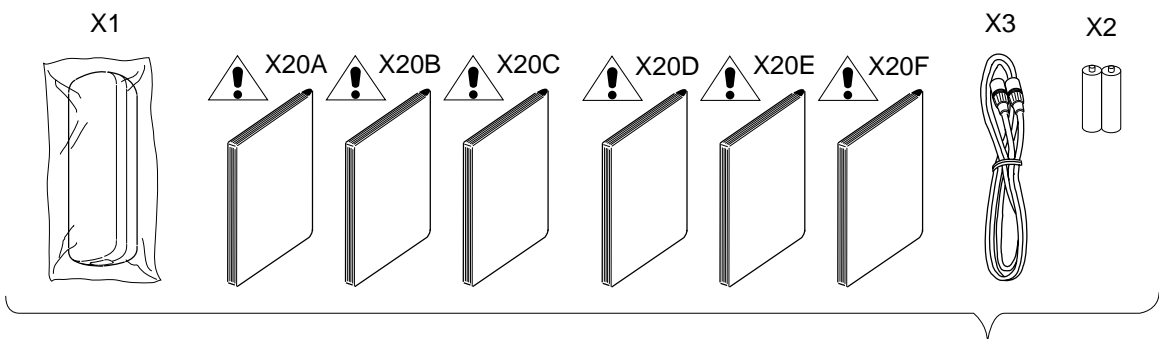
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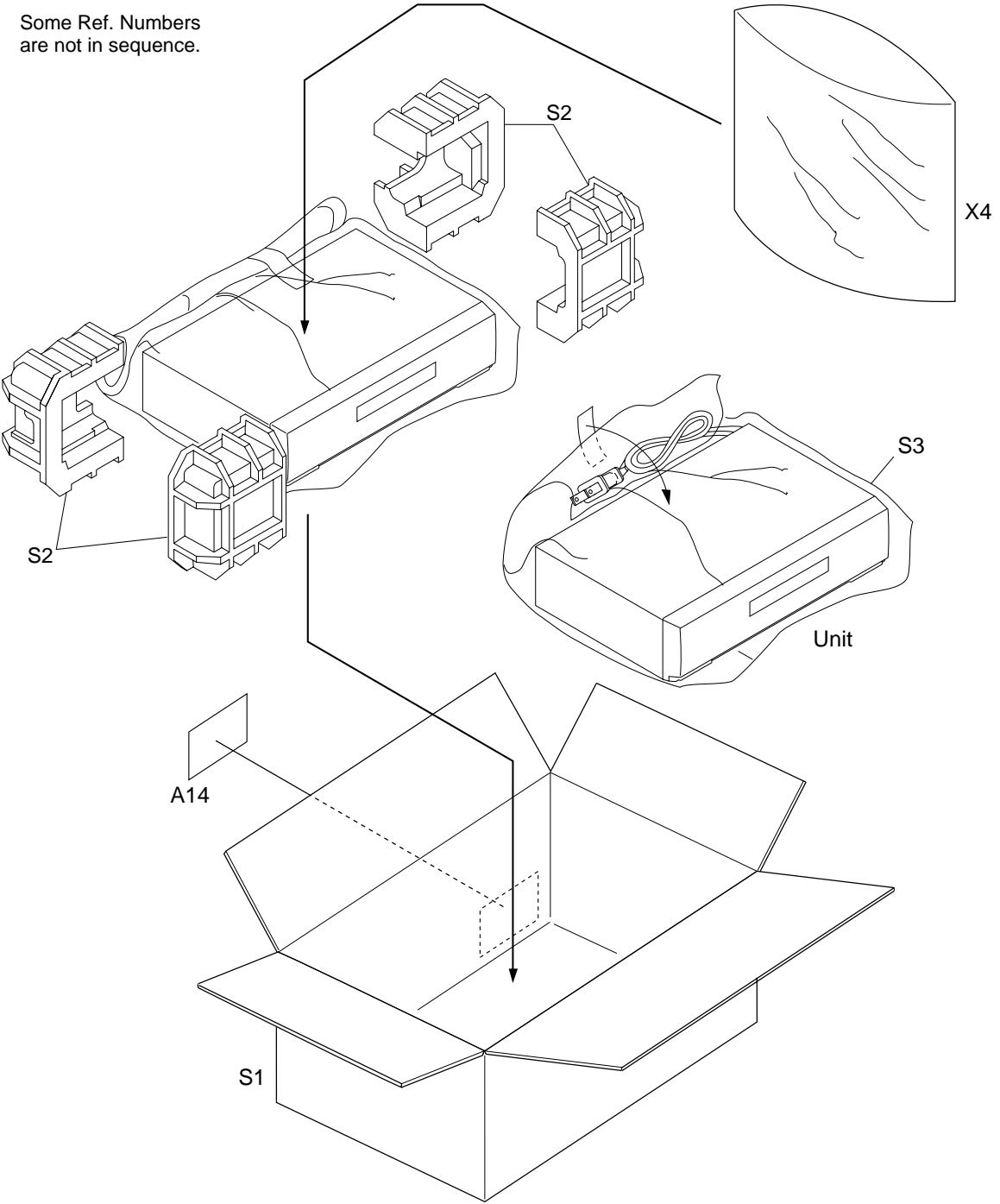
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Packing



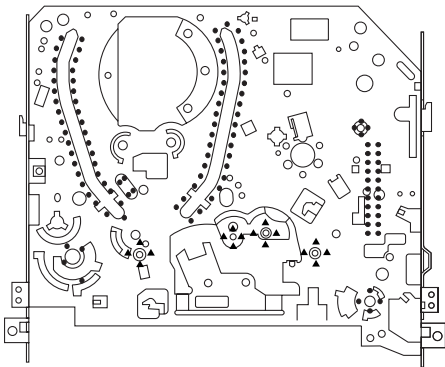
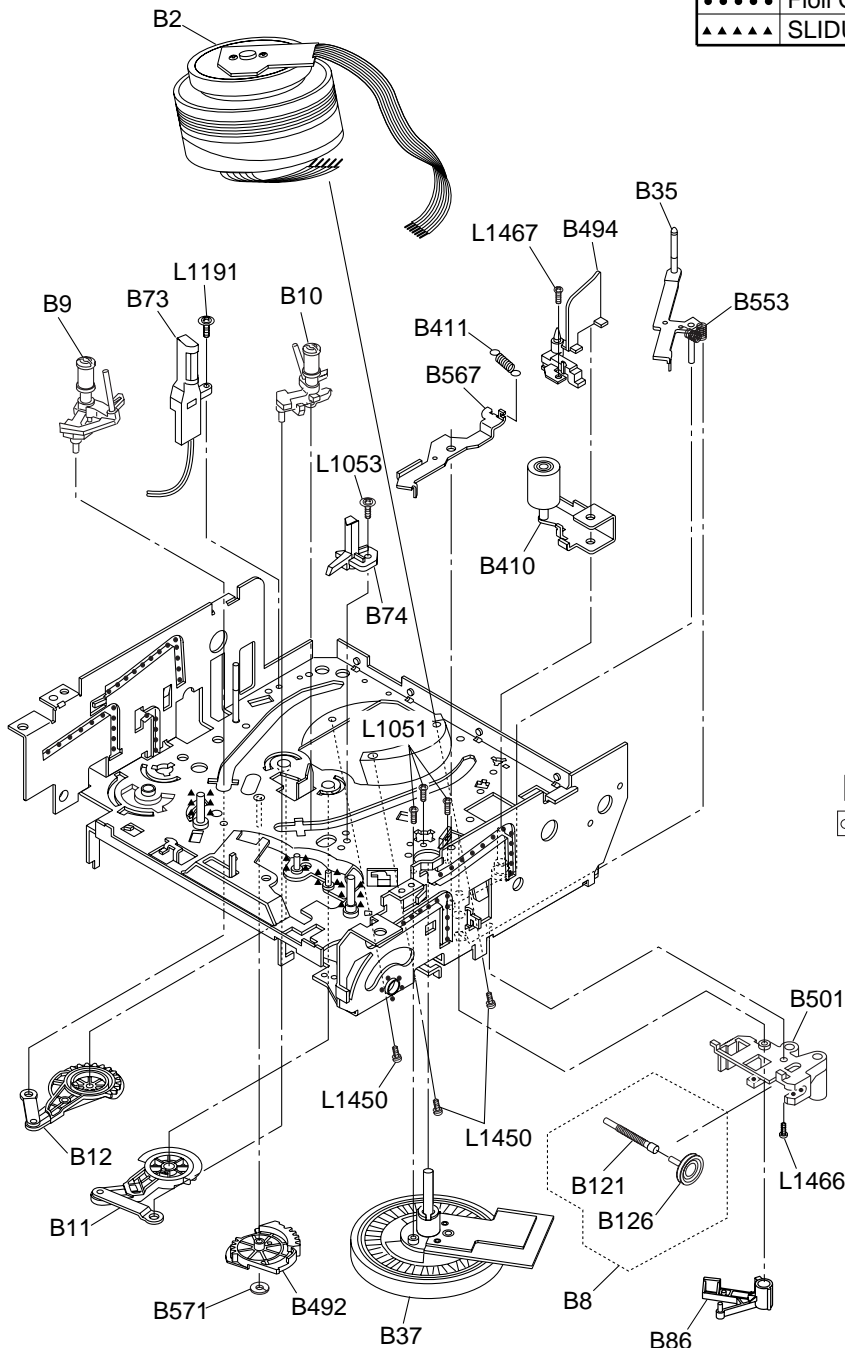
Some Ref. Numbers
are not in sequence.



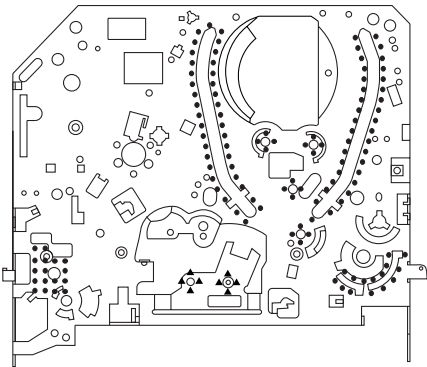
DECK EXPLODED VIEWS

Deck Mechanism View 1

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



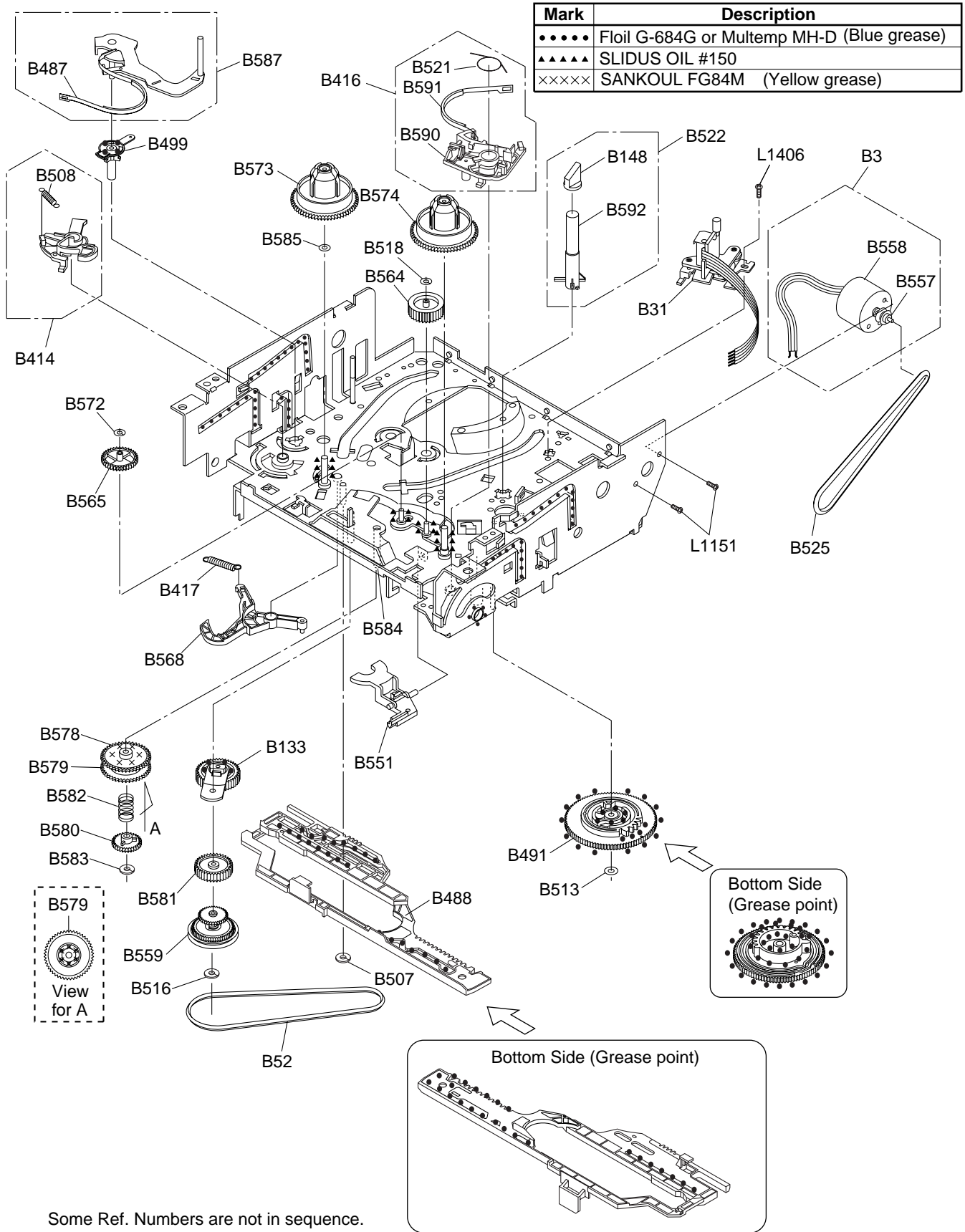
Chassis Assembly
Top View (Lubricating Point)



Chassis Assembly
Bottom View (Lubricating Point)

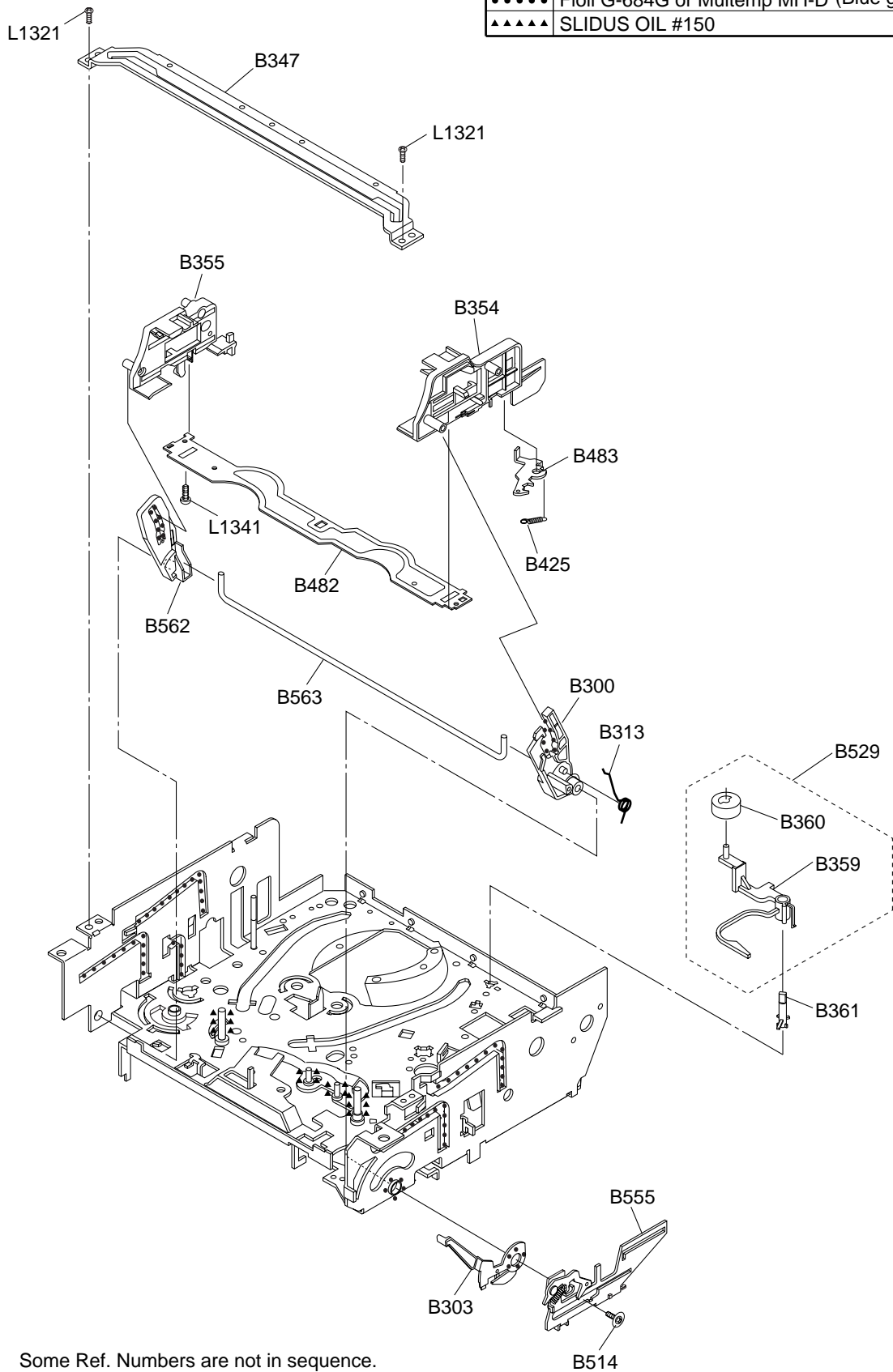
Some Ref. Numbers are not in sequence.

Deck Mechanism View 2




Deck Mechanism View 3

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





MECHANICAL PARTS LIST

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


NOTE:

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

Ref. No.	Description	Part No.
X20E 	OWNER'S MANUAL(GERMAN) HE4F0ED	0VMN03632
X20F 	OWNER'S MANUAL(ENGLISH) HE4F0ED	0VMN03633

Ref. No.	Description	Part No.
A1X	FRONT ASSEMBLY HE450ED	0VM204197
A2	CASE, TOP(ANTHRACITE) HE240ED	0VM101267
A3	CHASSIS(U27F-GMBH) HE240ED	0VM000177
A4	JACK BOARD(U27 FTZ) HE480ED (See Electrical Parts List)	
A5	JACK BOARD(2-21P) HE470ED (See Electrical Parts List)	
A7	PANEL, BOTTOM(RESET) HE240ED	0VM305896
A10 	LABEL, RATING HE4F0ED	-----
A14	LABEL, SERIAL NO. HE240ED or LABEL, BAR CODE HE4F0ED	-----
1B1	DECK ASSEMBLY CZD012/VM17E0	N17E0FL
2B5	SHEILD, CYLINDER HC460ED	0VM305182
2B7	HEAD SHIELD ASSEMBLY HE470ED (See Electrical Parts List)	
2B8	BUSH, LED(F) H3700UD (See Electrical Parts List)	
2B9	CUSHION HC460ED	0VM413251
2B18	FIBER, TOP CASE HC460ED	0VM412906
2B46	ROHM HOLDER H7770JD (See Electrical Parts List)	
2L011	SCREW, P-TIGHT 3X10 BIND HEAD+	GBCP3100
2L012	SCREW, P-TIGHT 3X10 BIND HEAD+	GBCP3100
2L021	SCREW, P-TIGHT M3X10 WASHER HEAD+	GCMP3100
2L022	SCREW, P-TIGHT M3X10 WASHER HEAD+ (See Electrical Parts List)	
2L031	SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060
2L041	P-TIGHT SCREW 3X8 BIND +	GBMP3080
2L042	P-TIGHT SCREW 3X8 BIND +	GBMP3080
2L051	SCREW, S-TIGHT M3X5 BIND HEAD+	GBMS3050
2L099	SCREW, P-TIGHT M3X8 BIND HEAD+	GBCP3080
PACKING		
S1	GIFT BOX CARTON HE4F0ED	0VM306320
S2	STYROFOAM HE470ED	0VM203850
S3	UNIT, BAG V4010PA	0VM406453B
ACCESSORIES		
X1	REMOTE CONTROL UNIT 364/CRC005 or REMOTE CONTROL UNIT 364/CRC007	N9473ED NA664ED
X2	DRY BATTERY R6P/2S or DRY BATTERY ES-GR6M-C	XB0M451T0001 XB0M571GLP01
X3	RF CORD PAL 1.2M or RF CABLE CC1001020012010	WPZ0122LG001 WPZ0122LW001
X4	ACCESSORY BAG K8092BA	0VM404632
X20A 	OWNER'S MANUAL(DANISH) HE4F0ED	0VMN03514
X20B 	OWNER'S MANUAL(SWEDISH) HE4F0ED	0VMN03515
X20C 	OWNER'S MANUAL(FINNISH) HE4F0ED	0VMN03516
X20D 	OWNER'S MANUAL(NORWEGIAN) HE4F0ED	0VMN03517

ELECTRICAL PARTS LIST

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

NOTES:

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

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

MCV CBA

Ref. No.	Description	Part No.
	MCV CBA	0VSA14166
	Consists of the following	
	Main CBA(MCV-A)	-----
	SUB JACK CBA(MCV-B)	-----
	JACK CBA(MCV-C)	-----
	SENSOR CBA	0VSA13549

MAIN CBA

Ref. No.	Description	Part No.
	Main CBA (MCV-A)	-----
	Consists of the following	
CAPACITORS		
C002, 	METALLIZED FILM CAP. 0.068µF/275V K or	CT2E683HJE06
	METALLIZED FILM CAP. 0.068µF/250V K	CT2E683DC011
C003, 	SAFETY CAP. 2200pF/250V or	CCN2EMP0E222
	SAFETY CAP. 2200pF/250V	CA2E222MR049
C004	ELECTROLYTIC CAP. 33µF/400V M(L+Z)	CA2H330NC010
C005	CERAMIC CAP. B K 0.01µF/500V	CCD2JKP0B103
C006	CERAMIC CAP. SL K 56pF/1KV or	CCD3AKPSL560
	CERAMIC CAP. SL J 56pF/1KV	CCD3AJPSL560
C007	CERAMIC CAP.(AX) B K 1000pF/50V	CCA1JKT0B102
C008	CERAMIC CAP.(AX) X K 5600pF/16V	CCA1CKT0X562
C010	FILM CAP.(P) 0.022µF/50V J or	CMA1JJS00223
	FILM CAP.(P) 0.022µF/50V J	CA1J223MS029
C011	ELECTROLYTIC CAP. 10µF/16V M H7	CE1CMAVSL100
C012	ELECTROLYTIC CAP. 10µF/50V M H7	CE1JMAVSL100
C014	ELECTROLYTIC CAP. 470µF/35V M or	CE1GMASDL471
	ELECTROLYTIC CAP. 470µF/35V M	CE1GMASDL471
C017	ELECTROLYTIC CAP. 470µF/16V M or	CE1CMASDL471
	ELECTROLYTIC CAP. 470µF/16V M	CE1CMASDL471
C018	ELECTROLYTIC CAP. 100µF/16V M or	CE1CMASDL101
	ELECTROLYTIC CAP. 100µF/16V M	CE1CMASDL101
C020	ELECTROLYTIC CAP. 1000µF/16V M	CE1CMZPTL102
C021	ELECTROLYTIC CAP. 470µF/10V M or	CE1AMASDL471
	ELECTROLYTIC CAP. 470µF/10V M	CE1AMASDL471
C025	CERAMIC CAP.(AX) X K 5600pF/16V	CCA1CKT0X562

Ref. No.	Description	Part No.
C026	ELECTROLYTIC CAP. 47µF/16V M H7	CE1CMAVSL470
C053	ELECTRIC DOUBLE LAYER CAP.0.047F/5.5V Z or	CA0J473NE003
	ELECTRIC DOUBLE LAYER CAP. 0.047F/5.5V Z	CA0J473MS014
C056	CHIP CERAMIC CAP. B K 0.047µF/50V or	CHD1JK30B473
	CHIP CERAMIC CAP. B K 0.047µF/25V	CHD1EK30B473
C057	CHIP CERAMIC CAP. CH J 470pF/50V or	CHD1JJ3CH471
	CHIP CERAMIC CAP. CG J 470pF/50V	CHD1JJ3CG471
C060	ELECTROLYTIC CAP. 10µF/16V M H7	CE1CMAVSL100
C061	CHIP CERAMIC CAP. F Z 0.1µF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1µF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1µF/50V	CHD1JZ3FZ104
C157	ELECTROLYTIC CAP. 1µF/50V M H7	CE1JMAVSL1R0
C158	CHIP CERAMIC CAP. B K 1000pF/50V	CHD1JK30B102
C251	ELECTROLYTIC CAP. 10µF/16V M H7	CE1CMAVSL100
C252	CHIP CERAMIC CAP. B K 1000pF/50V	CHD1JK30B102
C253	ELECTROLYTIC CAP. 1µF/50V M H7	CE1JMAVSL1R0
C254	CHIP CERAMIC CAP. F Z 0.1µF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1µF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1µF/50V	CHD1JZ3FZ104
C302	CHIP CERAMIC CAP. B K 0.022µF/50V or	CHD1JK30B223
	CHIP CERAMIC CAP. B K 0.022µF/25V	CHD1EK30B223
C303	ELECTROLYTIC CAP. 1µF/50V M H7	CE1JMAVSL1R0
C304	ELECTROLYTIC CAP. 1µF/50V M H7	CE1JMAVSL1R0
C305	CHIP CERAMIC CAP. F Z 0.22µF/16V or	CHD1CZ30F224
	CHIP CERAMIC CAP. FZ Z 0.22µF/25V	CHD1EZ3FZ224
C307	CHIP CERAMIC CAP. B K 0.047µF/50V or	CHD1JK30B473
	CHIP CERAMIC CAP. B K 0.047µF/25V	CHD1EK30B473
C308	CHIP CERAMIC CAP. B K 0.022µF/50V or	CHD1JK30B223
	CHIP CERAMIC CAP. B K 0.022µF/25V	CHD1EK30B223
C309	CHIP CERAMIC CAP. F Z 0.1µF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1µF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1µF/50V	CHD1JZ3FZ104
C310	CHIP CERAMIC CAP. B K 0.047µF/50V or	CHD1JK30B473
	CHIP CERAMIC CAP. B K 0.047µF/25V	CHD1EK30B473
C312	CHIP CERAMIC CAP. B K 8200pF/50V	CHD1JK30B822
C313	CHIP CERAMIC CAP. F Z 0.1µF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1µF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1µF/50V	CHD1JZ3FZ104
C314	CHIP CERAMIC CAP. B K 0.01µF/50V	CHD1JK30B103
C315	CHIP CERAMIC CAP. F Z 0.1µF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1µF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1µF/50V	CHD1JZ3FZ104
C316	CHIP CERAMIC CAP. B K 0.01µF/50V	CHD1JK30B103
C317	ELECTROLYTIC CAP. 47µF/6.3V M H7	CE0KMAVSL470
C318	ELECTROLYTIC CAP. 1µF/50V M H7	CE1JMAVSL1R0
C319	ELECTROLYTIC CAP. 1µF/50V M H7	CE1JMAVSL1R0
C320	CHIP CERAMIC CAP. F Z 0.1µF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1µF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1µF/50V	CHD1JZ3FZ104
C321	CHIP CERAMIC CAP. F Z 0.1µF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1µF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1µF/50V	CHD1JZ3FZ104
C322	ELECTROLYTIC CAP. 10µF/16V M H7	CE1CMAVSL100
C323	CHIP CERAMIC CAP. F Z 0.1µF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1µF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1µF/50V	CHD1JZ3FZ104
C324	CHIP CERAMIC CAP. CH J 68pF/50V or	CHD1JJ3CH680

Ref. No.	Description	Part No.
	CHIP CERAMIC CAP. CG J 68pF/50V	CHD1J3CG680
C325	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C326	CHIP CERAMIC CAP. CH J 68pF/50V or	CHD1J3CH680
	CHIP CERAMIC CAP. CG J 68pF/50V	CHD1J3CG680
C327	ELECTROLYTIC CAP. 0.47μF/50V M H7	CE1JMAVSLR47
C328	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C329	CHIP CERAMIC CAP. CH J 68pF/50V or	CHD1J3CH680
	CHIP CERAMIC CAP. CG J 68pF/50V	CHD1J3CG680
C330	CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZTFZ104
C332	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C333	ELECTROLYTIC CAP. 0.47μF/50V M H7	CE1JMAVSLR47
C334	ELECTROLYTIC CAP. 4.7μF/25V M NP H7	CP1EMAVSB4R7
C335	ELECTROLYTIC CAP. 10μF/16V M H7	CE1CMAVSL100
C336	CHIP CERAMIC CAP. CH J 1000pF/50V or	CHD1J3CH102
	CHIP CERAMIC CAP. CH J 1000pF/25V or	CHD1EJ3CH102
	CHIP CERAMIC CAP. CG J 1000pF/50V	CHD1J3CG102
C337	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C338	ELECTROLYTIC CAP. 100μF/6.3V H7	CE0KMAVSL101
C339	ELECTROLYTIC CAP. 1μF/50V M H7	CE1JMAVSL1R0
C340	CHIP CERAMIC CAP. CH J 120pF/50V or	CHD1J3CH121
	CHIP CERAMIC CAP. CG J 120pF/50V	CHD1J3CG121
C341	CHIP CERAMIC CAP. CH J 220pF/50V or	CHD1J3CH221
	CHIP CERAMIC CAP. CG J 220pF/50V	CHD1J3CG221
C342	ELECTROLYTIC CAP. 1μF/50V M H7	CE1JMAVSL1R0
C343	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C345	CHIP CERAMIC CAP. CH J 68pF/50V or	CHD1J3CH680
	CHIP CERAMIC CAP. CG J 68pF/50V	CHD1J3CG680
C346	CHIP CERAMIC CAP. CH J 68pF/50V or	CHD1J3CH680
	CHIP CERAMIC CAP. CG J 68pF/50V	CHD1J3CG680
C347	CHIP CERAMIC CAP. CH D 10pF/50V or	CHD1JD3CH100
	CHIP CERAMIC CAP. CG D 10pF/50V	CHD1JD3CG100
C351	ELECTROLYTIC CAP. 220μF/6.3V M H7	CE0KMAVSL221
C352	ELECTROLYTIC CAP. 100μF/16V M H7	CE1CMAVSL101
C401	ELECTROLYTIC CAP. 47μF/6.3V M H7	CE0KMAVSL470
C402	ELECTROLYTIC CAP. 220μF/6.3V M H7	CE0KMAVSL221
C403	CERAMIC CAP. B K 470pF/100V	CCD2AKS0B471
C404	FILM CAP.(P) 0.018μF/100V J or	CMA2AJP00183
	FILM CAP.(P) 0.018μF/50V J	CMA1JJP00183
C411	CHIP CERAMIC CAP. CH J 820pF/50V or	CHD1J3CH821
	CHIP CERAMIC CAP. CH J 820pF/25V or	CHD1EJ3CH821
	CHIP CERAMIC CAP. CG J 820pF/50V	CHD1J3CG821
C412	CHIP CERAMIC CAP. B K 1800pF/50V	CHD1JK30B182
C414	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JK30B103
C415	ELECTROLYTIC CAP. 10μF/16V M H7	CE1CMAVSL100
C416	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C417	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JK30B103
C418	CHIP CERAMIC CAP. CH J 33pF/50V or	CHD1J3CH330
	CHIP CERAMIC CAP. CG J 33pF/50V	CHD1J3CG330
C419	CHIP CERAMIC CAP. B K 4700pF/50V	CHD1JK30B472

Ref. No.	Description	Part No.
C421	ELECTROLYTIC CAP. 33μF/6.3V M H7	CE0KMAVSL330
C422	ELECTROLYTIC CAP. 4.7μF/25V M H7	CE1EMAVSL4R7
C424	ELECTROLYTIC CAP. 22μF/6.3V M H7	CE0KMAVSL220
C425	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C428	CHIP CERAMIC CAP. CH J 220pF/50V or	CHD1J3CH221
	CHIP CERAMIC CAP. CG J 220pF/50V	CHD1J3CG221
C430	ELECTROLYTIC CAP. 47μF/6.3V M H7	CE0KMAVSL470
C431	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JK30B103
C451	ELECTROLYTIC CAP. 47μF/16V M H7	CE1CMAVSL470
C452	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C453	ELECTROLYTIC CAP. 10μF/16V M H7	CE1CMAVSL100
C454	ELECTROLYTIC CAP. 22μF/10V M H7	CE1AMAVSL220
C455	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C456	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C457	ELECTROLYTIC CAP. 10μF/16V M H7	CE1CMAVSL100
C458	ELECTROLYTIC CAP. 4.7μF/25V M H7	CE1EMAVSL4R7
C459	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JK30B103
C460	CHIP CERAMIC CAP. B K 4700pF/50V	CHD1JK30B472
C461	ELECTROLYTIC CAP. 22μF/10V M H7	CE1AMAVSL220
C462	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JK30B103
C463	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JK30B103
C464	ELECTROLYTIC CAP. 10μF/16V M H7	CE1CMAVSL100
C465	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C466	ELECTROLYTIC CAP. 220μF/6.3V M H7	CE0KMAVSL221
C467	ELECTROLYTIC CAP. 22μF/10V M H7	CE1AMAVSL220
C468	CHIP CERAMIC CAP. B K 4700pF/50V	CHD1JK30B472
C469	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JK30B103
C470	ELECTROLYTIC CAP. 4.7μF/25V M H7	CE1EMAVSL4R7
C471	ELECTROLYTIC CAP. 10μF/16V M H7	CE1CMAVSL100
C472	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C473	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C474	ELECTROLYTIC CAP. 22μF/6.3V M H7	CE0KMAVSL220
C475	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C476	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C477	ELECTROLYTIC CAP. 10μF/16V M H7	CE1CMAVSL100
C478	ELECTROLYTIC CAP. 4.7μF/25V M H7	CE1EMAVSL4R7
C479	ELECTROLYTIC CAP. 4.7μF/25V M H7	CE1EMAVSL4R7
C480	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C481	ELECTROLYTIC CAP. 4.7μF/25V M H7	CE1EMAVSL4R7
C482	ELECTROLYTIC CAP. 4.7μF/25V M H7	CE1EMAVSL4R7
C483	ELECTROLYTIC CAP. 4.7μF/25V M H7	CE1EMAVSL4R7

Ref. No.	Description	Part No.
C484	ELECTROLYTIC CAP. 10μF/16V M H7	CE1CMAVSL100
C485	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C486	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C489	CHIP CERAMIC CAP. B K 2200pF/50V	CHD1JK30B222
C501	ELECTROLYTIC CAP. 220μF/6.3V M H7	CE0KMAVSL221
C502	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C506	CERAMIC CAP.(AX) B K 100pF/50V	CCA1JKT0B101
C508	ELECTROLYTIC CAP. 1μF/50V M H7	CE1JMAVSL1R0
C510	ELECTROLYTIC CAP. 22μF/10V M H7	CE1AMAVSL220
C511	ELECTROLYTIC CAP. 100μF/6.3V H7	CE0KMAVSL101
C512	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C513	CHIP CERAMIC CAP. CH J 22pF/50V or	CHD1JJ3CH220
	CHIP CERAMIC CAP. CG J 22pF/50V	CHD1JJ3CG220
C514	CHIP CERAMIC CAP. CH J 22pF/50V or	CHD1JJ3CH220
	CHIP CERAMIC CAP. CG J 22pF/50V	CHD1JJ3CG220
C515	CHIP CERAMIC CAP. CH J 18pF/50V or	CHD1JJ3CH180
	CHIP CERAMIC CAP. CG J 18pF/50V	CHD1JJ3CG180
C516	CHIP CERAMIC CAP. CH J 18pF/50V or	CHD1JJ3CH180
	CHIP CERAMIC CAP. CG J 18pF/50V	CHD1JJ3CG180
C517	CHIP CERAMIC CAP. B K 4700pF/50V	CHD1JK30B472
C518	CHIP CERAMIC CAP. B K 0.047μF/50V or	CHD1JK30B473
	CHIP CERAMIC CAP. B K 0.047μF/25V	CHD1EK30B473
C519	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JK30B103
C520	CHIP CERAMIC CAP. CH J 100pF/50V or	CHD1JJ3CH101
	CHIP CERAMIC CAP. CG J 100pF/50V	CHD1JJ3CG101
C521	CHIP CERAMIC CAP. CH J 560pF/50V or	CHD1JJ3CH561
	CHIP CERAMIC CAP. CG J 560pF/50V	CHD1JJ3CG561
C522	ELECTROLYTIC CAP. 22μF/6.3V M H7	CE0KMASSL220
C523	CHIP CERAMIC CAP. B K 1000pF/50V	CHD1JK30B102
C524	CHIP CERAMIC CAP. CH J 330pF/50V or	CHD1JJ3CH331
	CHIP CERAMIC CAP. CG J 330pF/50V	CHD1JJ3CG331
C526	CHIP CERAMIC CAP. B K 4700pF/50V	CHD1JK30B472
C527	ELECTROLYTIC CAP. 22μF/6.3V M H7	CE0KMASSL220
C529	CERAMIC CAP.(AX) Y M 0.01μF/16V	CCA1CMT0Y103
C530	CERAMIC CAP.(AX) F Z 0.022μF/25V	CCA1EZTFZ223
C531	CERAMIC CAP.(AX) Y M 0.01μF/16V	CCA1CMT0Y103
C532	ELECTROLYTIC CAP. 22μF/6.3V M H7	CE0KMASSL220
C533	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C535	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JK30B103
C538	CHIP CERAMIC CAP. B K 0.022μF/50V or	CHD1JK30B223
	CHIP CERAMIC CAP. B K 0.022μF/25V	CHD1EK30B223
C540	ELECTROLYTIC CAP. 470μF/6.3V M or	CE0KMASDL471
	ELECTROLYTIC CAP. 470μF/6.3V M	CE0KMASTL471
C561	CHIP CERAMIC CAP. B K 0.022μF/50V or	CHD1JK30B223
	CHIP CERAMIC CAP. B K 0.022μF/25V	CHD1EK30B223
C562	ELECTROLYTIC CAP. 330μF/6.3V M H7	CE0KMASSL331
C563	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C564	CHIP CERAMIC CAP. CH J 100pF/50V or	CHD1JJ3CH101
	CHIP CERAMIC CAP. CG J 100pF/50V	CHD1JJ3CG101

Ref. No.	Description	Part No.
C701	CHIP CERAMIC CAP. B K 0.047μF/50V or	CHD1JK30B473
	CHIP CERAMIC CAP. B K 0.047μF/25V	CHD1EK30B473
C702	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C703	ELECTROLYTIC CAP. 10μF/16V M H7	CE1CMAVSL100
C704	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JK30B103
C706	CHIP CERAMIC CAP. B K 1000pF/50V	CHD1JK30B102
C707	ELECTROLYTIC CAP. 100μF/6.3V H7	CE0KMAVSL101
C708	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JK30B103
C716	CHIP CERAMIC CAP. F Z 0.22μF/16V or	CHD1CZ30F224
	CHIP CERAMIC CAP. FZ Z 0.22μF/25V	CHD1EZ3FZ224
C717	CHIP CERAMIC CAP. F Z 0.22μF/16V or	CHD1CZ30F224
	CHIP CERAMIC CAP. FZ Z 0.22μF/25V	CHD1EZ3FZ224
C756	CHIP CERAMIC CAP. CH J 470pF/50V or	CHD1JJ3CH471
	CHIP CERAMIC CAP. CG J 470pF/50V	CHD1JJ3CG471
C757	CHIP CERAMIC CAP. CH J 470pF/50V or	CHD1JJ3CH471
	CHIP CERAMIC CAP. CG J 470pF/50V	CHD1JJ3CG471
C851	CHIP CERAMIC CAP. CH J 22pF/50V or	CHD1JJ3CH220
	CHIP CERAMIC CAP. CG J 22pF/50V	CHD1JJ3CG220
C852	CHIP CERAMIC CAP. CH J 22pF/50V or	CHD1JJ3CH220
	CHIP CERAMIC CAP. CG J 22pF/50V	CHD1JJ3CG220
C853	CHIP CERAMIC CAP. B K 4700pF/50V	CHD1JK30B472
C854	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JK30B103
C855	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C856	CHIP CERAMIC CAP. CH J 180pF/50V or	CHD1JJ3CH181
	CHIP CERAMIC CAP. CG J 180pF/50V	CHD1JJ3CG181
C859	ELECTROLYTIC CAP. 47μF/6.3V M H7	CE0KMAVSL470
C862	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JK30B103
CONNECTOR		
CN701	AFV PCB ASSEMBLY CP2500/C461	HC461AFV
DIODES		
D001	RECTIFIER DIODE 1N4005	NDQZ001N4005
D002	RECTIFIER DIODE 1N4005	NDQZ001N4005
D003	RECTIFIER DIODE 1N4005	NDQZ001N4005
D004	RECTIFIER DIODE 1N4005	NDQZ001N4005
D005	RECTIFIER DIODE BA159 or	NDQZ000BA159
	RECTIFIER DIODE ERA22-10	QDPZOERA2210
D006	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D007	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D008	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D009	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D011	RECTIFIER DIODE BA158	NDQZ000BA158
D012	RECTIFIER DIODE FR202	NDQZ000FR202
D013	RECTIFIER DIODE FR202	NDQZ000FR202
D014	SCHOTTKY BARRIER DIODE SB340	NDQZ000SB340
D015	ZENER DIODE DZ-8.2BSAT265 or	NDTA0DZ8R2BS
	ZENER DIODE MTZJT-778.2A	QDTA0MTZJ8R2
D018	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D019	ZENER DIODE DZ-5.1BSBT265 or	NDTB0DZ5R1BS
	ZENER DIODE MTZJT-775.1B	QDTB0MTZJ5R1
D021	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133

Ref. No.	Description	Part No.
D051	RECTIFIER DIODE 1N4005	NDQZ001N4005
D052	RECTIFIER DIODE 1N4005	NDQZ001N4005
D053	RECTIFIER DIODE 1N4005	NDQZ001N4005
D054	RECTIFIER DIODE 1N4005	NDQZ001N4005
D055	RECTIFIER DIODE 1N4005	NDQZ001N4005
D056	ZENER DIODE DZ-5.6BSCT265 or ZENER DIODE MTZJT-775.6C	NDTC0DZ5R6BS QDTC0MTZJ5R6
D057	ZENER DIODE DZ-10BSBT265 or ZENER DIODE MTZJT-7710B	NDTB00DZ10BS QDTB00MTZJ10
D058	ZENER DIODE DZ-33BSDT265 or ZENER DIODE MTZJT-7733D	NDTD00DZ33BS QDTD00MTZJ33
D153	ZENER DIODE DZ-11BSAT265 or ZENER DIODE MTZJT-7711A	NDTA00DZ11BS QDTA00MTZJ11
D154	ZENER DIODE DZ-11BSAT265 or ZENER DIODE MTZJT-7711A	NDTA00DZ11BS QDTA00MTZJ11
D155	ZENER DIODE DZ-11BSAT265 or ZENER DIODE MTZJT-7711A	NDTA00DZ11BS QDTA00MTZJ11
D156	ZENER DIODE DZ-11BSAT265 or ZENER DIODE MTZJT-7711A	NDTA00DZ11BS QDTA00MTZJ11
D301	SWITCHING DIODE 1N4148M or SWITCHING DIODE 1SS133(T-77)	NDT01N4148M QDTZ001SS133
D501	SWITCHING DIODE 1N4148M or SWITCHING DIODE 1SS133(T-77)	NDT01N4148M QDTZ001SS133
D502	LED MIE-534A2 or LED SIR-563ST3F P or LED SIR-563ST3F Q	NPZZM1E534A2 QPQPS1R563ST QPQQS1R563ST
D553	SWITCHING DIODE 1N4148M or SWITCHING DIODE 1SS133(T-77)	NDT01N4148M QDTZ001SS133
D701	ZENER DIODE DZ-33BSDT265 or ZENER DIODE MTZJT-7733D	NDTD00DZ33BS QDTD00MTZJ33
ICS		
IC001 [△]	PHOTOCOUPLER EL817A or	NPEA000EL817
[△]	PHOTOCOUPLER EL817B or	NPEB000EL817
[△]	PHOTOCOUPLER EL817C or	NPEC000EL817
[△]	PHOTOCOUPLER LTV-817B-F or	NPEB0LTV817F
[△]	PHOTOCOUPLER LTV-817C-F	NPEC0LTV817F
IC301	IC:Y/C/A LA71750EM-MPB-E	QSZBA0RSY020
IC451	IC:HIFI LA72648M-MPB-E	QSZBA0RSY033
IC501	MICROCONTROLLER 16BIT M37762MCA-AC1GP	QSZAB0RMB151
IC503	IC:EEPROM CAT24WC04JI or IC:MEMORY BR24C04F-W	NSZBA0SBG002 QSMB0ASRM004
IC561	IC:LED DRIVER PT6958-FN-TP	NSZBA0TG2003
COILS		
L001	BEAD CORE B16 RH 3.5X10X1.3	XL03010XM001
L002	BEAD CORE B16 RH 3.5X10X1.3	XL03010XM001
L003 [△]	LINE FILTER 56MH TLF14CB5630R2 or	LLBG00ZTU022
[△]	LINE FILTER 50MH LF-4D-E503	LLBG00ZKQ009
L009	CHOKE COIL 47μH-K or CHOKE COIL 47μH-K	LLBD00PKV007 LLBD00PKV005
L010	CHOKE COIL 47μH-K or CHOKE COIL 47μH-K	LLBD00PKV007 LLBD00PKV005
L012	INDUCTOR 100μH-J-5FT	LLARJCSTU101
L251	INDUCTOR 5.6μH-K-26T	LLAXKATTU5R6
L301	INDUCTOR 100μH-K-26T	LLAXKATTU101
L402	CHOKE COIL 47μH-K or CHOKE COIL 47μH-K	LLBD00PKV007 LLBD00PKV005
L403	INDUCTOR 47μH-K-5FT	LLARKBSTU470
L451	INDUCTOR 47μH-K-5FT	LLARKBSTU470
L452	INDUCTOR 27μH-K-5FT	LLARKBSTU270
L501	INDUCTOR 100μH-K-26T	LLAXKATTU101

Ref. No.	Description	Part No.
L561	INDUCTOR 68μH-K-26T	LLAXKATTU680
L562	INDUCTOR 56μH-K-26T	LLAXKATTU560
L701	INDUCTOR 10μH-K-26T	LLAXKATTU100
L702	CHOKE COIL 47μH-K or CHOKE COIL 47μH-K	LLBD00PKV007 LLBD00PKV005
L703	PCB JUMPER D0.6-P5.0	JW5.0T
L704	INDUCTOR 15μH-K-26T	LLAXKATTU150
L851	INDUCTOR 1.8μH-K-26T	LLAXKATTU1R8
TRANSISTORS		
Q001	FET 2SK3566	QFWZ02SK3566
Q002	TRANSISTOR KTC3199(BL) or TRANSISTOR 2SC2785(K) or TRANSISTOR 2SC1815-BL(TPE2)	NQS50KTC3199 QQSK02SC2785 QQS02SC1815
Q003	TRANSISTOR KTC3199(BL) or TRANSISTOR 2SC2785(K) or TRANSISTOR 2SC1815-BL(TPE2)	NQS50KTC3199 QQSK02SC2785 QQS02SC1815
Q004	TRANSISTOR KTC3199(Y) or TRANSISTOR KTC3199(GR) or TRANSISTOR 2SC2785(J) or TRANSISTOR 2SC2785(H) or TRANSISTOR 2SC2785(F) or TRANSISTOR 2SC1815-Y(TPE2) or TRANSISTOR 2SC1815-GR(TPE2)	NQSY0KTC3199 NQS10KTC3199 QQSJ02SC2785 QQSH02SC2785 QQSF02SC2785 QQSY02SC1815 QQS102SC1815
Q051	RES. BUILT-IN TRANSISTOR KRA104M or RES. BUILT-IN TRANSISTOR BN1L4M-T	NQSZ0KRA104M QQSZ00BN1L4M
Q052	RES. BUILT-IN TRANSISTOR KRC103M or RES. BUILT-IN TRANSISTOR BA1F4M-T	NQSZ0KRC103M QQSZ00BA1F4M
Q053	TRANSISTOR KTC3199(Y) or TRANSISTOR KTC3199(GR) or TRANSISTOR 2SC2785(J) or TRANSISTOR 2SC2785(H) or TRANSISTOR 2SC2785(F) or TRANSISTOR 2SC1815-Y(TPE2) or TRANSISTOR 2SC1815-GR(TPE2)	NQSY0KTC3199 NQS10KTC3199 QQSJ02SC2785 QQSH02SC2785 QQSF02SC2785 QQSY02SC1815 QQS102SC1815
Q054	TRANSISTOR KTC3205(Y) or TRANSISTOR 2SC3266-Y(TPE2)	NQSY0KTC3205 QQSY02SC3266
Q055	TRANSISTOR KTA1266(GR) or TRANSISTOR 2SA1015-GR(TPE2)	NQS40KTA1266 QQS102SA1015
Q056	RES. BUILT-IN TRANSISTOR KRA103M or RES. BUILT-IN TRANSISTOR BN1F4M-T	NQSZ0KRA103M QQSZ00BN1F4M
Q057	TRANSISTOR KTA1281(Y) or TRANSISTOR 2SA1020(Y)	NQSY0KTA1281 QQSY02SA1020
Q058	RES. BUILT-IN TRANSISTOR KRC103M or RES. BUILT-IN TRANSISTOR BA1F4M-T	NQSZ0KRC103M QQSZ00BA1F4M
Q059	RES. BUILT-IN TRANSISTOR KRC103M or RES. BUILT-IN TRANSISTOR BA1F4M-T	NQSZ0KRC103M QQSZ00BA1F4M
Q351	CHIP TRANSISTOR KTA1504GR-RTK or CHIP TRANSISTOR KTA1504Y-RTK	NQ140KTA1504 NQ1Y0KTA1504
Q352	TRANSISTOR KTC3199(Y) or TRANSISTOR KTC3199(GR) or TRANSISTOR 2SC2785(J) or TRANSISTOR 2SC2785(H) or TRANSISTOR 2SC2785(F) or TRANSISTOR 2SC1815-Y(TPE2) or TRANSISTOR 2SC1815-GR(TPE2)	NQSY0KTC3199 NQS10KTC3199 QQSJ02SC2785 QQSH02SC2785 QQSF02SC2785 QQSY02SC1815 QQS102SC1815
Q401	TRANSISTOR KTA1266(GR) or TRANSISTOR 2SA1015-GR(TPE2)	NQS40KTA1266 QQS102SA1015
Q402	TRANSISTOR KTC3203(Y) or TRANSISTOR 2SC2120-Y(TPE2)	NQSY0KTC3203 QQSY02SC2120
Q403	RES. BUILT-IN TRANSISTOR KRA103M or RES. BUILT-IN TRANSISTOR BN1F4M-T	NQSZ0KRA103M QQSZ00BN1F4M

Ref. No.	Description	Part No.
Q405	CHIP TRANSISTOR FMG4A T148 or	QQ2Z000FMG4A
	CHIP TRANSISTOR RN1511 (TE85R)	QQ2Z00RN1511
Q406	CHIP TRANSISTOR KTC3875Y-RTK	NQ1Y0KTC3875
Q451	CHIP TRANSISTOR KRC103S RTK	NQ1Z0KRC103S
Q501	TRANSISTOR KTC3199(BL) or	NQS50KTC3199
	TRANSISTOR 2SC2785(K) or	QQSK02SC2785
	TRANSISTOR 2SC1815-BL(TPE2)	QQS202SC1815
Q502	RES. BUILT-IN TRANSISTOR KRC103M or	NQSZ0KRC103M
	RES. BUILT-IN TRANSISTOR BA1F4M-T	QQSZ00BA1F4M
Q503	PHOTO TRANSISTOR PT204-6B-12 or	NPWZT2046B12
	PHOTO TRANSISTOR MID-32A22	NPWZM1D32A22
Q551	TRANSISTOR KTC3199(BL) or	NQS50KTC3199
	TRANSISTOR 2SC2785(K) or	QQSK02SC2785
	TRANSISTOR 2SC1815-BL(TPE2)	QQS202SC1815
Q552	RES. BUILT-IN TRANSISTOR KRC103M or	NQSZ0KRC103M
	RES. BUILT-IN TRANSISTOR BA1F4M-T	QQSZ00BA1F4M
RESISTORS		
R002	METAL OXIDE FILM RES. 1W J 150k Ω or	RN01154ZU001
	METAL OXIDE FILM RES. 1W J 150k Ω	RN01154KE009
R003	CARBON RES. 1/4W J 1M Ω	RCX4JATZ0105
R004	CARBON RES. 1/4W J 1M Ω	RCX4JATZ0105
R005	CARBON RES. 1/6W G 680 Ω or	RCX6GATZ0681
	CARBON RES. 1/4W G 680 Ω	RCX4GATZ0681
R006	METAL OXIDE FILM RES. 1W J 1.8 Ω or	RN011R8ZU001
	METAL OXIDE FILM RES. 1W J 1.8 Ω	RN011R8KE009
R007	CARBON RES. 1/6W J 22k Ω or	RCX6JATZ0223
	CARBON RES. 1/4W J 22k Ω	RCX4JATZ0223
R008	CARBON RES. 1/6W J 100k Ω or	RCX6JATZ0104
	CARBON RES. 1/4W J 100k Ω	RCX4JATZ0104
R009	CARBON RES. 1/6W G 3.3k Ω or	RCX6GATZ0332
	CARBON RES. 1/4W G 3.3k Ω	RCX4GATZ0332
R011	CARBON RES. 1/4W J 390k Ω	RCX4JATZ0394
R012	CARBON RES. 1/4W J 390k Ω	RCX4JATZ0394
R013	CARBON RES. 1/6W J 470k Ω or	RCX6JATZ0474
	CARBON RES. 1/4W J 470k Ω	RCX4JATZ0474
R014	CARBON RES. 1/6W J 100k Ω or	RCX6JATZ0104
	CARBON RES. 1/4W J 100k Ω	RCX4JATZ0104
R015	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R016	CARBON RES. 1/6W J 100k Ω or	RCX6JATZ0104
	CARBON RES. 1/4W J 100k Ω	RCX4JATZ0104
R017	CHIP RES.(1608) 1/10W J 220k Ω	RRXAJR5Z0224
R018	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJR5Z0223
R021	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJR5Z0223
R022	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJR5Z0152
R023	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJR5Z0222
R024	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R025	CHIP RES.(1608) 1/10W J 330 Ω	RRXAJR5Z0331
R026	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJR5Z0223
R027	CARBON RES. 1/6W J 1k Ω or	RCX6JATZ0102
	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R028	CARBON RES. 1/4W J 1M Ω	RCX4JATZ0105
R054	CHIP RES.(1608) 1/10W J 180 Ω	RRXAJR5Z0181
R058	CARBON RES. 1/6W J 820 Ω or	RCX6JATZ0821
	CARBON RES. 1/4W J 820 Ω	RCX4JATZ0821
R060	CARBON RES. 1/6W J 2.7k Ω or	RCX6JATZ0272
	CARBON RES. 1/4W J 2.7k Ω	RCX4JATZ0272
R061	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJR5Z0223
R062	CARBON RES. 1/6W J 10k Ω or	RCX6JATZ0103
	CARBON RES. 1/4W J 10k Ω	RCX4JATZ0103
R063	CARBON RES. 1/4W J 1.2k Ω	RCX4JATZ0122
R064	CARBON RES. 1/4W J 1.2k Ω	RCX4JATZ0122

Ref. No.	Description	Part No.
R065	CARBON RES. 1/4W J 1.2k Ω	RCX4JATZ0122
R066	CHIP RES.(1608) 1/10W J 47k Ω	RRXAJR5Z0473
R067	CARBON RES. 1/4W J 680 Ω	RCX4JATZ0681
R068	CARBON RES. 1/4W J 680 Ω	RCX4JATZ0681
R069	CARBON RES. 1/6W J 8.2k Ω or	RCX6JATZ0822
	CARBON RES. 1/4W J 8.2k Ω	RCX4JATZ0822
R070	CARBON RES. 1/6W J 10k Ω or	RCX6JATZ0103
	CARBON RES. 1/4W J 10k Ω	RCX4JATZ0103
R071	CARBON RES. 1/6W J 1.8k Ω or	RCX6JATZ0182
	CARBON RES. 1/4W J 1.8k Ω	RCX4JATZ0182
R072	CHIP RES.(1608) 1/10W J 68k Ω	RRXAJR5Z0683
R073	CARBON RES. 1/6W J 1 Ω or	RCX6JATZ01R0
	CARBON RES. 1/4W J 1 Ω	RCX4JATZ01R0
R251	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJR5Z0222
R252	CHIP RES.(1608) 1/10W J 39k Ω	RRXAJR5Z0393
R301	CHIP RES.(1608) 1/10W J 1.2k Ω	RRXAJR5Z0122
R302	CHIP RES.(1608) 1/10W J 8.2k Ω	RRXAJR5Z0822
R305	CHIP RES.(1608) 1/10W J 3.9k Ω	RRXAJR5Z0392
R307	CHIP RES.(1608) 1/10W J 4.7k Ω	RRXAJR5Z0472
R308	CHIP RES.(1608) 1/10W J 6.8k Ω	RRXAJR5Z0682
R309	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJR5Z0101
R310	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R311	CHIP RES.(1608) 1/10W J 18k Ω	RRXAJR5Z0183
R312	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R313	CHIP RES.(1608) 1/10W J 18k Ω	RRXAJR5Z0183
R315	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJR5Z0222
R316	CHIP RES.(1608) 1/10W J 6.8k Ω	RRXAJR5Z0682
R317	CHIP RES.(1608) 1/10W J 1.2k Ω	RRXAJR5Z0122
R318	CHIP RES.(1608) 1/10W J 4.7k Ω	RRXAJR5Z0472
R319	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R320	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R321	CARBON RES. 1/6W J 33 Ω or	RCX6JATZ0330
	CARBON RES. 1/4W J 33 Ω	RCX4JATZ0330
R322	CHIP RES.(1608) 1/10W J 75 Ω	RRXAJR5Z0750
R323	CARBON RES. 1/6W J 33 Ω or	RCX6JATZ0330
	CARBON RES. 1/4W J 33 Ω	RCX4JATZ0330
R324	CHIP RES.(1608) 1/10W J 47k Ω	RRXAJR5Z0473
R325	CHIP RES.(1608) 1/10W J 33 Ω	RRXAJR5Z0330
R326	CHIP INDUCTOR MLG1608B18NJ000 or	LLACJB3TE18N
	CHIP INDUCTOR HK1608 18NJ-T	LLACJB3TU18N
R330	CHIP RES.(1608) 1/10W J 5.6M Ω	RRXAJR5Z0565
R331	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R332	CHIP INDUCTOR MLG1608B18NJ000 or	LLACJB3TE18N
	CHIP INDUCTOR HK1608 18NJ-T	LLACJB3TU18N
R333	CHIP INDUCTOR MLG1608B18NJ000 or	LLACJB3TE18N
	CHIP INDUCTOR HK1608 18NJ-T	LLACJB3TU18N
R334	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R351	CHIP RES.(1608) 1/10W J 180 Ω	RRXAJR5Z0181
R352	CHIP RES.(1608) 1/10W J 150 Ω	RRXAJR5Z0151
R355	CARBON RES. 1/4W J 680 Ω	RCX4JATZ0681
R357	CHIP RES.(1608) 1/10W J 220 Ω	RRXAJR5Z0221
R358	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJR5Z0152
R360	CHIP RES.(1608) 1/10W J 1.8k Ω	RRXAJR5Z0182
R361	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R401	CHIP RES.(1608) 1/10W J 5.6k Ω	RRXAJR5Z0562
R402	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJR5Z0223
R403	CHIP RES.(1608) 1/10W J 47k Ω	RRXAJR5Z0473
R404	CARBON RES. 1/6W J 100 Ω or	RCX6JATZ0101
	CARBON RES. 1/4W J 100 Ω	RCX4JATZ0101
R407	CARBON RES. 1/6W J 820 Ω or	RCX6JATZ0821
	CARBON RES. 1/4W J 820 Ω	RCX4JATZ0821

Ref. No.	Description	Part No.
R408	CHIP RES.(1608) 1/10W J 12k Ω	RRXAJR5Z0123
R409	CHIP RES.(1608) 1/10W J 5.6k Ω	RRXAJR5Z0562
R411	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R412	CHIP RES.(1608) 1/10W J 27k Ω	RRXAJR5Z0273
R413	CHIP RES.(1608) 1/10W J 330k Ω	RRXAJR5Z0334
R414	CHIP RES.(1608) 1/10W J 120 Ω	RRXAJR5Z0121
R415	CHIP RES.(1608) 1/10W J 12k Ω	RRXAJR5Z0123
R416	CHIP RES.(1608) 1/10W J 1.8k Ω	RRXAJR5Z0182
R417	CHIP RES.(1608) 1/10W J 1.2k Ω	RRXAJR5Z0122
R418	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R421	CHIP RES.(1608) 1/10W J 12k Ω	RRXAJR5Z0123
R422	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R425	CHIP RES.(1608) 1/10W J 5.6k Ω	RRXAJR5Z0562
R426	CHIP RES.(1608) 1/10W J 4.7k Ω	RRXAJR5Z0472
R429	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJR5Z0222
R430	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R431	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R451	CHIP RES.(1608) 1/10W J 8.2k Ω	RRXAJR5Z0822
R452	CHIP RES.(1608) 1/10W J 39k Ω	RRXAJR5Z0393
R453	CHIP RES.(1608) 1/10W J 5.6k Ω	RRXAJR5Z0562
R454	CHIP RES.(1608) 1/10W J 39k Ω	RRXAJR5Z0393
R455	CHIP RES.(1608) 1/10W J 5.6k Ω	RRXAJR5Z0562
R456	CHIP RES.(1608) 1/10W J 39k Ω	RRXAJR5Z0393
R457	CHIP RES.(1608) 1/10W J 5.6k Ω	RRXAJR5Z0562
R458	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R459	CHIP RES.(1608) 1/10W J 39k Ω	RRXAJR5Z0393
R460	CHIP RES.(1608) 1/10W J 470 Ω	RRXAJR5Z0471
R461	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R462	CHIP RES.(1608) 1/10W J 2.7k Ω	RRXAJR5Z0272
R463	CHIP RES.(1608) 1/10W J 8.2k Ω	RRXAJR5Z0822
R464	CHIP RES.(1608) 1/10W J 39k Ω	RRXAJR5Z0393
R465	CHIP RES.(1608) 1/10W J 8.2k Ω	RRXAJR5Z0822
R466	CHIP RES.(1608) 1/10W J 5.6k Ω	RRXAJR5Z0562
R467	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R468	CHIP RES.(1608) 1/10W J 5.6k Ω	RRXAJR5Z0562
R469	CHIP RES.(1608) 1/10W J 5.6k Ω	RRXAJR5Z0562
R470	CHIP RES.(1608) 1/10W J 39k Ω	RRXAJR5Z0393
R471	CHIP RES.(1608) 1/10W J 39k Ω	RRXAJR5Z0393
R472	CHIP RES.(1608) 1/10W J 150 Ω	RRXAJR5Z0151
R473	CHIP RES.(1608) 1/10W J 150 Ω	RRXAJR5Z0151
R474	CHIP RES.(1608) 1/10W J 39k Ω	RRXAJR5Z0393
R475	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R476	CHIP RES.(1608) 1/10W J 33 Ω	RRXAJR5Z0330
R477	CHIP RES.(1608) 1/10W J 33 Ω	RRXAJR5Z0330
R478	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJR5Z0223
R479	CHIP RES.(1608) 1/10W J 6.8k Ω	RRXAJR5Z0682
R480	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJR5Z0101
R481	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJR5Z0101
R501	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R502	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R503	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R504	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R505	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R506	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R509	CHIP RES.(1608) 1/10W J 4.7k Ω	RRXAJR5Z0472
R510	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R511	CHIP RES.(1608) 1/10W J 100k Ω	RRXAJR5Z0104
R513	CHIP RES.(1608) 1/10W J 1.8k Ω	RRXAJR5Z0182
R514	CHIP RES.(1608) 1/10W J 820 Ω	RRXAJR5Z0821
R515	CARBON RES. 1/6W J 1k Ω or	RCX6JATZ0102
	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102

Ref. No.	Description	Part No.
R516	CHIP RES.(1608) 1/10W J 330k Ω	RRXAJR5Z0334
R517	CHIP RES.(1608) 1/10W J 560 Ω	RRXAJR5Z0561
R518	CHIP RES.(1608) 1/10W J 470 Ω	RRXAJR5Z0471
R520	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R521	CHIP RES.(1608) 1/10W J 220k Ω	RRXAJR5Z0224
R522	CHIP RES.(1608) 1/10W J 39k Ω	RRXAJR5Z0393
R523	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R524	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R525	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJR5Z0152
R526	CHIP RES.(1608) 1/10W J 1.8k Ω	RRXAJR5Z0182
R527	CHIP RES.(1608) 1/10W J 680 Ω	RRXAJR5Z0681
R528	CHIP RES.(1608) 1/10W J 18k Ω	RRXAJR5Z0183
R529	CARBON RES. 1/4W J 270 Ω	RCX4JATZ0271
R530	CHIP RES.(1608) 1/10W J 180 Ω	RRXAJR5Z0181
R531	CHIP RES.(1608) 1/10W J 68k Ω	RRXAJR5Z0683
R533	CHIP RES.(1608) 1/10W J 33k Ω	RRXAJR5Z0333
R534	CARBON RES. 1/6W G 3.6k Ω or	RCX6GATZ0362
	CARBON RES. 1/4W G 3.6k Ω	RCX4GATZ0362
R535	CARBON RES. 1/6W G 10k Ω or	RCX6GATZ0103
	CARBON RES. 1/4W G 10k Ω	RCX4GATZ0103
R536	CARBON RES. 1/6W G 470 Ω or	RCX6GATZ0471
	CARBON RES. 1/4W G 470 Ω	RCX4GATZ0471
R537	CARBON RES. 1/6W G 22k Ω or	RCX6GATZ0223
	CARBON RES. 1/4W G 22k Ω	RCX4GATZ0223
R538	CARBON RES. 1/6W G 1.5k Ω or	RCX6GATZ0152
	CARBON RES. 1/4W G 1.5k Ω	RCX4GATZ0152
R539	CARBON RES. 1/6W G 4.7k Ω or	RCX6GATZ0472
	CARBON RES. 1/4W G 4.7k Ω	RCX4GATZ0472
R540	CHIP RES.(1608) 1/10W J 390k Ω	RRXAJR5Z0394
R541	CHIP RES.(1608) 1/10W J 390k Ω	RRXAJR5Z0394
R542	CHIP RES.(1608) 1/10W J 1.8k Ω	RRXAJR5Z0182
R543	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R544	CHIP RES.(1608) 1/10W J 2.7k Ω	RRXAJR5Z0272
R545	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJR5Z0222
R546	CHIP RES.(1608) 1/10W J 12k Ω	RRXAJR5Z0123
R547	CHIP RES.(1608) 1/10W J 1.8k Ω	RRXAJR5Z0182
R548	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R549	CHIP RES.(1608) 1/10W J 1.2k Ω	RRXAJR5Z0122
R551	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJR5Z0101
R552	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R556	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R557	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R566	CHIP RES.(1608) 1/10W J 56k Ω	RRXAJR5Z0563
R604	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R605	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R611	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R613	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R624	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R625	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R701	CARBON RES. 1/6W J 1.8k Ω or	RCX6JATZ0182
	CARBON RES. 1/4W J 1.8k Ω	RCX4JATZ0182
R702	CARBON RES. 1/6W J 1k Ω or	RCX6JATZ0102
	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R703	CARBON RES. 1/6W J 1k Ω or	RCX6JATZ0102
	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R706	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R756	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R757	CHIP RES.(1608) 1/10W J 75 Ω	RRXAJR5Z0750
R758	CHIP RES.(1608) 1/10W J 4.7k Ω	RRXAJR5Z0472
R759	CHIP RES.(1608) 1/10W J 4.7k Ω	RRXAJR5Z0472
R851	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJR5Z0152

Ref. No.	Description	Part No.
R852	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R853	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
SWITCHES		
SW501	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH SKQSAF001A or	SST0101AL041
	TACT SWITCH TC-1104(H=9.5)	SST0101DNG01
SW502	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH SKQSAF001A or	SST0101AL041
	TACT SWITCH TC-1104(H=9.5)	SST0101DNG01
SW503	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH SKQSAF001A or	SST0101AL041
	TACT SWITCH TC-1104(H=9.5)	SST0101DNG01
SW504	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH SKQSAF001A or	SST0101AL041
	TACT SWITCH TC-1104(H=9.5)	SST0101DNG01
SW505	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH SKQSAF001A or	SST0101AL041
	TACT SWITCH TC-1104(H=9.5)	SST0101DNG01
SW506	LEAF SWITCH MXS01830MVP0	SSC0101MCE03
SW507	ROTARY MODE SWITCH SSS-50MD or	SSR0106KB002
	ROTARY MODE SWITCH R8100245	SSR0106U3002
SW508	TACT SWITCH KSM0611B	SST0101HH004
SW509	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH SKQSAF001A or	SST0101AL041
	TACT SWITCH TC-1104(H=9.5)	SST0101DNG01
SW510	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH SKQSAF001A or	SST0101AL041
	TACT SWITCH TC-1104(H=9.5)	SST0101DNG01
SW511	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH SKQSAF001A or	SST0101AL041
	TACT SWITCH TC-1104(H=9.5)	SST0101DNG01
SW512	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH SKQSAF001A or	SST0101AL041
	TACT SWITCH TC-1104(H=9.5)	SST0101DNG01
MISCELLANEOUS		
2B7	HEAD SHIELD ASSEMBLY HE470ED	0VM414333
2B8	BUSH, LED(F) H3700UD	0VM409508
2B46	ROHM HOLDER H7770JD	0VM304573
A4	JACK BOARD(U27 FTZ) HE480ED	0VM203840
AC001 [△]	AC CORD PE8B2CG1H0A-057	WAE0172LW003
F001 [△]	FUSE T1.6AL/250V or	PAGC20BW3162
[△]	FUSE T1.6AL/250V or	1790994
[△]	FUSE 50T016H 1.6A/250V	PAGH20BHV162
FH001	FUSE HOLDER MSF-015	XH01Z00LY001
FH002	FUSE HOLDER MSF-015	XH01Z00LY001
FP562	LED DISPLAY LFU-4421-2001A	NP724212001A
J902	BEAD CORE B16 RH 3.5X10X1.3	XL03010XM001
JK756	RCA JACK(YELLOW) MSP-281V4-B	JXRL010LY003
JK757	RCA JACK(WHITE) MSP-281V1-B	JXRL010LY005
JK758	RCA JACK(RED) MSP-281V3-A	JYRL010LY002
JW001	FLAT CABLE, 11P AWG26#2651/P1.25/150	WX1HC460-002
JW002	FLAT CABLE, 12P AWG26#2651/P1.25/150	WX1HC460-003
PS503	PHOTO INTERRUPTER RPI-302C70	QPWZP1302C70
RS501	REMOTE RECEIVER MIM-93M9DKF or	USESJRJSUNT03
	REMOTE RECEIVER PIC-37042LQ	USESJRSKK038
T001 [△]	SWITCHING TRANSFORMER CSA-SW0233A	LTT00EPSA135
TP301	PCB JUMPER D0.6-P10.0	JW10.0T
TP501	PCB JUMPER D0.6-P6.0	JW6.0T
TP502	PCB JUMPER D0.6-P5.0	JW5.0T
TP506	PCB JUMPER D0.6-P5.0	JW5.0T

Ref. No.	Description	Part No.
TP507	PCB JUMPER D0.6-P6.0	JW6.0T
TU701	TUNER UNIT TMDG2-631A	UTUNPLBAL012
VR501	CARBON P.O.T. 100k Ω B	VRCB104HH014
X301	X'TAL 4.433619MHz or	FXC445LLN001
	X'TAL 4.433619MHz	1811388
X501	X'TAL 12.000MHz	FXD126LDS001
X502	X'TAL 32.768kHz(20PPM) or	FXC323LQUA01
	X'TAL 32.768kHz(20PPM)	FXC323LDS002

SUB JACK CBA

Ref. No.	Description	Part No.
	SUB JACK CBA(MCV-B) Consists of the following	-----
CAPACITORS		
C751	CHIP CERAMIC CAP. B K 2200pF/50V	CHD1JK30B222
C752	CHIP CERAMIC CAP. B K 2200pF/50V	CHD1JK30B222
RESISTORS		
R751	CHIP RES.(1608) 1/10W J 820 Ω	RRXAJR5Z0821
R752	CHIP RES.(1608) 1/10W J 820 Ω	RRXAJR5Z0821
MISCELLANEOUS		
JK751	RCA JACK MSP-282V-12 PBSN	JXRL030LY011
JW004	FLAT CABLE, 3P AWG26#2651/P2.0/200	WX1HE480-001

JACK CBA

Ref. No.	Description	Part No.
	JACK CBA (MCV-C) Consists of the following	-----
CAPACITORS		
C101	CHIP CERAMIC CAP. B K 2200pF/50V	CHD1JK30B222
C102	CHIP CERAMIC CAP. B K 2200pF/50V	CHD1JK30B222
C103	CHIP CERAMIC CAP. CH J 470pF/50V or	CHD1JJ3CH471
	CHIP CERAMIC CAP. CG J 470pF/50V	CHD1JJ3CG471
C104	CHIP CERAMIC CAP. CH J 470pF/50V or	CHD1JJ3CH471
	CHIP CERAMIC CAP. CG J 470pF/50V	CHD1JJ3CG471
C105	CHIP CERAMIC CAP. F Z 0.1 μ F/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1 μ F/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1 μ F/50V	CHD1JZ3FZ104
C107	ELECTROLYTIC CAP. 1 μ F/50V M H7	CE1JMAVSL1R0
C108	CHIP CERAMIC CAP. B K 1000pF/50V	CHD1JK30B102
C109	CHIP CERAMIC CAP. B K 2200pF/50V	CHD1JK30B222
C110	CHIP CERAMIC CAP. B K 2200pF/50V	CHD1JK30B222
C111	CHIP CERAMIC CAP. CH J 470pF/50V or	CHD1JJ3CH471
	CHIP CERAMIC CAP. CG J 470pF/50V	CHD1JJ3CG471
C112	CHIP CERAMIC CAP. CH J 470pF/50V or	CHD1JJ3CH471
	CHIP CERAMIC CAP. CG J 470pF/50V	CHD1JJ3CG471
C113	CHIP CERAMIC CAP. B K 2200pF/50V	CHD1JK30B222
C115	ELECTROLYTIC CAP. 100 μ F/16V M H7	CE1CMAVSL101
C116	ELECTROLYTIC CAP. 470 μ F/6.3V M or	CE0KMASDL471
	ELECTROLYTIC CAP. 470 μ F/6.3V M	CE0KMASTL471
C117	ELECTROLYTIC CAP. 470 μ F/6.3V M or	CE0KMASDL471
	ELECTROLYTIC CAP. 470 μ F/6.3V M	CE0KMASTL471
DIODES		
D101	ZENER DIODE DZ-11BSAT265 or	NDTA00DZ11BS
	ZENER DIODE MTZJT-7711A	QDTA00MTZJ11
D102	ZENER DIODE DZ-11BSAT265 or	NDTA00DZ11BS
	ZENER DIODE MTZJT-7711A	QDTA00MTZJ11
D103	ZENER DIODE DZ-11BSAT265 or	NDTA00DZ11BS
	ZENER DIODE MTZJT-7711A	QDTA00MTZJ11

Ref. No.	Description	Part No.
D105	ZENER DIODE DZ-11BSAT265 or	NDTA00DZ11BS
	ZENER DIODE MTZJT-7711A	QDTA00MTZJ11
COILS		
L101	BEAD CORE B16 RH 3.5X10X1.3	XL03010XM001
L102	BEAD CORE B16 RH 3.5X10X1.3	XL03010XM001
TRANSISTORS		
Q101	TRANSISTOR KTA1266(GR) or	NQS40KTA1266
	TRANSISTOR 2SA1015-GR(TPE2)	QQS102SA1015
Q102	TRANSISTOR KTA1266(GR) or	NQS40KTA1266
	TRANSISTOR 2SA1015-GR(TPE2)	QQS102SA1015
RESISTORS		
R101	CARBON RES. 1/4W J 820 Ω	RCX4JATZ0821
R103	CARBON RES. 1/4W J 820 Ω	RCX4JATZ0821
R104	CARBON RES. 1/6W J 4.7k Ω or	RCX6JATZ0472
	CARBON RES. 1/4W J 4.7k Ω	RCX4JATZ0472
R106	CARBON RES. 1/6W J 4.7k Ω or	RCX6JATZ0472
	CARBON RES. 1/4W J 4.7k Ω	RCX4JATZ0472
R108	CARBON RES. 1/4W J 68 Ω	RCX4JATZ0680
R109	CHIP RES.(1608) 1/10W J 75 Ω	RRXAJR5Z0750
R110	CARBON RES. 1/4W J 820 Ω	RCX4JATZ0821
R112	CARBON RES. 1/4W J 820 Ω	RCX4JATZ0821
R113	CARBON RES. 1/6W J 4.7k Ω or	RCX6JATZ0472
	CARBON RES. 1/4W J 4.7k Ω	RCX4JATZ0472
R115	CARBON RES. 1/6W J 4.7k Ω or	RCX6JATZ0472
	CARBON RES. 1/4W J 4.7k Ω	RCX4JATZ0472
R116	CARBON RES. 1/6W J 15k Ω or	RCX6JATZ0153
	CARBON RES. 1/4W J 15k Ω	RCX4JATZ0153
R117	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R118	CARBON RES. 1/4W J 68 Ω	RCX4JATZ0680
R119	CHIP RES.(1608) 1/10W J 75 Ω	RRXAJR5Z0750
R120	CARBON RES. 1/6W J 680 Ω or	RCX6JATZ0681
	CARBON RES. 1/4W J 680 Ω	RCX4JATZ0681
R123	CHIP RES.(1608) 1/10W J 220 Ω	RRXAJR5Z0221
R125	CARBON RES. 1/6W J 680 Ω or	RCX6JATZ0681
	CARBON RES. 1/4W J 680 Ω	RCX4JATZ0681
R126	CHIP RES.(1608) 1/10W J 220 Ω	RRXAJR5Z0221
R127	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
MISCELLANEOUS		
2L022	SCREW, P-TIGHT M3X10 WASHER HEAD+	GCMP3100
A5	JACK BOARD(2-21P) HE470ED	0VM203835
JK101	RGB CONNECTOR MRC-021V-01	JXGL210LY002
JK102	RGB CONNECTOR MRC-021V-01	JXGL210LY002

SENSOR CBA

Ref. No.	Description	Part No.
	SENSOR CBA Consists of the following	0VSA13549
TRANSISTORS		
Q504	PHOTO TRANSISTOR PT204-6B-12	NPWZT2046B12
Q505	PHOTO TRANSISTOR PT204-6B-12	NPWZT2046B12
Q504	PHOTO TRANSISTOR MID-32A22	NPWZM1D32A22
Q505	PHOTO TRANSISTOR MID-32A22	NPWZM1D32A22

AFV CBA

Ref. No.	Description	Part No.
	AFV CBA Consists of the following	0VSA12355

Ref. No.	Description	Part No.
CAPACITORS		
C1	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C4	CHIP CERAMIC CAP. CH J 56pF/50V or	CHD1JJ3CH560
	CHIP CERAMIC CAP. CG J 56pF/50V	CHD1JJ3CG560
C5	CHIP CERAMIC CAP. CH J 22pF/50V or	CHD1JJ3CH220
	CHIP CERAMIC CAP. CG J 22pF/50V	CHD1JJ3CG220
C6	CHIP CERAMIC CAP. CH J 56pF/50V or	CHD1JJ3CH560
	CHIP CERAMIC CAP. CG J 56pF/50V	CHD1JJ3CG560
C7	CHIP CERAMIC CAP. CH C 3pF/50V or	CHD1JC3CH3R0
	CHIP CERAMIC CAP. CJ C 3pF/50V or	CHD1JC3CJ3R0
	CHIP CERAMIC CAP. CH D 3pF/50V	CHD1JD3CH3R0
C8	CHIP CERAMIC CAP. CH C 3pF/50V or	CHD1JC3CH3R0
	CHIP CERAMIC CAP. CJ C 3pF/50V or	CHD1JC3CJ3R0
	CHIP CERAMIC CAP. CH D 3pF/50V	CHD1JD3CH3R0
C11	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JK30B103
C12	ELECTROLYTIC CAP. 10μF/16V M H7	CE1CMASSL100
C13	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JK30B103
C14	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JK30B103
C15	ELECTROLYTIC CAP. 10μF/16V M H7	CE1CMASSL100
C16	ELECTROLYTIC CAP. 10μF/16V M H7	CE1CMASSL100
C17	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C19	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C20	ELECTROLYTIC CAP. 3.3μF/50V M H7	CE1JMASSL3R3
C21	CHIP CERAMIC CAP. F Z 0.1μF/50V or	CHD1JZ30F104
	CHIP CERAMIC CAP. F Z 0.1μF/25V or	CHD1EZ30F104
	CHIP CERAMIC CAP. FZ Z 0.1μF/50V	CHD1JZ3FZ104
C22	ELECTROLYTIC CAP. 10μF/16V M H7	CE1CMASSL100
C24	ELECTROLYTIC CAP. 0.22μF/50V M H7	CE1JMASSLR22
CONNECTORS		
CN1	ANGLE PIN HEADER, 9P 6029B-1-09Z003-T	5700069
DIODES		
D2	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
ICS		
IC1	IC:AUDIO PROCESSOR MSP3417G-QG-B8 or	NSZBA0SP3002
	IC:AUDIO PROCESSOR MSP3417G-QG-B8-V3	NSZBA0SP3005
COILS		
L1	INDUCTOR 10μH-K-26T	LLAXKATTU100
L2	PCB JUMPER D0.6-P5.0	JW5.0T
L3	INDUCTOR 18μH-K-26T	LLAXKATTU180
L4	INDUCTOR 10μH-K-26T	LLAXKATTU100
RESISTORS		
R1	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R4	CHIP RES.(1608) 1/10W J 120k Ω	RRXAJR5Z0124
R5	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R6	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
MISCELLANEOUS		
X1	X'TAL 18.432MHz	FXD186LLN001

DECK PARTS LIST

NOTE:

Four different, but interchangeable, types of B558 (LOADING MOTOR) may be installed in these models. Please confirm B558 (LOADING MOTOR) type by a part number on it. B558 (LOADING MOTOR) type varies in combination with L1151. Please see Table 1 for details and combination.

Table 1 (B558 and L1151 Combination)

LOADING MOTOR (B558)		SCREW (L1151)	
Description	Parts No.	Description	Parts No.
LOADING MOTOR M31E-1 R-14 7376	MMDZB12MM003	SCREW, SEMS M2.6X4 PAN HEAD+	CPM39040
LOADING MOTOR M31E-1 R-14 7391	MMDZB12MM004		
LOADING MOTOR MDB2B80	MMDZB12SJ008	SCREW, SEMS M3X4 PAN HEAD+	CPM33040
LOADING MOTOR MDB2B82	MMDZB10SJ001		

Ref. No.	Description	Part No.
B2	CYLINDER ASSEMBLY MK12 PAL 4HD HIFI or	N1767CYL
	CYLINDER ASSEMBLY(V) MK12 PAL 4HD HIFI	N1769CYL
B3	LOADING MOTOR ASSEMBLY MK11 TVCR	0VSA13465
B8	PULLEY ASSEMBLY(HI) MK12	0VSA13501
B9	MOVING GUIDE S PREPARATION MK12	0VSA13560
B10	MOVING GUIDE T PREPARATION MK12	0VSA13562
B11	LOADING ARM(TU) ASSEMBLY MK12	0VSA13300
B12	LOADING ARM(SP) ASSEMBLY MK12	0VSA13299
B31	AC HEAD ASSEMBLY MK12	0VSA13275
B35	TAPE GUIDE ARM ASSEMBLY MK12	0VSA13277
B37	CAPSTAN MOTOR 288/VCCM012	N9671CML
B52	CAP BELT MK10	0VM411138
B73	FE HEAD ASSEMBLY MK11 or	N9742FEL
	FE HEAD ASSEMBLY MK11 or	N9743FEL
	FE HEAD(MK11) MH-131SF11 or	DHVEC01Z0005
	FE HEAD(MK11) VTR-1X2ERS11-148 or	DHVEC01TE004
	FE HEAD(MK12) VTR-1X2ERS11-155 or	DHVEC01TE005
	FE HEAD(MK12) HVFHP0047A	DHVEC01AL007
B74	PRISM MK10	0VM202870
B86	F BRAKE ASSEMBLY(HI) MK12	0VSA13447
B121	WORM MK12	0VM414091
B126	PULLEY MK12	0VM414330B
B133	IDLER ASSEMBLY(HI) MK12	0VSA13451
B148	TG CAP MK6	0VM407664C
B300	C DRIVE LEVER(TU) MK12	0VM203773
B303	F DOOR OPENER MK12 or	0VM203751C
	F DOOR OPENER MK12	0VM203751
B313	C DRIVE SPRING MK12	0VM414145
B347	GUIDE HOLDER A MK10	0VM304920
B354	SLIDER(TU) MK12	0VM101172F
B355	SLIDER(SP) MK12 or	0VM101182F
	SLIDER(SP) SUB ASSEMBLY MK12 or	0VDM12542
	SLIDER(SP) MK12	0VM101182H
B359	CLEANER LEVER MK10	0VM304413
B360	CLEANER ROLLER MK9	0VM410032C
B361	CL POST MK10	0VM411114
B410	PINCH ARM(A) ASSEMBLY(4) MK12 or	0VSA13572

Ref. No.	Description	Part No.
	PINCH ARM(A) ASSEMBLY(5) MK12	0VSA13788
B411	PINCH SPRING MK12	0VM414644
B414	M BRAKE(SP) ASSEMBLY(HI) MK12	0VSA13655
B416	M BRAKE(TU) ASSEMBLY(HI) MK12	0VSA13449
B417	TENSION SPG(3002654) MK12	0VM414221E
B425	LOCK LEVER SPRING MK10	0VM411110
B482	CASSETTE PLATE MK12	0VM203749
B483	LOCK LEVER MK12	0VM414095
B487	BAND BRAKE(SP) MK12	0VM305723
B488	MODE LEVER(HI) MK12	0VM101175J
B491	CAM GEAR(A)(HI) MK12	0VM101176
B492	MODE GEAR(LM) MK12	0VM204236
B494	C DOOR OPENER MK12	0VM305719
B499	T LEVER HOLDER MK12	0VM305729
B501	WORM HOLDER MK12	0VM203767
B507	REEL WASHER MK9 5*2.1*0.5	0VM410058
B508	S BRAKE SPRING(HI) MK12	0VM414899
B513	P.S.W F 6*2.55*0.5	0VM402629A
B514	SCREW RACK MK10	0VM411535
B516	REEL WASHER MK9 5*2.1*0.5	0VM410058
B518	P.S.W CUT 1.6X4.0X0.5T	0VM408485A
B521	REV BRAKE SPG(HI) MK12	0VM414943
B522	TG POST ASSEMBLY MK10	0VSA11012
B525	LDG BELT MK11	0VM412804
B529	CLEANER ASSEMBLY MK10	0VSA11161
B551	FF ARM(HI) MK12	0VM306183
B553	REV SPRING MK11	0VM412555
B555	RACK ASSEMBLY MK12	0VSA13289
B557	MOTOR PULLEY U5	0VM403205A
B558	LOADING MOTOR MDB2B82 or	MMDZB10SJ001
	LOADING MOTOR MDB2B80 or	MMDZB12SJ008
	LOADING MOTOR M31E-1 R-14 7376 or	MMDZB12MM003
	LOADING MOTOR M31E-1 R14 7391	MMDZB12MM004
B559	CLUTCH ASSEMBLY(HI) MK12	0VSA13450
B562	C DRIVE LEVER(SP) MK12	0VM203772
B563	SLIDER SHAFT MK12	0VM305762
B564	M GEAR(HI) MK12	0VM305755
B565	SENSOR GEAR(HI) MK12	0VM305756
B567	PINCH ARM(B) MK12	0VM305718
B568	BT ARM MK12	0VM305728
B571	P.S.W CUT 1.6X4.0X0.5T	0VM408485A
B572	P.S.W CUT 1.6X4.0X0.5T	0VM408485A
B573	REEL S MK11	0VM203436
B574	REEL T MK10	0VM202872C
B578	TR GEAR A MK10	0VM304440
B579	TR GEAR B MK12	0VM305900
B580	TR GEAR C MK12	0VM305743A
B581	CENTER GEAR MK11	0VM305081
B582	TR GEAR SPRING MK10	0VM411187
B583	CAM WASHER MK12	0VM414741
B584	TR GEAR SHAFT MK10	0VM411186
B585	PSW(317505) MK11	0VM413663
B587	TENSION LEVER ASSEMBLY MK12	0VSA13279
B590	BRAKE ARM(TU) MK12	0VM203752E
B591	BAND BRAKE(TU) MK12	0VM305724C
B592	TG POST MK10	0VM411108E
L1051	SCREW, B-TIGHT M2.6X6 PAN HEAD+	GPMB9060
L1053	SCREW, S-TIGHT M2.6X8 WASHER HEAD+	GCMS9080
L1151	SCREW, SEMS M3X4 PAN HEAD + or	CPM33040
	SCREW, SEMS M2.6X4 PAN HEAD+	CPM39040
L1191	SCREW, S-TIGHT M2.6X8 WASHER HEAD+	GCMS9080

Ref. No.	Description	Part No.
L1321	SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060
L1341	SCREW, P-TIGHT 2X8 PAN HEAD +	GPMP2080
L1406	AC HEAD SCREW MK9	0VM410964
L1450	SCREW, SEMS M2.6X5 PAN HEAD+	CPM39050
L1466	SCREW, S-TIGHT M2.6X6 BIND HEAD+	GBMS9060
L1467	SCREW, S-TIGHT M2.6X5 WASHER HEAD+	GCMS9050

