

## SERVICE MANUAL

VIDEO CASSETTE RECORDER

## HR-S6850EU, S6851EU, S6852EU, S6855EK

HR-S6850EU, S6851EU, S6852EU, S6855EK



**SHOWVIEW<sup>®</sup>**  
DELUXE  
**Hi-Fi S VHS**  
625  
**Super VHS ET**

SPECIFICATIONS *(The specifications shown pertain specifically to the model HR-S6850EU/S6851EU/6852EU)***GENERAL**

Power requirement	: AC 220 V – 240 V ~ , 50 Hz/60 Hz
Power consumption	
Power on	: 22 W
Power off	: 3.8 W
Temperature	
Operating	: 5°C to 40°C
Storage	: -20°C to 60°C
Operating position	: Horizontal only
Dimensions (WxHxD)	: 400 mm x 94 mm x 278 mm
Weight	: 3.6 kg
Format	: S-VHS/VHS PAL standard
Maximum recording time	
(SP)	: 240 min. with E-240 video cassette
(LP)	: 480 min. with E-240 video cassette
(EP)	: 720 min. with E-240 video cassette

**VIDEO/AUDIO**

Signal system	: PAL-type colour signal and CCIR monochrome signal, 625 lines 50 fields
Recording system	: DA4 (Double Azimuth) head helical scan system
Signal-to-noise ratio	: 45 dB
Horizontal resolution	
(SP/LP)	: 250 lines (VHS) 400 lines (S-VHS)
(EP)	: 220 lines (VHS) 350 lines (S-VHS)
Frequency range	: 70 Hz to 10,000 Hz (Normal audio) 20 Hz to 20,000 Hz (Hi-Fi audio)
Input/Output	: 21-pin SCART connectors: IN/OUT x 1, IN/DECODER x 1 RCA connectors: VIDEO IN x 1, AUDIO IN x 1, AUDIO OUT x 1 S-Video connector: IN x 1

**TUNER/TIMER**

TV channel storage capacity	: 99 positions (+AUX position)
Tuning system	: Frequency synthesized tuner
Channel coverage	: VHF 47 MHz – 89 MHz/ 104 MHz – 300 MHz/ 302 MHz – 470 MHz UHF 470 MHz – 862 MHz
Aerial output	: UHF channels 22 – 69 (Adjustable)
Memory backup time	: Approx. 10 min.

**ACCESSORIES**

Provided accessories	: RF cable, Infrared remote control unit, "R6" battery x 2
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Specifications shown are for SP mode unless otherwise specified.  
E. & O.E. Design and specifications subject to change without notice.

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The following table lists the differing points between Models ( HR-S6850EU, HR-S6851EU, HR-S6852EU and HR-S6855EK) in this series.

	HR-S6850EU	HR-S6851EU	HR-S6852EU	HR-S6855EK
VIDEO SYSTEM	PAL/MESECAM(MANUAL) /NTSC ON PAL TV	PAL/MESECAM(MANUAL) /NTSC ON PAL TV	PAL/MESECAM(MANUAL) /NTSC ON PAL TV	PAL/NTSC ON PAL TV
BROADCASTING STANDARD	B/G,D/K	B/G,D/K	B/G,D/K	I
STEREO DECODER	NICAM/A2	NICAM/A2	NICAM/A2	NICAM
RF OUT SYSTEM [INITIAL]	G,K	G,K	G,K	I
VCR PLUS+	SHOWVIEW DELUXE	SHOWVIEW DELUXE	SHOWVIEW DELUXE	VIDEOPUS+ DELUXE
VPS(AUTO)	USED	USED	USED	NOT USED
INITIAL (TIMER)	GER,AUS,SWISS:ON, OTHER:OFF	GER,AUS,SWISS:ON, OTHER:OFF	GER,AUS,SWISS:ON, OTHER:OFF	OFF
CABLE BOX OR DBS. BOX OR SAT CTL	READY	READY	READY	USED
LANGUAGE [INITIAL] (ON SCREEN DISPLAY)	13 LANG. [E]	13 LANG. [E]	13 LANG. [E]	ENG
GOST	USED	NOT USED	NOT USED	NOT USED
FRONT PANEL COLOR	PURE SILVER	PURE SILVER	BLACK	PURE SILVER
WINDOW COLOR	SMOKE LIGHT GRAY	GREEN	SMOKE PINK	CLEAR
CABLE MOUSE	OPTION	OPTION	OPTION	PROVIDED

# Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform 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

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the  $\triangle$  symbol and shaded (  ) parts are critical for safety.

Replace only with specified part numbers.

**Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.**

3. Fuse replacement caution notice.  
Caution for continued protection against fire hazard.  
Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:

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

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

- |                    |                                      |            |
|--------------------|--------------------------------------|------------|
| 1) Insulation Tape | 3) Spacers                           | 5) Barrier |
| 2) PVC tubing      | 4) Insulation sheets for transistors |            |

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

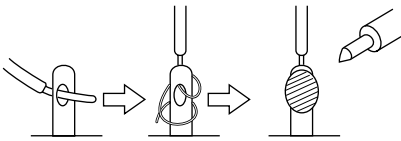


Fig.1

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

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

9. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

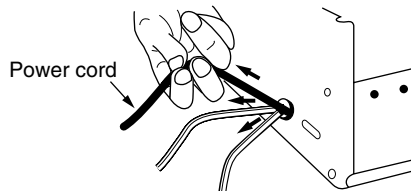


Fig.2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)  
In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector

In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

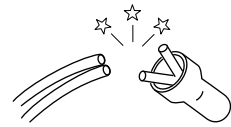
**1) Connector part number :** E03830-001

**2) Required tool :** Connector crimping tool of the proper type which will not damage insulated parts.

**3) Replacement procedure**

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

Important : Do not reuse a connector (discard it).



cut close to connector

Fig.3

(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.

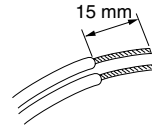


Fig.4

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

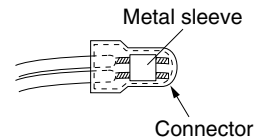


Fig.5

(4) As shown in Fig.6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

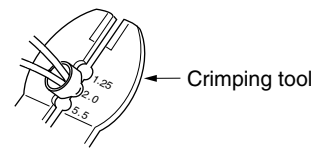


Fig.6

(5) Check the four points noted in Fig.7.

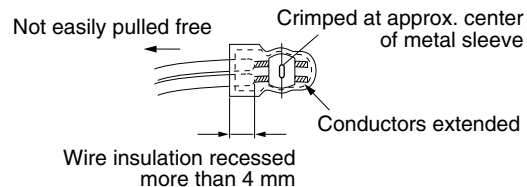


Fig.7

## ● Safety Check after Servicing

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

### 1. Insulation resistance test

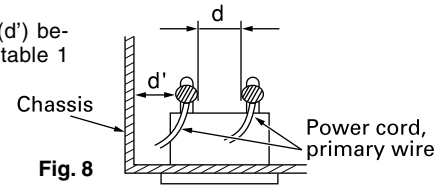
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

### 2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

### 3. Clearance distance

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

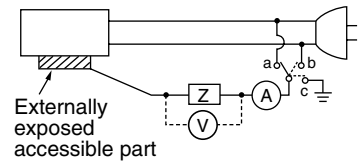


### 4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

**Measuring Method :** (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

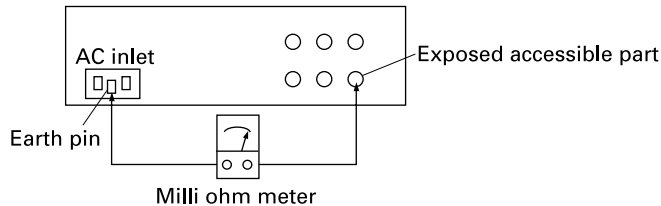


### 5. Grounding (Class 1 model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

**Measuring Method:**

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.



#### Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	$Z \leq 0.1 \text{ ohm}$
Europe & Australia	$Z \leq 0.5 \text{ ohm}$

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	$R \geq 1 \text{ M}\Omega/500 \text{ V DC}$	AC 1 kV 1 minute	$d, d' \geq 3 \text{ mm}$
100 to 240 V			AC 1.5 kV 1 minute	$d, d' \geq 4 \text{ mm}$
110 to 130 V	USA & Canada	$1 \text{ M}\Omega \leq R \leq 12 \text{ M}\Omega/500 \text{ V DC}$	AC 1 kV 1 minute	$d, d' \geq 3.2 \text{ mm}$
110 to 130 V 200 to 240 V	Europe & Australia	$R \geq 10 \text{ M}\Omega/500 \text{ V DC}$	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	$d \geq 4 \text{ mm}$ $d' \geq 8 \text{ mm}$ (Power cord) $d' \geq 6 \text{ mm}$ (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	$i \leq 1 \text{ mA rms}$	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	$i \leq 0.5 \text{ mA rms}$	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	Antenna earth terminals
		50 kΩ	$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	Other terminals

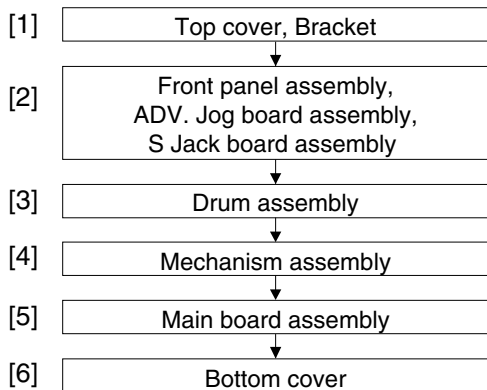
Table 2 Leakage current specifications for each region

**Note:** These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

# SECTION 1 DISASSEMBLY

## 1.1 Disassembly flow chart

This flowchart lists the disassembling steps for the cabinet parts and P.C. boards in order to gain access to item(s) to be serviced. When reassembling, perform the step(s) in reverse order. Bend, route and dress the flat cables as they were originally laid.



## 1.2 How to read the disassembly and assembly

<Example>

Step/ Loc.No.	Part Name	Fig. No.	Point	Note
[1]	Top cover, Bracket	D1	4(S1a),(S1b),3(L1a), 2(SD1a),(P1a),(W1a), CN1(WR1a), 2(S1c)	<Note 1a>

(1)                      (2)                      (3)                      (4)                      (5)

### (1) Order of steps in Procedure

When reassembling, perform the step(s) in the reverse order. These numbers are also used as the identification (location) No. of parts Figures.

### (2) Part name to be removed or installed.

### (3) Fig. No. showing procedure or part location.

### (4) Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped or unsoldered.

P= Spring, W= Washer, S= Screw, L= Locking tab, SD= Solder, CN\*\*(WR\*\*)= Remove the wire (WR\*\*) from the connector (CN\*\*).

### Note:

- **The bracketed ( ) WR of the connector symbol are assigned nos. in priority order and do not correspond to those on the spare parts list.**

### (5) Adjustment information for installation

## 1.3 Disassembly/assembly method

Step/ Loc.No.	Part Name	Fig. No.	Point	Note
[1]	Top cover, Bracket	D1	4(S1a), (S1b) ----- 2(S1c)	
[2]	Front panel assembly  ADV. Jog board assembly S Jack board assembly	D2	CN7001(WR2a), CN916(WR2b), 4(L2a), 3(L2b) ----- 2(S2a) ----- 2(S2b)	<Note 2a> <Note 2b> <Note 2c>
[3]	Drum assembly  (Inertia plate) (Roller arm assy)	D3	CN1(WR3a), CN1(WR3b), (S3a), (S3b), (S3c) ----- 4(L3a) ----- (P3), (L3b)	<Note 2c>
[4]	Mechanism assembly	D4	CN2001(WR4a), (S4a),(S4b), (S4c), (S4d)	<Note 2c> <Note 4a>
[5]	Main board assembly	D5	7(L5a), (S5a), 3(S5b)	
[6]	Bottom cover	D6	2(L6a), 9(L6b)	<Note 6a>

### <Note 2a>

- When reattaching the Front panel assembly, make sure that the door opener “a” of the Cassette holder assembly is lowered in position prior to the reinstallation.

### <Note 2b>

- When reattaching the Front panel assembly, pay careful attention to the switch lever not to make it touch the switch knob “b” of the Main board assembly from the side.

### <Note 2c>

- Be careful not to damage the connector and wire etc. during connection and disconnection. When connecting the wire to the connector, be careful with the wire direction.

### <Note 4a>

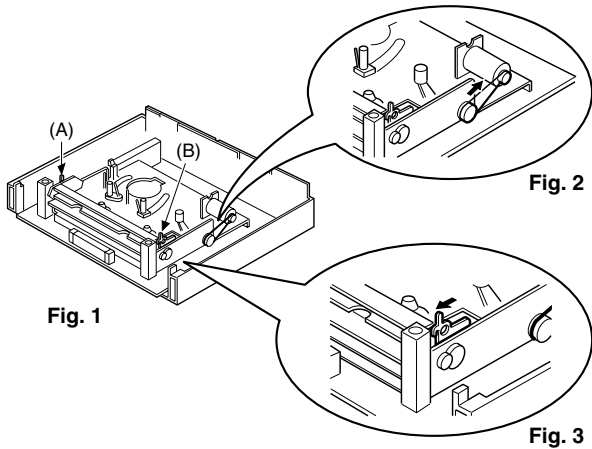
- When it is required to remove the screws (S4a to S4b) retaining the Mechanism assembly, please refer to the “Procedures for Lowering the Cassette holder assembly”(See on page 1-2).
- When reattaching the Mechanism assembly to the Main board assembly, take care not to damage the sensors and switch on the Main board assembly.
- When removing the Mechanism assembly only, unhook the two spacers connecting it with the Main board assembly with pliers from the back side of the Main board assembly first, and then remove the Mechanism assembly.
- The wire (WR4a) has excess length that may be loose, as it is quite long. After inserting the wire and connectors, the loose portion of the wire should be taken up and accommodated between the A/C head base and the main deck.

### <Note 6a>

- When removing the bottom cover, push down the two tabs (L6a) to slide the bottom cover.

**Procedures for Lowering the Cassette holder assembly**

As the mechanism of this unit is integrated with the Housing assembly, the holder must be lowered and the two screws unscrewed when removing the Mechanism assembly.



Turn the loading motor pulley in the direction as indicated by Fig.2. As both (A) and (B) levers are lodged twice, push the levers in the direction as indicated by Fig.3 to release them. When pushing the levers, do it in the order of (A), (B), (B), (A). When the holder has been lowered, turn the pulley until the cassette holder is securely in place without allowing any up/down movement.

**Procedures for Lowering the Cassette holder assembly**

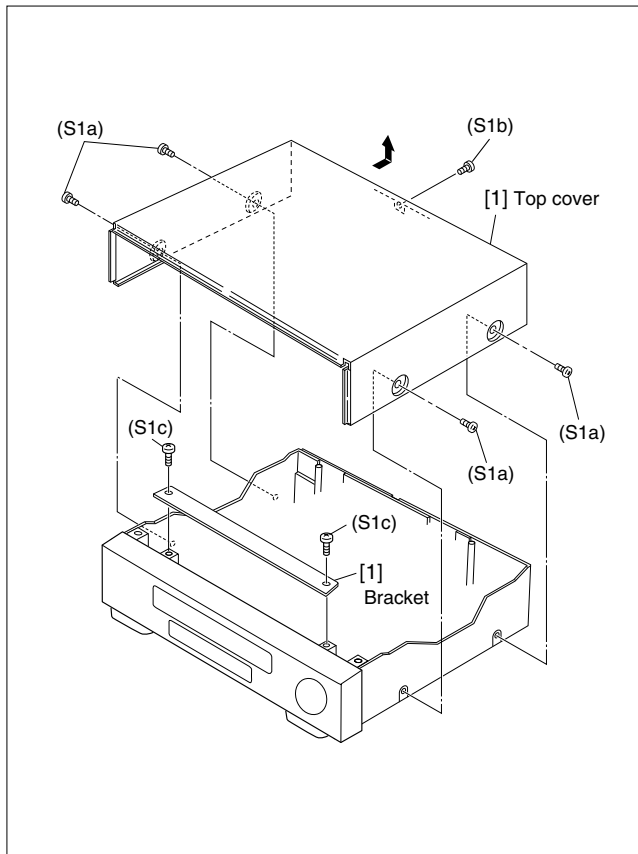


Fig. D1

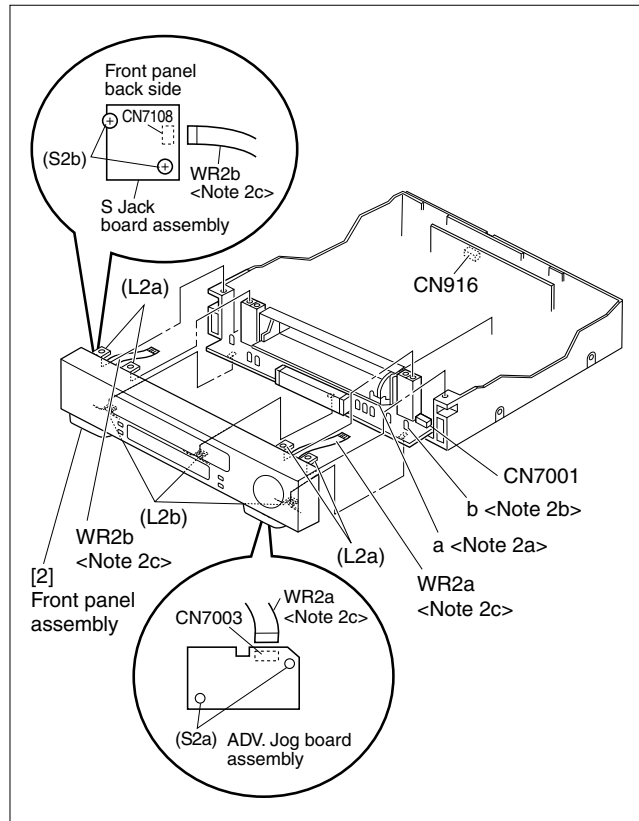


Fig. D2

Note: When installing the Drum assembly, secure the screws (S3a to S3c) in the order of a, b, c.

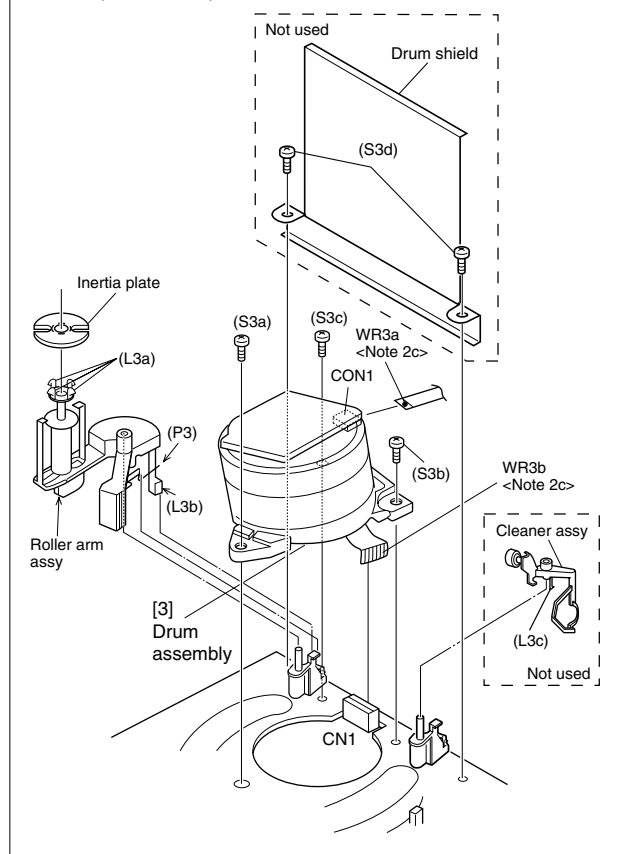


Fig. D3

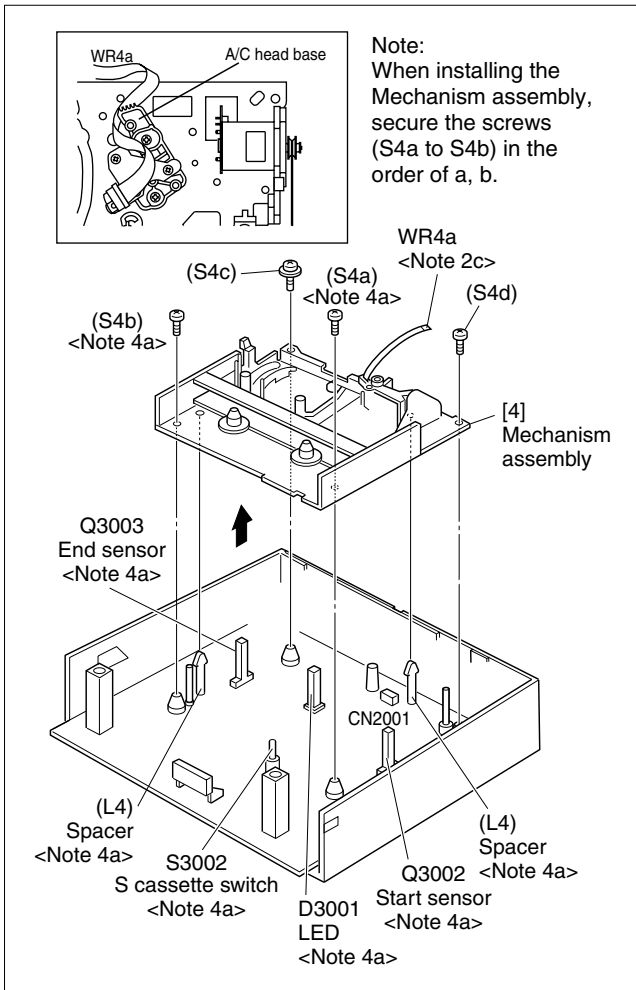


Fig. D4

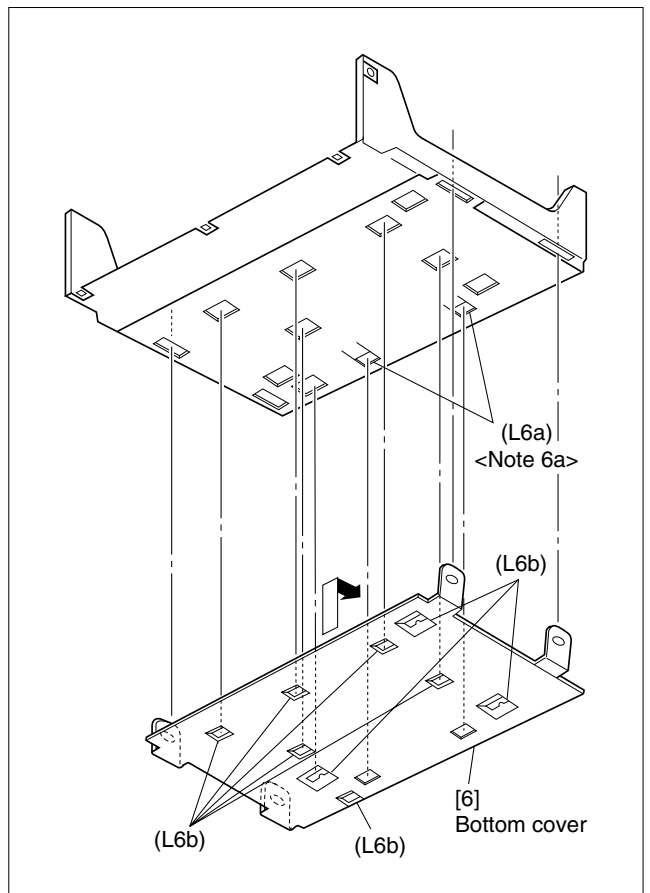


Fig. D6

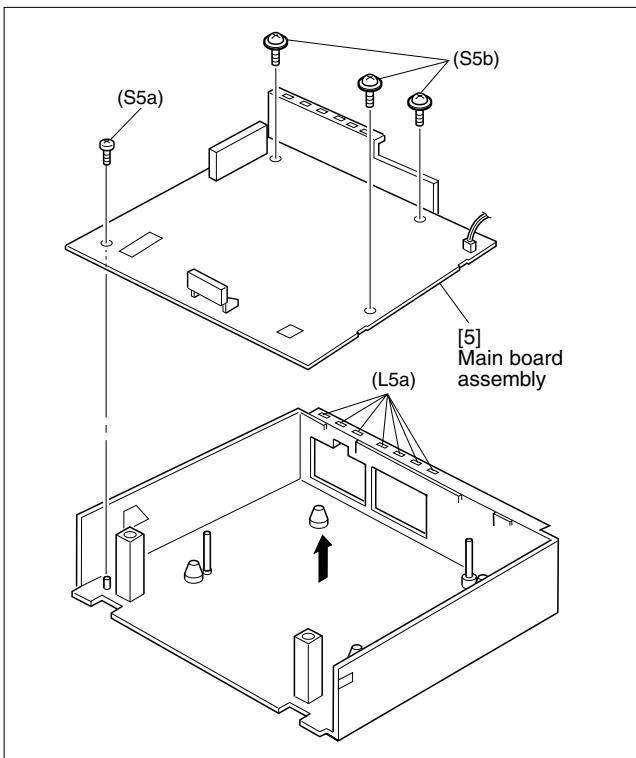


Fig. D5

## 1.4 Service position

This unit has been designed so that the Mechanism and Main board assemblies can be removed together from the chassis assembly. Before diagnosing or servicing the circuit boards, take out the major parts from the chassis assembly.

### 1.4.1 How to set the "Service position"

- (1) Refer to the disassembly procedure and perform the disassembly of the major parts before removing the Drum assembly.
- (2) Lower the cassette holder to prepare for the removal of the Mechanism assembly screws. (Refer to the "Procedures for lowering the Cassette holder assembly" of 1.3 Disassembly/assembly method.)
- (3) Remove the combined Mechanism and Main board assemblies.
- (4) Connect the wires and connectors of the major parts that have been removed in step (1). (Refer to Fig.1-4-1a.)
- (5) Place the combined Mechanism and Main board assemblies upside down.
- (6) Insert the power cord plug into the power outlet and then proceed with the diagnostics and servicing of the board assembly.

#### Notes:

- Before inserting the power cord plug into the power outlet, make sure that none of the electrical parts are able to short-circuit between the workbench and the board assembly.
- For the disassembly procedure of the major parts and details of the precautions to be taken, see "1.3 Disassembly/assembly method".
- If there are wire connections from the Main board and Mechanism assemblies to the other major parts, be sure to remove them (including wires connected to the major parts) first before performing step (2).
- When carrying out diagnosis and repair of the Main board assembly in the "Service position", be sure to ground both the Main board and Mechanism assemblies. If they are improperly grounded, there may be noise on the playback picture or FDP counter display may move even when the mechanism is kept in an inoperative status.
- In order to diagnose the playback or recording of the cassette tape, set the Mechanism assembly to the required mode before placing it upside down. If the mechanism mode is changed (including ejection) while it is in an upside down position the tape inside may be damaged.

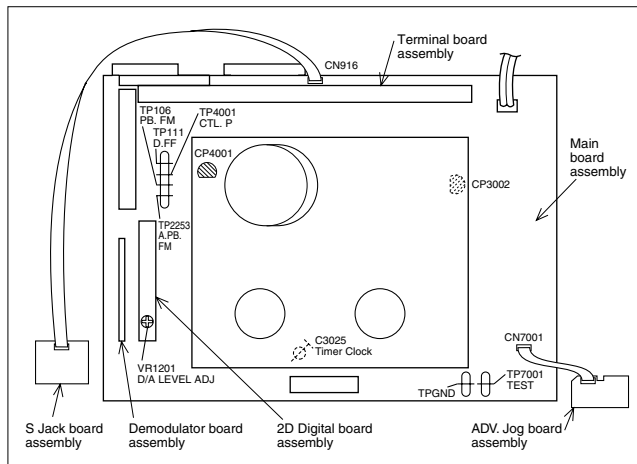


Fig. 1-4-1a

## 1.5 Mechanism service mode

This model has a unique function to enter the mechanism into every operation mode without loading of any cassette tape. This function is called the "Mechanism service mode".

### 1.5.1 How to set the "Mechanism service mode"

- (1) Unplug the power cord plug from the power outlet.
- (2) Connect TPGND and TP7001(TEST) on the Main board assembly with a jump wire.
- (3) Insert the power cord plug into the power outlet.
- (4) With lock levers (A) (B) on the left and right of the Cassette holder assembly pulled toward the front, slide the holder in the same direction as the cassette insertion direction. (For the positions of lock levers (A) (B), refer to the "Procedures for lowering the Cassette holder assembly" of 1.3 Disassembly/assembly method.)
- (5) The cassette holder lowers and, when the loading has completed, the mechanism enters the desired mode.

## 1.6 Jig RCU mode

This unit uses the following two modes for receiving remote control codes.

- 1) User RCU mode : Ordinary mode for use by the user.
- 2) Jig RCU mode : Mode for use in production and servicing.

When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). As both of the above two modes are stored in the EEPROM, it is required to set the VCR back to the User RCU mode each time that an adjustment is made or to check that the necessary operations have been completed. These modes can be set by the operations described below.

### 1.6.1 Setting the Jig RCU mode

- (1) Unplug the power cord plug from the power outlet.
  - (2) Press and hold the "REC" and "PAUSE" buttons on the VCR simultaneously, while plugging the power cord plug into the power outlet.
- When the VCR is set to the Jig RCU mode, the symbols (" : ") in the time display of the FDP are turned off.

### 1.6.2 Setting the User RCU mode

- (1) Turn off the power.
- (2) Press the "REC" and "PAUSE" buttons of the VCR simultaneously. Alternatively, transmit the code "80" from the Jig RCU.

## 1.7 Servicing items related to video navigation

The video navigation function built into this unit works by storing the video navigation data in the internal EEPROM and writing data in the cassette tape simultaneously. The video navigation data stored in the EEPROM cannot be copied to another EEPROM. Therefore, when the circuit board mounting the EEPROM is replaced, the original EEPROM should be mounted on the new board. This will make the user's video navigation data usable with the new circuit board after replacement. However, the user's data cannot be restored if the EEPROM on the original circuit board is damaged.

#### Note:

- If the circuit board mounting the EEPROM or the EEPROM alone has been replaced, it is required to perform confirmation/re-adjustment on all of the adjustment items using the EVR as well as those which are adjusted by transmitting adjustment codes from the Jig RCU.

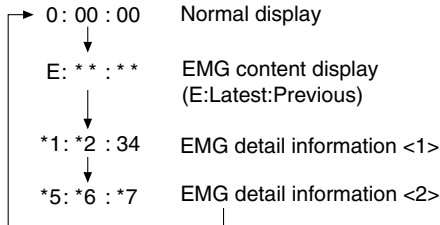


## 1.8 Emergency display function

This unit has a function for storing the history of the past two emergencies (EMG) and displaying them on each FDP (or OSD). With the status of the VCR and mechanism at the moment an emergency occurred can also be confirmed.

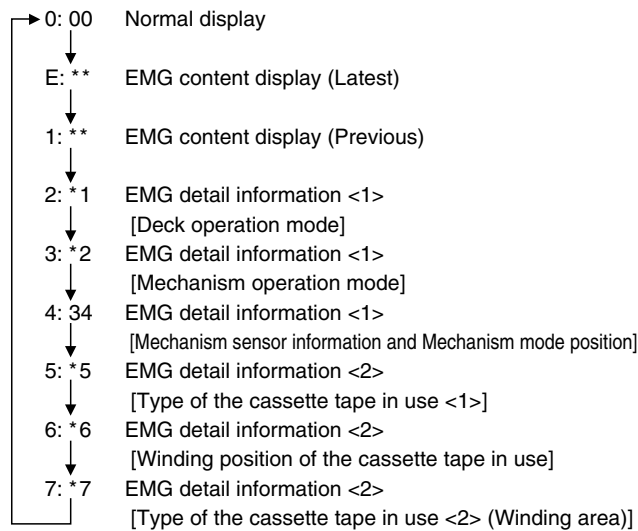
### FDP display model

#### [FDP display]



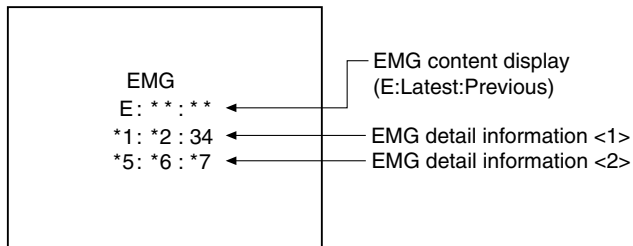
### FDP (7segment LED) display model

#### [FDP display]



### OSD display model

#### [OSD display]



### Notes:

- The EMG detail information <1><2> show the information on the latest EMG.  
It becomes “-- : -- : --” when there is no latest EMG record.
- When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received).

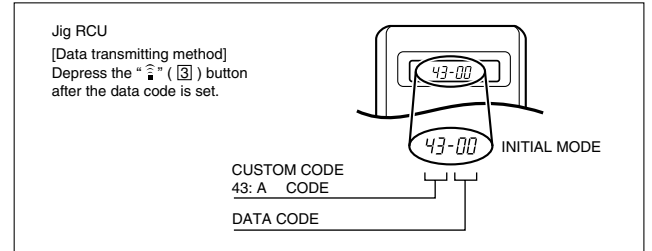
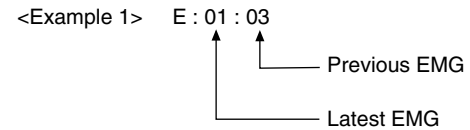


Fig. 1-8a Jig RCU [PTU94023B]

### 1.8.1 Displaying the EMG information

- (1) Transmit the code “59” from the Jig RCU.

The FDP shows the EMG content in the form of “E: \* \* : \* \*”.



- (2) Transmit the code “59” from the Jig RCU again.

The FDP shows the EMG detail information <1> in the form of “\*1: \*2 : 34”.

- \*1 : Deck operation mode at the moment of EMG
- \*2 : Mechanism operation mode at the moment of EMG
- 3- : Mechanism sensor information at the moment of EMG
- 4 : Mechanism mode position at the moment of EMG

- (3) Transmit the code “59” from the Jig RCU once again.

The FDP shows the EMG detail information <2> in the form of “\*5: \*6 : \*7”.

- \*5 : Type of the cassette tape in use <1> .
- \*6 : Winding position of the cassette tape in use
- \*7 : Type of the cassette tape in use <2> (Winding area)

- (4) Transmit the code “59” from the Jig RCU once again to reset the display.

### Notes:

- For the OSD display model, all EMG information are showed by transmitting first code from the Jig RCU.
- For the EMG content, see “1.8.3 EMG content description”.
- For the EMG detail information <1>, see “1.8.4 EMG detail information <1>”.
- For the EMG detail information <2>, see “1.8.5 EMG detail information <2>”.

### 1.8.2 Clearing the EMG history

- (1) Display the EMG history.
- (2) Transmit the code “36” from the Jig RCU.
- (3) Reset the EMG display.

### 1.8.3 EMG content description

Note: EMG contents "E08/E09" are for the model with Dynamic Drum (DD).

FDP	CONTENT	CAUSE
E01: Loading EMG	When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the loading direction, [E:01] is identified and the power is turned off.	<ol style="list-style-type: none"> <li>The mechanism is locked in the middle of mode transition.</li> <li>The mechanism is locked at the loading end due to the encoder position reading error during mode transition.</li> <li>Power is not supplied to the loading MDA.</li> </ol>
E02: Unloading EMG	When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the unloading direction, [E:02] is identified and the power is turned off.	<ol style="list-style-type: none"> <li>The mechanism is locked in the middle of mode transition.</li> <li>The mechanism is locked at the unloading end due to the encoder position reading error during mode transition.</li> <li>Power is not supplied to the loading MDA.</li> </ol>
E03: Take Up Reel Pulse EMG	When the take-up reel pulse has not been generated for more than 4 seconds in the capstan rotating mode, [E:03] is identified, the pinch rollers are turned off and stopped, and the power is turned off. However, the reel EMG is not detected in STILL/SLOW modes.	<ol style="list-style-type: none"> <li>The take-up reel pulse is not generated in the FWD transport modes (PLAY/FWD SEARCH/FF, etc.) because; <ol style="list-style-type: none"> <li>The idler gear is not meshed with the take-up reel gear;</li> <li>The idler gear is meshed with the take-up reel gear, but incapable of winding due to too large mechanical load (abnormal tension);</li> <li>The take-up reel sensor does not output the FG pulse.</li> </ol> </li> <li>The supply reel pulse is not generated in the REV transport modes (REV SEARCH/REW, etc.) because; <ol style="list-style-type: none"> <li>The idler gear is not meshed with the supply reel gear.</li> <li>The idler gear is meshed with the supply reel gear, but incapable of winding due to too large a mechanical load (abnormal tension);</li> <li>The supply reel sensor does not output the FG pulse.</li> </ol> </li> <li>Power is not supplied to the reel sensors.</li> </ol>
E04: Drum FG EMG	When the drum FG pulse has not been input for more than 3 seconds in the drum rotating mode, [E:04] is identified, the pinch rollers are turned off and stopped, and the power is turned off.	<ol style="list-style-type: none"> <li>The drum could not start or the drum rotation has stopped due to too large a load on the tape, because; <ol style="list-style-type: none"> <li>The tape tension is abnormally high;</li> <li>The tape is damaged or a foreign object (grease, etc.) adheres to the tape.</li> </ol> </li> <li>The drum FG pulse did not reach the System controller CPU because; <ol style="list-style-type: none"> <li>The signal circuit is disconnected in the middle;</li> <li>The FG pulse generator (hall device) of the drum is faulty.</li> </ol> </li> <li>The drum control voltage (DRUM CTL V) is not supplied to the MDA.</li> <li>Power is not supplied to the drum MDA.</li> </ol>
E05: Cassette Eject EMG	When the eject operation does not complete in 3 seconds after the start, [E:05] is identified, the pinch rollers are turned off and stopped, and the power is turned off. When the cassette insertion operation does not complete in 3 seconds after the start, the cassette is ejected. In addition, when the operation does not complete within 3 seconds after the start, [E:05] is also identified and the power is turned off immediately.	<ol style="list-style-type: none"> <li>The cassette cannot be ejected due to a failure in the drive mechanism of the housing.</li> <li>When the housing load increases during ejection, the loading motor is stopped because of lack of headroom in its drive torque. <p>Housing load increasing factors: Temperature environment (low temperature, etc.), mechanism wear or failure.</p> </li> <li>The sensor/switch for detecting the end of ejection are not functioning normally.</li> <li>The loading motor drive voltage is lower than specified or power is not supplied to the motor (MDA).</li> <li>When the user attempted to eject a cassette, a foreign object (or perhaps the user's hand) was caught in the opening of the housing.</li> </ol>
E06: Capstan FG EMG	When the capstan FG pulse has not been generated for more than 1 second in the capstan rotating mode, [E:06] is identified, the pinch rollers are turned off and stopped, and the power is turned off. However, the capstan EMG is not detected in STILL/SLOW/FF/REW modes.	<ol style="list-style-type: none"> <li>The capstan could not start or the capstan rotation has stopped due to too large a load on the tape, because; <ol style="list-style-type: none"> <li>The tape tension is abnormally high (mechanical lock);</li> <li>The tape is damaged or a foreign object (grease, etc.) is adhered to the tape (occurrence of tape entangling, etc.).</li> </ol> </li> <li>The capstan FG pulse did not reach the System controller CPU because; <ol style="list-style-type: none"> <li>The signal circuit is disconnected in the middle;</li> <li>The FG pulse generator (MR device) of the capstans is faulty.</li> </ol> </li> <li>The capstan control voltage (CAPSTAN CTL V) is not supplied to the MDA.</li> <li>Power is not supplied to the capstan MDA.</li> </ol>
E07: SW Power Short-Circuit EMG	When short-circuiting of the SW power supply with GND has lasted for 0.5 second or more, [E:07] is identified, all the motors are stopped and the power is turned off.	<ol style="list-style-type: none"> <li>The SW 5 V power supply circuit is shorted with GND.</li> <li>The SW 12 V power supply circuit is shorted with GND.</li> </ol>
E08: DD Initialized (Absolute Position Sensor) EMG	When DD tilting does not complete in 4 seconds, [E:08] is identified, the tilt motor is stopped and the power is turned off.	<ol style="list-style-type: none"> <li>The absolute value sensor is defective. (The soldered parts have separated.)</li> <li>The pull-up resistor at the absolute sensor output is defective. (The soldered parts have separated.)</li> <li>Contact failure or soldering failure of the pins of the connector (board-to-board) to the absolute value sensor.</li> <li>The absolute value sensor data is not sent to the System Controller CPU.</li> </ol>
E09: DD FG EMG	When the DD FG pulse is not generated within 2.5 seconds, [E:09] is identified, the tilt motor is stopped and the power is turned off.	<ol style="list-style-type: none"> <li>The FG sensor is defective. (The soldered parts have separated.)</li> <li>The pull-up resistor at the FG sensor output is defective. (The soldered parts have separated.)</li> <li>Contact failure or soldering failure of the pins of the connector (board-to-board) to the FG sensor.</li> <li>The power to the sensor is not supplied. (Connection failure/soldering failure)</li> <li>The FG pulse is not sent to the System Controller CPU.</li> <li>The tilt motor is defective. (The soldered parts have separated.)</li> <li>The drive power to the tilt motor is not supplied. (Connection failure/soldering failure)</li> <li>The tilt motor drive MDA - IC is defective.</li> <li>Auto-recovery of the DD tilting cannot take place due to overrun.</li> </ol>
E0A: Supply Reel Pulse EMG	When the supply reel pulse has not been generated for more than 10 seconds in the capstan rotating mode, [E:0A] is identified and the cassette is ejected (but the power is not turned off). However, note that the reel EMG is not detected in the SLOW/STILL mode.	<ol style="list-style-type: none"> <li>The supply reel pulse is not generated in the FWD transport mode (PLAY/FWD SEARCH/FF, etc.) because; <ol style="list-style-type: none"> <li>PLAY/FWD or SEARCH/FF is started while the tape in the inserted cassette is cut in the middle;</li> <li>A mechanical factor caused tape slack inside and outside the supply reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the FWD transport, so the pulse is not generated until then;</li> <li>The FG pulse output from the supply reel sensor is absent.</li> </ol> </li> <li>The take-up reel pulse is not generated in the REV transport mode (REV SEARCH/REW, etc.). <ol style="list-style-type: none"> <li>REV SEARCH/REW is started when the tape in the inserted cassette has been cut in the middle;</li> <li>A mechanical factor caused tape slack inside and outside the take-up reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the REV transport, so the pulse will not be generated until that time;</li> <li>The FG pulse output from the take-up reel sensor is absent.</li> </ol> </li> <li>The power to a reel sensor is not supplied.</li> </ol>
EC1 or EU1: Head clog warning	<p>Presupposing the presence of the control pulse output in the PLAY mode, when the value obtained by mixing the two V.FM output channels (without regard to the A.FM output) has remained below a certain threshold level for more than 10 seconds, [E:C1] or [E:U1] is identified and recorded in the emergency history. During the period in which a head clog is detected, the FDP and OSD repeat the "3-second warning display" and "7-second noise picture display" alternately.</p> <p>EMG code : "E:C1" or "E:U1" / FDP : "U:01" / OSD : "Try cleaning tape." or "Use cleaning cassette."</p> <p>The head clog warning is reset when the above-mentioned threshold has been exceeded for more than 2 seconds or the mode is changed to another mode than PLAY.</p>	

### 1.8.4 EMG detail information <1>

The status (electrical operation mode) of the VCR and the status (mechanism operation mode/sensor information) of the mechanism in the latest EMG can be confirmed based on the figure in EMG detail information <1> .

#### [FDP/OSD display]

\* 1 : \* 2 : 34

- \* 1 : Deck operation mode at the moment of EMG
- \* 2 : Mechanism operation mode at the moment of EMG
- 3- : Mechanism sensor information at the moment of EMG
- 4 : Mechanism mode position at the moment of EMG

#### Note:

- For EMG detailed information <1>, the content of the code that is shown on the FDP (or OSD) differs depending on the parts number of the system control microprocessor (IC3001) of the VCR. The system control microprocessor parts number starts with two letters, refer these to the corresponding table.

#### \* 1 : Deck operation mode

##### [Common table of MN\*, HD\* and M3\*]

Display		Deck operation mode
MN*/M3*	HD*	
00	-	Mechanism being initialized
01	00	STOP with pinch roller pressure off (or tape present with P.OFF)
02	01	STOP with pinch roller pressure on
03	-	POWER OFF as a result of EMG
04	04	PLAY
0C	0E	REC
10	11	Cassette ejected
20	22	FF
21	-	Tape fully loaded, START sensor ON, short FF
22	-	Cassette identification FWD SEARCH before transition to FF (SP x7-speed)
24	26	FWD SEARCH (variable speed) including x2-speed
2C	2E	INSERT REC
40	43	REW
42	-	Cassette identification REV SEARCH before transition to REW (SP x7-speed)
44	47	REV SEARCH (variable speed)
4C	4C	AUDIO DUB
6C	6E	INSERT REC (VIDEO + AUDIO)
84	84	FWD STILL / SLOW
85	85	REV STILL / SLOW
8C	8F	REC PAUSE
8D	-	Back spacing
8E	-	Forward spacing (FWD transport mode with BEST function)
AC	AF	INSERT REC PAUSE
AD	-	INSERT REC back spacing
CC	CD	AUDIO DUB PAUSE
CD	-	AUDIO DUB back spacing
EC	EF	INSERT REC (VIDEO + AUDIO) PAUSE
ED	-	INSERT REC (VIDEO + AUDIO) back spacing

#### \* 2 : Mechanism operation mode

##### [Common table of MN\* and M3\*]

Display		Mechanism operation mode
MN*	M3*	
00	00	Command standby (Status without executing command)
02	02	POWER OFF by EMG occurrence
04	04	Moving to the adjacent position in the LOAD direction
06	06	Moving to the adjacent position in the UNLOAD direction
08	08	Cassette ejection being executed / Cassette housing ejection being executed
-	0A	Mode transition to STOP with cassette ejection end
0A	0C	Cassette insertion being executed
0C	0E	Tape being loaded
0E	10	Tape being unloaded
10	12	Mode transition to STOP with pinch roller compression ON
12	14	Mode transition to STOP with pinch roller compression OFF
14	16	Mode transition to STOP with pinch roller compression OFF as a result of POWER OFF
16	18	Mode transition to STOP with pinch roller compression ON as a result of POWER ON
18	1A	Mode transition to PLAY
1A	1C	Mode transition to FWD SEARCH
1C	1E	Mode transition to REC
1E	20	Mode transition to FWD STILL / SLOW
20	22	Mode transition to REV STILL / SLOW
22	24	Mode transition to REV SEARCH
24	26	Mode transition from FF / REW to STOP
26	28	Mode transition to FF
28	2A	Mode transition to REW
2A	2C	4 sec. of REV as a result of END sensor going ON during loading
2C	2E	Short FF / REV as a result of END sensor going ON during unloading
2E	30	Mechanism position being corrected due to overrun
80	80	Mechanism in initial position (Dummy command)

#### [Table of HD\*]

Display	Mechanism operation mode
00	STOP with pinch roller pressure off
01	STOP with pinch roller pressure on
02	U/L STOP (or tape being loaded)
04	PLAY
05	PLAY (x1-speed playback using JOG)
0E	REC
11	Cassette ejected
22	FF
26	FWD SEARCH (variable speed) including x2-speed
2E	INSERT REC
43	REW
47	REV SEARCH
4C	AUDIO DUB
6E	INSERT REC (VIDEO + AUDIO)
84	FWD STILL/SLOW
85	REV STILL/SLOW
8F	REC PAUSE
AF	INSERT REC PAUSE
C7	REV SEARCH (x1-speed reverse playback using JOG)
CD	AUDIO DUB PAUSE
EF	INSERT REC (VIDEO + AUDIO) PAUSE
F0	Mechanism being initialized
F1	POWER OFF as a result of EMG
F2	Cassette being inserted
F3	Cassette being ejected
F4	Transition from STOP with pinch roller pressure on to STOP with pinch roller pressure off
F5	Transition from STOP with pinch roller pressure on to PLAY
F6	Transition from STOP with pinch roller pressure on to REC
F7	Cassette type detection SEARCH before FF/REW is being executed
F8	Tape being unloaded
F9	Transition from STOP with pinch roller pressure off to STOP with pinch roller pressure on
FA	Transition from STOP with pinch roller pressure off to FF/REW
FB	Transition from STOP with pinch roller pressure off to REC.P (T.REC,etc.)
FC	Transition from STOP with pinch roller pressure off to cassette type detection SEARCH
FD	Short REV being executed after END sensor on during unloading
FE	Tension loosening being executed after tape loading (STOP with pinch roller pressure on)

**3- : Mechanism sensor information**  
**[Common table of MN\*, HD\* and M3\*]**

Display	Mechanism sensor information				
	MN* / HD* S-VHS SW	M3* CASS SW	REC safety SW	Start sensor	End sensor
0-	VHS	Cassette insertion	Tab broken	ON	ON
1-	VHS	Cassette insertion	Tab broken	ON	OFF
2-	VHS	Cassette insertion	Tab broken	OFF	ON
3-	VHS	Cassette insertion	Tab broken	OFF	OFF
4-	VHS	Cassette insertion	Tab present	ON	ON
5-	VHS	Cassette insertion	Tab present	ON	OFF
6-	VHS	Cassette insertion	Tab present	OFF	ON
7-	VHS	Cassette insertion	Tab present	OFF	OFF
8-	S-VHS	Cassette ejection	Tab broken	ON	ON
9-	S-VHS	Cassette ejection	Tab broken	ON	OFF
A-	S-VHS	Cassette ejection	Tab broken	OFF	ON
B-	S-VHS	Cassette ejection	Tab broken	OFF	OFF
C-	S-VHS	Cassette ejection	Tab present	ON	ON
D-	S-VHS	Cassette ejection	Tab present	ON	OFF
E-	S-VHS	Cassette ejection	Tab present	OFF	ON
F-	S-VHS	Cassette ejection	Tab present	OFF	OFF

**-4 : Mechanism mode position**  
**[Common table of MN\*, HD\* and M3\*]**

Display			Mechanism mode position
MN*	HD*	M3*	
-0	-7	-	Initial value
-1	-0	-	EJECT position
-	-	-0	EJECT position (Cassette housing drive mode)
-2	-7	-	Housing operating
-	-	-1	Between EJECT and U / L STOP
-3	-1	-2	U / L STOP position
-	-	-3	Guide arm drive position
-4	-7	-4	Tape being loaded / unloaded (When the pole base is located on the front side of the position just beside the drum)
-5	-2	-5	Tape being loaded / unloaded (When the pole base is located on the rear side of the position just beside the drum)
-6	-7	-6	Pole base compressed position
-7	-3	-F	FF / REW position
-8	-7	-F	Between FF / REW and STOP with pinch roller compression ON
-9	-4	-F	STOP with pinch roller compression OFF
-A	-7	-E	Between STOP with pinch roller compression OFF and REV
-B	-5	-	REV (REV STILL / SLOW) position
-	-	-D	REV position
-	-	-C	Between REV and REV STILL / SLOW
-	-	-B	REV STILL / SLOW position
-C	-7	-	Between REV and FWD
-	-	-A	Between REV STILL / SLOW and FWD STILL / SLOW
-D	-6	-	FWD (FWD STILL / SLOW) position
-	-	-9	FWD STILL / SLOW position
-E	-7	-	Between FWD and PLAY
-	-	-8	Between FWD STILL / SLOW and PLAY
-F	-6	-7	PLAY position

**Note:**

• In the case of the "HD\*" microprocessor, as the display is always "-7" at any intermediate position between modes, the position of transitory EMG may sometimes not be located.

**1.8.5 EMG detail information <2>**

The type of the cassette tape and the cassette tape winding position can be confirmed based on the figure in EMG detail information <2> .

**[FDP/OSD display]**

\*5 : \*6 : \*7

\*5 : Type of the cassette tape in use <1>

\*6 : Winding position of the cassette tape in use

\*7 : Type of the cassette tape in use <2> (Winding area)

**Note:**

• EMG detail information <2> is the reference information stored using the remaining tape detection function of the cassette tape. As a result, it may not identify cassette correctly when a special cassette tape is used or when the tape has variable thickness.

**\*5 : Cassette tape type <1>**

Display	Cassette tape type <1>
00	Cassette type not identified
16	Large reel/small reel (T-0 to T-15/T-130 to T-210) not classified
82	Small reel, thick tape (T-120) identified/thin tape (T-140) identified
84	Large reel (T-0 to T-60) identified
92	Small reel, thick tape (T-130) identified/thin tape (T-160 to T-210) identified
93	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) not classified
C3	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified
D3	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified
E1	C cassette, thick tape (TC-10 to TC-20) identified
E2	Small reel, thick tape (T-0 to T-100) identified
E9	C cassette, thin tape (TC-30 to TC-40) identified
F1	C cassette, thick tape/thin tape (TC-10 to TC-40) not classified

**Notes:**

• Cassette tape type <1> is identified a few times during mode transition and the identification count is variable depending on the cassette tape type. If an EMG occurs in the middle of identification, the cassette tape type may not be able to be identified.  
 • If other value than those listed in the above table is displayed, the cassette tape type is not identified.

**\*6 : Cassette tape winding position**

The cassette tape winding position at the moment of EMG is displayed by dividing the entire tape (from the beginning to the end) in 22 sections using a hex number from "00" to "15".

"00" : End of winding

"15" : Beginning of winding

"FF or --" : Tape position not identified

**\*7 : Cassette tape type <2> (Winding area)**

Display	Cassette tape type <2>
00	Cassette type not identified
07	Small reel, thick tape T-5
08 - 0E	C cassette, thick tape TC-10
09 - 15	C cassette, thick tape TC-20P
0A - 0B	Small reel, thick tape T-20
0A - 16	C cassette, thin tape TC-30
0A - 16	C cassette, thin tape TC-40
0D - 0F	Small reel, thick tape T-40
11 - 14	Small reel, thick tape T-60
15 - 18	Small reel, thick tape T-80 / DF-160
17 - 1A	Small reel, thick tape T-90 / DF-180
19 - 1D	Small reel, thick tape T-100
1D - 21	Small reel, thick tape T-120 / DF-240
1E - 1F	Small reel, thin tape T-140
1F - 23	Small reel, thick tape T-130
21 - 23	Small reel, thin tape T-160
21 - 23	Small reel, thin tape T-168
22 - 24	Small reel, thick tape DF-300
22 - 24	Small reel, thin tape T-180 / DF-360
22 - 24	Small reel, thin tape T-210 / DF-420
22 - 23	Large reel T-5
23 - 24	Large reel T-10
25 - 26	Large reel T-20
27 - 29	Large reel T-30
29 - 2B	Large reel T-40
2D - 2F	Large reel T-60

**Note:**

• The values of cassette tape type <2> in the above table are typical values with representative cassette tapes.

## SECTION 2 MECHANISM ADJUSTMENT

### 2.1 Before starting repair and adjustment

#### 2.1.1 Precautions

- (1) Unplug the power cord plug of the VCR before using your soldering iron.
- (2) Take care not to cause any damage to the conductor wires when plugging and unplugging the connectors.
- (3) Do not randomly handle the parts without identifying where the trouble is.
- (4) Exercise enough care not to damage the lugs, etc. during the repair work.
- (5) When reattaching the front panel assembly, make sure that the door opener of the cassette holder assembly is lowered in position prior to the reinstallation. (See SECTION 1 DISASSEMBLY.)
- (6) When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). (See SECTION 1 DISASSEMBLY.)

#### 2.1.2 Checking for proper mechanical operations

Enter the mechanism service mode when you want to operate the mechanism when no cassette is loaded. (See SECTION 1 DISASSEMBLY.)

#### 2.1.3 Manually removing the cassette tape

##### 1. In case of electrical failures

If you cannot remove the cassette tape which is loaded because of any electrical failure, manually remove it by taking the following steps.

- (1) Unplug the power cord plug from the power outlet.
- (2) Refer to the disassembly procedure and perform the disassembly of the major parts before removing the drum assembly.
- (3) Unload the pole base assembly by manually turning the loading motor of the mechanism assembly toward the front. In doing so, hold the tape by the hand to keep the slack away from any grease. (See Fig.2-1-3a.)
- (4) Bring the pole base assembly to a pause when it reaches the position where it is hidden behind the cassette tape.
- (5) Move the top guide toward the drum while holding down the lug (A) of the bracket retaining the top guide. Likewise hold part (B) down and remove the top guide. Section (C) of the top guide is then brought under the cassette lid. Then remove the top guide by pressing the whole cassette tape down. (See Fig.2-1-3b.)
- (6) Remove the cassette tape by holding both the slackened tape and the cassette lid.
- (7) Take up the slack of the tape into the cassette. This completes removal of the cassette tape.

##### Note:

- For the disassembly procedure of the major parts and details of the precautions to be taken, see "SECTION 1 DISASSEMBLY".

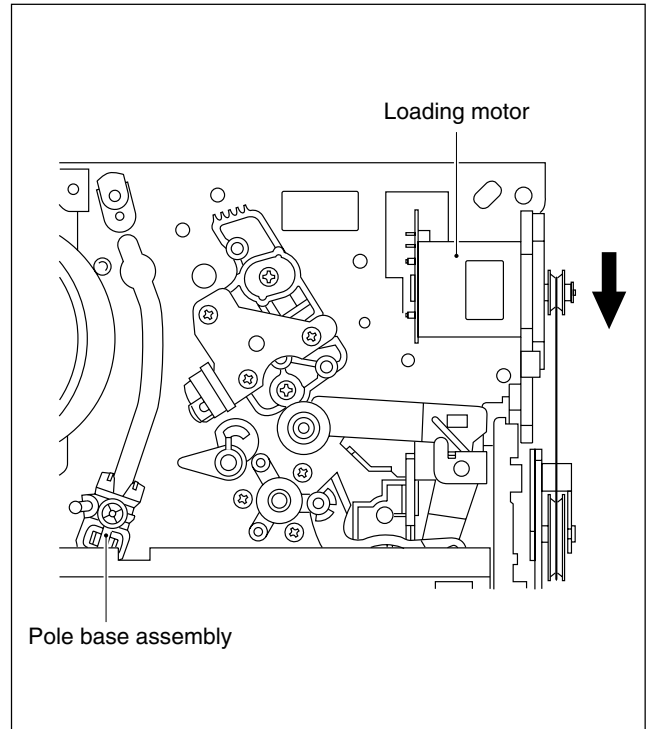


Fig. 2-1-3a

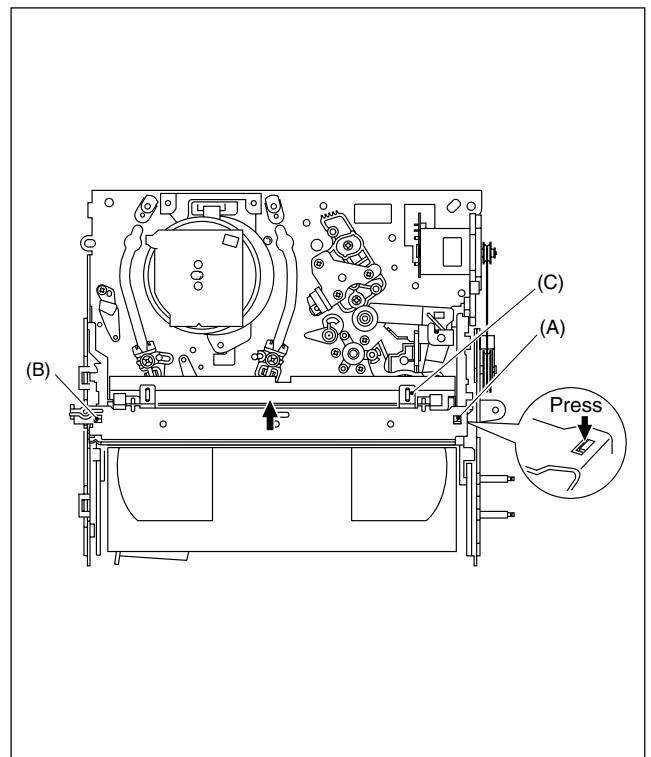


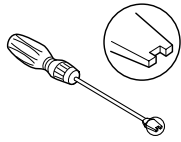

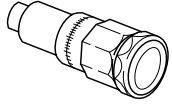
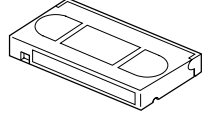
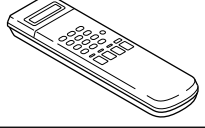
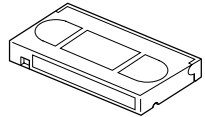
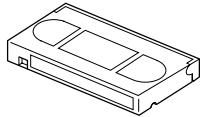
Fig. 2-1-3b

## 2. In case of mechanical failure

If you cannot remove the cassette tape which is loaded because of any mechanical failure, manually remove it by taking the following steps.

- (1) Unplug the power cable and remove the top cover, front panel assembly and others so that the mechanism assembly is visible. (See SECTION 1 DASSEMBLY.)
- (2) While keeping the tension arm assembly of the mechanism assembly free from tension, pull the tape on the pole base assembly (supply or take-up side) out of the guide roller. (See Fig.2-1-3c.)
- (3) Take the spring of the pinch roller arm assembly off the hook of the press lever assembly, and detach it from the tape. (See Fig.2-1-3d.)
- (4) In the same way as in the electrical failure instructions in 2.1.3-1(5), remove the top guide.
- (5) Raise the cassette tape cover. By keeping it in that position, draw out the cassette tape case from the cassette holder and take out the tape.
- (6) By hanging the pinch roller arm assembly spring back on the hook, take up the slack of the tape into the cassette.

## 2.1.4 Jigs and tools required for adjustment

Roller driver PTU94002	A/C head positioning tool PTU94010	Torque gauge PUJ48075-2
		
Back tension cassette gauge PUJ48076-2	Jig RCU PTU94023B	
		
Alignment tape (SP, stairstep, PAL) MHPE	Alignment tape (LP, stairstep, PAL) MHPE-L	
		

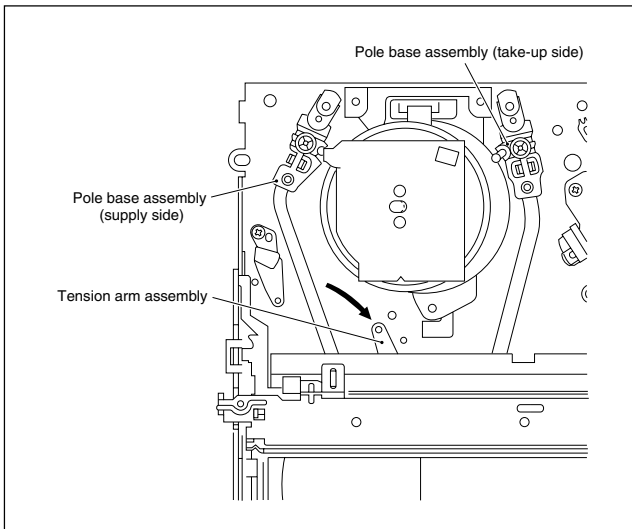


Fig. 2-1-3c

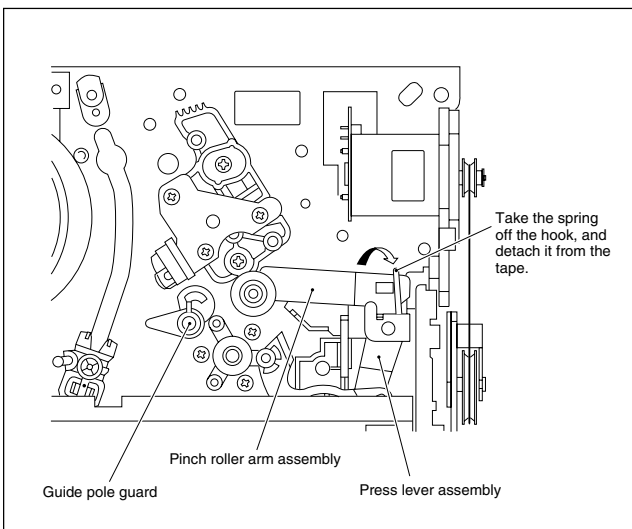


Fig. 2-1-3d

## 2.1.5 Maintenance and inspection

### 1. Location of major mechanical parts

In this chapter, the two mechanism speeds are described by comparing the speeds of the standard type and the high-speed FF/REW type.

It is possible to distinguish between these two types of mechanism by the diameters of their capstan pulleys.

The capstan pulley diameter for the standard type is approx. 32 mm.

The capstan pulley diameter for the high-speed FF/REW type is approx. 43 mm.

For information on the different parts used in the two mechanism types, please refer to the "Replacement of major parts".

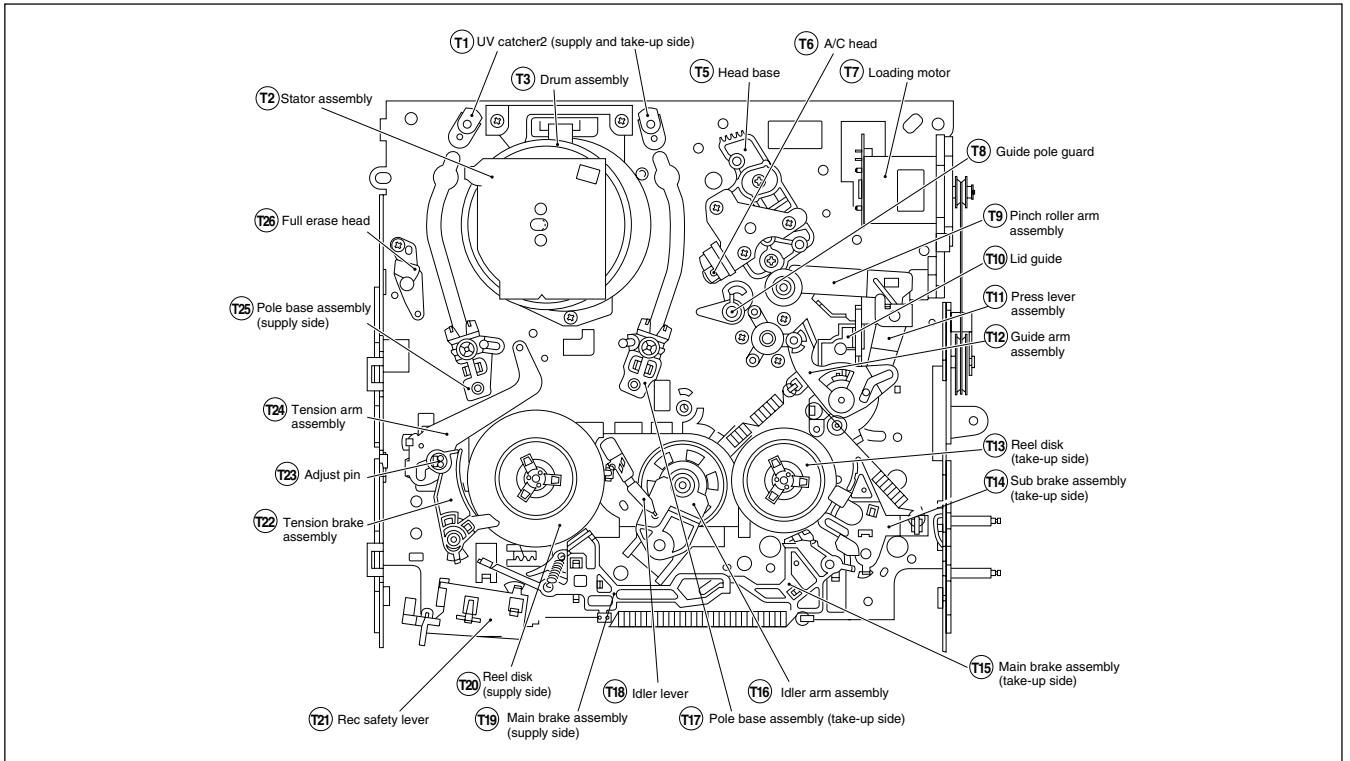


Fig. 2-1-5a Mechanism assembly top side

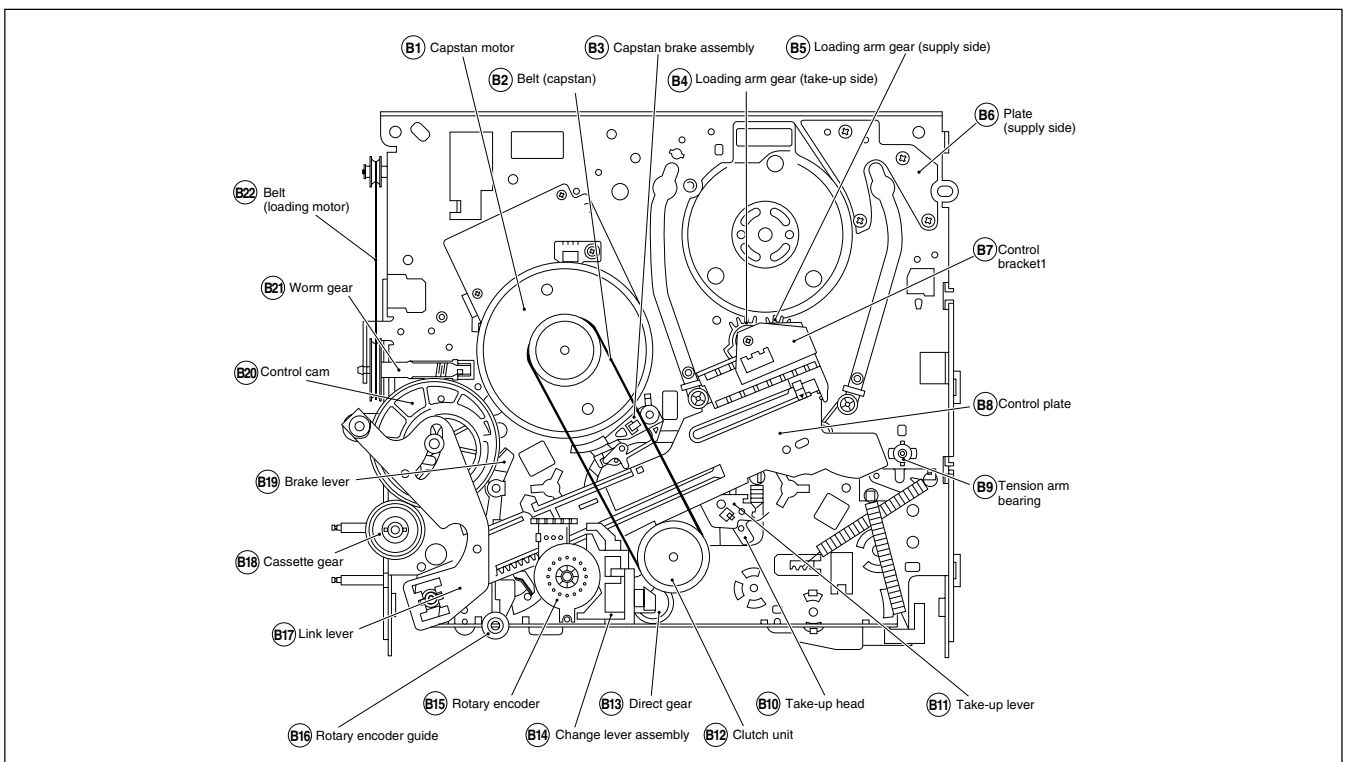


Fig. 2-1-5b Mechanism assembly bottom side

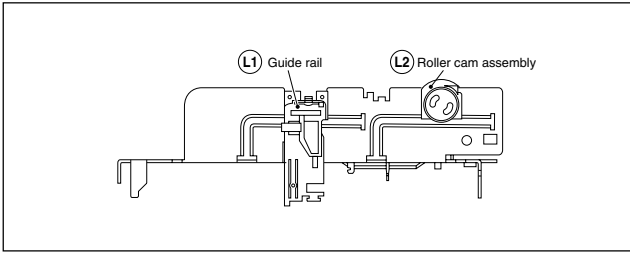


Fig. 2-1-5c Mechanism assembly left side

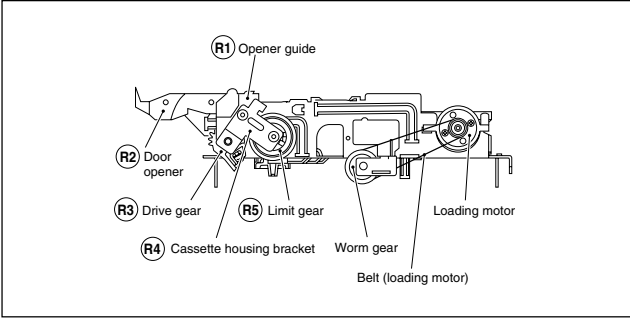


Fig. 2-1-5d Mechanism assembly right side

**2. Cleaning**

Regular cleaning of the transport system parts is desirable but practically impossible. So make it a rule to carry out cleaning of the tape transport system whenever the machine is serviced.

When the video head, tape guide and/or brush get soiled, the playback picture may appear inferior or at worst disappear, resulting in possible tape damage.

(1) When cleaning the upper drum (especially the video head), soak a piece of closely woven cloth or Kimu-wipe with alcohol and while holding the cloth onto the upper drum by the fingers, turn the upper drum counterclockwise.

**Note:**

• **Absolutely avoid sweeping the upper drum vertically as this will cause damage to the video head.**

(2) To clean the parts of the tape transport system other than the upper drum, use a piece of closely woven cloth or a cotton swab soaked with alcohol.

(3) After cleaning, make sure that the cleaned parts are completely dry before using the video tape.

**3. Lubrication**

With no need for periodical lubrication, you have only to lubricate new parts after replacement. If any oil or grease on contact parts is soiled, wipe it off and newly lubricate the parts.

**Note:**

• **See the “mechanism assembly” diagram of the parts list for the lubricating or greasing spots, and for the types of oil or grease to be used.**

**4. Suggested servicing schedule for main components**

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary. Also note that rubber parts may deform in time, even if the set is not used.

System	Parts Name	Operation Hours	
		~1000H	~2000H
Tape transport	Upper drum assembly	★○	○
	A/C head	★○	★○
	Lower drum assembly	★	★○
	Pinch roller arm assembly	★	★
	Full erase head	★	★
	Tension arm assembly	★	★
	Capstan motor (Shaft)	★	★
	Guide arm assembly	★	★
Drive	Capstan motor		○
	Capstan brake assembly		○
	Main brake assembly		○
	Belt (Capstan)	○	○
	Belt (Loading motor)		○
	Loading motor		○
	Clutch unit		○
	Worm gear		○
	Control plate		○
Other	Brush	★○	★○
	Tension brake assembly	○	○
	Rotary encoder		○

★ : Cleaning

○ : Inspection or replacement if necessary

Table 2-1-5a

**5. Disassembling procedure table**

The following table indicates the order in which parts are removed for replacement. To replace parts, remove them in the order of 1 to 18 as shown in the table. To install them, reverse the removal sequence.

The symbols and numbers preceding the individual part names represent the numbers in the “Location of major mechanical parts” table. Also, the “T”, “B”, and “T/B” on the right of each part name shows that the particular part is removed from the front, from the back, and from both sides of the mechanism, respectively.





## 2.2 Replacement of major parts

### 2.2.1 Before starting disassembling (Phase matching between mechanical parts)

The mechanism of this unit is closely linked with the rotary encoder and system controller circuits.

Since the system controller detects the status of mechanical operation in response to phases of the rotary encoder (internal switch positions), the mechanism may not operate properly unless such parts as the rotary encoder, control plate, loading arm gear, control cam, cassette gear, limit gear, relay gear and drive gear are installed in their correct positions.

Especially, this model is not provided with any cassette housing assembly, so that cassette loading and unloading must be accomplished by operation of the cassette holder assembly. The latter is in turn driven by such parts as the drive gear, relay gear and limit gear. Exercise enough care, therefore, to have the phases of all this gear matching one another. (For information on phase matching of the mechanism, see the instructions on how to install individual parts.)

This unit is provided with a mechanism assembly mode. It is therefore necessary to enter this mode for assembling and disassembling procedures.

This mode is usually not in use, manually set it when it is required.

### 2.2.2 How to set the "Mechanism assembling mode"

Remove the mechanism assembly and place it bottom side up. (See SECTION 1 DISASSEMBLY.) Turn the worm gear toward the front so that the guide hole of the control cam is brought into alignment with the hole at the mechanism assembly chassis. This position renders the mechanism assembling mode operational. Make sure that the control plate is located in alignment with the mark E. (See Fig.2-2-2a.)

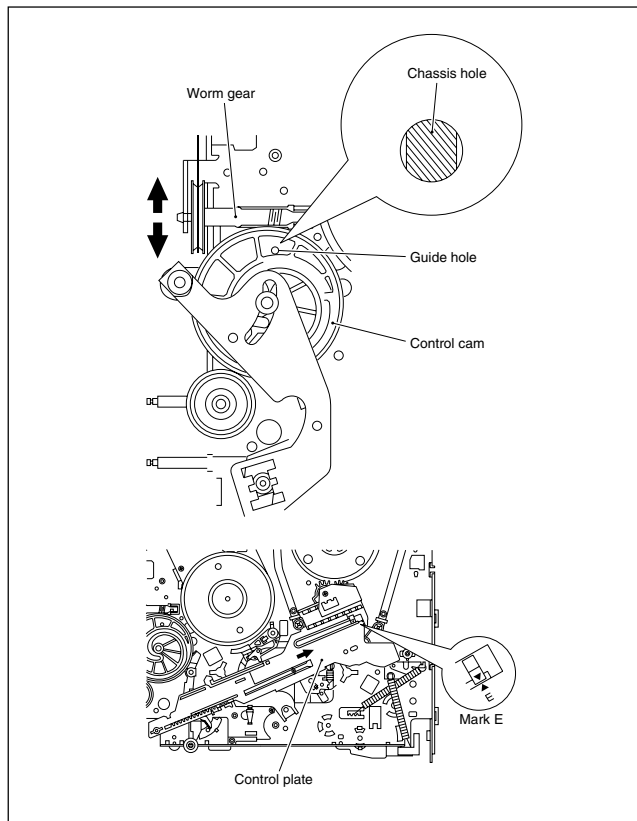


Fig. 2-2-2a

### 2.2.3 Cassette holder assembly

#### 1. How to remove

(1) Remove the guide rail and roller cam assembly. (See Fig.2-2-3a.)

(3 lugs on the guide rail and one lug on the roller cam assembly)

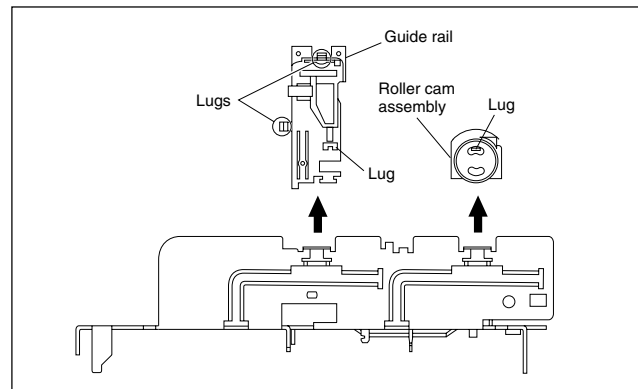


Fig. 2-2-3a

(2) Remove the two slit washers and remove the cassette housing bracket. (See Fig.2-2-3b.)

(3) Remove the opener guide, spring(A), door opener, relay gear and limit gear. (See Fig.2-2-3b.)

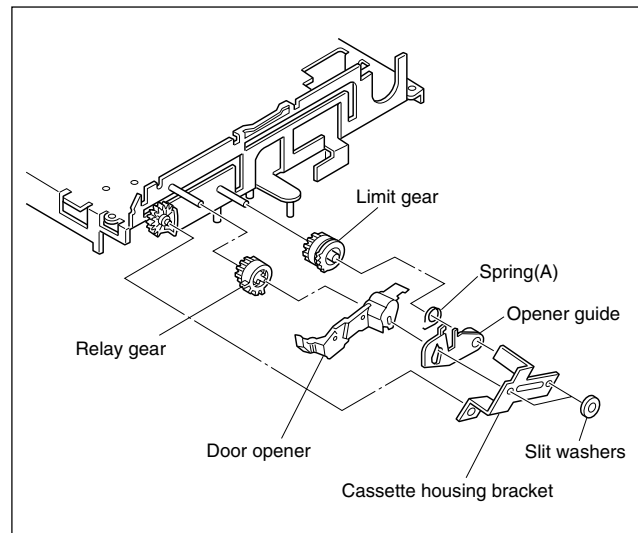


Fig. 2-2-3b

(4) While swinging the lock levers (R) and (L) of the cassette holder assembly toward the front, slide the cassette holder assembly until its legs come to where the guide rail and the roller cam assembly have been removed (so that the drive arm is upright). (See Fig.2-2-3c.)

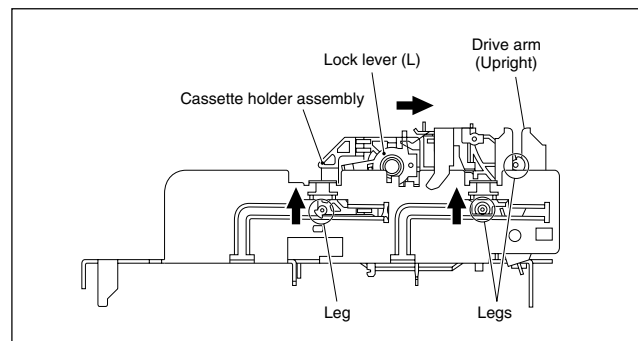


Fig. 2-2-3c

- (5) While holding the left side of the cassette holder, lift the cassette holder assembly so that the three legs on the left side are all released. Then pull the legs (A) and (B) on the right side out of the rail and also pull up the leg (C). (See Fig.2-2-3d and Fig.2-2-3e.)
- (6) Draw out the drive gear, and remove the drive arm.

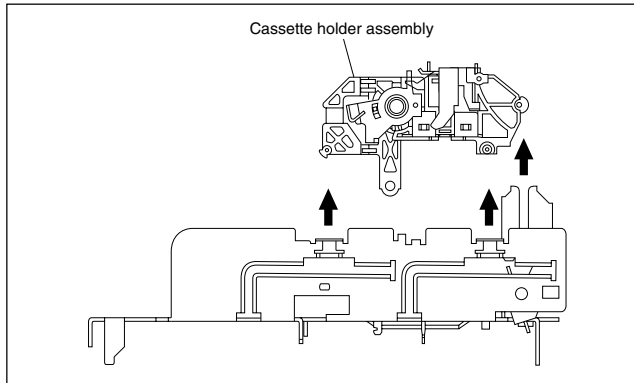


Fig. 2-2-3d

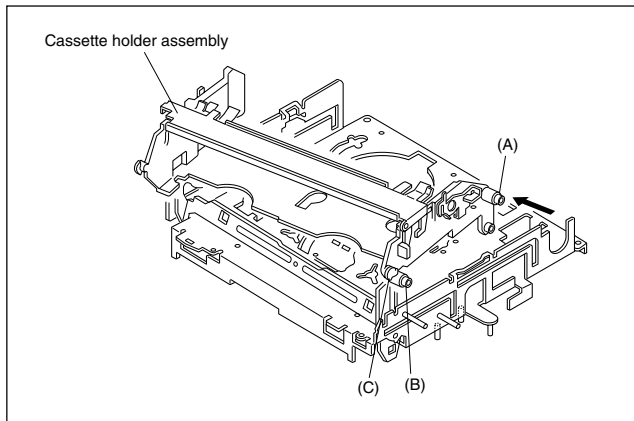


Fig. 2-2-3e

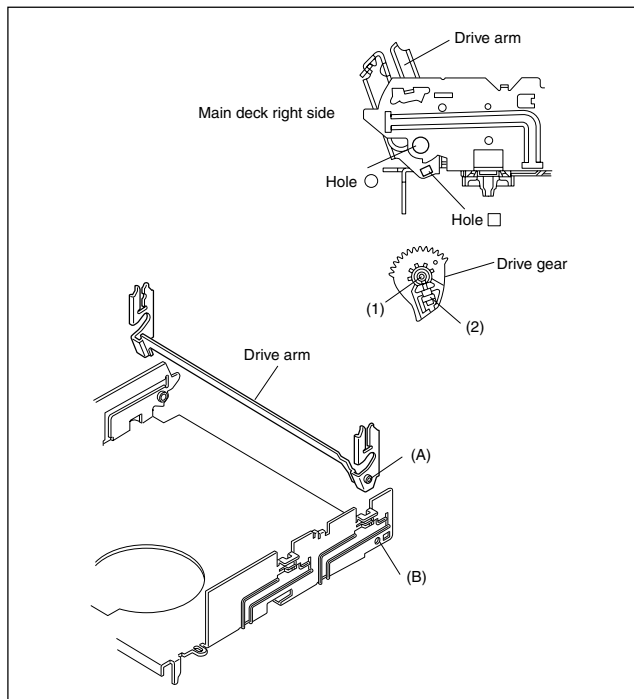


Fig. 2-2-3f

## 2. How to install (Phase matching)

- (1) Insert the section (A) of the drive arm into the section (B) of the main deck.
- (2) Insert the section (1) of the drive gear into the round hole, and the section (2) into the square hole on the drive arm. (See Fig.2-2-3f.)
- (3) Hold the drive arm upright and fit the leg (C) on the right side of the cassette holder assembly into the groove. (See Fig.2-2-3g.)
- (4) While swinging the lock lever (R) of the cassette holder assembly toward the front, put the legs (A) and (B) into the rail. (See Fig.2-2-3g.)
- (5) Drop the three legs on the left side of the cassette holder assembly into the groove at one time. (See Fig.2-2-3h.)
- (6) Slide the whole cassette holder assembly toward the front to bring it to the eject end position.
- (7) Install the limit gear so that the notch on the outer circumference of the limit gear is brought into alignment with the guide hole on the main deck. (See Fig.2-2-3i.)
- (8) Install so that the notch on the periphery of the relay gear is aligned with the notch of the main deck and that hole A of the relay gear is aligned with the hole B of the limit gear and that hole B of the relay gear is aligned with the hole B of the drive gear. (See Fig.2-2-3i.)
- (9) Install the door opener, opener guide, spring(A) and cassette housing bracket and fasten the two slit washers.

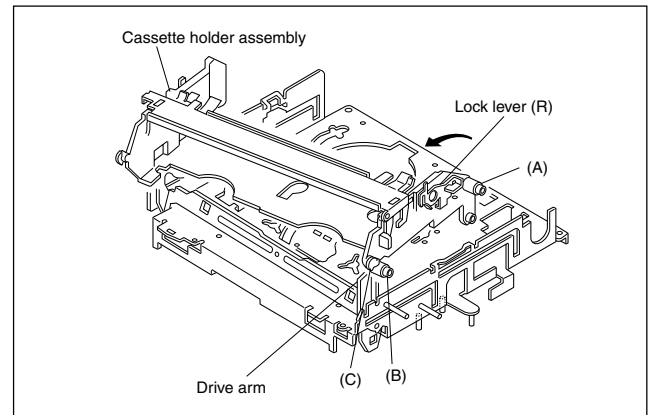


Fig. 2-2-3g

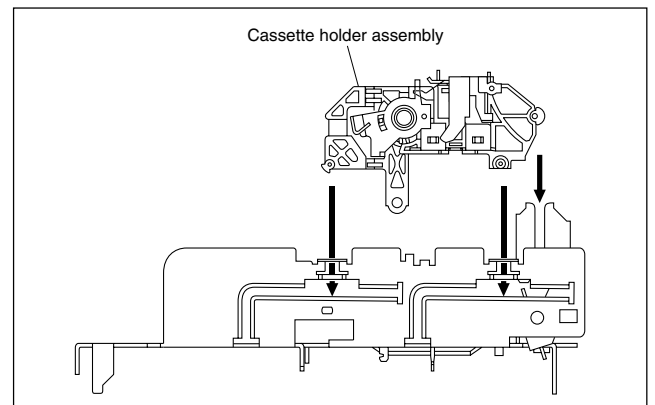


Fig. 2-2-3h

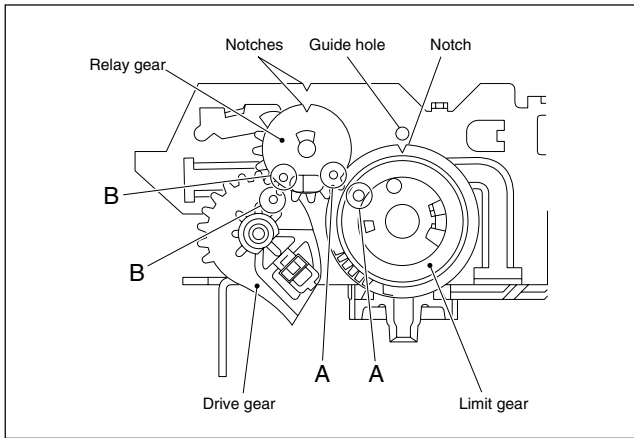


Fig. 2-2-3i

### 2.2.4 Pinch roller arm assembly

#### 1. How to remove

- (1) Remove the spring from the hook of the press lever assembly.
- (2) Remove the slit washer and remove the pinch roller seat 2. (See Fig.2-2-4a.)
- (3) Remove the pinch roller arm assembly by pulling it up.

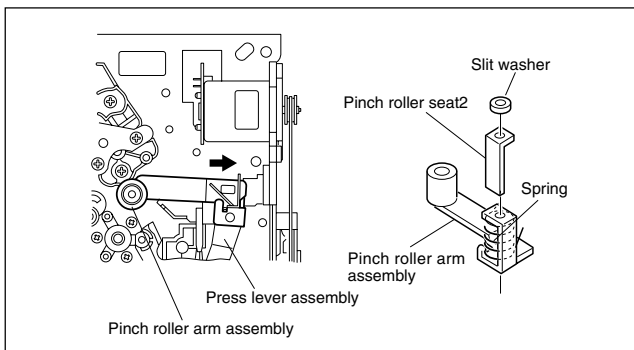


Fig. 2-2-4a

### 2.2.5 Guide arm assembly and press lever assembly

#### 1. How to remove

- (1) Remove the spring and expand the lug of the lid guide in the arrow-indicated direction. Then remove the guide arm assembly by pulling it up.
- (2) Remove the press lever assembly by pulling it up. (See Fig.2-2-5a.)

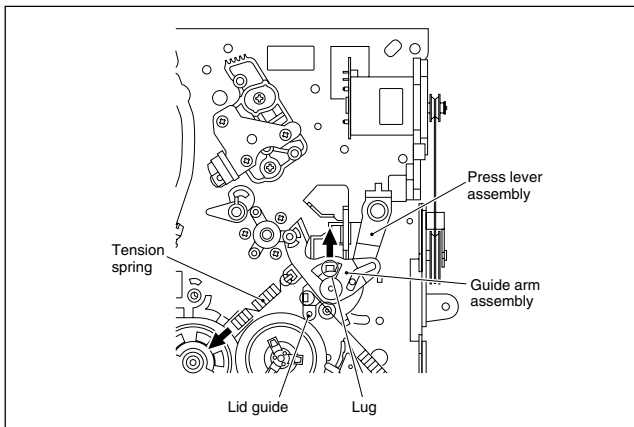


Fig. 2-2-5a

### 2.2.6 A/C head

#### 1. How to remove

- (1) Remove the two screws (A) and remove the A/C head together with the head base.
- (2) When replacing only the A/C head, remove the three screws (B) while controlling the compression spring.

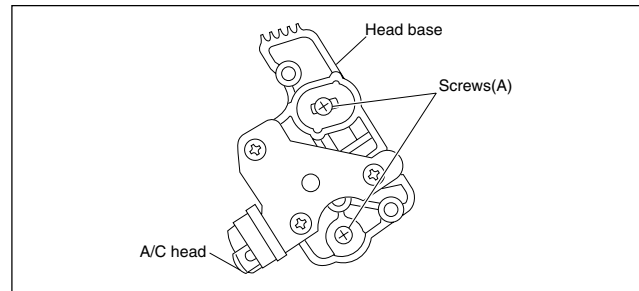


Fig. 2-2-6a

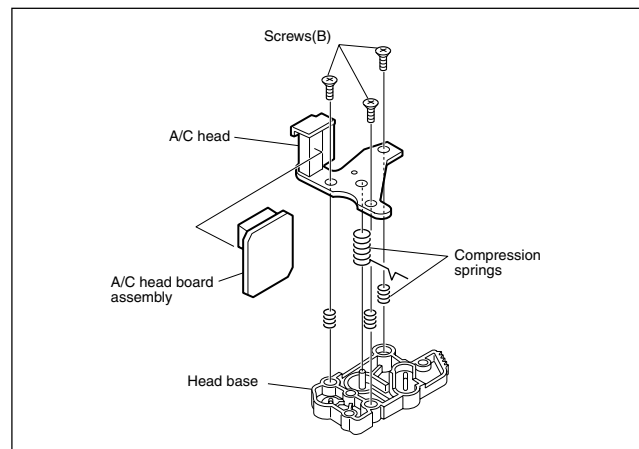


Fig. 2-2-6b

#### 2. How to install

- (1) To make the post-installation adjustment easier, set the temporary level as indicated in Fig.2-2-6c. Also make sure that the screw center (centre) is brought into alignment with the center (centre) position of the slot.

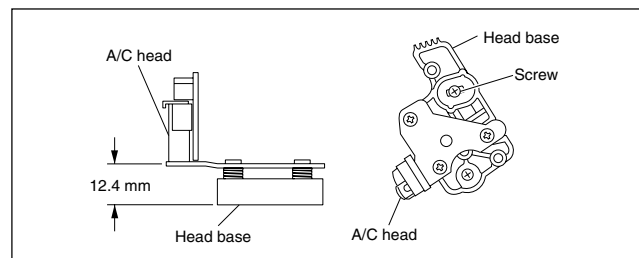


Fig. 2-2-6c

### 2.2.7 Loading motor

#### 1. How to remove

- (1) Remove the belt wound around the worm gear.
- (2) Open the two lugs of the motor guide and remove the loading motor, loading motor board assembly and motor guide altogether by pulling them up.
- (3) When replacing the loading motor board assembly, take care with the orientation of the loading motor. (Install so that the loading motor label faces upward.)
- (4) When the motor pulley has been replaced, choose the fitting dimension as indicated in Fig.2-2-7a.

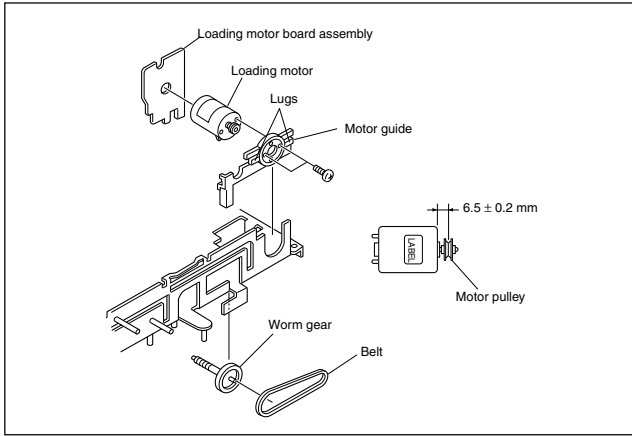


Fig. 2-2-7a

## 2.2.8 Capstan motor

### 1. How to remove

- (1) Remove the belt (capstan) on the mechanism assembly back side.
- (2) Remove the three screws (A) and remove the capstan motor.

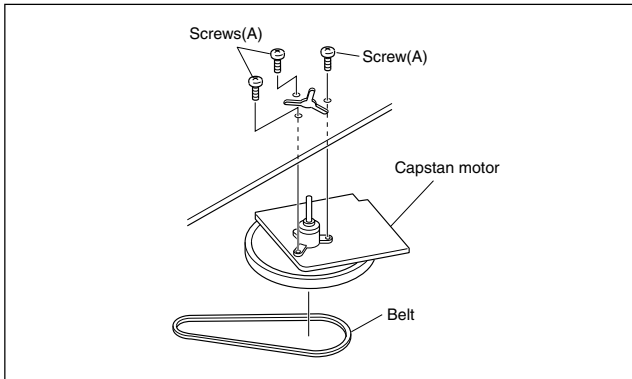


Fig. 2-2-8a

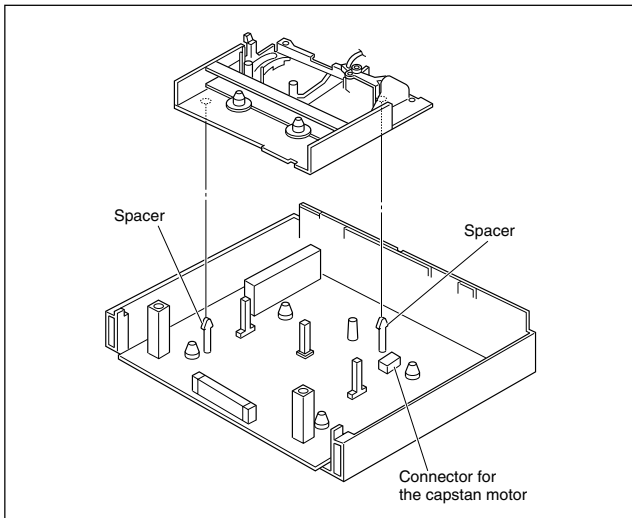


Fig. 2-2-8b

### 2. How to install (Centering the mounting position)

When the capstan motor has once been removed and then reinstalled out of the initial correct position in the rotational direction, the capstan motor current may be unstable during operation in high or low temperatures. This may result in greater Wow & Flutter and occasionally in power breakdown because of current over - load. Install the capstan motor while following the procedure given below.

(The capstan motor is centrally located when the unit is shipped from the factory.)

- (1) Provisionally tighten the three screws (A) securing the capstan motor.
- (2) Install the mechanism assembly to which the capstan motor is provisionally fastened on the bottom chassis which incorporates the Main board assembly. (No need to tighten the screws for mounting the mechanism.)  
Make sure that all the connectors for the mechanism assembly and the Main board assembly are correctly installed as indicated in Fig. 2-2-8b.
- (3) Making sure that the connector for the capstan motor is correctly mounted, and securely tighten the three screws (A).

### Note:

- **When the capstan motor has been replaced with a new one, perform recording in the EP(or LP) mode for at least 2 minutes at normal temperatures immediately before starting the FF/REW or SEARCH operations (Aging).**

## 2.2.9 Pole base assembly (supply or take-up side)

### 1. How to remove

- (1) Remove the UV catcher 2 on the removal side by loosening the screw (A).
- (2) Remove the pole base assembly on the supply side from the mechanism assembly by loosening the screw (B) on the mechanism assembly back side and sliding the pole base assembly toward the UV catcher 2.
- (3) As for the pole base assembly on the take-up side, turn the pulley of the loading motor to lower the cassette holder because the screw (B) is hidden under the control plate. (See the "Procedures for Lowering the Cassette holder assembly" of 1.3 DISASSEMBLY/ASSEMBLY METHOD.) Further turn the motor pulley to move the cassette holder until the screw (B) is no longer under the control plate (in the half-loading position). Then remove it as done for the supply side by removing the screw (B).

### Note:

- **After reinstalling the Pole base assembly and the UV catcher2, be sure to perform compatibility adjustment.**

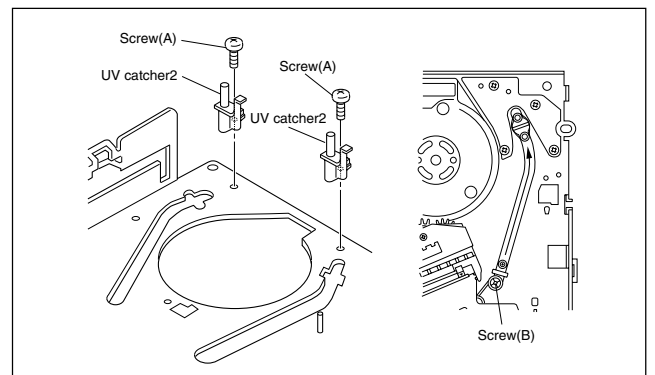


Fig. 2-2-9a

## 2.2.10 Rotary encoder

### 1. How to remove

- (1) Remove the screw (A) and remove the rotary encoder by pulling it up. (See Fig. 2-2-10a.)

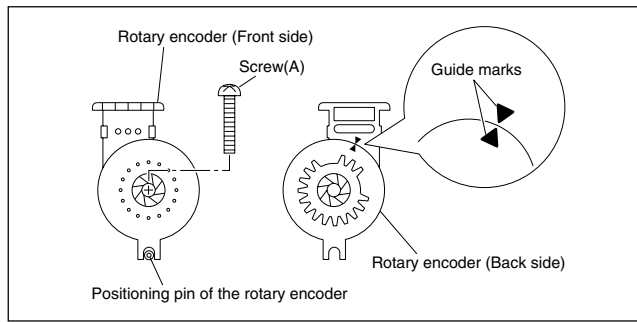


Fig. 2-2-10a

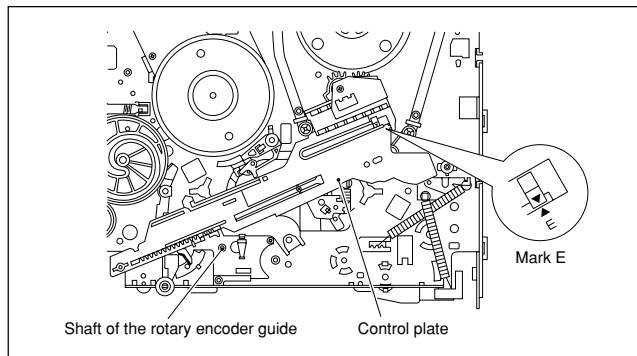


Fig. 2-2-10b

### 2. How to install (Phase matching)

- (1) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft and bring the guide marks on the rotary encoder into alignment as indicated in Fig.2-2-10a. (See Fig. 2-2-10a and Fig. 2-2-10b.)
- (2) Turn over the rotary encoder with its guide marks kept in alignment and install it by fitting on the shaft of the rotary encoder guide and the positioning pin.
- (3) Tighten the screw (A) to complete the installation.

## 2.2.11 Clutch unit

- (1) Remove the belt wound around the capstan motor and the clutch unit.
- (2) Remove the slit washer and remove the clutch unit.

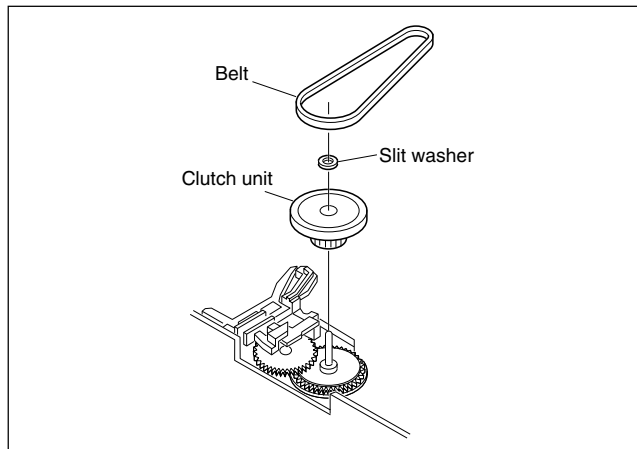


Fig. 2-2-11a

## 2.2.12 Change lever assembly, direct gear, clutch gear and coupling gear

### 1. How to remove

- (1) Release the two lugs of the rotary encoder guide in the arrow-indicated direction and remove the change lever assembly.
- (2) Remove the slit washer retaining the direct gear and remove the latter. Take care so as not to lose the washer and spring. (See Fig.2-2-12a.)

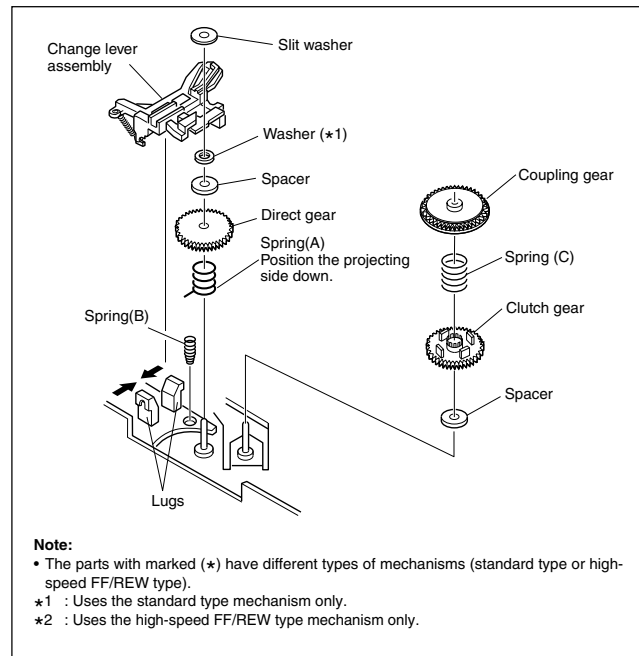


Fig. 2-2-12a

### 2. How to install

- (1) Install the clutch gear, spring (A), spring (C), direct gear, spacer and others to the individual shafts of the main deck, and finally the slit washer. (See Fig.2-2-12a.)
- (2) Let the spring (B) drops into the rotary encoder guide hole and install the change lever assembly. (Take care not to mistake a direction of the spring.) The point is to slightly lift the coupling gear and catch it from the both sides with the assembly. (See Fig.2-2-12b.)

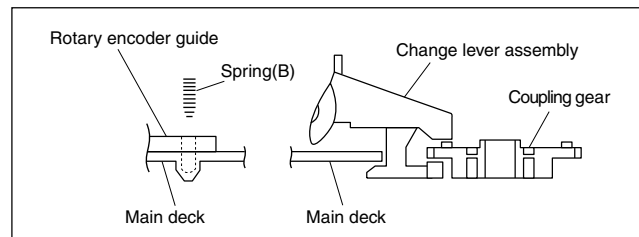


Fig. 2-2-12b

### 2.2.13 Link lever

#### 1. How to remove

- (1) Remove the two slit washers.
- (2) Remove the link lever by lifting it from the shaft retained by the slit washers. Then swing the link lever counterclockwise and remove it from the locking section of the control plate.

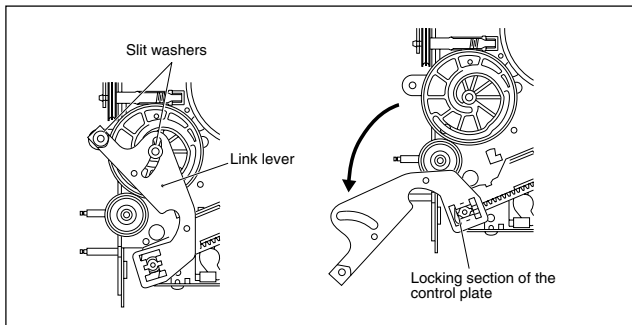


Fig. 2-2-13a

#### 2. How to install (Phase matching)

- (1) Slide the control plate so that its mark E is aligned with the mark ▼ on the loading arm gear shaft. (See Fig.2-2-13b.)
- (2) Rotate the worm gear until the guide hole of the control cam is aligned exactly with the guide hole of the main deck. (See Fig.2-2-13c.)
- (3) Insert the link lever into the locking section of the control plate. (See Fig.2-2-13a.)
- (4) Rotate the link lever clockwise so that it is installed on the shafts in the center (centre) and on the left of the control cam.
- (5) Fasten the slit washers at these two points.

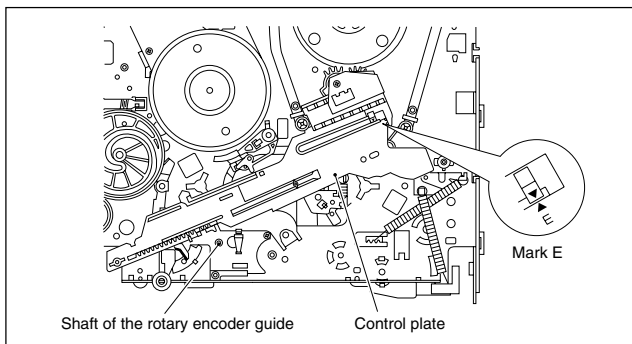


Fig. 2-2-13b

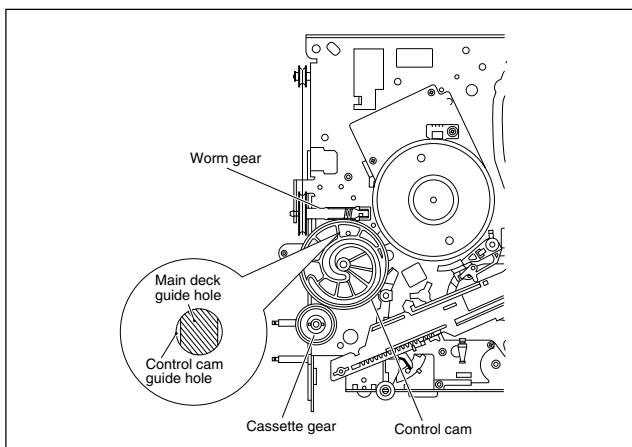


Fig. 2-2-13c

### 2.2.14 Cassette gear, control cam and worm gear

#### 1. How to remove

- (1) Remove the control cam by lifting it.
- (2) Open the two lugs of the cassette gear outward and pull the latter off.
- (3) Remove the belt wound around the worm gear and the loading motor.
- (4) Open the lug of the lid guide outward and remove the worm gear.

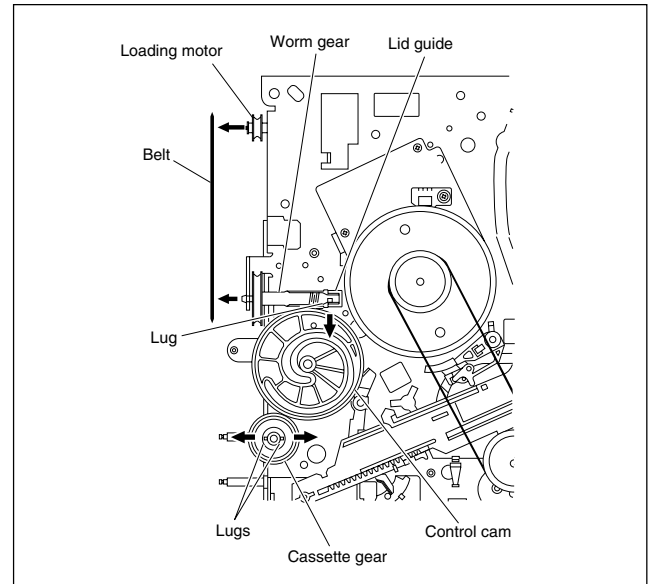


Fig. 2-2-14a

### 2.2.15 Control plate

#### 1. How to remove

- (1) Remove the screw (A) retaining the control bracket 1 and remove the latter.
- (2) Slide the control plate as indicated by the arrow and remove the control plate. (See Fig.2-2-15a.)

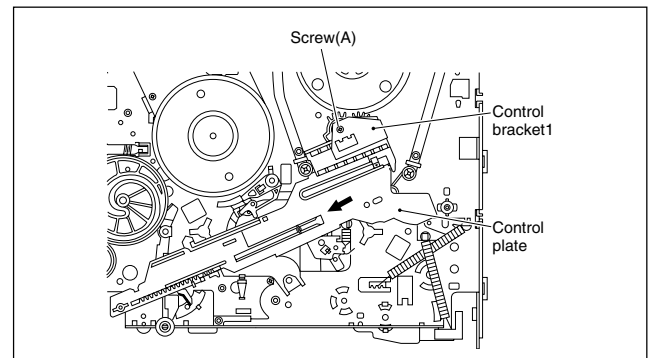


Fig. 2-2-15a

#### 2. How to install (Phase matching)

- (1) Adjust the position of the idler arm assembly pin as indicated in Fig.2-2-15b (to the left of center (centre) of the R section).
- (2) Bring the guide hole of the take-up lever into alignment with the hole at the control plate guide and fix the position by inserting a 1.5 mm hexagonal wrench.

- (3) Install the control plate so that the section A of the loading arm gear shaft fits into the hole (A) of the control plate, the section B of the control plate guide into the hole (B), and the control plate comes under the section C of the rotary encoder guide and the section D of the loading arm gear shaft while press-fit the pole base assembly (supply side) as indicated by the arrow. It is important that the tension arm assembly shaft is positioned closer toward you than the control plate. (See Fig.2-2-15c.)
- (4) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft. (See Fig.2-2-15c.)
- (5) Pull off the hexagonal wrench for positioning.

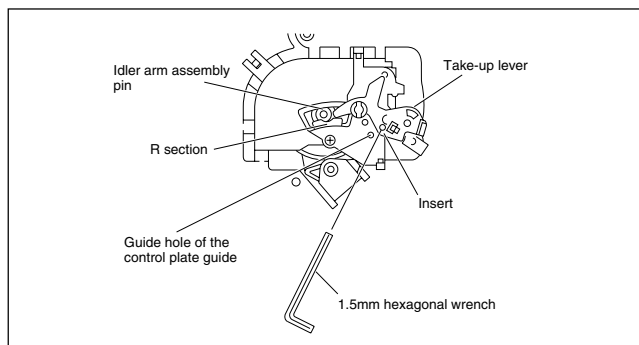


Fig. 2-2-15b

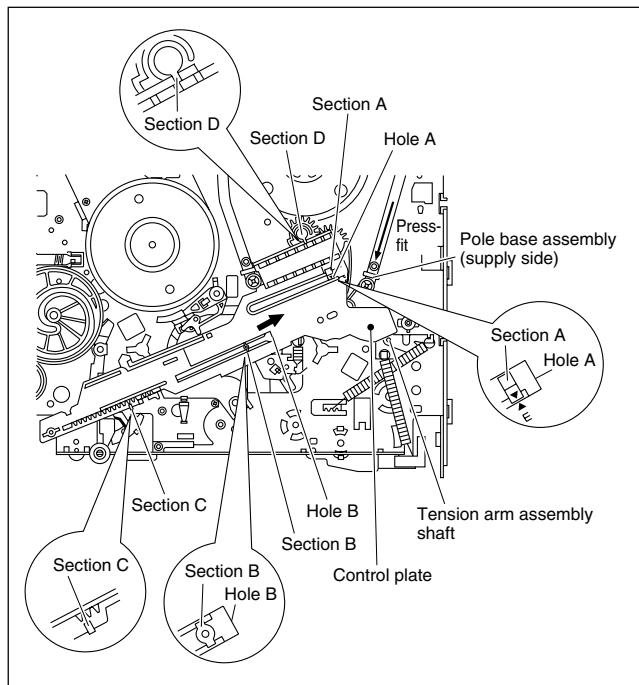


Fig. 2-2-15c

## 2.2.16 Loading arm gear (supply or take-up side) and loading arm gear shaft

### 1. How to remove

- (1) Remove the loading arm gear (supply side) by loosening the screw (A). (See Fig. 2-2-16a.)
- (2) Remove the screw (B) and remove the torsion arm from the pole base assembly (take-up side). (See Fig.2-2-16a.)

- (3) Turn the loading arm gear (take-up side) clockwise so that the notch of the loading arm gear (take-up side) is in alignment with the projection of the loading arm gear shaft and lift it. Likewise, turn the loading arm counterclockwise so that the notch is in alignment with the projection and remove the loading arm gear (take-up side). (See Fig.2-2-16a and Fig. 2-2-16b.)
- (4) When removing the loading arm gear shaft, be sure of first removing the screw retaining the drum assembly (on the back side of the loading arm gear shaft). Then remove the screw (C) and remove the loading arm gear shaft by sliding it.

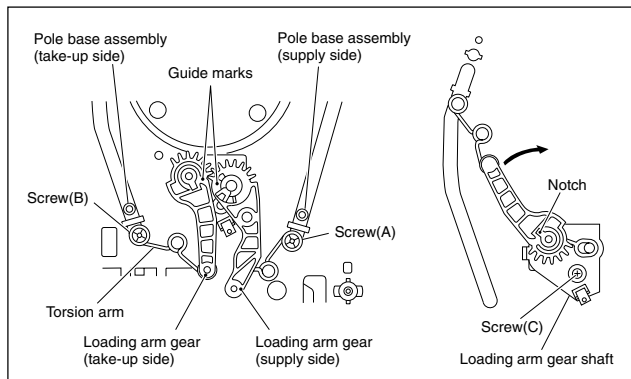


Fig. 2-2-16a

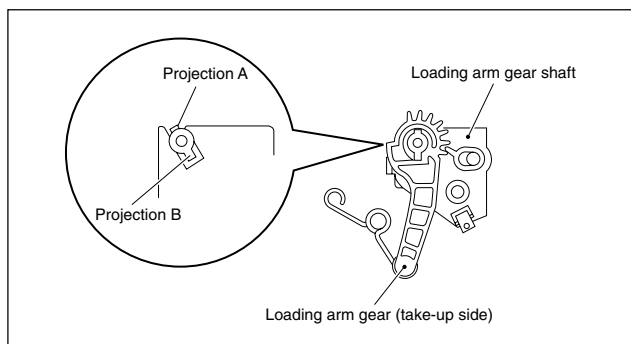


Fig. 2-2-16b

### 2. How to install

- (1) Align the notch of the loading arm gear (take-up side) to the projection B of the loading arm gear shaft and slip it over. Then rotate it clockwise for alignment with the projection A and slip it down to the bottom. (See Fig.2-2-16b.)
- (2) Then turn the loading arm gear (take-up side) counterclockwise. Hang the torsion arm on the pole base assembly (take-up side) and tighten the screw (B).
- (3) Install the loading arm gear (supply side) so that the guide mark of the loading arm gear (take-up side) is in alignment with the guide mark of the loading arm gear (supply side). Then hang the torsion arm on the pole base assembly (supply side) and tighten the screw (A). (See Fig.2-2-16a.)



### 2.2.17 Take-up lever, take-up head and control plate guide

- (1) Remove the spring of the take-up lever from the main deck.
- (2) Remove the lug (A) of the take-up lever from the main deck and pull out the take-up lever and the take-up head together.
- (3) Remove the screw (A).
- (4) Align the idler arm assembly pin in the center (centre) of the R section of the control plate guide, remove the control plate guide lugs (B) and (C) from the main deck, and remove the control plate guide.

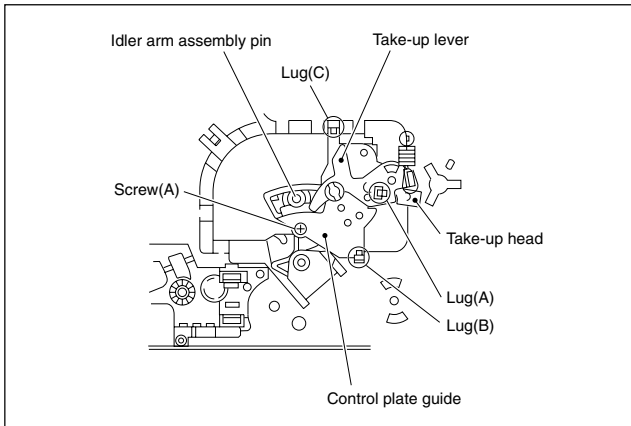


Fig. 2-2-17a

### 2.2.18 Capstan brake assembly

#### 1. How to remove

- (1) Move the lug (A) of the capstan brake assembly in the arrow-indicated direction so that it comes into alignment with the notch of the main deck. (See Fig. 2-2-18a.)
- (2) Remove the lug (B) of the capstan brake assembly from the main deck and remove the capstan brake assembly.

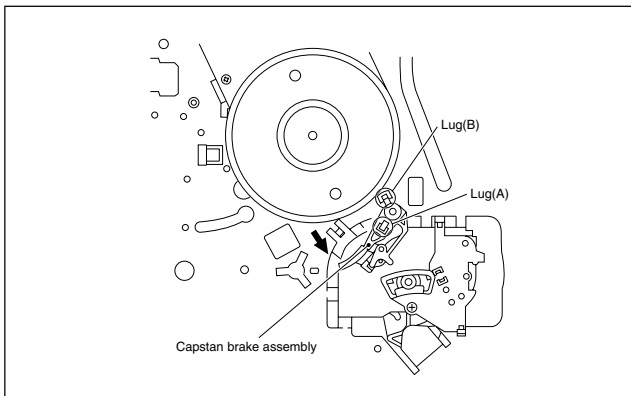


Fig. 2-2-18a

### 2.2.19 Sub brake assembly (take-up side)

#### 1. How to remove

- (1) Remove the spring attached to the lid guide and sub brake assembly (take-up side).
- (2) Bring the lug (A) of the sub brake assembly (take-up side) into alignment with the notch of the main deck.
- (3) Remove the lugs (B) and (C) of the sub brake assembly (take-up side) from the main deck and remove the sub brake assembly (take-up side).

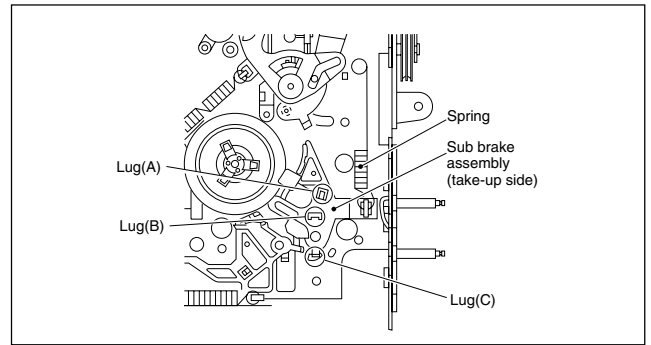


Fig. 2-2-19a

### 2.2.20 Main brake assembly (take-up side), reel disk (take-up side) and main brake assembly (supply side)

#### 1. How to remove

- (1) Move the main brake assembly (take-up side) in the arrow-indicated direction and remove the reel disk (take-up side).
- (2) Remove the spring attached to the main brake assembly.
- (3) Remove the lug (A) of the main brake assembly (take-up side) and pull out the lug (B) after bringing it into alignment with the main deck notch.
- (4) Remove the lugs (C), (D) and (E) of the main brake assembly (supply side) from the main deck and pull them off. (See Fig.2-2-20a.)
- (5) When installing the main brake assembly (take-up side), slide the brake lever in the direction as indicated by the arrow to prevent it from hitting the projection of the main brake assembly (take-up side). (See Fig.2-2-20b.)

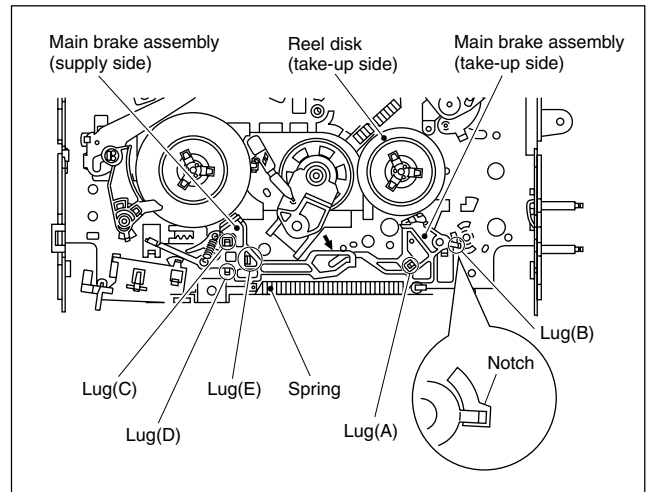
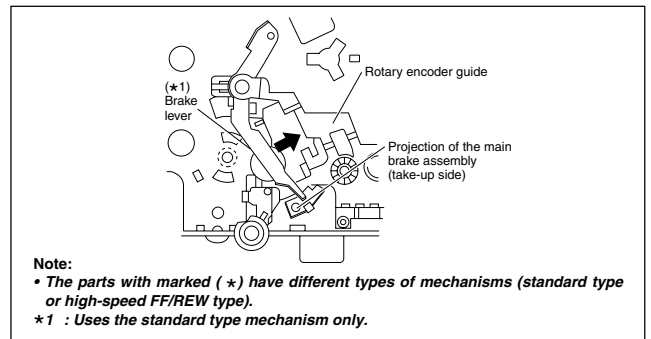


Fig. 2-2-20a



Note:  
 • The parts with marked (\*) have different types of mechanisms (standard type or high-speed FF/REW type).  
 \*1 : Uses the standard type mechanism only.

Fig. 2-2-20b

### 2.2.21 Tension brake assembly, reel disk (supply side) and tension arm assembly

#### 1. How to remove

- (1) Remove the three lugs of the tension brake assembly from the main deck and pull them off.
- (2) Remove the reel disk (supply side) by loosening in the arrow-indicated direction the main brake assembly (supply side).
- (3) Remove the tension spring on the back of the main deck. Then release the lug of the tension arm bearing in the arrow-indicated direction and draw out the tension arm assembly. (See Fig. 2-2-21a.)

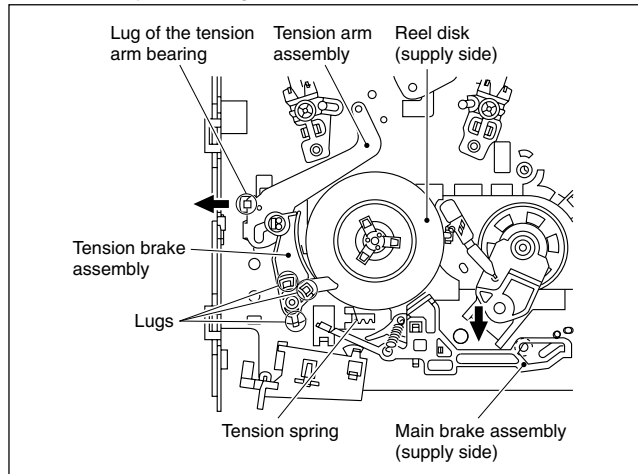


Fig. 2-2-21a

### 2.2.22 Idler lever, idler arm assembly

#### 1. How to remove

- (1) Remove the lug of the idler lever from the main deck and remove the hook fitted in the idler arm assembly hole by lifting it.
- (2) Remove the slit washer and pull out the idler arm assembly.

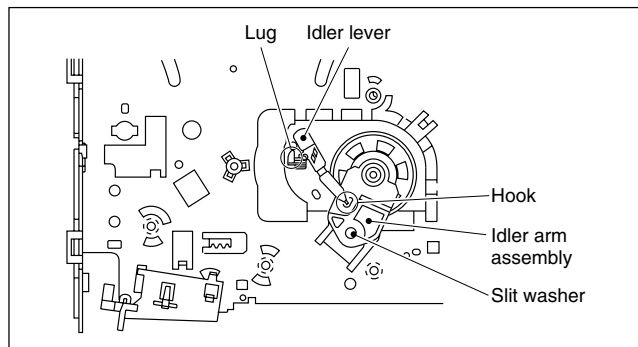


Fig. 2-2-22a

### 2.2.23 Stator assembly

- (1) Remove the flat cable.
- (2) Remove the two screws (A), (B) and remove the lug wire.
- (3) Remove the stator assembly by lifting in the arrow-indicated direction. (Take care that the brush spring does not jump out.)

#### Notes:

- **Be careful not to lose the brush and spring.**
- **There are some models that do not use the lug wire. Refer to the parts list for these models.**
- **When tightening the screw (B), place the caulked part of the lug terminal near to the shaft of the drum and then tighten it.**
- **After installation, be sure to perform the switching point adjustment according to the electrical adjustment procedure.**

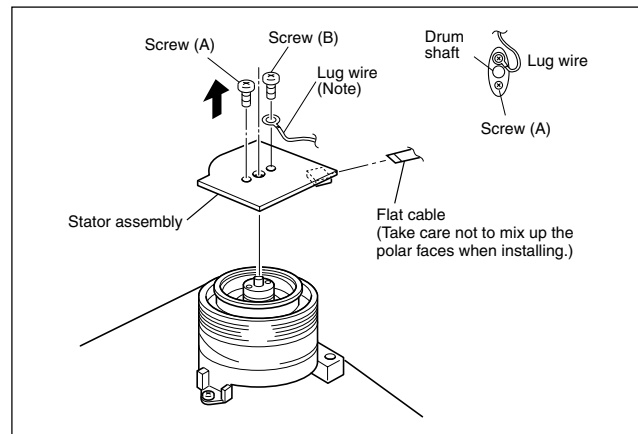


Fig. 2-2-23a

### 2.2.24 Rotor assembly

#### 1. How to remove

- (1) Remove the stator assembly.
- (2) Remove the two screws (B) and remove the rotor assembly.

#### 2. How to install

- (1) Match the phases of the upper drum assembly and the rotor assembly as indicated in Fig.2-2-24a.
- (2) Place the upper drum assembly hole (a) over the rotor assembly holes (b) (with three holes to be aligned) and tighten the two screws (B). (See Fig.2-2-24a.)

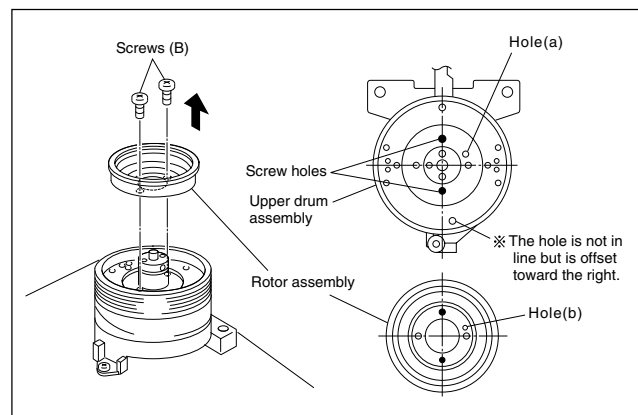


Fig. 2-2-24a

## 2.2.25 Upper drum assembly

### Notes:

- *To replace the upper drum assembly only may not be possible with some models. For upper drum assembly replacement, refer to the parts list. (When the parts number of the upper drum assembly is not listed on the parts list, then this cannot be replaced.)*
- *When replacement is required, control the up- down movement of the brush. Never apply grease.*
- *When replacing the upper drum assembly, replace it together with the washer.*

### 1. How to remove

- (1) Remove the stator assembly and rotor assembly.
- (2) Loosen the screw of the collar assembly using a 1.5 mm hexagonal wrench and remove the collar assembly. Also remove the brush, spring and cap at one time.
- (3) Remove the upper drum assembly and remove the washer using tweezers.

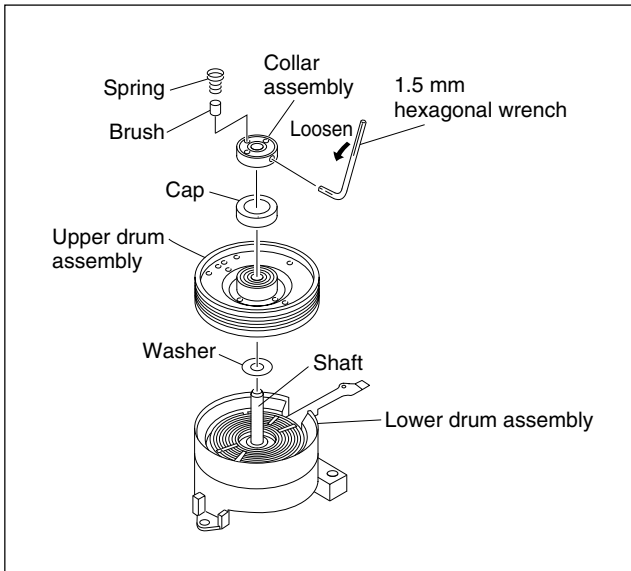


Fig. 2-2-25a

### 2. How to install

- (1) Clean the coil parts of the lower drum assembly and the newly installed upper drum assembly with an air brush in advance. (See Fig.2-2-25b.)
- (2) Install a new washer and upper drum assembly on the drum shaft. (See Fig.2-2-25a.)
- (3) Install the cap to the upper drum assembly.
- (4) Position the collar assembly as indicated in Fig.2-2-25c while controlling its up- down movement.
- (5) Secure the collar assembly in position with a hexagonal wrench while pressing its top with the fingers.
- (6) After installation, gently turn the upper drum assembly with your hand to make sure that it turns normally. Then install the brush and the spring.
- (7) Install the rotor assembly and stator assembly according to Fig 2-2-23a and 2-2-24a.
- (8) When installation is complete, clean the upper drum assembly and lower drum assembly and carry out the following adjustments.
  - PB switching point adjustment
  - Slow tracking adjustment
  - Compatibility adjustment (Be sure to check for compatibility for the EP (or LP) mode.)

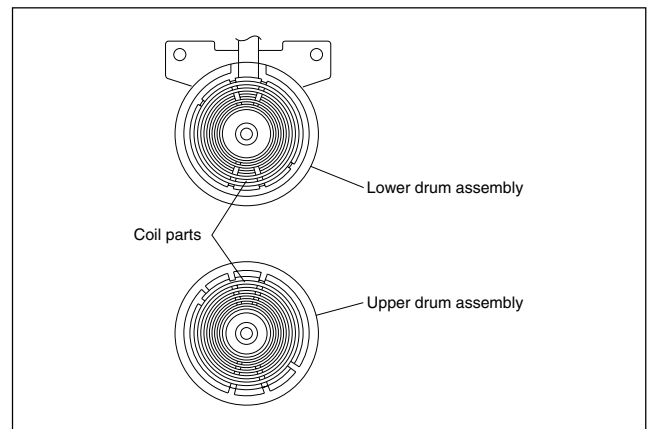


Fig. 2-2-25b

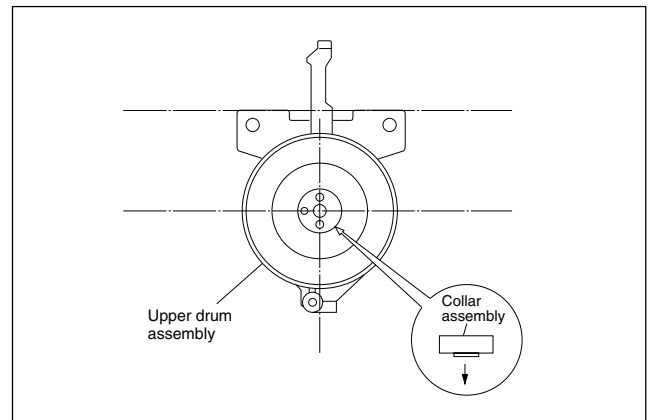


Fig. 2-2-25c

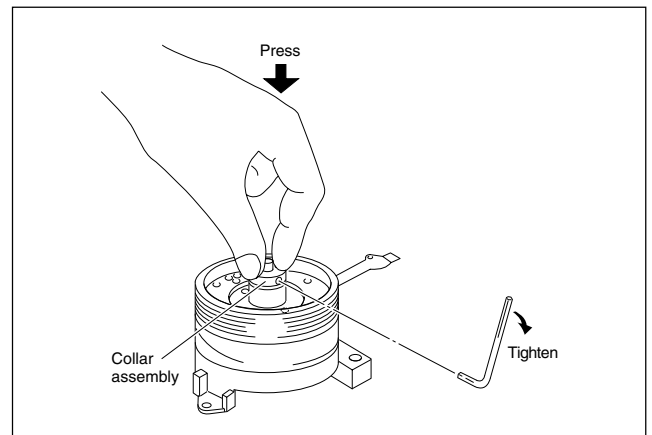


Fig. 2-2-25d

### 2.3 Compatibility adjustment

#### Notes:

- **Although compatibility adjustment is very important, it is not necessary to perform this as part of the normal servicing work. It will be required when you have replaced the A/C head, drum assembly or any part of the tape transport system.**
- **To avoid any damage to the alignment tape while performing the compatibility adjustment, get a separate cassette tape (for recording and play back) ready to be used for checking the initial tape running behavior.**
- **Unless otherwise specified, all measuring points and adjustment parts are located on the Main board.**
- **When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). (See SECTION 1 DISASSEMBLY.)**

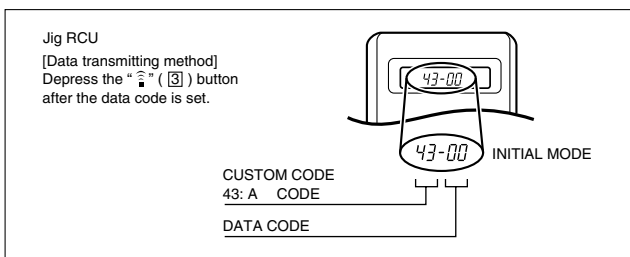


Fig. 2-3a Jig RCU [PTU94023B]

#### 2.3.1 FM waveform linearity

Signal	(A1) (A2)	• Alignment tape(SP, staircase, PAL) [MHPE] • Alignment tape(LP, staircase, PAL) [MHPE-L]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• Guide roller [Mechanism assembly]
Specified value	(G)	• Flat V.PB FM waveform
Adjustment tool	(H)	• Roller driver [PTU94002]

- (1) Play back the alignment tape (A1).
- (2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
- (3) Set the VCR to the manual tracking mode.
- (4) Make sure that there is no significant level drop of the V.PB FM waveform caused by the tracking operation, with its generally parallel and linear variation ensured. Perform the following adjustments when required. (See Fig. 2-3-1a.)
- (5) Reduce the V.PB FM waveform by the tracking operation. If a drop in level is found on the left side, turn the guide roller of the pole base assembly (supply side) with the roller driver to make the V.PB FM waveform linear. If a drop in level is on the right side, likewise turn the guide roller of the pole base assembly (take-up side) with the roller driver to make it linear. (See Fig. 2-3-1c.)
- (6) Make sure that the V.PB FM waveform varies in parallel and linearly with the tracking operation again. When required, perform fine-adjustment of the guide roller of the

- (7) pole base assembly (supply or take-up side).
- (7) Unload the cassette tape once, play back the alignment tape (A1) again and confirm the V.PB FM waveform.
- (8) After adjustment, confirm that the tape wrinkling does not occur at the roller upper or lower limits. (See Fig. 2-3-1d.)

[Perform adjustment step (9) only for the models equipped with SP mode and EP (or LP) mode.]

- (9) Repeat steps (1) to (8) by using the alignment tape (A2).

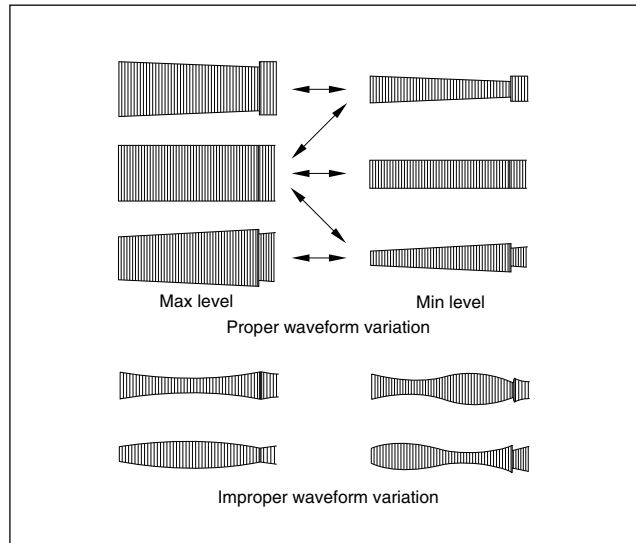


Fig. 2-3-1a

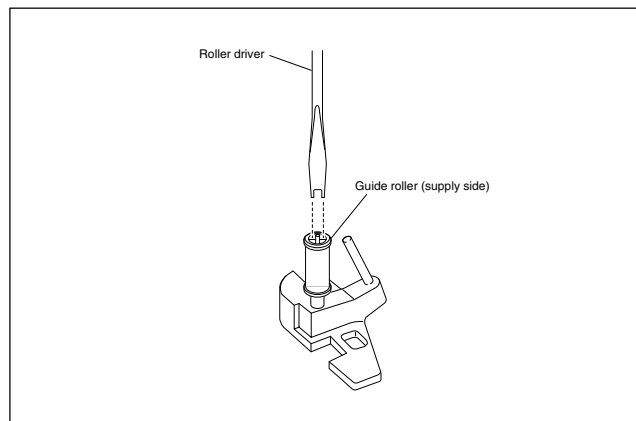


Fig. 2-3-1b

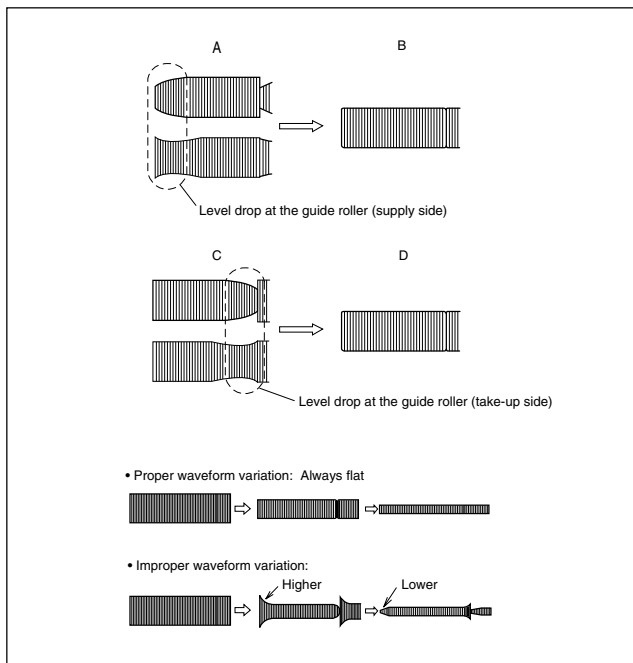


Fig. 2-3-1c

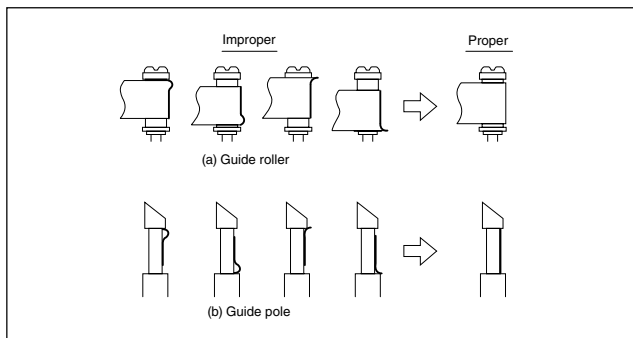


Fig. 2-3-1d

### 2.3.2 Height and tilt of the A/C head

**Note:**

• **Set a temporary level of the height of the A/C head in advance to make the adjustment easier after the A/C head has been replaced. (See Fig.2-2-6c.)**

Signal	(A)	• Alignment tape(SP, stairstep, PAL) [MHPE]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D1) (D2)	• AUDIO OUT terminal • TP4001 (CTL. P)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• A/C head [Mechanism assembly]
Specified value	(G)	• Maximum waveform

- (1) Play back the alignment tape (A).
- (2) Apply the external trigger signal to D.FF (E), to observe the AUDIO OUT waveform and Control pulse waveform at the measuring points (D1) and (D2) in the ALT mode.
- (3) Set the VCR to the manual tracking mode.

- (4) Adjust the AUDIO OUT waveform and Control pulse waveform by turning the screws (1), (2) and (3) little by little until both waveforms reach maximum. The screw (1) and (3) are for adjustment of tilt and the screw (2) for azimuth.

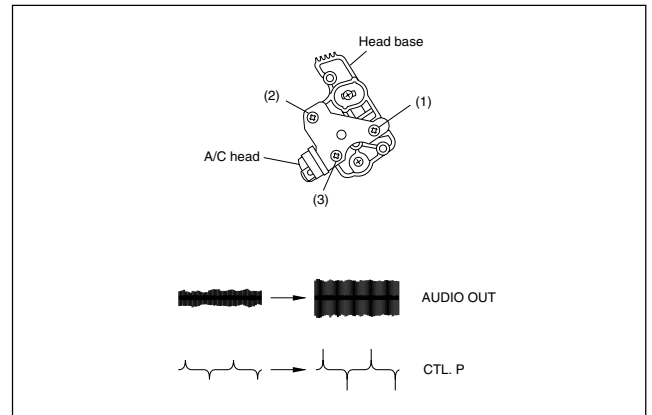


Fig. 2-3-2a

### 2.3.3 A/C head phase (X-value)

Signal	(A1)	• Alignment tape(SP, stairstep, PAL) [MHPE]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• A/C head base [Mechanism assembly]
Specified value	(G)	• Maximum V.PB FM waveform
Adjustment tool	(H)	• A/C head positioning tool [PTU94010]

- (1) Play back the alignment tape (A1).
- (2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
- (3) Set the VCR to the manual tracking mode.
- (4) Loosen the screws (4) and (5), then set the A/C head positioning tool to the innermost projected part of the A/C head. (See Fig. 2-3-3a.)
- (5) Turn the A/C head positioning tool fully toward the capstan. Then turn it back gradually toward the drum and stop on the second peak point position of the V.PB FM waveform output level. Then tighten the screws (4) and (5).
- (6) Perform the tracking operation and make sure that the V.PB FM waveform is at its maximum. If it is not at maximum, loosen the screws (4) and (5), and turn the A/C head positioning tool to bring the A/C head to a position, around where the waveform reaches its maximum for the first time. Then tighten the screws (4) and (5).

**[Perform adjustment steps (7) to (10) only for 2 Head models equipped with LP mode.]**

- (7) Then play back the alignment tape (A2).
- (8) Set the VCR to the manual tracking mode.
- (9) Perform the tracking operation and make sure that the V.PB FM waveform is at its maximum.
- (10) If it is not at maximum, loosen the screws (4) and (5), and turn the A/C head positioning tool to bring the A/C head to a position, around where the waveform reaches its maximum for the first time. Then tighten the screws (4) and (5).

**Note:**

- After adjusting, always perform the confirmation and re-adjustment of the item 2.3.4.

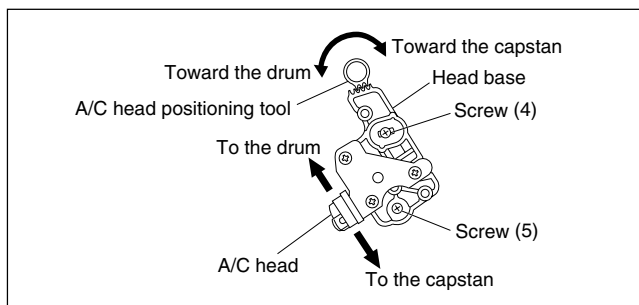


Fig. 2-3-3a

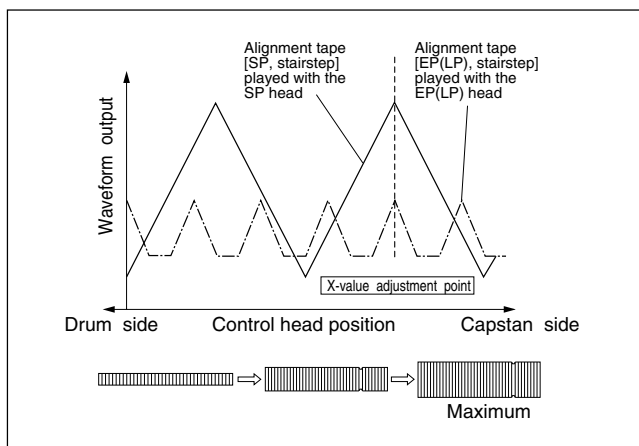


Fig. 2-3-3b

**2.3.4 Standard tracking preset**

Signal	(A)	• Alignment tape(LP, stairstep, PAL) [MHPE-L]
Mode	(B)	• PB → Auto adjust
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• Jig RCU: Code "50"
Specified value	(G)	• STOP mode (Maximum V.PB FM waveform)
Adjustment tool	(H)	• Jig RCU [PTU94023B]

- (1) Play back the alignment tape (A).
- (2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
- (3) Confirm that the automatic tracking operation is completed.

- (4) Set the VCR to the Auto adjust mode by transmitting the code (F) twice from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed.
- (5) If the VCR enters the eject mode, perform adjustment for the audio control head phase (X-value) again.

**2.3.5 Tension pole position**

Signal	(A)	• Back tension cassette gauge [PUJ48076-2]
Mode	(B)	• PB
Adjustment part	(F)	• Adjust pin [Mechansim assembly]
Specified value	(G)	• 25 - 51 gf•cm (2.45 - 5 × 10 <sup>-3</sup> Nm)

- (1) Play back the back tension cassette gauge (A).
- (2) Check that the indicated value on the left side gauge is within the specified value (G).
- (3) If the indicated value is not within the specified value (G), perform the adjustment in a following procedure.
  - 1) Set the VCR to the mechanism service mode. (See SECTION 1 DISASSEMBLY.)
  - 2) Set the VCR to the play back mode and adjust by turning adjustment pin to align the tension arm assembly edge with the main deck hole (A) on the right edge marker. (See Fig. 2-3-5a)

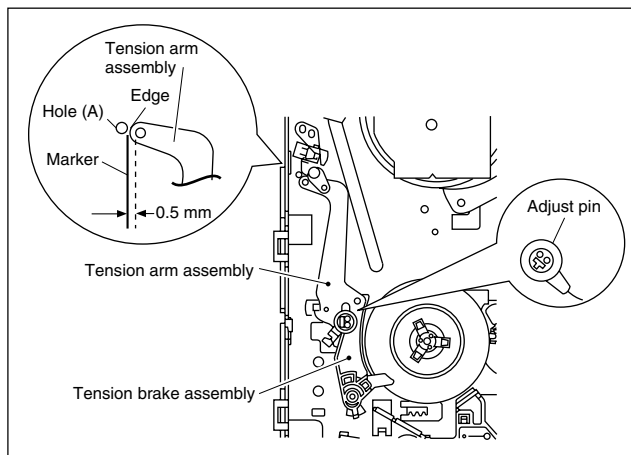
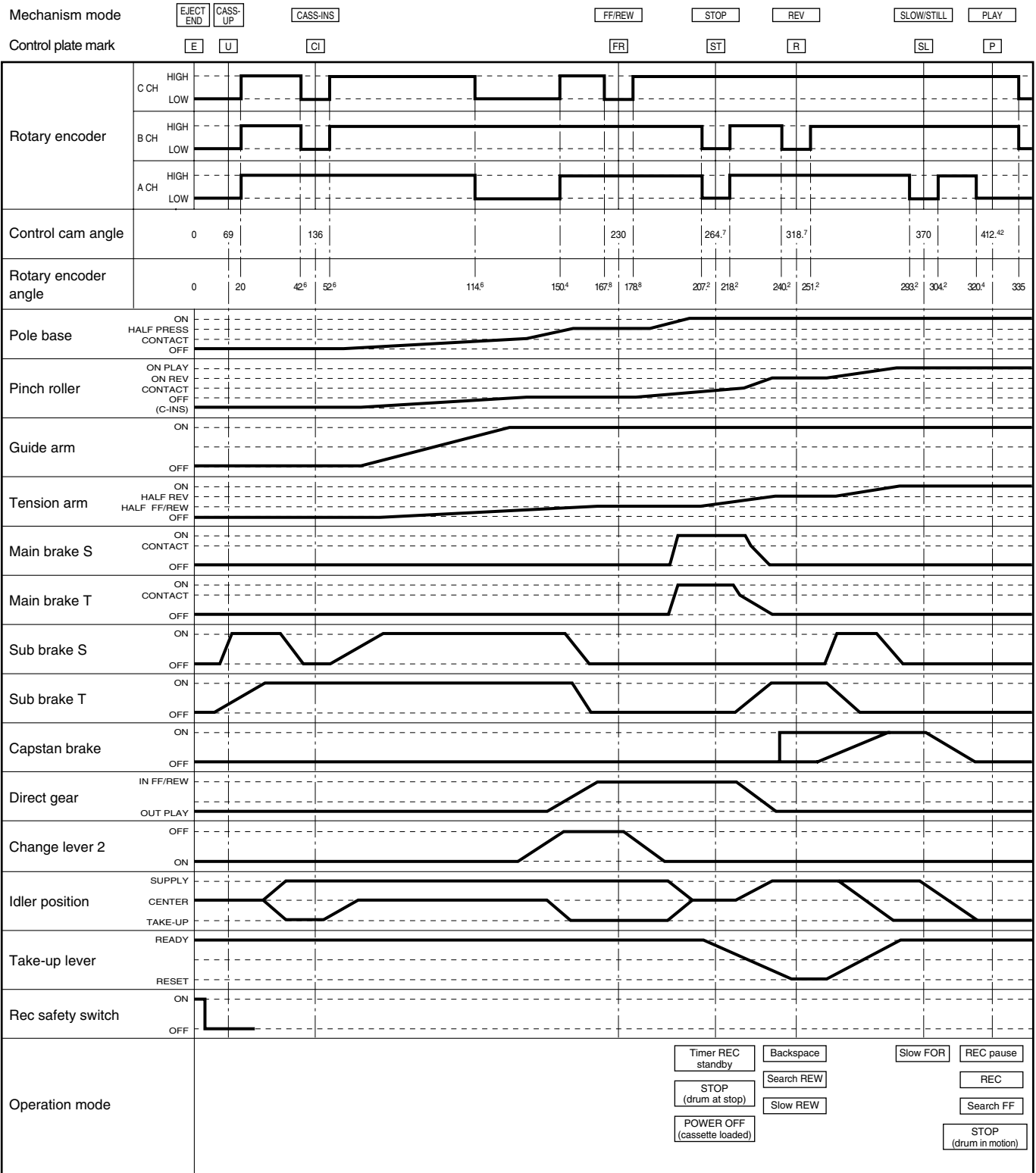


Fig. 2-3-5a

# Mechanism Timing Chart



# SECTION 3 ELECTRICAL ADJUSTMENT

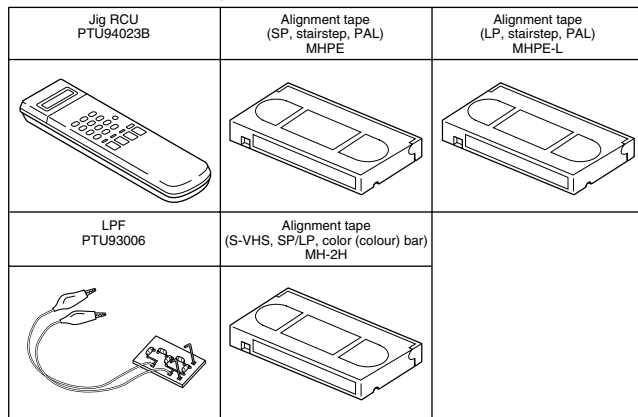
## 3.1 Precaution

The following adjustment procedures are not only necessary after replacement of consumable mechanical parts or board assemblies, but are also provided as references to be referred to when servicing the electrical circuitry. In case of trouble with the electrical circuitry, always begin a service by identifying the defective points by using the measuring instruments as described in the following electrical adjustment procedures. After this, proceed to the repair, replacement and/or adjustment. If the required measuring instruments are not available in the field, do not change the adjustment parts (variable resistor, etc.) carelessly.

### 3.1.1 Required test equipments

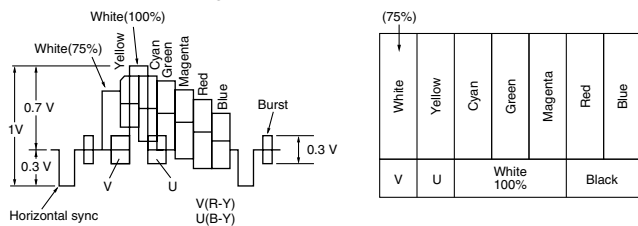
- Color (colour) television or monitor
- Oscilloscope: wide-band, dual-trace, triggered delayed sweep
- Frequency counter
- Audio level meter
- Signal generator: RF / IF sweep / marker
- Signal generator: staircase, color (colour) bar [PAL]
- Recording tape (VHS/SVHS)
- Digit-key remote controller (provided)

### 3.1.2 Required adjustment tools



### 3.1.3 Color (colour) bar signal, Color (colour) bar pattern

- Color (colour) bar signal [PAL]
- Color (colour) bar pattern [PAL]



### 3.1.4 Switch settings and standard precautions

The SW settings of the VCR and the standard precautions for the electrical adjustments are as follows.

- **When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). (See SECTION 1 DISASSEMBLY.)**

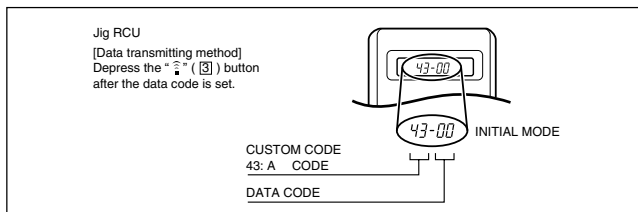


Fig. 3-1-4a Jig RCU [PTU94023B]

- **Set the switches as shown below unless otherwise specified on the relevant adjustment chart. The switches that are not listed below can be set as desired. If the VCR is not equipped with the functions detailed below, setup is not required.**

AUTO PICTURE/VIDEO CALIBRATION/ B.E.S.T./D.S.P.C.	OFF
PICTURE CONTROL/SMART PICTURE	NORMAL/NATURAL
VIDEO STABILIZER	OFF
TBC	ON
Digital 3R	ON
VIDEO NAVIGATION/TAPE MANAGER	OFF

- **If there is a reference to a signal input method in the signal column of the adjustment chart, "Ext. S-input" means the Y/C separated video signal and "Ext. input" means the composite video signal input.**
- **Unless otherwise specified, all measuring points and adjustment parts are located on the Main board.**

### 3.1.5 EVR Adjustment

Some of the electrical adjustments require the adjustment performed by the EVR system. The main unit have EEPROMs for storing the EVR adjustment data and user setups.

#### Notes:

- **In the EVR adjustment mode, the value is varied with the channel buttons (+, -). The adjusted data is stored when the setting mode changes (from PB to STOP, when the tape speed is changed, etc.). Take care to identify the current mode of each adjustment item when making an adjustment.**
- **When changing the address setting in the EVR adjustment mode, use the Jig RCU or the remote controller having numeric keypad with which a numeric code can be directly input.**

The remote control code of the Jig RCU corresponds to each of the digit keys on the remote controller as follows.

Digit-key	0	1	2	3	4	5	6	7	8	9
Code	20	21	22	23	24	25	26	27	28	29

- **As the counter indication and remaining tape indication are not displayed FDP during the EVR adjustment mode, check them on the TV monitor screen.**
- **When performing the EVR adjustment, confirm that the FDP indication is changed to the EVR mode, as shown below.**

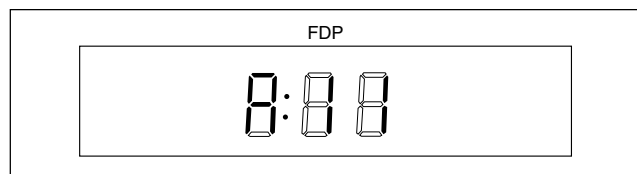


Fig. 3-1-5a EVR mode



### 3.2 Servo circuit

#### 3.2.1 Switching point

Signal	(A1) (A2)	• Stairstep signal • Alignment tape (SP, stairstep, PAL) [MHPE]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D1) (D2)	• VIDEO OUT terminal (75Ω terminated) • TP106 (PB, FM)
External trigger	(E)	• TP111 (D.FF)/slope : -
Adjustment part	(F)	• Jig code "5A"
Specified value	(G)	• 7.5 ± 0.5H
Adjustment tool	(H)	• Jig RCU [PTU94023B]

- Play back the signal (A1) of the alignment tape (A2).
- Apply the external trigger signal to D.FF (E) to observe the VIDEO OUT waveform and V.PB FM waveform at the measuring points (D1) and (D2).
- Set the VCR to the manual tracking mode.
- Adjust tracking so that the V.PB FM waveform becomes maximum.
- Set the VCR to the Auto adjust mode by transmitting the code (F) from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed.
- If the VCR enters the eject mode, repeat steps (1) to (5) again.
- Play back the alignment tape (A2) again, confirm that the switching point is the specified value (G).

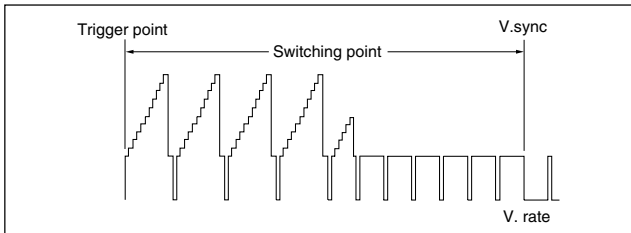


Fig. 3-2-1a Switching point

#### 3.2.2 Slow tracking preset

Signal	(A1) (A2)	• Ext. input • Color (colour) bar signal [PAL]
Mode	(B1) (B2)	• VHS SP • VHS LP
Measuring point	(D)	• TV-Monitor
Adjustment part	(F)	• Jig code "71" or "72"
Specified value	(G)	• Minimum noise
Adjustment tool	(H)	• Jig RCU [PTU94023B]

- Record the signal (A2) in the mode (B1), and play back the recorded signal.
- Set the VCR to the manual tracking mode.
- Set the VCR to the FWD slow (+1/6x) mode.
- Transmit the code (F) from the Jig RCU to adjust so that the noise bar becomes the specified value (G) on the TV monitor in the slow mode.
- Set the VCR to the Stop mode.
- Confirm that the noise bar is (G) on the TV monitor in the slow mode.
- Repeat steps (3) to (6) in the REV slow (-1/6x) mode.
- Repeat steps (1) to (7) in the mode (B2).

#### Note:

- For FWD slow (+1/6x) playback, transmit the code "08" from the Jig RCU to enter the slow playback mode, and transmit the code "D0" for REV slow (-1/6x) mode.

### 3.3 Video circuit

#### 3.3.1 D/A level

Signal	(A1) (A2) (A3)	• Ext. S-input / Ext. input • Color (colour) bar signal [PAL] • S-VHS tape
Mode	(B)	• S-VHS • EE
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• Y OUT terminal (75Ω terminated)
Adjustment part	(F)	• VR1201 (D/A LEVEL ADJ) [2D DIGITAL board]
Specified value (Note)	(G)	• 1.00 ± 0.015 Vp-p (reference value)

- Insert the cassette tape (A3) to enter the mode (B).
- Observe the Y OUT waveform at the measuring point (D).
- Check the Y level value when the External S-input (Y/C separated video signal).
- Switch the input signal to the External input (composite video signal), and adjust the adjustment part (F) so that the Y level becomes the same value observed in step (3).

#### Note:

- The specified value (G) is just a reference value to be obtained when the External S-Video (Y/C separated video) signal is input. In actual adjustment, set it to the value observed in step (3).

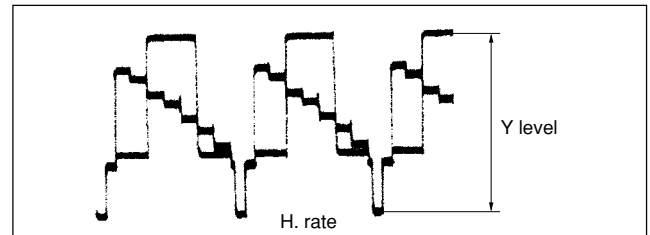


Fig. 3-3-1a D/A level

#### 3.3.2 EE Y/PB Y (S-VHS/VHS) level

Signal	(A1) (A2)	• Ext. input • Color (colour) bar signal [PAL]
Mode	(B1) (B2) (B3)	• EE • S-VHS SP • VHS SP
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• Y OUT terminal (75Ω terminated)
EVR mode	(F1)	• Jig code "57"
EVR address	(F2) (F3) (F4)	• A : 11 • Jig code "21" twice • Jig code "18" or "19" (Channel +/-)
Specified value	(G)	• 1.00 ± 0.05 Vp-p
Adjustment tool	(H)	• Jig RCU [PTU94023B]

- Observe the Y OUT waveform at the measuring point (D).
- Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.

- (3) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
- (4) Transmit the code (F4) from the Jig RCU to adjust so that the Y level of the Y OUT waveform becomes the specified value (G).
- (5) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
- (6) Record the signal (A2) in the mode (B2), and play back the recorded signal.
- (7) Set the VCR to the manual tracking mode.
- (8) Repeat steps (1) to (5) in the mode (B2).
- (9) Record the signal (A2) in the mode (B3), and play back the recorded signal.
- (10) Set the VCR to the manual tracking mode.
- (11) Repeat steps (1) to (5) in the mode (B3).

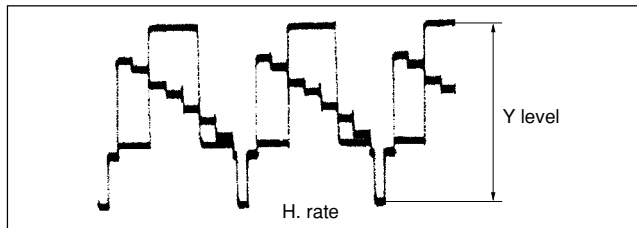


Fig. 3-3-2a EE/PB Y level

### 3.3.3 REC color (colour) level

Signal	(A1) (A2) (A3)	<ul style="list-style-type: none"> <li>• Alignment tape(S-VHS, SP/LP, Color(colour) bar) [MH-2H]</li> <li>• Ext. input</li> <li>• Color (colour) bar signal [PAL]</li> </ul>
Mode	(B1) (B2)	<ul style="list-style-type: none"> <li>• S-VHS SP</li> <li>• S-VHS LP</li> </ul>
Equipment	(C)	<ul style="list-style-type: none"> <li>• Oscilloscope</li> </ul>
Measuring point	(D1) (D2)	<ul style="list-style-type: none"> <li>• TP106 (PB. FM)</li> <li>• PB color (colour) output of the LPF</li> </ul>
External trigger	(E)	<ul style="list-style-type: none"> <li>• TP111 (D.FF)</li> </ul>
EVR mode	(F1)	<ul style="list-style-type: none"> <li>• Jig code "57"</li> </ul>
EVR address	(F2) (F3) (F4)	<ul style="list-style-type: none"> <li>• A : 02</li> <li>• Jig code "20" and "22"</li> <li>• Jig code "18" or "19" (Channel +/-)</li> </ul>
Specified value	(G)	<ul style="list-style-type: none"> <li>• SP: "B" x 125 ± 5%</li> <li>• LP: "B" x 125 ± 5%</li> </ul>
Adjustment tool	(H1) (H2)	<ul style="list-style-type: none"> <li>• Jig RCU [PTU94023B]</li> <li>• LPF [PTU93006] (See Fig. 3-3-3a.)</li> </ul>

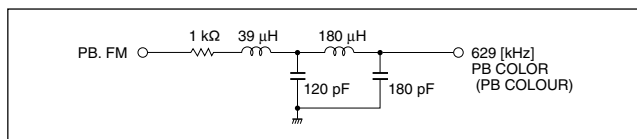


Fig. 3-3-3a LPF

- (1) Connect the adjustment tool (H2) to the measuring point (D1).
- (2) Apply the external trigger signal to D.FF (E) to observe the PB color (colour) waveform at the measuring point (D2).
- (3) Play back the signal (A3) in the mode (B1) of the alignment tape (A1).
- (4) Set the VCR to the manual tracking mode.
- (5) Adjust tracking so that the PB color (colour) waveform becomes maximum. Make a note of the higher PB color (colour) level as "B" at this time.
- (6) Record the signal (A3) in the mode (B1), and play back the recorded signal.

- (7) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
- (8) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
- (9) Transmit the code (F4) from the Jig RCU to adjust so that the higher level channel becomes the specified value (G) of the note "B" level as shown in Fig. 3-3-3b. (Adjust before recording, then confirm it by playing back.)
- (10) After adjustment, record the signal (A3) then playing it back again. At this time, confirm that there is no inverting phenomenon or noise appearing on the playback screen.
- (11) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
- (12) Repeat steps (3) to (11) in the mode (B2).

#### Note:

- After adjusting, always perform the confirmation and re-adjustment of the item 3.4.1.

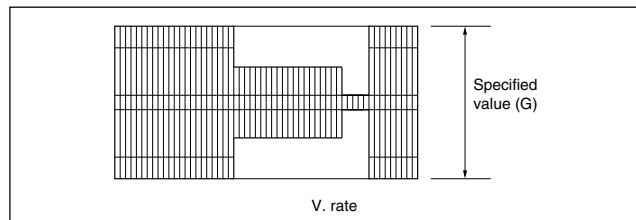


Fig. 3-3-3b REC color (colour) level

### 3.3.4 Video EQ (Frequency response)

Signal	(A1) (A2)	<ul style="list-style-type: none"> <li>• Ext. S-input</li> <li>• Video sweep signal</li> </ul>
Mode	(B1) (B2) (B3)	<ul style="list-style-type: none"> <li>• S-VHS SP</li> <li>• S-VHS LP</li> <li>• Picture Control / Smart Picture REC : Normal / Natural PB : Edit / Distinct</li> </ul>
Equipment	(C)	<ul style="list-style-type: none"> <li>• Oscilloscope</li> </ul>
Measuring point	(D1) Frequency marker(D2)	<ul style="list-style-type: none"> <li>• Y OUT terminal (75Ω terminated)</li> <li>• 3 [MHz]</li> </ul>
External trigger	(E)	<ul style="list-style-type: none"> <li>• TP111 (D.FF)</li> </ul>
EVR mode	(F1)	<ul style="list-style-type: none"> <li>• Jig code "57"</li> </ul>
EVR address	(F2) (F3) (F4)	<ul style="list-style-type: none"> <li>• A : 03</li> <li>• Jig code "20" and "23"</li> <li>• Jig code "18" or "19" (Channel +/-)</li> </ul>
Specified value	(G)	<ul style="list-style-type: none"> <li>• SP: 3.6 ± 0.4 div. (-1 ± 1 dB)</li> <li>• LP: 3.2 ± 0.4 div. (-2 ± 1 dB)</li> </ul>
Adjustment tool	(H)	<ul style="list-style-type: none"> <li>• Jig RCU [PTU94023B]</li> </ul>

- (1) Apply the external trigger signal to D.FF (E) to observe the Y OUT waveform at the measuring point (D1).
- (2) Record the signal (A2) in the mode (B1), and play back the recorded signal.
- (3) Set the VCR to the manual tracking mode.
- (4) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
- (5) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
- (6) Set the slope of the oscilloscope to the channel having higher (D2) marker level of the Y OUT waveform [signal (A2)]. Then set the 100 kHz marker level to the "4" scale on the oscilloscope. In this condition, transmit the code (F4) from the Jig RCU to adjust so that the (D2) marker level reaches the specified value (G).

- (7) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)
- (8) Repeat steps (2) to (7) in the mode (B2).

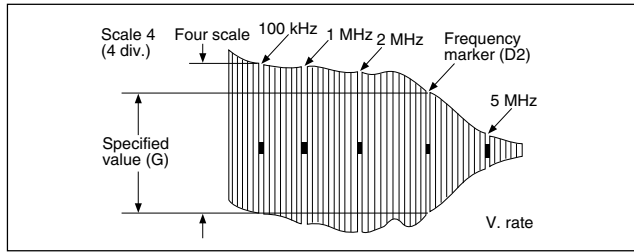


Fig. 3-3-4a Video EQ (Frequency Response)

### 3.3.5 Auto picture initial setting

Signal	(A1) (A2) (A3)	<ul style="list-style-type: none"> <li>• Ext. input</li> <li>• Video: Optional</li> <li>• VHS tape</li> </ul>
Mode	(B)	• EE → Auto adjust (SP/LP REC → PB)
Adjustment part	(F)	• Jig code "58"
Specified value	(G)	• STOP mode
Adjustment tool	(H)	• Jig RCU [PTU94023B]

- (1) Insert the cassette tape (A3).
- (2) Set the VCR to the Auto adjust mode by transmitting the code (F) from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed. When the VCR enters the eject mode, repeat steps (1) to (2) again.

### 3.4 Audio circuit

#### Notes:

- **This adjustment should be done after the "REC color (colour) level adjustment" for the video circuit has been completed.**
- **GND (Ground) should be taken from the Tuner shield case.**

#### 3.4.1 Audio REC FM

Signal	(A1) (A2) (A3)	<ul style="list-style-type: none"> <li>• Ext. input</li> <li>• Audio: No signal</li> <li>• Video: Color (colour) bar signal [PAL]</li> </ul>
Mode	(B)	• S-VHS LP
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP2253 (A. PB. FM)
External trigger	(E)	• TP111 (D.FF)
EVR mode	(F1)	• Jig code "57"
EVR address	(F2) (F3) (F4)	<ul style="list-style-type: none"> <li>• A : 30</li> <li>• Jig code "23" and "20"</li> <li>• Jig code "18" or "19" (Channel +/-)</li> </ul>
Specified value	(G1) (G2)	<ul style="list-style-type: none"> <li>• 400 ± 100 mVp-p</li> <li>• More than 250 mVp-p</li> </ul>
Adjustment tool	(H)	• Jig RCU [PTU94023B]

- (1) Apply the external trigger signal to D.FF (E) to observe the Audio PB FM waveform at the measuring point (D).
- (2) Record the signal (A3) with no audio signal input in the mode (B), and play back the recorded signal.
- (3) Set the VCR to the manual tracking mode.

- (4) If the A.PB FM level is not within the specified value (G1), perform the adjustment in a following procedure.
- (5) Set the VCR to the EVR mode by transmitting the code (F1) from the Jig RCU.
- (6) Set the EVR address to (F2) by transmitting the code (F3) from the Jig RCU.
- (7) Transmit the code (F4) from the Jig RCU to adjust so that the A.PB FM level of the higher channel level becomes the specified value (G1). (Adjust before recording, then confirm it by playing back.)
- (8) If the specified value (G1) is not obtained, transmit the code (F4) from the Jig RCU to adjust so that the waveform level of the lower channel level becomes the specified value (G2). (Adjust before recording, then confirm it by playing back.)
- (9) Release the EVR mode of the VCR by transmitting the code (F1) from the Jig RCU again. (When the EVR mode is released, the adjusted data is memorized.)

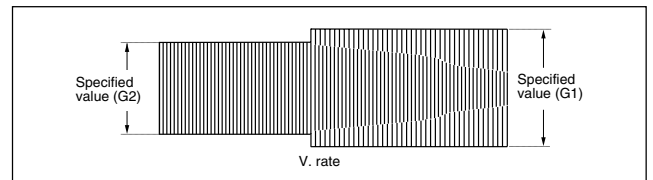


Fig. 3-4-1a Audio REC FM

### 3.5 Syscon circuit

#### Note:

- **When perform this adjustment, remove the Mechanism assembly.**

#### 3.5.1 Timer clock


Signal	(A)	• No signal
Mode	(B)	• EE
Equipment	(C)	• Frequency counter
Measuring point	(D1)	• IC3001 pin 61
Short point	(D2) (D3)	<ul style="list-style-type: none"> <li>• IC3001 pin 24</li> <li>• C3026 + and -</li> </ul>
Adjustment part	(F)	• C3025 (TIMER CLOCK)
Specified value	(G)	• 1024.008 ± 0.001 Hz (976.5549 ± 0.0010 μsec)

- (1) Connect the frequency counter to the measuring point (D1).
- (2) Connect the short wire between the short point (D2) and Vcc (5V).
- (3) Short the leads of capacitor (D3) once in order to reset the microprocessor of the SYSCON.
- (4) Disconnect the short wire between the short point (D2) and Vcc then connect it again.
- (5) Adjust the Adjustment part (F) so that the output frequency becomes the specified value (G).

# SECTION 4 CHARTS AND DIAGRAMS

## NOTES OF SCHEMATIC DIAGRAM

### Safety precautions

The Components identified by the symbol  are critical for safety. For continued safety, replace safety critical components only with manufacturer's recommended parts.

### 1. Units of components on the schematic diagram

Unless otherwise specified.

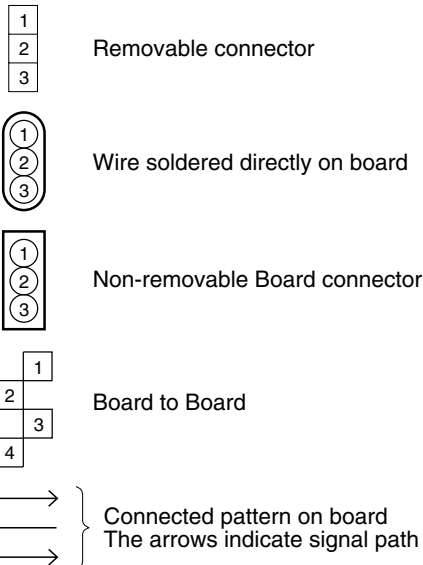
- 1) All resistance values are in ohm, 1/6 W, 1/8 W (refer to parts list).  
Chip resistors are 1/16 W.  
K or k: k $\Omega$  (1000 $\Omega$ ), M: M $\Omega$  (1000k $\Omega$ )
- 2) All capacitance values are in  $\mu$ F, (P: PF).
- 3) All inductance values are in  $\mu$ H, (m: mH).
- 4) All diodes are 1SS133, MA165 or 1N4148M (refer to parts list).

### 2. Indications of control voltage

AUX : Active at high

AUX or AUX(L) : Active at low

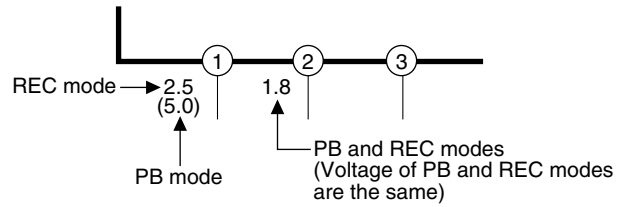
### 3. Interpreting Connector indications



### 4. Voltage measurement

- 1) Video circuits  
REC : Colour bar signal in SP mode, normal VHS mode  
PB : Alignment tape, colour bar SP mode, normal VHS mode  
— : Unmeasurable or unnecessary to measure
- 2) Audio circuits  
REC : 1KHz, -8 dBs sine wave signal in SP mode, Normal VHS mode  
PB : REC then playback it
- 3) Movie Camera circuits  
Measured using a correctly illuminated gray scale or colour bar test charts in the E-E mode

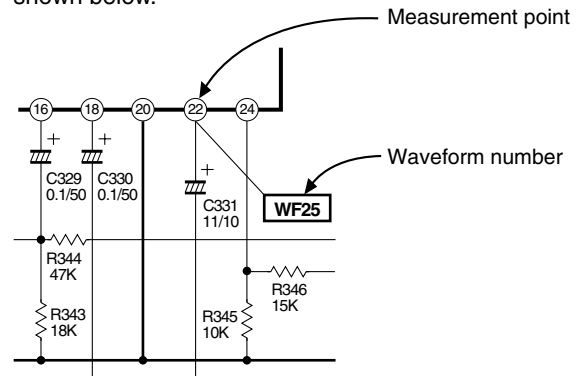
- 4) Indication on schematic diagram  
Voltage Indications for REC and PB mode on the schematic diagram are as shown below.



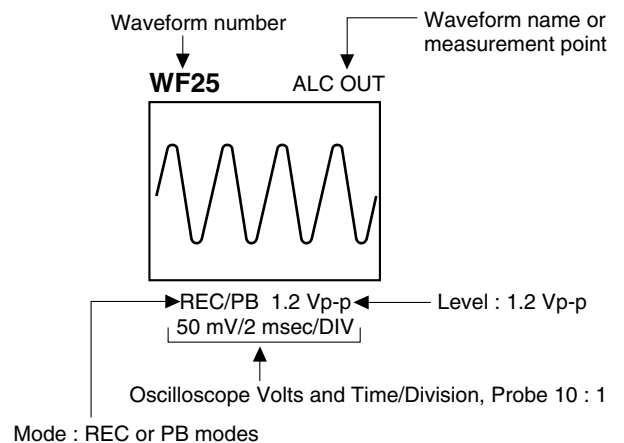
**Note: If the voltages are not indicated on the schematic diagram, refer to the voltage charts.**

### 5. Waveform measurement

- 1) Video circuits  
REC : Colour bar signal in SP mode, normal VHS mode  
PB : Alignment tape, colour bar SP mode, normal VHS mode
- 2) Audio circuits  
REC : 1KHz, -8 dBs sine wave signal in SP mode, normal VHS mode  
PB : REC then playback it
- 3) Movie Camera circuits  
Measured using a correctly illuminated gray scale or colour bar test charts in the E-E mode
- 4) Indication on schematic diagram  
Waveform indications on the schematic diagram are as shown below.

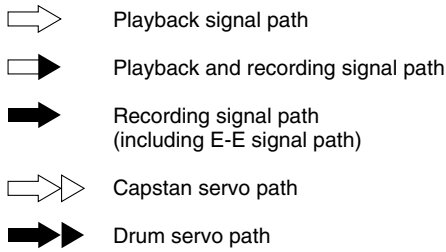


### 5) Waveform indications

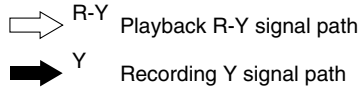


## 6. Signal path Symbols

The arrows indicate the signal path as follows.

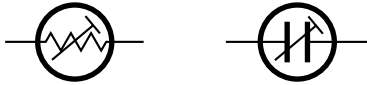


(Example)



## 7. Indication of the parts for adjustments

The parts for the adjustments are surrounded with the circle as shown below.



## 8. Indication of the parts not mounted on the circuit board

"OPEN" is indicated by the parts not mounted on the circuit board.



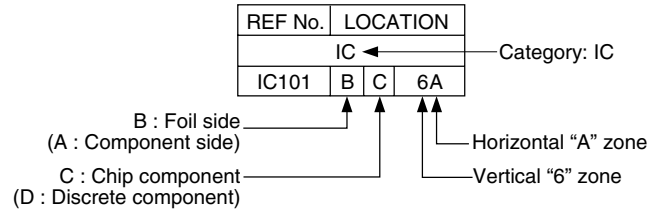
## CIRCUIT BOARD NOTES

### 1. Foil and Component sides

- 1) Foil side (B side) :  
Parts on the foil side seen from foil face (pattern face) are indicated.
- 2) Component side (A side) :  
Parts on the component side seen from component face (parts face) indicated.

### 2. Parts location guides

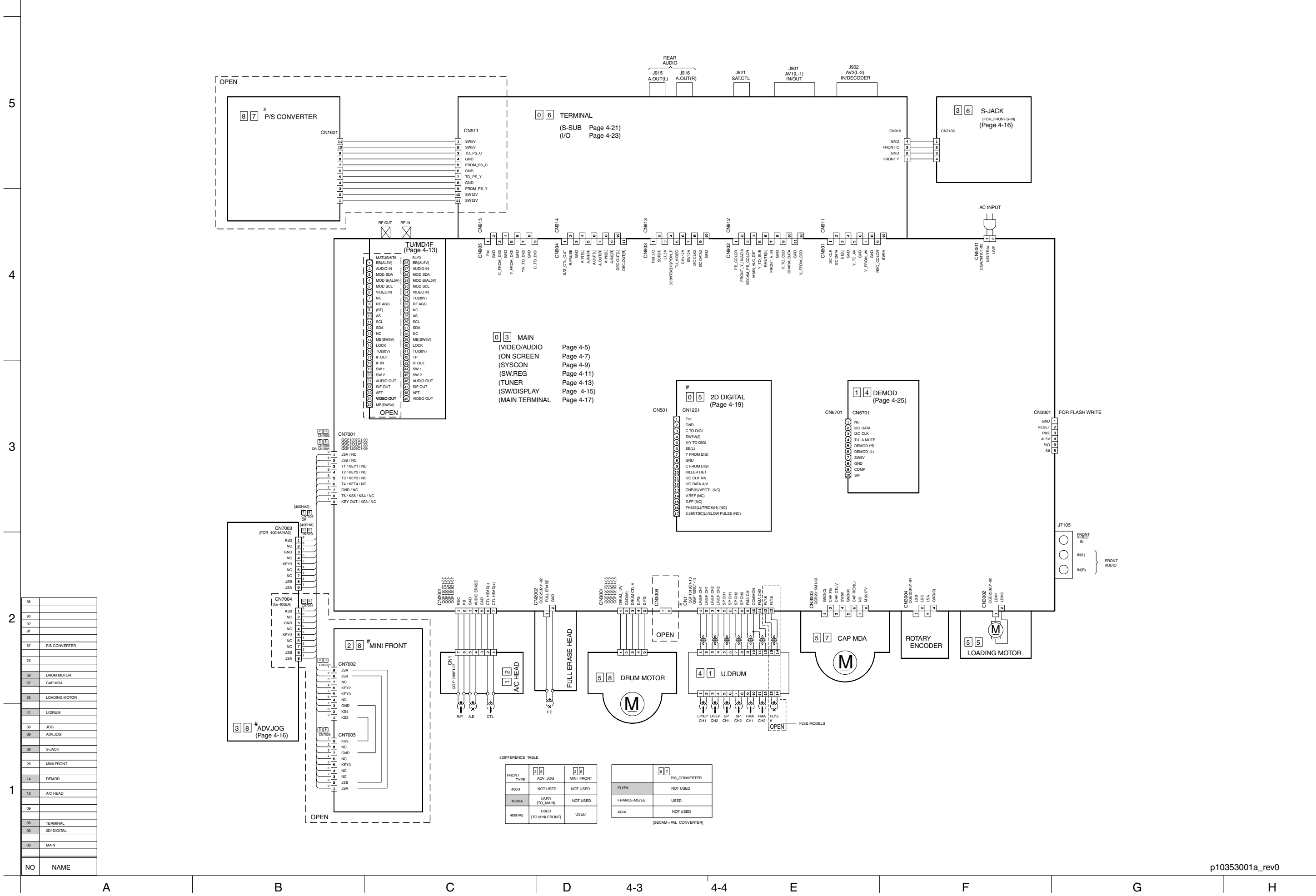
Parts location are indicated by guide scale on the circuit board.



### Note:

For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).

# 4.1 BOARD INTERCONNECTIONS



96	
93	
92	
91	
87	P/S CONVERTER
76	
58	DRUM MOTOR
57	CAP MDA
55	LOADING MOTOR
41	U.DRUM
39	JOG
38	ADV.JOG
36	S-JACK
28	MINI FRONT
14	DEMOD
12	AC HEAD
09	
06	TERMINAL
05	2D DIGITAL
03	MAIN
NO	NAME

#DIFFERENCE TABLE

FRONT TYPE	ADV_JOG	MINI_FRONT	P/S_CONVERTER
400H	NOT USED	NOT USED	EUEK NOT USED
400HA	USED [TO MAIN]	NOT USED	FRANCE-MS/EE USED
400HA2	USED [TO MINI-FRONT]	USED	ASIA NOT USED

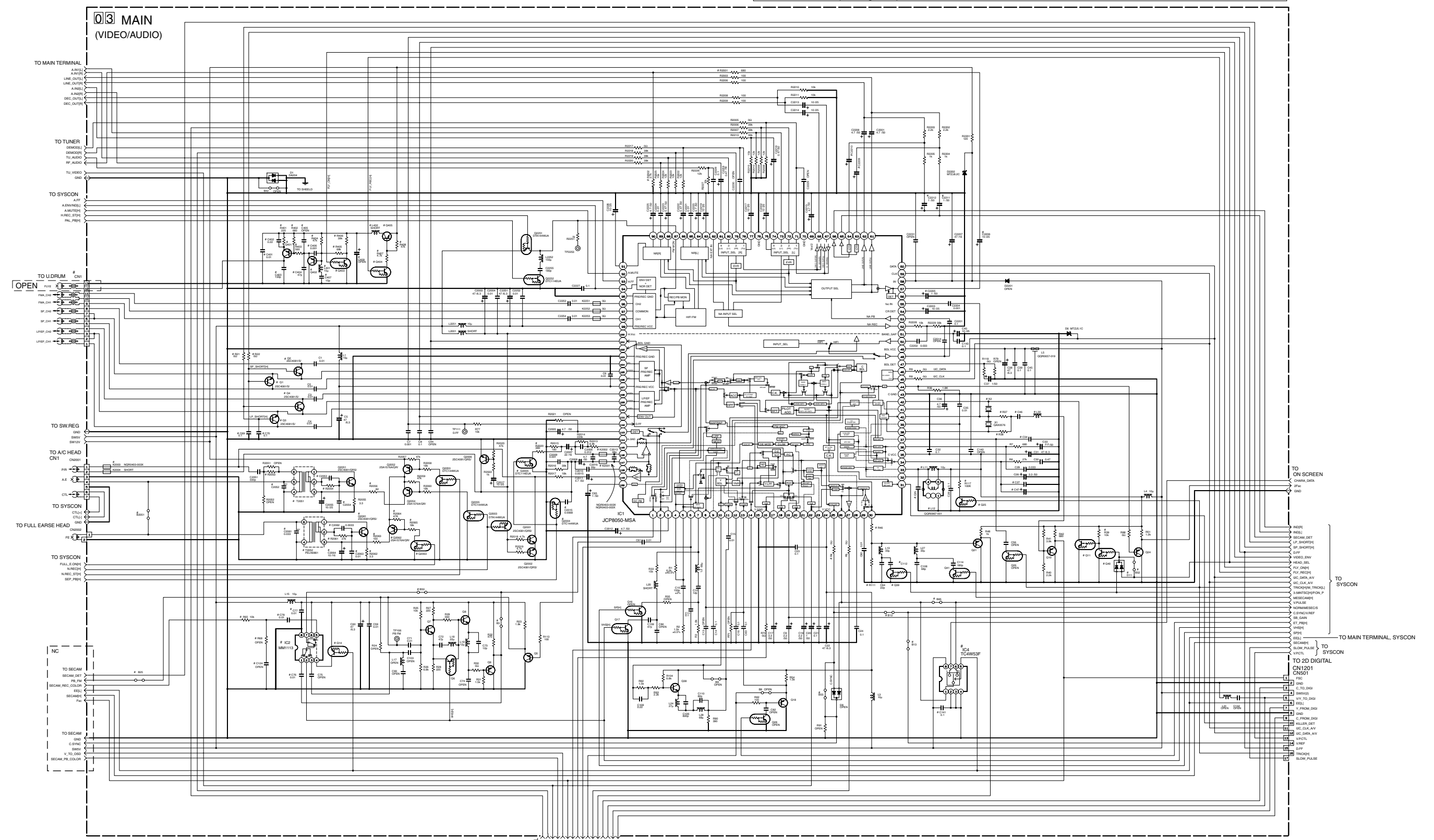
[SECAM-PAL\_CONVERTER]

# 4.2 MAIN (VIDEO/AUDIO) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.

5  
4  
3  
2  
1

A B C D 4-5 4-6 E F G H



# DIFFERENCE TABLE  
 o: Used  
 x: Not used

VT4 LINEUP	FLYERASE	H.SHORT	Fsc OUT	REC APC DET	PAL EP TROCK	ACC DET	B13	ID	R4	R46	R111	C112 QSR	SEC. REC. COLOR	SEC. REC. CTR.	SEC. REC. BSS	SEC. REC. BSS	SEC. REC. BSS	C SYNC	EP.MODE	RF-OUT	T0501	B0501	R0503	R0504	R0506	C2052	C2053	C2054	C2061-Q2063	C2209 C2210	C2211 C2212	L11	L12	C35	R3001 R3002 R3003			
5890A-81-52-0190EK	1-11	X	O	X	1k	100p	SHORT	C27-0.022	O	O	X	0.1	X	X	O	560	X	X	X	O	O	O	O	PELN0850	O	4.7k	15k	47	0.062	0.0047	0.022	X	1016	X	X	O	O	
5795B-7851EU	1-11	X	O	X	1k	100p	SHORT	C27-0.022	X	X	X	0.22	X	X	X	470	X	X	X	O	X	O	O	PELN0850	X	4.7k	15k	100	0.033	0.0033	0.01	O	5.150	O	X	O	5p	O
5890A-81-52-0190EK	1-13	O	X	X	1k	100p	SHORT	C27-0.022	O	O	X	0.1	X	X	O	560	X	X	X	O	O	O	PELN0850	X	4.7k	15k	100	0.033	0.0033	0.01	O	5.150	O	X	O	5p	O	
5890A-81-52-0190EK	1-13	O	X	X	1k	100p	SHORT	C27-0.022	X	X	X	0.22	O	O	X	560	X	X	X	O	X	O	PELN0850	O	4.7k	15k	47	0.062	0.0047	0.022	X	1016	X	X	O	5p	O	
5795B-7851EAS	1-14	O	X	X	1k	100p	SHORT	C27-0.022	O	O	X	0.1	X	X	O	560	X	X	X	O	X	O	PELN0850	X	4.7k	15k	100	0.033	0.0033	0.01	O	5.150	O	X	O	5p	O	
5890A-81-52-0190EK	1-14	O	X	X	1k	100p	SHORT	C27-0.022	X	X	X	0.22	O	O	X	470	X	X	X	O	X	O	PELN0850	X	4.7k	15k	100	0.033	0.0033	0.01	O	5.150	O	X	O	5p	O	
5890A-81-52-0190EK	1-11	X	O	1k	X	15p	100p	C47-2.250	O	X	O	0.1	X	GAK0575	O	330	3.3k	O	X	O	O	O	PELN0850	X	4.7k	15k	100	0.033	0.0033	0.01	O	5.150	O	X	X	5p	SHORT	
5795B-7851EAS	1-11	X	O	1k	X	15p	100p	C47-2.250	O	X	O	0.1	X	GAK0575	O	330	3.3k	O	X	O	O	O	PELN0850	X	4.7k	15k	100	0.033	0.0033	0.01	O	1016	X	O	X	5p	SHORT	

TITLE	REC	REV	IC1	CT41
YES	X	O		
NO	O	X		

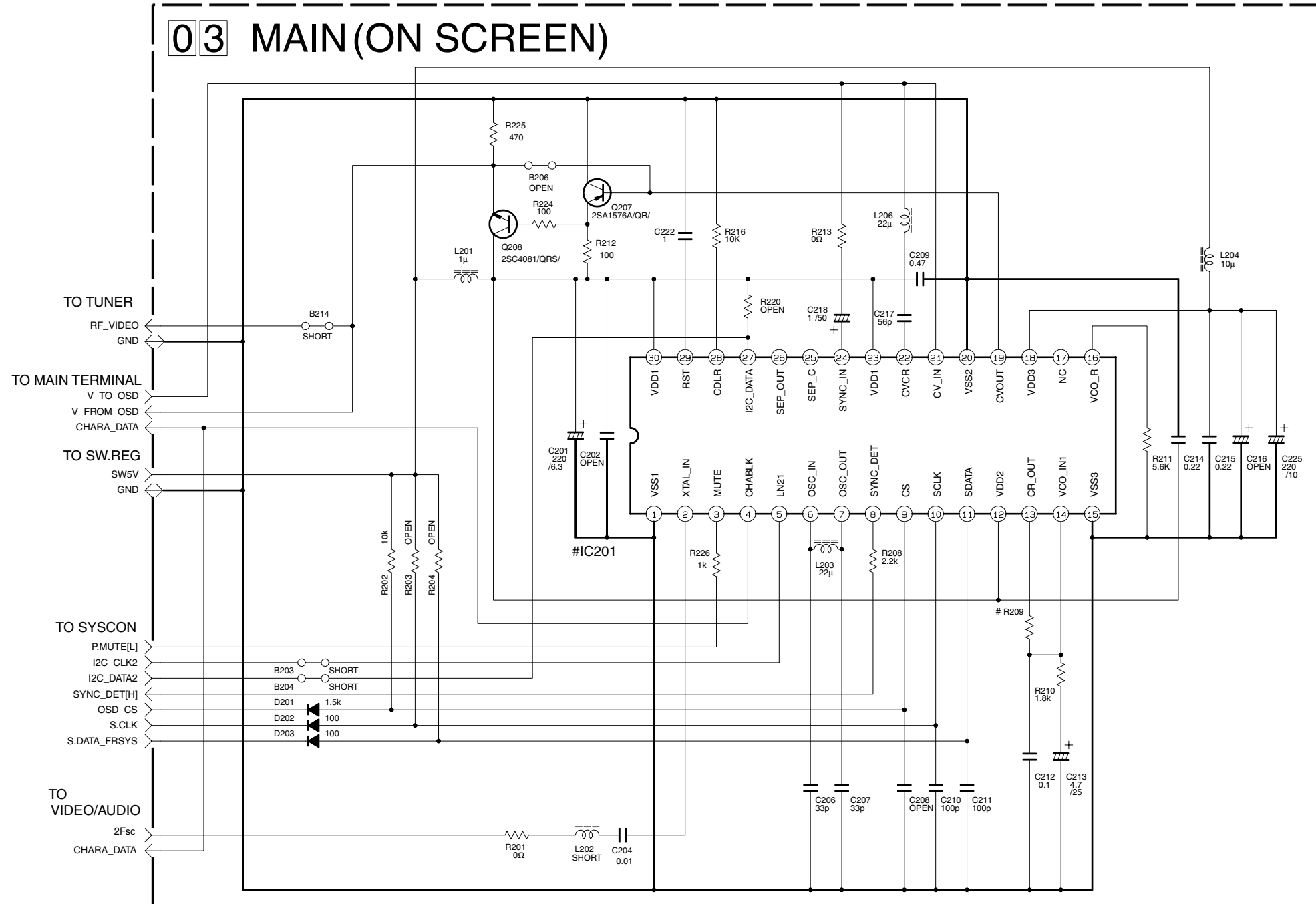
NOTES - UNLESS OTHERWISE SPECIFIED:  
 ALL RESISTANCE VALUES ARE IN OHMS.  
 ALL INDUCTANCE VALUES ARE IN H.  
 ALL CAPACITANCE VALUES ARE IN  $\mu$ F.

ELECTROLYTIC  
 CERAMIC  
 MYLAR  
 NON POLAR

ALL NPN TYPE TRANSISTORS ARE 2SC4081 (QRS) or 2SD1819A (QRS) or 2PC4081 (RV)  
 ALL PNP TYPE TRANSISTORS ARE 2SA1575A (QRV) or 2SD1216A (QRV) or 2SA1575 (RV)  
 ALL NPN TYPE DIGITAL TRANSISTORS ARE D7C144W (QA) or UNG21E or R81308 or POT144W (U)  
 ALL PNP TYPE DIGITAL TRANSISTORS ARE D7A144W (QA) or UNG11E or R82309 or POT144W (U)

4.3 MAIN (ON SCREEN) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



NOTES: UNLESS OTHERWISE SPECIFIED.  
 ALL RESISTANCE VALUES ARE IN OHMS.  
 ALL INDUCTANCE VALUES ARE IN H.  
 ALL CAPACITANCE VALUES ARE IN  $\mu$ F.

- ELECTROLYTIC
- CERAMIC
- MYLER
- NON POLAR

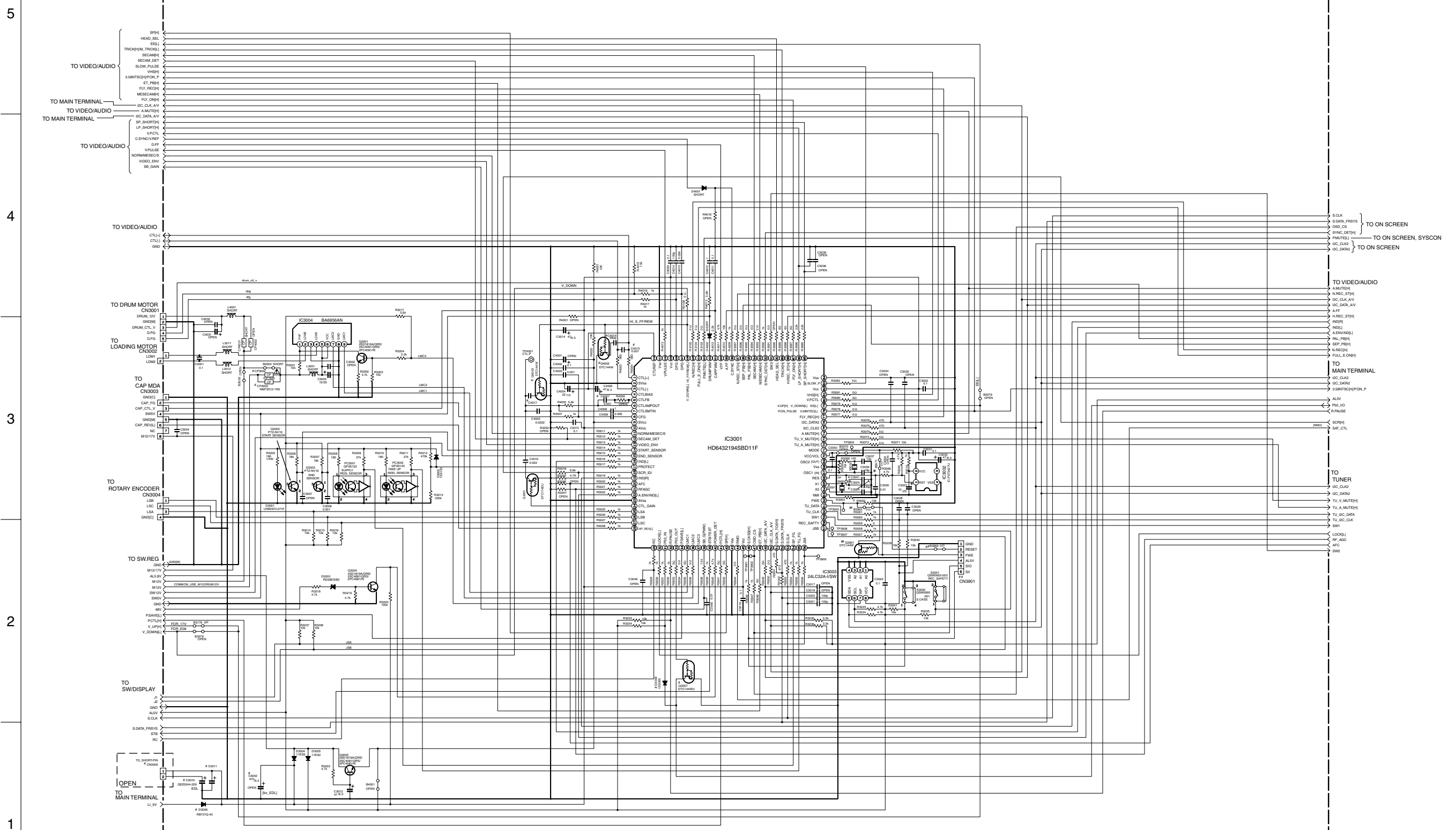
# DIFFERENCE TABLE		
	IC201	R209
EE	LC74776-9791	6.8k
OTHER	LC74775-9750	5.1k



#### 4.4 MAIN (SYSCON) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.

### 03 MAIN(SYSCON)



#DIFFERENCE\_TABLE  
 O : Used  
 X : Not used

BACKUP_TIME	C3010	C3011	C3042	C3043	C3008
10MIN	X	X	X	X	X
EDMIN	O	X	O	O	X
LI.BATT	X	X	X	O	O

FEATURE_TYPE	03000
TV(LINK)PS	O

MECHA_TYPE	C4015	C4016	G4052	C4055	C4017	G4053
Y20-2	O	X	X	O	X	X
Y20-T	O	X	X	X	O	O
Y20-T-PALEP	88Op	O	O	O	X	O

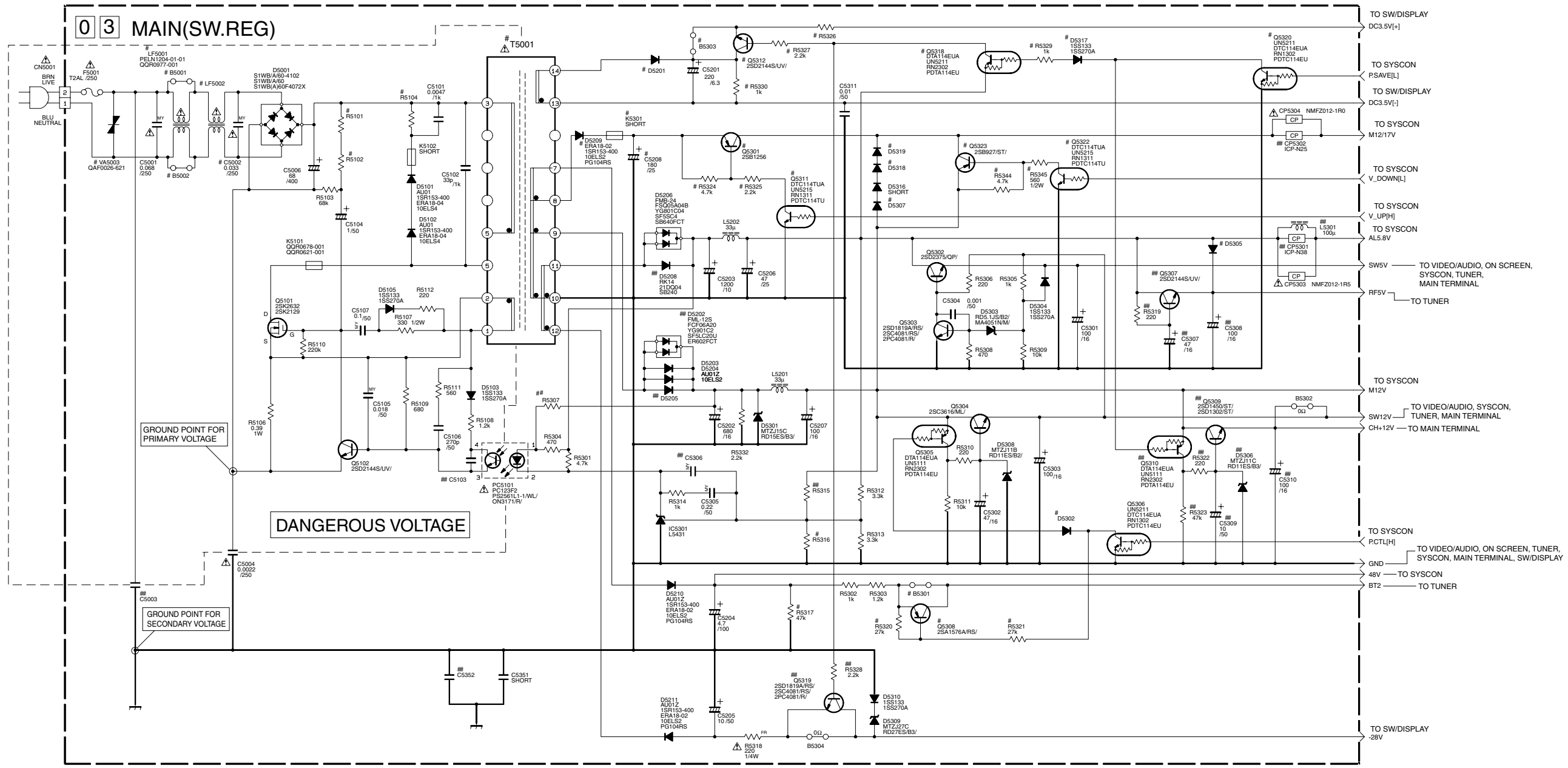
SUB_CLK_ADJ	X3001	C3035	C3041	C3024
ADJ	QA03045	O	X	22p
FIX	QA03044	X	15p	12p

CP_TYPE	Leadert_type	Surface_type
	CP000	CP000
	CP005	NMF2013-1R0

NOTES-UNLESS OTHERWISE SPECIFIED:  
 ALL RESISTANCE VALUES ARE IN OHMS.  
 ALL INDUCTANCE VALUES ARE IN H.  
 ALL CAPACITANCE VALUES ARE IN pF.  
 E: ELECTROLYTIC  
 C: CERAMIC  
 M: MYLAR  
 NP: NON POLAR

4.5 MAIN (SW.REG) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



#DIFFERENCE TABLE 1

HIGH SPEED FF/REW	Q5301 Q5311 D5209	C5208 R5301 R5304	R5325	D5307
-YES-		YES		11ES2 ERA15-02 1A3G
-NO-		NO		SHORT

#DIFFERENCE TABLE 2

POWER SAVE	R5101 R5102	R5104	B5301	D5302	Q5308 R5320 R5321	R5317	B5303	Q5312 Q5318 Q5320	D5317 R5327 R5329	R5330	D5305	R5316
-YES-	330k	150k 2W	NO	1S133 1SS270A	YES	NO	NO	YES			AK94 11EG04 1S4	12k
-NO-	220k	68k 2W	YES	SHORT	NO	YES	NO	NO			11ES2 ERA15-02 1A3G	10k

#DIFFERENCE TABLE 3

CE	B5001 B5002	C5002	LF5001	LF5002	T5001
NO	NO	YES	YES	QQR0978-001 QQR0908-001 QQR0609-001 QQR0616-001	QCS0033-001 QCS0034-001
YES	NO	NO	NO	QQR0932-001 QQR0933-001 QQR0934-001 QQR0932-001 QQR0932-001	QCS0030-002 QCS0031-002 QCS0036-001

#DIFFERENCE TABLE 4

EP	Q5323 Q5322	R5344 R5345	D5318 D5319
-YES-	YES		11ES2 ERA15-02 1A3G
-NO-	NO		SHORT

#DIFFERENCE TABLE 5

LEVEL IND.	D5201	R5326
-YES-	AK04 11EG04 1S4	2.2
-NO-	AU01Z 10ELS2	SHORT

#DIFFERENCE TABLE 6

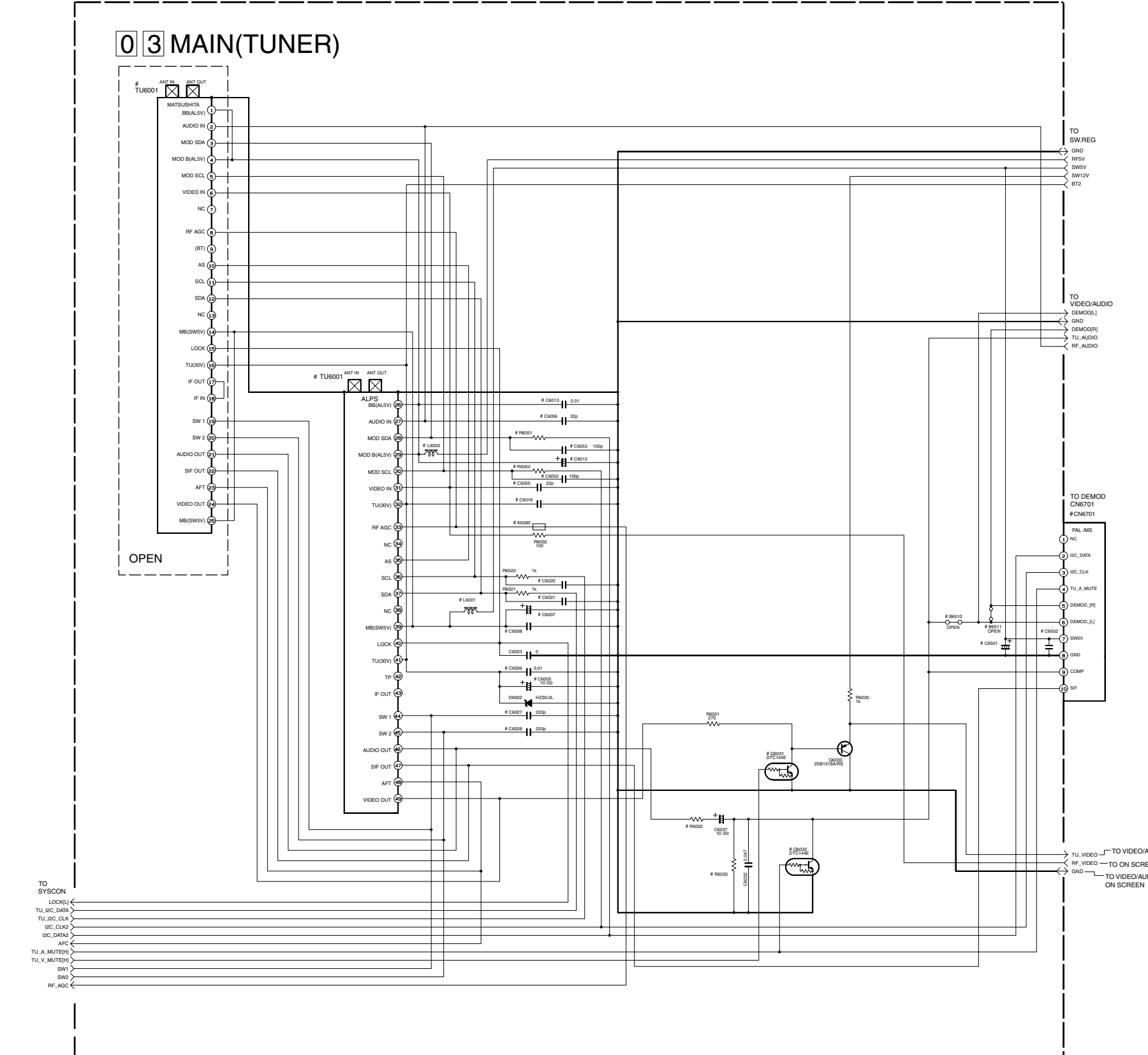
SURGE	VA5003
PHILIPS 110-240V	YES
OTHER	NO

NOTES: UNLESS OTHERWISE SPECIFIED.  
ALL RESISTANCE VALUES ARE IN OHMS.  
ALL INDUCTANCE VALUES ARE IN H.  
ALL CAPACITANCE VALUES ARE IN μF.

ELECTROLYTIC  
 CERAMIC  
 MYLER  
 NON POLAR

4.6 MAIN (TUNER) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



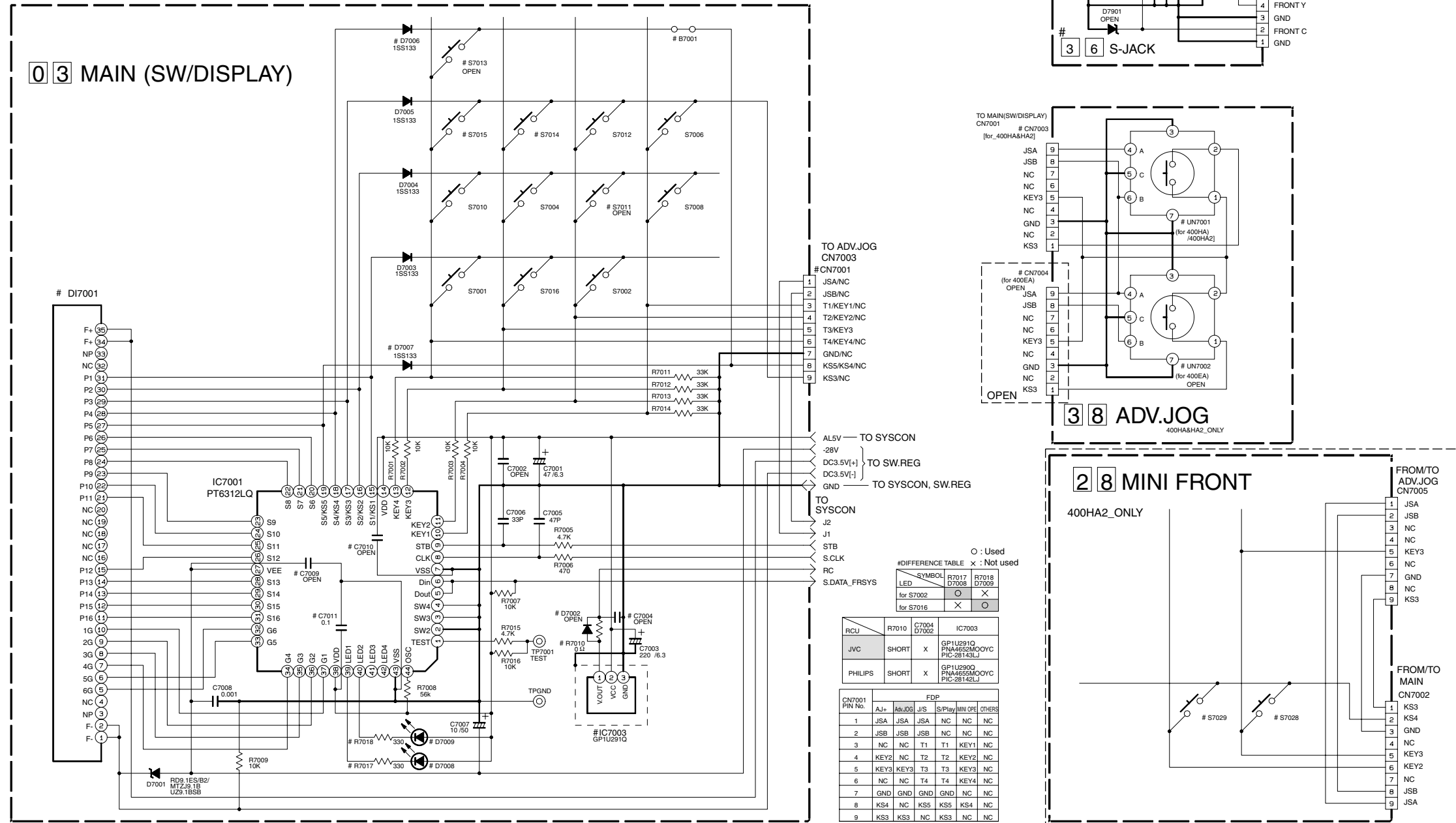
# DIFFERENCE TABLE O : Used  
x : Not used

	TU6001	EU/EX		FRANCE		ASIA		ASIA		HR/FS1EU
		ALPS	LG	3SYSTEM	MATSUSHITA	MATSUSHITA	ALPS			
TUNER	TU6001	ALPS	LG	3SYSTEM	MATSUSHITA	MATSUSHITA	ALPS			
ATS-	K8080	143	143		X	X				
SWV	L6001	15u	15u	15u	15u	15u	15u			
	C6007	220E.3	220E.3	220E.3	220E.3	220E.3	220E.3			
	C6008	0.01		X	0.01	0.01	0.01			
RFV	L6003	47u	47u	47u	47u	47u	15u			
	C6012	10016	10016	10016	10016	10016	330E.3			
	C6013	0.01	0.01	0.01	0.01	0.01	0.01			
BTZ	C6016	0.01	X	0.01	0.01	0.01	2200p			
	C6005	X	X	X	X	X	X			
RF CONV.	C6009	X	X	X	X	X	X			
	R6001	100	X	100	100	100	470			
	R6003	0	X	0	0	0	X			
VIDEO IN	R6002	100	X	100	100	100	470			
	C6002	0	X	0	0	0	0			
	C6006	X	X	X	X	X	X			
TUNER IC	R6000	X	X	X	X	X	X			
	C6021	X	X	X	X	X	X			
SYSTEM SW	C6027	X	X	X	X	X	X			
	C6008	X	X	X	X	X	X			
	R6002	4.7k	10k	10k	0	0	3.3k			
AUDIO OUT	R6003	1.8k	1.8k	3.3k	X	X	1.8k			
	C6002	0	X	0	X	X	0			
	C6002	0	0	X	X	X	0			
VIDEO OUT	C6001	0	0	X	X	X	0			
	C6001	X	X	X	X	X	X			
DEMOD PASS CON	C6002	0.01	0.01	0.01	0.01	0.01	2200p			

NOTES-UNLESS OTHERWISE SPECIFIED:  
ALL RESISTANCE VALUES ARE IN OHMS.  
ALL INDUCTANCE VALUES ARE IN H.  
ALL CAPACITANCE VALUES ARE IN pF.  
ELECTROLYTIC  
CERAMIC  
MYLER  
NON POLAR

4.7 MAIN (SW.DISPLAY), S-JACK AND ADV.JOG SCHEMATIC DIAGRAMS

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



#DIFFERENCE TABLE FDP\_TYPE

WITHOUT LEVEL_IND	QLF0031-001 OR QLF0033-001
WITH LEVEL_IND	QLF0032-001 OR QLF0034-001

NOTES: UNLESS OTHERWISE SPECIFIED.  
 ALL RESISTANCE VALUES ARE IN OHMS.  
 ALL INDUCTANCE VALUES ARE IN H.  
 ALL CAPACITANCE VALUES ARE IN μF.

ELECTROLYTIC  
 CERAMIC  
 MYLER  
 NON POLAR

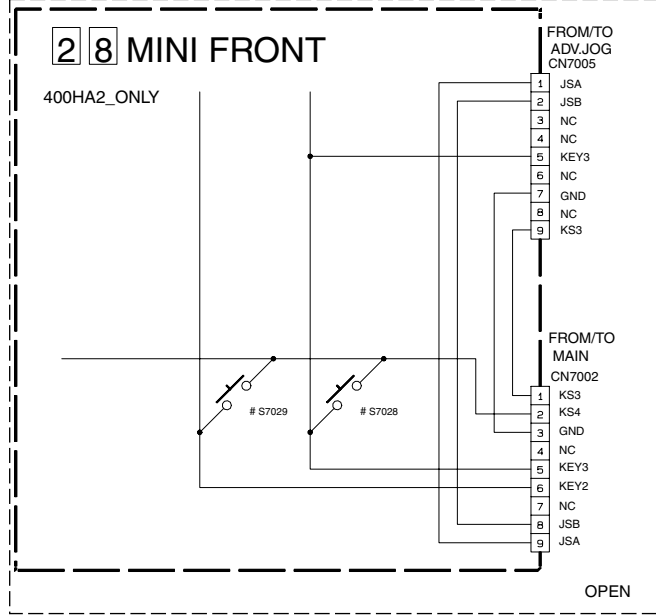
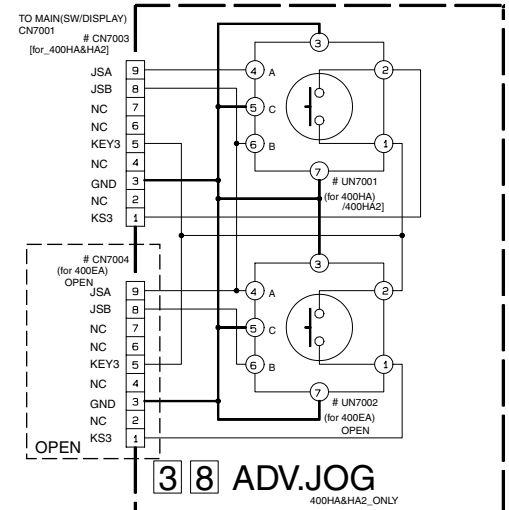
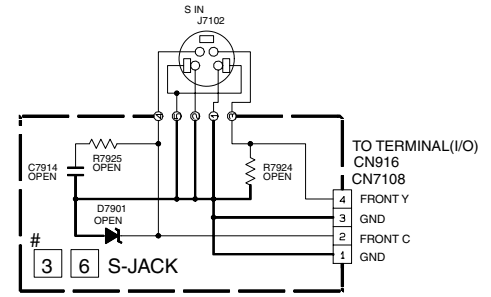
#DIFFERENCE TABLE

SYMBOL	R7017	R7018
LED	○	○
for S7002	○	×
for S7016	×	○

RCU	R7010	C7004	IC7003
JVC	SHORT	X	GP1U291Q PNA4652MOOYC PIC-28143LJ
PHILIPS	SHORT	X	GP1U2990 PNA4652MOOYC PIC-28142LJ

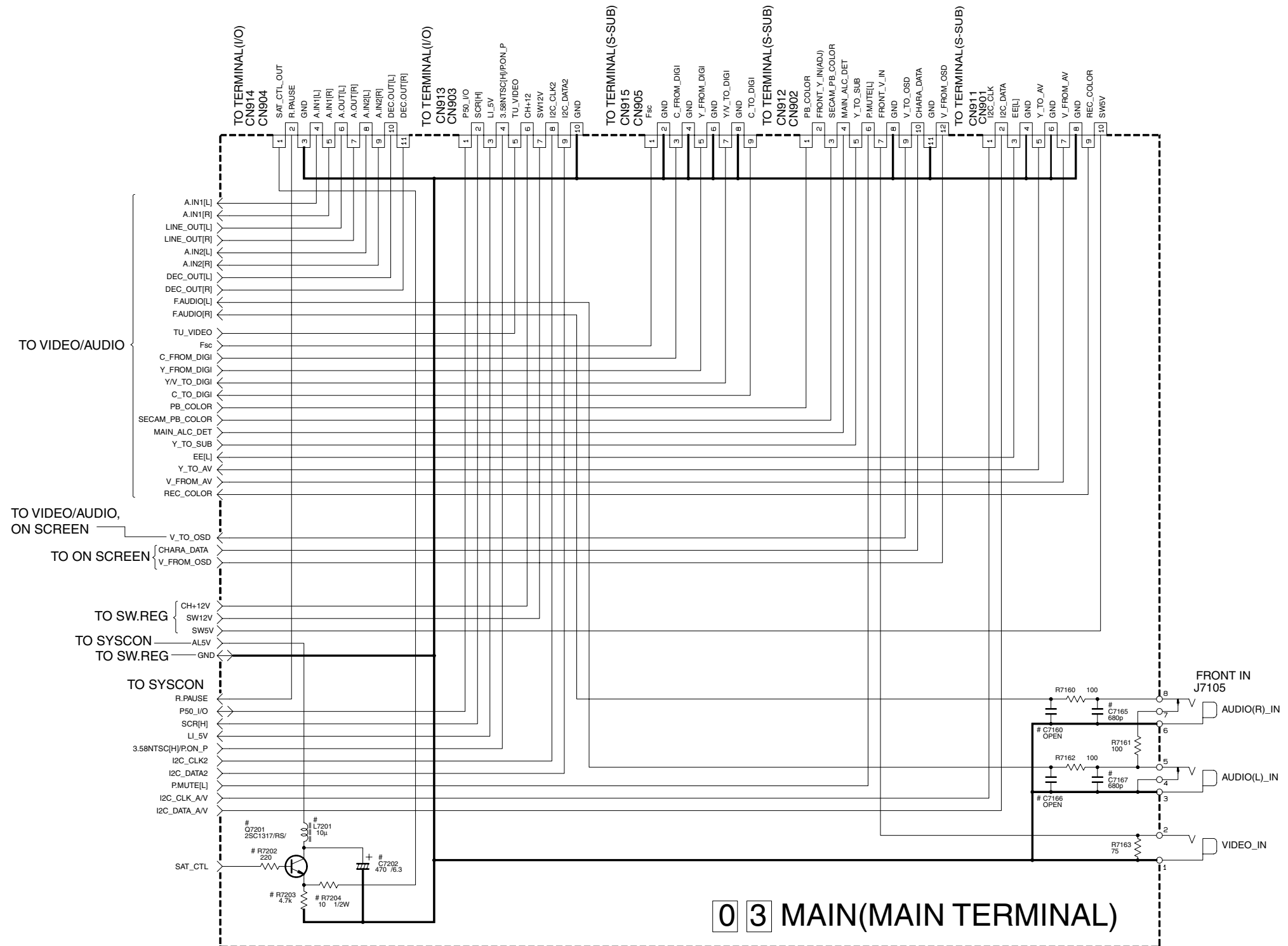
CN7001	FIN No.	AJ+	AHJOG	JIS	S/Play	MINI OPE	OTHERS
1	JSA	JSA	JSA	NC	NC	NC	NC
2	JSB	JSB	JSB	NC	NC	NC	NC
3	NC	NC	T1	T1	KEY1	NC	NC
4	KEY2	NC	T2	T2	KEY2	NC	NC
5	KEY3	KEY3	T3	T3	KEY3	NC	NC
6	NC	NC	T4	T4	KEY4	NC	NC
7	GND	GND	GND	GND	NC	NC	NC
8	KS4	NC	KSS	KSS	KS4	NC	NC
9	KS3	KS3	NC	KS3	NC	NC	NC

	D7007	B7001	CN7001	S7014	S7015
AJ+	×	○	○	○	×
AHJOG	×	×	○	○	×
JIS	○	×	○	○	×
S/Play	○	×	○	○	×
MINI OPE	×	○	○	○	×
OTHERS	×	×	×	○	○



4.8 MAIN (MAIN TERMINAL) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



0 3 MAIN(MAIN TERMINAL)

NOTES: UNLESS OTHERWISE SPECIFIED.  
 ALL RESISTANCE VALUES ARE IN OHMS.  
 ALL INDUCTANCE VALUES ARE IN H.  
 ALL CAPACITANCE VALUES ARE IN μF.

- ELECTROLYTIC
- CERAMIC
- MYLER
- NON POLAR

# DIFFERENCE TABLE

	Q7201	R7202	R7203	R7204	C7202	L7201
SAT CTL						
YES		○				
NO						×

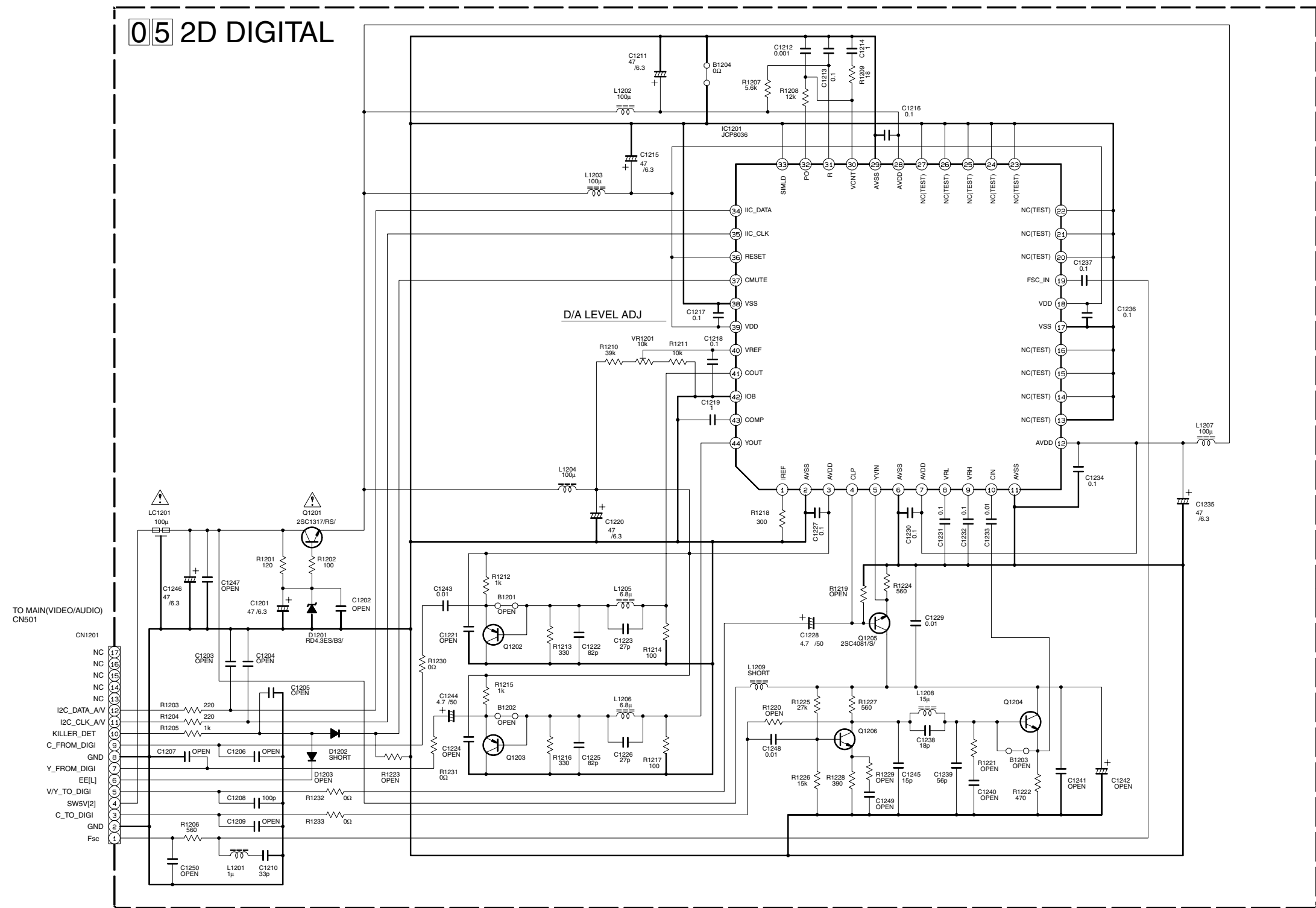
○ : Used  
 × : Not used

	C7165	C7167
CE		
YES		○
NO		×

4.9 2D DIGITAL SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.

05 2D DIGITAL

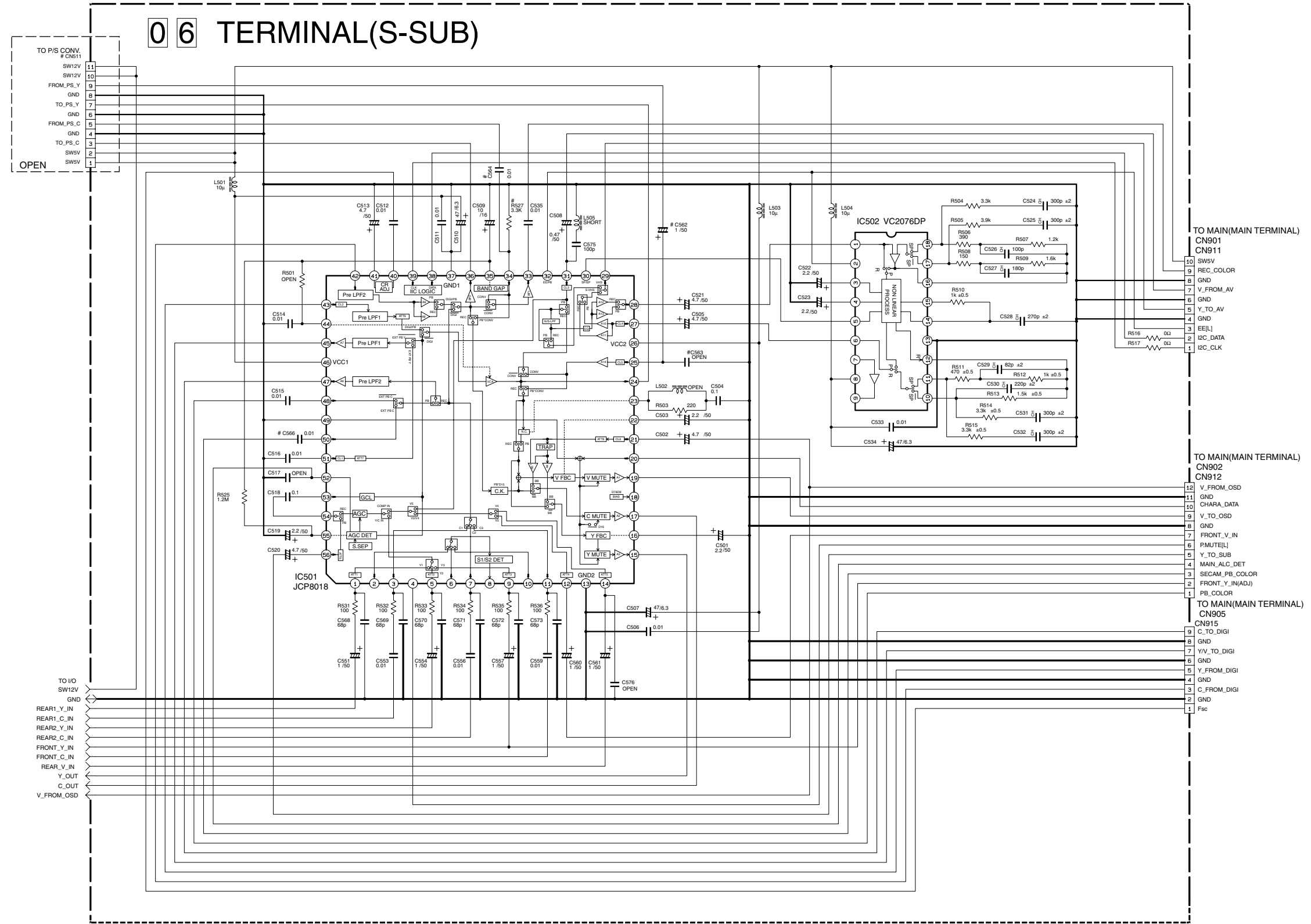


NOTES: UNLESS OTHERWISE SPECIFIED.  
 ALL RESISTANCE VALUES ARE IN OHMS.  
 ALL INDUCTANCE VALUES ARE IN H.  
 ALL CAPACITANCE VALUES ARE IN μF.

+ ELECTROLYTIC  
 CERAMIC  
 MYLER  
 NON POLAR

4.10 TERMINAL (S-SUB) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.



# DIFFERENCE TABLE

	○ : Used	× : Not used
MS	○	×
OTHERS	×	○

NOTES: UNLESS OTHERWISE SPECIFIED.  
 ALL RESISTANCE VALUES ARE IN OHMS.  
 ALL INDUCTANCE VALUES ARE IN H.  
 ALL CAPACITANCE VALUES ARE IN μF.

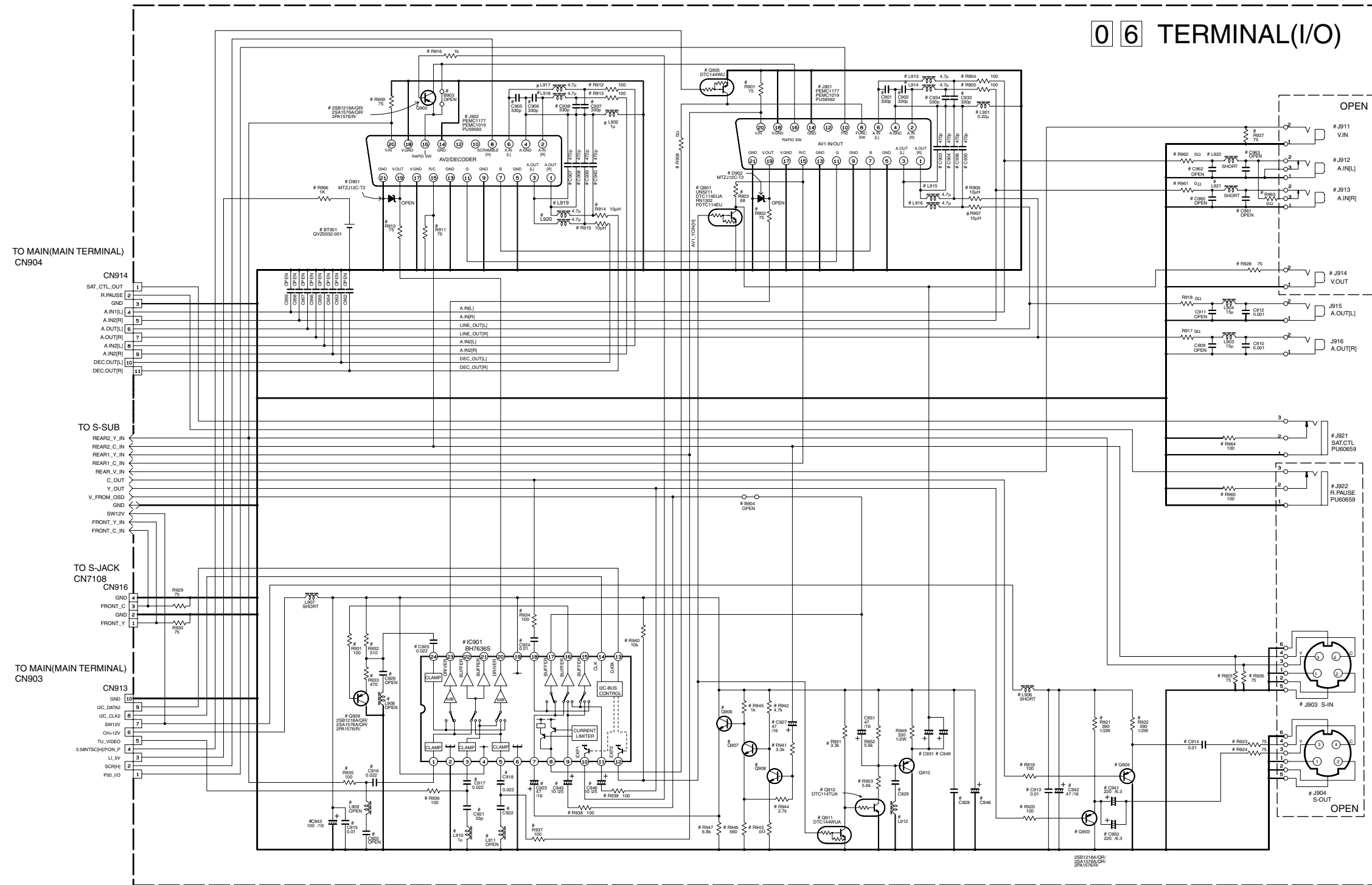
ELECTROLYTIC  
 CERAMIC  
 MYLER  
 NON POLAR

5  
4  
3  
2  
1

4.11 TERMINAL (I/O) SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.

06 TERMINAL(I/O)



○ : Used  
x : Not used

		CH+	REAR S-OUT	S-IN	REAR IN/OUT	SAT CTL	R.PAUSE	C915	C943	C928	C948	C929	L912	C931	C949	BACK UP
EURO MODELS	WITHOUT REAR S-OUT	○	x	x	x	○	x	0.01	100/16	0.01	OPEN	OPEN	OPEN	10/25	OPEN	x
	WITH REAR S-OUT	○	○	x	x	○	○	0.01	100/16	0.01	OPEN	OPEN	OPEN	10/25	OPEN	x
ARC MODELS		x	○	○	○	x	x	OPEN	OPEN	0.01	47/16	5.6k	SHORT	220/6.3	220/6.3	○

NOTES: UNLESS OTHERWISE SPECIFIED.  
ALL RESISTANCE VALUES ARE IN OHMS.  
ALL INDUCTANCE VALUES ARE IN H.  
ALL CAPACITANCE VALUES ARE IN μF.

- ELECTROLYTIC
- CERAMIC
- MYLER
- NON POLAR

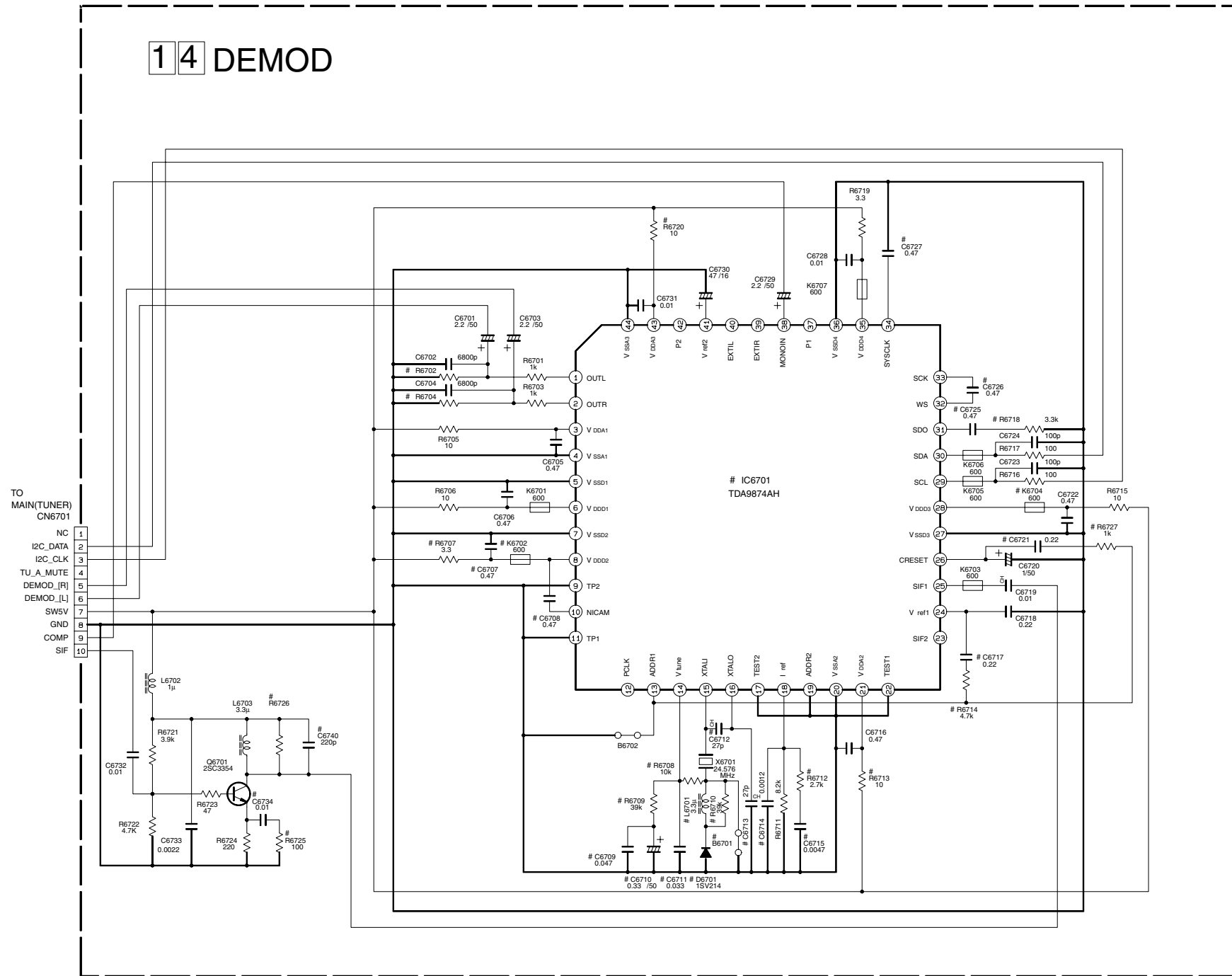
ALL NPN TYPE TRANSISTORS ARE 2SC4081/ORS/ or 2SD1819A/ORS/ or 2PC4081/R/.  
ALL PNP TYPE TRANSISTORS ARE 2SA1576A/QR/ or 2SB1218A/QR/ or 2PA1576/R/.



4.12 DEMODULATOR SCHEMATIC DIAGRAM

Note : The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.

1 4 DEMOD



# DIFFERENCE TABLE

	V12 EK/ARC	V12 EU/MS	V13/V14
IC6701	TDA9874H	←	TDA9874AH
R6707	10	←	NOT USED
R6708	10k	←	0Ω
R6709	39k	←	NOT USED
R6710	39k	←	NOT USED
R6713	10	←	NOT USED
R6720	10	←	NOT USED
R6725	100	NOT USED	100
R6726	1k	2.2k	1k
C6707	0.47	←	NOT USED
C6710	0.33/50	←	NOT USED
C6711	0.033	←	NOT USED
C6712	27p	←	NOT USED
C6713	27p	←	0Ω
C6714	0.0012	←	NOT USED
C6734	0.01	NOT USED	0.01
C6740	NOT USED	220p	NOT USED
L6701	3.3μ	←	NOT USED
D6701	15V214	←	NOT USED
K6702	600	←	NOT USED
R6702,R6704, R6712,R6714, R6717,R6718, C6708,C6709, C6715,C6717, C6721,C6725, C6726,C6727, B6701	NOT USED	←	←

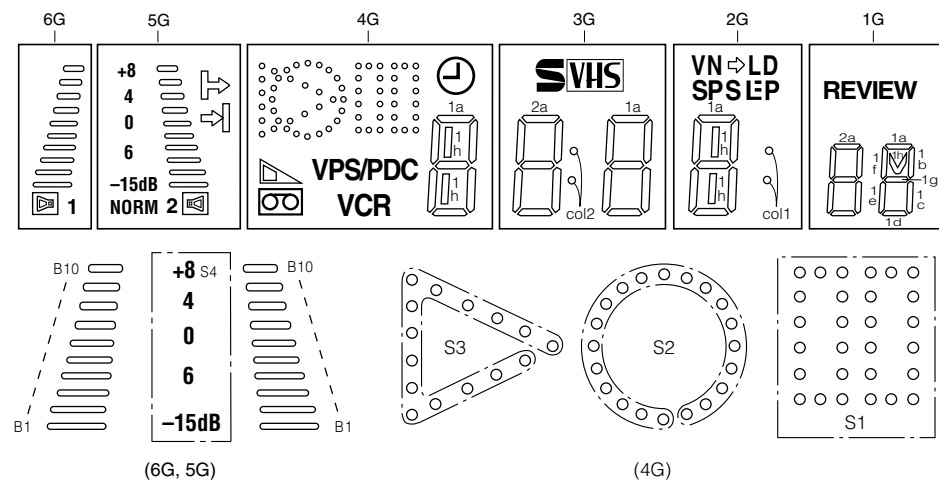
NOTES: UNLESS OTHERWISE SPECIFIED.  
ALL RESISTANCE VALUES ARE IN OHMS.  
ALL INDUCTANCE VALUES ARE IN H.  
ALL CAPACITANCE VALUES ARE IN μF.

- ⊕ — ELECTROLYTIC
- — CERAMIC
- MY— MYLER
- — NON POLAR

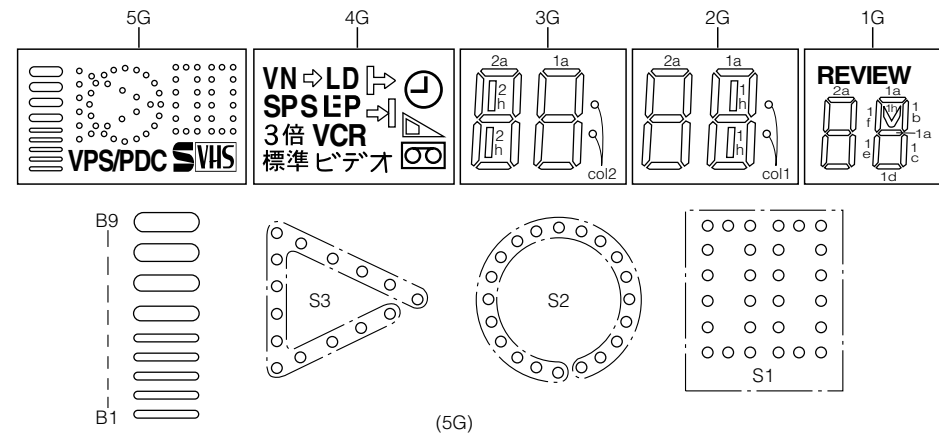


### 4.17 FDP GRID ASSIGNMENT AND ANODE CONNECTION

[A] (FDP with audio level indicator)



[B] (FDP without audio level indicator)



#### ANODE CONNECTION

[A]

	6G	5G	4G	3G	2G	1G
P 1	—	▷	S2	1a	1a	1a
P 2	—	◁	S1	1b	1b	1b
P 3	—	S4	S3	1f	1f	1f
P 4	—	NORM	VPS/PDC	1g	1g	1g
P 5	1	2	Ⓢ	1c	1c	1c
P 6	▷	◁	△	1e	1e	1e
P 7	B10	B10	Ⓢ	1d	1d	1d
P 8	B9	B9	VCR	col2	1h	1h
P 9	B8	B8	1a	2a	col1	2a
P10	B7	B7	1b	2b	▷	2b
P11	B6	B6	1f	2f	VN	2f
P12	B5	B5	1g	2g	LD	2g
P13	B4	B4	1c	2c	SP	2c
P14	B3	B3	1e	2e	S <sub>(SEP)</sub>	2e
P15	B2	B2	1d	2d	⊖ <sub>(SEP)</sub>	2d
P16	B1	B1	1h	SVHS	LP <sub>(SEP)</sub>	REVIEW

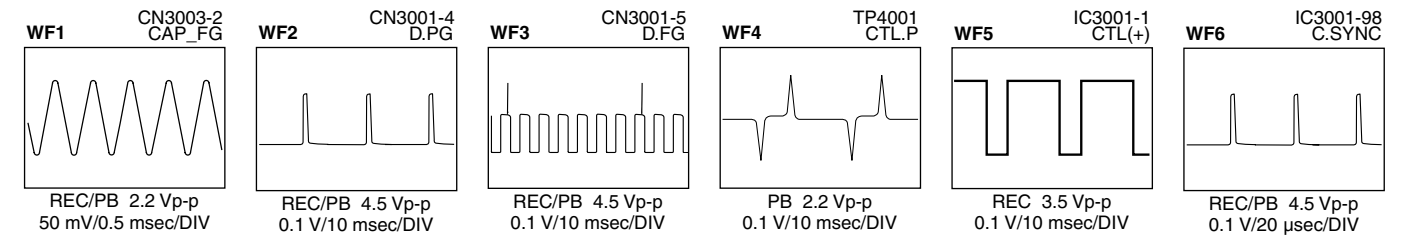
#### ANODE CONNECTION

[B]

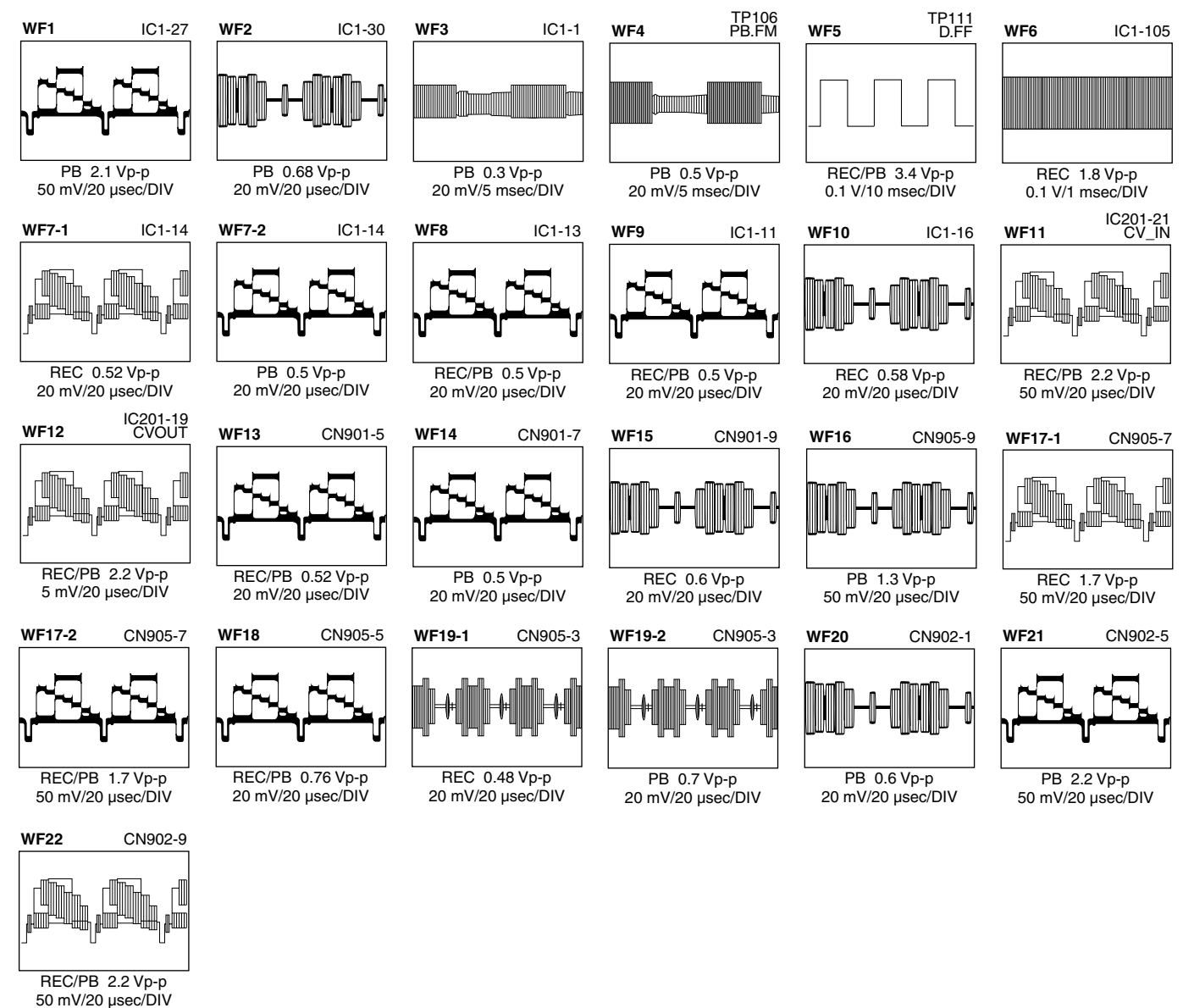
	5G	4G	3G	2G	1G
P 1	S2	▷	1a	1a	1a
P 2	S1	◁	1b	1b	1b
P 3	S3	3倍	1f	1f	1f
P 4	VPS/PDC	標準	1g	1g	1g
P 5	SVHS	Ⓢ	1c	1c	1c
P 6	—	△	1e	1e	1e
P 7	—	Ⓢ	1d	1d	1d
P 8	B9	VCR	col2	1h	1h
P 9	B8	ビデオ	2a	2a	2a
P10	B7	▷	2b	2b	2b
P11	B6	VN	2f	2f	2f
P12	B5	LD	2g	2g	2g
P13	B4	SP	2c	2c	2c
P14	B3	S <sub>(SEP)</sub>	2e	2e	2e
P15	B2	⊖ <sub>(SEP)</sub>	2d	2d	2d
P16	B1	LP <sub>(SEP)</sub>	2h	col1	REVIEW

### 4.18 WAVEFORMS

< SYSCON >



< VIDEO >





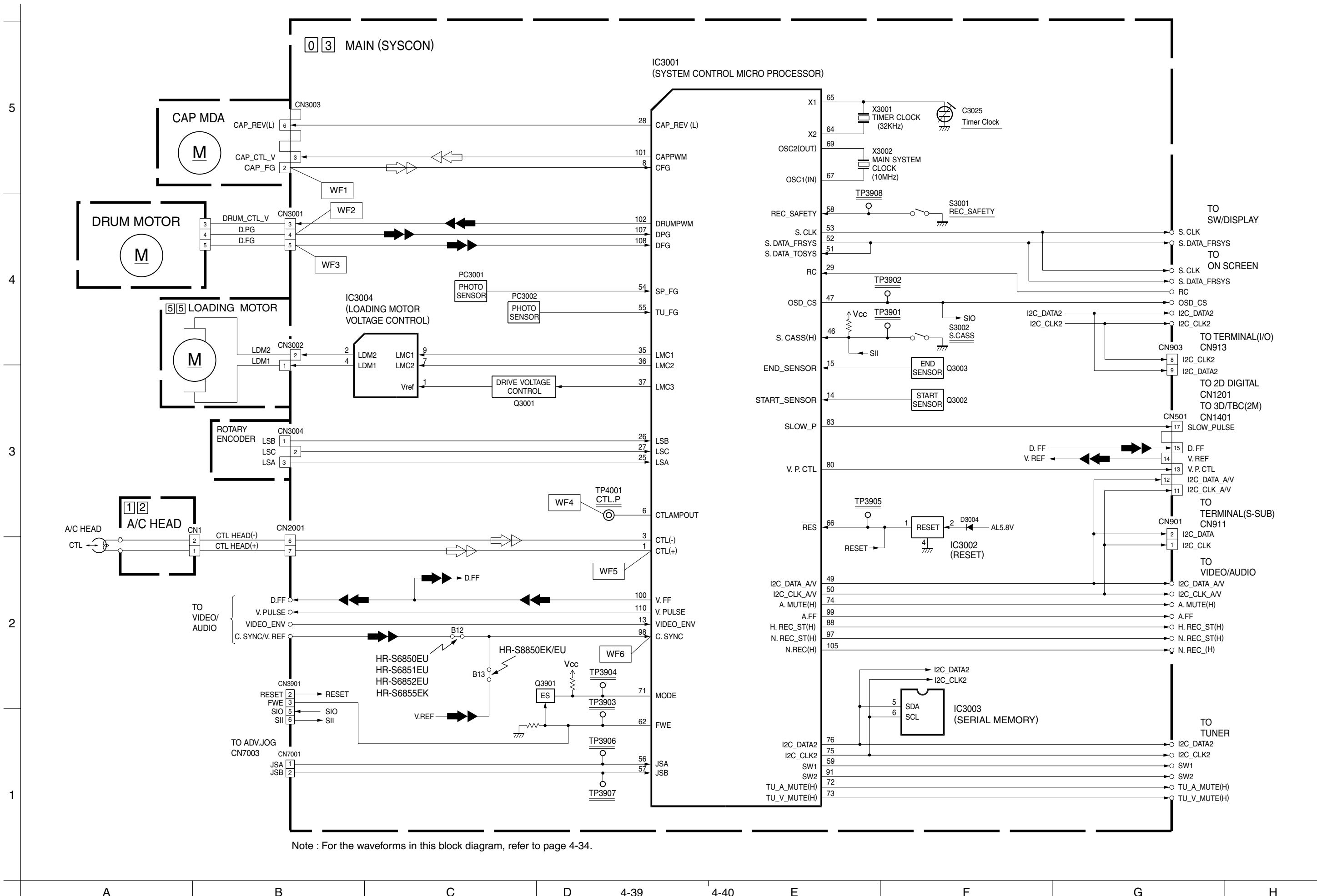
## 4.20 CPU PIN FUNCTION

### <SYSCON IC3001>

PIN NO.	LABEL	IN/OUT	FUNCTION
1	CTL(+)	IN/OUT	CTL(+) SIGNAL
2	SVSS	-	GND
3	CTL(-)	IN/OUT	CTL(-) SIGNAL
4	CTLBIAS	-	CTL BIAS VOLTAGE
5	CTLFB	IN	CTL PULSE FEEDBACK
6	CTLAMPOUT	OUT	CTL PULSE OUTPUT
7	CTLSMTIN	IN	CTL PULSE INPUT
8	CFG	IN	CAPSTAN FG PULSE INPUT
9	SVCC	-	SYSTEM POWER
10	AVCC	-	SYSTEM POWER FOR ANALOG CIRCUIT
11	NORM/MESEC/S	IN	SVHS MODE:H
12	SECAM_DET	IN	NC
13	VIDEO_ENV	IN	AUTO TRACKING DETECT/INPUT THE AVERAGE OF PLAYBACK VIDEO SIGNAL
14	START_SENSOR	IN	START SENSOR
15	END_SENSOR	IN	END SENSOR
16	IND(L)	-	NC
17	PROTECT	IN	DETECTION SIGNAL FOR SW POWER SUPPLY
18	SCR_ID	IN	SCRAMBLE CONTROL INPUT (SCRAMBLE:H)
19	IND(R)	-	NC
20	AFC	IN	TUNING CHECK
21	RF AGC	IN	CHANGES IN ATSC OUTPUT AS CAUSED BY CHANGES IN RECEIVER SENSITIVITY WHEN THE SAME CHANNEL IS RECEIVED MORE THAN ONCE ARE INPUT
22	A.ENV/ND(L)	IN	AUDIO PB FM ENV.INPUT/NON HIFI MODE:L
23	AVSS	-	GND FOR ANALOG CIRCUIT
24	CTL_GAIN	OUT	CONTROL AMP OUT FREQUENCY RESPONSE SWITCHING
25	LSA	IN	MECHANISM MODE DETECT(A)
26	LSB	IN	MECHANISM MODE DETECT(B)
27	LSC	IN	MECHANISM MODE DETECT(C)
28	CAP_REV(L)	OUT	CAPSTAN MOTOR REVERSE CONTROL (FWD:H/REV:L)
29	RC	IN	REMOTE CONTROL DATA INPUT
30	LOCK(L)	IN	TUNING PLL LOCK DETECT:L
31	P50_IN	IN	CONTROL SIGNAL FOR TV LINK
32	R.PAUSE	-	NC
33	P50_OUT	OUT	CONTROL SIGNAL FOR TV LINK
34	P.SAVE(L)	OUT	POWER SAVE:L
35	LMC1	OUT	LOADING MOTOR DRIVE(1)
36	LMC2	OUT	LOADING MOTOR DRIVE(2)
37	LMC3	OUT	LOADING MOTOR DRIVE(3)
38	SB_G(PWM)	OUT	VOLTAGE CONTROL SIGNAL FOR VIDEO FREQUENCY RESPONSE
39	STB/TEST	OUT	STROBE SIGNAL (FOR FDP DRIVER)
40	POWER_DET	IN	DETECTION SIGNAL FOR POWER DOWN OF AC POWER SUPPLY
41	P.CTL(H)	OUT	CONTROL SIGNAL FOR SWITCHING POWER SUPPLY
42	SP(H)	-	NC
43	VSS	-	GND
44	RMO	OUT	REMOTE CONTROL OUTPUT FOR SATELLITE RECEIVER
45	VCC	-	SYSTEM POWER
46	S.CASS(H)	IN	DETECTION SIGNAL FOR SVHS CASSETTE (SVHS:H)
47	OSD_CS	OUT	CHIP SELECT FOR THE ON-SCREEN IC
48	ET_PB(H)	-	NC
49	I2C_DATA_A/V	IN/OUT	SERIAL DATA TRANSFER OUTPUT FOR THE VIDEO/AUDIO IC
50	I2C_CLK_A/V	OUT	SERIAL DATA TRANSFER CLOCK FOR THE VIDEO/AUDIO IC
51	S.DATA_TOSYS	IN	SERIAL DATA TRANSFER OUTPUT FROM THE ON-SCREEN IC TO THE FDP DRIVER
52	S.DATA_FRSYS	OUT	SERIAL DATA TRANSFER OUTPUT FROM THE FDP DRIVER TO THE ON-SCREEN IC
53	S.CLK	OUT	SERIAL DATA TRANSMISSION CLOCK FROM THE FDP DRIVER TO THE ON-SCREEN IC
54	SP_FG	IN	DETECTION SIGNAL FOR SUPPLY REEL ROTATION/TAPE REMAIN
55	TU_FG	IN	DETECTION SIGNAL FOR TAKE-UP REEL ROTATION/TAPE REMAIN
56	JSA	IN	INPUT FOR THE JOG SHUTTLE

PIN NO.	LABEL	IN/OUT	FUNCTION
57	JSB	IN	INPUT FOR THE JOG SHUTTLE
58	REC_SAFETY	IN	REC SAFETY SWITCH DETECT (SW ON:L)
59	SW1	OUT	TUNER SYSTEM MODE:H
60	TU_CLK	OUT	CLOCK FOR DATA TRANSFER TO THE TUNER UNIT
61	TU_DATA	OUT	TUNING DATA
62	FWE	OUT	FLASH WRITE ENABLE
63	NMI(L)	-	NC
64	X2	-	TIMER CLOCK (32.768KHz)
65	X1	-	TIMER CLOCK (32.768KHz)
66	RES(L)	-	RESET TERMINAL (RESET ON:L)
67	OSC1(IN)	-	MAIN SYSTEM CLOCK(10MHz)
68	VSS	-	GND
69	OSC2(OUT)	-	MAIN SYSTEM CLOCK(10MHz)
70	VCC/VCL	-	SYSTEM POWER
71	MODE	IN	FWE MODE
72	TU_A_MUTE(H)	OUT	TUNER AUDIO MUTE CONTROL (MUTE:H)
73	TU_V_MUTE(H)	OUT	TUNER VIDEO CONTROL (MUTE:H)
74	A.MUTE(H)	OUT	AUDIO MUTE CONTROL (MUTE:H)
75	I2C_CLK2	OUT	SERIAL DATA TRANSFER CLOCK FOR MEMORY IC
76	I2C_DATA2	IN/OUT	SERIAL DATA TRANSFER OUTPUT FOR MEMORY IC
77	FLY_REC(H)	-	NC
78	P.ON_PULSE/3.58 NTSC(L)	OUT	P.ON_PULSE(H)
79	V.UP(H)/V.DOWN(L)/EE(L)	OUT	HIGH SPEED FF/REW TURBO SEARCH:H
80	V.P.CTL	-	NC
81	VHS(H)	OUT	VHS MODE(H)
82	VCC	-	SYSTEM POWER
83	SLOW_P	-	NC
84	VSS	-	GND
85	SP_SHORT(H)	OUT	MODE SELECT
86	LP_SHORT(H)	OUT	MODE SELECT
87	FLY_ON(H)	-	NC
88	H.REC_ST(H)	OUT	HIFI AUDIO SOUND RECORDING START
89	TRICK(H)	-	NC
90	HEAD_SEL	OUT	HEAD SELECT(LP HEAD:H, SP HEAD:L)
91	SW2	OUT	TUNER SYSTEM MODE:L
92	SYNC_DET(H)	IN	DETECTION OF VIDEO SYNC SIGNAL (DETECTED:H)
93	MESECAM(H)	OUT	MESECAM:H
94	SECAM(H)	-	NC
95	PAL_PB(H)	OUT	PAL FM (PB ON:H)
96	SEP_PB(H)	OUT	PAL EP MODE(H)
97	N.REC_ST(H)	OUT	NORMAL AUDIO SOUND RECORDING START
98	C.SYNC	IN	COMPOSITE SYNC
99	A.FF	OUT	AUDIO FF OUTPUT
100	V.FF	OUT	ROTATION DETECTION SIGNAL FOR DRUM MOTOR/TIMING CONTROL SIGNAL FOR REC
101	CAPPWM	OUT	CAPSTAN MOTOR CONTROL
102	DRUMPWM	OUT	DRUM MOTOR CONTROL
103	P.MUTE(L)	OUT	PICTURE MUTE CONTROL(MUTE:L)
104	FULL_E_ON(H)	-	NC
105	N.REC(H)	OUT	NORMAL AUDIO REC MODE CONTROL SIGNAL (REC:H)
106	V.DOWN(L)/HI_FF/REW(L)	OUT	NC/HIGH SPEED FF/REW:L
107	DPG	IN	DRUM PICKUP PULSE INPUT (SWITCHING PULSE)
108	DFG	IN	DRUM FG PULSE INPUT
109	VCC	-	SYSTEM POWER
110	V.PULSE	OUT	V.PULSE ADDITION TIMING CONTROL
111	VSS	-	GND
112	CTLREF	-	CTL REFERENCE VOLTA

4.21 SYSTEM BLOCK DIAGRAM

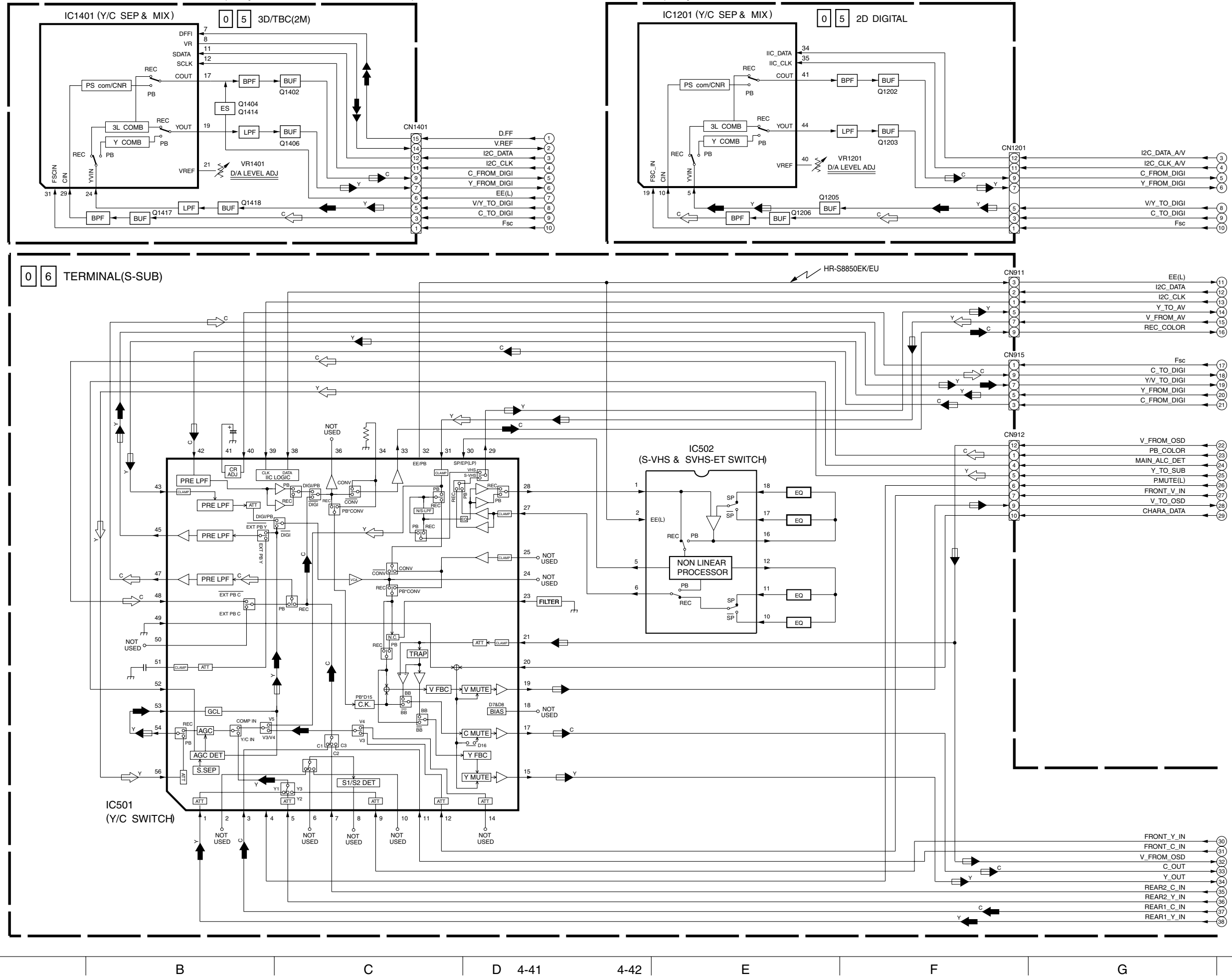


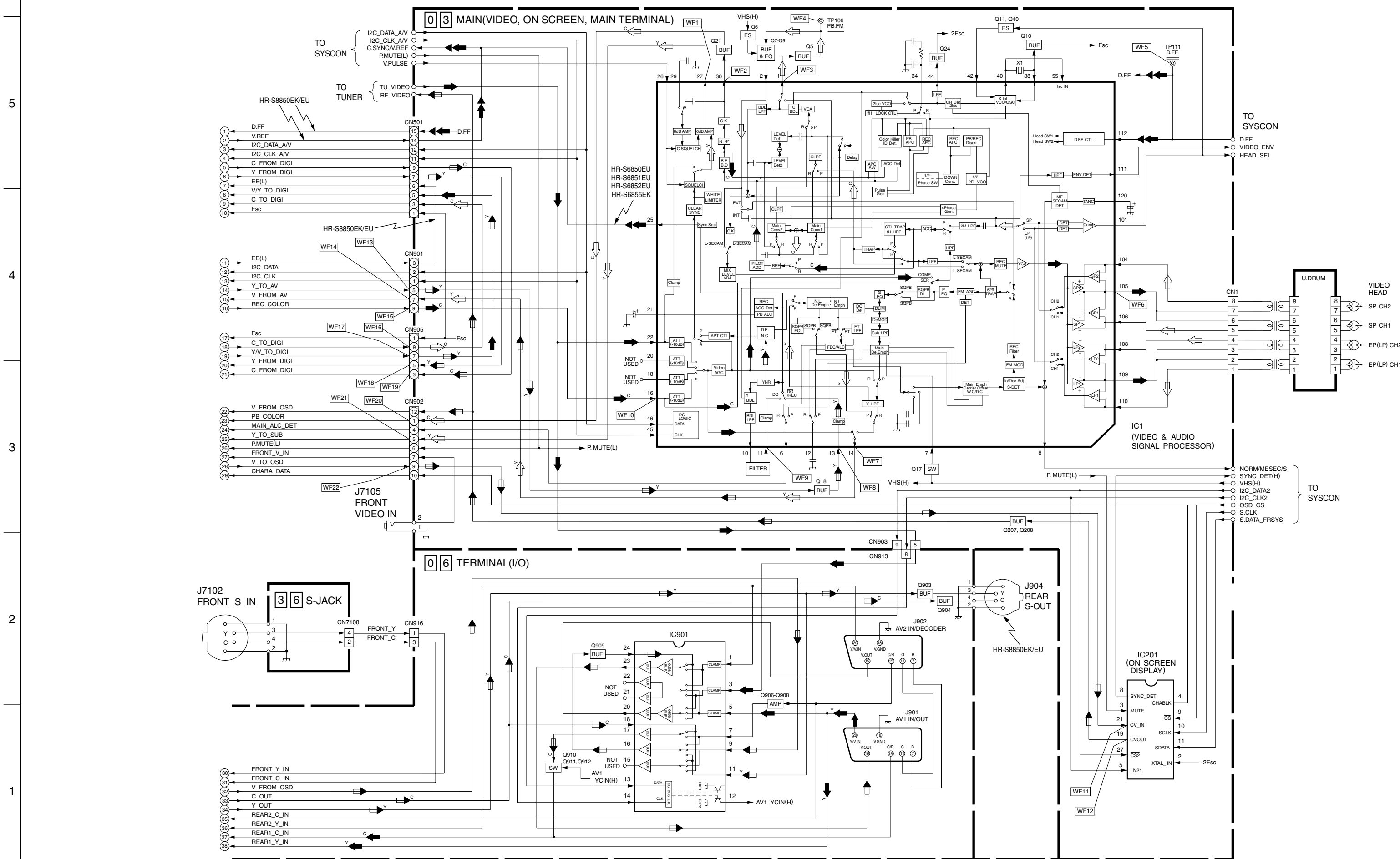
Note : For the waveforms in this block diagram, refer to page 4-34.

4.22 VIDEO BLOCK DIAGRAM

(Only used for HR-S8850EK/EU)

(Only used for HR-S6850EU/S6851EU/S6852EU/S6855EK)

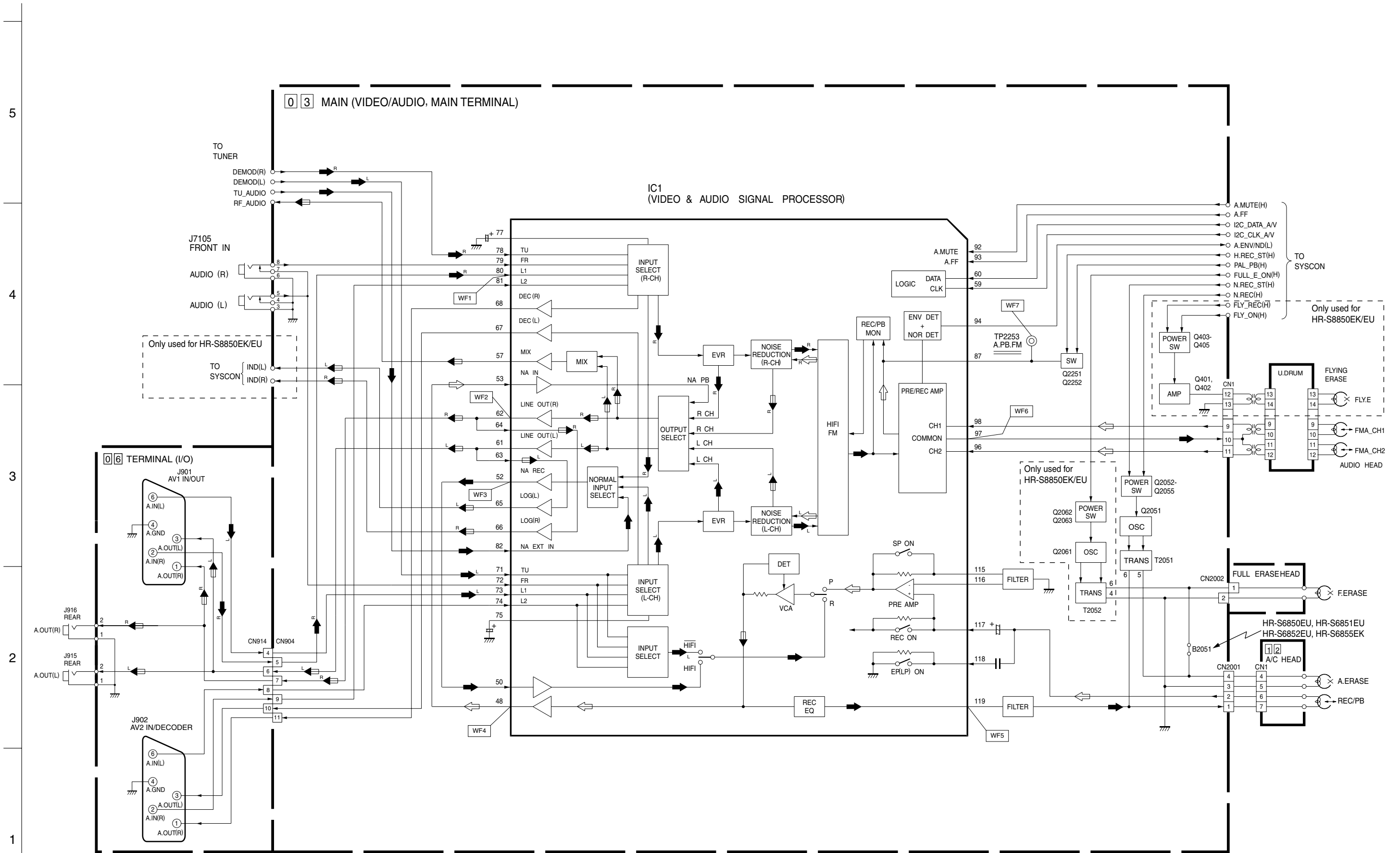




Note : For the waveforms in this block diagram, refer to page 4-34.



4.23 AUDIO BLOCK DIAGRAM



Note : For the waveforms in this block diagram, refer to page 4-35.

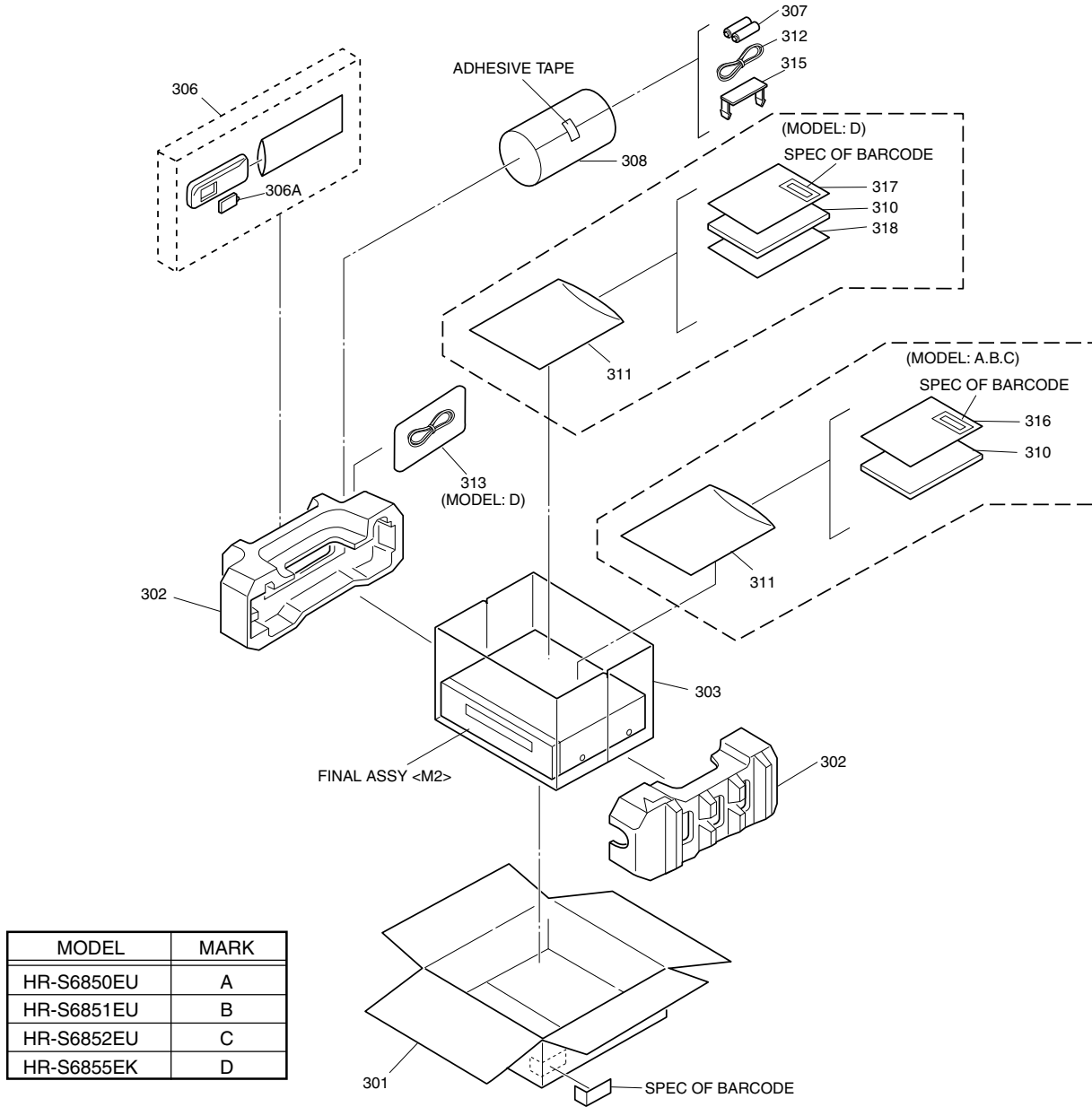
# SECTION 5 PARTS LIST

## SAFETY PRECAUTION

Parts identified by the  $\triangle$  symbol are critical for safety. Replace only with specified part numbers.

### 5.1 PACKING AND ACCESSORY ASSEMBLY <M1>

The instruction manual to be provided with this product will differ according to the destination.



MODEL	MARK
HR-S6850EU	A
HR-S6851EU	B
HR-S6852EU	C
HR-S6855EK	D

#  $\triangle$  REF No. PART No. PART NAME, DESCRIPTION  
\*\*\*\*\*

### PACKING AND ACCESSORY ASSEMBLY <M1>

301	LP30855-002B	PACKING CASE
302	LP30909-001C	CUSHION ASSY
303	PQM30021-93	POLY BAG
306	LP20878-010A	REMOTE CONTROLLER,A,B,D
	LP20878-011A	REMOTE CONTROLLER,C
306A	LP40610-001A	COVER(BATTERY),C
	LP40610-002A	COVER(BATTERY),A,B,D
307	-	BATTERY,X2("R6"TYPE)
308	QPC02202230P	POLY BAG

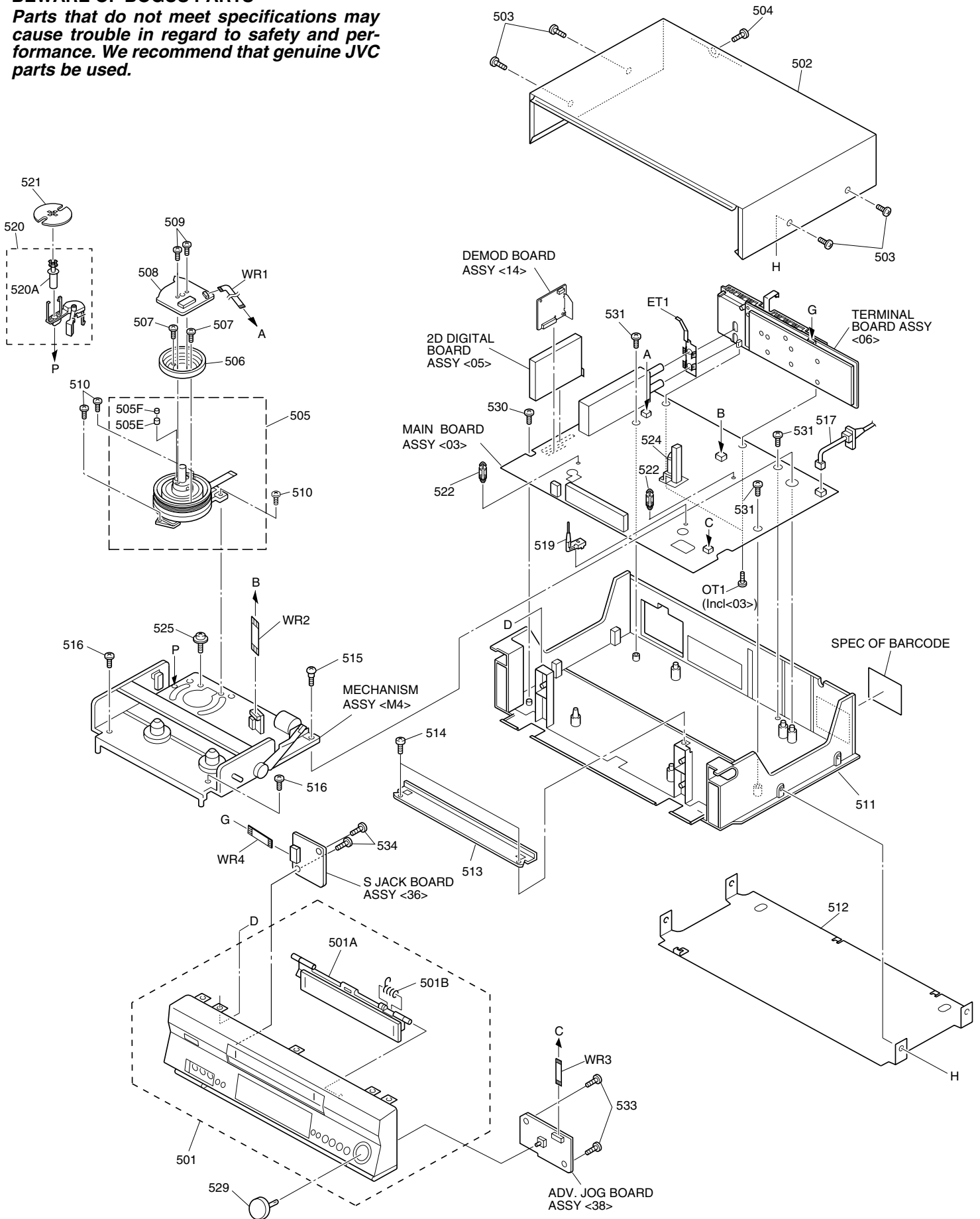
#  $\triangle$  REF No. PART No. PART NAME, DESCRIPTION

$\triangle$	310	LPT0485-001A	INST BOOK(EN),A,B,C
$\triangle$		LPT0485-002A	INST BOOK(GE),A,B,C
$\triangle$		LPT0546-001B	INST BOOK(EN),D
	311	QPC02503530P	POLY BAG
	312	PEAC0300-02	RF CABLE
	313	QAL0095-005	LEAD CABLE ASSY,D
	315	LP30809-001B	CAP(JACK)
	316	BT-54013-2	WARRANTY CARD,A,B,C
	317	BT-54008-2	GUARANTY CARD,D
	318	LYT0194-001B	Q. CARD(JUK),D

## 5.2 FINAL ASSEMBLY <M2>

### BEWARE OF BOGUS PARTS

*Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.*



# ▲ REF No. PART No. PART NAME, DESCRIPTION

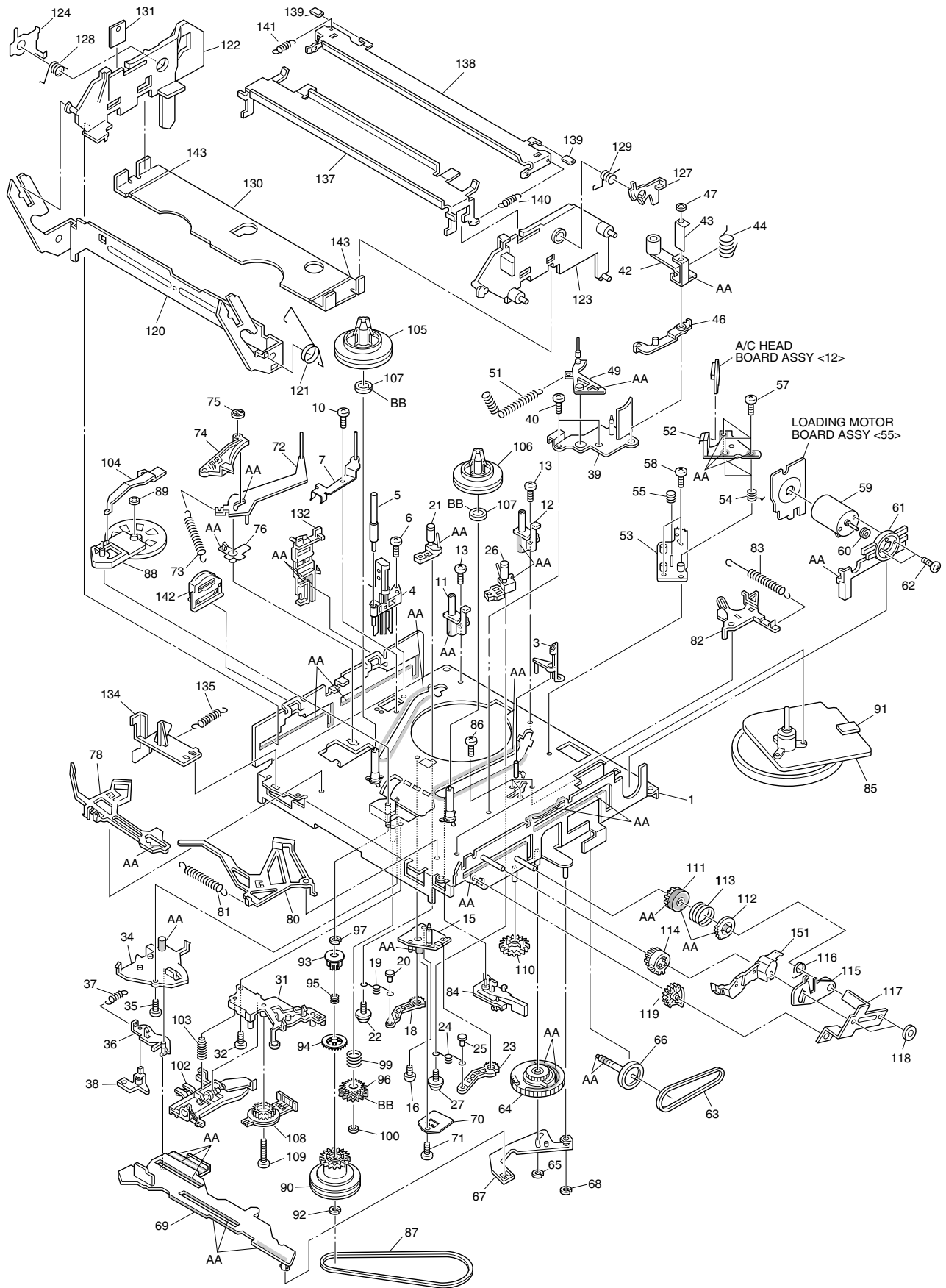
# ▲ REF No. PART No. PART NAME, DESCRIPTION

\*\*\*\*\*

**FINAL ASSEMBLY <M2>**

▲	501	LP10333-017E	FRONT PANEL ASSY,D
▲		LP10333-023C	FRONT PANEL ASSY,C
▲		LP10333-026C	FRONT PANEL ASSY,B
▲		LP10333-025C	FRONT PANEL ASSY,A
	501A	LP20961-011B	CASSETTE DOOR,C
		LP20961-007B	CASSETTE DOOR,A,B,D
	501B	PQ46448	TORSION SPRING
▲	502	LP10013-023D	TOP COVER,C
▲		LP10013-051A	TOP COVER,A,B,D
	503	QYTDSF3010M	SCREW,X4 TOP COVER(SIDE),C
		QYTDSF3010R	SCREW,X4 TOP COVER(SIDE),A,B,D
	504	QYTDSF3010M	SCREW,TOP COVER(REAR)
	505	LP20981-011A	DRUM SUB ASSY
	505E	LP40323-001A	CONTACT
	505F	LP30004-014A	COMPRESSION SPRING
	506	PDZ0179-1-4	ROTOR ASSY
	507	QYSPSP3006Z	SCREW,X2
▲	508	QAR0169-002	STATOR ASSY
	509	QYSPSPH2606Z	SCREW,X2
	510	QYTDST2610Z	SCREW,X3 DRUM
▲	511	LP10108-016E	BOTTOM CHASSIS
	512	LP10014-002B	BOTTOM COVER
	513	LP30312-001B	BRACKET(CHASSIS)
	514	QYTDSF3010Z	SCREW,X2
	515	LP40700-001A	SPACIAL SCREW,MECHA
	516	QYTDSF3010Z	SCREW,X2 MECHA
▲	517	QMP4A10-170	POWER CORD,A,B,C
▲		QMP51K0-170-K	POWER CORD,D
	519	LP40407-001A	KNOB ASSY
	520	LP40370-001E	ROLLER ARM ASSY
	520A	PDM4311A-1	ROLLER ASSY
	521	PQ45160	INERTIA PLATE
	522	LP40226-001A	PC SUPPORT,X2
	524	LP40253-001B	STOPPER
	525	PQ40413	SPECIAL SCREW,MECHA
	529	LP31019-001C	KNOB ASSY,A,B,D
		LP31019-004C	KNOB ASSY,C
	530	QYTDSF3010Z	SCREW,MAIN
	531	DPSF3010Z	SCREW,X3 MAIN
	533	QYTSPFG2608Z	SCREW,X2 A/J
	534	QYTDSF2608Z	SCREW,X2 S JACK
	WR1	QUQ212-0524CG	FFC WIRE,DRUM CN3001
	WR2	WJT0005-001A	E-CARD WIRE,A/C HEAD CN2001
	WR3	QUQ112-0914CG	FFC WIRE,A/J CN7001
	WR4	QUQ212-0456CG	FFC WIRE,S JACK CN916

### 5.3 MECHANISM ASSEMBLY <M4>



Classification	Part No.	Symbol in drawing
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

**NOTE:**The section marked in **AA** and **BB** indicate lubrication and greasing areas.

#	△	REF No.	PART No.	PART NAME, DESCRIPTION	#	△	REF No.	PART No.	PART NAME, DESCRIPTION
*****									
<b>MECHANISM ASSEMBLY &lt;M4&gt;</b>									
1			LP20821-006A	MAIN DECK ASSY	75			PQ46302-1-3	ADJUST PIN
3			LP30492-002B	GUIDE POLE GUARD	76			LP30232-002A	TENSION ARM BEARING
4			NAH0001-001	FULL ERASE HEAD	78			LP40532-008B	MAIN BRAKE ASSY (SUPPLY)
5			LP40098-001B	GUIDE POLE(SUPPLY)	80			LP40111-011A	MAIN BRAKE ASSY (TAKE UP)
6			QYTDST2608Z	SCREW,FE HEAD	81			LP30003-026A	TENSION SPRING
7			LP40637-002A	TENSION STUD BASE ASSY	82			LP40112-001F	SUB BRAKE ASSY(TAKE UP)
10			QYTDST2606Z	SCREW	83			LP40357-002A	TENSION SPRING
11			LP30409-002C	UV CATCHER 2(SUPPLY)	84			LP40461-001A	CAPSTAN BRAKE ASSY
12			LP30409-002C	UV CATCHER 2(TAKE UP)	85			QAR0087-005	CAPSTAN MOTOR
13			QYTPST2606Z	SCREW,X2	86			QYTDST2606M	SCREW,X3
15			LP30223-003C	LOADING ARM GEAR SHAFT	87			LP30005-007A	BELT,CAPSTAN MOTOR
16			QYTDST2606Z	SCREW	88			LP40114-012A	IDLER ARM ASSY
18			LP30224-001B	LOADING ARM GEAR(SUPPLY)	89			LP40599-001A	WASHER
19			LP40099-001A	TORSION ARM	90			LP40593-001A	CLUTCH UNIT 3
20			LP40100-001A	PIN	91			LP30002-097A	SPACER,CAPSTAN MOTOR
21			LP40101-006A	POLE BASE ASSY(SUPPLY)	92			PQM30017-47	SLIT WASHER
22			QYSPSTG2606Z	SCREW	93			LP30696-002A	CLUTCH GEAR 4
23			LP40103-002B	LOADING ARM GEAR(TAKE UP)	94			LP30697-003A	COUPLING GEAR
24			LP40099-001A	TORSION ARM	95			LP40554-002A	COMPRESSION SPRING
25			LP40100-002A	PIN	96			LP40442-001A	DIRECT GEAR
26			LP40104-006A	POLE BASE ASSY(TAKE UP)	97			LP30017-019A	SPACER
27			QYSPSTG2606Z	SCREW	99			LP40483-002A	COMPRESSION SPRING
31			LP20233-004B	ROTARY ENCODER GUIDE	100			LP30016-001A	SLIT WASHER
32			QYTPST2606Z	SCREW	102			LP40484-001J	CHANGE LEVER ASSY
34			LP30226-004E	CONTROL PLATE GUIDE	103			LP40512-002B	COMPRESSION SPRING
35			QYTPST2605Z	SCREW	104			LP30236-002C	IDLER LEVER
36			LP30249-003B	TAKE UP LEVER	105			LP20237-001B	REEL DISK (SUPPLY)
37			LP30003-006A	TENSION SPRING	106			LP20238-001B	REEL DISK (TAKE UP)
38			LP40119-002A	TAKE UP HEAD	107			LP30017-015A	SPACER,X2
39			LP20234-004B	LID GUIDE	108			QSW0554-003	ROTARY ENCODER
40			QYTDST2606Z	SCREW,X2	109			QYTPST2620Z	SCREW
42			LP40105-003A	PINCH ROLLER ARM ASSY	110			LP30237-002B	CASSETTE GEAR
43			LP40753-001A	PINCH ROLLER SHEET3	111			LP30239-002G	LIMIT GEAR(1)
44			LP40148-002A	TORSION SPRING	112			LP30240-002G	LIMIT GEAR(2)
46			LP40149-001C	PRESS LEVER ASSY	113			LP40136-001E	TORSION SPRING
49			LP40106-007A	GUIDE ARM ASSY	114			LP30242-002A	RELAY GEAR
51			LP40134-002A	TENSION SPRING	115			LP30339-002E	OPENER GUIDE
52			QAH0058-001	AC HEAD	116			LP40545-001A	TORSION SPRING
53			LP30228-001C	HEAD BASE	117			LP40214-001B	C.H.BRACKET
54			LP30004-013A	COMPRESSION SPRING,X3	118			PQM30017-47	SLIT WASHER,X2
55			LP40236-001A	COMPRESSION SPRING	119			LP30243-002A	DRIVE GEAR
57			LP40213-002B	SPECIAL SCREW,X3	120			LP20240-001G	DRIVE ARM
58			QYTDST2608Z	SCREW,X2	121			LP40137-001A	TORSION SPRING
59			QAR0023-001	LOADING MOTOR	122			LP10081-002L	SIDE HOLDER(L)
60			PQ43546-1-2	MOTOR PULLEY	123			LP10082-002M	SIDE HOLDER(R)
61			LP30230-001B	MOTOR GUIDE	124			LP30255-006A	LOCK LEVER(L)
62			QYTPSP3003Z	SCREW,X2	127			LP30256-001H	LOCK LEVER(R)
63			LP30005-003A	BELT,LOADING MOTOR	128			LP40168-003A	TORSION SPRING(L)
64			LP20791-002D	CONTROL CAM	129			LP40218-001B	TORSION SPRING(R)
65			PQM30017-24	SLIT WASHER	130			LP30257-001G	CASSETTE HOLDER
66			LP40120-001A	WORM GEAR	131			LP40852-001A	EARTH PLATE
67			LP40107-002A	LINK LEVER ASSY	132			LP30244-002G	GUIDE RAIL
68			PQM30017-24	SLIT WASHER	134			LP30245-002F	REC SAFETY LEVER
69			LP10201-003G	CONTROL PLATE	135			LP30003-004A	TENSION SPRING
70			LP40379-001B	CONTROL BRACKET(1)	137			LP20578-001C	TOP GUIDE
71			QYTDST2608M	SCREW	138			LP30500-001C	HOLD PLATE
72			LP40108-002A	TENSION ARM ASSY	139			LP40450-003A	PAD,X2
73			LP30003-010A	TENSION SPRING	140			LP30003-025B	TENSION SPRING
74			LP40109-003D	TENSION BRAKE ASSY	141			LP30003-024A	TENSION SPRING
					142			LP40481-003A	ROLLER CAM ASSY
					143			LP30019-014A	PAD,X2
					152			LP20324-003B	DOOR OPENER

## 5.4 ELECTRICAL PARTS LIST

#	△ REF No.	PART No.	PART NAME, DESCRIPTION
*****			
<b>MAIN BOARD ASSEMBLY &lt;03&gt;</b>			
PW1		LPA10140-01B	MAIN BOARD ASSY
IC1		JCP8050-MSA	IC
IC201		LC74775-9750	IC
IC3001		HD6432194SBD11F	IC (MCU)
IC3002		IC-PST3427U-X	IC
IC3003		24LC32A-I/SN-X	IC
		or HN58X2432FPI	IC
		or BR24C32F	IC
IC3004		BA6956AN	IC
IC5301		L5431	IC
		or MM1431AT	IC
		or UTCTL431	IC
IC7001		PT6312LQ	IC
		or UPD16312GB/H/	IC
IC7003		GP1U291Q	IR DETECT UNIT
		or PIC-28143LJ	IR DETECT UNIT
		or PIC-37143LJ	IR DETECT UNIT
		or PNA4652M00YC	IR DETECT UNIT
Q1		2SC4081/S/-X	TRANSISTOR
Q2		2SC4081/S/-X	TRANSISTOR
Q3		2SC4081/S/-X	TRANSISTOR
Q4		2SC4081/S/-X	TRANSISTOR
Q5		2SB1218A/QR/-X	TRANSISTOR
		or 2SA1576A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
Q7		2SD1819A/QRS/-X	TRANSISTOR
		or 2SC4081/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
Q8		2SD1819A/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SC4081/QRS/-X	TRANSISTOR
Q9		2SB1218A/QR/-X	TRANSISTOR
		or 2SA1576A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
Q10		2SA1576A/QR/-X	TRANSISTOR
Q11		DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR
		or RN1309	TRANSISTOR
		or UN521E	TRANSISTOR
Q17		DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR
		or RN1309	TRANSISTOR
		or UN521E	TRANSISTOR
Q18		2SB1218A/QR/-X	TRANSISTOR
		or 2SA1576A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
Q21		2SB1218A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
		or 2SA1576A/QR/-X	TRANSISTOR
Q24		2SB1218A/QR/-X	TRANSISTOR
		or 2SA1576A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
Q38		2SD1819A/QRS/-X	TRANSISTOR
		or 2SC4081/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
Q40		DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR

#	△ REF No.	PART No.	PART NAME, DESCRIPTION
		or RN1309	TRANSISTOR
		or UN521E	TRANSISTOR
Q41		DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR
		or RN1309	TRANSISTOR
		or UN521E	TRANSISTOR
Q207		2SB1218A/QR/-X	TRANSISTOR
		or 2SA1576A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
Q208		2SD1819A/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SC4081/QRS/-X	TRANSISTOR
Q2001		2SC4081/QRS/-X	TRANSISTOR
		or 2SD1819A/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
Q2002		2SC4081/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SD1819A/QRS/-X	TRANSISTOR
Q2003		DTA144WU	TRANSISTOR
		or PDTA144WU	TRANSISTOR
		or RN2309	TRANSISTOR
		or UN511E	TRANSISTOR
Q2004		DTC114EU	TRANSISTOR
		or PDTC114EU	TRANSISTOR
		or RN1302	TRANSISTOR
		or UN5211	TRANSISTOR
Q2051		2SC4081/QRS/-X	TRANSISTOR
		or 2SD1819A/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
Q2052		2SA1576A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
		or 2SB1218A/QR/-X	TRANSISTOR
Q2053		DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR
		or RN1309	TRANSISTOR
		or UN521E	TRANSISTOR
Q2054		2SA1576A/QR/-X	TRANSISTOR
		or 2SB1218A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
Q2055		DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR
		or RN1309	TRANSISTOR
		or UN521E	TRANSISTOR
Q2251		DTA144WU	TRANSISTOR
		or UN511E	TRANSISTOR
		or RN2309	TRANSISTOR
		or PDTA144WU	TRANSISTOR
Q2252		DTC114EU	TRANSISTOR
		or PDTC114EU	TRANSISTOR
		or RN1302	TRANSISTOR
		or UN5211	TRANSISTOR
Q3001		2SD1819A/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SC4081/QRS/-X	TRANSISTOR
Q3002		PTZ-NV16	PHOTO TRANSISTOR
		or PTZ-NV16A	PHOTO TRANSISTOR
Q3003		PTZ-NV16	PHOTO TRANSISTOR
		or PTZ-NV16A	PHOTO TRANSISTOR
Q3004		2SD1819A/QRS/-X	TRANSISTOR
		or 2SC4081/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
Q3005		2SD1819A/QRS/-X	TRANSISTOR

#	△	REF No.	PART No.	PART NAME, DESCRIPTION	#	△	REF No.	PART No.	PART NAME, DESCRIPTION
			or 2SC4081/QRS/-X	TRANSISTOR	D6		MTZJ5.1C	ZENER DIODE	
			or 2PC4081/R/-X	TRANSISTOR	D201		QRE141J-152Y	RESISTOR	1.5kΩ,1/4W
Q3007			UN521E	TRANSISTOR	D202		QRE141J-101Y	RESISTOR	100Ω,1/4W
			or RN1309	TRANSISTOR	D203		QRE141J-101Y	RESISTOR	100Ω,1/4W
			or DTC144WU	TRANSISTOR	D2202		MTZJ8.2C	ZENER DIODE	
			or PDTC144WU	TRANSISTOR	D3001		LNB2301L01VI	LE DIODE	
Q4001			UN5211	TRANSISTOR	D3002		1SS133	DIODE	
			or RN1302	TRANSISTOR			or 1SS270A	DIODE	
			or DTC114EU	TRANSISTOR	D3003		RD39ES/B3/-T2	ZENER DIODE	
			or PDTC114EU	TRANSISTOR			or MTZJ39C	ZENER DIODE	
Q5101			2SK2632-CB14	POWER MOS FET	D3004		11ES2	DIODE	
			or 2SK2632	POWER MOS FET			or 1A3G	DIODE	
			or 2SK2129	POWER MOS FET	D3005		11ES2	DIODE	
			or 2SK2129-LT	POWER MOS FET			or 1A3G	DIODE	
Q5102			2SD2144S/UV/-T	TRANSISTOR	D3008		1SS355	DIODE	
Q5301			2SB1256	TRANSISTOR	D4001		QUY153-050Y	IM BUS WIRE	
Q5302			2SD2375/QP/	TRANSISTOR	D4002		QUY153-050Y	IM BUS WIRE	
Q5303			2SD1819A/RS/-X	TRANSISTOR	D5001		S1WB/A/60-4102	BRIDGE DIODE	
			or 2SC4081/RS/-X	TRANSISTOR			or S1WB/A/60-X	BRIDGE DIODE	
			or 2PC4081/R/-X	TRANSISTOR			or S1WB(A)60F4072X	BRIDGE DIODE	
Q5304			2SC3616/ML/-T	TRANSISTOR	D5101		AU01	FR DIODE	
Q5305			DTA114EU	TRANSISTOR			or ERA18-04-T2	FR DIODE	
			or RN2302	TRANSISTOR			or 1SR153-400-T2	FR DIODE	
			or UN5111	TRANSISTOR			or 10ELS4	FR DIODE	
			or PDTA114EU	TRANSISTOR	D5102		AU01	FR DIODE	
Q5306			DTC114EU	TRANSISTOR			or ERA18-04-T2	FR DIODE	
			or PDTC114EU	TRANSISTOR			or 1SR153-400-T2	FR DIODE	
			or UN5211	TRANSISTOR			or 10ELS4	FR DIODE	
			or RN1302	TRANSISTOR	D5103		1SS133	DIODE	
Q5308			2SA1576A/RS/-X	TRANSISTOR			or 1SS270A	DIODE	
Q5311			DTC114TU	TRANSISTOR	D5105		1SS133	DIODE	
			or PDTC114TU	TRANSISTOR			or 1SS270A	DIODE	
			or RN1311	TRANSISTOR	D5201		AU01Z	FR DIODE	
			or UN5215	TRANSISTOR			or 10ELS2	FR DIODE	
Q5312			2SD2144S/UV/-T	TRANSISTOR	D5203		AU01Z	FR DIODE	
Q5318			DTA114EU	TRANSISTOR			or 10ELS2	FR DIODE	
			or PDTA114EU	TRANSISTOR	D5204		AU01Z	FR DIODE	
			or RN2302	TRANSISTOR			or 10ELS2	FR DIODE	
			or UN5111	TRANSISTOR	D5206		FMB-24	BARRIER DIODE	
Q5320			DTC114EU	TRANSISTOR			or SB640FCT	SB DIODE	
			or PDTC114EU	TRANSISTOR			or SF5SC4	SB DIODE	
			or UN5211	TRANSISTOR			or FSQ05A04B	SB DIODE	
			or RN1302	TRANSISTOR			or YG801C04	SB DIODE	
Q5322			DTC114TU	TRANSISTOR	D5209		ERA18-02-T2	FR DIODE	
			or PDTC114TU	TRANSISTOR			or PG104RS	FR DIODE	
			or RN1311	TRANSISTOR			or 1SR153-400-T2	FR DIODE	
			or UN5215	TRANSISTOR			or 10ELS2	FR DIODE	
Q5323			2SB927/ST/-T	TRANSISTOR	D5210		AU01Z	FR DIODE	
Q6030			2SB1218A/QR/-X	TRANSISTOR			or ERA18-02-T2	FR DIODE	
			or 2SA1576A/QR/-X	TRANSISTOR			or PG104RS	FR DIODE	
			or 2PA1576/R/-X	TRANSISTOR			or 10ELS2	FR DIODE	
Q6031			DTC114EU	TRANSISTOR			or 1SR153-400-T2	FR DIODE	
			or PDTC114EU	TRANSISTOR	D5211		AU01Z	FR DIODE	
			or RN1302	TRANSISTOR			or ERA18-02-T2	FR DIODE	
			or UN5211	TRANSISTOR			or 10ELS2	FR DIODE	
Q6032			DTC114EU	TRANSISTOR			or 1SR153-400-T2	FR DIODE	
			or PDTC114EU	TRANSISTOR			or PG104RS	FR DIODE	
			or UN5211	TRANSISTOR	D5301		MTZJ15C	ZENER DIODE	
			or RN1302	TRANSISTOR			or RD15ES/B3/-T2	ZENER DIODE	
Q7201			2SC1317/RS/-T	TRANSISTOR	D5302		1SS133	DIODE	
D1			DA204U	DIODE			or 1SS270A	DIODE	



#	△ REF No.	PART No.	PART NAME, DESCRIPTION	
D5303		RD5.1JS/B2/-T2 or MA4051N/M/-T2	ZENER DIODE ZENER DIODE	
D5304		1SS133 or 1SS270A	DIODE DIODE	
D5305		AK04 or 1S4 or 11EQS04	DIODE SB DIODE SB DIODE	
D5307		11ES2 or 1A3G or ERA15-02-T2	DIODE DIODE DIODE	
D5308		MTZJ11B or RD11ES/B2/-T2	ZENER DIODE ZENER DIODE	
D5309		MTZJ27C or RD27ES/B3/-T2	ZENER DIODE ZENER DIODE	
D5310		1SS133 or 1SS270A	DIODE DIODE	
D5316		QUY160-100Y	IM BUS WIRE	
D5317		1SS133 or 1SS270A	DIODE DIODE	
D5318		11ES2 or ERA15-02-T2 or 1A3G	DIODE DIODE DIODE	
D5319		11ES2 or 1A3G or ERA15-02-T2	DIODE DIODE DIODE	
D6002		HZ30-2L-T2 or HZ30-2LTD	ZENER DIODE Z DIODE (M)	
D7001		RD9.1ES/B2/-T2 or MTZJ9.1B or UZ9.1BSB	ZENER DIODE ZENER DIODE ZENER DIODE	
D7003		1SS133 or 1SS270A	DIODE DIODE	
D7004		1SS133 or 1SS270A	DIODE DIODE	
D7005		1SS133 or 1SS270A	DIODE DIODE	
D7008		SLR-325MC-T	LE DIODE	
D7009		SLR-325VC-T	LE DIODE	
R1		NRVA02D-682X	CMF RESISTOR	6.8kΩ,1/10W
R2		NRVA02D-152X	CMF RESISTOR	1.5kΩ,1/10W
R3		NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
R4		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R5		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R6		NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
R7		NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R8		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R9		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R21		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R22		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R23		NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
R25		NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R26		NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R27		NRSA02J-221X	MG RESISTOR	220Ω,1/10W
R28		NRSA02J-221X	MG RESISTOR	220Ω,1/10W
R29		NRSA02J-561X	MG RESISTOR	560Ω,1/10W
R30		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R31		NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
R32		NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R33		NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
R36		NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
R38		NRSA02J-102X	MG RESISTOR	1kΩ,1/10W

#	△ REF No.	PART No.	PART NAME, DESCRIPTION	
R39		NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R40		NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R41		NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
R42		NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R46		NRSA02J-561X	MG RESISTOR	560Ω,1/10W
R48		QRE141J-102Y	RESISTOR	1kΩ,1/4W
R51		NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
R54		NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
R62		NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R70		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R77		NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R88		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R90		NRSA02J-391X	MG RESISTOR	390Ω,1/10W
R92		NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
R93		NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R104		NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R113		NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R118		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R201		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R202		NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R208		NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R209		NRSA02J-512X	MG RESISTOR	5.1kΩ,1/10W
R210		NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
R211		NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
R212		NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R213		QRE141J-0R0Y	RESISTOR	0Ω,1/4W
R216		NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R224		NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R225		NRSA02J-471X	MG RESISTOR	470Ω,1/10W
R226		NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R2001		NRSA02J-681X	MG RESISTOR	680Ω,1/10W
R2002		NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
R2003		NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R2005		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R2006		NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
R2007		NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
R2008		NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
R2009		NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
R2010		NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
R2013		NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
R2014		NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
R2015		NRSA02J-181X	MG RESISTOR	180Ω,1/10W
R2016		NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
R2017		NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
R2018		NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2019		NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2053		NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
R2054		NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
R2055		NRSA02J-3R3X	MG RESISTOR	3.3Ω,1/10W
R2056		NRSA02J-820X	MG RESISTOR	82Ω,1/10W
R2057		NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2058		NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
R2059		NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
R2060		NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
R2201		QRE141J-121Y	RESISTOR	120Ω,1/4W
R2202		NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R2203		NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
R2204		NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R2205		NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
R2206		NRSA02J-101X	MG RESISTOR	100Ω,1/10W
R2208		NRSA02J-101X	MG RESISTOR	100Ω,1/10W

#	△	REF No.	PART No.	PART NAME, DESCRIPTION	#	△	REF No.	PART No.	PART NAME, DESCRIPTION
R2209			NRSA02J-101X	MG RESISTOR	R3060			NRSA02J-102X	MG RESISTOR
R2210			NRSA02J-103X	MG RESISTOR	R3061			NRSA02J-102X	MG RESISTOR
R2211			NRSA02J-103X	MG RESISTOR	R3062			NRSA02J-103X	MG RESISTOR
R2213			NRSA02J-393X	MG RESISTOR	R3063			NRSA02J-0R0X	MG RESISTOR
R2215			NRSA02J-153X	MG RESISTOR	R3066			NRSA02J-472X	MG RESISTOR
R2217			NRSA02J-0R0X	MG RESISTOR	R3069			NRSA02J-101X	MG RESISTOR
R2218			NRSA02J-393X	MG RESISTOR	R3071			NRSA02J-103X	MG RESISTOR
R2219			NRSA02J-393X	MG RESISTOR	R3072			NRSA02J-0R0X	MG RESISTOR
R2220			NRSA02J-393X	MG RESISTOR	R3073			NRSA02J-0R0X	MG RESISTOR
R2222			NRSA02J-123X	MG RESISTOR	R3074			NRSA02J-0R0X	MG RESISTOR
R2223			NRSA02J-123X	MG RESISTOR	R3075			NRSA02J-471X	MG RESISTOR
R2224			NRSA02J-123X	MG RESISTOR	R3076			NRSA02J-471X	MG RESISTOR
R2225			NRSA02J-153X	MG RESISTOR	R3077			NRSA02J-0R0X	MG RESISTOR
R2226			NRSA02J-123X	MG RESISTOR	R3078			NRSA02J-0R0X	MG RESISTOR
R2227			NRSA02J-123X	MG RESISTOR	R3079			NRSA02J-0R0X	MG RESISTOR
R2228			NRSA02J-103X	MG RESISTOR	R3080			NRSA02J-0R0X	MG RESISTOR
R2229			NRSA02J-563X	MG RESISTOR	R3081			NRSA02J-0R0X	MG RESISTOR
R2251			NRSA02J-102X	MG RESISTOR	R3083			NRSA02J-0R0X	MG RESISTOR
R3011			NRSA02J-102X	MG RESISTOR	R3085			NRSA02J-222X	MG RESISTOR
R3012			NRSA02J-102X	MG RESISTOR	R3086			NRSA02J-222X	MG RESISTOR
R3013			NRSA02J-102X	MG RESISTOR	R3087			NRSA02J-0R0X	MG RESISTOR
R3014			NRSA02J-102X	MG RESISTOR	R3088			NRSA02J-0R0X	MG RESISTOR
R3015			NRSA02J-102X	MG RESISTOR	R3089			NRSA02J-0R0X	MG RESISTOR
R3016			NRSA02J-102X	MG RESISTOR	R3091			NRSA02J-0R0X	MG RESISTOR
R3017			NRSA02J-102X	MG RESISTOR	R3092			NRSA02J-102X	MG RESISTOR
R3018			NRSA02J-682X	MG RESISTOR	R3093			NRSA02J-0R0X	MG RESISTOR
R3019			NRSA02J-102X	MG RESISTOR	R3094			NRSA02J-0R0X	MG RESISTOR
R3020			NRSA02J-102X	MG RESISTOR	R3095			NRSA02J-0R0X	MG RESISTOR
R3021			NRSA02J-102X	MG RESISTOR	R3096			NRSA02J-0R0X	MG RESISTOR
R3022			NRSA02J-102X	MG RESISTOR	R3097			NRSA02J-0R0X	MG RESISTOR
R3025			NRSA02J-102X	MG RESISTOR	R3103			NRSA02J-0R0X	MG RESISTOR
R3026			NRSA02J-102X	MG RESISTOR	R3104			NRSA02J-0R0X	MG RESISTOR
R3027			NRSA02J-102X	MG RESISTOR	R3105			NRSA02J-0R0X	MG RESISTOR
R3029			NRSA02J-102X	MG RESISTOR	R3106			NRSA02J-0R0X	MG RESISTOR
R3030			NRSA02J-102X	MG RESISTOR	R3201			NRSA02J-103X	MG RESISTOR
R3031			NRSA02J-102X	MG RESISTOR	R3202			NRSA02J-472X	MG RESISTOR
R3032			NRSA02J-102X	MG RESISTOR	R3203			NRSA02J-103X	MG RESISTOR
R3033			NRSA02J-0R0X	MG RESISTOR	R3204			NRSA02J-222X	MG RESISTOR
R3034			NRSA02J-0R0X	MG RESISTOR	R3205			QRE141J-181Y	RESISTOR
R3035			NRSA02J-0R0X	MG RESISTOR	R3206			NRSA02J-183X	MG RESISTOR
R3036			NRSA02J-0R0X	MG RESISTOR	R3207			QRE141J-183Y	RESISTOR
R3038			NRSA02J-152X	MG RESISTOR	R3208			NRSA02J-181X	MG RESISTOR
R3039			NRSA02J-102X	MG RESISTOR	R3209			NRSA02J-273X	MG RESISTOR
R3040			NRSA02J-472X	MG RESISTOR	R3210			NRSA02J-181X	MG RESISTOR
R3041			NRSA02J-0R0X	MG RESISTOR	R3211			NRSA02J-273X	MG RESISTOR
R3042			NRSA02J-0R0X	MG RESISTOR	R3212			QRE141J-474Y	RESISTOR
R3044			NRSA02J-0R0X	MG RESISTOR	R3213			NRSA02J-334X	MG RESISTOR
R3046			NRSA02J-102X	MG RESISTOR	R3214			NRSA02J-103X	MG RESISTOR
R3047			NRSA02J-102X	MG RESISTOR	R3215			NRSA02J-103X	MG RESISTOR
R3048			NRSA02J-0R0X	MG RESISTOR	R3216			NRSA02J-103X	MG RESISTOR
R3049			NRSA02J-0R0X	MG RESISTOR	R3217			QRE141J-562Y	RESISTOR
R3050			NRSA02J-0R0X	MG RESISTOR	R3218			QRE141J-472Y	RESISTOR
R3051			NRSA02J-471X	MG RESISTOR	R3219			NRSA02J-472X	MG RESISTOR
R3052			NRSA02J-471X	MG RESISTOR	R3220			NRSA02J-104X	MG RESISTOR
R3053			NRSA02J-471X	MG RESISTOR	R3222			NRSA02J-472X	MG RESISTOR
R3054			NRSA02J-102X	MG RESISTOR	R3223			NRSA02J-472X	MG RESISTOR
R3055			NRSA02J-102X	MG RESISTOR	R3224			NRSA02J-472X	MG RESISTOR
R3056			NRSA02J-102X	MG RESISTOR	R3225			NRSA02J-103X	MG RESISTOR
R3057			NRSA02J-102X	MG RESISTOR	R3229			NRSA02J-105X	MG RESISTOR
R3058			NRSA02J-102X	MG RESISTOR	R3230			NRSA02J-472X	MG RESISTOR
R3059			NRSA02J-0R0X	MG RESISTOR	R3231			NRSA02J-102X	MG RESISTOR

#	△ REF No.	PART No.	PART NAME, DESCRIPTION	#	△ REF No.	PART No.	PART NAME, DESCRIPTION
R3233		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W	R5332		QRE141J-222Y	RESISTOR 2.2kΩ,1/4W
R3234		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W	R5344		NRSA02J-472X	MG RESISTOR 4.7kΩ,1/10W
R3235		NRSA02J-332X	MG RESISTOR 3.3kΩ,1/10W	R5345		QRE121J-561Y	RESISTOR 560Ω,1/2W
R3236		NRSA02J-332X	MG RESISTOR 3.3kΩ,1/10W	R6020		NRSA02J-102X	MG RESISTOR 1kΩ,1/10W
R3237		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W	R6021		NRSA02J-102X	MG RESISTOR 1kΩ,1/10W
R3238		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W	R6030		NRSA02J-102X	MG RESISTOR 1kΩ,1/10W
R3239		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W	R6031		NRSA02J-271X	MG RESISTOR 270Ω,1/10W
R3240		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W	R6032		NRSA02J-472X	MG RESISTOR 4.7kΩ,1/10W
R3241		QRE141J-104Y	RESISTOR 100kΩ,1/4W	R6033		NRSA02J-182X	MG RESISTOR 1.8kΩ,1/10W
R3242		NRSA02J-472X	MG RESISTOR 4.7kΩ,1/10W	R6050		QRE141J-101Y	RESISTOR 100Ω,1/4W
R4003		NRSA02J-561X	MG RESISTOR 560Ω,1/10W	R6051		NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R4004		NRSA02J-561X	MG RESISTOR 560Ω,1/10W	R6052		NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R4005		NRSA02J-562X	MG RESISTOR 5.6kΩ,1/10W	R7001		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W
R4007		NRSA02J-102X	MG RESISTOR 1kΩ,1/10W	R7002		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W
R4008		NRSA02J-102X	MG RESISTOR 1kΩ,1/10W	R7003		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W
R4009		NRSA02J-102X	MG RESISTOR 1kΩ,1/10W	R7004		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W
R4010		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W	R7005		NRSA02J-472X	MG RESISTOR 4.7kΩ,1/10W
R4011		NRSA02J-472X	MG RESISTOR 4.7kΩ,1/10W	R7006		NRSA02J-471X	MG RESISTOR 470Ω,1/10W
R4012		NRSA02J-222X	MG RESISTOR 2.2kΩ,1/10W	R7007		QRE141J-103Y	RESISTOR 10kΩ,1/4W
R4013		NRSA02J-102X	MG RESISTOR 1kΩ,1/10W	R7008		QRE141J-563Y	RESISTOR 56kΩ,1/4W
R4015		NRSA02J-562X	MG RESISTOR 5.6kΩ,1/10W	R7009		QRE141J-103Y	RESISTOR 10kΩ,1/4W
R4017		NRSA02J-102X	MG RESISTOR 1kΩ,1/10W	R7010		NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
R4018		NRSA02J-102X	MG RESISTOR 1kΩ,1/10W	R7011		NRSA02J-333X	MG RESISTOR 33kΩ,1/10W
R4019		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W	R7012		NRSA02J-333X	MG RESISTOR 33kΩ,1/10W
R4020		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W	R7013		NRSA02J-333X	MG RESISTOR 33kΩ,1/10W
R4021		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W	R7014		NRSA02J-333X	MG RESISTOR 33kΩ,1/10W
R5101		QRE141J-334Y	RESISTOR 330kΩ,1/4W	R7015		QRE141J-472Y	RESISTOR 4.7kΩ,1/4W
R5102		QRE141J-334Y	RESISTOR 330kΩ,1/4W	R7016		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W
R5103		QRE141J-683Y	RESISTOR 68kΩ,1/4W	R7017		NRSA02J-331X	MG RESISTOR 330Ω,1/10W
R5104		QRG029J-154G	OMF RESISTOR 150kΩ,2W	R7018		NRSA02J-331X	MG RESISTOR 330Ω,1/10W
R5106		QRT01DJ-R39X	MF RESISTOR 0.39Ω,1W	R7160		NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R5107		QRE121J-331Y	RESISTOR 330Ω,1/2W	R7161		NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R5108		NRSA02J-122X	MG RESISTOR 1.2kΩ,1/10W	R7162		NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R5109		QRE141J-681Y	RESISTOR 680Ω,1/4W	R7163		NRSA02J-750X	MG RESISTOR 75Ω,1/10W
R5110		NRSA02J-224X	MG RESISTOR 220kΩ,1/10W	R7202		NRSA02J-221X	MG RESISTOR 220Ω,1/10W
R5111		NRSA02J-561X	MG RESISTOR 560Ω,1/10W	R7203		NRSA02J-472X	MG RESISTOR 4.7kΩ,1/10W
R5112		NRSA02J-221X	MG RESISTOR 220Ω,1/10W	R7204		QRE121J-100Y	RESISTOR 10Ω,1/2W
R5301		NRSA02J-472X	MG RESISTOR 4.7kΩ,1/10W	B3		NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
R5302		NRSA02J-102X	MG RESISTOR 1kΩ,1/10W	B12		QUY160-220Y	IM BUS WIRE
R5303		NRSA02J-122X	MG RESISTOR 1.2kΩ,1/10W	B52		NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
R5304		NRSA02J-471X	MG RESISTOR 470Ω,1/10W	B65		NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
R5305		NRSA02J-102X	MG RESISTOR 1kΩ,1/10W	B203		QUY153-050Y	IM BUS WIRE
R5306		NRSA02J-221X	MG RESISTOR 220Ω,1/10W	B204		QUY153-050Y	IM BUS WIRE
R5308		NRSA02J-471X	MG RESISTOR 470Ω,1/10W	B214		QUY160-280Y	IM BUS WIRE
R5309		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W	B2051		QUY153-050Y	IM BUS WIRE
R5310		NRSA02J-221X	MG RESISTOR 220Ω,1/10W	B3004		QUY160-120Y	IM BUS WIRE
R5311		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W	B3179		NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
R5312		NRVA02D-332X	CMF RESISTOR 3.3kΩ,1/10W	B5302		NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
R5313		NRVA02D-332X	CMF RESISTOR 3.3kΩ,1/10W	B5304		NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
R5314		NRSA02J-102X	MG RESISTOR 1kΩ,1/10W	C1		NCB21HK-103X	CAPACITOR 0.01μF,50V
R5316		NRVA02D-123X	CMF RESISTOR 12kΩ,1/10W	C2		NCB21HK-103X	CAPACITOR 0.01μF,50V
R5317		NRSA02J-473X	MG RESISTOR 47kΩ,1/10W	C3		NCB21HK-103X	CAPACITOR 0.01μF,50V
△ R5318		QRZ9005-221X	FUSI RESISTOR 220Ω,1/4W	C4		NCB21HK-103X	CAPACITOR 0.01μF,50V
R5320		NRSA02J-273X	MG RESISTOR 27kΩ,1/10W	C5		QEKJ0JM-476	E CAPACITOR 47μF,6.3V
R5321		NRSA02J-273X	MG RESISTOR 27kΩ,1/10W	C6		QCB11HK-103	CAPACITOR 0.01μF,50V
R5324		NRSA02J-472X	MG RESISTOR 4.7kΩ,1/10W	C7		NCB21HK-102X	CAPACITOR 0.001μF,50V
R5325		QRE141J-222Y	RESISTOR 2.2kΩ,1/4W	C8		NCB21EK-104X	CAPACITOR 0.1μF,25V
R5326		QUY153-050Y	IM BUS WIRE	C9		QEKJ1HM-225	E CAPACITOR 2.2μF,50V
R5327		NRSA02J-222X	MG RESISTOR 2.2kΩ,1/10W	C10		NDC21HG-151X	CAPACITOR 150pF,50V
R5329		NRSA02J-102X	MG RESISTOR 1kΩ,1/10W	C11		NCB21EK-104X	CAPACITOR 0.1μF,25V
R5330		NRSA02J-102X	MG RESISTOR 1kΩ,1/10W	C12		NDC21HJ-8R0X	CAPACITOR 8pF,50V

#	△	REF No.	PART No.	PART NAME, DESCRIPTION	#	△	REF No.	PART No.	PART NAME, DESCRIPTION
C14			NCB21EK-104X	CAPACITOR	C225		QERF1AM-227	E CAPACITOR	220µF,10V
C15			NCB21HK-103X	CAPACITOR	C2001		QEKJ1HM-475	E CAPACITOR	4.7µF,50V
C16			NCB21EK-104X	CAPACITOR	C2002		QEKJ1EM-106	E CAPACITOR	10µF,25V
C17			QEKJ1HM-335	E CAPACITOR	C2003		QEKJ0JM-476	E CAPACITOR	47µF,6.3V
C19			QEKJ1HM-225	E CAPACITOR	C2005		QEKJ1HM-475	E CAPACITOR	4.7µF,50V
C20			QEKJ1HM-105	E CAPACITOR	C2006		NCB21EK-123X	CAPACITOR	0.012µF,25V
C21			NCB21EK-104X	CAPACITOR	C2007		QEKJ1CM-226	E CAPACITOR	22µF,16V
C22			QEKJ0JM-476	E CAPACITOR	C2008		QEKJ1HM-475	E CAPACITOR	4.7µF,50V
C23			NCB21EK-104X	CAPACITOR	C2009		NCB21HK-102X	CAPACITOR	0.001µF,50V
C24			QCB1HK-104	CAPACITOR	C2010		NCB21HK-152X	CAPACITOR	0.0015µF,50V
C25			NDC21HJ-6R0X	CAPACITOR	C2011		QEKJ1HM-475	E CAPACITOR	4.7µF,50V
C26			NCB21EK-104X	CAPACITOR	C2012		QEKJ1HM-475	E CAPACITOR	4.7µF,50V
C27			NCB21HK-223X	CAPACITOR	C2013		NDC21HJ-680X	CAPACITOR	68pF,50V
C28			QEKJ1HM-335	E CAPACITOR	C2015		NCB21HK-682X	CAPACITOR	0.0068µF,50V
C29			NCB21EK-333X	CAPACITOR	C2051		NCB21HK-331X	CAPACITOR	330pF,50V
C30			NCB21CK-474X	CAPACITOR	C2052		QFLC1HJ-823Z	F CAPACITOR	0.082µF,50V
C31			QEKJ0JM-476	E CAPACITOR	C2053		NCB21HK-472X	CAPACITOR	0.0047µF,50V
C32			QCB1HK-104	CAPACITOR	C2054		NCB21HK-223X	CAPACITOR	0.022µF,50V
C33			QEKJ1HM-225	E CAPACITOR	C2055		QEKJ1EM-106	E CAPACITOR	10µF,25V
C34			NCB21EK-104X	CAPACITOR	C2201		NCB21EK-104X	CAPACITOR	0.1µF,25V
C35			NCB21HK-103X	CAPACITOR	C2202		NCB21EK-333X	CAPACITOR	0.033µF,25V
C36			QEKJ1HM-475	E CAPACITOR	C2203		QEKJ1EM-106	E CAPACITOR	10µF,25V
C37			QEKJ1HM-105	E CAPACITOR	C2204		QDGB1HK-102Y	CAPACITOR	0.001µF,50V
C38			QEKJ0JM-476	E CAPACITOR	C2205		QEKJ1HM-105	E CAPACITOR	1µF,50V
C39			NCB21EK-104X	CAPACITOR	C2206		QEKJ1EM-106	E CAPACITOR	10µF,25V
C40			QEKJ1EM-106	E CAPACITOR	C2207		QEKJ1CM-476	E CAPACITOR	47µF,16V
C45			QCB1HK-104	CAPACITOR	C2208		QEKJ1HM-475	E CAPACITOR	4.7µF,50V
C46			NDC21HJ-101X	CAPACITOR	C2213		QEKJ1EM-106	E CAPACITOR	10µF,25V
C59			NCB21HK-103X	CAPACITOR	C2214		QEKJ1EM-106	E CAPACITOR	10µF,25V
C60			QEKJ0JM-476	E CAPACITOR	C2215		QEKJ1HM-475	E CAPACITOR	4.7µF,50V
C61			NCB21HK-103X	CAPACITOR	C2216		QEKJ1HM-474	E CAPACITOR	0.47µF,50V
C63			NCB21EK-104X	CAPACITOR	C2217		QEKJ1EM-106	E CAPACITOR	10µF,25V
C64			NDC21HJ-220X	CAPACITOR	C2218		QEKJ1HM-474	E CAPACITOR	0.47µF,50V
C65			QEKJ1HM-105	E CAPACITOR	C2219		QEKJ1EM-106	E CAPACITOR	10µF,25V
C69			NCB21EK-104X	CAPACITOR	C2220		QEKJ1HM-475	E CAPACITOR	4.7µF,50V
C70			NCB21EK-104X	CAPACITOR	C2221		NCB21HK-103X	CAPACITOR	0.01µF,50V
C71			NCB21HK-103X	CAPACITOR	C2222		QEKJ1HM-474	E CAPACITOR	0.47µF,50V
C72			NDC21HJ-470X	CAPACITOR	C2223		QEKJ1HM-474	E CAPACITOR	0.47µF,50V
C73			NDC21HJ-120X	CAPACITOR	C2224		NCB21HK-103X	CAPACITOR	0.01µF,50V
C80			NCB21HK-103X	CAPACITOR	C2225		QEKJ1HM-475	E CAPACITOR	4.7µF,50V
C106			NCB21HK-821X	CAPACITOR	C2226		QEKJ1EM-106	E CAPACITOR	10µF,25V
C108			NDC21HJ-680X	CAPACITOR	C2227		NCB21CK-104X	CAPACITOR	0.1µF,16V
C109			NCB21CK-224X	CAPACITOR	C2228		NCB21CK-104X	CAPACITOR	0.1µF,16V
C110			NDC21HJ-820X	CAPACITOR	C2251		QEKJ0JM-476	E CAPACITOR	47µF,6.3V
C114			NDC21HJ-181X	CAPACITOR	C2252		NCB21HK-103X	CAPACITOR	0.01µF,50V
C139			NDC21HJ-470X	CAPACITOR	C2253		NCB21HK-103X	CAPACITOR	0.01µF,50V
C143			QCFB1HZ-104	CAPACITOR	C2254		NCB21HK-103X	CAPACITOR	0.01µF,50V
C201			QEKJ0JM-227	E CAPACITOR	C2255		NDC21HJ-181X	CAPACITOR	180pF,50V
C204			NCB21HK-103X	CAPACITOR	C3001		NCB21EK-104X	CAPACITOR	0.1µF,25V
C206			NDC21HJ-330X	CAPACITOR	C3003		QEKJ1EM-106	E CAPACITOR	10µF,25V
C207			NDC21HJ-330X	CAPACITOR	C3008		NCB21HK-102X	CAPACITOR	0.001µF,50V
C209			NCB21CK-474X	CAPACITOR	C3011		QETL0JM-338	E CAPACITOR	3300µF,6.3V
C210			NDC21HJ-101X	CAPACITOR	C3012		QEKJ0JM-476	E CAPACITOR	47µF,6.3V
C211			NDC21HJ-101X	CAPACITOR	C3014		QEKJ0JM-476	E CAPACITOR	47µF,6.3V
C212			NCB21EK-104X	CAPACITOR	C3015		NCB21EK-104X	CAPACITOR	0.1µF,25V
C213			QERF1EM-475	E CAPACITOR	C3016		NCB21EK-104X	CAPACITOR	0.1µF,25V
C214			NCB21CK-224X	CAPACITOR	C3020		NDC21HJ-101X	CAPACITOR	100pF,50V
C215			NCB21CK-224X	CAPACITOR	C3021		NDC21HJ-101X	CAPACITOR	100pF,50V
C217			NDC21HJ-560X	CAPACITOR	C3022		NCB21EK-104X	CAPACITOR	0.1µF,25V
C218			QERF1HM-105	E CAPACITOR	C3024		NDC21HJ-220X	CAPACITOR	22pF,50V
C222			NCB21CK-105X	CAPACITOR	C3025		QAT3725-300Z	TRIM CAPACITOR,TIMER CLOCK	

#	△ REF No.	PART No.	PART NAME, DESCRIPTION	#	△ REF No.	PART No.	PART NAME, DESCRIPTION
		C3026	NCB21HK-103X CAPACITOR 0.01μF,50V			C7003	QEKJ0JM-227 E CAPACITOR 220μF,6.3V
		C3027	QEKJ1EM-106 E CAPACITOR 10μF,25V			C7005	NDC21HJ-470X CAPACITOR 47pF,50V
		C3030	QEKJ0JM-476 E CAPACITOR 47μF,6.3V			C7006	NDC21HJ-330X CAPACITOR 33pF,50V
		C3031	NCB21EK-104X CAPACITOR 0.1μF,25V			C7007	QEKJ1HM-106 E CAPACITOR 10μF,50V
		C3032	NCB21EK-104X CAPACITOR 0.1μF,25V			C7008	NCB21HK-102X CAPACITOR 0.001μF,50V
		C3033	NCB21EK-104X CAPACITOR 0.1μF,25V			C7011	QCFB1HZ-104 CAPACITOR 0.1μF,50V
		C3036	NDC21HJ-180X CAPACITOR 18pF,50V			C7165	NCB21HK-681X CAPACITOR 680pF,50V
		C3037	NDC21HJ-120X CAPACITOR 12pF,50V			C7167	NCB21HK-681X CAPACITOR 680pF,50V
		C3040	NCB21HK-103X CAPACITOR 0.01μF,50V			C7202	QETJ0JM-477 E CAPACITOR 470μF,6.3V
		C3050	NCB21EK-104X CAPACITOR 0.1μF,25V			L1	QQL29BJ-100Z COIL 10μH
		C4002	NCB21EK-104X CAPACITOR 0.1μF,25V			L2	QQL071J-121Y COIL 120μH
		C4003	NCB21HK-102X CAPACITOR 0.001μF,50V			L3	QQL29BJ-100Z COIL 10μH
		C4004	QEKJ1AM-226 E CAPACITOR 22μF,10V			L4	QQL29BJ-100Z COIL 10μH
		C4005	NCB21HK-222X CAPACITOR 0.0022μF,50V			L5	QQR0521-012Z NOISE FILTER
		C4006	QEKJ0JM-476 E CAPACITOR 47μF,6.3V			L12	QQR0967-001 COIL 12μH
		C4007	NCB21HK-102X CAPACITOR 0.001μF,50V			L13	QQL071J-330Y COIL 33μH
		C4008	NCB21AK-105X CAPACITOR 1μF,10V			L15	QQL29BJ-100Z COIL 10μH
		C4009	NCB21HK-563X CAPACITOR 0.056μF,50V			L18	QQL071J-220Y COIL 22μH
		C4010	NCB21EK-223X CAPACITOR 0.022μF,25V			L19	QQL071J-120Y COIL 12μH
		C4011	NCB21EK-104X CAPACITOR 0.1μF,25V			L20	QUY153-050Y IM BUS WIRE
		C4012	NCB21AK-105X CAPACITOR 1μF,10V			L24	QQL071J-270Y COIL 27μH
		C4013	NCB21HK-563X CAPACITOR 0.056μF,50V			L27	QQL071J-330Y COIL 33μH
		C4014	NDC21HJ-101X CAPACITOR 100pF,50V			L28	QQL071J-680Y COIL 68μH
		C4015	NCB21HK-102X CAPACITOR 0.001μF,50V			L30	QUY153-050Y IM BUS WIRE
△		C5001	QFZ9073-683 F CAPACITOR 0.068μF,250V			L201	QQL29BK-1R0Z COIL 1μH
△		C5002	QFZ9051-333 F CAPACITOR 0.033μF,250V			L202	QUY153-050Y IM BUS WIRE
△		C5004	QCZ9071-222 CAPACITOR 0.0022μF,250V			L203	QQL29BJ-220Z COIL 22μH
		C5006	QEZ0375-686 E CAPACITOR 68μF,400V			L204	QQL29BJ-100Z COIL 10μH
		C5101	QCZ0212-472 CAPACITOR 0.0047μF,1kV			L206	QQL071J-220Y COIL 22μH
		C5102	QCZ0302-330Z CAPACITOR 33pF,1kV			L2001	QUY153-050Y IM BUS WIRE
		C5104	QEKJ1HM-105 E CAPACITOR 1μF,50V			L2251	QQL29BJ-100Z COIL 10μH
		C5105	QFN31HJ-183 F CAPACITOR 0.018μF,50V			L2252	QQL29BJ-151Z COIL 150μH
		C5106	QCBB1HJ-271 CAPACITOR 270pF,50V			L3001	QUY153-050Y IM BUS WIRE
		C5107	QFV91HJ-104 F CAPACITOR 0.1μF,50V			L3011	QUY153-050Y IM BUS WIRE
		C5201	QEMU0JM-227 E CAPACITOR 220μF,6.3V			L3012	QUY153-050Y IM BUS WIRE
		C5202	QEMT1CM-687 E CAPACITOR 680μF,16V			L4001	QUY153-050Y IM BUS WIRE
		C5203	QEMT1AM-128 E CAPACITOR 1200μF,10V			L5201	PELN1184 COIL 33μH
		C5204	QETN2AM-475 E CAPACITOR 4.7μF,100V			L5202	PU60944-330K COIL 33μH
		C5205	QETN1HM-106 E CAPACITOR 10μF,50V			L6001	QQL29BJ-100Z COIL 10μH
		C5206	QETN1EM-476 E CAPACITOR 47μF,25V			L6003	QQL29BJ-470Z COIL 47μH
		C5207	QETN1CM-107 E CAPACITOR 100μF,16V			L7201	QQL29BJ-100Z COIL 10μH
		C5208	QEMU1EM-187 E CAPACITOR 180μF,25V			X1	QAX0576-001Z CRYSTAL RESONATOR
		C5301	QEKJ1CM-107 E CAPACITOR 100μF,16V			X3001	QAX0445-001 CRYSTAL RESONATOR
		C5302	QEKJ1CM-476 E CAPACITOR 47μF,16V			X3002	QAX0527-001 CRYSTAL RESONATOR
		C5303	QEKJ1CM-107 E CAPACITOR 100μF,16V			S3001	QSW0602-004 PUSH SWITCH
		C5304	QFLC1HJ-102Z F CAPACITOR 0.001μF,50V			S3002	QSW0695-001 PUSH SWITCH
		C5305	QFV91HJ-224 F CAPACITOR 0.22μF,50V			S7001	QSW0456-002Z TACT SWITCH
		C5311	NCB21HK-103X CAPACITOR 0.01μF,50V			S7002	QSW0456-002Z TACT SWITCH
		C5351	QUY153-050Y IM BUS WIRE			S7004	QSW0456-002Z TACT SWITCH
		C6007	QEMU0JM-227 E CAPACITOR 220μF,6.3V			S7006	QSW0456-002Z TACT SWITCH
		C6008	NCB21HK-103X CAPACITOR 0.01μF,50V			S7008	QSW0456-002Z TACT SWITCH
		C6012	QEKJ1CM-107 E CAPACITOR 100μF,16V			S7010	QSW0456-002Z TACT SWITCH
		C6013	NCB21HK-103X CAPACITOR 0.01μF,50V			S7012	QSW0456-002Z TACT SWITCH
		C6023	NRSA02J-0R0X MG RESISTOR 0Ω,1/10W			S7016	QSW0456-002Z TACT SWITCH
		C6032	NCF21EZ-473X CAPACITOR 0.047μF,25V			K2001	NQR0403-003X FERRITE BEAD
		C6037	QEKJ1EM-106 E CAPACITOR 10μF,25V			K2002	NQR0403-003X FERRITE BEAD
		C6052	NDC21HJ-101X CAPACITOR 100pF,50V			K2003	NQR0403-003X FERRITE BEAD
		C6053	NDC21HJ-101X CAPACITOR 100pF,50V			K2004	NRSA02J-0R0X MG RESISTOR 0Ω,1/10W
		C6501	QEKJ0JM-107 E CAPACITOR 100μF,6.3V			K2251	NRSA02J-0R0X MG RESISTOR 0Ω,1/10W
		C6502	NCB21HK-103X CAPACITOR 0.01μF,50V			K2252	NRSA02J-0R0X MG RESISTOR 0Ω,1/10W
		C7001	QEKJ0JM-476 E CAPACITOR 47μF,6.3V			K2253	NRSA02J-0R0X MG RESISTOR 0Ω,1/10W

#	△	REF No.	PART No.	PART NAME, DESCRIPTION	
		K5101	QQR0678-001Z	FERRITE BEAD	
		K5102	QUY153-050Y	IM BUS WIRE	
		K5301	QUY153-050Y	IM BUS WIRE	
		K6080	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		PC3001	GP3S123	IC(PHOTO SENSOR	
		PC3002	GP3S123	IC(PHOTO SENSOR	
△		PC5101	PS2561L1-1/L/	IC(PHOTO COUPLER)	
		T2051	PELN0832	OSC TRANSFORMER	
△		T5001	QQS0033-001	SW TRANSFORMER	
		TU6001	QAU0208-002	TUNER	
		DI7001	QLF0031-001	FL TUBE	
		ET1	PQ21623-2-5	EARTH PLATE(RF)	
		HD1	PQ35479-1-4	HOLDER(FDP)	
		HS1	LP40621-001A	HEAT SINK,Q5101	
		OT1	QYTDSF3010Z	SCREW,X2	
		OT2	QYTDST3008Z	SCREW,Q5101	
		SD1	LP30864-001A	SHIELD CASE(PRE)	
		FC5001	QNG0006-001Z	FUSE CLIP	
		FC5002	QNG0006-001Z	FUSE CLIP	
		J7105	QNN0381-002	PIN JACK	
△		LF5001	PELN1204-01-01	LINE FILTER	
△		LF5002	QQR0978-001	LINE FILTER	
		CN1	QGF1028C1-11	FPC CONNECTOR,(1-11)U.DRUM	
		CN901	QGB2024K1-10S	CONNECTOR,(1-10)TERMINAL	
		CN902	QGB2024K1-12S	CONNECTOR,(1-12)TERMINAL	
		CN903	QGB2024K1-10S	CONNECTOR,(1-10)TERMINAL	
		CN904	QGB2024K1-11S	CONNECTOR,(1-11)TERMINAL	
		CN905	QGB2024K1-09S	CONNECTOR,(1-9)TERMINAL	
		CN2001	QGF1207C1-07	FPC CONNECTOR,(1-7)A/C HEAD	
		CN2002	QGB2532J1-02	CONNECTOR,(1-2)FE HEAD	
		CN3001	QGF1207C1-05	FPC CONNECTOR,(1-5)DRUM MDA	
		CN3002	QGB2532J1-02	CONNECTOR,(1-2)LOADING MOTOR	
		CN3003	QGB2015M2-08	CONNECTOR,(1-8)CAPSTAN MOTOR	
		CN3004	QGB2534J2-04	CONNECTOR,(1-4)ROTARY ENCODER	
△		CN5001	QGA7901C3-02	CONNECTOR,(1-2)AC IN	
		CN7001	QGF1207C1-09	FPC CONNECTOR,(1-9)ADV.JOG	
△		CP3002	ICP-N25	CIRCUIT PROTECTOR	
		CP4001	QUY153-050Y	IM BUS WIRE	
△		CP5303	NMFZ012-1R5X-M	FUSE	T1.5A,50V
△		CP5304	NMFZ012-1R0X-M	FUSE	T1.0A,50V
△		F5001	QMF51E2-2R0J1	FUSE	T2.0A,AC250V

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**2D DIGITAL BOARD ASSEMBLY <05>**

		PW1	LPA10090-07A	2D DIGITAL BOARD ASSY	
		IC1201	JCP8036	IC	
△		Q1201	2SC1317/RS/-T	TRANSISTOR	
		Q1202	2SA1576A/QR/-X	TRANSISTOR	
			or 2PA1576/R/-X	TRANSISTOR	
		Q1203	2SA1576A/QR/-X	TRANSISTOR	
			or 2PA1576/R/-X	TRANSISTOR	
		Q1204	2SC4081/QRS/-X	TRANSISTOR	
			or 2PC4081/R/-X	TRANSISTOR	
		Q1205	2SC4081/S/-X	TRANSISTOR	
		Q1206	2SC4081/QRS/-X	TRANSISTOR	
			or 2PC4081/R/-X	TRANSISTOR	
		D1201	RD4.3ES/B3/-T2	ZENER DIODE	

#	△	REF No.	PART No.	PART NAME, DESCRIPTION	
		D1202	QUY153-050Y	IM BUS WIRE	
		R1201	NRSA02J-121X	MG RESISTOR	120Ω,1/10W
		R1202	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1203	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R1204	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R1205	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1206	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
		R1207	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R1208	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R1209	NRSA02J-180X	MG RESISTOR	18Ω,1/10W
		R1210	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R1211	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R1212	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1213	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R1214	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1215	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R1216	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R1217	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R1218	NRSA02J-301X	MG RESISTOR	300Ω,1/10W
		R1222	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R1224	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
		R1225	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R1226	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R1227	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
		R1228	NRSA02J-391X	MG RESISTOR	390Ω,1/10W
		R1230	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1231	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1232	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R1233	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		VR1201	QVZ3521-103Z	V RESISTOR,D/A LEVEL ADJ	
		B1204	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		C1201	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C1208	NDC21HJ-101X	CAPACITOR	100pF,50V
		C1210	NDC21HJ-330X	CAPACITOR	33pF,50V
		C1211	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C1212	NCB21HK-102X	CAPACITOR	0.001μF,50V
		C1213	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1214	NCF21CZ-105X	CAPACITOR	1μF,16V
		C1215	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C1216	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1217	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1218	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1219	NCF21CZ-105X	CAPACITOR	1μF,16V
		C1220	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C1222	NDC21HJ-820X	CAPACITOR	82pF,50V
		C1223	NDC21HJ-270X	CAPACITOR	27pF,50V
		C1225	NDC21HJ-820X	CAPACITOR	82pF,50V
		C1226	NDC21HJ-270X	CAPACITOR	27pF,50V
		C1227	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C1228	QEKJ1HM-475	E CAPACITOR	4.7μF,50V
		C1229	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C1230	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1231	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1232	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1233	QDYB1CM-103Y	CAPACITOR	0.01μF,16V
		C1234	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1235	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C1236	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1237	NCF21EZ-104X	CAPACITOR	0.1μF,25V
		C1238	NDC21HJ-180X	CAPACITOR	18pF,50V
		C1239	NDC21HJ-560X	CAPACITOR	56pF,50V

#	△ REF No.	PART No.	PART NAME, DESCRIPTION
C1243		NCB21HK-103X	CAPACITOR 0.01μF,50V
C1244		QEKJ1HM-475	E CAPACITOR 4.7μF,50V
C1245		NDC21HJ-150X	CAPACITOR 15pF,50V
C1246		QEKJ0JM-476	E CAPACITOR 47μF,6.3V
C1248		NCB21HK-103X	CAPACITOR 0.01μF,50V
L1201		QQL071J-1R0Y	COIL 1μH
L1202		QQL29BJ-101Z	COIL 100μH
L1203		QQL29BJ-101Z	COIL 100μH
L1204		QQL29BJ-101Z	COIL 100μH
L1205		QQL071J-6R8Y	COIL 6.8μH
L1206		QQL071J-6R8Y	COIL 6.8μH
L1207		QQL29BJ-101Z	COIL 100μH
L1208		QQL071J-150Y	COIL 15μH
L1209		QUY153-050Y	IM BUS WIRE
△ LC1201		QQL29BJ-101Z	COIL 100μH
SD1		LP30706-001C	SHIELD FRAME(S-VHS)
SD2		LP30684-001A	SHIELD CASE(S-VHS)
CN1201		QGG2502K1-17	HEADER PIN

#	△ REF No.	PART No.	PART NAME, DESCRIPTION
		or DTC144WU	TRANSISTOR
Q912		UN5215	TRANSISTOR
		or PDTC114TU	TRANSISTOR
		or RN1311	TRANSISTOR
		or DTC114TU	TRANSISTOR
R503		NRSA02J-221X	MG RESISTOR 220Ω,1/10W
R504		NRSA02J-332X	MG RESISTOR 3.3kΩ,1/10W
R505		NRSA02J-392X	MG RESISTOR 3.9kΩ,1/10W
R506		NRSA02J-391X	MG RESISTOR 390Ω,1/10W
R507		NRSA02J-122X	MG RESISTOR 1.2kΩ,1/10W
R508		NRSA02J-151X	MG RESISTOR 150Ω,1/10W
R509		NRSA02J-162X	MG RESISTOR 1.6kΩ,1/10W
R510		NRVA02D-102X	CMF RESISTOR 1kΩ,1/10W
R511		NRVA02D-471X	CMF RESISTOR 470Ω,1/10W
R512		NRVA02D-102X	CMF RESISTOR 1kΩ,1/10W
R513		NRVA02D-152X	CMF RESISTOR 1.5kΩ,1/10W
R514		NRVA02D-332X	CMF RESISTOR 3.3kΩ,1/10W
R515		NRVA02D-332X	CMF RESISTOR 3.3kΩ,1/10W
R516		QUY160-100Y	IM BUS WIRE
R517		QUY160-100Y	IM BUS WIRE
R525		QRE141J-125Y	RESISTOR 1.2MΩ,1/4W
R527		NRSA02J-332X	MG RESISTOR 3.3kΩ,1/10W
R531		NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R532		NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R533		NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R534		NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R535		NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R536		NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R901		NRSA02J-750X	MG RESISTOR 75Ω,1/10W
R902		NRSA02J-750X	MG RESISTOR 75Ω,1/10W
R903		QRE141J-680Y	RESISTOR 68Ω,1/4W
R904		NQL402M-4R7X	MG RESISTOR
R905		NQL402M-4R7X	MG RESISTOR
R906		QQL231J-100Y	COIL 10μH
R907		QQL231J-100Y	COIL 10μH
R908		NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
R909		NRSA02J-750X	MG RESISTOR 75Ω,1/10W
R910		NRSA02J-750X	MG RESISTOR 75Ω,1/10W
R911		NRSA02J-750X	MG RESISTOR 75Ω,1/10W
R912		NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R913		NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R914		QQL231J-100Y	COIL 10μH
R915		QQL231J-100Y	COIL 10μH
R916		NRSA02J-102X	MG RESISTOR 1kΩ,1/10W
R917		NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
R918		NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
R929		NRSA02J-820X	MG RESISTOR 82Ω,1/10W
R930		NRSA02J-750X	MG RESISTOR 75Ω,1/10W
R931		NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R932		NRSA02J-511X	MG RESISTOR 510Ω,1/10W
R933		NRSA02J-471X	MG RESISTOR 470Ω,1/10W
R934		QRE141J-101Y	RESISTOR 100Ω,1/4W
R935		QRE141J-101Y	RESISTOR 100Ω,1/4W
R936		QRE141J-101Y	RESISTOR 100Ω,1/4W
R937		QRE141J-101Y	RESISTOR 100Ω,1/4W
R938		QRE141J-101Y	RESISTOR 100Ω,1/4W
R939		QRE141J-101Y	RESISTOR 100Ω,1/4W
R940		NRSA02J-103X	MG RESISTOR 10kΩ,1/10W
R941		NRSA02J-332X	MG RESISTOR 3.3kΩ,1/10W
R942		NRSA02J-472X	MG RESISTOR 4.7kΩ,1/10W
R943		NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W

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**TERMINAL BOARD ASSEMBLY <06>**

PW1	LPA10138-01B	TERMINAL BOARD ASSY
IC501	JCP8018	IC
	or JCP8028	IC
	or JCP8028-01	IC
	or JCP8038	IC
IC502	VC2076DP	IC
IC901	BH7636S	IC
Q901	UN5211	TRANSISTOR
	or RN1302	TRANSISTOR
	or DTC114EU	TRANSISTOR
	or PDTC114EU	TRANSISTOR
Q902	2SB1218A/QR/-X	TRANSISTOR
	or 2SA1576A/QR/-X	TRANSISTOR
	or 2PA1576R/-X	TRANSISTOR
Q905	UN521E	TRANSISTOR
	or PDTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or DTC144WU	TRANSISTOR
Q906	2SD1819A/QRS/-X	TRANSISTOR
	or 2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081R/-X	TRANSISTOR
Q907	2SD1819A/QRS/-X	TRANSISTOR
	or 2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081R/-X	TRANSISTOR
Q908	2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081R/-X	TRANSISTOR
	or 2SC4081/QRS/-X	TRANSISTOR
Q909	2SB1218A/QR/-X	TRANSISTOR
	or 2SA1576A/QR/-X	TRANSISTOR
	or 2PA1576R/-X	TRANSISTOR
Q910	2SB1218A/QR/-X	TRANSISTOR
	or 2PA1576R/-X	TRANSISTOR
	or 2SA1576A/QR/-X	TRANSISTOR
Q911	UN521E	TRANSISTOR
	or PDTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR

#	△	REF No.	PART No.	PART NAME, DESCRIPTION		#	△	REF No.	PART No.	PART NAME, DESCRIPTION	
R944			NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W	C903			NCB21HK-471X	CAPACITOR	470pF,50V
R945			NRSA02J-102X	MG RESISTOR	1kΩ,1/10W	C904			NCB21HK-471X	CAPACITOR	470pF,50V
R946			NRSA02J-561X	MG RESISTOR	560Ω,1/10W	C905			NCB21HK-331X	CAPACITOR	330pF,50V
R947			NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W	C906			NCB21HK-331X	CAPACITOR	330pF,50V
R949			QRE121J-331Y	RESISTOR	330Ω,1/2W	C907			NCB21HK-471X	CAPACITOR	470pF,50V
R951			NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W	C908			NCB21HK-471X	CAPACITOR	470pF,50V
R952			NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W	C910			NCB21HK-102X	CAPACITOR	0.001μF,50V
R953			NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W	C912			NCB21HK-102X	CAPACITOR	0.001μF,50V
R964			NRSA02J-101X	MG RESISTOR	100Ω,1/10W	C915			NCB21HK-103X	CAPACITOR	0.01μF,50V
C501			QEKJ1HM-225	E CAPACITOR	2.2μF,50V	C916			NCB21HK-223X	CAPACITOR	0.022μF,50V
C502			QEKJ1HM-475	E CAPACITOR	4.7μF,50V	C917			NCB21HK-223X	CAPACITOR	0.022μF,50V
C503			QEKJ1HM-225	E CAPACITOR	2.2μF,50V	C918			QCB1HK-223	CAPACITOR	0.022μF,50V
C504			NCB21EK-104X	CAPACITOR	0.1μF,25V	C921			NDC21HJ-330X	CAPACITOR	33pF,50V
C505			QEKJ1HM-475	E CAPACITOR	4.7μF,50V	C923			QEKJ1CM-476	E CAPACITOR	47μF,16V
C506			NCB21HK-103X	CAPACITOR	0.01μF,50V	C924			NCB21HK-103X	CAPACITOR	0.01μF,50V
C507			QEKJ0JM-476	E CAPACITOR	47μF,6.3V	C925			NCB21HK-223X	CAPACITOR	0.022μF,50V
C508			QEKJ1HM-474	E CAPACITOR	0.47μF,50V	C927			QEKJ1CM-476	E CAPACITOR	47μF,16V
C509			QEKJ1CM-106	E CAPACITOR	10μF,16V	C928			NCB21HK-103X	CAPACITOR	0.01μF,50V
C510			QEKJ0JM-476	E CAPACITOR	47μF,6.3V	C931			QEKJ1EM-106	E CAPACITOR	10μF,25V
C511			NCB21HK-103X	CAPACITOR	0.01μF,50V	C935			NCB21HK-471X	CAPACITOR	470pF,50V
C512			NCB21HK-103X	CAPACITOR	0.01μF,50V	C936			NCB21HK-471X	CAPACITOR	470pF,50V
C513			QEKJ1HM-475	E CAPACITOR	4.7μF,50V	C937			NCB21HK-331X	CAPACITOR	330pF,50V
C514			NCB21HK-103X	CAPACITOR	0.01μF,50V	C938			NCB21HK-331X	CAPACITOR	330pF,50V
C515			NCB21HK-103X	CAPACITOR	0.01μF,50V	C939			NCB21HK-471X	CAPACITOR	470pF,50V
C516			NCB21HK-103X	CAPACITOR	0.01μF,50V	C940			NCB21HK-471X	CAPACITOR	470pF,50V
C518			NCB21EK-104X	CAPACITOR	0.1μF,25V	C943			QEKJ1CM-107	E CAPACITOR	100μF,16V
C519			QEKJ1HM-225	E CAPACITOR	2.2μF,50V	C945			QEKJ1EM-106	E CAPACITOR	10μF,25V
C520			QEKJ1HM-475	E CAPACITOR	4.7μF,50V	C946			QEKJ1EM-106	E CAPACITOR	10μF,25V
C521			QEKJ1HM-475	E CAPACITOR	4.7μF,50V	C951			QEK1CM-476	E CAPACITOR	47μF,16V
C522			QEKJ1HM-225	E CAPACITOR	2.2μF,50V	C958			NCB21HK-331X	CAPACITOR	330pF,50V
C523			QEKJ1HM-225	E CAPACITOR	2.2μF,50V	C959			NCB21HK-331X	CAPACITOR	330pF,50V
C524			NDC21HG-301X	CAPACITOR	300pF,50V	L501			QQL29BJ-100Z	COIL	10μH
C525			NDC21HG-301X	CAPACITOR	300pF,50V	L503			QQL29BJ-100Z	COIL	10μH
C526			NDC21HJ-101X	CAPACITOR	100pF,50V	L504			QQL29BJ-100Z	COIL	10μH
C527			NDC21HJ-181X	CAPACITOR	180pF,50V	L505			QUY153-050Y	IM BUS WIRE	
C528			NDC21HG-271X	CAPACITOR	270pF,50V	L901			QQL231J-R22Y	COIL	0.22μH
C529			NDC21HG-820X	CAPACITOR	82pF,50V	L902			QQL071J-1R0Y	COIL	1μH
C530			NDC21HG-221X	CAPACITOR	220pF,50V	L903			QQL071J-150Y	COIL	15μH
C531			NDC21HG-301X	CAPACITOR	300pF,50V	L904			QQL071J-150Y	COIL	15μH
C532			NDC21HG-301X	CAPACITOR	300pF,50V	L907			QUY153-050Y	IM BUS WIRE	
C533			NCB21HK-103X	CAPACITOR	0.01μF,50V	L910			QQL071J-1R0Y	COIL	1μH
C534			QEKJ0JM-476	E CAPACITOR	47μF,6.3V	L913			QQL071J-4R7Y	COIL	4.7μH
C535			NCB21HK-103X	CAPACITOR	0.01μF,50V	L914			QQL071J-4R7Y	COIL	4.7μH
C551			QEKJ1HM-105	E CAPACITOR	1μF,50V	L915			QQL071J-4R7Y	COIL	4.7μH
C553			QCB1HK-103	CAPACITOR	0.01μF,50V	L916			QQL071J-4R7Y	COIL	4.7μH
C554			QEKJ1HM-105	E CAPACITOR	1μF,50V	L917			QQL071J-4R7Y	COIL	4.7μH
C556			QCB1HK-103	CAPACITOR	0.01μF,50V	L918			QQL071J-4R7Y	COIL	4.7μH
C557			QEKJ1HM-105	E CAPACITOR	1μF,50V	L919			QQL071J-4R7Y	COIL	4.7μH
C559			NCB21HK-103X	CAPACITOR	0.01μF,50V	L920			QQL071J-4R7Y	COIL	4.7μH
C560			QEKJ1HM-105	E CAPACITOR	1μF,50V	ET1			LP30918-001A	EARTH PLATE	
C561			QEKJ1HM-105	E CAPACITOR	1μF,50V	ET2			LP30915-001A	EARTH PLATE	
C563			NCB21HK-103X	CAPACITOR	0.01μF,50V	△ TB1			LP21028-001A	TERMINAL BOARD	
C568			NDC21HJ-680X	CAPACITOR	68pF,50V	J901			PEMC1177	RGB21PIN SOCKET,AV1	
C569			NDC21HJ-680X	CAPACITOR	68pF,50V	J902			PEMC1177	RGB21PIN SOCKET,AV2	
C570			NDC21HJ-680X	CAPACITOR	68pF,50V	J915			QNN0418-003	PIN JACK,A.OUT(L)	
C571			NDC21HJ-680X	CAPACITOR	68pF,50V	J916			QNN0418-002	PIN JACK,A.OUT(R)	
C572			NDC21HJ-680X	CAPACITOR	68pF,50V	J921			PU60659	MINI JACK,SAT.CTL	
C573			NDC21HJ-680X	CAPACITOR	68pF,50V	OT1			QYTD3F3008Z	SCREW,X6	
C575			NDC21HJ-101X	CAPACITOR	100pF,50V	CN911			QGB2024J1-10S	CONNECTOR,(1-10)MAIN	
C901			NCB21HK-331X	CAPACITOR	330pF,50V	CN912			QGB2024J1-12S	CONNECTOR,(1-12)MAIN	
C902			NCB21HK-331X	CAPACITOR	330pF,50V	CN913			QGB2024J1-10S	CONNECTOR,(1-10)MAIN	



#	△ REF No.	PART No.	PART NAME, DESCRIPTION
CN914		QGB2024J1-11S	CONNECTOR,(1-11)MAIN
CN915		QGB2024J1-09S	CONNECTOR,(1-9)MAIN
CN916		QGF1208F1-04	FPC CONNECTOR,(1-4)S JACK

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**A/C HEAD BOARD ASSEMBLY <12>**

PW1	LP10122-01A1	A/C HEAD BOARD ASSY
CN1	QGF1208F1-07	FPC CONNECTOR

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**DEMOD BOARD ASSEMBLY <14>**

PW1	LPA10060-04A	DEMOD BOARD ASSY
IC6701	TDA9874AH/V2	IC
Q6701	2SC3936/BC/-X	TRANSISTOR
R6701	NRSA02J-102X	MG RESISTOR 1kΩ,1/10W
R6703	NRSA02J-102X	MG RESISTOR 1kΩ,1/10W
R6705	NRSA02J-100X	MG RESISTOR 10Ω,1/10W
R6706	NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
R6708	NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
R6711	NRSA02J-822X	MG RESISTOR 8.2kΩ,1/10W
R6715	NRSA02J-100X	MG RESISTOR 10Ω,1/10W
R6716	NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R6717	NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R6719	NRSA02J-3R3X	MG RESISTOR 3.3Ω,1/10W
R6721	NRSA02J-392X	MG RESISTOR 3.9kΩ,1/10W
R6722	NRSA02J-472X	MG RESISTOR 4.7kΩ,1/10W
R6723	NRSA02J-470X	MG RESISTOR 47Ω,1/10W
R6724	NRSA02J-221X	MG RESISTOR 220Ω,1/10W
R6725	NRSA02J-101X	MG RESISTOR 100Ω,1/10W
R6726	NRSA02J-102X	MG RESISTOR 1kΩ,1/10W
B6702	NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
C6701	QEKJ1HM-225	E CAPACITOR 2.2μF,50V
C6702	NCB21HK-682X	CAPACITOR 0.0068μF,50V
C6703	QEKJ1HM-225	E CAPACITOR 2.2μF,50V
C6704	NCB21HK-682X	CAPACITOR 0.0068μF,50V
C6705	NCF21CZ-474X	CAPACITOR 0.47μF,16V
C6706	NCF21CZ-474X	CAPACITOR 0.47μF,16V
C6713	NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
C6716	NCF21CZ-474X	CAPACITOR 0.47μF,16V
C6718	NCB21EK-224X	CAPACITOR 0.22μF,25V
C6719	NCB21HK-103X	CAPACITOR 0.01μF,50V
C6720	QEKJ1HM-105	E CAPACITOR 1μF,50V
C6722	NCF21CZ-474X	CAPACITOR 0.47μF,16V
C6723	NDC21HJ-101X	CAPACITOR 100pF,50V
C6724	NDC21HJ-101X	CAPACITOR 100pF,50V
C6728	NCB21HK-103X	CAPACITOR 0.01μF,50V
C6729	QEKJ1HM-225	E CAPACITOR 2.2μF,50V
C6730	QEKJ1CM-476	E CAPACITOR 47μF,16V
C6731	NRSA02J-0R0X	MG RESISTOR 0Ω,1/10W
C6732	NCB21HK-103X	CAPACITOR 0.01μF,50V
C6733	NCB21HK-222X	CAPACITOR 0.0022μF,50V
C6734	NCB21HK-103X	CAPACITOR 0.01μF,50V
L6702	QQL231J-1R0Y	COIL 1μH

#	△ REF No.	PART No.	PART NAME, DESCRIPTION
L6703		QQL231J-3R3Y	COIL 3.3μH
X6701		QAX0560-001	CRYSTAL RESONATOR
K6701		NQR0200-003X	FERRITE BEAD
K6703		NQR0200-003X	FERRITE BEAD
K6704		NQR0200-003X	FERRITE BEAD
K6705		NQR0200-003X	FERRITE BEAD
K6706		NQR0200-003X	FERRITE BEAD
K6707		NQR0200-003X	FERRITE BEAD
BK1		LP40425-001A	BRACKET(BOARD)
CN6701		QGG2502K1-10	HEADER PIN

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**S.JACK BOARD ASSEMBLY <36>**

PW1	LPA20009-02B	S JACK BORD ASSY
J7102	QND0084-001	S JACK
CN7108	QGF1209F1-04	FPC CONNECTOR,(1-4)MAIN

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**ADV.JOG BOARD ASSEMBLY <38>**

PW1	LPA20013-03B	ADV.JOG BOARD ASSY
UN7001	QSW0905-001	ROTARY ENCODER
CN7003	QGF1209F1-09	FPC CONNECTOR,(1-9)MAIN

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**LOADING MOTOR BOARD ASSEMBLY <55>**

PW2	LP10122-01A2	LOADING MOTOR BOARD ASSY
CN1	QGB2533K1-02	CONNECTOR

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