

# TC-S9

## SERVICE MANUAL

Ver 1.0 2001.09

*AEP Model  
UK Model  
E Model  
Australian Model*



TC-S9 is the Tape deck section  
in MHC-S9D.

Dolby noise reduction manufactured under license  
from Dolby Laboratories Licensing Corporation.  
“DOLBY” and the double-D symbol  $\square\square$  are trade-  
marks of Do by Laboratories Licensing Corporation.

Tape deck Section	Model Name Using Similar Mechanism	TC-S3
	Tape Transport Mechanism Type	TCM-230AWR41, TCM-230MWR41

### SPECIFICATIONS

Recording system	4-track 2-channel stereo
Frequency response (DOLBY NR OFF)	60 – 13,000 Hz ( $\pm 3$ dB), using Sony TYPE I cassette, 60 – 14,000 Hz ( $\pm 3$ dB), using Sony TYPE II cassette
Dimensions (w/h/d)	Approx 280 x 128 x 330 mm
Mass	Approx 2.4 kg

Design and specifications are subject to change  
without notice

## STEREO CASSETTE DECK

9-873-281-01  
200110500-1  
© 2001.9

**Sony Corporation**  
Home Audio Company  
Shinagawa Tec Service Manual Production Group

# SONY®

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**Notes on chip component replacement**

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

**SAFETY-RELATED COMPONENT WARNING!!**

**COMPONENTS IDENTIFIED BY MARK  $\triangle$  OR DOTTED LINE WITH MARK  $\triangle$  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

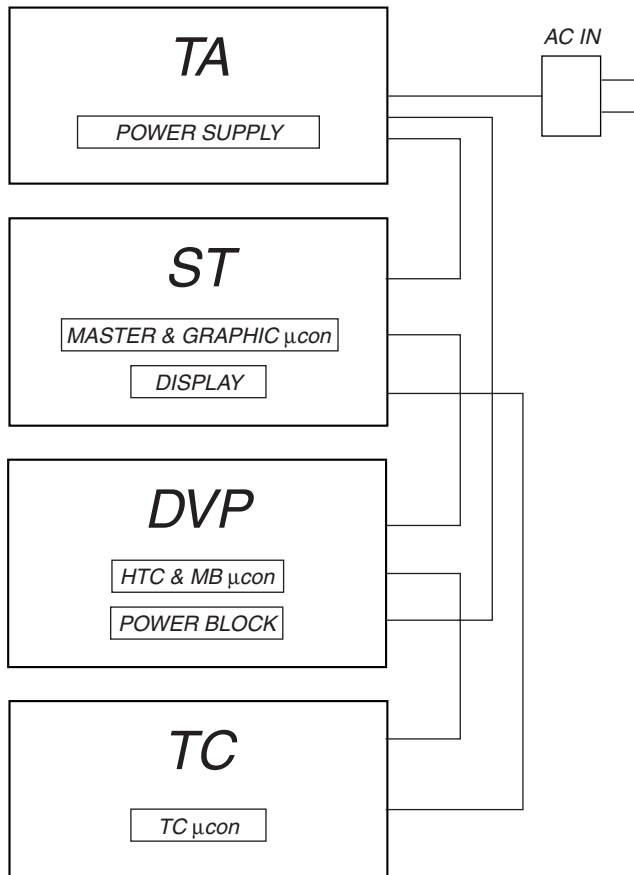
# SECTION 1 SERVICING NOTES

This set is a component of the MHC-S9D.  
The MHC-S9D system configuration is as shown below, and therefore it does not operate normally unless all four components are connected.

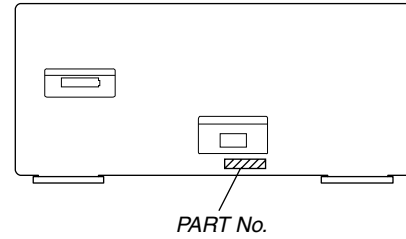
In performing the repair, connect all components with the system cables.

Note: The precaution to the users is described on the label stuck on the back panel (DVD/video CD/CD player) and in the troubleshooting section in the Operation Manual.

**System Configuration:**



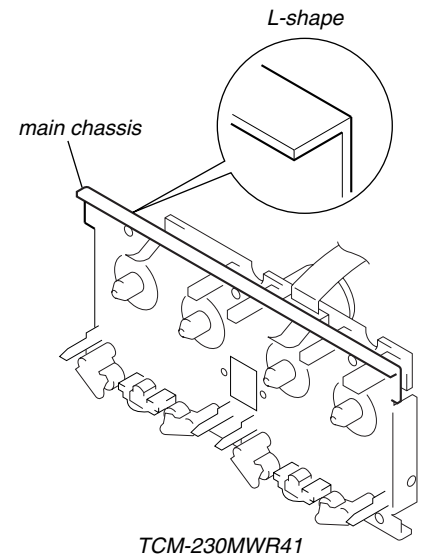
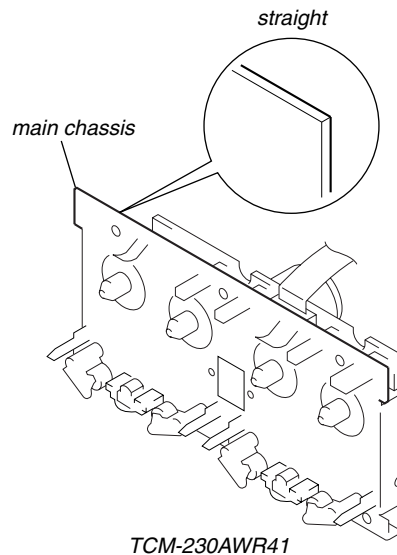
• **MODEL IDENTIFICATION**  
– Rear Panel –



Model	PART No.
AEP and UK models	4-236-839-0□
Australian, Saudi Arabia and Korean models	4-236-839-1□
E and Singapore models	4-236-839-2□
Mexican model	4-236-839-3□
Thai model	4-236-839-4□

• **TAPE MECHANISM DECK DISCRIMINATION**

TCM-230AWR41 and TCM-230MWR41 are used for the tape mechanism deck of this set, and they can be discriminated as shown below.



This section is extracted from instruction manual.

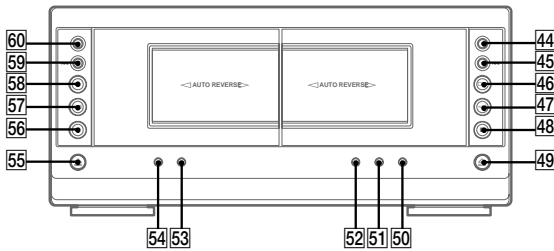
LOCATION OF CONTROLS

Parts Identification

The items are arranged in alphabetical order.  
Refer to the pages indicated in parentheses ( ) for details.

Main unit

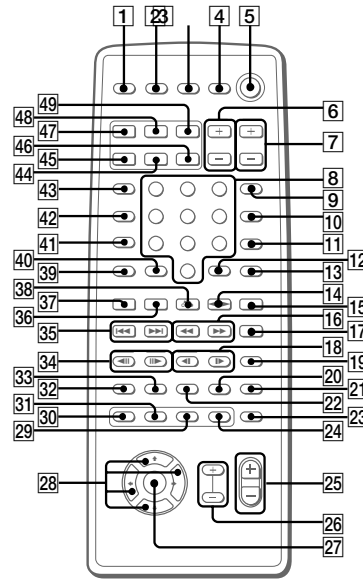
Cassette deck



- CD SYNC **51** (45, 46)
- DIRECTION **54** (44, 45, 46, 55)
- DOLBY NR **53** (44-46)
- HI-DUB **52** (45)
- REC PAUSE/START **50** (45, 46, 55)

- |  |  |
|--|--|
| – Deck A –                                     | – Deck B –                                     |
| ▶ (forward play) <b>58</b> (44, 55, 63)        | ▶ (forward play) <b>46</b> (44, 45, 63)        |
| ◀ (reverse play) <b>57</b> (44, 63)            | ◀ (reverse play) <b>47</b> (44, 45, 63)        |
| ■ (stop) <b>56</b> (44)                        | ■ (stop) <b>48</b> (44, 45, 55)                |
| ▶▶/▶▶ (go forward/fast forward) <b>60</b> (44) | ▶▶/▶▶ (fast forward/go forward) <b>44</b> (44) |
| ◀◀/◀◀ (go back/rewind) <b>59</b> (44)          | ◀◀/◀◀ (rewind/go back) <b>45</b> (44)          |
| ▲ (eject) <b>55</b> (44, 63)                   | ▲ (eject) <b>49</b> (44, 63)                   |

Remote control



- ANGLE **32** (37)
- AUDIO **22** (34)
- CLEAR **12** (22, 29, 30, 36)
- CLOCK/TIMER SELECT **3** (47, 56)
- CLOCK/TIMER SET **2** (17, 47, 56)
- DBFB **41** (48)
- D.SKIP **9** (26)
- DIGITAL **44** (57)
- DISPLAY **47** (17, 31, 32, 43, 54)
- DVD DISPLAY **23** (18, 19, 30, 32-34, 36-40)
- DVD MENU **21** (27)
- DVD SET UP **19** (18, 19, 24, 39)
- ENTER **27**
- EQ **31** (52)
- EQ ON/OFF **29** (53)
- FILE SELECT +/- **26** (48, 49, 53)
- FUNCTION **43** (18, 25, 27, 28, 36, 45, 46, 55, 57)
- GROOVE **42** (48)
- KARAOKE PON (Except for European model) **39** (54)
- MD **46** (57)
- Numeric buttons **8** (28, 30)
- PLAY MODE **11** (25, 28, 29, 46)
- REPEAT **10** (30)
- RETURN **13** (27, 39, 40)
- SELECT DVD **36** (20, 25, 27, 29, 30)
- SET UP **24** (14, 16, 51, 53, 54)
- SLEEP **1** (55)
- SLOW **18** (26)
- SPECTRUM ANALYZER **48** (54)
- STEP **34** (26)
- SUBTITLE **33** (37)
- SUR **30** (51)
- TAPE A **38** (44)
- TAPE B **14** (44, 45)
- TITLE **20** (27)
- TUNER/BAND **37** (42)
- TV I/⏻ **4** (13)
- TV CH +/- **7** (13)
- TV/VIDEO **49** (13)
- TV VOL +/- **6** (13)
- VIDEO **45** (57)
- VOL +/- **25**

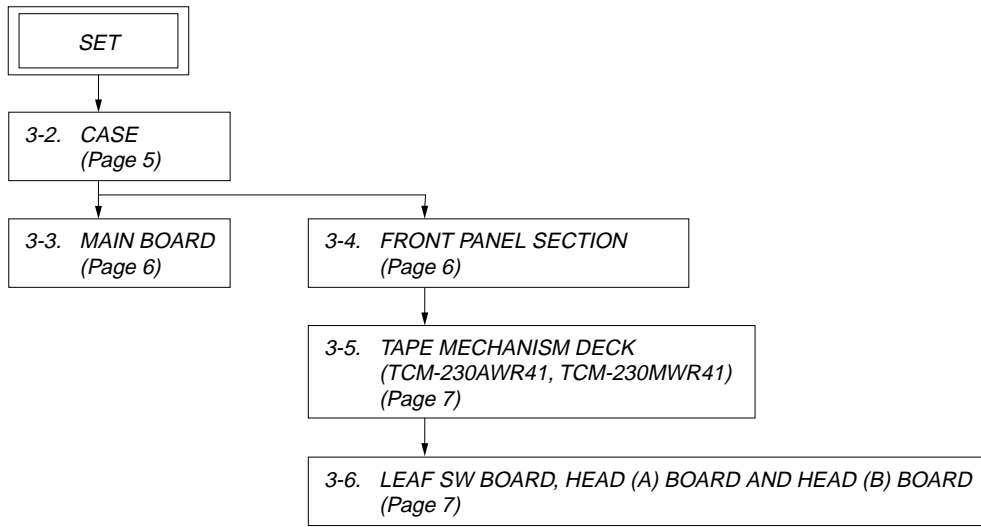
BUTTON DESCRIPTIONS

- I/⏻ (power) **5**
- ⏸ (pause) **17**
- (stop) **15**
- ◀◀/▶▶ (rewind/fast forward), TUNING -/+ **16**
- ◀◀/▶▶ (go back/go forward), PRESET -/+, PREV/NEXT **35**
- ↶/↷/↵/➤ **28**
- >10 **40**

## SECTION 3 DISASSEMBLY

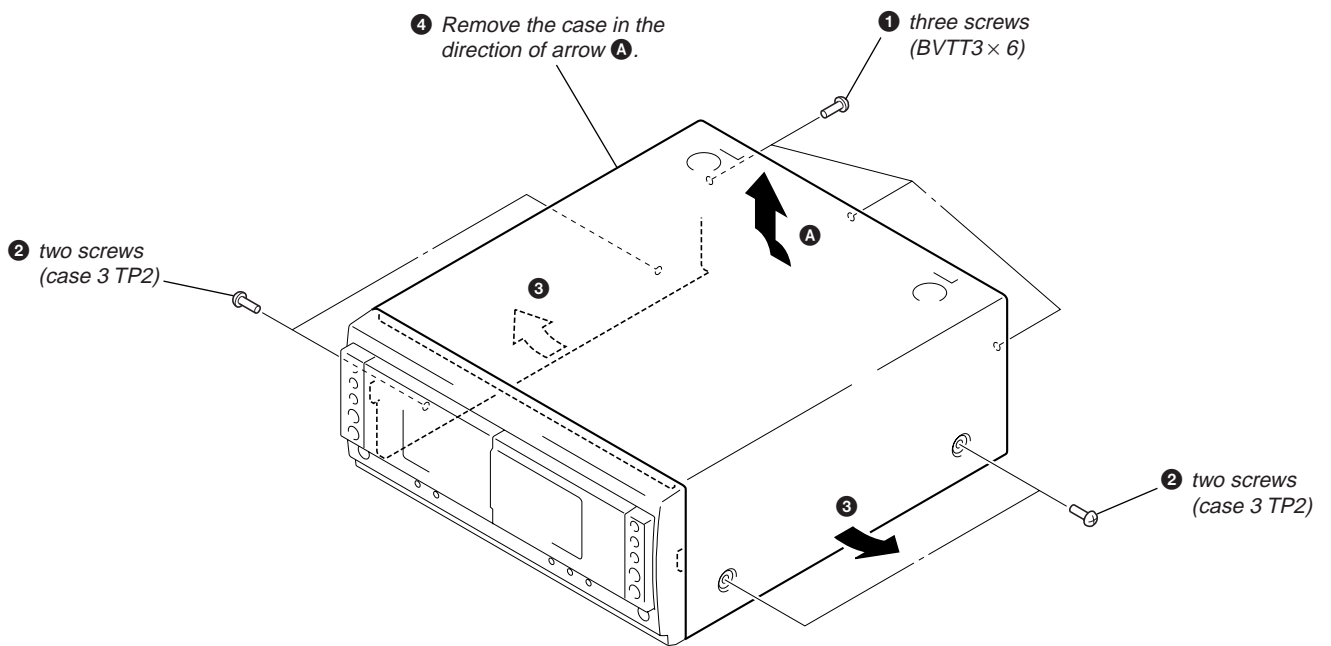
• This set can be disassembled in the order shown below.

### 3-1. DISASSEMBLY FLOW

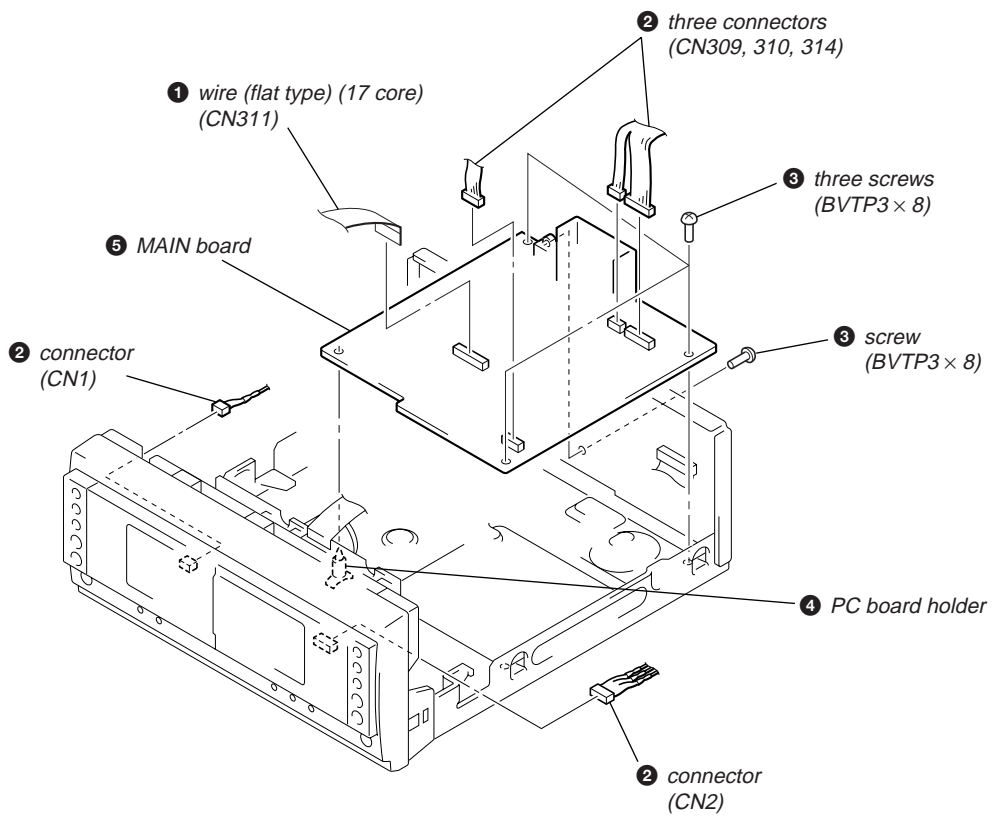


**Note:** Follow the disassembly procedure in the numerical order given.

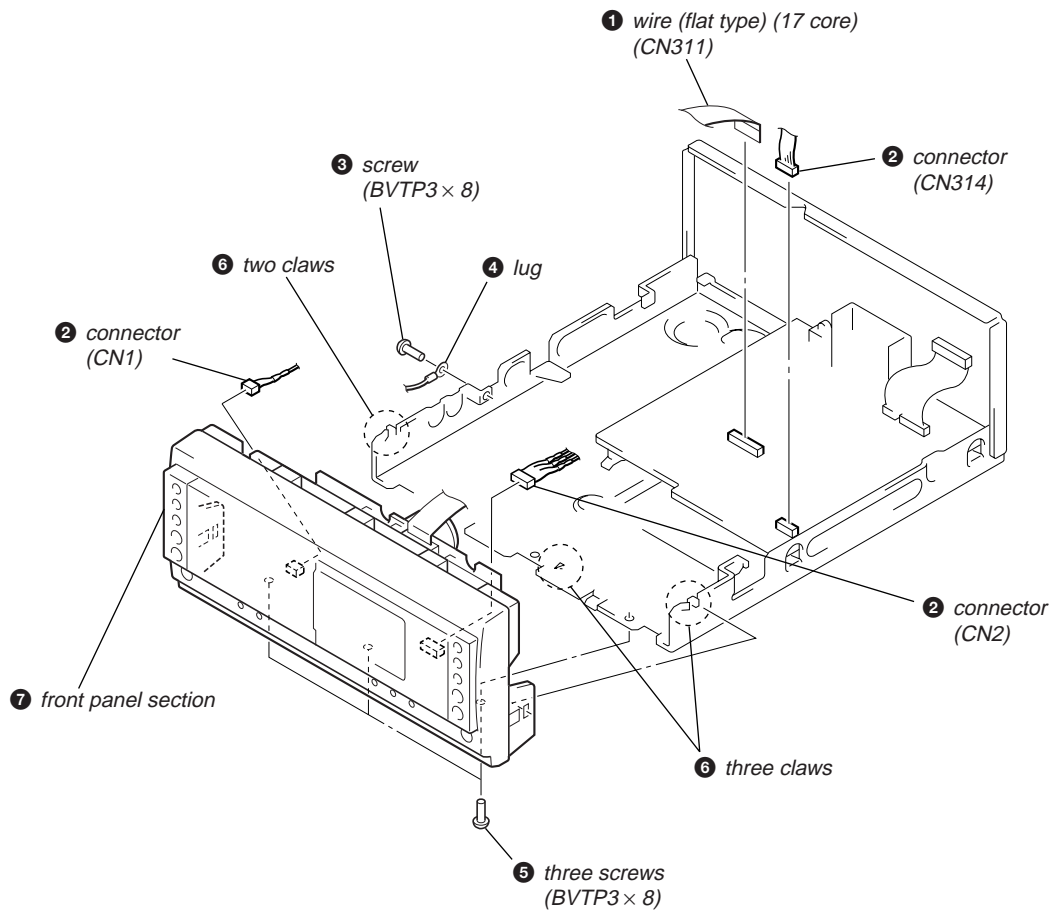
### 3-2. CASE



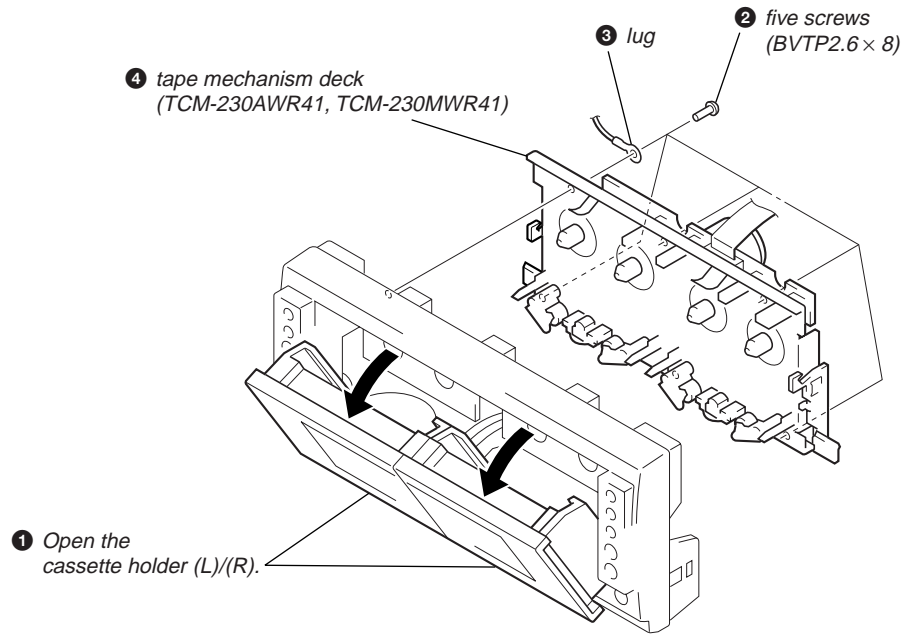
3-3. MAIN BOARD



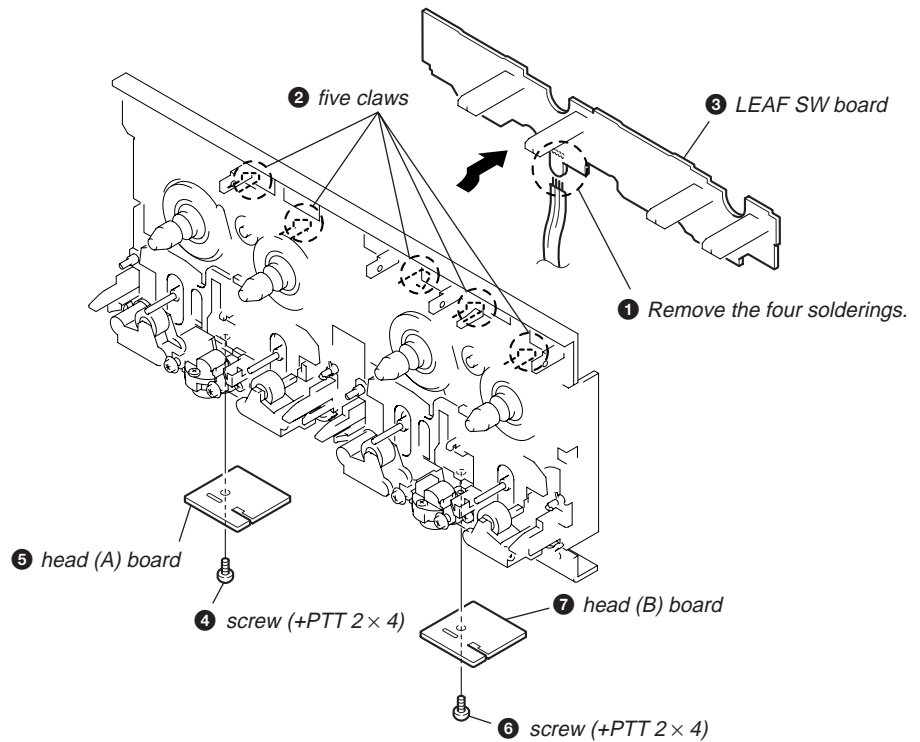
3-4. FRONT PANEL SECTION



3-5. TAPE MECHANISM DECK (TCM-230AWR41, TCM-230MWR41)



3-6. LEAF SW BOARD, HEAD (A) BOARD AND HEAD (B) BOARD



## SECTION 4

### TEST MODE

**Note:** Use following buttons in the test mode.

no mark : Button of Tape unit (TC-S9)





\*1 : Button of amplifier unit (TA-S9D)

\*2 : Button of DVD/video CD/CD unit (DVP-S9)


#### [MC Test Mode]

##### Enter the MC Test Mode

###### Procedure:

1. Press the \*1 button to turn the power on.
2. While pressing the both \*2 and \*2 buttons, press the \*2 button.
3. "GROOVE" indication blinks on the fluorescent indicator tube in the midst of MC test mode.

##### Releasing the MC Test Mode

To release from this mode, press the \*1 button or disconnect the power cord.

#### [DECK Test Mode]

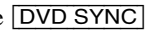
In the DECK test mode, it operates as follows.

##### Cancellation of the linear mute of DOLBY IC (IC301)

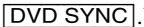
- It become cancellation automatically when it is possible to enter a MC test mode.

#### AMS Checking

##### Procedure:


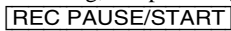
1. Enter the MC test mode.
2. Insert a test tape AMS-110A or AMS-120 to Deck A.
3. Set TAPE A function.
4. Press the  button to enter the AMS test mode.
5. After a tape is rewind first, the FF AMS is checked, and the mechanism is shut off after detecting the ASM signal twice.
6. Then the REW AMS is checked and the mechanism is shut off after detecting the AMS signal twice.
7. When the check is complete, a message of either OK or NG appears.

(To check an AMS of the B deck, select TAPE B function.

After that, press .)


#### ALC Checking

##### Procedure:

1. Enter the MC test mode.
  2. Insert a tape into Deck B.
  3. During Recording, Keep holding down the below keys.  
\*2 + 
- ALC could keep ON while these keys keep being pressed, ALC could keep OFF while keys are released.

#### Double Speed REC Mode



##### Procedure:

1. Enter the MC test mode
  2. Insert a tape into Deck B.
  3. During Recording, keep holding down the below key.  

- Double speed recording is going on while the key keeps being pressed.

#### REC/PLAY Checking

- The mode to PLAY by rewinding recording contents automatically.

##### Procedure:

1. If recording A surface, it returns automatically at the point of the recording beginning and it replays when pressing TAPE B .
2. If recording B surface, it returns automatically at the point of the recording beginning and it replays when pressing TAPE B .



## SECTION 5 MECHANICAL ADJUSTMENTS

### Precaution

1. Clean the following parts with a denatured alcohol-moistened swab:
 

record/playback heads	pinch rollers
erase head	rubber belts
capstan	idlers
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

### Torque Measurement

Mode	Torque meter	Meter reading
FWD	CQ-102C	3.06 N • m to 6.96 N • m 31 to 71 g • cm (0.43 – 0.98 oz • inch)
FWD back tension	CQ-102C	0.19 N • m to 0.58 N • m 2 to 6 g • cm (0.02 – 0.08 oz • inch)
REV	CQ-102RC	3.06 N • m to 6.96 N • m 31 to 71 g • cm (0.43 – 0.98 oz • inch)
REV back tension	CQ-102RC	0.19 N • m to 0.58 N • m 2 to 6 g • cm (0.02 – 0.08 oz • inch)
FF/REW	CQ-201B	6.96 N • m to 14.02 N • m 71 to 143 g • cm (0.98 – 1.99 oz • inch)
FWD tension	CQ-403A	9.80 N • m 100 g or more (3.53 oz or more)
REV tension	CQ-403R	9.80 N • m 100 g or more (3.53 oz or more)

## SECTION 6 ELECTRICAL ADJUSTMENTS

### DECK SECTION

0 dB=0.775 V

1. Demagnetize the record/playback head with a head demagnetizer.
2. Do not use a magnetized screwdriver for the adjustments.
3. After the adjustments, apply suitable locking compound to the parts adjust.
4. The adjustments should be performed with the rated power supply voltage unless otherwise noted.
5. The adjustments should be performed in the order given in this service manual. (As a general rule, playback circuit adjustment should be completed before performing recording circuit adjustment.)
6. The adjustments should be performed for both L-CH and R-CH.
7. Switches and controls should be set as follows unless otherwise specified.
8. Please refer to "SERVICING NOTES" (page 3) before adjustments.

• Test Tape

Tape	Signal	Used for
P-4-A100	10 kHz, -10 dB	Azimuth Adjustment
WS-48B	3 kHz, 0 dB	Tape Speed Adjustment
P-4-L300J	315 Hz, 0 dB	Level Adjustment

### Record/Playback Head Azimuth Adjustment

#### DECK A

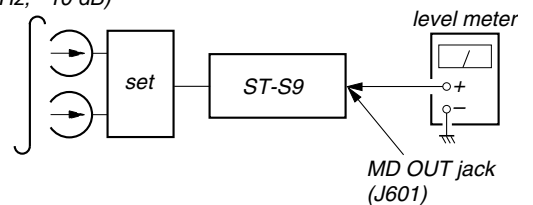
#### DECK B

**Note:** Perform this adjustments for both decks

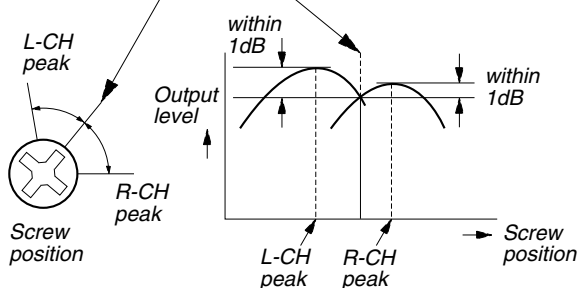
**Procedure:**

1. Mode: Playback

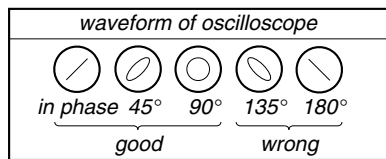
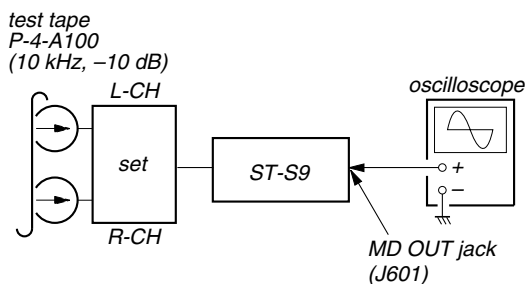
*test tape*  
P-4-A100  
(10 kHz, -10 dB)



- Turn the adjustment screw and check output peaks. If the peaks do not match for L-CH and R-CH, turn the adjustment screw so that outputs match within 1dB of peak.

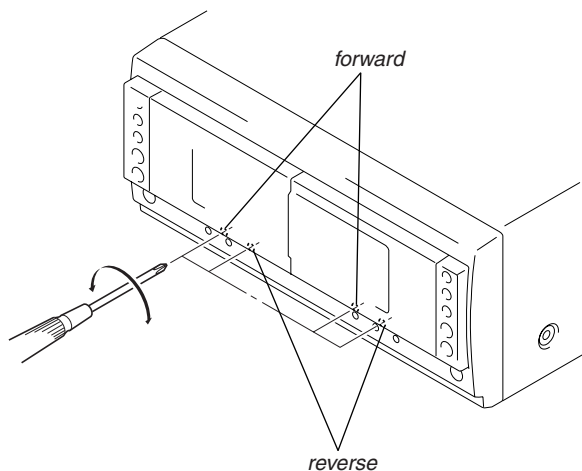


- Mode: Playback



- After the adjustments, apply suitable locking compound to the parts adjusted.

**Adjustment Location:** Playback Head (Deck A).  
Record/Playback/Erase Head (Deck B).



**Note:** Use following buttons in the test mode.

- no mark : Button of Tape unit (TC-S9)
- \*1 : Button of amplifier unit (TA-S9D)
- \*2 : Button of DVD/video CD/CD unit (DVP-S9)

**Tape Speed Adjustment** DECK B

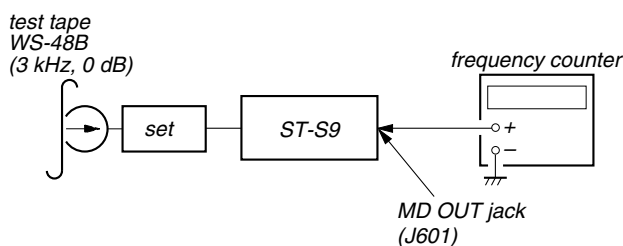
**Note:** Start the Tape Speed adjustment as below after setting to the test mode.

In the test mode, the tape speed is high during pressing the HI-DUB button.

**Procedure:**

- Turn the power switch on.
- While pressing the both PLAY MODE\*2 and ■\*2 buttons, press the DISC 3\*2 button.  
(The "GROOVE" on the fluorescent indicator tube display while in the test mode.)  
To exit from the test mode, press the I/O\*1 button.

Mode: Playback



- Insert the WS-48B into the deck B.
- Press the ▶ button on the deck B.
- Press the HI-DUB button in playback mode.  
Then at HIGH speed mode.
- Adjust RV1001 on the LEAF SW board so that frequency counter reads  $6,000 \pm 180$  Hz.
- Press the HI-DUB button.  
Then back to NORMAL speed mode.
- Adjust RV1002 on the LEAF SW board so that frequency counter reads  $3,000 \pm 90$  Hz.

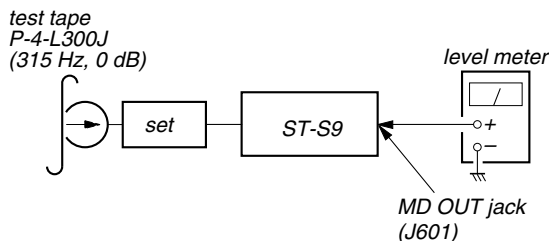
**Adjustment Location:** LEAF SW board

Sample Value of Wow and Flutter: 0.3% or less W. RMS  
(WS-48B)

**Playback Level Adjustment** DECK A DECK B

**Procedure:**

Mode: Playback



- Confirm that level difference between the channels is with  $\pm 0.5$  dB.
- After check, adjust the following RVs.  
Deck A is RV302 (L-CH), Deck B is RV303 (L-CH) so that adjustment within adjustment level as follows.

**Adjustment Level:**

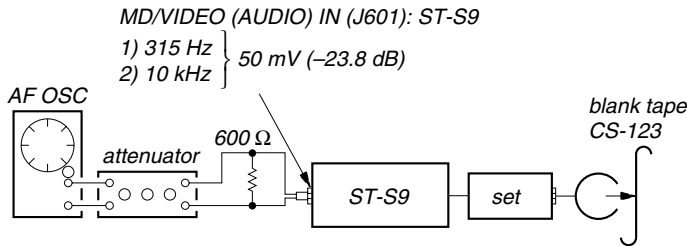
MD OUT jack (J601) PB level: 334.4 to 748.7 mV  
( $-6.8 \pm 0.5$  dB)

**Adjustment Location:** MAIN board

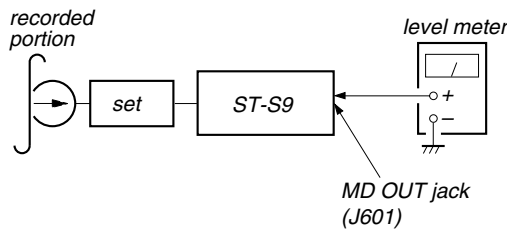
**REC Bias Adjustment DECK B**

**Procedure:**

1. Insert a tape into Deck B.
2. After press [REC PAUSE/START] button, press [REC PAUSE/START] button, then recording start.
3. Mode: Record



4. Mode: Playback



5. Confirm the playback signal recorded in step 3 becomes adjustable level as follows.  
 If these levels are not adjustable level, adjust the RV304 (L-CH) and RV354 (R-CH) on the MAIN board to repeat steps 4 and 5.

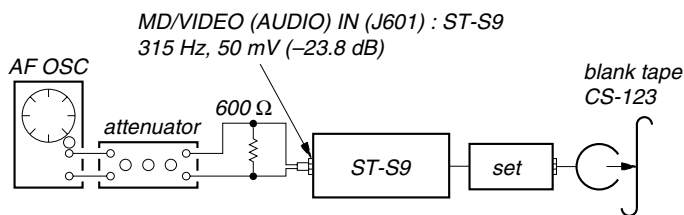
**Adjustable level:** Playback output of 315 Hz to playback output of 10 kHz:  $\pm 1.0$  dB

**Adjustment Location:** MAIN board

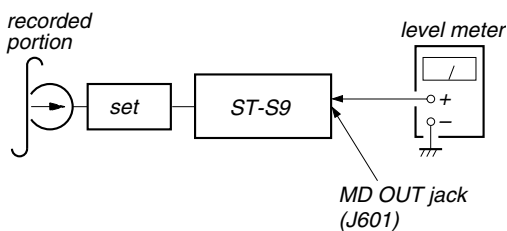
**REC Level Adjustment DECK B**

**Procedure:**

1. Insert a tape into Deck B.
2. After press [REC PAUSE/START] button, press [REC PAUSE/START] button, then recording start.
3. Mode: Record



4. Mode: Playback



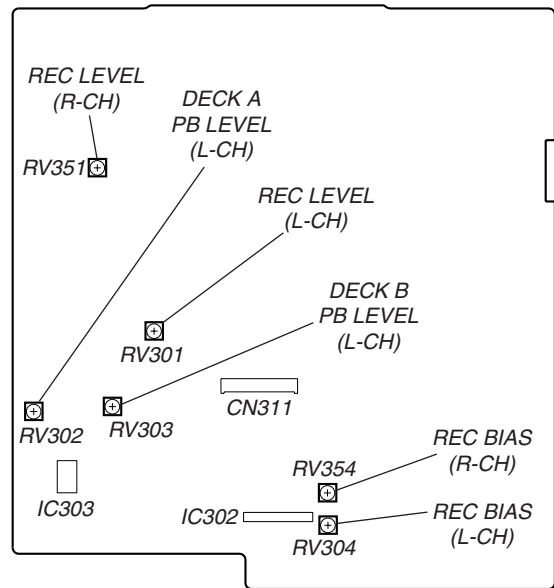
5. Confirm the play back signal recorded in step 3 becomes adjustable level as follows.  
 If these levels are not adjustable level, adjust the RV301 (L-CH) and RV351 (R-CH) on the MAIN board to repeat steps 4 and 5.

**Adjustable level:**

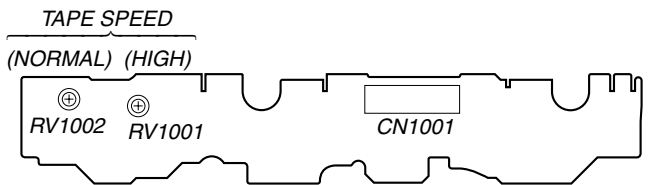
MD OUT jack PB level: 47.2 to 53.0 mV (-27.3 to -26.3 dB)

**Adjustment Location:** MAIN board

**[MAIN BOARD] (Component Side)**



**[LEAF SW BOARD] (Component Side)**



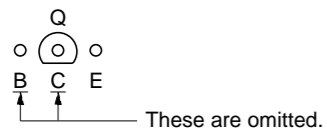
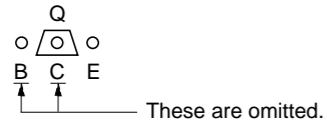
MEMO

## SECTION 7 DIAGRAMS

### 7-1. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

#### Note on Printed Wiring Boards:

- — : parts extracted from the component side.
- : Pattern from the side which enables seeing.
- Indication of transistor.



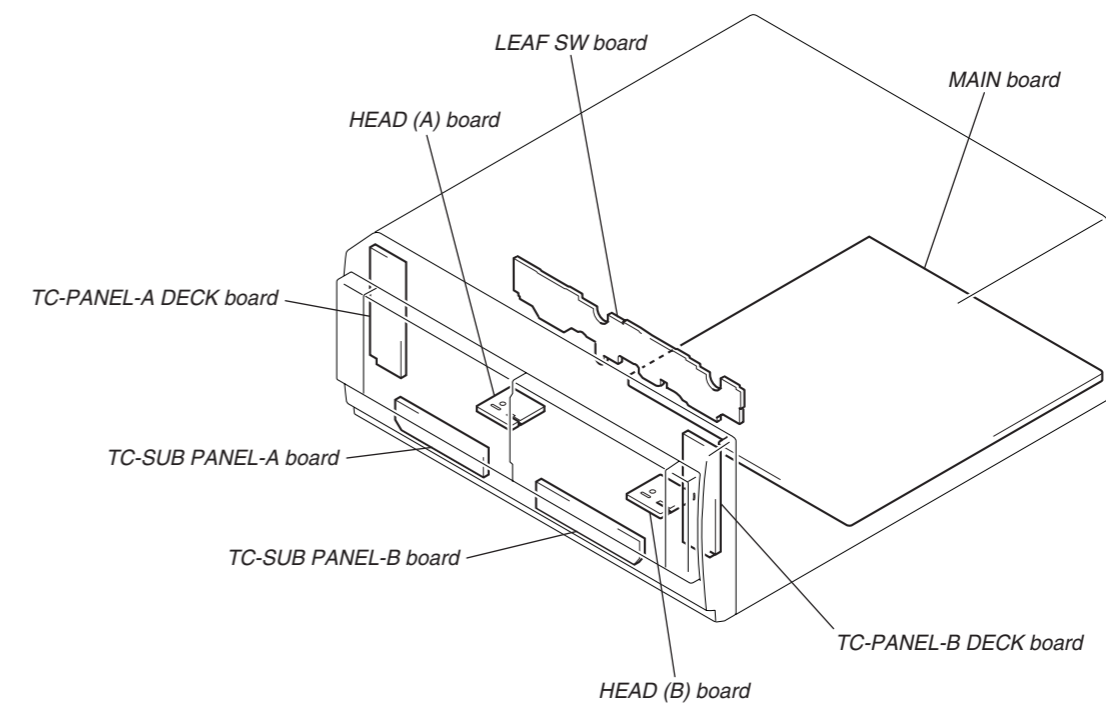
#### Note on Schematic Diagram:

- All capacitors are in  $\mu\text{F}$  unless otherwise noted. pF:  $\mu\mu\text{F}$  50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $1/4\text{ W}$  or less unless otherwise specified.
- ⊞ : fusible resistor.
- : panel designation.

**Note:** The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

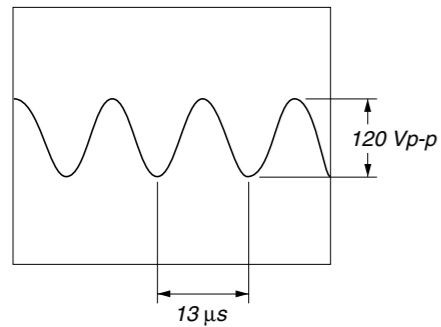
- : B+ Line.
- - - : B- Line.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
- no mark : STOP
- ( ) : PB
- ⟨ ⟩ : REC
- Voltages are taken with a VOM (Input impedance 10 M $\Omega$ ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
- ∑ : PB
- ∑ : REC
- Abbreviation
- TH : Thai model

#### • Circuit Boards Location

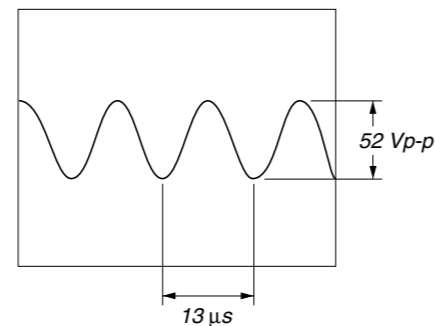


#### • Waveforms – MAIN Board –

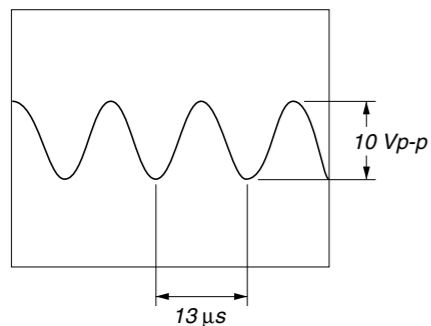
##### ① T301 ④ (DECK-B REC mode)



##### ③ NO312 ⑥ (L-REC), ③ (R-REC) (DECK-B REC mode)

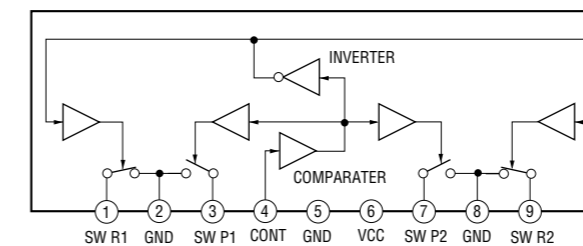


##### ② Q301, 303 (collector) (REC mode)

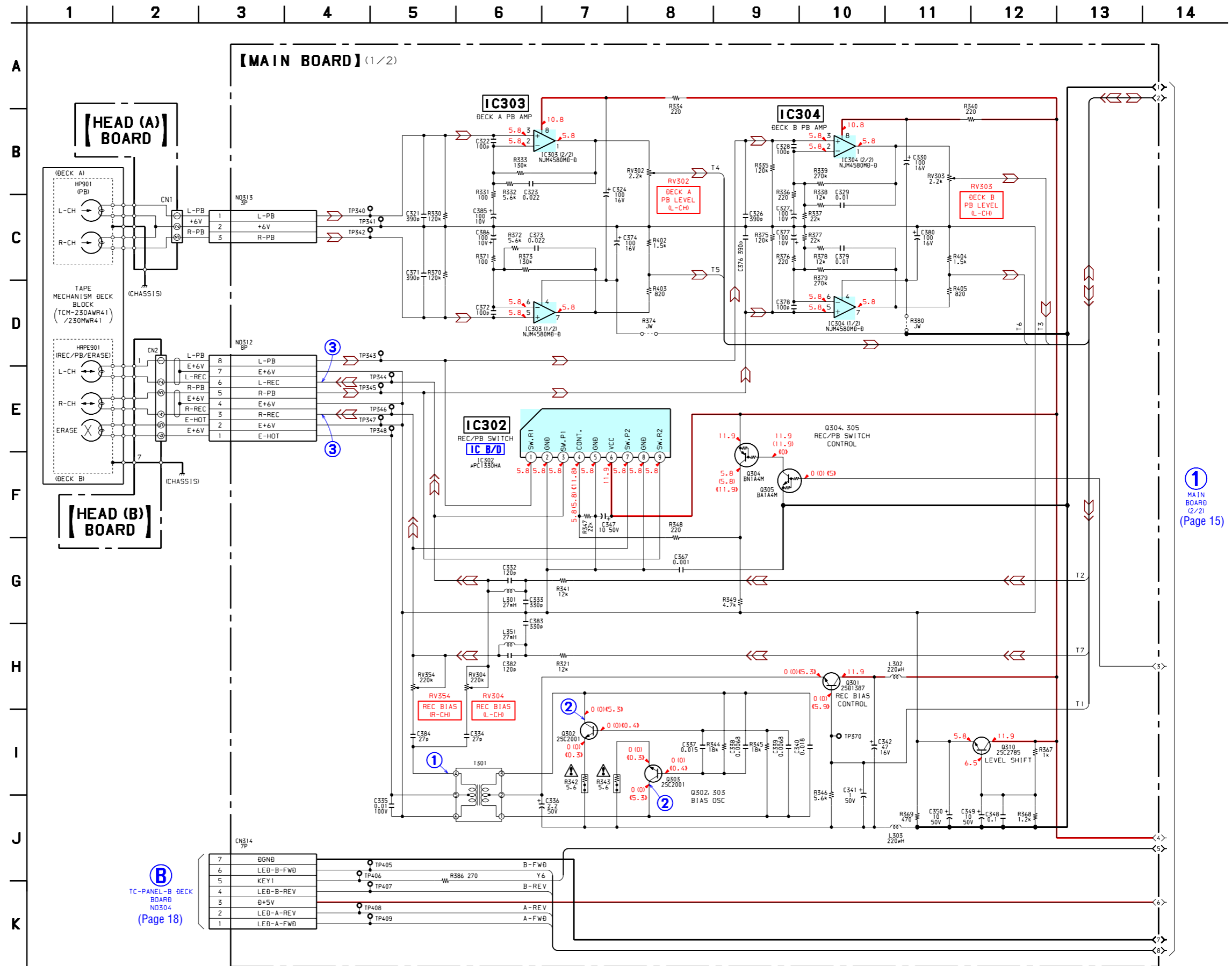


#### • IC Block Diagram – MAIN Board –

##### IC302 $\mu\text{PC1330HA}$



7-2. SCHEMATIC DIAGRAM – MAIN Section (1/2) – • See page 13 for Waveforms. • See page 13 for IC Block Diagram.

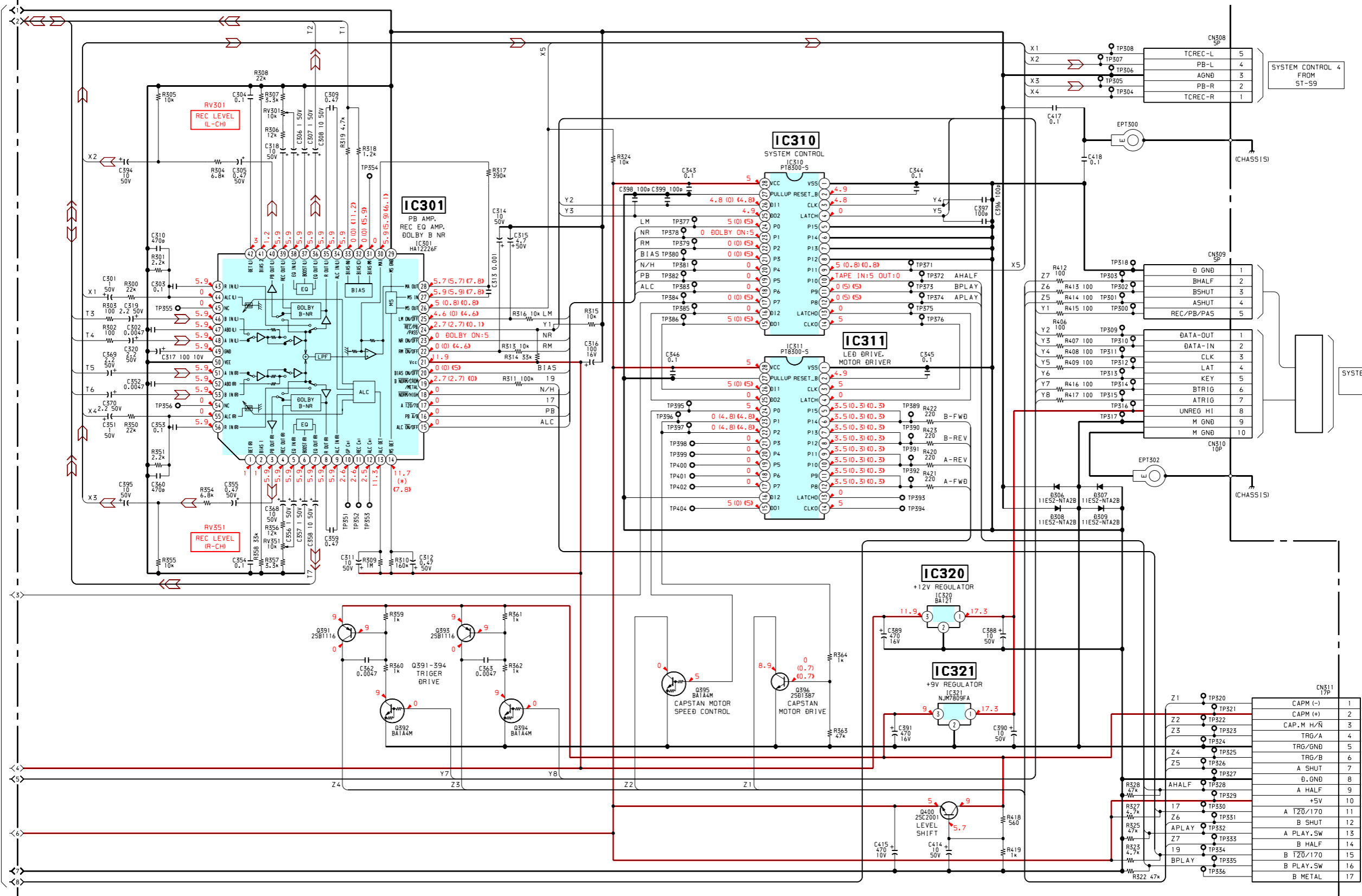


7-3. SCHEMATIC DIAGRAM – MAIN Section (2/2) –

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K

**[MAIN BOARD] (2/2)**



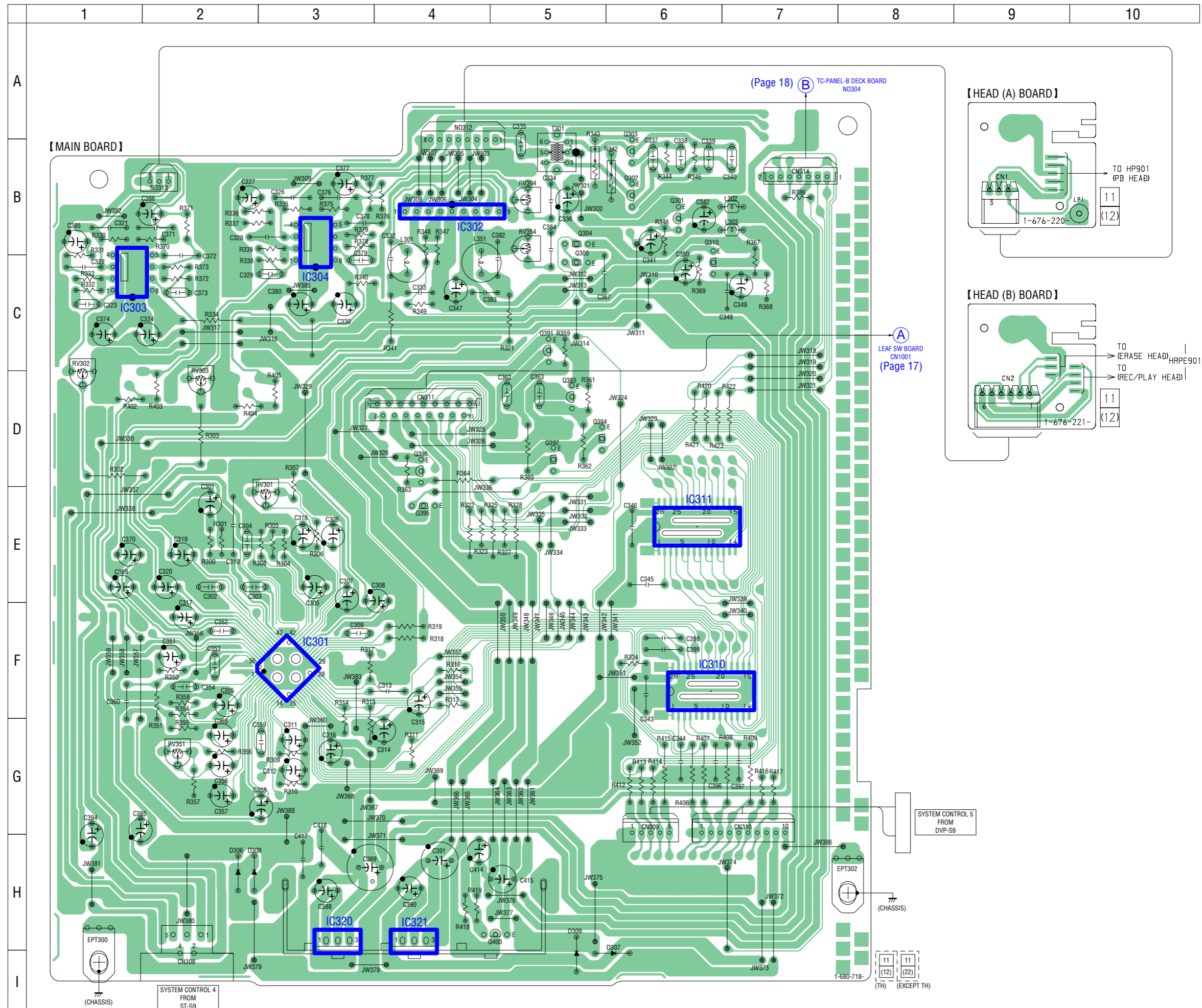
1 MAIN BOARD (1/2) (Page 14)

A LEAF SW BOARD CN1001 (Page 17)

7-4. PRINTED WIRING BOARDS – MAIN Section – • See page 13 for Circuit Boards Location.

• Semiconductor Location

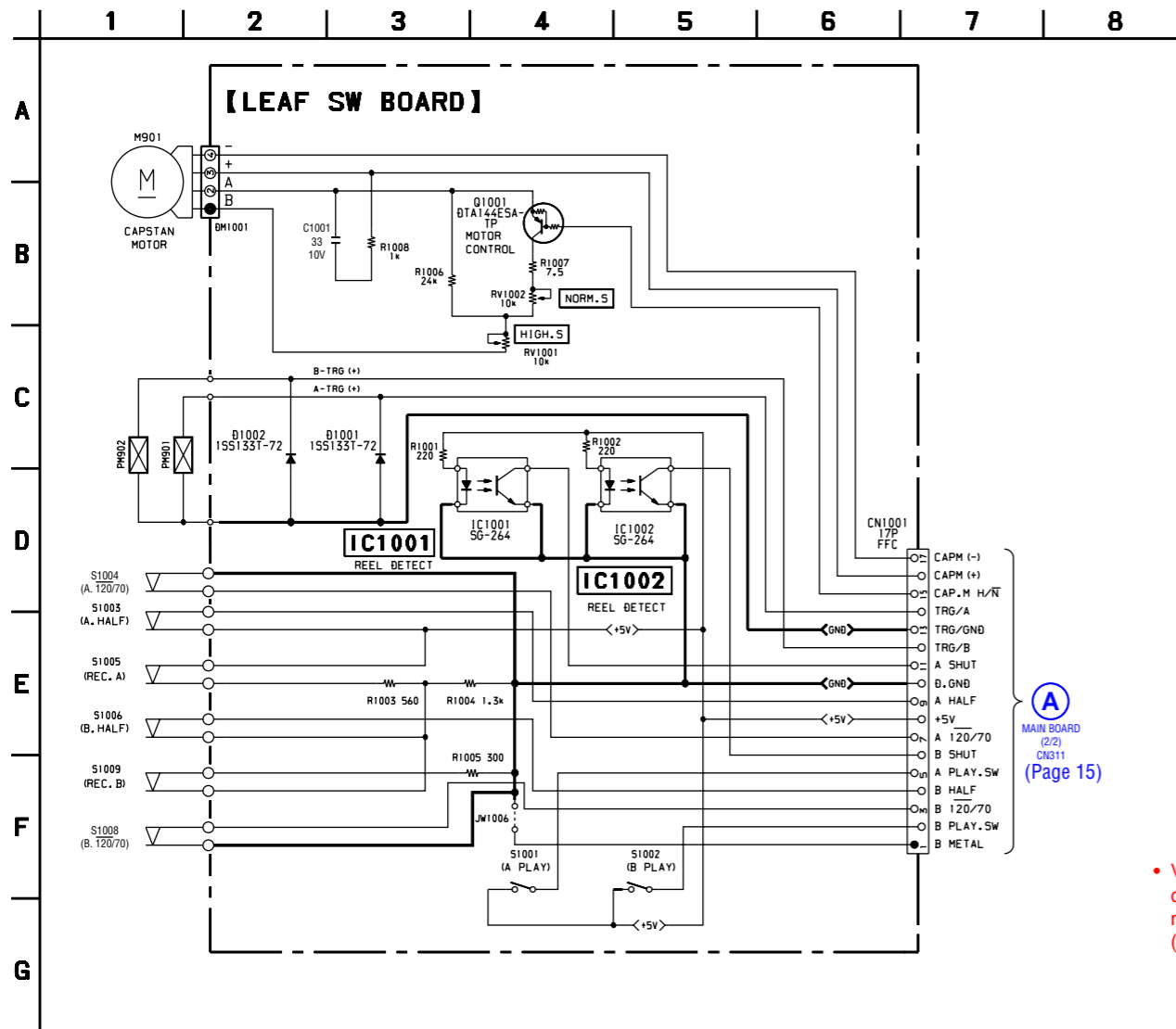
Ref. No.	Location
D306	H-2
D307	I-6
D308	H-2
D309	H-5
IC301	F-3
IC302	B-4
IC303	C-1
IC304	B-3
IC310	F-6
IC311	E-6
IC320	H-3
IC321	H-4
Q301	B-6
Q302	B-6
Q303	B-6
Q304	B-5
Q305	C-5
Q310	C-6
Q391	C-5
Q392	D-5
Q393	D-5
Q394	D-5
Q395	E-4
Q396	D-4
Q400	H-5



There are a few cases that the part printed on this diagram isn't mounted in this model.



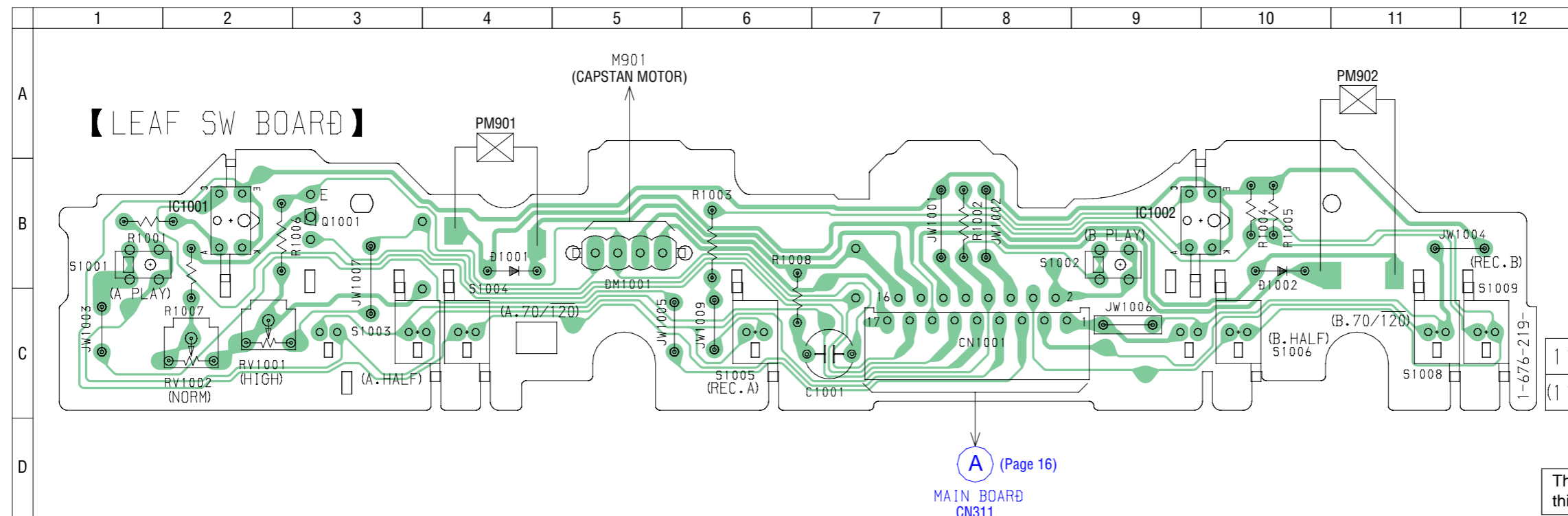
7-5. SCHEMATIC DIAGRAM – LEAF SW Section –



**A**  
MAIN BOARD  
(2/2)  
CN311  
(Page 15)

• Voltages are dc with respect to ground under no-signal conditions.  
no mark : TAPE PLAY  
( ) : TAPE REC

7-6. PRINTED WIRING BOARD – LEAF SW Section – • See page 13 for Circuit Boards Location.



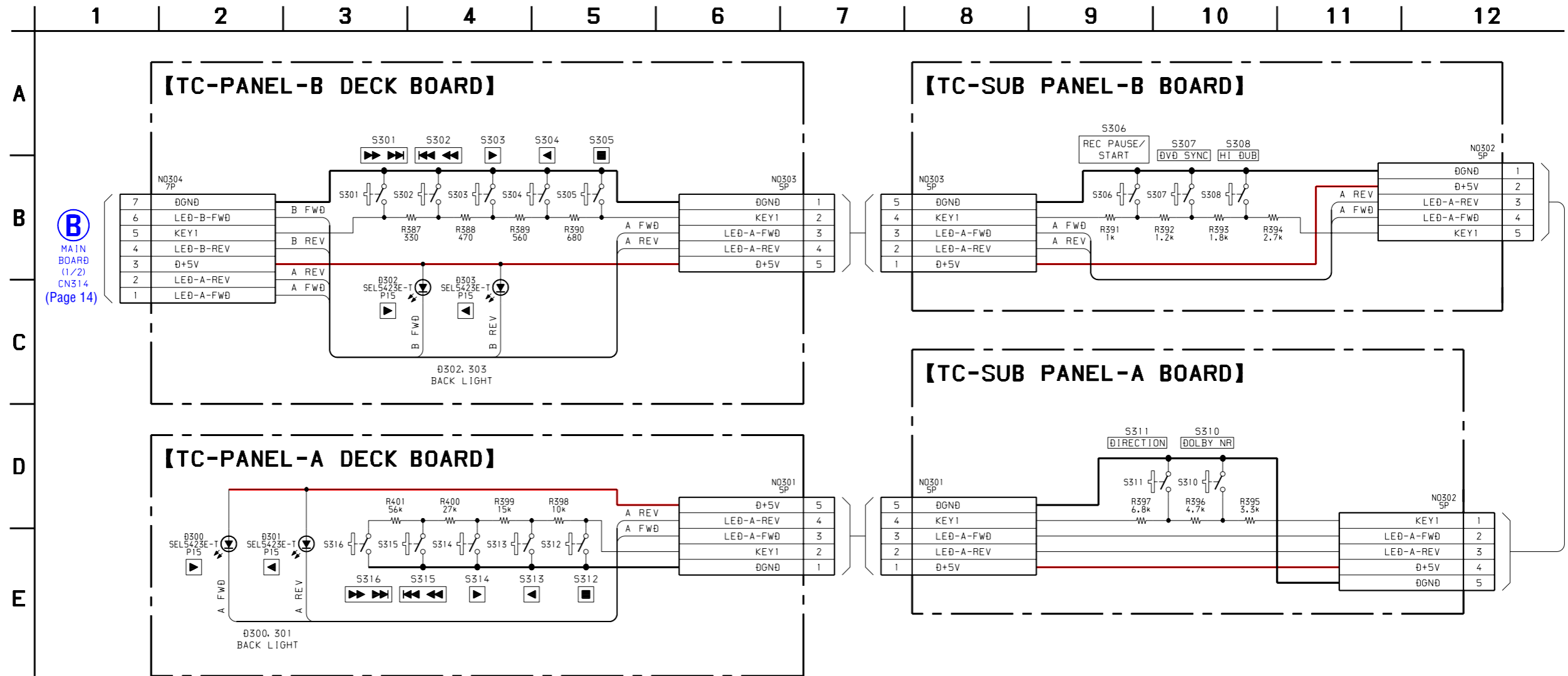
• Semiconductor Location

Ref. No.	Location
D1001	B-4
D1002	B-10
IC1001	B-2
IC1002	B-9
Q1001	B-3

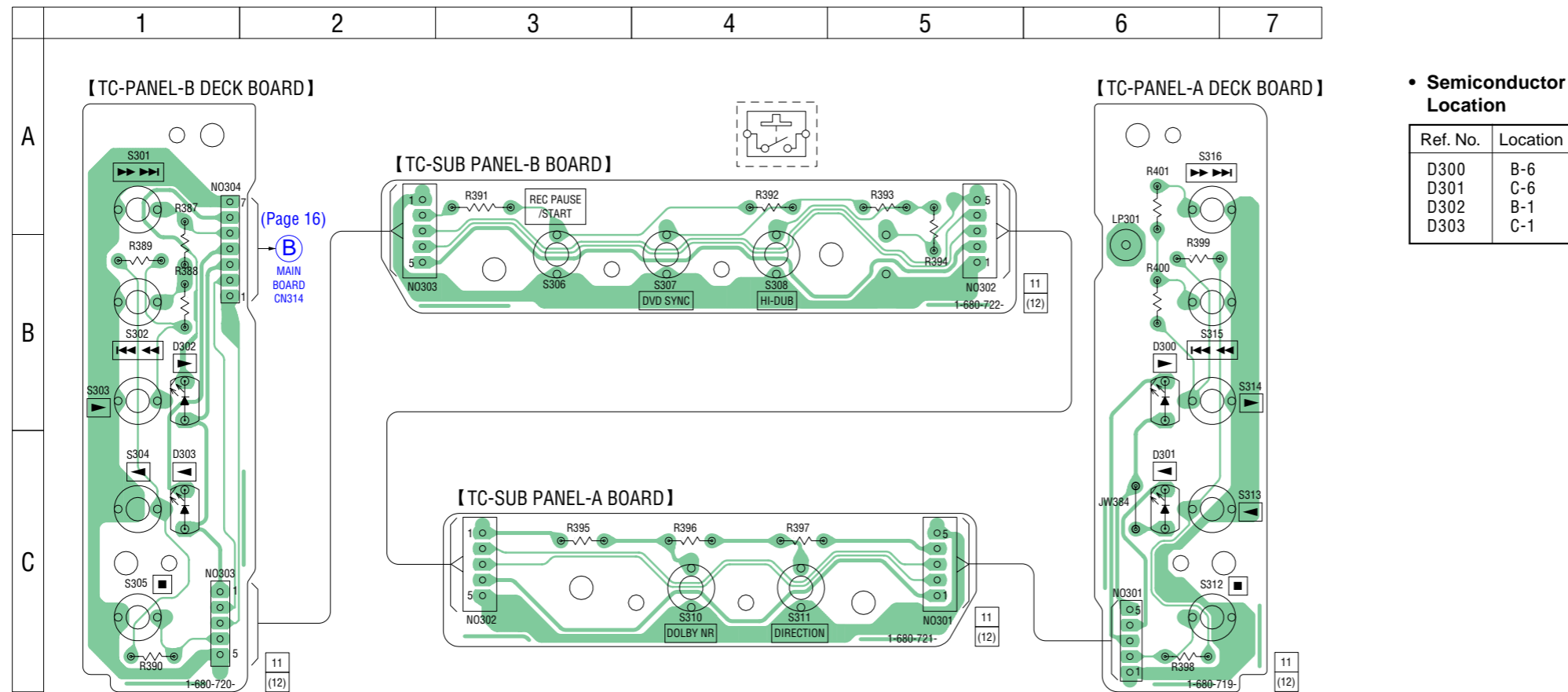
**A** (Page 16)  
MAIN BOARD  
CN311

There are a few cases that the part printed on this diagram isn't mounted in this model.

7-7. SCHEMATIC DIAGRAM – PANEL Section –



7-8. PRINTED WIRING BOARDS – PANEL Section – • See page 13 for Circuit Boards Location.



## 7-9. IC PIN FUNCTION DESCRIPTION

## • MAIN BOARD IC310 PT8300-S (SYSTEM CONTROL)

Pin No.	Pin Name	I/O	Description
1	VSS	—	Ground terminal
2	RESET_B	I	Reset signal input terminal Not used
3	CLK	I	Serial data transfer clock signal input from the DVD/ VIDEO CD/ CD player section (DVP-S9)
4	LATCH	I	Serial data latch pulse signal input from the DVD/ VIDEO CD/ CD player section (DVP-S9)
5 to 8	P15 to P12	I	Not used (fixed at “L”)
9	P11	I	AMS signal input terminal “L”: AMS in
10	P10	I	Detection input from the deck-A half detect switch “H”: cassette in, “L”: no cassette
11	P9	I	Detection input from the deck-B play detect switch “H”: deck-B play
12	P8	I	Detection input from the deck-A play detect switch “H”: deck-A play
13	LATCHO	O	Serial data latch pulse output to the PT8300-S (IC311)
14	CLKO	O	Serial data transfer clock signal output to the PT8300-S (IC311)
15	DO1	O	Serial data output to the PT8300-S (IC311)
16	DI2	I	Serial data input from the PT8300-S (IC311)
17	P7	O	Tape deck relay on/off control signal output to the $\mu$ PC1330H (IC302)
18	P6	O	ALC on/off control signal output to the HA12226F (IC301)
19	P5	O	Deck-A/B selection signal output to the HA12226F (IC301)
20	P4	O	EQ high/normal selection signal output to the HA12226F (IC301)
21	P3	O	Recording bias on/off control signal output to the HA12226F (IC301)
22	P2	O	Recording muting on/off control signal output to the HA12226F (IC301)
23	P1	O	Dolby NR on/off selection signal output to the HA12226F (IC301)
24	P0	O	Tape deck line muting on/off control output to the HA12226F (IC301)
25	DO2	O	Serial data output to the DVD/ VIDEO CD/ CD player section (DVP-S9)
26	DI1	I	Serial data input from the DVD/ VIDEO CD/ CD player section (DVP-S9)
27	PULLUP	I	P8 to P15 Control pin for pull-up resistor (fixed at “L”)
28	VCC	—	Power supply terminal (+5V)

• MAIN BOARD IC311 PT8300-S (LED DRIVE, MOTOR DRIVER)

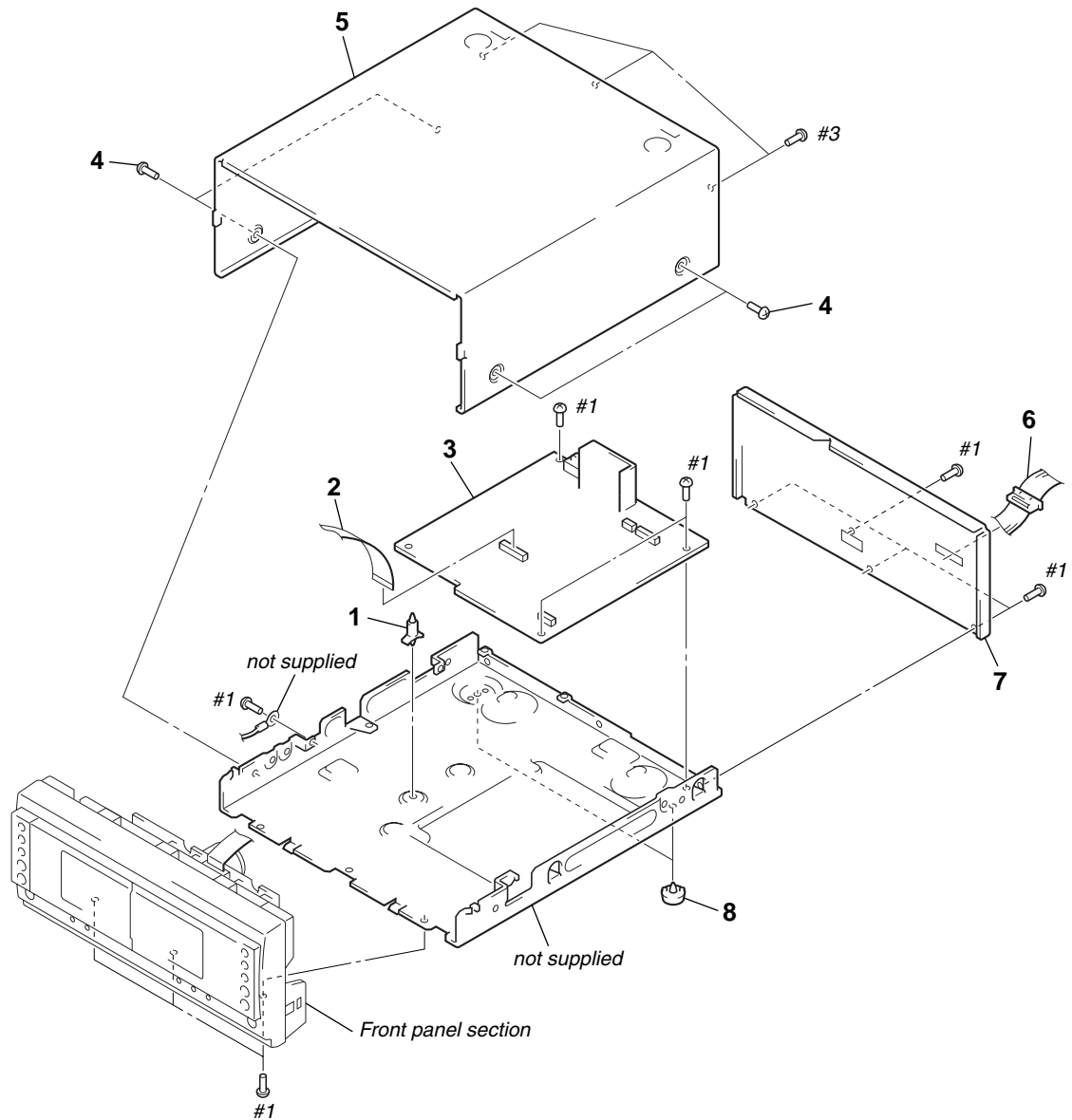
Pin No.	Pin Name	I/O	Description
1	VSS	—	Ground terminal
2	RESET_B	I	Reset signal input terminal Nor used
3	CLK	I	Serial data transfer clock signal input from the PT8300-S (IC310)
4	LATCH	I	Serial data latch pulse input from the PT8300-S (IC310)
5	P15	O	Not used (connected to pin ⑥)
6	P14	O	LED drive signal output of the B-FWD indicator (D302) “L”: LED on
7	P13	O	Not used (connected to pin ⑧)
8	P12	O	LED drive signal output of the B-REV indicator (D303) “L”: LED on
9	P11	O	Not used (connected to pin ⑩)
10	P10	O	LED drive signal output of the A-REV indicator (D301) “L”: LED on
11	P9	O	Not used (connected to pin ⑪)
12	P8	O	LED drive signal output of the A-FWD indicator (D300) “L”: LED on
13	LATCHO	O	Not used (open)
14	CLKO	O	Not used (open)
15	DO1	O	Not used (open)
16	DI2	I	Not used (fixed at “L”)
17 to 21	P7 to P3	O	Not used (open)
22	P2	O	Not used (connected to pin ⑳)
23	P1	O	Capstan motor on/off control signal output terminal “H”: motor on
24	P0	O	High/normal speed selection signal output of the capstan motor “H”: normal speed, “L”: high speed
25	DO2	O	Serial data output to the PT8300-S (IC310)
26	DI1	I	Serial data input from the PT8300-S (IC310)
27	PULLUP	I	P8 to P15 Control pin for Pull-up resistor (fixed at “L”)
28	VCC	—	Power supply terminal (+5V)

## SECTION 8 EXPLODED VIEWS

**NOTE:**

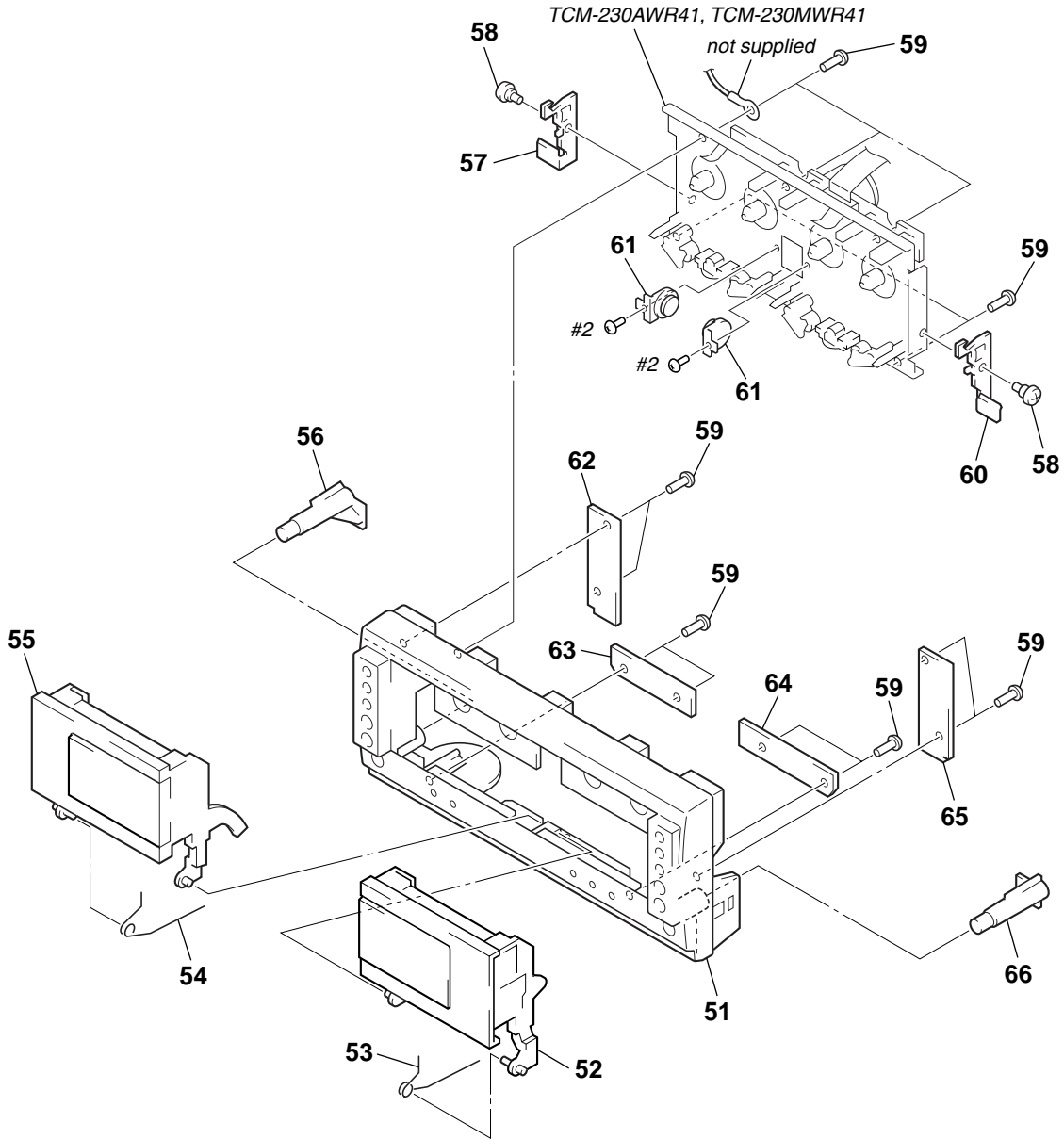
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts  
Example:  
KNOB, BALANCE (WHITE) . . . (RED)  
  ↑  ↑  
  Parts Color Cabinet's Color
- Abbreviation  
AUS : Australian model                   MX : Mexican model  
EA : Saudi Arabia model               SP : Singapore model  
KR : Korean model                      TH : Thai model
- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of the electrical parts list.

### 8-1. GENERAL SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 1	4-924-098-01	HOLDER, PC BOARD		7	4-236-839-01	PANEL (TC), BACK (AEP, UK)	
2	1-773-048-11	WIRE (FLAT TYPE) (17 CORE)		7	4-236-839-11	PANEL (TC), BACK (AUS, EA, KR)	
3	A-2007-873-A	MAIN BOARD, COMPLETE (EXCEPT TH)		7	4-236-839-21	PANEL (TC), BACK (E, SP)	
3	A-4725-734-A	MAIN BOARD, COMPLETE (TH)		7	4-236-839-31	PANEL (TC), BACK (MX)	
4	3-363-099-21	SCREW (CASE 3 TP2)		7	4-236-839-41	PANEL (TC), BACK (TH)	
5	4-232-336-31	CASE		8	4-965-822-01	FOOT	
6	1-757-632-11	CORD (WITH CONNECTOR) 15P					

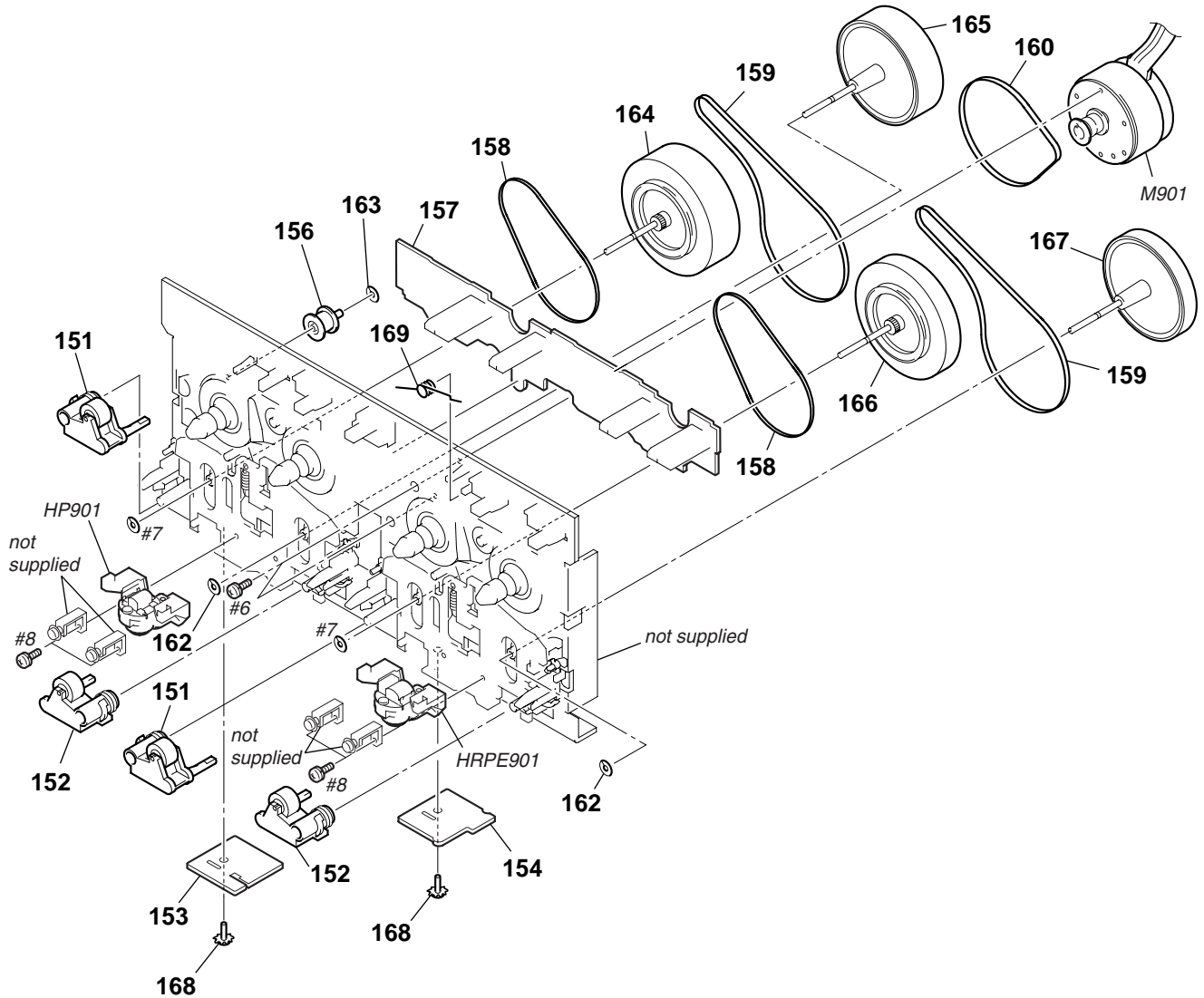
8-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	X-4953-609-1	PANEL ASSY, FRONT		59	4-951-620-01	SCREW (2.6X8), +BVTP	
52	X-4953-606-1	HOLDER (R) ASSY, CASSETTE		60	4-900-889-01	EJECT (LEVER-R)	
53	4-233-091-01	SPRING (R), TORSION		61	4-215-062-01	DAMPER	
54	4-233-090-01	SPRING (L), TORSION		62	1-680-719-11	TC-PANEL-A DECK BOARD	
55	X-4953-605-1	HOLDER (L) ASSY, CASSETTE		63	1-680-721-11	TC-SUB PANEL-A BOARD	
56	4-233-094-01	EJECT (L), BUTTON		64	1-680-722-11	TC-SUB PANEL-B BOARD	
57	4-900-888-01	EJECT (LEVER-L)		65	1-680-720-11	TC-PANEL-B DECK BOARD	
58	3-019-456-11	SCREW, STEP		66	4-233-095-01	EJECT (R), BUTTON	

**8-3. TAPE MECHANISM DECK SECTION  
(TCM-230AWR41)**

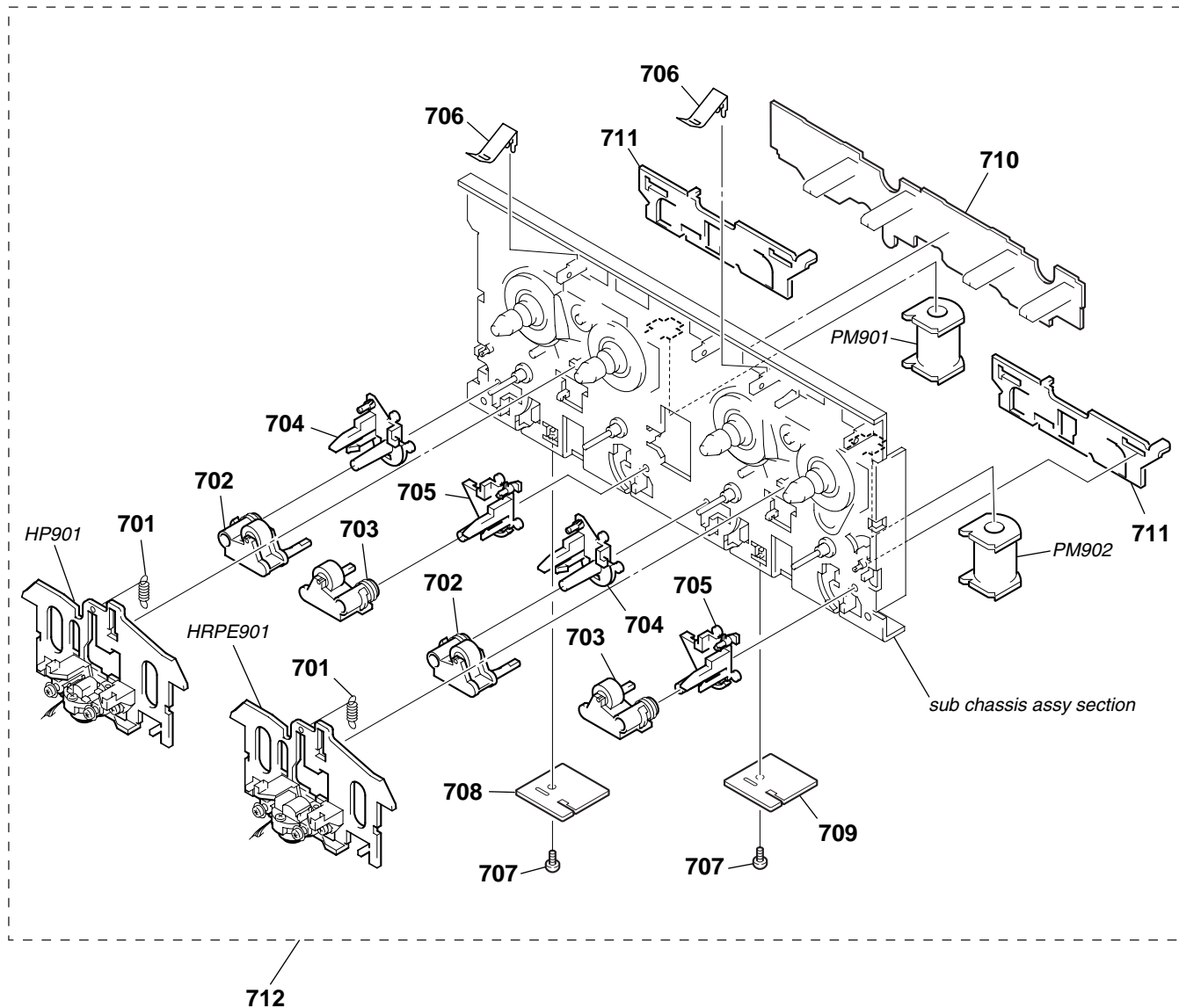
NOTE: Two types of tape mechanism deck are used for this model.  
Refer to "TAPE MECHANISM DECK DISCRIMINATION" on page 3.



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
151	X-3374-156-4	PINCH LEVER (REV) ASSY		164	X-3378-041-1	FLYWHEEL (A-REV) ASSY	
152	X-3374-155-4	PINCH LEVER (FWD) ASSY		165	X-3378-040-1	FLYWHEEL (A-FWD) ASSY	
153	A-2007-839-A	HEAD (A) BOARD, COMPLETE		166	X-3378-043-1	FLYWHEEL (B-REV) ASSY	
154	A-2007-840-A	HEAD (B) BOARD, COMPLETE		167	X-3378-042-1	FLYWHEEL (B-FWD) ASSY	
156	3-040-580-02	PULLEY (TENSION)		168	4-227-872-11	SCREW (+PTT 2X4), GROUND POINT	
157	A-2007-838-A	LEAF SW BOARD, COMPLETE		169	4-227-455-02	SPING (HALF), TORSION	
158	3-041-947-01	BELT (FR)		HP901	X-4953-985-1	BLOCK (A) ASSY, HEAD (PB)	(for TCM-230AWR41)
159	3-041-946-01	BELT (CAPSTAN B)		HRPE901	X-4953-986-1	BLOCK (B) ASSY, HEAD (REC/PB/ERASE)	(for TCM-230AWR41)
160	4-227-239-01	BELT (CAPSTAN C)		M901	X-3378-241-1	MOTOR ASSY (WITH PULLEY) (CAPSTAN)	
162	3-019-208-01	WASHER, STOPPER					
163	3-016-533-01	WASHER (FR), STOPPER					

**8-4. TAPE MECHANISM DECK SECTION  
(TCM-230MWR41)**

NOTE: Two types of tape mechanism deck are used for this model.  
Refer to "TAPE MECHANISM DECK DISCRIMINATION" on page 3.

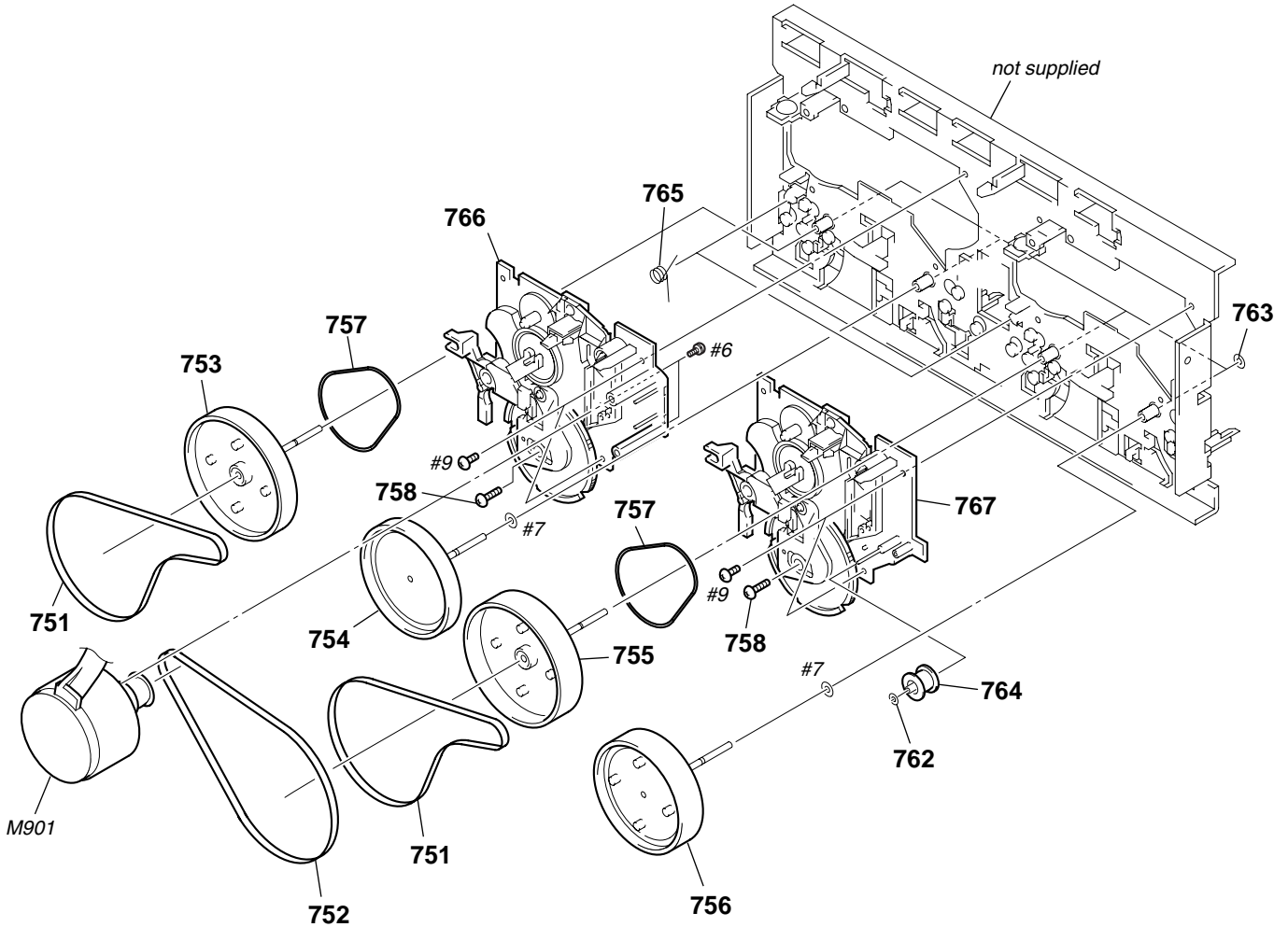


Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
701	3-016-574-11	SPRING (HEAD), TENSION		710	A-2007-838-A	LEAF SW BOARD, COMPLETE	
702	3-016-565-01	BASE (PINCH LEVER REV)		711	3-016-566-01	SLIDER, REVERSE	
703	3-016-564-01	BASE (PINCH LEVER FWD)		712	A-2100-932-A	TAPE MECHANISM DECK (TCM-230MWR41)	
704	X-3374-156-5	PINCH LEVER (REV) ASSY		HP901	A-2004-771-A	BASE (A) ASSY, HEAD (PB)	
705	X-3374-155-5	PINCH LEVER (FWD) ASSY				(for TCM-230MWR41)	
706	4-229-083-01	SPRING (CASSETTE), LEAF		HRPE901	A-2004-772-A	BASE (B) ASSY, HEAD (REC/PB/ERASE)	
707	4-227-872-11	SCREW (+PTT 2X4), GROUND POINT				(for TCM-230MWR41)	
708	A-2007-839-A	HEAD (A) BOARD, COMPLETE		PM901	1-454-887-32	SOLENOID, PLUNGER (for TCM-230MWR41)	
709	A-2007-840-A	HEAD (B) BOARD, COMPLETE		PM902	1-454-887-32	SOLENOID, PLUNGER (for TCM-230MWR41)	



**8-5. SUB CHASSIS ASSY SECTION  
(TCM-230MWR41)**

NOTE: Two types of tape mechanism deck are used for this model.  
Refer to "TAPE MECHANISM DECK DISCRIMINATION" on page 3.



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
751	3-041-946-01	BELT (CAPSTAN B)		762	3-016-532-01	WASHER (FR LEVER), STOPPER	
752	4-227-239-01	BELT (CAPSTAN C)		763	3-019-208-01	WASHER, STOPPER	
753	X-3378-042-1	FLYWHEEL (B-FWD) ASSY		764	3-040-580-02	PULLEY (TENSION)	
754	X-3378-043-1	FLYWHEEL (B-REV) ASSY		765	4-228-450-11	SPRING (REVERSE SLIDER), TORSION	
755	X-3378-040-1	FLYWHEEL (A-FWD) ASSY		766	A-2004-794-A	CHASSIS (B) ASSY, SUB	
756	X-3378-041-1	FLYWHEEL (A-REV) ASSY		767	A-2004-793-A	CHASSIS (A) ASSY, SUB	
757	3-041-947-01	BELT (FR)		M901	X-3378-241-1	MOTOR ASSY (WITH PULLEY) (CAPSTAN)	
758	4-231-273-01	SCREW (2X7) +PTT					

HEAD (A)	HEAD (B)
LEAF SW	MAIN

## SECTION 9 ELECTRICAL PARTS LIST

**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS  
All resistors are in ohms.  
METAL: Metal-film resistor.  
METAL OXIDE: Metal oxide-film resistor.  
F: nonflammable
- Abbreviation  
TH : Thai model

- Items marked “\*\*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS  
In each case, u:  $\mu$ , for example:  
uA. . :  $\mu$ A. .      uPA. . :  $\mu$ PA. .  
uPB. . :  $\mu$ PB. .    uPC. . :  $\mu$ PC. .  
uPD. . :  $\mu$ PD. .
- CAPACITORS  
uF:  $\mu$ F
- COILS  
uH:  $\mu$ H

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark
	A-2007-839-A	HEAD (A) BOARD, COMPLETE *****	
		< CONNECTOR >	
* CN1	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P *****	
	A-2007-840-A	HEAD (B) BOARD, COMPLETE *****	
		< CONNECTOR >	
CN2	1-564-722-11	PIN, CONNECTOR (SMALL TYPE) 6P *****	
	A-2007-838-A	LEAF SW BOARD, COMPLETE *****	
		< CAPACITOR >	
C1001	1-107-716-11	ELECT      33uF      20%      10V	
		< CONNECTOR >	
CN1001	1-568-860-21	SOCKET, CONNECTOR 17P	
		< DIODE >	
D1001	8-719-911-19	DIODE 1SS133T-72	
D1002	8-719-911-19	DIODE 1SS133T-72	
		< PHOTO INTERRUPTER >	
IC1001	8-749-014-38	PHOTO INTERRUPTER SG-264	
IC1002	8-749-014-38	PHOTO INTERRUPTER SG-264	
		< TRANSISTOR >	
Q1001	8-729-029-56	TRANSISTOR      DTA144ESA-TP	
		< RESISTOR >	
R907	1-247-879-11	CARBON      100K      5%      1/4W	
R1001	1-249-409-11	CARBON      220      5%      1/4W	
R1002	1-249-409-11	CARBON      220      5%      1/4W	
R1003	1-249-414-11	CARBON      560      5%      1/4W	
R1004	1-247-834-11	CARBON      1.3K      5%      1/4W	
R1005	1-247-818-11	CARBON      300      5%      1/4W	
R1006	1-247-864-11	CARBON      24K      5%      1/4W	
R1007	1-247-780-00	CARBON      7.5      5%      1/4W	

Ref. No.	Part No.	Description	Remark
R1008	1-249-417-11	CARBON      1K      5%	1/4W
		< VARIABLE RESISTOR >	
RV1001	1-241-785-11	RES, ADJ, CARBON 10K	
RV1002	1-241-785-11	RES, ADJ, CARBON 10K	
		< SWITCH >	
S1001	1-570-953-11	SWITCH, PUSH (1 KEY) (A PLAY)	
S1002	1-570-953-11	SWITCH, PUSH (1 KEY) (B PLAY)	
S1003	1-771-333-11	SWITCH, LEAF (A.HALF)	
S1004	1-771-205-11	SWITCH, LEAF (A.120/70)	
S1005	1-771-205-11	SWITCH, LEAF (REC.A)	
S1006	1-771-333-11	SWITCH, LEAF (B.HALF)	
S1008	1-771-205-11	SWITCH, LEAF (B.120/70)	
S1009	1-771-205-11	SWITCH, LEAF (REC.B)	
*****			
	A-2007-873-A	MAIN BOARD, COMPLETE (EXCEPT TH)	
	A-4725-734-A	MAIN BOARD, COMPLETE (TH) *****	
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
		< CAPACITOR >	
C301	1-126-960-11	ELECT      1uF      20%      50V	
C302	1-130-479-00	MYLAR      0.0047uF      5%      50V	
C303	1-136-165-00	FILM      0.1uF      5%      50V	
C304	1-136-165-00	FILM      0.1uF      5%      50V	
C305	1-126-959-11	ELECT      0.47uF      20%      50V	
C306	1-126-960-11	ELECT      1uF      20%      50V	
C307	1-126-960-11	ELECT      1uF      20%      50V	
C308	1-126-964-11	ELECT      10uF      20%      50V	
C309	1-137-194-11	FILM      0.47uF      5%      50V	
C310	1-162-290-31	CERAMIC      470PF      10%      50V	
C311	1-126-964-11	ELECT      10uF      20%      50V	
C312	1-126-959-11	ELECT      0.47uF      20%      50V	
C313	1-162-294-31	CERAMIC      0.001uF      10%      50V	
C314	1-126-964-11	ELECT      10uF      20%      50V	
C315	1-126-963-11	ELECT      4.7uF      20%      50V	
C316	1-126-933-11	ELECT      100uF      20%      16V	
C317	1-104-665-11	ELECT      100uF      20%      10V	
C318	1-126-964-11	ELECT      10uF      20%      50V	
C319	1-126-961-11	ELECT      2.2uF      20%      50V	
C320	1-126-961-11	ELECT      2.2uF      20%      50V	

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C321	1-162-289-31	CERAMIC	390PF 10% 50V	C388	1-126-964-11	ELECT	10uF 20% 50V
C322	1-162-282-31	CERAMIC	100PF 10% 50V	C389	1-126-935-11	ELECT	470uF 20% 16V
C323	1-136-157-00	FILM	0.022uF 5% 50V	C390	1-126-964-11	ELECT	10uF 20% 50V
C324	1-126-933-11	ELECT	100uF 20% 16V	C391	1-126-935-11	ELECT	470uF 20% 16V
C326	1-162-289-31	CERAMIC	390PF 10% 50V	C394	1-126-964-11	ELECT	10uF 20% 50V
C327	1-104-665-11	ELECT	100uF 20% 10V	C395	1-126-964-11	ELECT	10uF 20% 50V
C328	1-162-282-31	CERAMIC	100PF 10% 50V	C396	1-162-282-31	CERAMIC	100PF 10% 50V
C329	1-136-153-00	FILM	0.01uF 5% 50V	C397	1-162-282-31	CERAMIC	100PF 10% 50V
C330	1-126-933-11	ELECT	100uF 20% 16V	C398	1-162-282-31	CERAMIC	100PF 10% 50V
C332	1-162-283-31	CERAMIC	120PF 10% 50V	C399	1-162-282-31	CERAMIC	100PF 10% 50V
C333	1-162-288-31	CERAMIC	330PF 10% 50V	C414	1-126-964-11	ELECT	10uF 20% 50V
C334	1-162-209-31	CERAMIC	27PF 5% 50V	C415	1-126-935-11	ELECT	470uF 20% 10V
C335	1-137-150-11	MYLAR	0.01uF 5% 100V	C417	1-164-159-11	CERAMIC	0.1uF 50V
C336	1-126-961-11	ELECT	2.2uF 20% 50V	C418	1-164-159-11	CERAMIC	0.1uF 50V
C337	1-136-155-00	FILM	0.015uF 5% 50V			< CONNECTOR >	
C338	1-130-481-00	MYLAR	0.0068uF 5% 50V				
C339	1-130-481-00	MYLAR	0.0068uF 5% 50V	* CN308	1-566-856-11	SOCKET, CONNECTOR 5P (SYSTEM CONTROL 4 FROM ST-S9)	
C340	1-136-156-00	FILM	0.018uF 5% 50V	CN309	1-794-569-11	PIN, CONNECTOR 5P	
C341	1-126-960-11	ELECT	1uF 20% 50V	CN310	1-580-176-11	PIN, CONNECTOR 10P	
C342	1-104-660-11	ELECT	47uF 20% 16V	CN311	1-784-778-11	CONNECTOR, FFC 17P	
C343	1-164-159-11	CERAMIC	0.1uF 50V	* CN314	1-568-934-11	PIN, CONNECTOR 7P	
C344	1-164-159-11	CERAMIC	0.1uF 50V			< DIODE >	
C345	1-164-159-11	CERAMIC	0.1uF 50V	D306	8-719-024-99	DIODE 11ES2-NTA2B (EXCEPT TH)	
C346	1-164-159-11	CERAMIC	0.1uF 50V	D306	8-719-200-82	DIODE 11ES2-NTA1B (TH)	
C347	1-126-964-11	ELECT	10uF 20% 50V	D307	8-719-024-99	DIODE 11ES2-NTA2B (EXCEPT TH)	
C348	1-164-159-11	CERAMIC	0.1uF 50V	D307	8-719-200-82	DIODE 11ES2-NTA1B (TH)	
C349	1-126-964-11	ELECT	10uF 20% 50V	D308	8-719-024-99	DIODE 11ES2-NTA2B (EXCEPT TH)	
C350	1-126-964-11	ELECT	10uF 20% 50V	D308	8-719-200-82	DIODE 11ES2-NTA1B (TH)	
C351	1-126-960-11	ELECT	1uF 20% 50V	D309	8-719-024-99	DIODE 11ES2-NTA2B (EXCEPT TH)	
C352	1-130-479-00	MYLAR	0.0047uF 5% 50V	D309	8-719-200-82	DIODE 11ES2-NTA1B (TH)	
C353	1-136-165-00	FILM	0.1uF 5% 50V			< GROUND TERMINAL >	
C354	1-136-165-00	FILM	0.1uF 5% 50V	* EPT300	1-537-738-21	TERMINAL, EARTH	
C355	1-126-959-11	ELECT	0.47uF 20% 50V	* EPT302	1-537-738-21	TERMINAL, EARTH	
C356	1-126-960-11	ELECT	1uF 20% 50V			< IC >	
C357	1-126-960-11	ELECT	1uF 20% 50V	IC301	8-759-652-02	IC HA12226F	
C358	1-126-964-11	ELECT	10uF 20% 50V	IC302	8-759-143-54	IC uPC1330HA	
C359	1-137-194-11	FILM	0.47uF 5% 50V	IC303	8-759-710-59	IC NJM4580D-D	
C360	1-162-290-31	CERAMIC	470PF 10% 50V	IC304	8-759-710-59	IC NJM4580D-D	
C362	1-130-479-00	MYLAR	0.0047uF 5% 50V	IC310	6-800-467-01	IC PT8300-S	
C363	1-130-479-00	MYLAR	0.0047uF 5% 50V	IC311	6-800-467-01	IC PT8300-S	
C367	1-162-294-31	CERAMIC	0.001uF 10% 50V	IC320	8-759-394-35	IC BA12T	
C368	1-126-964-11	ELECT	10uF 20% 50V	IC321	8-759-701-59	IC NJM7809FA	
C369	1-126-961-11	ELECT	2.2uF 20% 50V			< COIL >	
C370	1-126-961-11	ELECT	2.2uF 20% 50V	L301	1-410-780-11	INDUCTOR 27uH	
C371	1-162-289-31	CERAMIC	390PF 10% 50V	L302	1-414-193-41	INDUCTOR 220uH	
C372	1-162-282-31	CERAMIC	100PF 10% 50V	L303	1-414-193-41	INDUCTOR 220uH	
C373	1-136-157-00	FILM	0.022uF 5% 50V	L351	1-410-780-11	INDUCTOR 27uH	
C374	1-126-933-11	ELECT	100uF 20% 16V			< TRANSISTOR >	
C376	1-162-289-31	CERAMIC	390PF 10% 50V	Q301	8-729-801-93	TRANSISTOR 2SD1387-34-TP	
C377	1-104-665-11	ELECT	100uF 20% 10V	Q302	8-729-142-46	TRANSISTOR 2SC2001TP-LK	
C378	1-162-282-31	CERAMIC	100PF 10% 50V	Q303	8-729-142-46	TRANSISTOR 2SC2001TP-LK	
C379	1-136-153-00	FILM	0.01uF 5% 50V				
C380	1-126-933-11	ELECT	100uF 20% 16V				
C382	1-162-283-31	CERAMIC	120PF 10% 50V				
C383	1-162-288-31	CERAMIC	330PF 10% 50V				
C384	1-162-209-31	CERAMIC	27PF 5% 50V				
C385	1-104-665-11	ELECT	100uF 20% 10V				
C386	1-104-665-11	ELECT	100uF 20% 10V				

MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark	
Q304	8-729-422-57	TRANSISTOR	BN1A4M-TP	R349	1-249-425-11	CARBON 4.7K 5%	1/4W	
Q305	8-729-900-80	TRANSISTOR	BA1A4M-TP	R350	1-249-433-11	CARBON 22K 5%	1/4W	
Q310	8-729-119-78	TRANSISTOR	2SC2785TP-HFE	R351	1-249-421-11	CARBON 2.2K 5%	1/4W	
Q391	8-729-140-04	TRANSISTOR	2SB1116-TP-LK	R354	1-249-427-11	CARBON 6.8K 5%	1/4W	
Q392	8-729-900-80	TRANSISTOR	BA1A4M-TP	R355	1-249-429-11	CARBON 10K 5%	1/4W	
Q393	8-729-140-04	TRANSISTOR	2SB1116-TP-LK	R356	1-249-430-11	CARBON 12K 5%	1/4W	
Q394	8-729-900-80	TRANSISTOR	BA1A4M-TP	R357	1-247-843-11	CARBON 3.3K 5%	1/4W	
Q395	8-729-900-80	TRANSISTOR	BA1A4M-TP	R358	1-249-435-11	CARBON 33K 5%	1/4W	
Q396	8-729-801-93	TRANSISTOR	2SD1387-34-TP	R359	1-249-417-11	CARBON 1K 5%	1/4W	
Q400	8-729-142-46	TRANSISTOR	2SC2001TP-LK	R360	1-249-417-11	CARBON 1K 5%	1/4W	
< RESISTOR >				R361	1-249-417-11	CARBON 1K 5%	1/4W	
R300	1-249-433-11	CARBON	22K 5%	1/4W	R362	1-249-417-11	CARBON 1K 5%	1/4W
R301	1-249-421-11	CARBON	2.2K 5%	1/4W	R363	1-249-437-11	CARBON 47K 5%	1/4W
R302	1-247-807-31	CARBON	100 5%	1/4W	R364	1-249-417-11	CARBON 1K 5%	1/4W
R303	1-247-807-31	CARBON	100 5%	1/4W	R367	1-249-417-11	CARBON 1K 5%	1/4W
R304	1-249-427-11	CARBON	6.8K 5%	1/4W	R368	1-249-418-11	CARBON 1.2K 5%	1/4W
R305	1-249-429-11	CARBON	10K 5%	1/4W	R369	1-249-413-11	CARBON 470 5%	1/4W
R306	1-249-430-11	CARBON	12K 5%	1/4W	R370	1-247-881-00	CARBON 120K 5%	1/4W
R307	1-247-843-11	CARBON	3.3K 5%	1/4W	R371	1-247-807-31	CARBON 100 5%	1/4W
R308	1-249-433-11	CARBON	22K 5%	1/4W	R372	1-249-426-11	CARBON 5.6K 5%	1/4W
R309	1-247-903-00	CARBON	1M 5%	1/4W	R373	1-247-882-11	CARBON 130K 5%	1/4W
R310	1-247-884-11	CARBON	160K 5%	1/4W	R375	1-247-881-00	CARBON 120K 5%	1/4W
R311	1-249-441-11	CARBON	100K 5%	1/4W	R376	1-249-409-11	CARBON 220 5%	1/4W
R313	1-249-429-11	CARBON	10K 5%	1/4W	R377	1-249-433-11	CARBON 22K 5%	1/4W
R314	1-249-435-11	CARBON	33K 5%	1/4W	R378	1-249-430-11	CARBON 12K 5%	1/4W
R315	1-249-429-11	CARBON	10K 5%	1/4W	R379	1-247-889-00	CARBON 270K 5%	1/4W
R316	1-249-429-11	CARBON	10K 5%	1/4W	R386	1-249-410-11	CARBON 270 5%	1/4W
R317	1-247-893-11	CARBON	390K 5%	1/4W	R402	1-249-419-11	CARBON 1.5K 5%	1/4W
R318	1-249-418-11	CARBON	1.2K 5%	1/4W	R403	1-249-416-11	CARBON 820 5%	1/4W
R319	1-249-425-11	CARBON	4.7K 5%	1/4W	R404	1-249-419-11	CARBON 1.5K 5%	1/4W
R321	1-249-430-11	CARBON	12K 5%	1/4W	R405	1-249-416-11	CARBON 820 5%	1/4W
R322	1-249-437-11	CARBON	47K 5%	1/4W	R406	1-247-807-31	CARBON 100 5%	1/4W
R323	1-249-425-11	CARBON	4.7K 5%	1/4W	R407	1-247-807-31	CARBON 100 5%	1/4W
R324	1-249-429-11	CARBON	10K 5%	1/4W	R408	1-247-807-31	CARBON 100 5%	1/4W
R325	1-249-437-11	CARBON	47K 5%	1/4W	R409	1-247-807-31	CARBON 100 5%	1/4W
R327	1-249-425-11	CARBON	4.7K 5%	1/4W	R412	1-247-807-31	CARBON 100 5%	1/4W
R328	1-249-437-11	CARBON	47K 5%	1/4W	R413	1-247-807-31	CARBON 100 5%	1/4W
R330	1-247-881-00	CARBON	120K 5%	1/4W	R414	1-247-807-31	CARBON 100 5%	1/4W
R331	1-247-807-31	CARBON	100 5%	1/4W	R415	1-247-807-31	CARBON 100 5%	1/4W
R332	1-249-426-11	CARBON	5.6K 5%	1/4W	R416	1-247-807-31	CARBON 100 5%	1/4W
R333	1-247-882-11	CARBON	130K 5%	1/4W	R417	1-247-807-31	CARBON 100 5%	1/4W
R334	1-249-409-11	CARBON	220 5%	1/4W	R418	1-249-414-11	CARBON 560 5%	1/4W
R335	1-247-881-00	CARBON	120K 5%	1/4W	R419	1-249-417-11	CARBON 1K 5%	1/4W
R336	1-249-409-11	CARBON	220 5%	1/4W	R420	1-249-409-11	CARBON 220 5%	1/4W
R337	1-249-433-11	CARBON	22K 5%	1/4W	R421	1-249-409-11	CARBON 220 5%	1/4W
R338	1-249-430-11	CARBON	12K 5%	1/4W	R422	1-249-409-11	CARBON 220 5%	1/4W
R339	1-247-889-00	CARBON	270K 5%	1/4W	R423	1-249-409-11	CARBON 220 5%	1/4W
R340	1-249-409-11	CARBON	220 5%	1/4W	< VARIABLE RESISTOR >			
R341	1-249-430-11	CARBON	12K 5%	1/4W	RV301	1-241-764-11	RES, ADJ, CARBON 10K	
△ R342	1-212-851-00	FUSIBLE	5.6 5%	1/4W F	RV302	1-241-762-11	RES, ADJ, CARBON 2.2K	
△ R343	1-212-851-00	FUSIBLE	5.6 5%	1/4W F	RV303	1-241-762-11	RES, ADJ, CARBON 2.2K	
R344	1-249-432-11	CARBON	18K 5%	1/4W	RV304	1-241-768-11	RES, ADJ, CARBON 220K	
R345	1-249-432-11	CARBON	18K 5%	1/4W	RV351	1-241-764-11	RES, ADJ, CARBON 10K	
R346	1-249-426-11	CARBON	5.6K 5%	1/4W	RV354	1-241-768-11	RES, ADJ, CARBON 220K	
R347	1-249-433-11	CARBON	22K 5%	1/4W				
R348	1-249-409-11	CARBON	220 5%	1/4W				

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

MAIN

TC-PANEL-A DECK

TC-PANEL-B DECK

TC-SUB PANEL-A

TC-SUB PANEL-B

Ref. No.	Part No.	Description	Remark
		< TRANSFORMER >	
T301	1-423-980-11	TRANSFORMER, BIAS OSCILLATION	
*****			
	1-680-719-11	TC-PANEL-A DECK BOARD	
*****			
		< LED >	
D300	8-719-058-03	LED SEL5423E-TP15 (▶)	
D301	8-719-058-03	LED SEL5423E-TP15 (◀)	
		< RESISTOR >	
R398	1-249-429-11	CARBON 10K 5% 1/4W	
R399	1-249-431-11	CARBON 15K 5% 1/4W	
R400	1-249-434-11	CARBON 27K 5% 1/4W	
R401	1-249-438-11	CARBON 56K 5% 1/4W	
		< SWITCH >	
S312	1-771-410-21	SWITCH, TACTILE (■)	
S313	1-771-410-21	SWITCH, TACTILE (◀)	
S314	1-771-410-21	SWITCH, TACTILE (▶)	
S315	1-771-410-21	SWITCH, TACTILE (◀◀ ◀)	
S316	1-771-410-21	SWITCH, TACTILE (▶▶ ▶)	
*****			
	1-680-720-11	TC-PANEL-B DECK BOARD	
*****			
		< LED >	
D302	8-719-058-03	LED SEL5423E-TP15 (▶)	
D303	8-719-058-03	LED SEL5423E-TP15 (◀)	
		< RESISTOR >	
R387	1-249-411-11	CARBON 330 5% 1/4W	
R388	1-249-413-11	CARBON 470 5% 1/4W	
R389	1-249-414-11	CARBON 560 5% 1/4W	
R390	1-249-415-11	CARBON 680 5% 1/4W	
		< SWITCH >	
S301	1-771-410-21	SWITCH, TACTILE (▶▶ ▶)	
S302	1-771-410-21	SWITCH, TACTILE (◀◀ ◀)	
S303	1-771-410-21	SWITCH, TACTILE (▶)	
S304	1-771-410-21	SWITCH, TACTILE (◀)	
S305	1-771-410-21	SWITCH, TACTILE (■)	
*****			
	1-680-721-11	TC-SUB PANEL-A BOARD	
*****			
		< RESISTOR >	
R395	1-247-843-11	CARBON 3.3K 5% 1/4W	
R396	1-249-425-11	CARBON 4.7K 5% 1/4W	
R397	1-249-427-11	CARBON 6.8K 5% 1/4W	
		< SWITCH >	
S310	1-771-410-21	SWITCH, TACTILE (DOLBY NR)	
S311	1-771-410-21	SWITCH, TACTILE (DIRECTION)	
*****			

Ref. No.	Part No.	Description	Remark
	1-680-722-11	TC-SUB PANEL-B BOARD	
*****			
		< RESISTOR >	
R391	1-249-417-11	CARBON 1K 5% 1/4W	
R392	1-249-418-11	CARBON 1.2K 5% 1/4W	
R393	1-249-420-11	CARBON 1.8K 5% 1/4W	
R394	1-249-422-11	CARBON 2.7K 5% 1/4W	
		< SWITCH >	
S306	1-771-410-21	SWITCH, TACTILE (REC PAUSE/START)	
S307	1-771-410-21	SWITCH, TACTILE (DVD SYNC)	
S308	1-771-410-21	SWITCH, TACTILE (HI-DUB)	
*****			
		MISCELLANEOUS	
*****			
2	1-773-048-11	WIRE (FLAT TYPE) (17 CORE)	
6	1-757-632-11	CORD (WITH CONNECTOR) 15P	
712	A-2100-932-A	TAPE MECHANISM DECK (TCM-230MWR41)	
HP901	A-2004-771-A	BASE (A) ASSY, HEAD (PB)	(for TCM-230MWR41)
HP901	X-4953-985-1	BLOCK (A) ASSY, HEAD (PB)	(for TCM-230AWR41)
HRPE901A-2004-772-A		BASE (B) ASSY, HEAD (REC/PB/ERASE)	(for TCM-230MWR41)
HRPE901X-4953-986-1		BLOCK (B) ASSY, HEAD (REC/PB/ERASE)	(for TCM-230AWR41)
M901	X-3378-241-1	MOTOR ASSY (WITH PULLEY) (CAPSTAN)	
PM901	1-454-887-32	SOLENOID, PLUNGER (for TCM-230MWR41)	
PM902	1-454-887-32	SOLENOID, PLUNGER (for TCM-230MWR41)	
*****			
*****			
HARDWARE LIST			
*****			
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#2	7-685-853-04	SCREW +BVTT 2X6 (S)	
#3	7-685-871-01	SCREW +BVTT 3X6 (S)	
#6	7-628-254-05	SCREW +PS 2.6X5	
#7	7-623-921-01	RING, RETAINING, CAPSTAN	
#8	7-685-783-09	SCREW +PTT 2X6 (S)	
#9	7-685-781-09	SCREW +PTT 2X4 (S)	

