

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  are trade-
marks of Dolby 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 (± 3 dB), using Sony TYPE I cassette, 60 – 14,000 Hz (± 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
2001I0500-1
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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

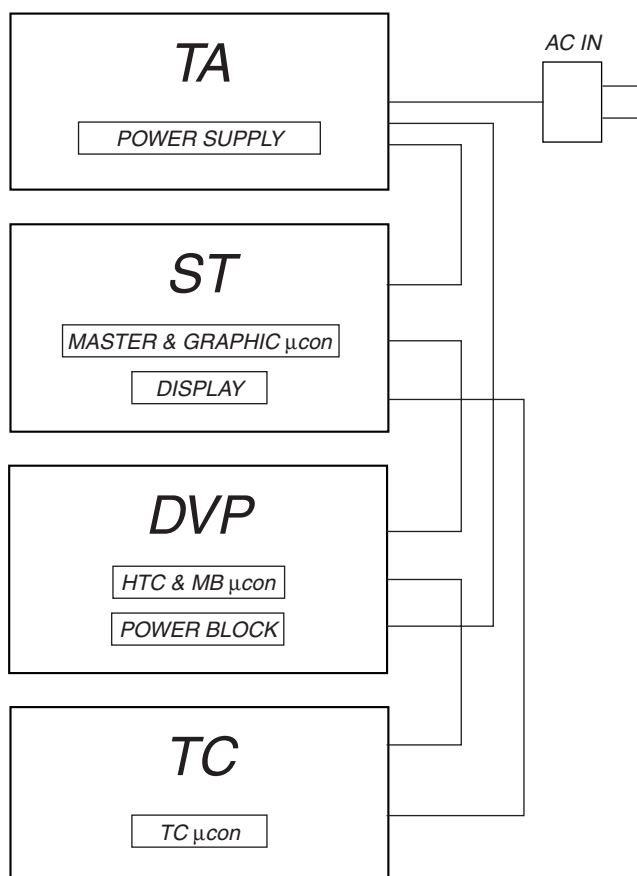
This set is a component of the MHC-S9D.

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.

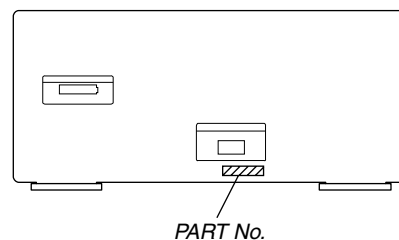
Note: The precaution to the users is described on the label stuck on the back panel (DVD/video CD/CD player) and in the troubleshooting section in the Operation Manual.

System Configuration:



• MODEL IDENTIFICATION

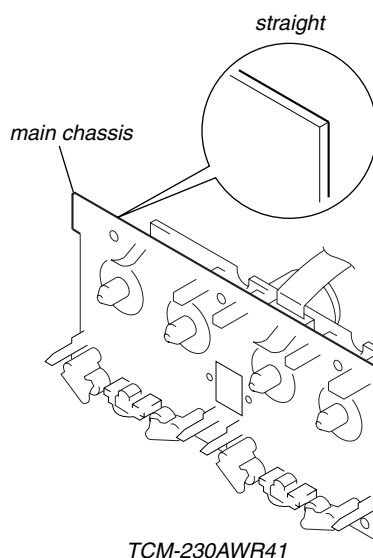
– Rear Panel –



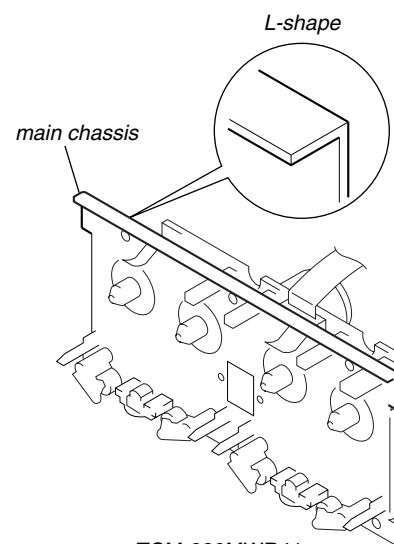
Model	PART No.
AEP and UK models	4-236-839-0□
Australian, Saudi Arabia and Korean models	4-236-839-1□
E and Singapore models	4-236-839-2□
Mexican model	4-236-839-3□
Thai model	4-236-839-4□

• 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.



TCM-230AWR41



TCM-230MWR41

LOCATION OF CONTROLS

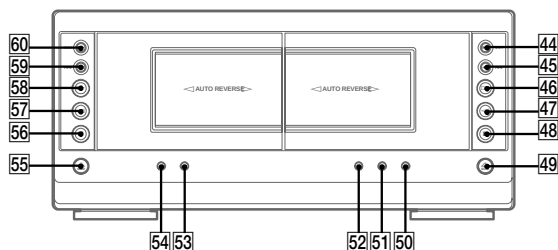
Parts Identification

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)

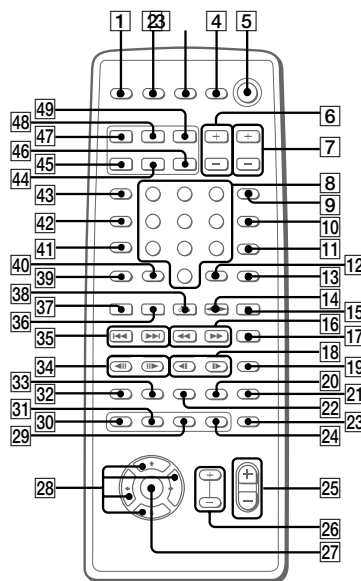
– Deck A –

▶ (forward play) **58** (44, 55, 63)
◀ (reverse play) **57** (44, 63)
■ (stop) **56** (44)
▶▶/▶▶ (go forward/fast forward) **60** (44)
◀◀/◀◀ (go back/rewind) **59** (44)
▲ (eject) **55** (44, 63)

– Deck B –

▶ (forward play) **46** (44, 45, 63)
◀ (reverse play) **47** (44, 45, 63)
■ (stop) **48** (44, 45, 55)
▶▶/▶▶ (fast forward/go forward) **44** (44)
◀◀/◀◀ (rewind/go back) **45** (44)
▲ (eject) **49** (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**

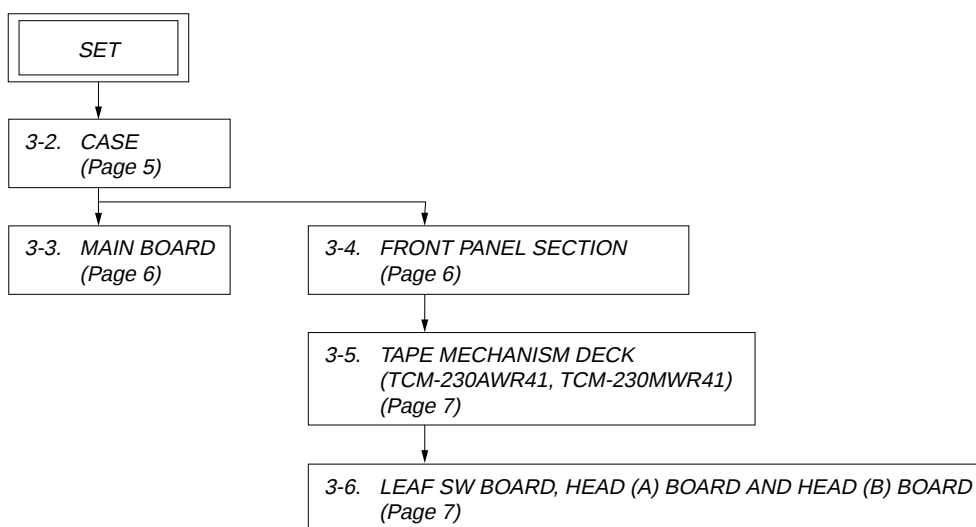
BUTTON DESCRIPTIONS

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

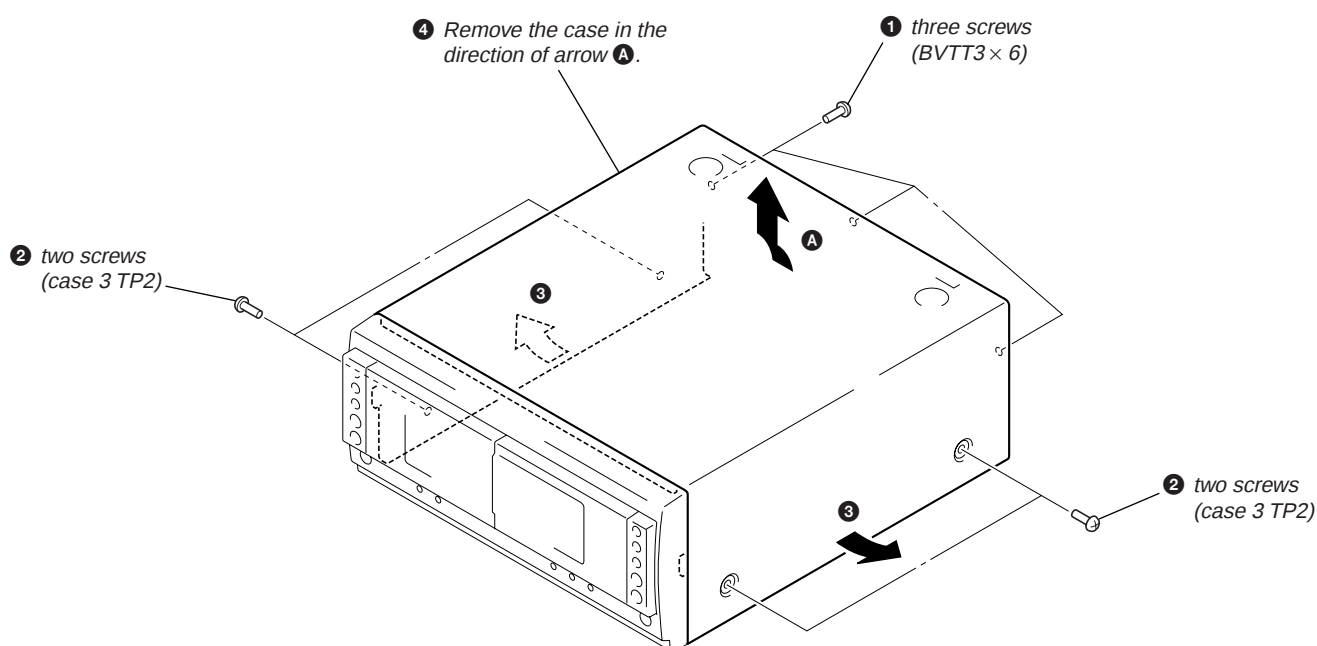
• This set can be disassembled in the order shown below.

3-1. DISASSEMBLY FLOW

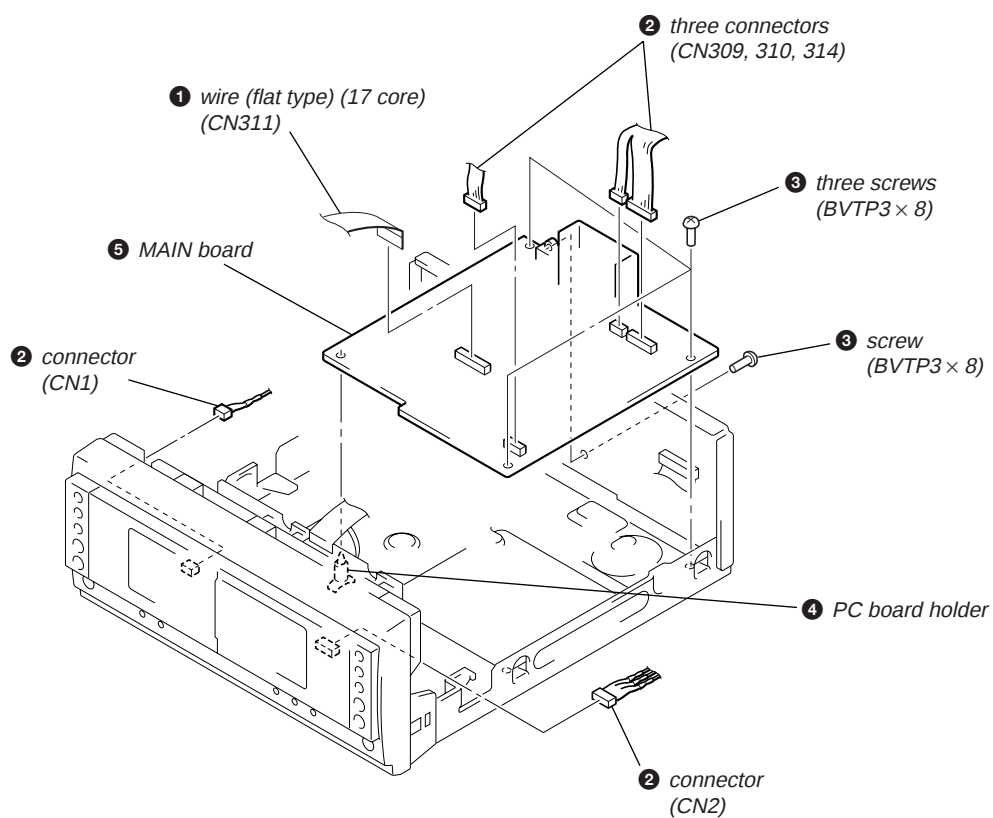


Note: Follow the disassembly procedure in the numerical order given.

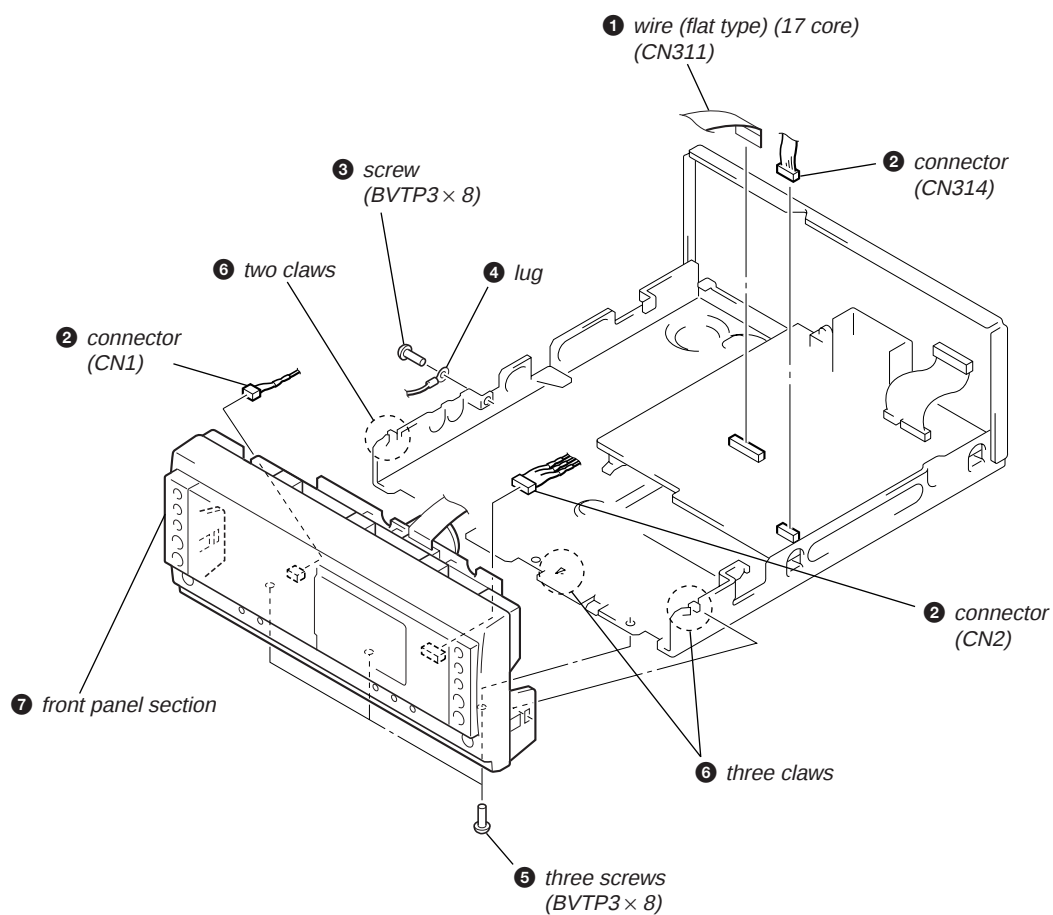
3-2. CASE



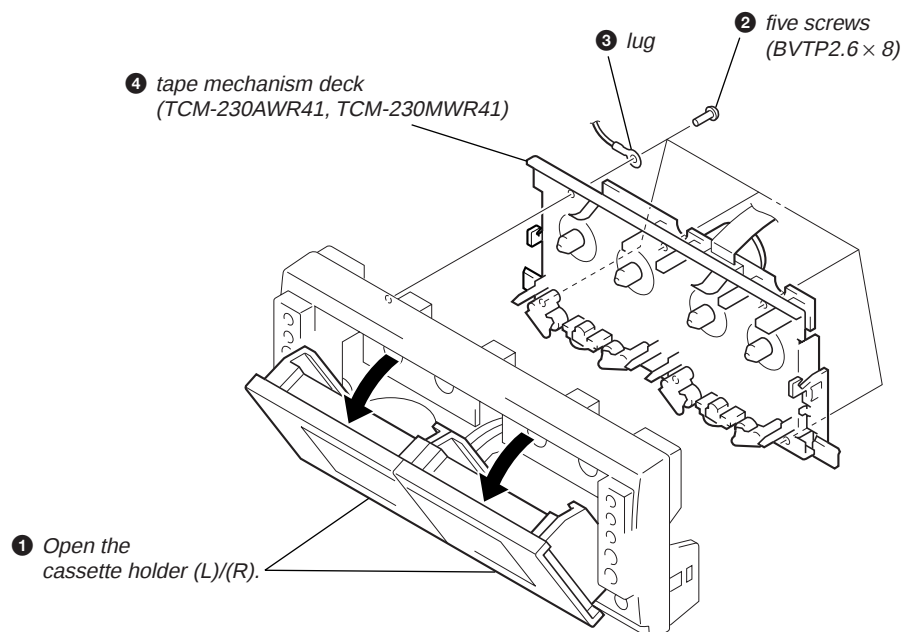
3-3. MAIN BOARD



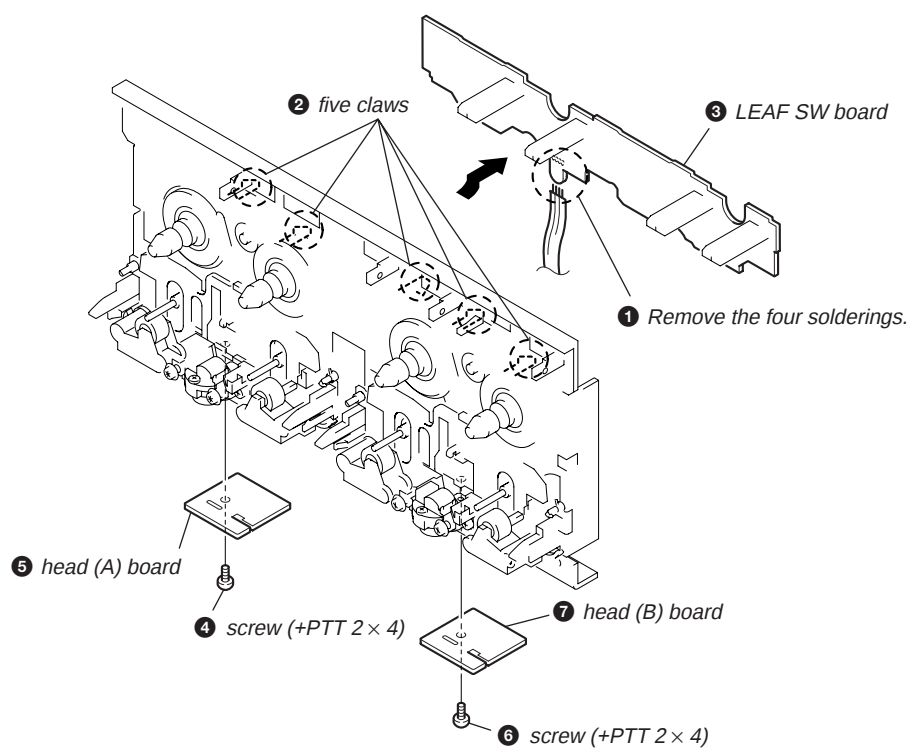
3-4. FRONT PANEL SECTION



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)

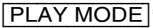
*1 : Button of amplifier unit (TA-S9D)

*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]

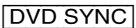
In the DECK test mode, it operates as follows.

Cancellation of the linear mute of DOLBY IC (IC301)

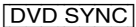
- It become cancellation automatically when it is possible to enter a MC test mode.

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

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

record/playback heads	pinch rollers
erase head	rubber belts
capstan	idlers
- Demagnetize the record/playback head with a head demagnetizer.
- Do not use a magnetized screwdriver for the adjustments.
- After the adjustments, apply suitable locking compound to the parts adjusted.
- 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

- Demagnetize the record/playback head with a head demagnetizer.
- Do not use a magnetized screwdriver for the adjustments.
- After the adjustments, apply suitable locking compound to the parts adjust.
- The adjustments should be performed with the rated power supply voltage unless otherwise noted.
- 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.)
- The adjustments should be performed for both L-CH and R-CH.
- Switches and controls should be set as follows unless otherwise specified.
- 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

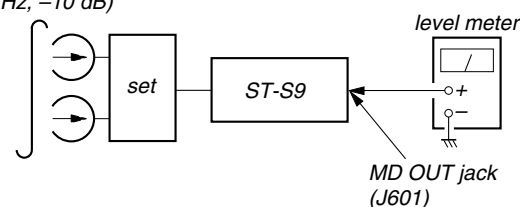
DECK B

Note: Perform this adjustments for both decks

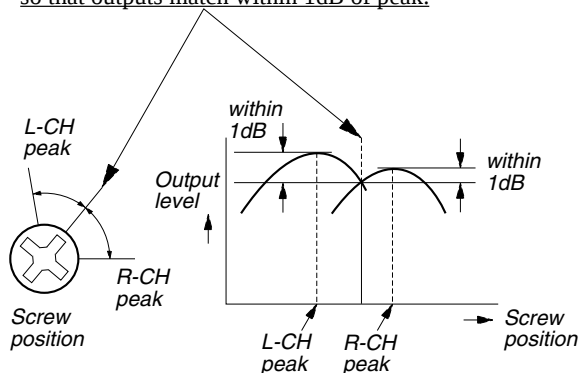
Procedure:

- Mode: Playback

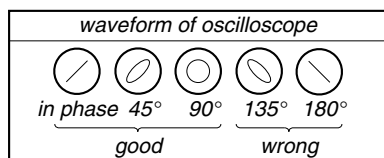
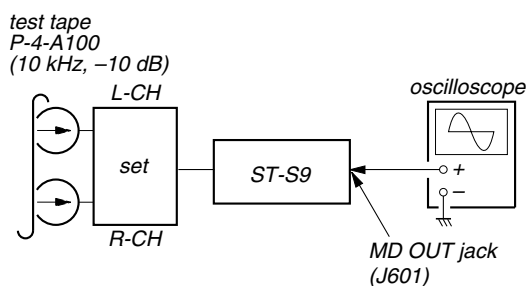
test tape
P-4-A100
(10 kHz, -10 dB)



- 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.

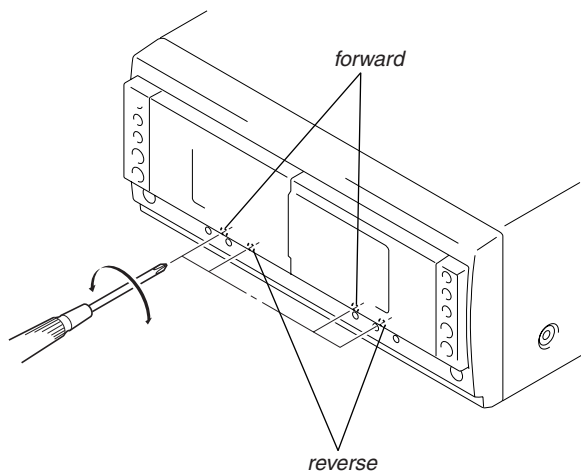


- Mode: Playback



- 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**

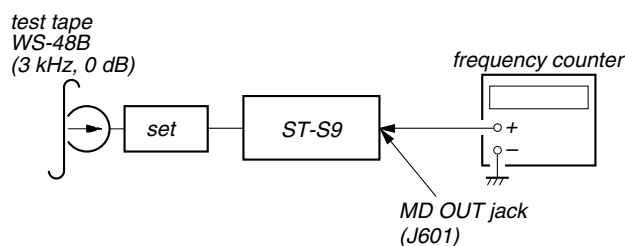
Note: Start the Tape Speed adjustment as below after setting to the test mode.

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/II***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.

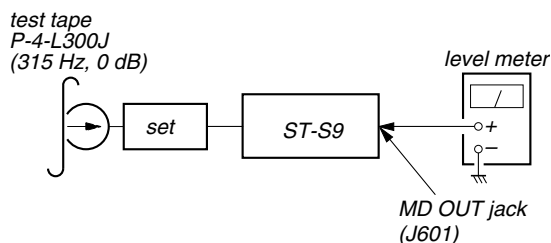
Adjustment Location: LEAF SW board

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 ± 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:

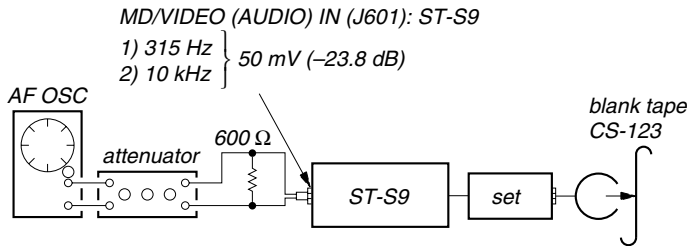
MD OUT jack (J601) PB level: 334.4 to 748.7 mV
(-6.8 ± 0.5 dB)

Adjustment Location: MAIN board

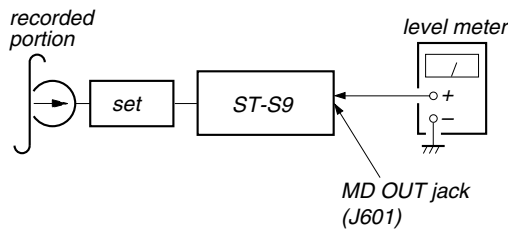
REC Bias Adjustment **DECK B**

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.

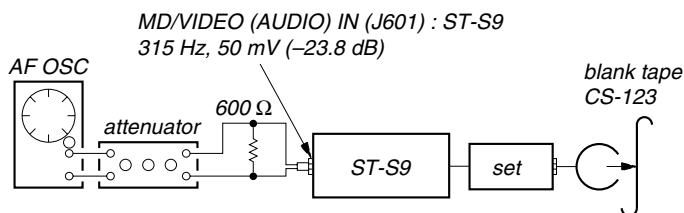
Adjustable level: Playback output of 315 Hz to playback output of 10 kHz: ± 1.0 dB

Adjustment Location: MAIN board

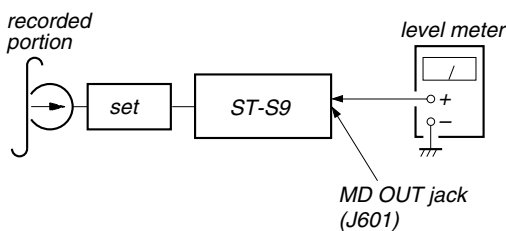
REC Level Adjustment **DECK B**

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



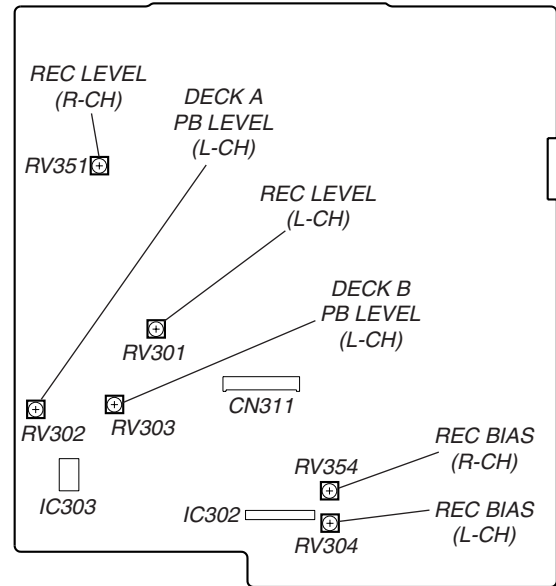
5. Confirm the play back signal recorded in step 3 becomes adjustable level as follows.
 If these levels are not adjustable level, adjust the RV301 (L-CH) and RV351 (R-CH) on the MAIN board to repeat steps 4 and 5.

Adjustable level:

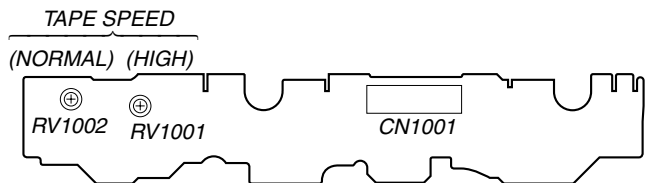
MD OUT jack PB level: 47.2 to 53.0 mV (-27.3 to -26.3 dB)

Adjustment Location: MAIN board

[MAIN BOARD] (Component Side)



[LEAF SW BOARD] (Component Side)



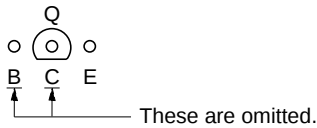
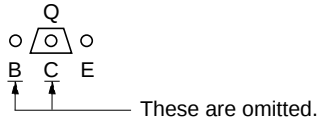
MEMO

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.



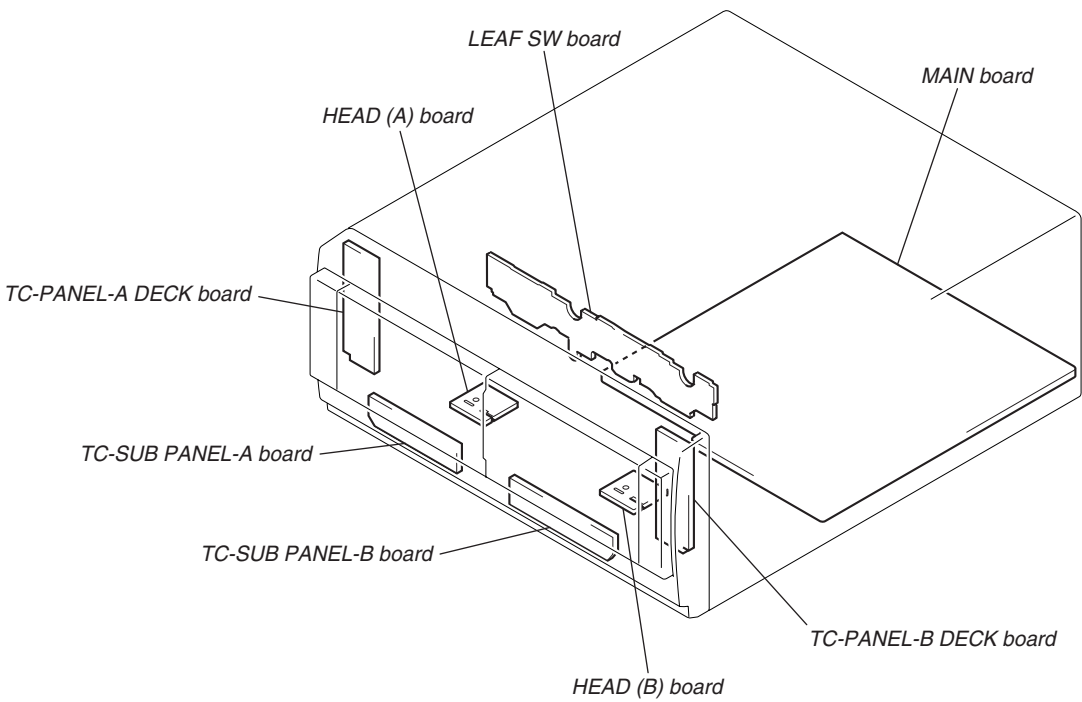
Note on Schematic Diagram:

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

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

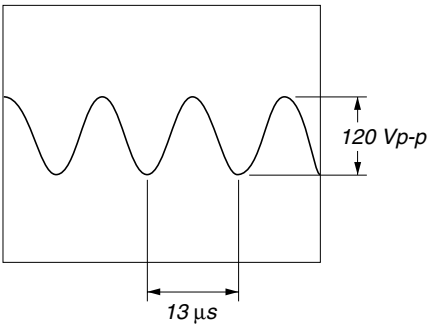
- : B+ Line.
- - - : B- Line.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
- no mark : STOP
- () : PB
- ⟨ ⟩ : REC
- Voltages are taken with a VOM (Input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken 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

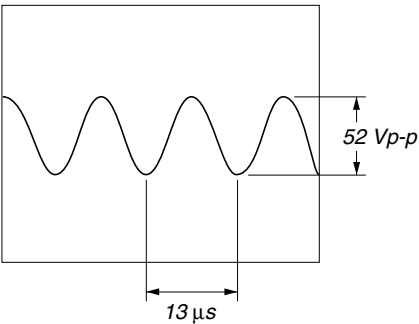


• Waveforms
– MAIN Board –

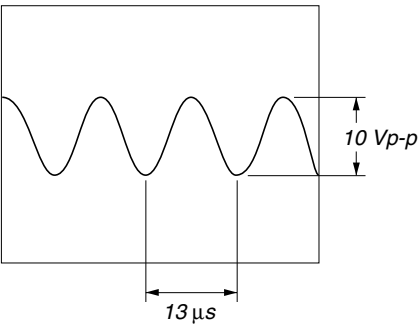
① T301 ④ (DECK-B REC mode)



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

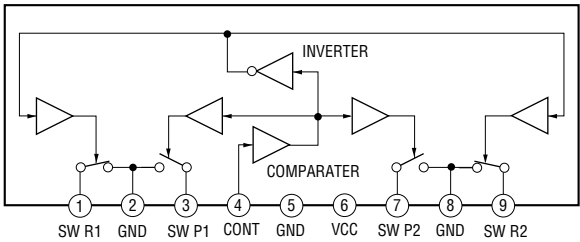


② Q301, 303 (collector) (REC mode)

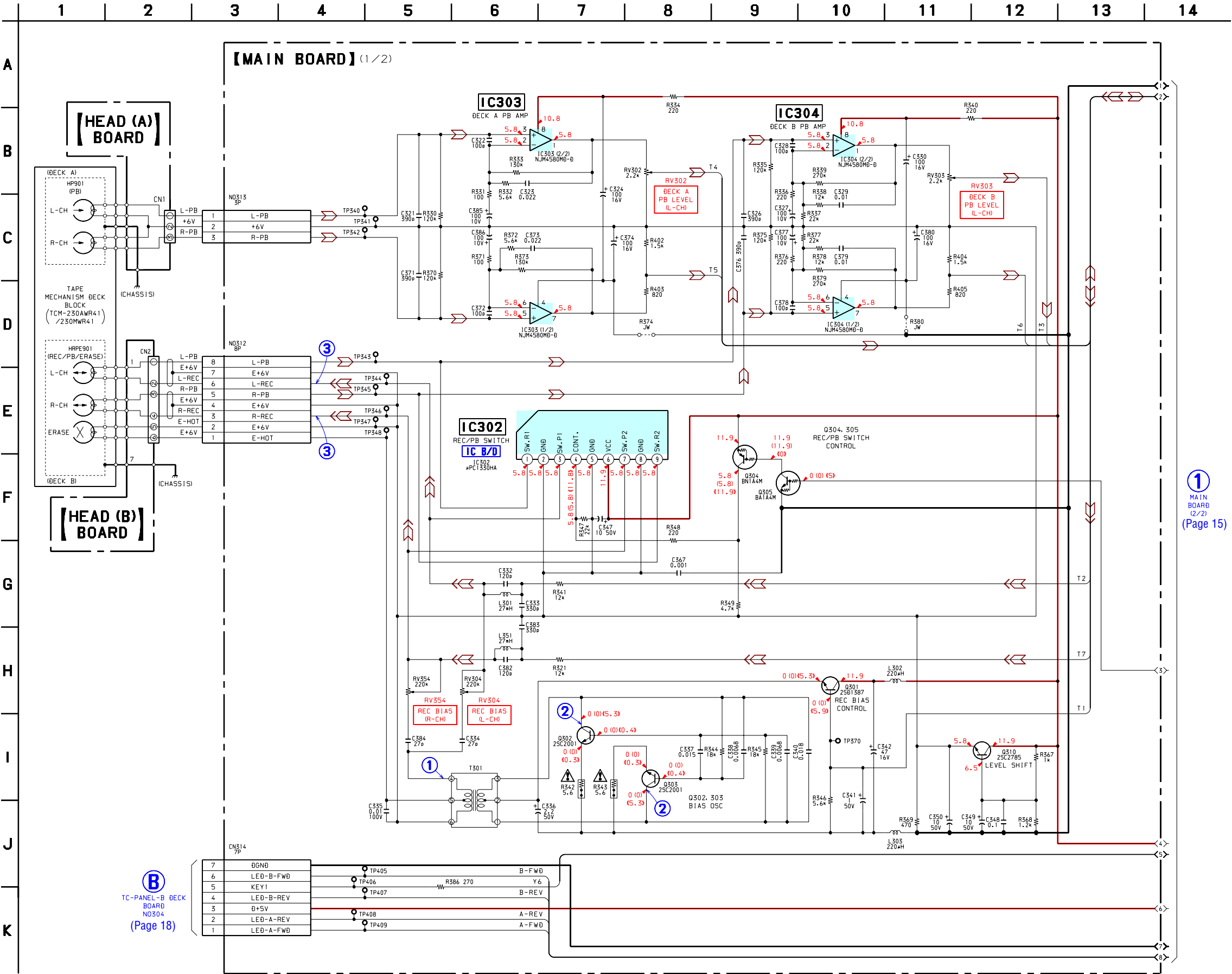


• IC Block Diagram
– MAIN Board –

IC302 $\mu\text{PC1330HA}$

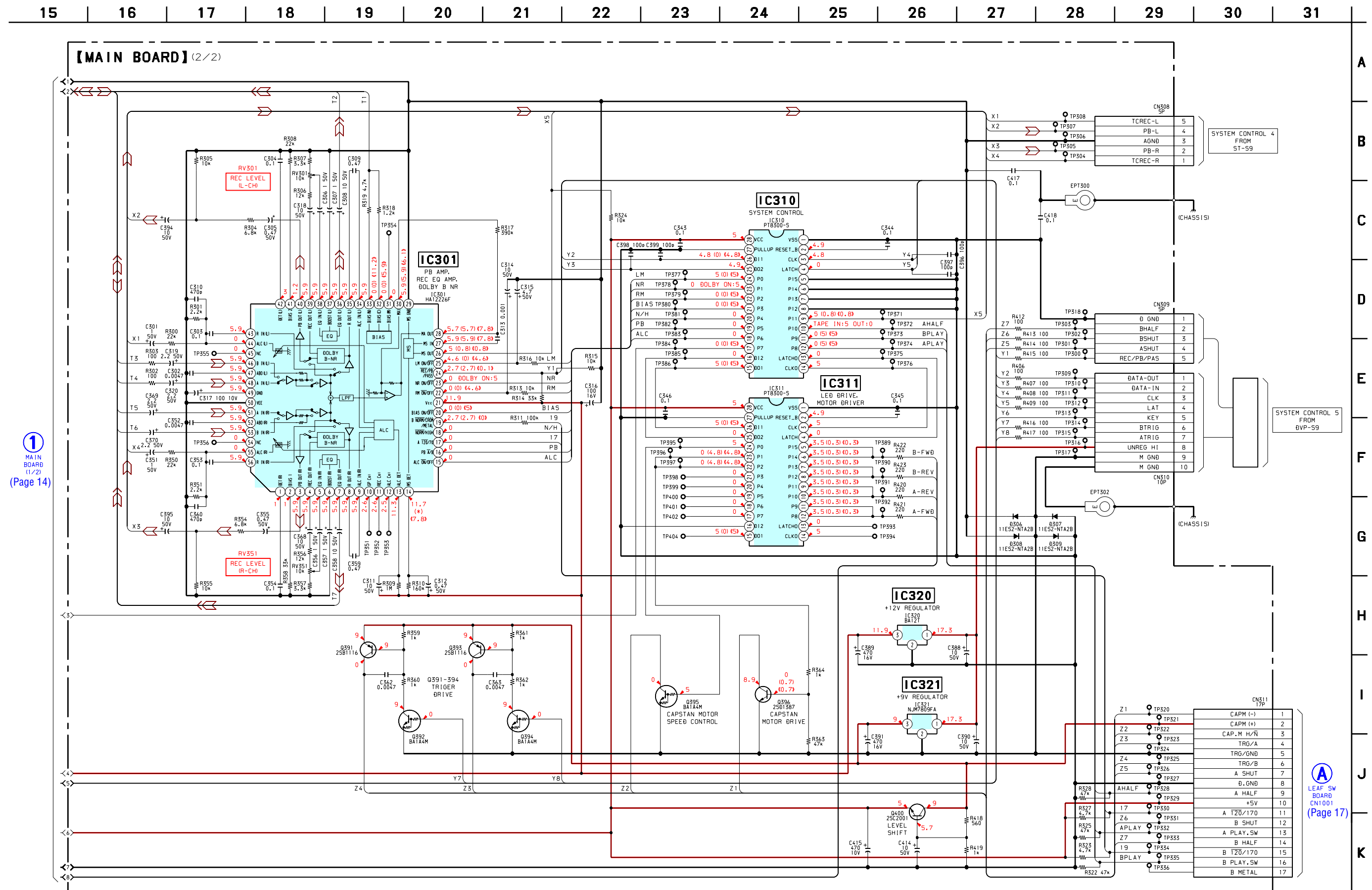


7-2. SCHEMATIC DIAGRAM – MAIN Section (1/2) – • See page 13 for Waveforms. • See page 13 for IC Block Diagram.



1 MAIN BOARD (2/2) (Page 15)

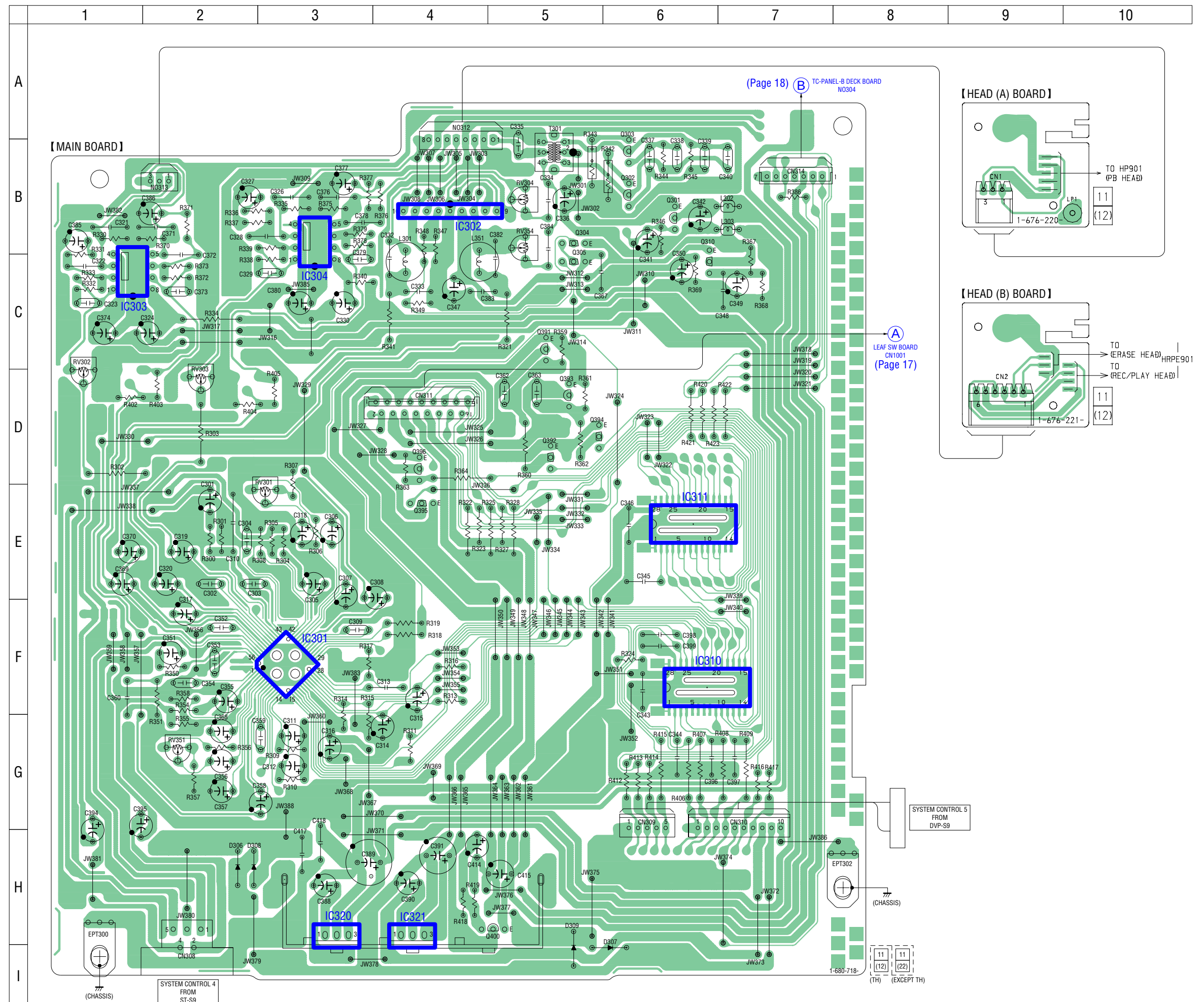
7-3. SCHEMATIC DIAGRAM – MAIN Section (2/2) –



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

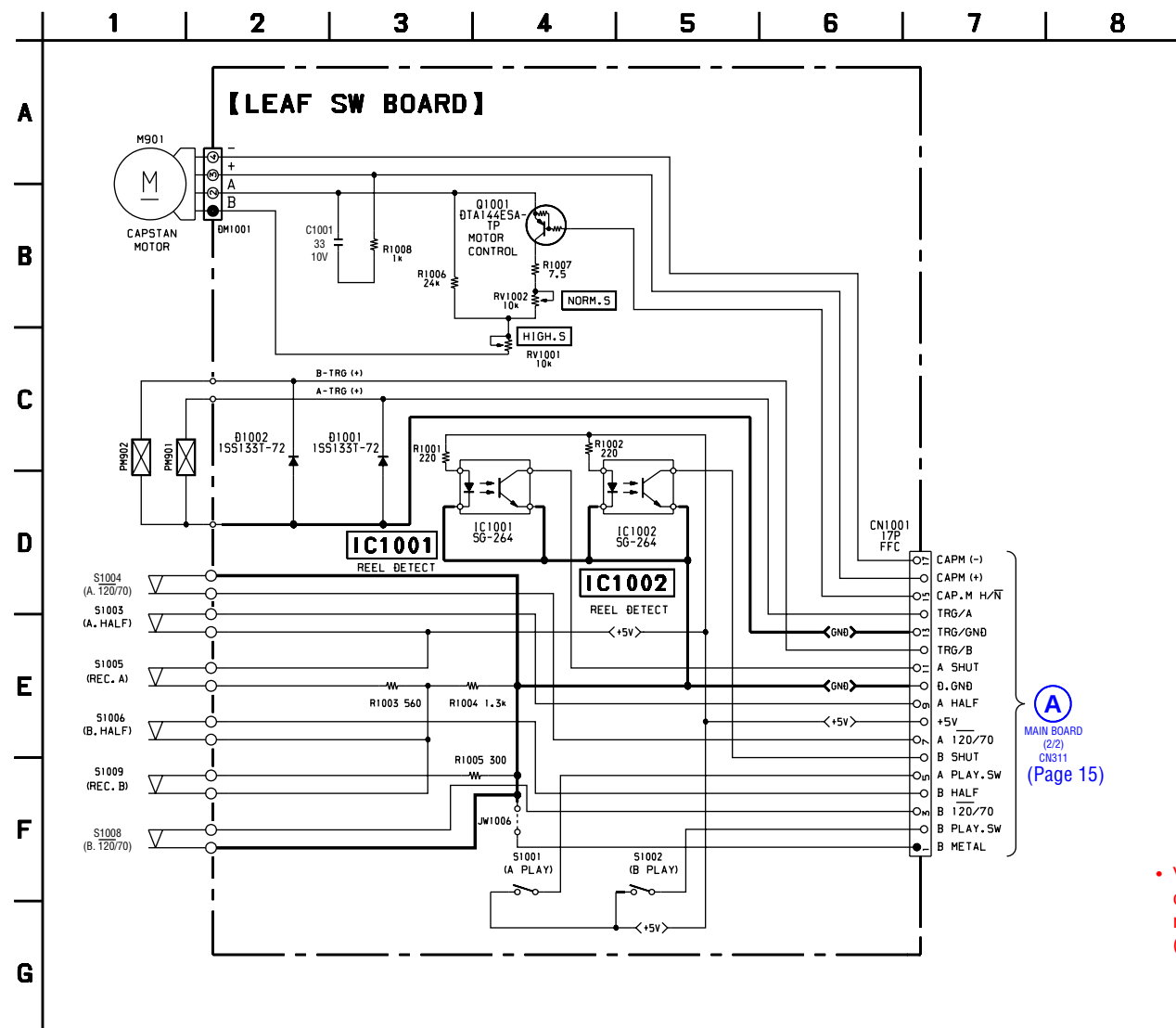
- **Semiconductor Location**

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.

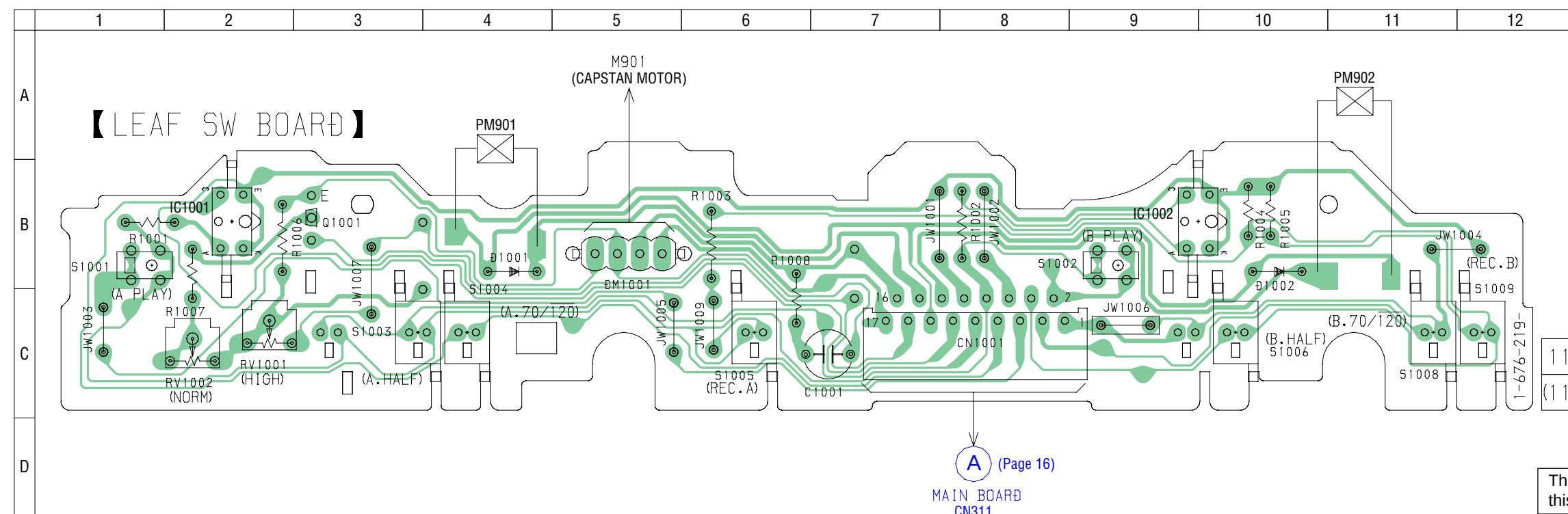
7-5. SCHEMATIC DIAGRAM – LEAF SW Section –



- 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.

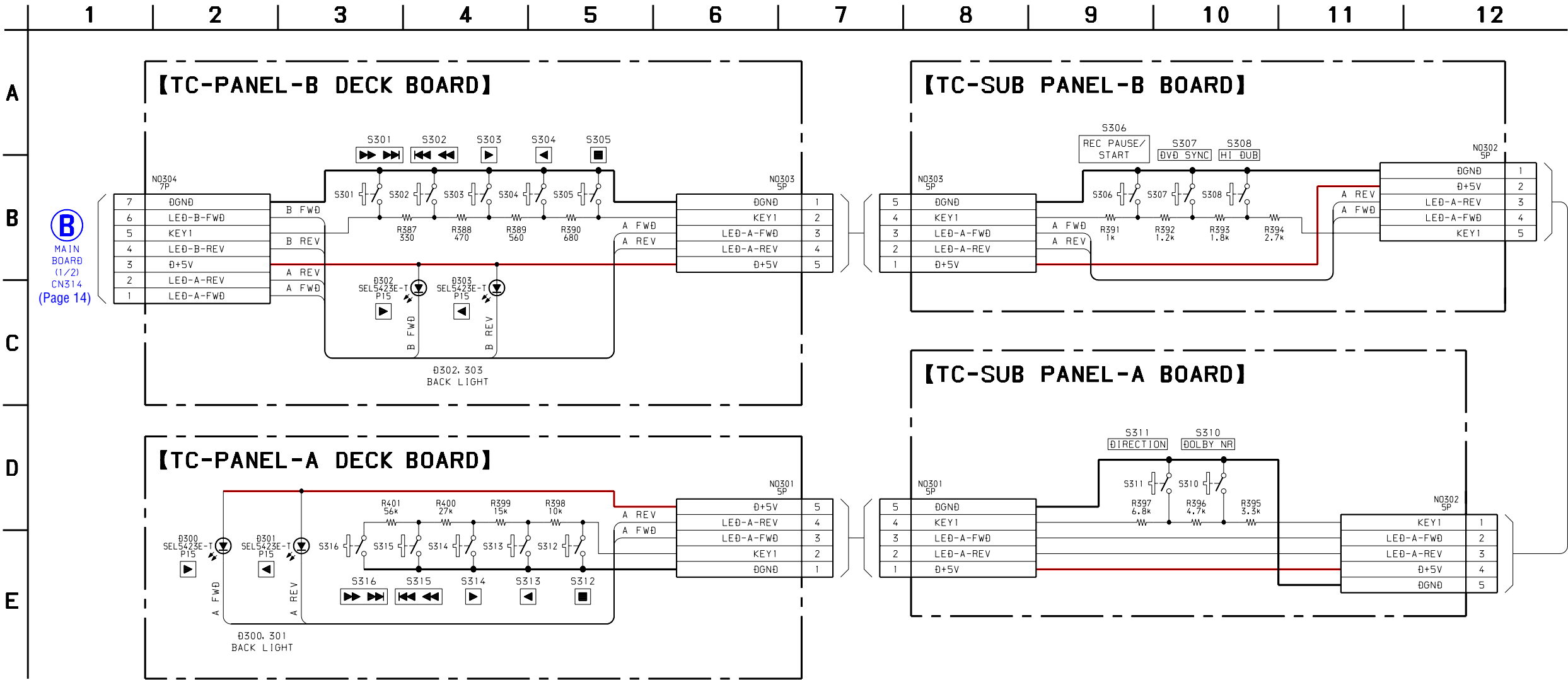


- **Semiconductor Location**

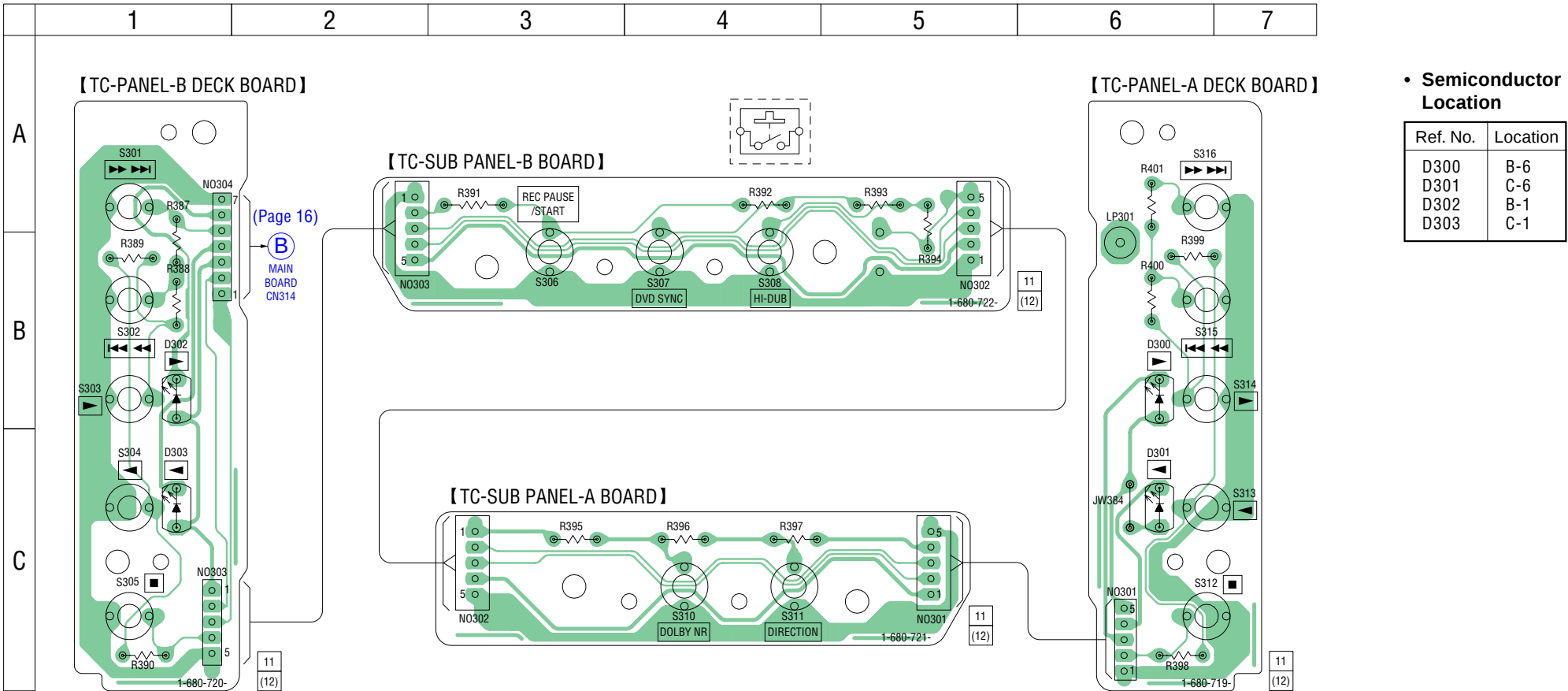
Ref. No.	Location
D1001	B-4
D1002	B-10
IC1001	B-2
IC1002	B-9
Q1001	B-3

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 μ 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 ㉓)
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

EA : Saudi Arabia model

KR : Korean model

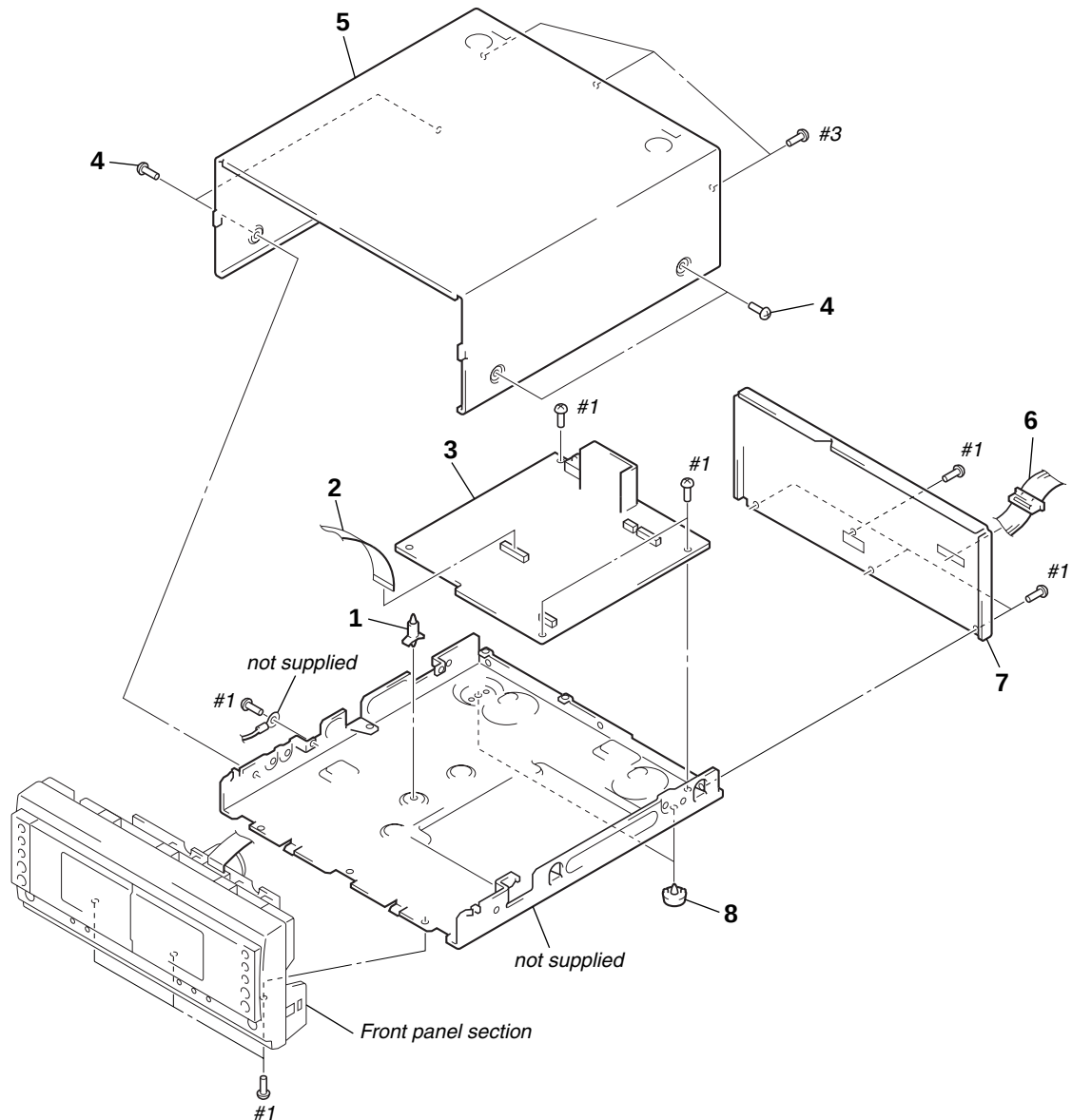
MX : Mexican model

SP : Singapore model

TH : Thai model

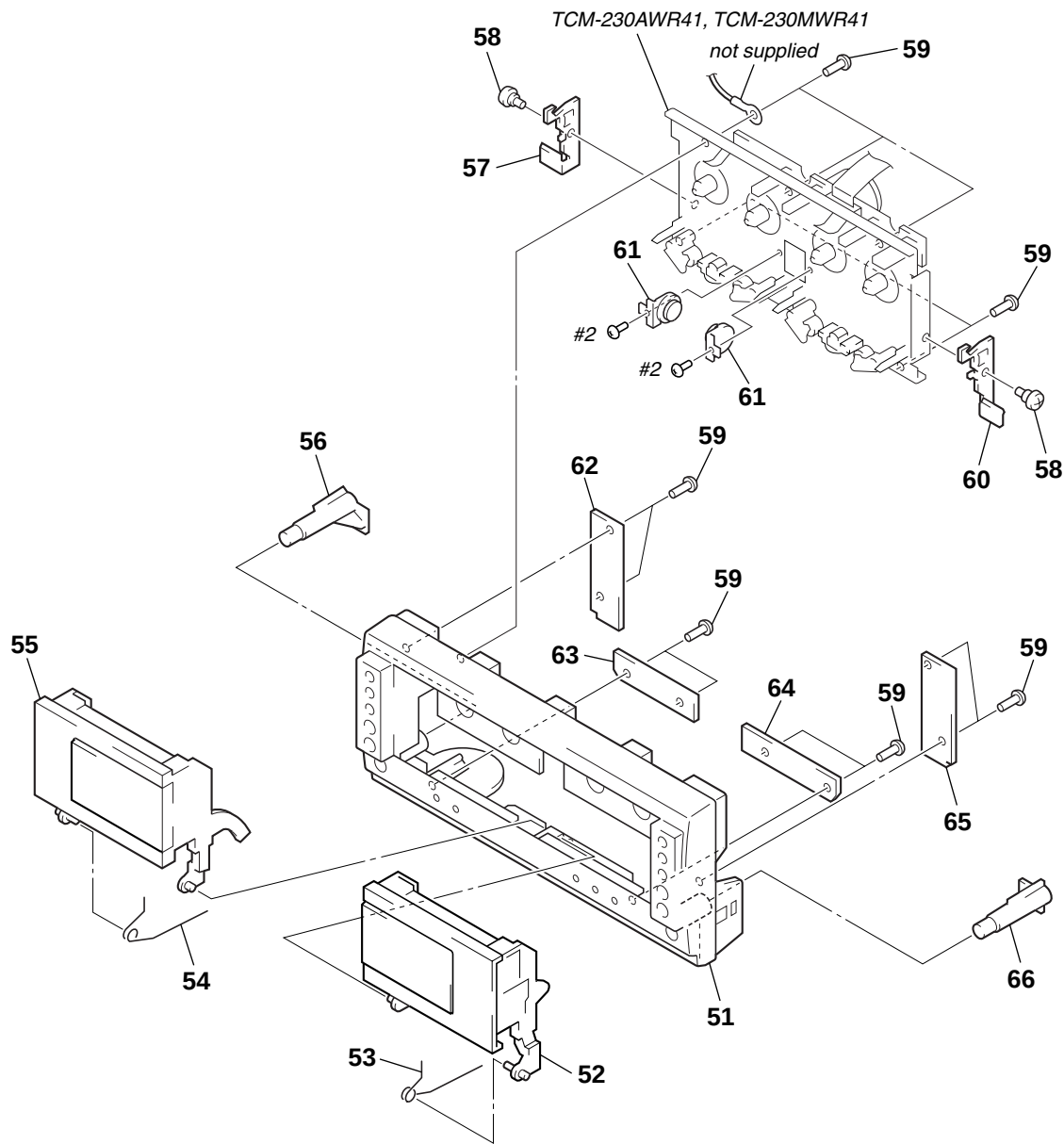
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of the electrical parts list.

8-1. GENERAL SECTION



<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
* 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

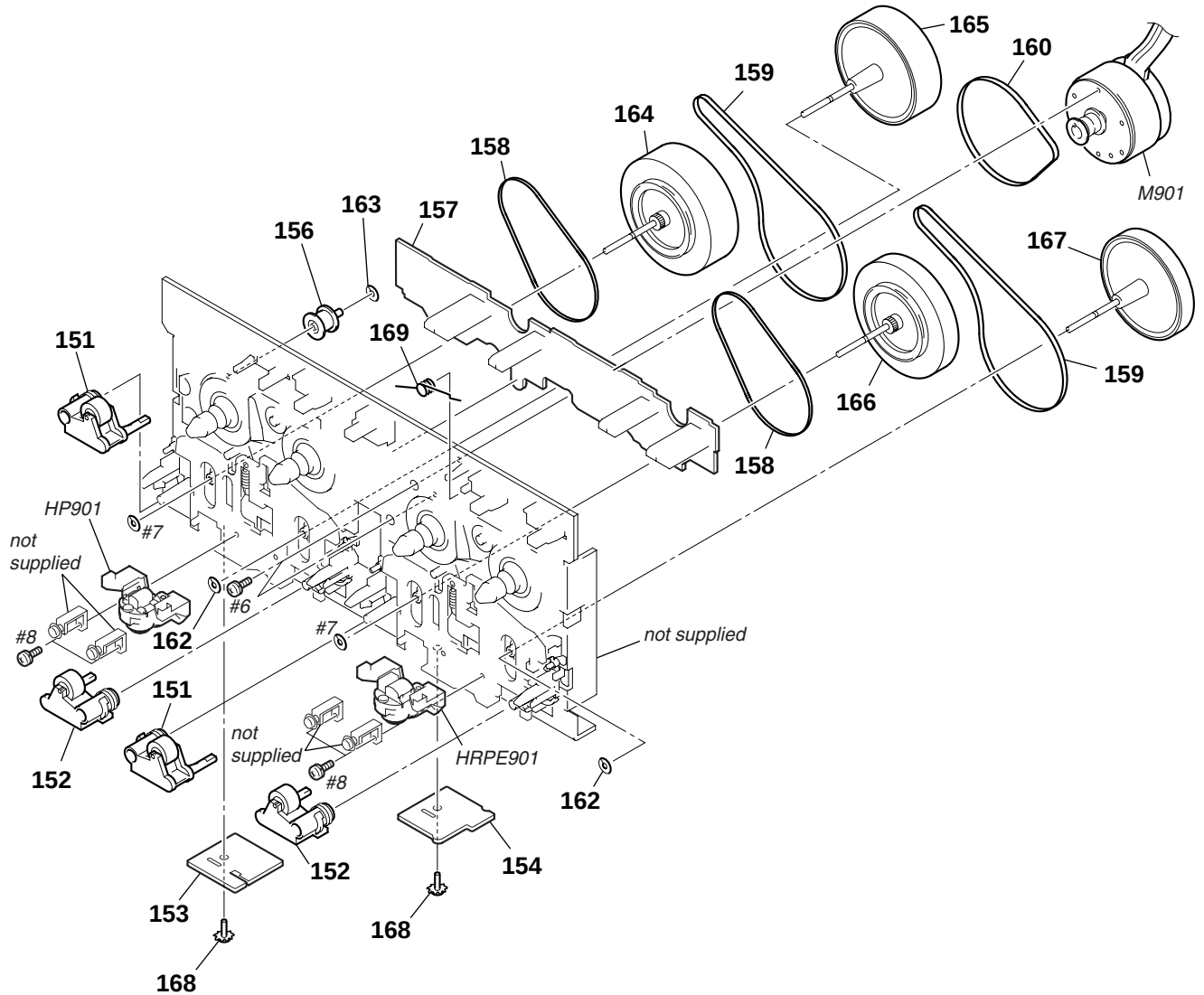


Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	X-4953-609-1	PANEL ASSY, FRONT		59	4-951-620-01	SCREW (2.6X8), +BVTP	
52	X-4953-606-1	HOLDER (R) ASSY, CASSETTE		60	4-900-889-01	EJECT (LEVER-R)	
53	4-233-091-01	SPRING (R), TORSION		61	4-215-062-01	DAMPER	
54	4-233-090-01	SPRING (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.

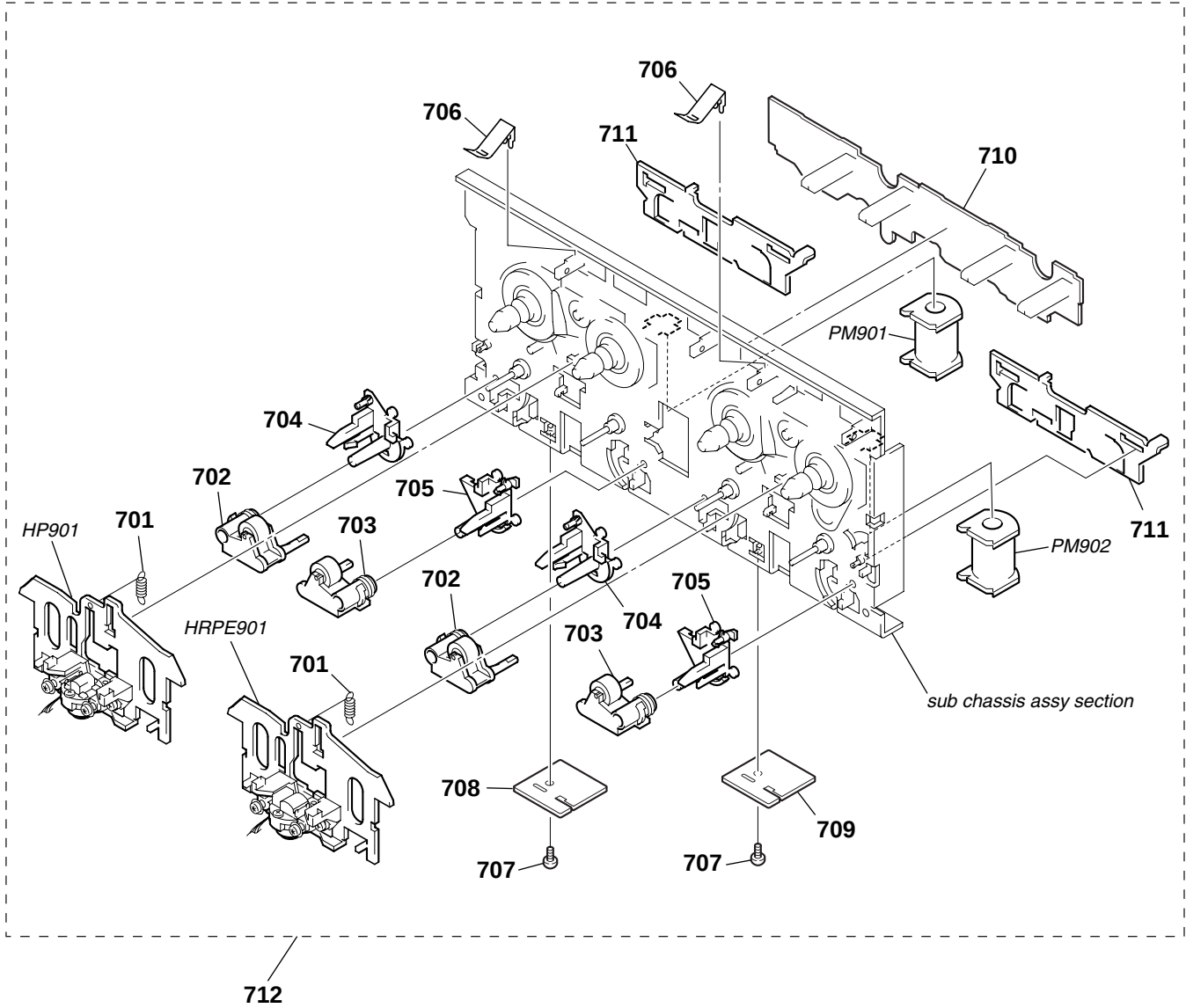
Refer to "TAPE MECHANISM DECK DISCRIMINATION" on page 3.



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)

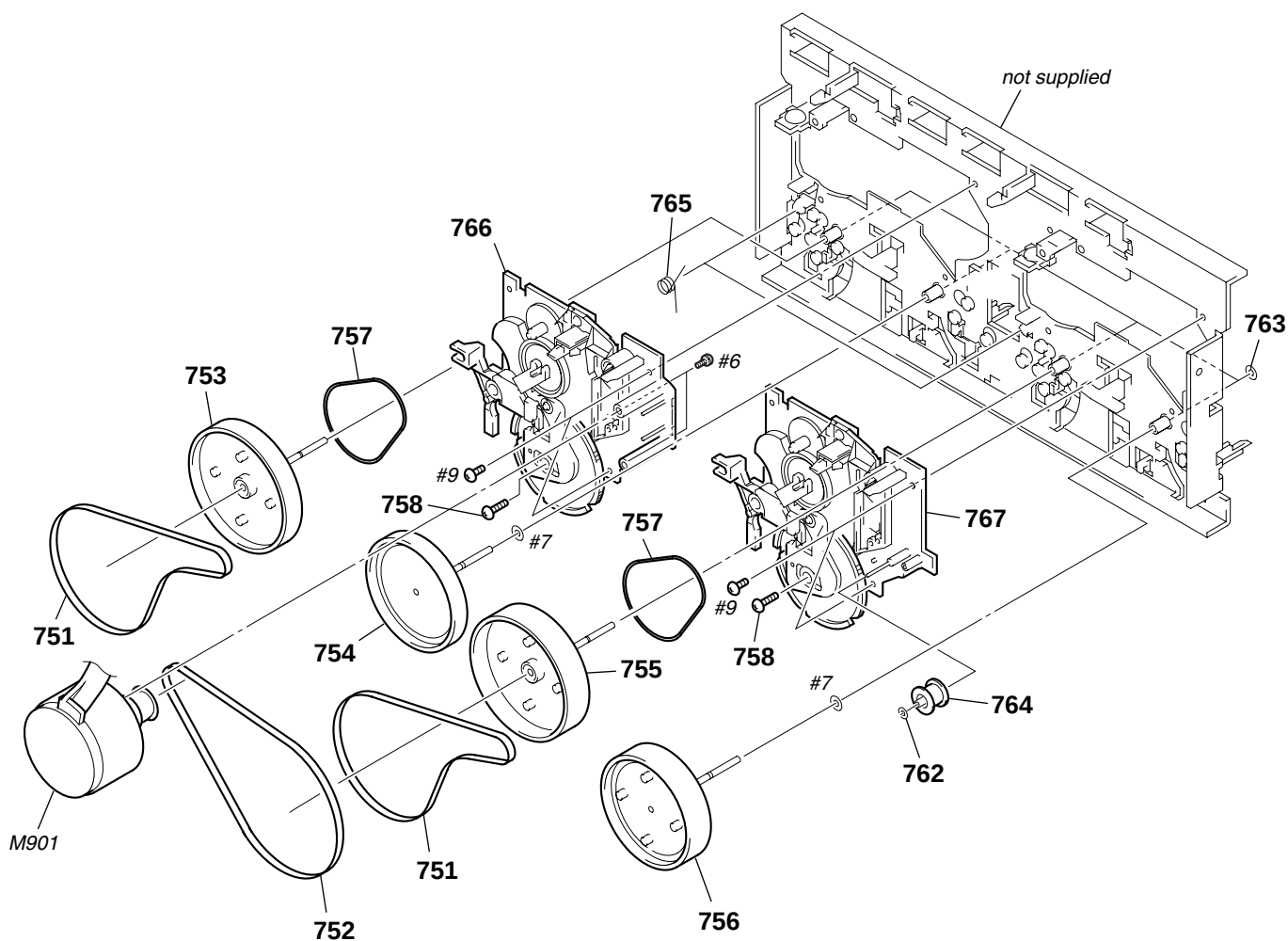
NOTE: Two types of tape mechanism deck are used for this model.
Refer to "TAPE MECHANISM DECK DISCRIMINATION" on page 3.



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)	(for TCM-230MWR41)
705	X-3374-155-5	PINCH LEVER (FWD) ASSY		HRPE901A-2004-772-A		BASE (B) ASSY, HEAD (REC/PB/ERASE)	(for TCM-230MWR41)
706	4-229-083-01	SPRING (CASSETTE), LEAF					
707	4-227-872-11	SCREW (+PTT 2X4), GROUND POINT		PM901	1-454-887-32	SOLENOID, PLUNGER (for TCM-230MWR41)	
708	A-2007-839-A	HEAD (A) BOARD, COMPLETE		PM902	1-454-887-32	SOLENOID, PLUNGER (for TCM-230MWR41)	
709	A-2007-840-A	HEAD (B) BOARD, COMPLETE					

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					

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: μ , for example:
uA. . : μ A. . uPA. . : μ PA. .
uPB. . : μ PB. . uPC. . : μ PC. .
uPD. . : μ PD. .
- CAPACITORS
uF: μ F
- COILS
uH: μ H

The components identified by mark Δ or dotted line with mark Δ 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	Ref. No.	Part No.	Description	Remark
	A-2007-839-A	HEAD (A) BOARD, COMPLETE *****		R1008	1-249-417-11	CARBON 1K 5%	1/4W
		< CONNECTOR >				< VARIABLE RESISTOR >	
* CN1	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P *****		RV1001	1-241-785-11	RES, ADJ, CARBON 10K	
				RV1002	1-241-785-11	RES, ADJ, CARBON 10K	
						< SWITCH >	
	A-2007-840-A	HEAD (B) BOARD, COMPLETE *****		S1001	1-570-953-11	SWITCH, PUSH (1 KEY) (A PLAY)	
		< CONNECTOR >		S1002	1-570-953-11	SWITCH, PUSH (1 KEY) (B PLAY)	
CN2	1-564-722-11	PIN, CONNECTOR (SMALL TYPE) 6P *****		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)	
	A-2007-838-A	LEAF SW BOARD, COMPLETE *****		S1006	1-771-333-11	SWITCH, LEAF (B.HALF)	
		< CAPACITOR >		S1008	1-771-205-11	SWITCH, LEAF (B.120/70)	
				S1009	1-771-205-11	SWITCH, LEAF (REC.B)	

C1001	1-107-716-11	ELECT 33uF 20%	10V	A-2007-873-A	MAIN BOARD, COMPLETE (EXCEPT TH)		
		< CONNECTOR >		A-4725-734-A	MAIN BOARD, COMPLETE (TH) *****		
CN1001	1-568-860-21	SOCKET, CONNECTOR 17P		7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S		
		< DIODE >				< CAPACITOR >	
D1001	8-719-911-19	DIODE 1SS133T-72		C301	1-126-960-11	ELECT 1uF 20%	50V
D1002	8-719-911-19	DIODE 1SS133T-72		C302	1-130-479-00	MYLAR 0.0047uF 5%	50V
		< PHOTO INTERRUPTER >		C303	1-136-165-00	FILM 0.1uF 5%	50V
				C304	1-136-165-00	FILM 0.1uF 5%	50V
IC1001	8-749-014-38	PHOTO INTERRUPTER SG-264		C305	1-126-959-11	ELECT 0.47uF 20%	50V
IC1002	8-749-014-38	PHOTO INTERRUPTER SG-264					
		< TRANSISTOR >		C306	1-126-960-11	ELECT 1uF 20%	50V
				C307	1-126-960-11	ELECT 1uF 20%	50V
Q1001	8-729-029-56	TRANSISTOR DTA144ESA-TP		C308	1-126-964-11	ELECT 10uF 20%	50V
		< RESISTOR >		C309	1-137-194-11	FILM 0.47uF 5%	50V
				C310	1-162-290-31	CERAMIC 470PF 10%	50V
R907	1-247-879-11	CARBON 100K 5%	1/4W	C311	1-126-964-11	ELECT 10uF 20%	50V
R1001	1-249-409-11	CARBON 220 5%	1/4W	C312	1-126-959-11	ELECT 0.47uF 20%	50V
R1002	1-249-409-11	CARBON 220 5%	1/4W	C313	1-162-294-31	CERAMIC 0.001uF 10%	50V
R1003	1-249-414-11	CARBON 560 5%	1/4W	C314	1-126-964-11	ELECT 10uF 20%	50V
R1004	1-247-834-11	CARBON 1.3K 5%	1/4W	C315	1-126-963-11	ELECT 4.7uF 20%	50V
R1005	1-247-818-11	CARBON 300 5%	1/4W	C316	1-126-933-11	ELECT 100uF 20%	16V
R1006	1-247-864-11	CARBON 24K 5%	1/4W	C317	1-104-665-11	ELECT 100uF 20%	10V
R1007	1-247-780-00	CARBON 7.5 5%	1/4W	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						
C324	1-126-933-11	ELECT	100uF	20%	16V	C390	1-126-964-11	ELECT	10uF	20%	50V
C326	1-162-289-31	CERAMIC	390PF	10%	50V	C391	1-126-935-11	ELECT	470uF	20%	16V
						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						
C330	1-126-933-11	ELECT	100uF	20%	16V	C397	1-162-282-31	CERAMIC	100PF	10%	50V
C332	1-162-283-31	CERAMIC	120PF	10%	50V	C398	1-162-282-31	CERAMIC	100PF	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						
C336	1-126-961-11	ELECT	2.2uF	20%	50V	C417	1-164-159-11	CERAMIC	0.1uF		50V
C337	1-136-155-00	FILM	0.015uF	5%	50V	C418	1-164-159-11	CERAMIC	0.1uF		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			
C340	1-136-156-00	FILM	0.018uF	5%	50V			(SYSTEM CONTROL 4 FROM ST-S9)			
C341	1-126-960-11	ELECT	1uF	20%	50V	CN309	1-794-569-11	PIN, CONNECTOR 5P			
C342	1-104-660-11	ELECT	47uF	20%	16V	CN310	1-580-176-11	PIN, CONNECTOR 10P			
						CN311	1-784-778-11	CONNECTOR, FFC 17P			
C343	1-164-159-11	CERAMIC	0.1uF		50V						
C344	1-164-159-11	CERAMIC	0.1uF		50V	* CN314	1-568-934-11	PIN, CONNECTOR 7P			
C345	1-164-159-11	CERAMIC	0.1uF		50V			< DIODE >			
C346	1-164-159-11	CERAMIC	0.1uF		50V						
C347	1-126-964-11	ELECT	10uF	20%	50V	D306	8-719-024-99	DIODE 11ES2-NTA2B (EXCEPT TH)			
						D306	8-719-200-82	DIODE 11ES2-NTA1B (TH)			
C348	1-164-159-11	CERAMIC	0.1uF		50V	D307	8-719-024-99	DIODE 11ES2-NTA2B (EXCEPT TH)			
C349	1-126-964-11	ELECT	10uF	20%	50V	D307	8-719-200-82	DIODE 11ES2-NTA1B (TH)			
C350	1-126-964-11	ELECT	10uF	20%	50V	D308	8-719-024-99	DIODE 11ES2-NTA2B (EXCEPT TH)			
C351	1-126-960-11	ELECT	1uF	20%	50V						
C352	1-130-479-00	MYLAR	0.0047uF	5%	50V	D308	8-719-200-82	DIODE 11ES2-NTA1B (TH)			
						D309	8-719-024-99	DIODE 11ES2-NTA2B (EXCEPT TH)			
C353	1-136-165-00	FILM	0.1uF	5%	50V	D309	8-719-200-82	DIODE 11ES2-NTA1B (TH)			
C354	1-136-165-00	FILM	0.1uF	5%	50V			< GROUND TERMINAL >			
C355	1-126-959-11	ELECT	0.47uF	20%	50V						
C356	1-126-960-11	ELECT	1uF	20%	50V	* EPT300	1-537-738-21	TERMINAL, EARTH			
C357	1-126-960-11	ELECT	1uF	20%	50V	* EPT302	1-537-738-21	TERMINAL, EARTH			
								< IC >			
C358	1-126-964-11	ELECT	10uF	20%	50V						
C359	1-137-194-11	FILM	0.47uF	5%	50V	IC301	8-759-652-02	IC HA12226F			
C360	1-162-290-31	CERAMIC	470PF	10%	50V	IC302	8-759-143-54	IC uPC1330HA			
C362	1-130-479-00	MYLAR	0.0047uF	5%	50V	IC303	8-759-710-59	IC NJM4580D-D			
C363	1-130-479-00	MYLAR	0.0047uF	5%	50V	IC304	8-759-710-59	IC NJM4580D-D			
						IC310	6-800-467-01	IC PT8300-S			
C367	1-162-294-31	CERAMIC	0.001uF	10%	50V						
C368	1-126-964-11	ELECT	10uF	20%	50V	IC311	6-800-467-01	IC PT8300-S			
C369	1-126-961-11	ELECT	2.2uF	20%	50V	IC320	8-759-394-35	IC BA12T			
C370	1-126-961-11	ELECT	2.2uF	20%	50V	IC321	8-759-701-59	IC NJM7809FA			
C371	1-162-289-31	CERAMIC	390PF	10%	50V			< COIL >			
C372	1-162-282-31	CERAMIC	100PF	10%	50V	L301	1-410-780-11	INDUCTOR	27uH		
C373	1-136-157-00	FILM	0.022uF	5%	50V	L302	1-414-193-41	INDUCTOR	220uH		
C374	1-126-933-11	ELECT	100uF	20%	16V	L303	1-414-193-41	INDUCTOR	220uH		
C376	1-162-289-31	CERAMIC	390PF	10%	50V	L351	1-410-780-11	INDUCTOR	27uH		
C377	1-104-665-11	ELECT	100uF	20%	10V			< TRANSISTOR >			
C378	1-162-282-31	CERAMIC	100PF	10%	50V	Q301	8-729-801-93	TRANSISTOR	2SD1387-34-TP		
C379	1-136-153-00	FILM	0.01uF	5%	50V	Q302	8-729-142-46	TRANSISTOR	2SC2001TP-LK		
C380	1-126-933-11	ELECT	100uF	20%	16V	Q303	8-729-142-46	TRANSISTOR	2SC2001TP-LK		
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	RV302	1-241-762-11	RES, ADJ, CARBON 2.2K			
△ R343	1-212-851-00	FUSIBLE	5.6	5%	1/4W	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.

REVISION HISTORY

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