

TC-SP55

SERVICE MANUAL

AEP Model
UK Model
E Model



TC-SP55 is the deck section in CMT-SP55TC,
and TC-SP55 is sold in the option as a tape
deck of CMT-SP55MD.

This stereo system is equipped with the Dolby* B-
type noise reduction system.

* Dolby noise reduction manufactured under license
from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol \square are
trademarks of the Dolby Laboratories Licensing
Corporation.

Model Name Using Similar Mechanism	NEW
Tape Transport Mechanism Type	CMAL2Z720A

SPECIFICATIONS

Recording system	4-track 2-channel stereo
Frequency response	(DOLBY NR OFF) 40 - 14,000 Hz (± 3 dB) using Sony TYPE I cassettes 40 - 15,000 Hz (± 3 dB), using Sony TYPE II cassettes

General

Dimensions (w/h/d) incl. projecting parts and controls	Approx. 202 x 101 x 283 mm
Mass	Approx. 1.9 kg
Supplied accessory	System cable (1)

Design and specifications are subject to change without notice.

STEREO CASSETTE DECK

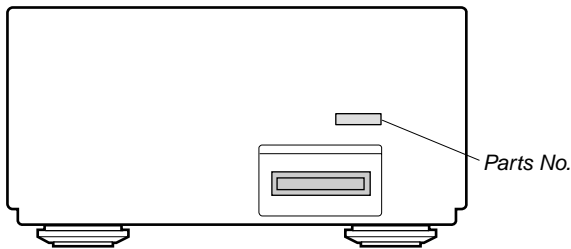
SONY®

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MODEL IDENTIFICATION

— BACK PANEL —



MODEL	PARTS No.
AEP, UK, AED models	4-229-654-0□
MY, SP models	4-229-654-2□

- Abbreviation
- AED : North European model
- MY : Malaysia model
- SP : Singapore model

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 NOTE

This unit cannot be repaired by itself.










When repairing, connect the whole system except for the speaker.

Cold Reset

- When the AC cord is removed, COLD RESET is done with TC-SP55.









ST Test Mode

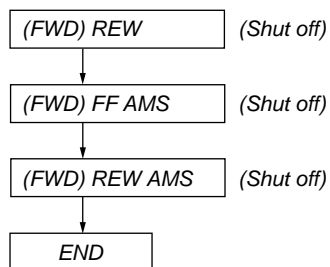
Procedure :


1. When the power ON, press the  button (TA) while pressing the  button (ST) and  buttons (CDP) together.
2. LCD are all turned on.
3. Press  button (ST) to enter the model destination indication mode. "SP55 CE2" or "SP55 ASIA2" appears.
4. Every pressing of  button (ST) changes the display in the following order.
MC Version → CD Version → ST Version → TC Version → TA Version → TM Version → model destination display.
5. Press  button (ST) and the date appears as "00615a"
Every pressing of  button (ST) changes the display in the Version display and model destination display.
6. Press  button (ST) to enter the key check mode.
7. In the key check mode, the fluorescent indicator tube displays "Key 0 Vol 0". Each time a button is pressed, "Key" value increases. However, once a button is pressed, it is no longer taken into account.
"Vol" Value increases like "1, 2, 3 ..." if rotating  knob (TA) in the clockwise direction, or decreases like "0, 9, 8 ..." if rotating in the counterclockwise direction. (The TC-SP55 is not count.)
8. To exit from this mode, disconnect the power cord.

MC Test Mode

Procedure :

1. When the power ON, press the  button (TA) while pressing  button (ST) and  button (CDP) together.
2. Frame of the MD mark and the CD mark flash, and "BASS/TRE FLAT" appears for a moment.
3. When the  knob (TA) is turned clockwise, "VOLUME MAX" appears for a moment.
4. When the  knob (TA) is turned counterclockwise, "VOLUME MIN" appears for a moment.
5. Select the function "TAPE" using the  knob (TA).
Set the test tape AMS-110A or AMS-120.
6. Press  button (TC) to enter either "↺↻" (loop) or "↻↺" (two way).
7. Press the  button (TC) to start the AMS test.



8. Number of AMS signals is counted during the AMS test and the message "EDG#" (# means a number) appears. When the test tape either AMS-110A or AMS-120 is used, the AMS signal is detected twice before shut off.
9. When the AMS test ends, either "OK" or "NG" appears.
10. To exit the MC test mode, either press the  button (TA) or perform the cold reset as described above.

Aging Mode

- Mode for repeating operations of the CD player and TC deck automatically.

When errors occur:

Aging stops and a message indicating that an error has occurred such as "CD MEC ERR" is displayed. (For details of errors, refer to "Error History Display Mode".)

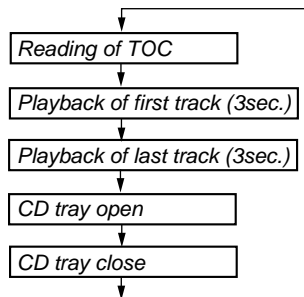
When no errors occur:

Aging is repeatedly performed.

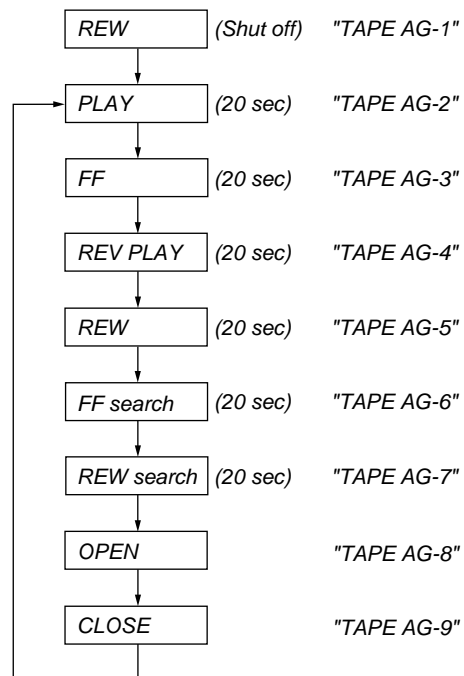
Procedure:

1. Load any CD and a tape.
2. Select the function "CD" using the **FUNCTION** knob (TA).
3. While pressing the **TUNING MODE** button (ST) and **▶** button (CDP), press the **I/⏻** button (TA).
4. "AGING" is displayed on the LCD briefly.
5. Operations are performed in the following sequence during aging.
Every pressing of **DISPLAY** button (ST) changes the display in the CD display and TAPE display.

CD :



Cassette :



6. To end aging, execute the cold reset.

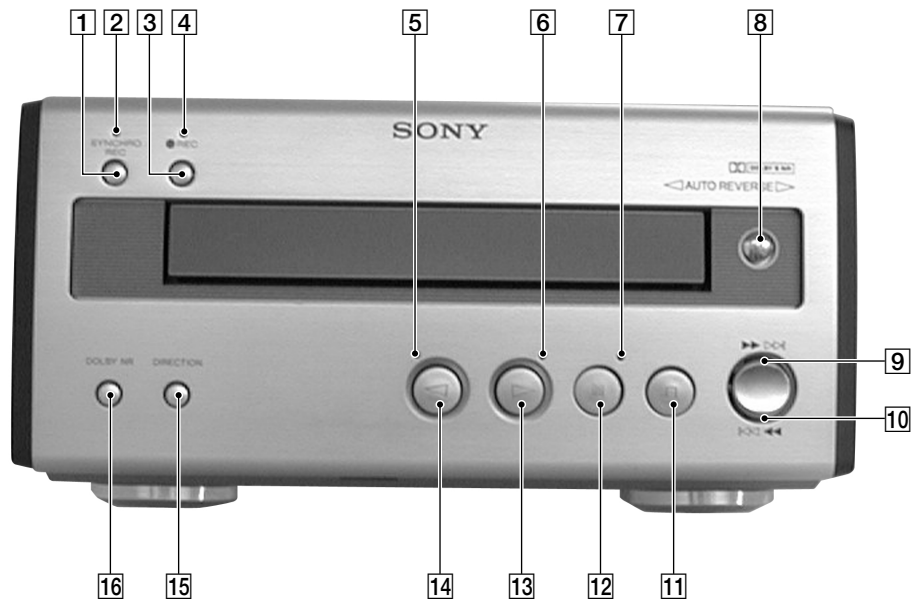
Error History Display Mode

Mode for checking the history of errors which have occurred in the CD player. Execute this mode after ending the aging mode.

Procedure:

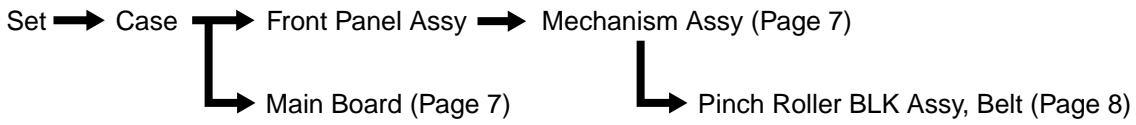
1. Select the function "CD" using the **FUNCTION** knob (TA).
2. While pressing the **TUNING MODE** button (ST) and **⏏** button (CDP), press the **I/⏻** button (TA).
3. "EMC@@EDC**" id displayed.
@@: Number of mechanism errors (Last 3 errors)
** : Number of errors (NO DISC ERROR) which occurred after chucking (Last 3 errors)
4. To end, press the **I/⏻** button (TA) and turn OFF the power.
5. To erase the error history, perform cold reset.
(While pressing the **TUNING MODE** button (ST) and **▶▶▶▶▶** button (CDP), press the **I/⏻** button.)

SECTION 2 GENERAL



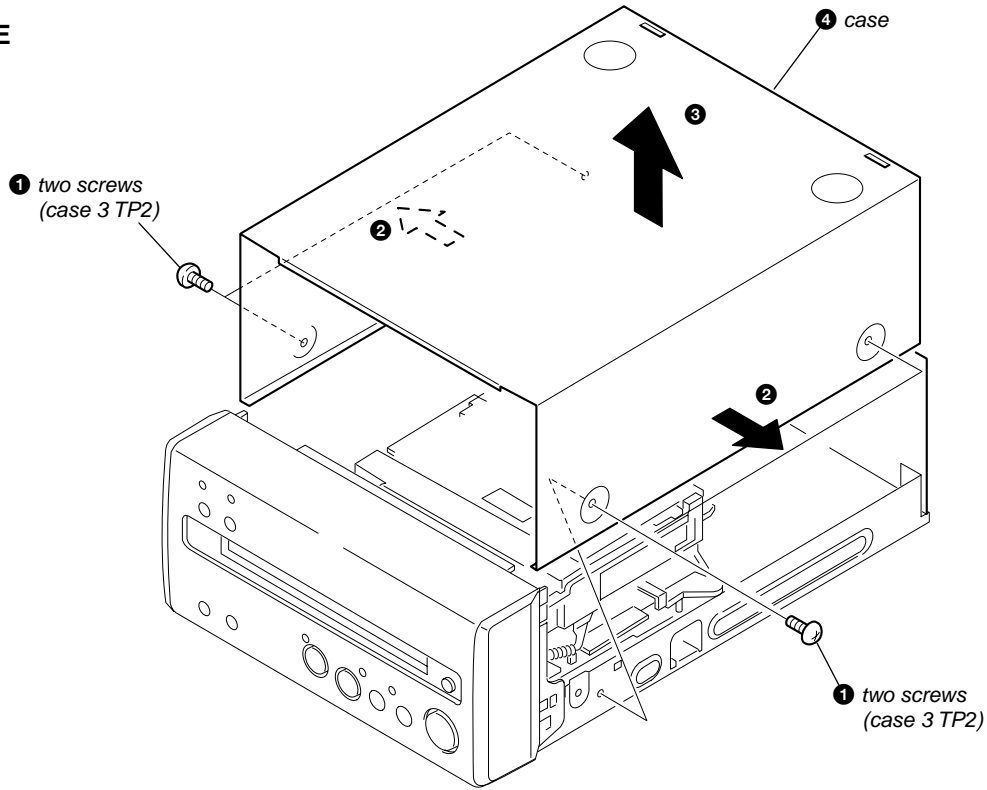
- | | | | |
|----------|-----------------------|-----------|------------------|
| 1 | CD SYNC REC button | 9 | ▶▶ ▷▷ button |
| 2 | CD SYNC REC indicator | 10 | ◀◀ ◀◀ button |
| 3 | ● REC button | 11 | □ button |
| 4 | ● REC indicator | 12 | □□ button |
| 5 | ◁ indicator | 13 | ▷ button |
| 6 | ▷ indicator | 14 | ◁ button |
| 7 | □□ indicator | 15 | DIRECTION button |
| 8 | ◻ button | 16 | DOLBY NR button |

SECTION 3 DISASSEMBLY

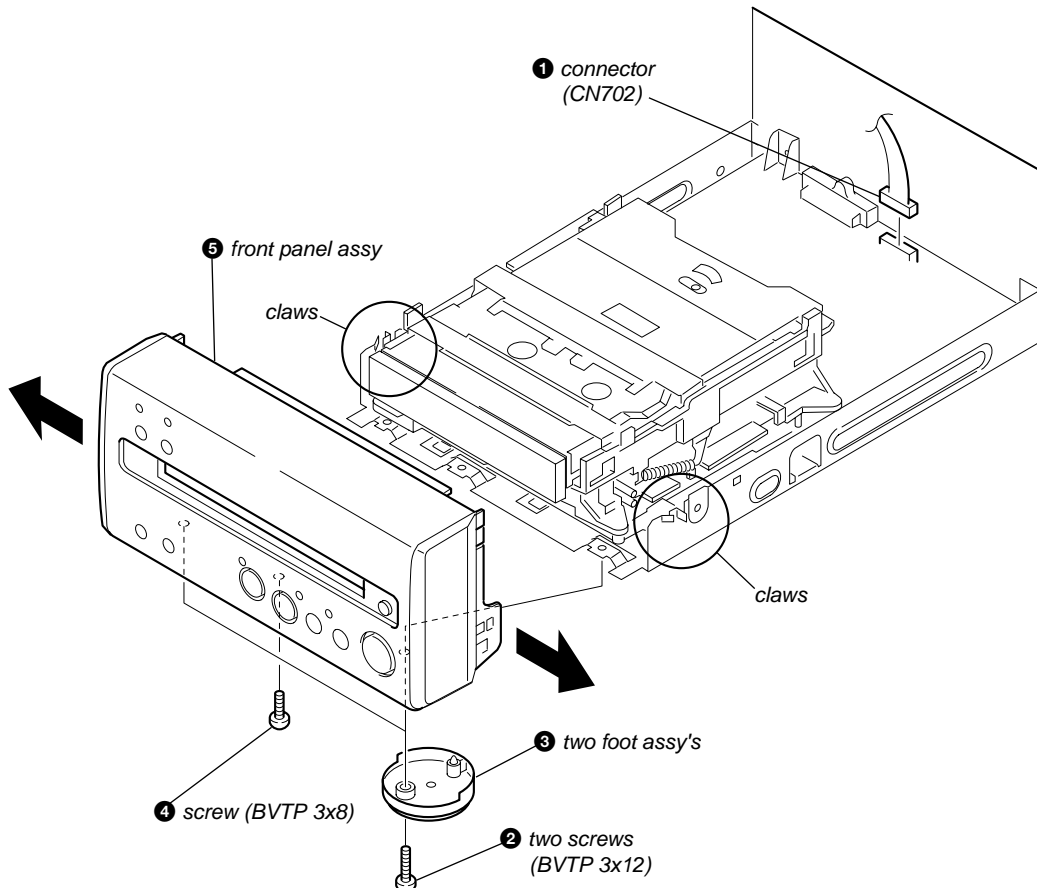


Note: Follow the disassembly procedure in the numerical order given.

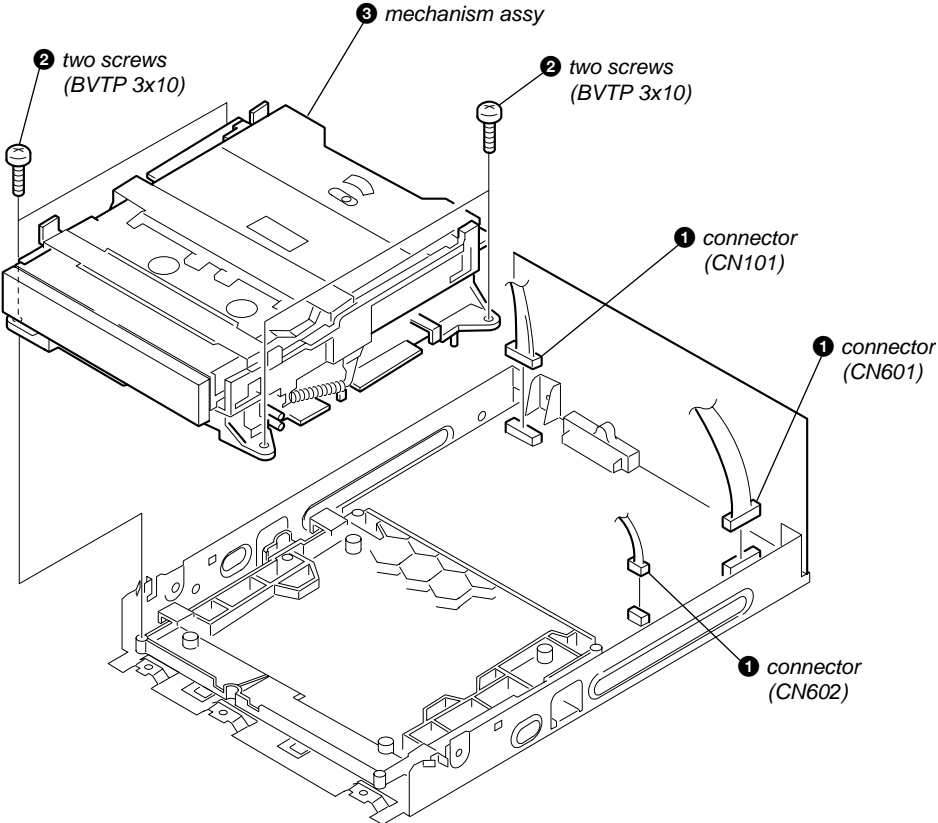
3-1. CASE



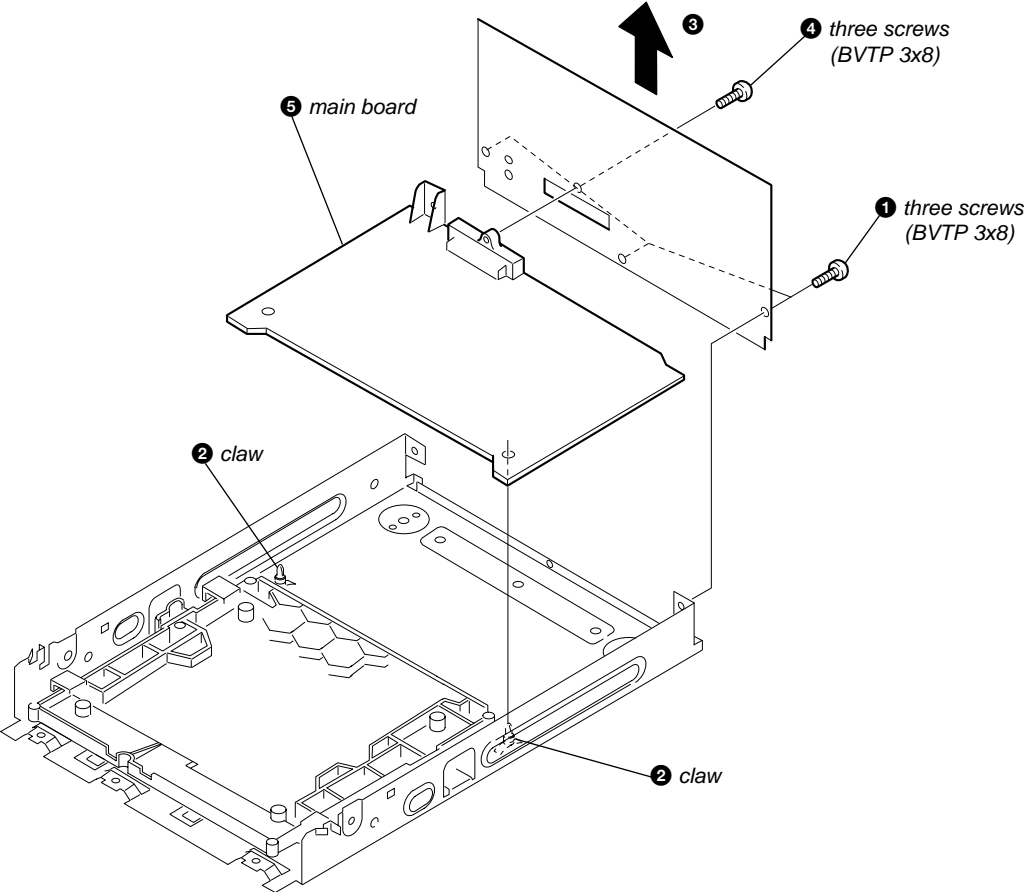
3-2. FRONT PANEL ASSY



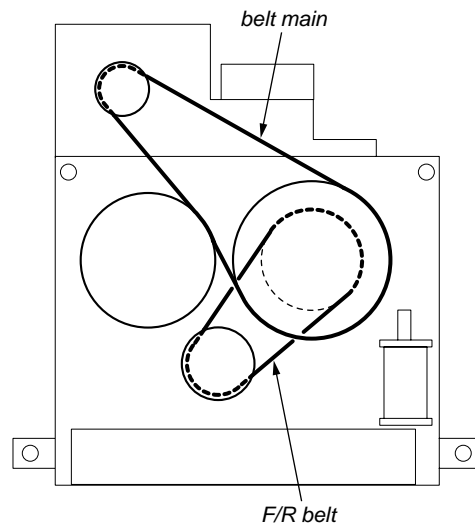
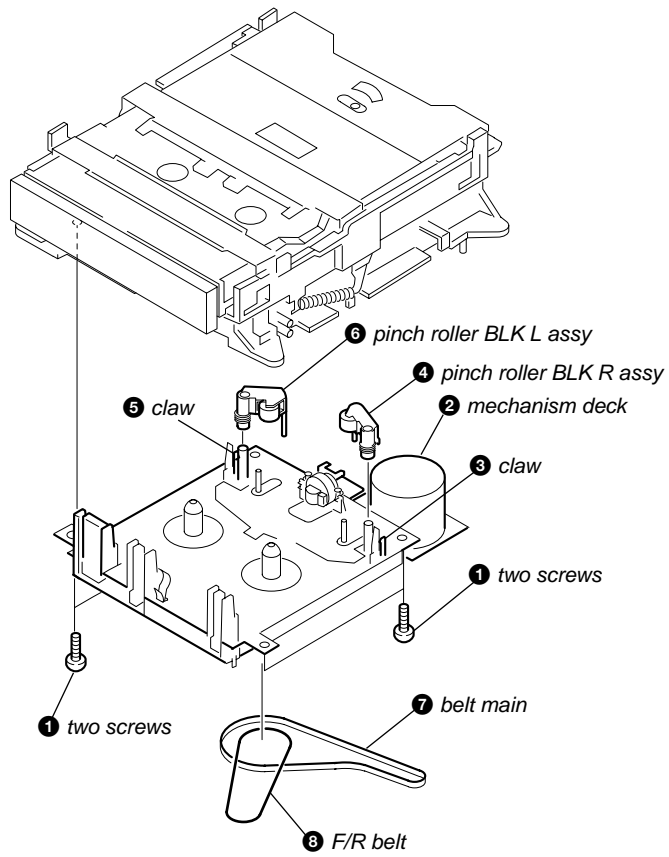
3-3. MECHANISM ASSY



3-4. MAIN BOARD



3-5. PINCH ROLLER BLK ASSY, BELT







SECTION 4 TEST MODE

4-1. TEST MODE FOR NOT CONNECTING THE WHOLE SYSTEM (When connecting TA-SP55,ST-SP55,TC-SP55)


4-1-1. SETTING THE TEST MODE

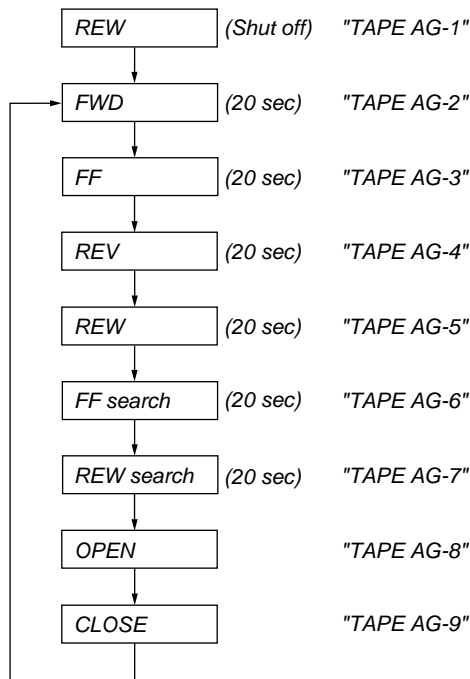
Procedure:

1. When the power ON, press the  button (TA) while pressing the  button (TC) and  buttons (TC) together.
2. When the test mode is set, the PAUSE LED will light up for 0.1 seconds at intervals of 3.2 seconds.
3. To exit the test mode, either press the  button (TA) and turn OFF the power.

4-1-2. TC AGING MODE



Procedure:

1. After setting the test mode, press the  button (TC).
2. Operations are performed in the following sequence during aging.






4-1-3. TC AMS CHECK

Procedure:

1. After setting the test mode, pressing the  button (TC) and then the  button (TC) will start REW operations.
2. After rewinding to the tape top, FF search in the FWD direction starts.
"TAPE EDG*" will be displayed. (*: Arbitrary number)
3. After FF searching to the tape end, the tape will be automatically stopped, and "TAPE OK" or "TAPE NG" will be displayed.

4-1-4. TC REC START POINT

Procedure:

1. Set the test mode, and press the  button (TC) and then the  button (TC) to set the recording state.
2. Pressing the  button (TC) returns to the starting point of recording.

4-2. TEST MODE FOR CONNECTING THE WHOLE SYSTEM

4-2-1. TC Aging Mode (Connecting The Whole System)

- Mode for repeating operations of the CD player and TC deck automatically.

When errors occur:

Aging stops and a message indicating that an error has occurred such as “CD MEC ERR” is displayed.
(For details of errors, refer to “Error History Display Mode”).

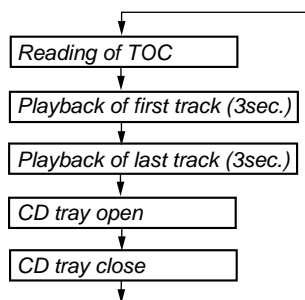
When no errors occur:

Aging is repeatedly performed.

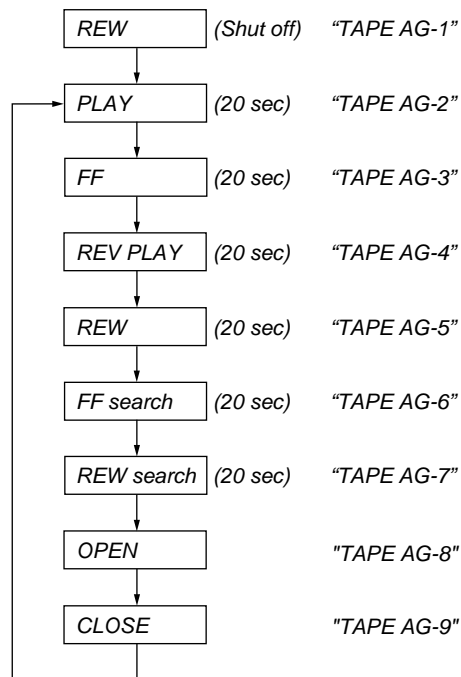
Procedure:

1. Load any CD and a tape.
2. Select the function “CD” using the **FUNCTION** knob(TA) .
3. While pressing the **TUNING MODE** button (ST) and **▶** button (CDP), press the **I/⏻** button (TA).
4. “AGING” is displayed on the fluorescent display tube briefly.
5. Operations are performed in the following sequence during aging.
Every pressing of **DISPLAY** button (ST) changes the display in the CD display and TAPE display.

CD :



Cassette :



6. To end aging, execute the cold reset.

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	3.04 – 6.96 N • m (31 to 71 g • cm) (0.43 – 0.98 oz • inch)
FWD back tension	CQ-102C	0.20 – 0.58 N • m (2 to 6 g • cm) (0.02 – 0.08 oz • inch)
REV	CQ-102RC	3.04 – 6.96 N • m (31 to 71 g • cm) (0.43 – 0.98 oz • inch)
REV back tension	CQ-102RC	0.20 – 0.58 N • m (2 to 6 g • cm) (0.02 – 0.08 oz • inch)
FF/REW	CQ-201B	6.97 – 14.02 N • m (71 to 143 g • cm) (0.98 – 1.99 oz • inch)
FWD tension	CQ-403A	0.98 N • m or more (100 g or more) (3.53 oz or more)
REV tension	CQ-403R	0.98 N • m or more (100 g or more) (3.53 oz or more)

SECTION 6 ELECTRICAL ADJUSTMENTS

0 DB=0.775V

Note: Before starting the adjustment, measure performance of the machine. Perform adjustment only when the measured performances do not satisfy the specifications.

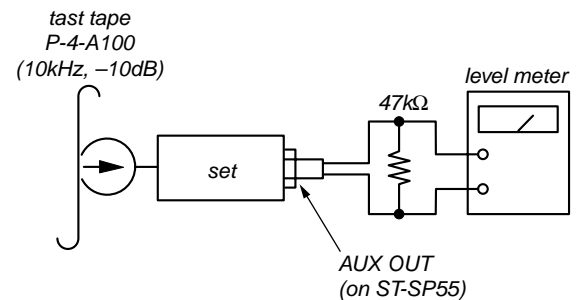
1. Demagnetize the record/playback head with a head demagnetizer.
2. Do not use a magnetized screwdriver for the adjustments.
3. After the adjustments, apply suitable locking compound to the parts adjusted.
4. The adjustments should be performed with the rated power supply voltage unless otherwise noted.
(completed before performing recording circuit adjustment.)
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.

Tape	Signal	Used for
P-4-A100	10 kHz, -10 dB	Azimuth Adjustment
WS-48B	3 kHz, 0 dB	Tape Speed Adjustment
P-4-L300	315 Hz, 0 dB	Level Adjustment

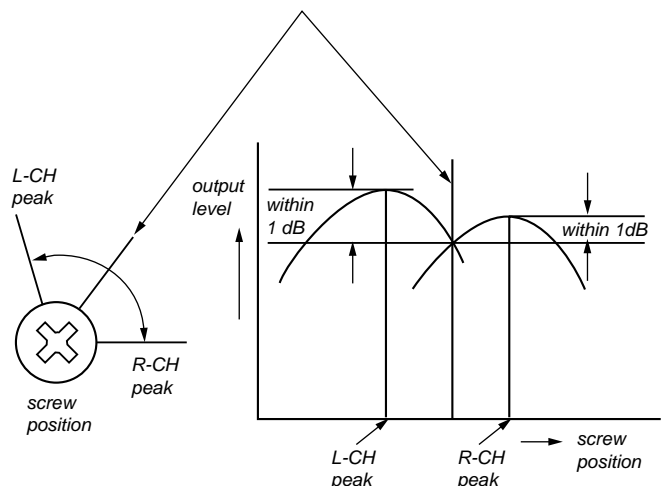
Record/Playback Head Azimuth Adjustment

Procedure:

1. Mode : FWD playback

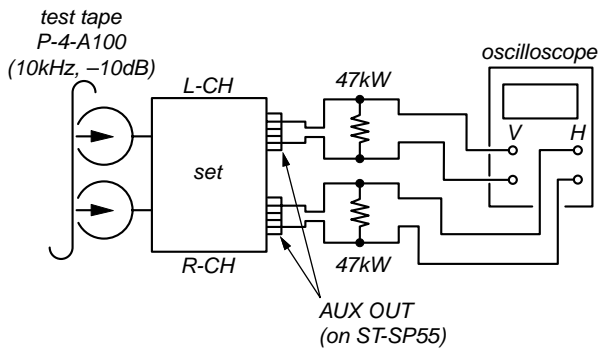


2. Turn the adjustment screw and check output peaks. If the peaks do not match for L-CH and R-CH, turn the adjustment screw so that outputs match within 1 dB of peak.

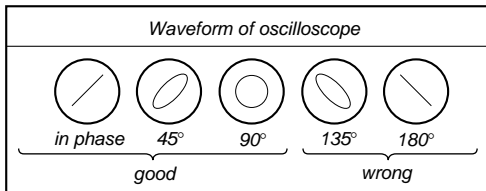


3. Phase check

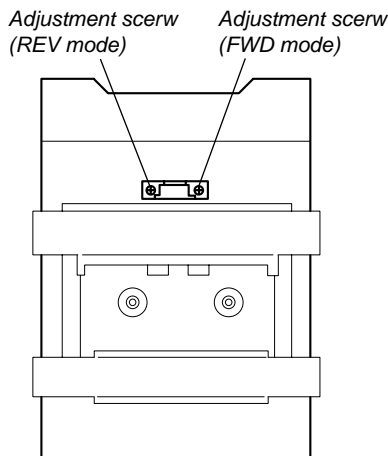
Model: FWD playback



- Perform steps 1 to 3 in the FWD playback mode.
- Confirm that phase error between L-ch and R-ch is in the range of same phase to 90 degrees.
- After the adjustments, apply suitable locking compound to the parts adjusted.

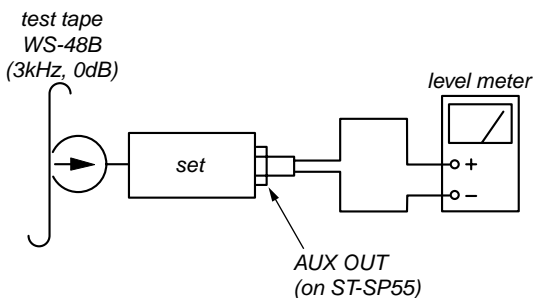


Adjustment Location:



Tape Speed Adjustment

Procedure:



- Insert the WS-48B into deck.
- Press the button of deck.
- Adjust RV362 of the MAIN board so that the reading of the frequency counter becomes 3000 ± 90 Hz.

Adjustment Location: MAIN board

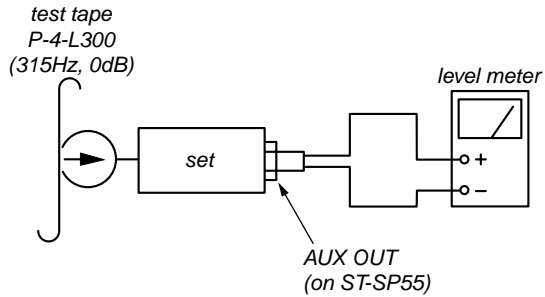
Sample Value of Wow and flutter

W.RMS (JIS) less than 0.3%
(test tape: WS-48B)

Playback Level Adjustment

Procedure:

Mode: FWD playback



Adjust RV211 (L-CH) and RV261 (R-CH), so that adjustment within the following adjustment level.

Adjustment level:

AUX OUT level: -8.2 ± 0.5 dB (285 to 319 mV)

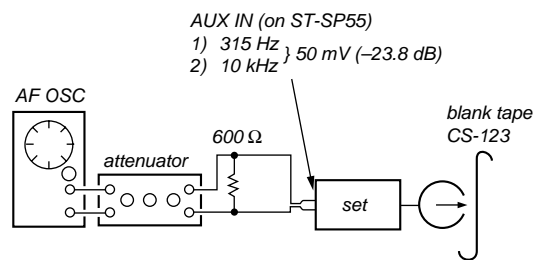
Level difference between the channels: within ± 1.0 dB

Confirm that the AUX OUT level does not change even though play and stop are repeated.

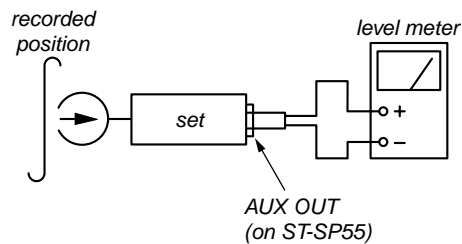
Record Bias Adjustment

Procedure:

- Record mode.



- Playback mode.



- Confirm playback the signal recorded in step 1 become adjustment level as follows.

Note: You had better to refer "4-1-4. TC REC START POINT" See page 9) when this adjustment

- If these levels do not adjustment level, adjust the RV311 (L-CH) and RV361 (R-CH), to repeat steps 1 to 3.

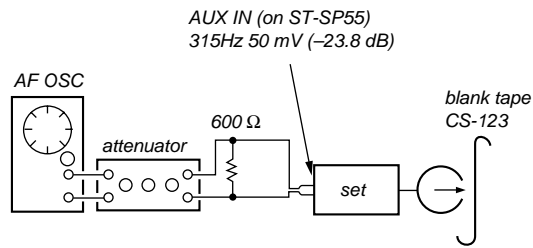
Adjustment level:

The playback output of 10 kHz level difference adjust 315 Hz reference should be $0 \text{ dB} \pm 0.5$ dB.

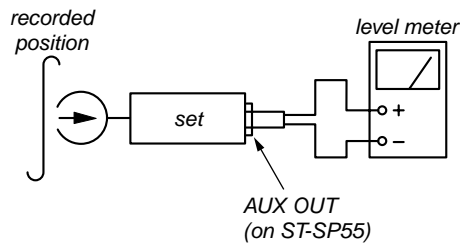
Record Level Adjustment

Procedure:

1. Record mode.



2. Playback mode.

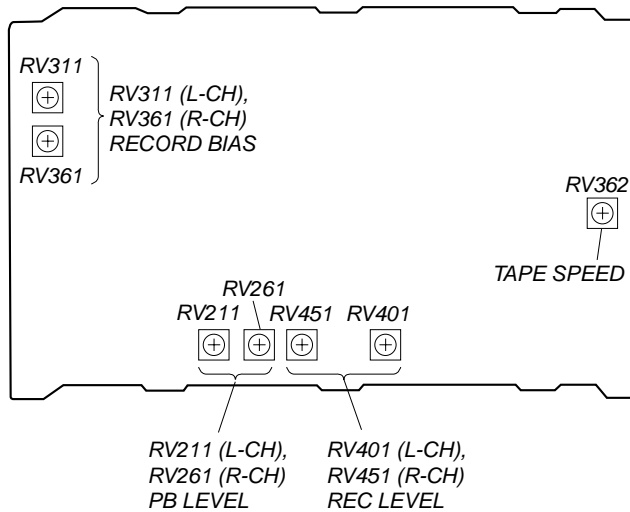


3. Confirm playback the signal recorded in step 1 become adjustment level as follows.
4. If these levels do not adjustment level, adjust the RV401 (L-CH) and RV451 (R-CH), on the MAIN board to repeat steps 1 to 3.

Adjustment level:

LINE OUT level: $-21.8 \text{ dB} \pm 0.5 \text{ dB}$ (59.5 to 66.7 mV)

Adjustment Location: MAIN board






SECTION 7 DIAGRAMS






THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For schematic diagrams.

Note:




- All capacitors are in μF unless otherwise noted. pF: μpF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $1/4\text{ W}$ or less unless otherwise specified.
- Δ : internal component.
-  : nonflammable resistor.
-  : fusible resistor.
-  : panel designation.

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

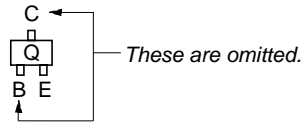
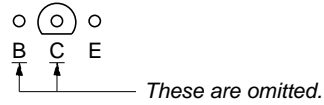
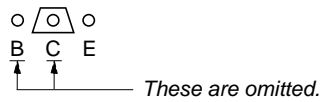
-  : B+ Line.
-  : B- Line.
-  : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- Voltages are taken with a VOM (Input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
 : PB
 : REC
- Abbreviation
AED : North European model
MY : Malaysia model
SP : Singapore model

For printed wiring boards.

Note:

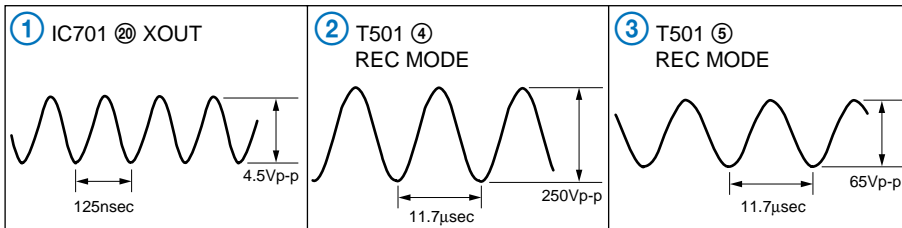
-  : parts extracted from the component side.
-  : parts extracted from the conductor side.
-  : Pattern from the side which enables seeing.
(The other layers' patterns are not indicated.)

• Indication of transistor

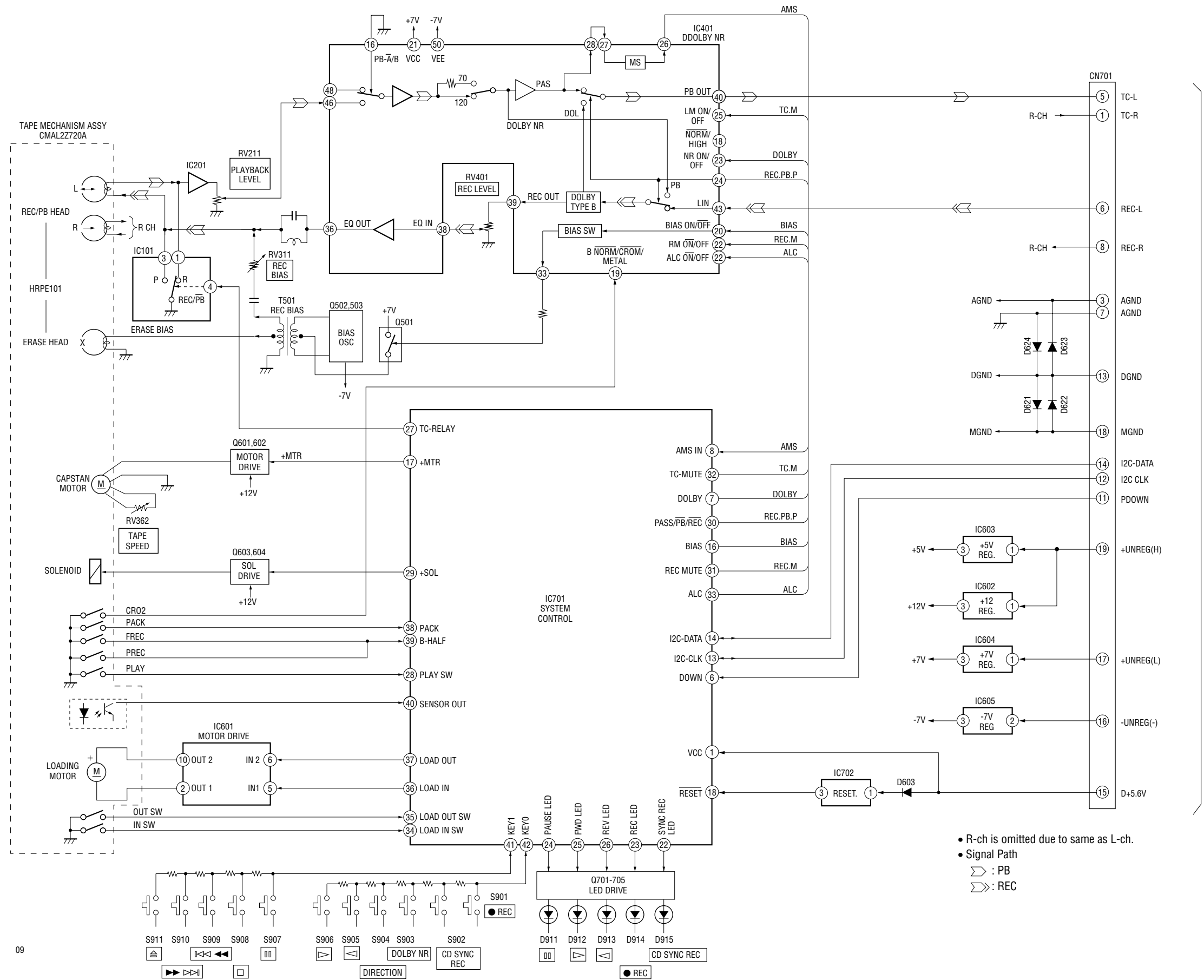


• WAVEFORMS

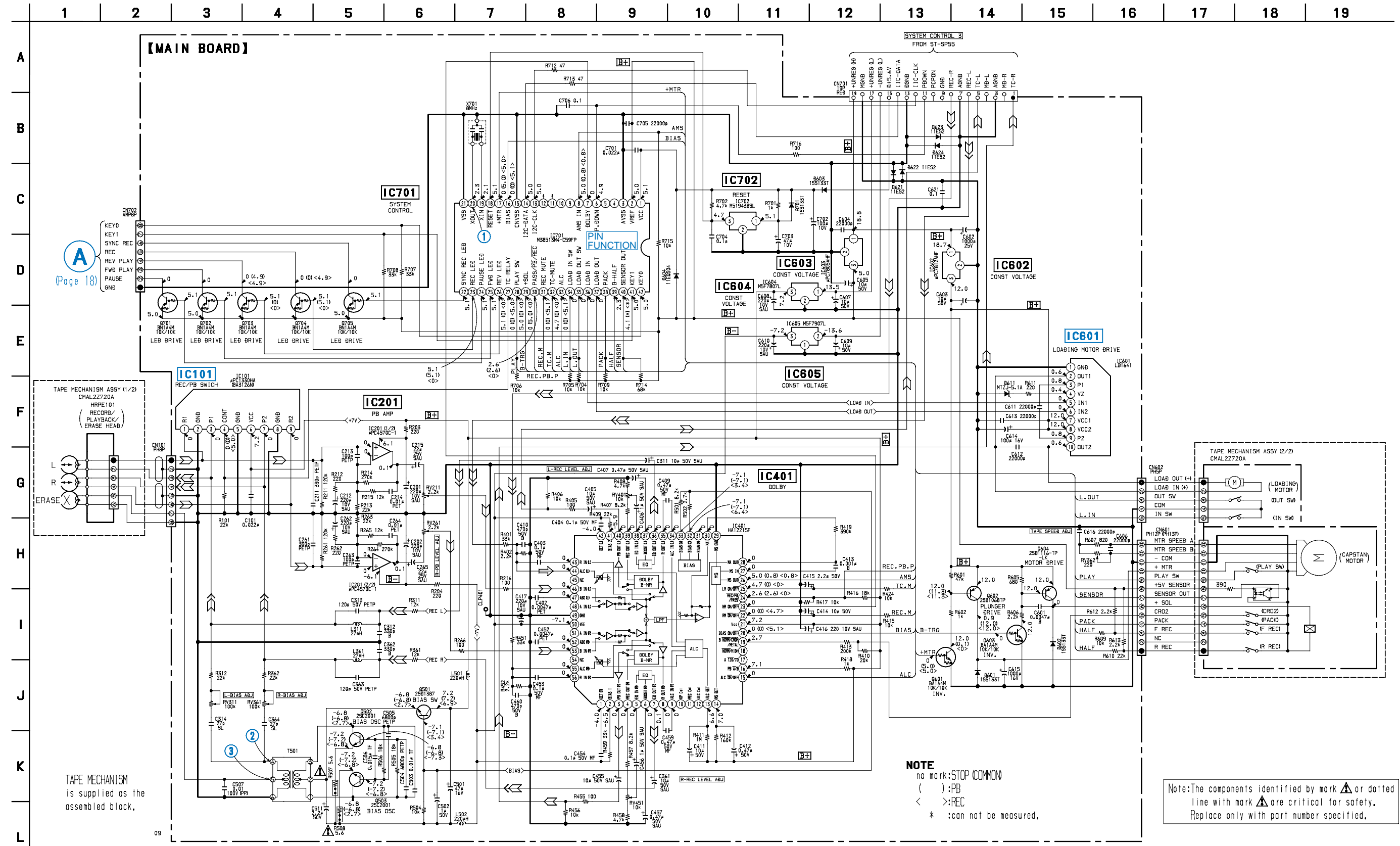
– MAIN BOARD –



7-1. BLOCK DIAGRAM



7-2. SCHEMATIC DIAGRAM – MAIN SECTION – • See page 14 for Waveforms. • See page 19 for IC Pin Functions. • See page 20 for IC Block Diagrams.



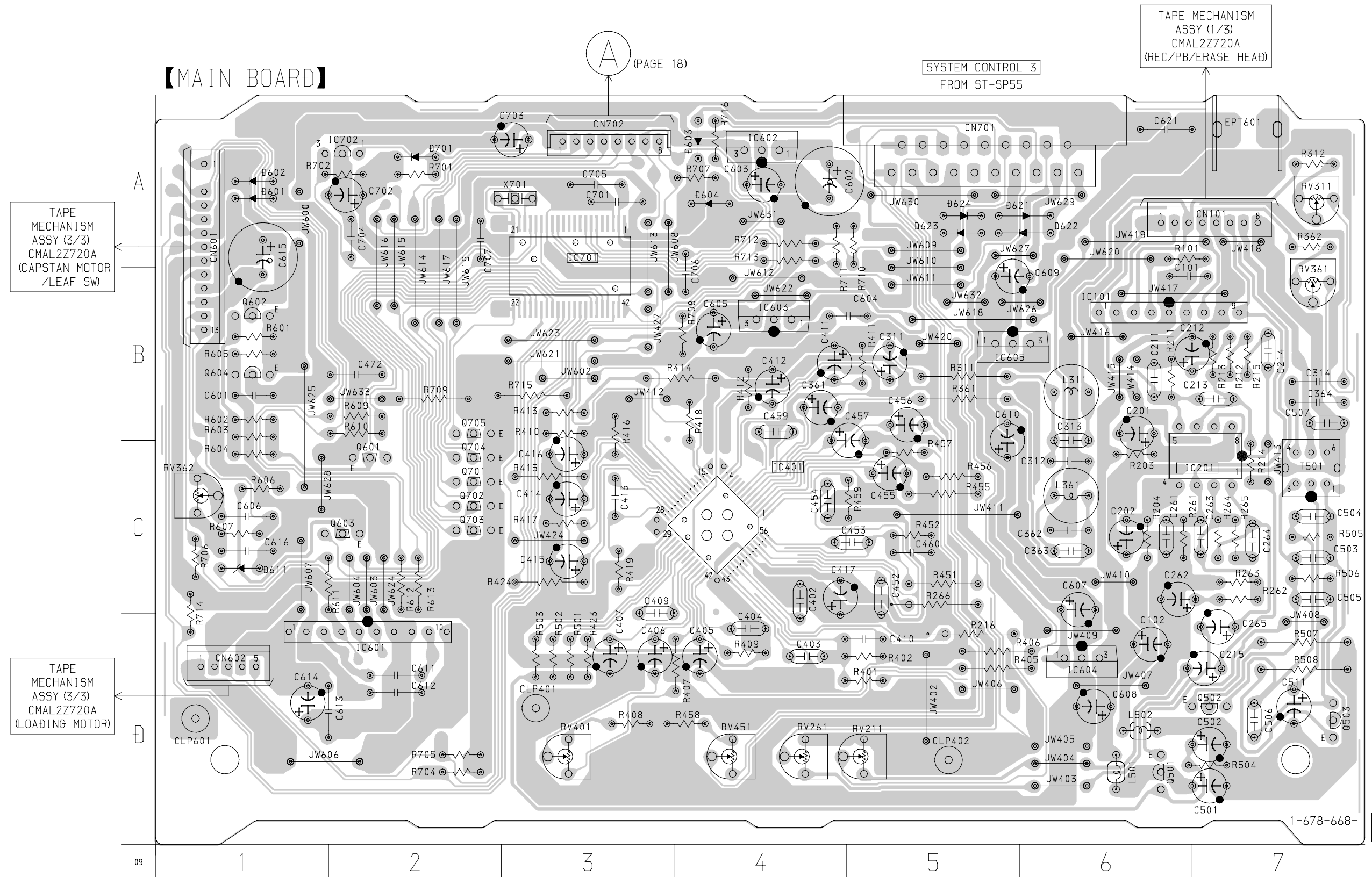
(Page 18)

TAPE MECHANISM is supplied as the assembled block.

NOTE
 no mark: STOP COMMON
 () : PB
 < > : REC
 * : can not be measured.

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

7-3. PRINTED WIRING BOARD – MAIN SECTION –

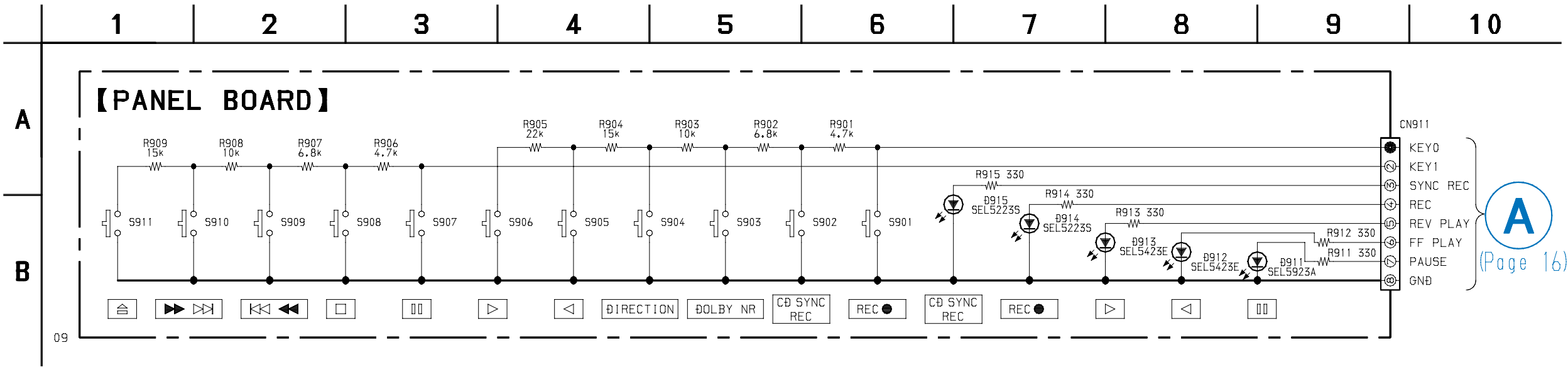


• Semiconductor Location

Ref. No.	Location
D601	A-1
D602	A-1
D603	A-4
D604	A-4
D611	C-1
D621	A-5
D622	A-5
D623	A-5
D624	A-5
D701	A-2
IC101	B-6
IC201	C-7
IC401	C-4
IC601	D-2
IC602	A-4
IC603	B-4
IC604	D-6
IC605	B-5
IC701	B-3
IC702	A-2
Q501	D-6
Q502	D-7
Q503	D-7
Q601	C-2
Q602	B-1
Q603	C-2
Q604	B-1
Q701	C-2
Q702	C-2
Q703	C-2
Q704	C-2
Q705	B-2

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

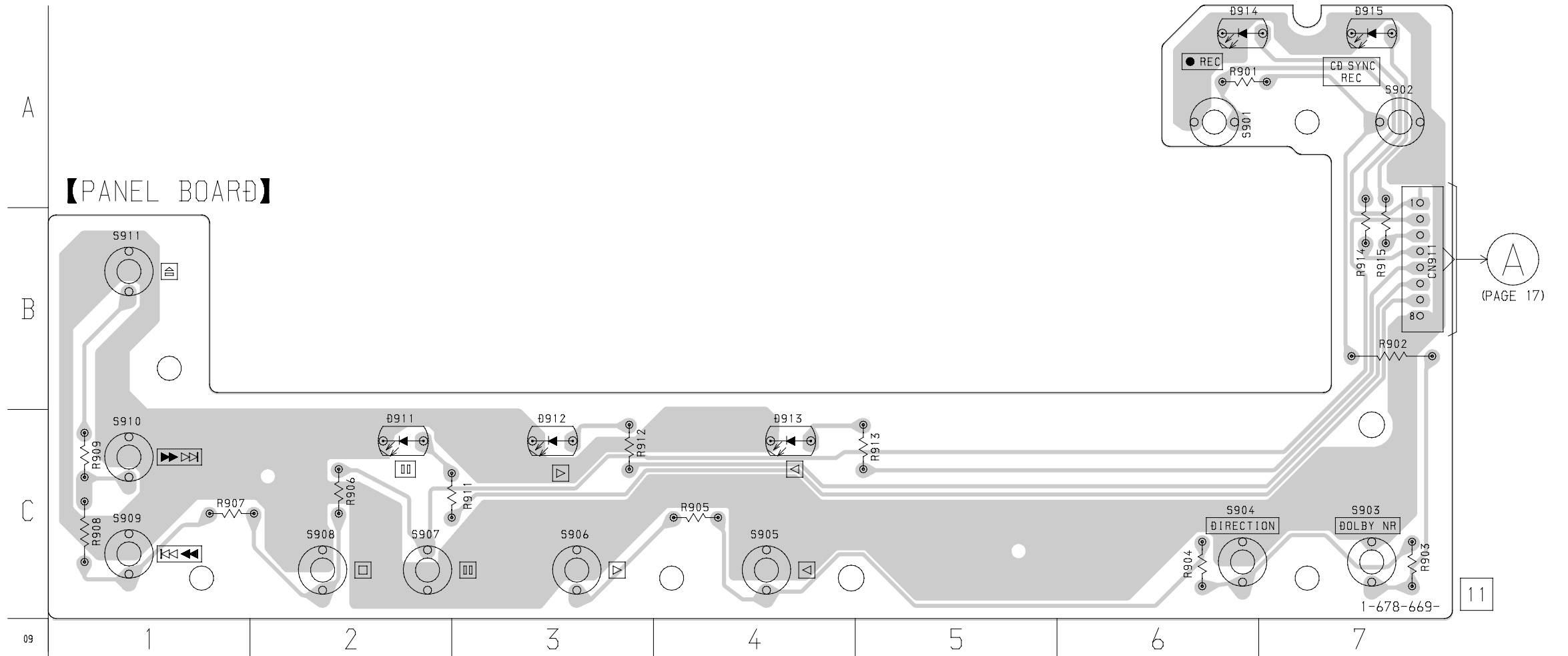
7-4. SCHEMATIC DIAGRAM – PANEL SECTION –



7-5. PRINTED WIRING BOARD – PANEL SECTION –

• Semiconductor Location

Ref. No.	Location
D911	C-2
D912	C-3
D913	C-4
D914	A-6
D915	A-7



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

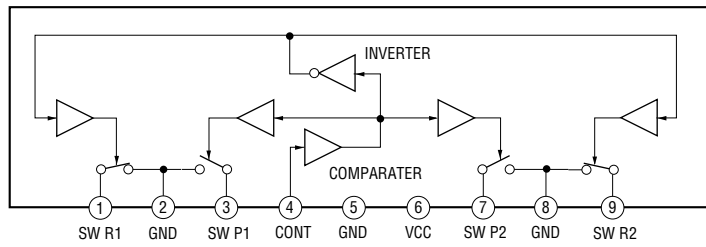
7-6. IC PIN FUNCTIONS

• IC701 M38513M4-C59FP SYSTEM CONTROL (MAIN BOARD)

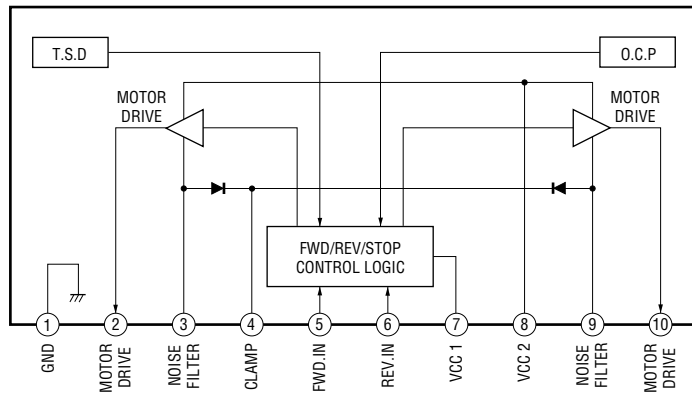
Pin No.	Pin Name	I/O	Function
1	VCC	—	Power supply.(+5V)
2	VREF	—	Analog Reference Voltage.
3	AVSS	—	Ground.
4	NC	—	Not used.
5	NC	—	Not used.
6	P.DOWN	I	POWER DOWN signal control signal input. H: Normal L: STANDBY mode
7	DOLBY	O	DOLBY B NR control signal output. H: ON L: OFF
8	AMS IN	I	AMS search signal input.
9	NC	—	Not used.
10	NC	—	Not used.
11	NC	—	Not used.
12	NC	—	Not used.
13	I2C-CLK	I/O	IIC bus clock input/output.
14	I2C-DATA	I/O	IIC bus data input/output.
15	CNVSS	—	Connected to ground.
16	BIAS	O	REC bias control signal output. H: ON L: OFF
17	+MTR	O	Capstan Motor control. H: ON L: OFF
18	RESET	I	Reset signal input. L: RESET
19	XIN	I	Ceramic oscillator input.(8MHz)
20	XOUT	O	Ceramic oscillator output.(8MHz)
21	VSS	—	Ground.
22	SYNC REC LED	O	CD SYNC LED control signal output. H: OFF L: ON
23	REC LED	O	REC LED control signal output. H: OFF L: ON
24	PAUSE LED	O	PAUSE LED control signal output. H: OFF L: ON
25	FWD LED	O	FWD LED control signal output. H: OFF L: ON
26	REV LED	O	REV LED control signal output. H: OFF L: ON
27	TC-RELAY	O	Head REC/PB select signal output. H: REC L: PB
28	PLAY SW	I	MC PLAY switch signal input.
29	+SOL	O	MC mode exchange solenoid control signal output.
30	REC/PB/PASS	I/O	REC/PB/PASS select . H: REC PASS L: REC mode 1/2Vcc: PB MODE
31	REC MUTE	O	REC MUTE control. H: ON L: OFF
32	TC-MUTE	O	TC LINE MUTE control signal output. H: ON L: OFF
33	ALC	O	Automatic level control signal output. H: OFF L: ON
34	LOAD IN SW	I	Detection input from the tray open/close switch. H: LOAD IN
35	LOAD OUT SW	I	Detection input from the tray open/close switch. L: LOAD OUT
36	LOAD IN	O	Tray loading motor LOAD IN signal output. H: ON L: OFF
37	LOAD OUT	O	Tray loading motor LOAD OUT signal output. H: ON L:OFF
38	PACK	I	Detection input from the cassette half switch H: HALF OFF L: HALF ON (H:without a half L: within a half)
39	B-HALF	I	REC proof detect signal input.
40	SENSOR OUT	I	Reel senser signal input.
41	KEY1	I	Key input.
42	KEY0	I	Key input.

7-7. IC BLOCK DIAGRAMS

IC101 μ PC1330HA (MAIN BOARD)



IC601 LB1641 (MAIN BOARD)



SECTION 8 EXPLODED VIEW

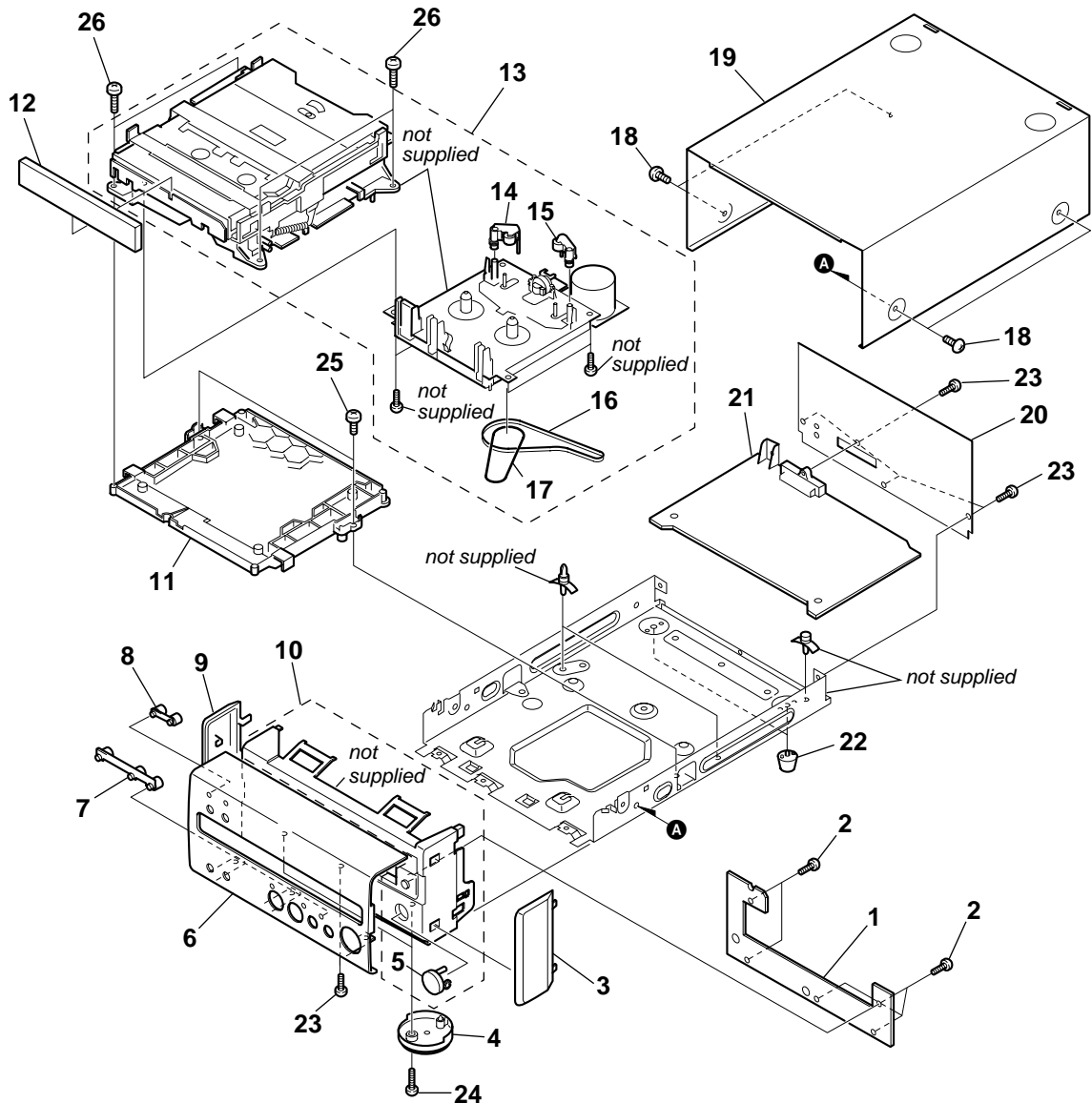
NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- 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.
- Abbreviation
 AED : North European model
 MY : Malaysia model
 SP : Singapore model

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

8-1. CASE AND FRONT PANEL



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	1-678-669-11	PANEL BOARD		15	X-4949-568-1	PINCH ROLLER BLK R ASSY	
2	4-951-620-01	SCREW(2.6X8), +BVTP		16	3-356-744-01	BELT MAIN	
3	4-229-703-01	PLATE(R), SIDE		17	4-928-951-21	F/R BELT	
4	X-4953-027-1	FOOT ASSY		18	3-363-099-51	SCREW (CASE 3 TP2)	
5	4-229-678-01	BUTTON (U/D)		19	4-229-701-31	CASE	
6	4-229-648-01	PANEL (TC), FRONT		20	4-229-654-01	PANEL, BACK (AEP,UK,AED)	
7	4-229-652-01	INDICATOR (PLAY)		21	A-2007-857-A	MAIN BOARD, COMPLETE	
8	4-229-651-01	INDICATOR (REC)		22	4-965-822-01	FOOT	
9	4-229-704-01	PLATE (L), SIDE		23	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
10	X-4953-025-1	PANEL ASSY (TC), SUB		24	7-685-648-79	SCREW +BVTP 3X12 TYPE2 N-S	
11	4-229-653-01	HOLDER (TC)		25	7-685-871-01	SCREW +BVTT 3X6 (S)	
12	4-229-649-01	PANEL, LOADING		26	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
13	A-2004-777-A	MECHANISM (CMAL2Z720A) ASSY					
14	X-4949-569-1	PINCH ROLLER BLK L ASSY					

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

- 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.

- Abbreviation
AED : North European model
MY : Malaysia model
SP : Singapore model

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	A-2007-857-A	MAIN BOARD, COMPLETE *****					
		< CAPACITOR >					
C101	1-161-494-00	CERAMIC	0.022uF	25V	C456	1-119-820-11	ELECT 1uF 20% 50V
C201	1-128-832-11	ELECT	220uF	20% 10V	C457	1-128-854-11	ELECT 0.47uF 20% 50V
C202	1-128-832-11	ELECT	220uF	20% 10V	C459	1-137-194-81	FILM 0.47uF 5% 50V
C211	1-110-342-11	MYLAR	390PF	5% 50V	C460	1-162-290-31	CERAMIC 470PF 10% 50V
C212	1-128-832-11	ELECT	220uF	20% 10V	C501	1-104-664-11	ELECT 47uF 20% 16V
C213	1-110-335-11	MYLAR	100PF	5% 50V	C502	1-126-960-11	ELECT 1uF 20% 50V
C214	1-130-483-00	MYLAR	0.01uF	5% 50V	C503	1-136-153-00	FILM 0.01uF 5% 50V
C215	1-128-858-91	ELECT	22uF	20% 25V	C504	1-130-481-00	MYLAR 0.0068uF 5% 50V
C261	1-110-342-11	MYLAR	390PF	5% 50V	C505	1-130-481-00	MYLAR 0.0068uF 5% 50V
C262	1-128-832-11	ELECT	220uF	20% 10V	C506	1-136-155-00	FILM 0.015uF 5% 50V
C263	1-110-335-11	MYLAR	100PF	5% 50V	C507	1-137-150-11	FILM 0.01uF 5% 100V
C264	1-130-483-00	MYLAR	0.01uF	5% 50V	C511	1-126-961-11	ELECT 2.2uF 20% 50V
C265	1-128-858-91	ELECT	22uF	20% 25V	C601	1-162-600-11	CERAMIC 0.0047uF 30% 16V
C311	1-119-824-11	ELECT MELF	10uF	20% 50V	C602	1-126-942-61	ELECT 1000uF 20% 25V
C312	1-162-288-31	CERAMIC	330PF	10% 50V	C603	1-126-964-11	ELECT 10uF 20% 50V
C313	1-137-427-11	MYLAR	120PF	5% 50V	C604	1-161-494-00	CERAMIC 0.022uF 25V
C314	1-162-209-31	CERAMIC	27PF	5% 50V	C605	1-126-964-11	ELECT 10uF 20% 50V
C361	1-119-824-11	ELECT MELF	10uF	20% 50V	C606	1-161-494-00	CERAMIC 0.022uF 25V
C362	1-162-288-31	CERAMIC	330PF	10% 50V	C607	1-126-964-11	ELECT 10uF 20% 50V
C363	1-137-427-11	MYLAR	120PF	5% 50V	C608	1-128-832-11	ELECT 220uF 20% 10V
C364	1-162-209-31	CERAMIC	27PF	5% 50V	C609	1-126-964-11	ELECT 10uF 20% 50V
C402	1-130-479-00	MYLAR	0.0047uF	5% 50V	C610	1-128-832-11	ELECT 220uF 20% 10V
C403	1-136-165-00	FILM	0.1uF	5% 50V	C611	1-161-494-00	CERAMIC 0.022uF 25V
C404	1-136-165-00	FILM	0.1uF	5% 50V	C612	1-161-494-00	CERAMIC 0.022uF 25V
C405	1-119-824-11	ELECT MELF	10uF	20% 50V	C613	1-161-494-00	CERAMIC 0.022uF 25V
C406	1-119-820-11	ELECT	1uF	20% 50V	C614	1-126-933-11	ELECT 100uF 20% 16V
C407	1-128-854-11	ELECT	0.47uF	20% 50V	C615	1-126-767-11	ELECT 1000uF 20% 16V
C409	1-137-194-81	FILM	0.47uF	5% 50V	C621	1-164-159-11	CERAMIC 0.1uF 50V
C410	1-162-290-31	CERAMIC	470PF	10% 50V	C701	1-161-494-00	CERAMIC 0.022uF 25V
C411	1-126-964-11	ELECT	10uF	20% 50V	C702	1-104-665-11	ELECT 100uF 20% 10V
C412	1-126-959-11	ELECT	0.47uF	20% 50V	C703	1-104-664-11	ELECT 47uF 20% 10V
C413	1-162-294-31	CERAMIC	0.001uF	10% 50V	C704	1-164-159-11	CERAMIC 0.1uF 50V
C414	1-126-964-11	ELECT	10uF	20% 50V	C705	1-161-494-00	CERAMIC 0.022uF 25V
C415	1-126-961-11	ELECT	2.2uF	20% 50V	C706	1-164-159-11	CERAMIC 0.1uF 50V
C416	1-128-832-11	ELECT	220uF	20% 10V			< CONNECTOR >
C417	1-128-832-11	ELECT	220uF	20% 10V	* CN101	1-564-710-11	PIN, CONNECTOR (SMALL TYPE) 8P
C452	1-130-479-00	MYLAR	0.0047uF	5% 50V	CN601	1-784-927-11	PIN, CONNECTOR 12P
C453	1-136-165-00	FILM	0.1uF	5% 50V	CN602	1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P
C454	1-136-165-00	FILM	0.1uF	5% 50V	CN701	1-793-351-21	SOCKET, CONNECTOR 19P
C455	1-119-824-11	ELECT MELF	10uF	20% 50V	* CN702	1-568-935-11	PIN, CONNECTOR 8P
							< DIODE >
				D601	8-719-911-19	DIODE 1SS133T-72	
				D602	8-719-911-19	DIODE 1SS133T-72	

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
D603	8-719-911-19	DIODE 1SS133T-72		R312	1-249-433-11	CARBON 22K 5%	1/4W
D604	8-719-210-21	DIODE 11EQS04-NTA2B		R361	1-249-430-11	CARBON 12K 5%	1/4W
D611	8-719-947-16	DIODE MTZJ-T-72-5.1A		R362	1-249-433-11	CARBON 22K 5%	1/4W
D621	8-719-024-99	DIODE 11ES2-NTA2B		R401	1-249-435-11	CARBON 33K 5%	1/4W
D622	8-719-024-99	DIODE 11ES2-NTA2B		R402	1-249-421-11	CARBON 2.2K 5%	1/4W F
D623	8-719-024-99	DIODE 11ES2-NTA2B		R405	1-247-807-31	CARBON 100 5%	1/4W
D624	8-719-024-99	DIODE 11ES2-NTA2B		R406	1-249-429-11	CARBON 10K 5%	1/4W
D701	8-719-911-19	DIODE 1SS133T-72		R407	1-249-428-11	CARBON 8.2K 5%	1/4W F
		< IC >		R408	1-249-425-11	CARBON 4.7K 5%	1/4W F
				R409	1-249-433-11	CARBON 22K 5%	1/4W
IC101	8-759-143-54	IC uPC1330HA		R410	1-247-862-11	CARBON 20K 5%	1/4W
IC201	8-759-111-44	IC uPC4570C-1		R411	1-247-903-00	CARBON 1M 5%	1/4W
IC401	8-759-495-26	IC HA12215F		R412	1-247-884-11	CARBON 160K 5%	1/4W
IC601	8-759-822-09	IC LB1641		R413	1-247-886-11	CARBON 200K 5%	1/4W
IC602	8-759-088-08	IC uPC7812AHF		R415	1-249-429-11	CARBON 10K 5%	1/4W
IC603	8-759-039-69	IC uPC7805AHF		R416	1-249-432-11	CARBON 18K 5%	1/4W
IC604	8-759-604-86	IC M5F7807L		R417	1-249-429-11	CARBON 10K 5%	1/4W
IC605	8-759-604-90	IC M5F7907L		R418	1-249-417-11	CARBON 1K 5%	1/4W F
IC701	8-759-684-70	IC M38513M4-C59FP		R419	1-247-893-11	CARBON 390K 5%	1/4W
IC702	8-759-635-63	IC M51943BSL-TP		R424	1-249-429-11	CARBON 10K 5%	1/4W
		< COIL >		R451	1-249-435-11	CARBON 33K 5%	1/4W
L311	1-410-092-31	INDUCTOR 27MH		R452	1-249-421-11	CARBON 2.2K 5%	1/4W F
L361	1-410-092-31	INDUCTOR 27MH		R455	1-247-807-31	CARBON 100 5%	1/4W
L501	1-414-193-41	INDUCTOR 220uH		R456	1-249-429-11	CARBON 10K 5%	1/4W
L502	1-414-193-41	INDUCTOR 220uH		R457	1-249-428-11	CARBON 8.2K 5%	1/4W F
		< TRANSISTOR >		R458	1-249-425-11	CARBON 4.7K 5%	1/4W F
Q501	8-729-801-93	TRANSISTOR 2SD1387-34-TP		R459	1-249-435-11	CARBON 33K 5%	1/4W
Q502	8-729-142-46	TRANSISTOR 2SC2001TP-LK		R501	1-249-428-11	CARBON 8.2K 5%	1/4W F
Q503	8-729-142-46	TRANSISTOR 2SC2001TP-LK		R502	1-249-422-11	CARBON 2.7K 5%	1/4W F
Q601	8-729-900-80	TRANSISTOR BA1A4M-TP		R504	1-249-429-11	CARBON 10K 5%	1/4W
Q602	8-729-116-59	TRANSISTOR 2SB1068TP		R505	1-249-432-11	CARBON 18K 5%	1/4W
Q603	8-729-900-80	TRANSISTOR BA1A4M-TP		R506	1-249-432-11	CARBON 18K 5%	1/4W
Q604	8-729-140-04	TRANSISTOR 2SB1116-TP-LK		△ R507	1-212-851-00	FUSIBLE 5.6 5%	1/4W
Q701	8-729-422-57	TRANSISTOR BN1A4M-TP		△ R508	1-212-851-00	FUSIBLE 5.6 5%	1/4W
Q702	8-729-422-57	TRANSISTOR BN1A4M-TP		R601	1-249-437-11	CARBON 47K 5%	1/4W
Q703	8-729-422-57	TRANSISTOR BN1A4M-TP		R602	1-249-417-11	CARBON 1K 5%	1/4W F
Q704	8-729-422-57	TRANSISTOR BN1A4M-TP		R605	1-249-415-11	CARBON 680 5%	1/4W F
Q705	8-729-422-57	TRANSISTOR BN1A4M-TP		R606	1-249-421-11	CARBON 2.2K 5%	1/4W F
		< RESISTOR >		R607	1-249-416-11	CARBON 820 5%	1/4W F
R101	1-249-433-11	CARBON 22K 5%	1/4W	R609	1-249-429-11	CARBON 10K 5%	1/4W
R203	1-249-409-11	CARBON 220 5%	1/4W F	R610	1-249-433-11	CARBON 22K 5%	1/4W
R204	1-249-409-11	CARBON 220 5%	1/4W F	R611	1-249-409-11	CARBON 220 5%	1/4W F
R211	1-247-881-00	CARBON 120K 5%	1/4W	R612	1-249-421-11	CARBON 2.2K 5%	1/4W F
R212	1-249-409-11	CARBON 220 5%	1/4W F	R613	1-249-421-11	CARBON 2.2K 5%	1/4W F
R213	1-249-433-11	CARBON 22K 5%	1/4W	R701	1-249-417-11	CARBON 1K 5%	1/4W F
R214	1-247-889-00	CARBON 270K 5%	1/4W	R702	1-249-425-11	CARBON 4.7K 5%	1/4W F
R215	1-249-430-11	CARBON 12K 5%	1/4W	R704	1-249-429-11	CARBON 10K 5%	1/4W
R216	1-247-807-31	CARBON 100 5%	1/4W	R705	1-249-429-11	CARBON 10K 5%	1/4W
R261	1-247-881-00	CARBON 120K 5%	1/4W	R706	1-249-429-11	CARBON 10K 5%	1/4W
R262	1-249-409-11	CARBON 220 5%	1/4W F	R707	1-249-435-11	CARBON 33K 5%	1/4W
R263	1-249-433-11	CARBON 22K 5%	1/4W	R708	1-249-435-11	CARBON 33K 5%	1/4W
R264	1-247-889-00	CARBON 270K 5%	1/4W	R709	1-249-429-11	CARBON 10K 5%	1/4W
R265	1-249-430-11	CARBON 12K 5%	1/4W	R712	1-249-401-11	CARBON 47 5%	1/4W F
R266	1-247-807-31	CARBON 100 5%	1/4W	R713	1-249-401-11	CARBON 47 5%	1/4W F
R311	1-249-430-11	CARBON 12K 5%	1/4W	R714	1-249-439-11	CARBON 68K 5%	1/4W
				R715	1-249-429-11	CARBON 10K 5%	1/4W
				R716	1-247-807-31	CARBON 100 5%	1/4W

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

MAIN **PANEL**

Ref. No.	Part No.	Description	Remark
< VARIABLE RESISTOR >			
RV211	1-241-762-11	RES, ADJ, CARBON 2.2K	
RV261	1-241-762-11	RES, ADJ, CARBON 2.2K	
RV311	1-241-767-21	RES, ADJ, CARBON 100K	
RV361	1-241-767-21	RES, ADJ, CARBON 100K	
RV362	1-241-759-11	RES, ADJ, CARBON 220	
RV401	1-241-764-11	RES, ADJ, CARBON 10K	
RV451	1-241-764-11	RES, ADJ, CARBON 10K	
< TRANSFORMER >			
T501	1-423-980-11	TRANSFORMER, BIAS OSCILLATION	
< VIBRATOR >			
X701	1-579-125-11	VIBRATOR, CERAMIC (8MHz)	

	1-678-669-11	PANEL BOARD	

< DIODE >			
D911	8-719-057-97	DIODE SEL5923A-TP15 (□□)	
D912	8-719-058-03	DIODE SEL5423E-TP15 (◁)	
D913	8-719-058-03	DIODE SEL5423E-TP15 (▷)	
D914	8-719-058-04	DIODE SEL5223S-TP15 (● REC)	
D915	8-719-058-04	DIODE SEL5223S-TP15 (CD SYNC REC)	
< RESISTOR >			
R901	1-249-425-11	CARBON 4.7K 5% 1/4W F	
R902	1-249-427-11	CARBON 6.8K 5% 1/4W F	
R903	1-249-429-11	CARBON 10K 5% 1/4W	
R904	1-249-431-11	CARBON 15K 5% 1/4W	
R905	1-249-433-11	CARBON 22K 5% 1/4W	
R906	1-249-425-11	CARBON 4.7K 5% 1/4W F	
R907	1-249-427-11	CARBON 6.8K 5% 1/4W F	
R908	1-249-429-11	CARBON 10K 5% 1/4W	
R909	1-249-431-11	CARBON 15K 5% 1/4W	
R911	1-249-411-11	CARBON 330 5% 1/4W	
R912	1-249-411-11	CARBON 330 5% 1/4W	
R913	1-249-411-11	CARBON 330 5% 1/4W	
R914	1-249-411-11	CARBON 330 5% 1/4W	
R915	1-249-411-11	CARBON 330 5% 1/4W	
< SWITCH >			
S901	1-771-410-21	SWITCH, TACTILE (● REC)	
S902	1-771-410-21	SWITCH, TACTILE (CD SYNC REC)	
S903	1-771-410-21	SWITCH, TACTILE (DOLBY NR)	
S904	1-771-410-21	SWITCH, TACTILE (DIRECTION)	
S905	1-771-410-21	SWITCH, TACTILE (◁)	
S906	1-771-410-21	SWITCH, TACTILE (▷)	
S907	1-771-410-21	SWITCH, TACTILE (□□)	
S908	1-771-410-21	SWITCH, TACTILE (□)	
S909	1-771-410-21	SWITCH, TACTILE (◀◀ ◀◀)	
S910	1-771-410-21	SWITCH, TACTILE (▶▶ ▶▶)	
S911	1-771-410-21	SWITCH, TACTILE (≡)	

Ref. No.	Part No.	Description	Remark
ACCESSORIES & PACKING MATERIALS			

1-792-923-11		CORD (WITH CONNECTOR) (AEP,UK,AED)	
4-230-237-11		MANUAL, INSTRUCTION (ENGLISH) (AEP,UK,AED)	
4-230-237-21		MANUAL, INSTRUCTION (FRENCH,SPANISH) (AEP,UK,AED)	
4-230-237-31		MANUAL, INSTRUCTION (GERMAN,DUTCH) (AEP,UK,AED)	
4-230-237-41		MANUAL, INSTRUCTION (ITALIAN,PORTUGUSE,SWEDISH) (AEP,UK,AED)	