

TC-D70

SERVICE MANUAL

*AEP Model
UK Model*

This set is the cassette deck
Section in XO-D70/XO-D70CD.



SPECIFICATIONS

Recording system	4-track 2-channel stereo
Frequency response	DOLBY NR OFF (DIN) With TYPE II cassette (Sony UX-S) 40 to 14,000 Hz $\pm$ 3 dB With TYPE I cassette (Sony HF-S) 40 to 13,000 Hz $\pm$ 3 dB
Wow and flutter	$\pm$ 0.2% (DIN)
Dimensions	Approx. 355 $\times$ 130 $\times$ 305 mm (w/h/d) (14 $\times$ 5 1/8 $\times$ 12 1/8 inches) Incl. projecting parts and controls
Weight	Approx. 3.6 kg (7 lb 15 oz)

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

Model Name Using Similar Mechanism	DXA-D50
Tape Transport Mechanism Type	DECK A: TCM-170RA 1 DECK B: TCM-170RB 1

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  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.

STEREO CASSETTE DECK
SONY[®]

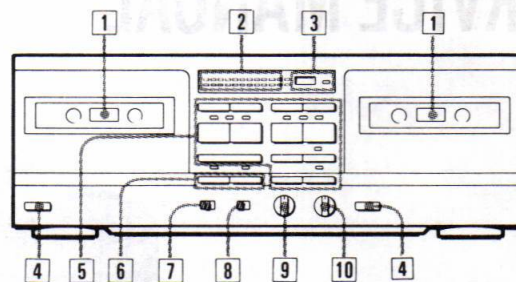


SECTION 1 GENERAL

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
SECTION 1 GENERAL		
1-1.	Parts Identification	2
SECTION 2 MECHANICAL ADJUSTMENTS		
2-1.	Torque Measurement	3
SECTION 3 ELECTRICAL ADJUSTMENTS		
3-1.	Record/Playback Head Azimuth Adjustment	3
3-2.	Tape Speed Adjustment	4
3-3.	Playback Level Adjustment	4
3-4.	Record Bias Adjustment	4
3-5.	Record Level Adjustment	5
SECTION 4 DIAGRAMS		
4-1.	Circuit Board Location	5
4-2.	Semiconductor Lead Layouts	6
4-3.	Printed Wiring Board	7
4-4.	Schematic Diagram —Audio Section—.....	9
4-5.	Schematic Diagram —Systemcontrol Section—.....	11
SECTION 5 EXPLODED VIEWS		
5-1.	Cabinet Section	13
5-2.	Front Panel Section	14
5-3.	Mechanism Section (1)	15
5-4.	Mechanism Section (2)	16
SECTION 6 ELECTRICAL PARTS LIST		17

1-1. PARTS IDENTIFICATION



- 1 Cassette holders
- 2 Level meters
- 3 Tape COUNTER and RESET button (for only deck B)
- 4 ▲ EJECT buttons
- 5 Tape operation buttons and indicators
 - ◀ Leftward fast winding
 - ▶ Rightward fast winding
 - ◁ Reverse play
 - ▷ Forward play
 - Stop
 - || Pause
 - Record muting (only deck B)
 - REC (record, for only deck B) (This button corresponds to the ● button on the remote commander.)
- 6 SYNCHRO DUBBING speed select buttons and indicators
- 7 DIRECTION MODE selector
- 8 DOLBY NR* (Noise Reduction) switch
- 9 BALANCE control
- 10 REC (recording) LEVEL control

SECTION 2 MECHANICAL ADJUSTMENTS

PRECAUTION

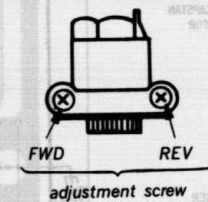
- Clean the following parts with a denatured alcohol-moistened swab:
Record/playback head pinch roller
erase head rubber belt
capstan idlers
- Demagnetize the record/playback head with a head demagnetizer.
- Do not use a magnetized screwdriver for the adjustments.
- After the adjustments, apply suitable locking compound to the parts adjusted.
- The adjustments should be performed with the rated power supply voltage unless otherwise noted.

2-1. TORQUE MEASUREMENT

Mode	Torque Motor	Torque
FWD	CQ-102C	30–70g·cm (0.41–0.97oz·inch)
FWD back tension	CQ-102C	2–6g·cm (0.03–0.08oz·inch)
REV	CQ-102RB	30–70g·cm (0.41–0.97oz·inch)
REV back tension	CQ-102RB	2–6g·cm (0.03–0.08oz·inch)
FE, REW	CQ-201B	90–160g·cm (1.25–2.22oz·inch)

- Repeat steps 1–3 in REV playback mode.
- After the adjustment, lock the screws with locking compound.

Adjustment Location:



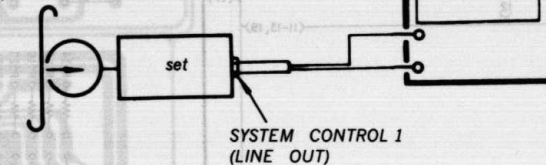
3-2. TAPE SPEED ADJUSTMENT

DECK A DECK B

Procedure:

Mode: playback

test tape
WS-48B
(3kHz, 0dB)



(High speed adjustment)

- short the CN801
- Playback WS-48B (Tape top portion) in High speed mode.
- Adjust the deck A (H), deck B (H) so that at this time the frequency counter reads $5920\text{Hz} \pm 40\text{Hz}$.

(Normal speed adjustment)

- Open the CN801
- Playback WS-48B (Tape top portion) in Normal speed mode.
- Adjustment the deck A (L), deck B (L) so that at this time the frequency counter reads $2960 \pm 20\text{Hz}$.

frequency difference between the frequency of deck A and deck B should be within 1.5%.

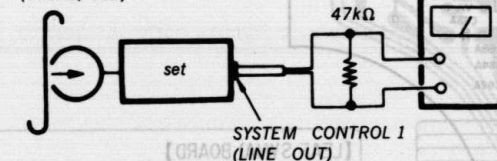
3-3. PLAYBACK LEVEL ADJUSTMENT

DECK A DECK B

Procedure:

Mode: playback

test tape
P-4-L300
(315Hz, 0dB)



Adjustment the RV41-A (L-ch), RV61-A (R-ch) of Deck A and RV41-B (L-ch), RV61-B (R-ch) of Deck B.

Specification:

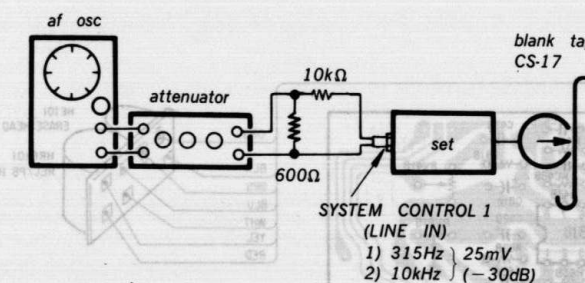
LINE OUT level: 0.34 to 0.49V (–6 to –4dB)

Level difference between channels: less than 0.5dB Check that the LINE OUT level does not change in playback mode while changing the mode from playback to stop several times.

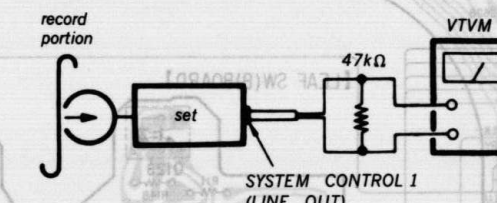
3-4. RECORD BIAS ADJUSTMENT DECK B

Procedure:

- Mode: record monitor



- Mode: playback

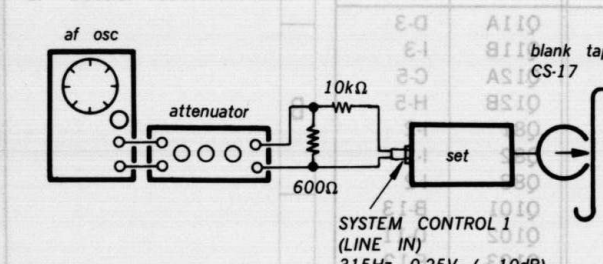


Playback the tape recorded in step 1.
Confirm that the LINE OUT level of 10kHz signal is $0 \pm 0.5\text{dB}$ relative to that of 315Hz. If not, adjust the RV 42 (L-ch), RV62 (R-ch) and repeat steps 1 and 2.

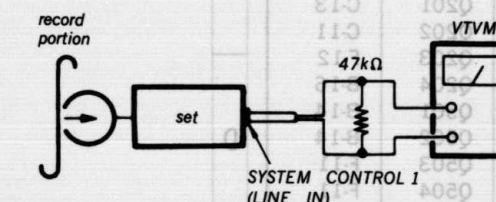
3-5. RECORD LEVEL ADJUSTMENT DECK B

Procedure:

- Mode: record monitor



- Mode: playback

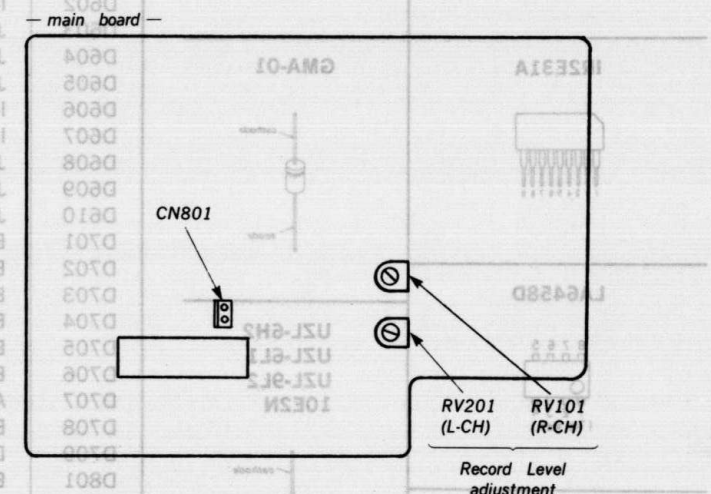
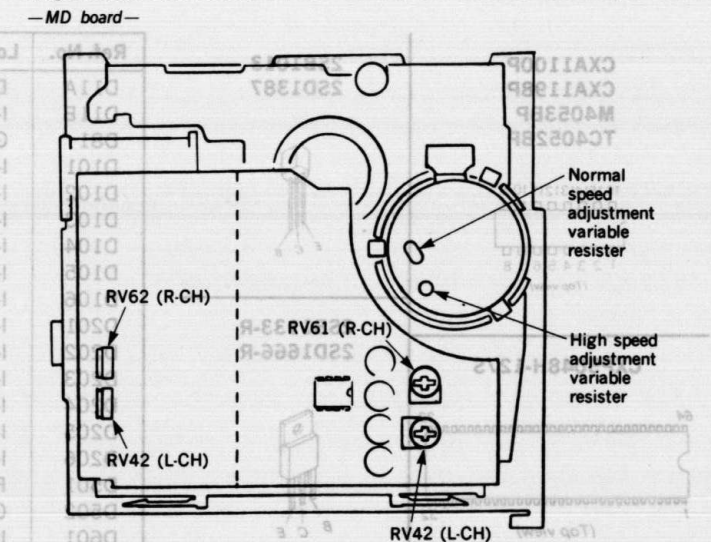


Adjust RV101 (L-CH), RV201 (R-CH).

Specification:

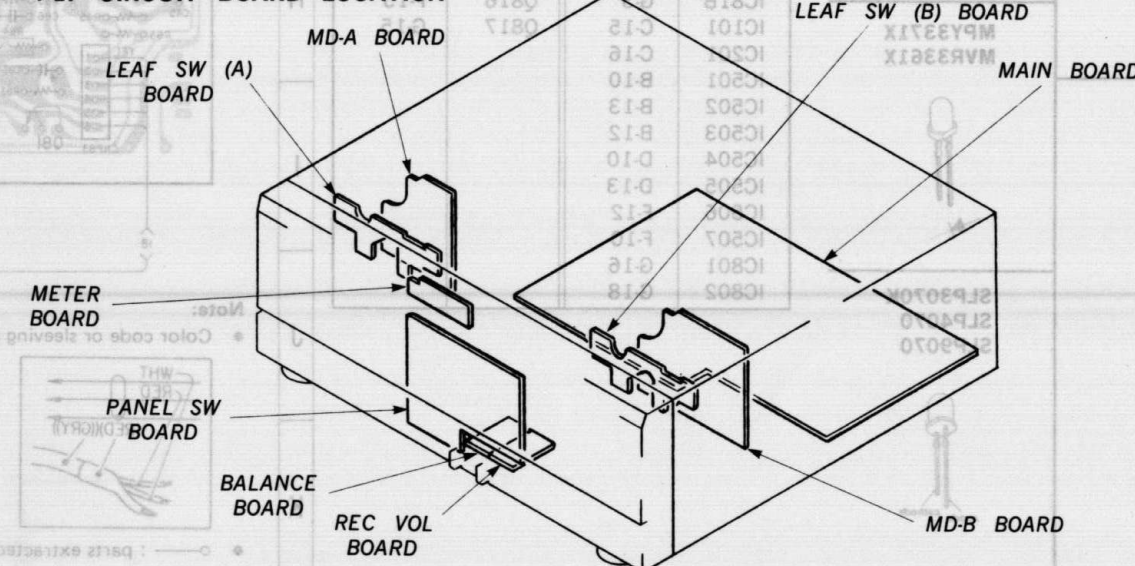
LINE OUT level: 0.41 to 0.46V (–5.5 to –4.5dB)

Adjustment Location: MD board



SECTION 4 DIAGRAMS

4-1. CIRCUIT BOARD LOCATION



SECTION 3 ELECTRICAL ADJUSTMENTS

Note: The adjustment should be performed in the order given in this service manual.
The adjustments should be performed for both L-CH and R-CH.

- Set the TAPE switches according to the tape as follows.

Tape	Tape Switch
CS-17	TYPE I
CS-26	TYPE II
CS-42	TYPE IV

- Switches and controls should be set as follows unless otherwise specified.

DOLBY NR switch: OFF

- Standard Record:
Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

Standard Input Level

INPUT terminal	LINE IN
source impedance	10kΩ
input level	0.25V (–10dB)

Standard Output Level

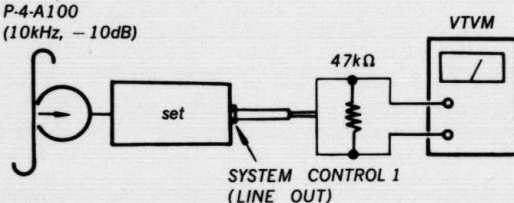
OUTPUT terminal	LINE OUT
load impedance	47kΩ
output level	0.435V (–5dB)

3-1. RECORD/PLAYBACK HEAD AZIMUTH ADJUSTMENT DECK A DECK B

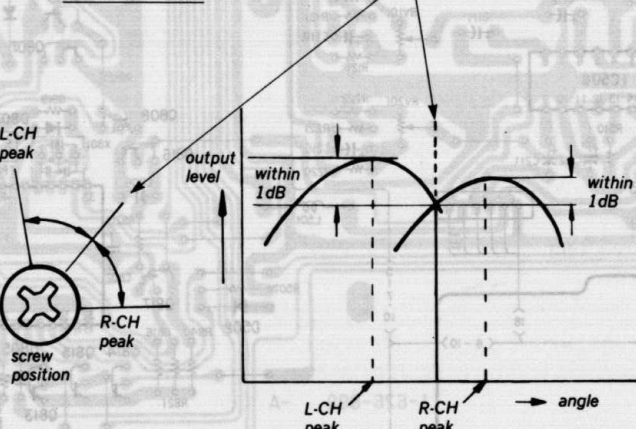
Procedure:

- Mode: playback

test tape
P-4-A100
(10kHz, –10dB)



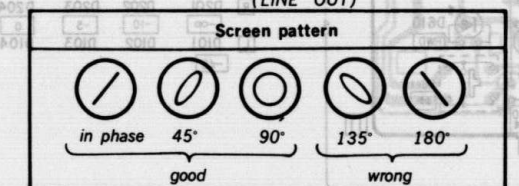
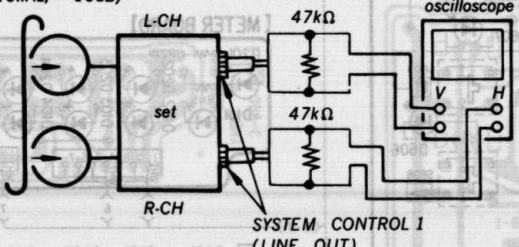
- Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1dB.



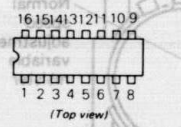
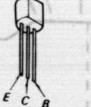
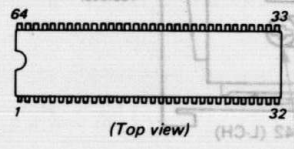
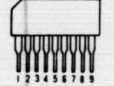
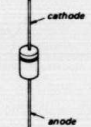
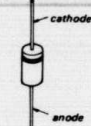
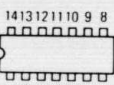
- Phase Check

Mode: playback

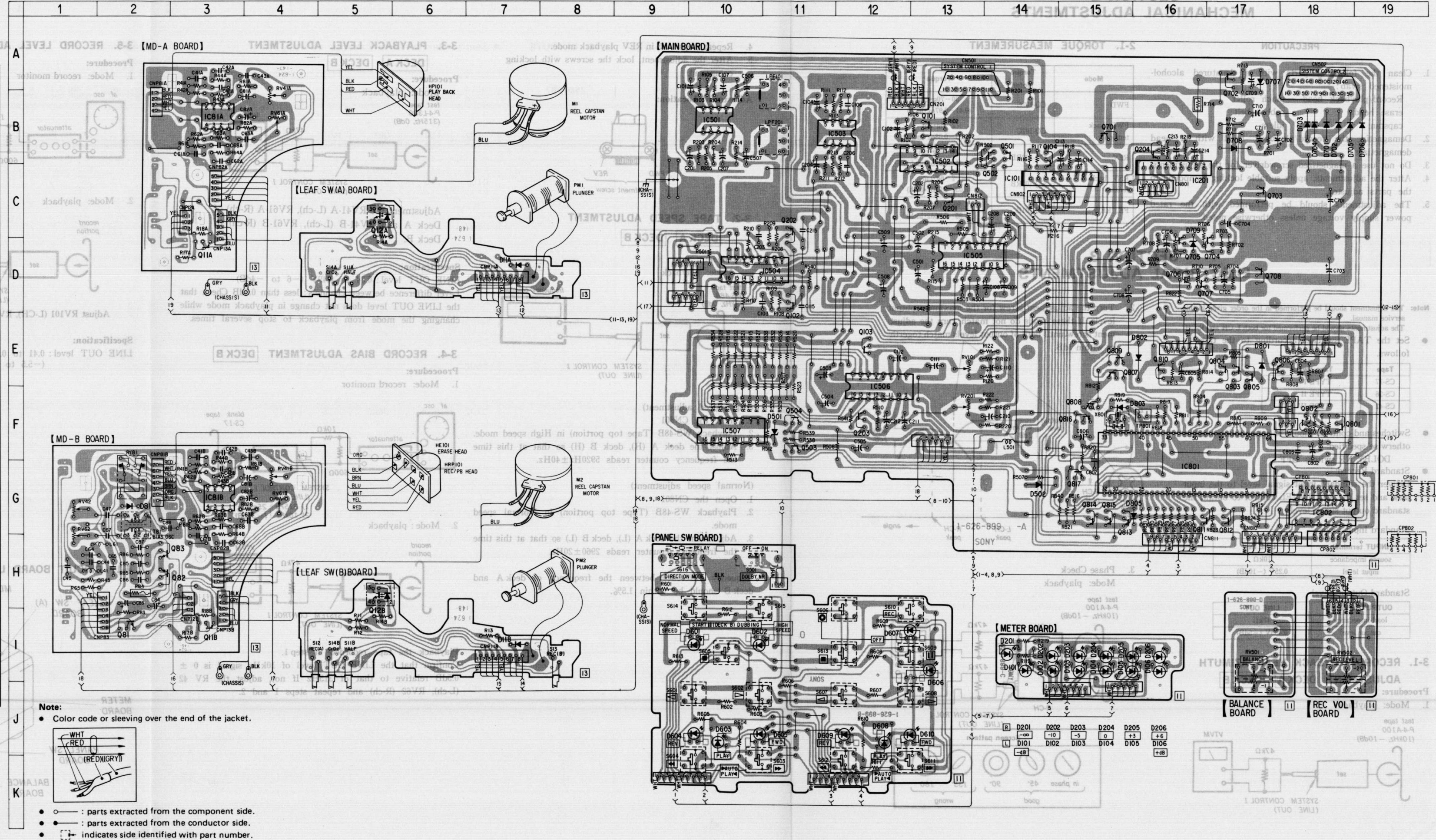
test tape
P-4-A100
(10kHz, –10dB)



4-2. SEMICONDUCTOR LEAD LAYOUTS • Semiconductor Lead Layouts

		Ref. No.	Location	Ref. No.	Location
CXA1100P CXA1198P M4053BP TC4052BP 	2SB1013 2SD1387 	D11A	D-7	Q11A	D-3
		D11B	I-7	Q11B	I-3
		D81	G-2	Q12A	C-5
		D101	I-14	Q12B	H-5
CXP5048H-127S 	2SB1133-R 2SD1666-R 	D102	I-14	Q81	I-2
		D103	I-15	Q82	I-2
		D104	I-15	Q83	I-2
		D105	I-15	Q101	B-13
IR2E31A 	GMA-01 	D106	I-16	Q102	D-11
		D201	I-14	Q103	E-12
		D202	I-14	Q104	B-14
		D203	I-15	Q201	C-13
LA6458D 	UZL-6H2 UZL-6L1 UZL-9L2 10E2N 	D204	I-15	Q202	C-11
		D205	I-15	Q203	F-12
		D206	I-16	Q204	B-16
		D501	F-11	Q501	B-14
M4066BP 	MPY3371X MVR3361X 	D502	G-14	Q502	B-14
		D601	I-10	Q503	F-11
		D602	I-10	Q504	F-11
		D603	J-10	Q701	B-15
2SA1317-SU 2SA1345 2SA1348 2SC3330 2SC3399 2SC3901 	SLP3070K SLP4070 SLP9070 	D604	J-10	Q702	A-17
		D605	J-10	Q703	C-17
		D606	I-12	Q704	D-17
		D607	I-12	Q705	D-16
		D608	J-12	Q706	D-16
		D609	J-12	Q707	D-16
		D610	J-12	Q708	D-17
		D701	B-18	Q801	F-18
		D702	B-18	Q802	F-18
		D703	B-18	Q803	E-17
		D704	B-18	Q804	E-17
		D705	B-18	Q805	E-17
		D706	B-19	Q806	E-18
		D707	A-17	Q807	E-15
		D708	B-17	Q808	F-15
		D709	D-16	Q809	E-15
		D801	E-17	Q810	E-16
		D802	E-16	Q811	G-16
		D803	F-15	Q812	G-17
		D805	G-16	Q813	G-15
		IC81A	B-2	Q814	G-15
		IC81B	G-3	Q815	G-15
		IC101	C-15	Q816	F-15
		IC201	C-16	Q817	G-15
		IC501	B-10		
		IC502	B-13		
		IC503	B-12		
		IC504	D-10		
		IC505	D-13		
		IC506	F-12		
		IC507	F-10		
		IC801	G-16		
		IC802	G-18		

4-3. PRINTED WIRING BOARD

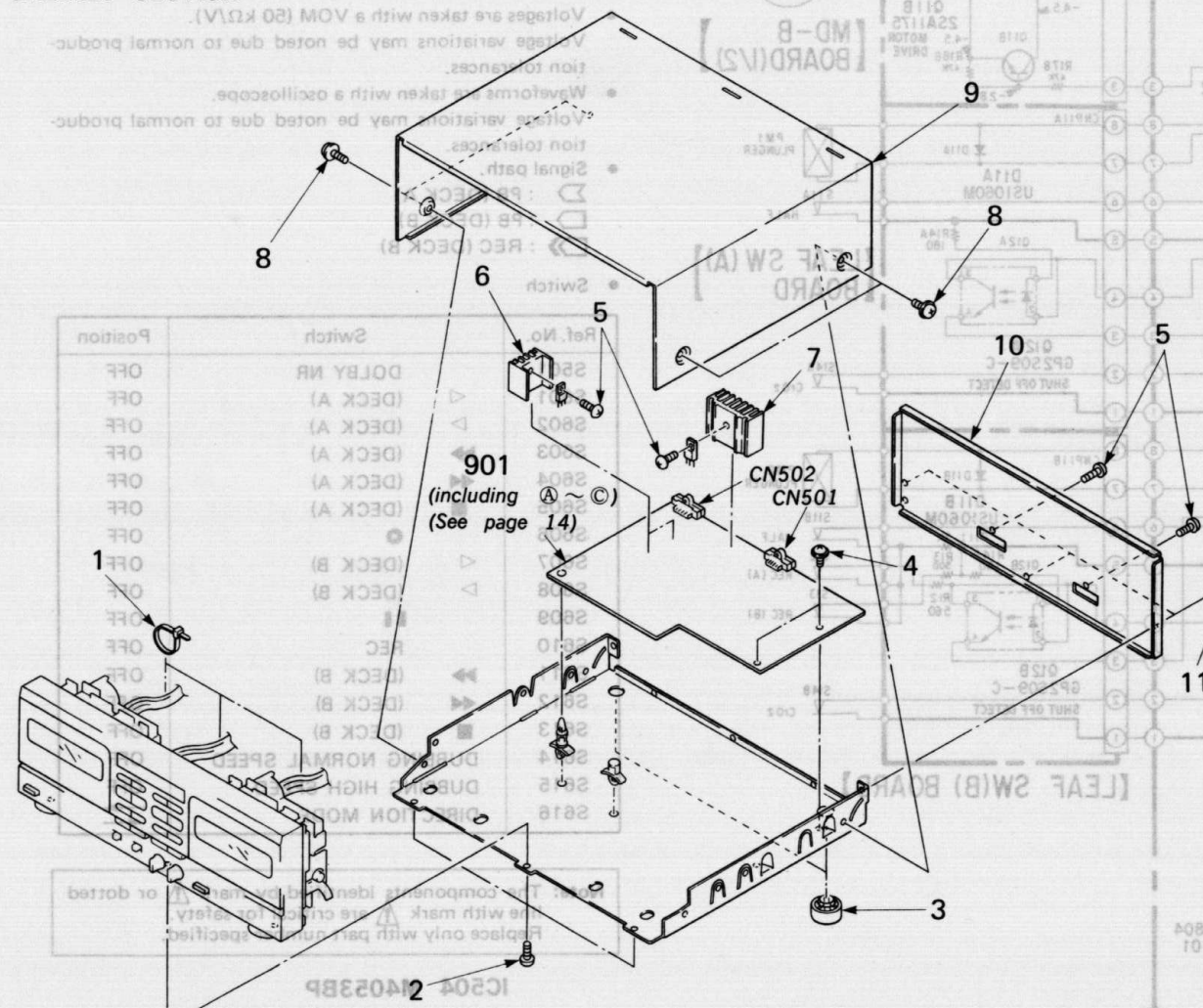


SECTION 5 EXPLODED VIEWS

NOTE:

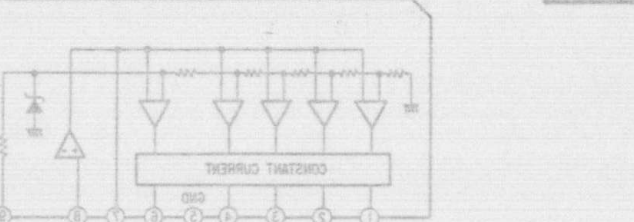
- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
Example:
(RED) ... KNOB, BALANCE (WHITE)
Cabinet's Color Parts Color

5-1. CABINET SECTION

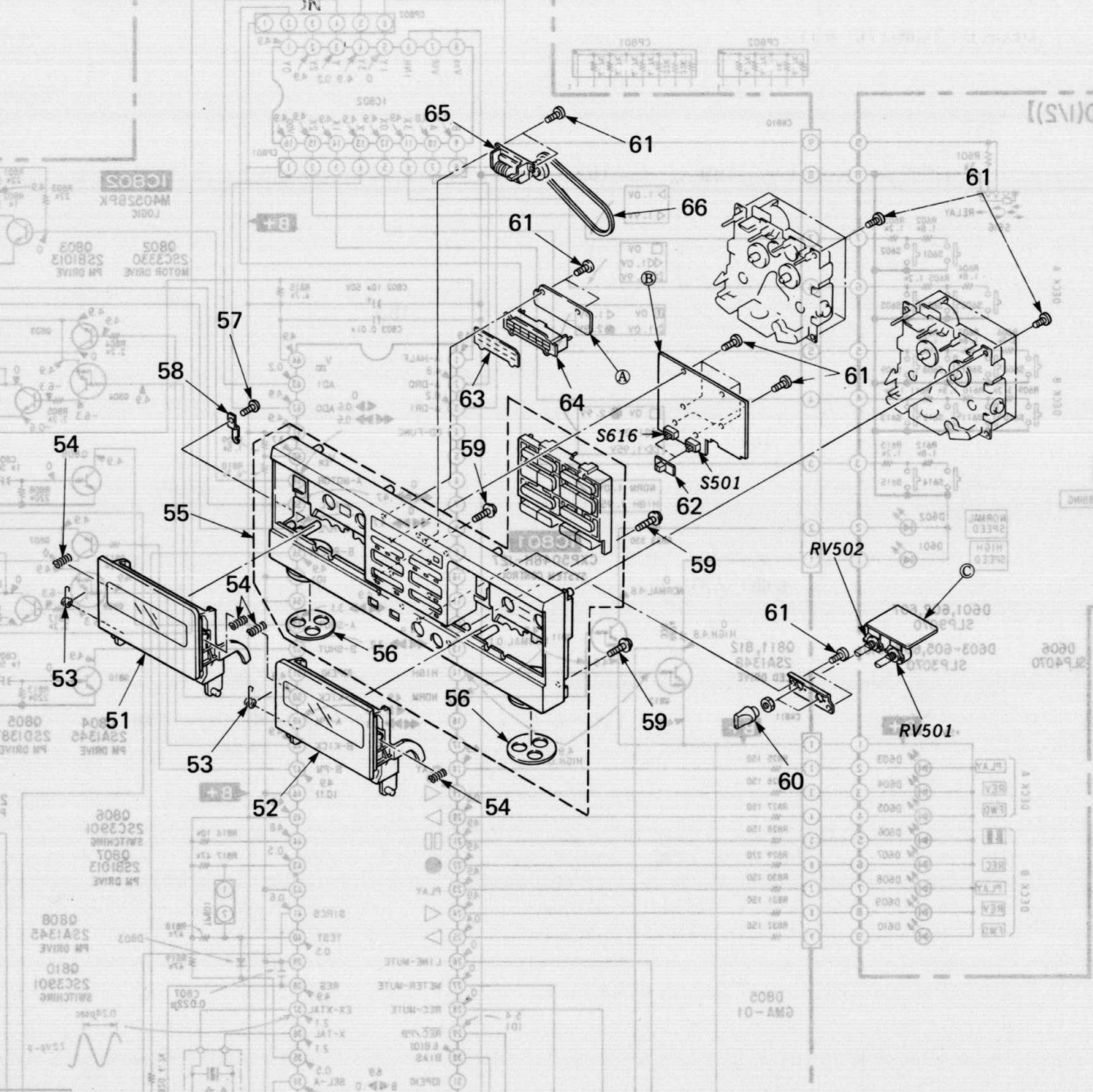


Ref.No	Part No.	Description	Remarks
1	*3-337-402-01	BAND, BINDING	
2	7-682-548-04	SCREW +BVTT 3X8 (S)	
3	X-4921-901-1	FOOT ASSY	
4	4-886-821-11	SCREW, S TIGHT, +PTTWH 3X6	
5	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
6	*4-363-146-41	HEAT SINK, V.OUT	
7	*3-343-684-01	HEAT SINK	
8	4-886-821-01	SCREW, M3 CASE	

Ref.No	Part No.	Description	Remarks
9	4-919-379-31	(AEP, UK) ... CASE	
9	4-919-379-31	(WG) ... CASE	
10	*3-343-663-02	PANEL, BACK	
11	7-682-147-01	SCREW +BVTT 3X6 (S)	
901	*A-2056-421-A	MOUNTED PCB, MAIN	
CN501	*1-566-858-11	SOCKET, CONNECTOR 11P (SYSTEM CONTROL 1)	
CN502	*1-566-859-11	SOCKET, CONNECTOR 15P (SYSTEM CONTROL 2)	



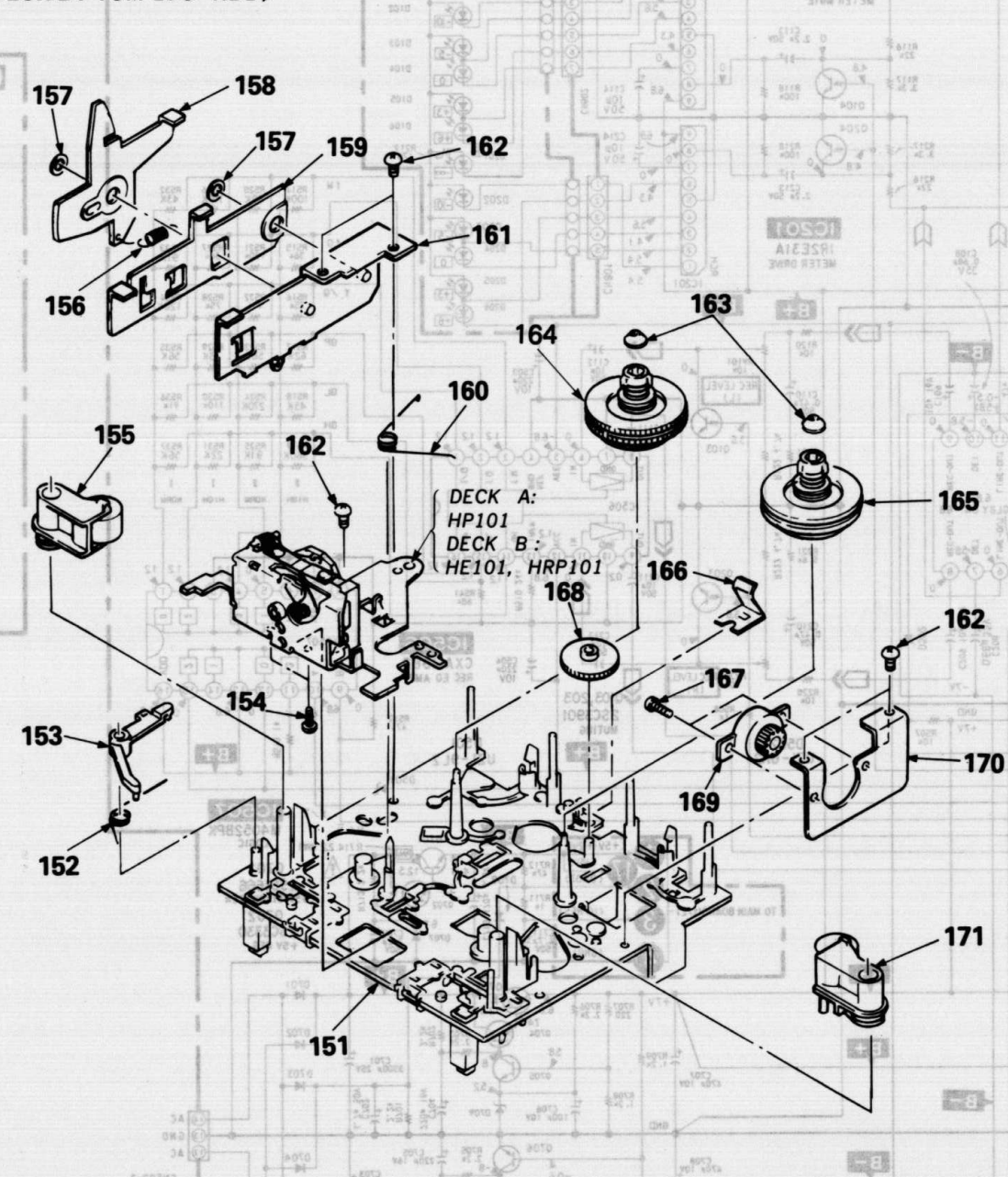
5-2. FRONT PANEL SECTION



Ref.No	Part No.	Description	Remarks
51	X-4924-501-1	(AEP, UK) ... HOLDER (A) ASSY, CASSETTE 54	
51	X-4924-521-2	(WG) ... HOLDER (A) ASSY, CASSETTE	
52	X-4924-503-1	(AEP, UK) ... HOLDER (B) ASSY, CASSETTE 54	
52	X-4924-504-2	(WG) ... HOLDER (B) ASSY, CASSETTE	
53	3-343-675-01	SPRING, TORSION	
54	*3-610-808-00	SPRING (1)	
55	X-3343-621-1	(AEP, UK) ... PANEL ASSY, FRONT	
55	X-3343-622-1	(WG) ... PANEL ASSY, FRONT	
56	4-921-906-01	FELT	
57	7-685-134-19	SCREW +P 2.6X8 TYPE2 NON-SLIT	
58	*3-343-674-01	BRACKET (HOLDER)	
59	7-685-648-79	SCREW, TAPPING	
60	4-908-097-11	(AEP, UK) ... KNOB	

Ref.No	Part No.	Description	Remarks
60	4-908-097-21	(WG) ... KNOB	
61	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
153	*3-343-476-01	LEVER (EJECT SAFETY LEVER)	
154	7-685-102-19	SCREW P 2X4 NON-SLIT TYPE 2	
155	X-3343-403-1	LEVER (PINCH LEVER REV) ASSY	
156	3-343-474-01	SPRING, TENSION	
157	3-558-708-21	WASHER, STOPPER	
158	*3-343-449-01	LEVER (LOCK LEVER)	
159	*3-343-668-01	LEVER (EJECT)	
160	3-343-401-01	SPRING, TORSION	
161	*X-3343-620-1	BRACKET (EJECT) ASSY	
162	7-621-773-86	SCREW +BVTT 2.6X4 (S)	

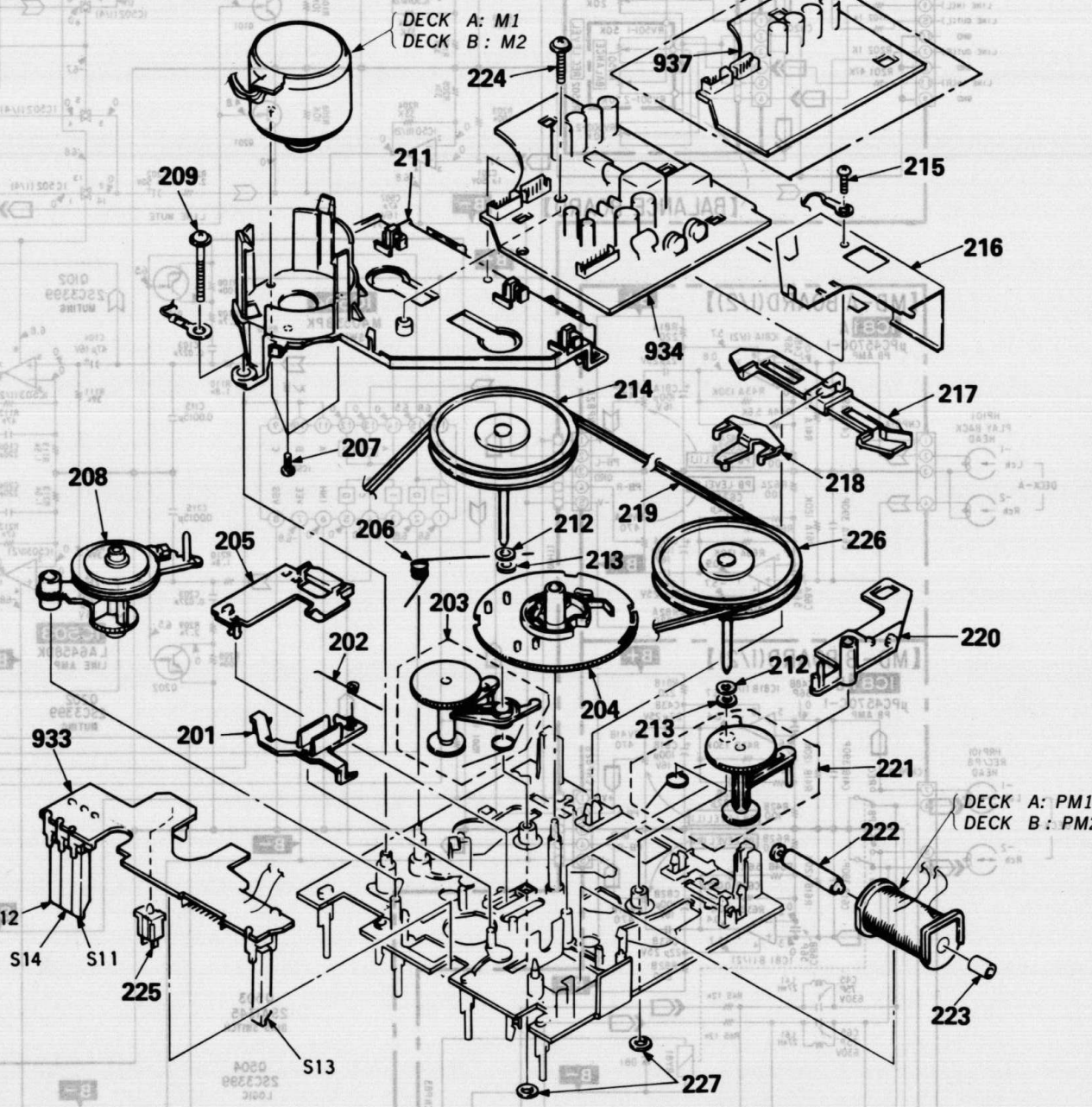
5-3. MECHANISM SECTION (1) (DECK A: TCM-170 RA1 DECK B: TCM-170 RB1)



Ref.No	Part No.	Description	Remarks
151	*X-3343-418-5	CHASSIS ASSY, MECHANICAL	
152	3-343-477-01	SPRING, TORSION (EJECT SAFETY)	
153	*X-3343-401-1	TABEL ASSY, REEL	
154	7-685-102-19	SCREW P 2X4 NON-SLIT TYPE 2	
155	7-621-255-15	SCREW +PTT 2X3 (S)	
156	3-343-474-01	SPRING, TENSION	
157	3-558-708-21	WASHER, STOPPER	
158	*3-343-449-01	LEVER (LOCK LEVER)	
159	*3-343-668-01	LEVER (EJECT)	
160	3-343-401-01	SPRING, TORSION	
161	*X-3343-620-1	BRACKET (EJECT) ASSY	
162	7-621-773-86	SCREW +BVTT 2.6X4 (S)	

Ref.No	Part No.	Description	Remarks
163	3-343-439-01	CAP (REEL TABLE)	
164	X-3343-415-1	TABEL (REV) ASSY, REEL	
165	X-3343-401-1	TABEL ASSY, REEL	
166	3-343-420-01	SPRING, LEAF	
167	7-621-255-15	SCREW +PTT 2X3 (S)	
168	3-343-411-01	GEAR (FF GEAR)	
169	3-319-224-31	DAMPER, SMALL	
170	*3-343-438-01	BRACKET (DAMPER BRACKET)	
171	X-3343-402-1	LEVER (PINCH LEVER FWD) ASSY	
HE101	A-2108-123-A	(DECK B) ... CHASSIS ASSY, HEAD	
HP101	A-2108-122-A	(DECK A) ... CHASSIS ASSY, HEAD	

5-4. MECHANISM SECTION (2) (DECK A: TCM-170 RA1 DECK B: TCM-170 RB1)



Ref.No	Part No.	Description	Remarks
201	3-343-453-01	SLIDER (BRAKE PLATE)	
202	3-343-429-01	SPRING, TORSION	
203	X-3343-405-1	LEVER (TU ARM REV) ASSY	
204	3-343-470-01	GEAR (CAM GEAR)	
205	*3-343-461-01	SLIDER	
206	3-343-430-01	SPRING, TORSION	
207	7-627-556-28	SCREW +P 2.6X3.5	
208	X-3343-414-1	LAVER (FR ARM) ASSY	
209	3-343-403-01	SCREW (PTTWH 2X18)	
210	*X-3343-407-1	BASE (THRUST RETAINER) ASSY	
211	4-605-835-11	WASHER (2.6), POLYSLIDER	
212	3-307-482-00	WASHER, LUMILER	
213	X-3343-411-1	FLYWHEEL COMPLETE ASSY	
214	7-685-104-19	SCREW +P 2X6 TYPE2 NON-SLIT	
215	*3-343-480-01	PLATE, SHIELD	
216	3-343-457-01	SLIDER (REVERSE SLIDER)	
217	3-343-462-01	LEVER	
218	3-343-426-01	BELT (CAPSTAN BELT SQUARE)	

Ref.No	Part No.	Description	Remarks
220	*3-343-456-01	LEVER (PM LEVER)	
221	X-3343-405-1	LEVER (TU ARM FWD) ASSY	
222	*3-343-425-01	ARBOR (MOVABLE IRON ARBOR), IRON	
223	*3-343-424-01	ARBOR (FIXED IRON ARBOR), IRON	
224	3-343-404-01	SCREW (PTTWH 2X10)	
225	*3-343-419-01	HOLDER (S SENSER A)	
226	X-3343-416-1	FLYWHEEL (REV) COMPLETE ASSY	
227	*3-343-473-01	WASHER, NYLON	
933	*1-624-146-11	PC BOARD, LEAF SW (A), (B)	
934	*1-624-146-11	PC BOARD, MD-B	
937	*1-624-147-11	PC BOARD, MD-A	
PM1	1-454-456-11	(DECK A) ... PLUNGER	
PM2	1-454-456-11	(DECK B) ... PLUNGER	
S11	1-571-128-21	SWITCH, LEAF (HALF)	
S12	1-571-128-21	(DECK B) ... SWITCH, LEAF (REC(A))	
S13	1-571-128-21	(DECK B) ... SWITCH, LEAF (REC(B))	
S14	1-571-128-21	SWITCH, LEAF (C/O)	

SECTION 6 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.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:MF: μ F, PF: μ μF.**RESISTORS**

- All resistors are in ohms.
- F: nonflammable

COILS

- MMH: mH, UH: μ H

SEMICONDUCTORSIn each case, U: μ , for example:UA...: μ A..., UPA...: μ PA...,UPC...: μ PC, UPD...: μ PD...

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

Ref.No	Part No.	Description				Ref.No	Part No.	Description			
901	*A-2001-303-A	OVERALL ASSY				C201	1-124-499-11	ELECT	1MF	20%	50V
933	*1-624-148-11	PC BOARD, LEAF SW (A), (B)				C202	1-124-927-11	ELECT	4.7MF	20%	50V
934	*1-624-146-11	PC BOARD, MD-B				C203	1-136-158-00	FILM	0.027MF	5%	50V
937	*1-624-147-11	PC BOARD, MD-A				C204	1-124-477-11	ELECT	47MF	20%	16V
CAPACITOR											
C41A	1-162-289-31	CERAMIC	390PF	10%	50V	C206	1-162-286-31	CERAMIC	220PF	10%	50V
C41B	1-162-289-31	CERAMIC	390PF	10%	50V	C207	1-123-875-11	ELECT	10MF	20%	50V
C42A	1-136-157-00	FILM	0.022MF	5%	50V	C208	1-131-587-11	TANTALUM	0.68MF	10%	35V
C42B	1-136-157-00	FILM	0.022MF	5%	50V	C209	1-123-875-11	ELECT	10MF	20%	50V
C43A	1-124-282-00	ELECT	22MF	20%	25V	C210	1-124-902-00	ELECT	0.47MF	20%	50V
C43B	1-124-282-00	ELECT	22MF	20%	25V	C211	1-123-875-11	ELECT	10MF	20%	50V
C44	1-162-288-31	CERAMIC	330PF	10%	50V	C212	1-123-875-11	ELECT	10MF	20%	50V
C45	1-136-273-91	FILM	75PF	5%	630V	C213	1-124-925-11	ELECT	2.2MF	20%	50V
C47	1-162-217-31	CERAMIC	56PF	5%	50V	C214	1-123-875-11	ELECT	10MF	20%	50V
C48A	1-162-217-31	CERAMIC	56PF	5%	50V	C215	1-161-374-11	CERAMIC	0.0015MF	30%	16V
C48B	1-162-217-31	CERAMIC	56PF	5%	50V	C501	1-126-176-11	ELECT	220MF	20%	10V
C61A	1-162-289-31	CERAMIC	390PF	10%	50V	C502	1-126-176-11	ELECT	220MF	20%	10V
C61B	1-162-289-31	CERAMIC	390PF	10%	50V	C503	1-126-176-11	ELECT	220MF	20%	10V
C62A	1-136-157-00	FILM	0.022MF	5%	50V	C504	1-126-176-11	ELECT	220MF	20%	10V
C62B	1-136-157-00	FILM	0.022MF	5%	50V	C505	1-124-477-11	ELECT	47MF	20%	16V
C63A	1-124-282-00	ELECT	22MF	20%	25V	C506	1-124-477-11	ELECT	47MF	20%	16V
C63B	1-124-282-00	ELECT	22MF	20%	25V	C507	1-124-477-11	ELECT	47MF	20%	16V
C64	1-162-288-31	CERAMIC	330PF	10%	50V	C508	1-126-176-11	ELECT	220MF	20%	10V
C65	1-136-273-91	FILM	75PF	5%	630V	C509	1-126-176-11	ELECT	220MF	20%	10V
C67	1-162-217-31	CERAMIC	56PF	5%	50V	C701	1-124-636-00	ELECT	3300MF	20%	25V
C68A	1-162-217-31	CERAMIC	56PF	5%	50V	C702	1-124-927-11	ELECT	4.7MF	20%	50V
C68B	1-162-217-31	CERAMIC	56PF	5%	50V	C703	1-124-563-11	ELECT	2200MF	20%	25V
C81A	1-126-101-11	ELECT	100MF	20%	16V	C704	1-124-120-11	ELECT	220MF	20%	16V
C81B	1-126-101-11	ELECT	100MF	20%	16V	C705	1-124-120-11	ELECT	220MF	20%	16V
C82A	1-126-101-11	ELECT	100MF	20%	16V	C706	1-124-443-00	ELECT	100MF	20%	10V
C82B	1-126-101-11	ELECT	100MF	20%	16V	C707	1-124-472-11	ELECT	470MF	20%	10V
C83	1-124-499-11	ELECT	1MF	20%	50V	C708	1-124-472-11	ELECT	470MF	20%	10V
C84	1-124-925-11	ELECT	2.2MF	20%	50V	C709	1-124-925-11	ELECT	2.2MF	20%	50V
C85	1-130-477-00	MYLAR	0.0033MF	5%	50V	C710	1-124-472-11	ELECT	470MF	20%	6.3V
C86	1-130-475-00	MYLAR	0.0022MF	5%	50V	C711	1-124-927-11	ELECT	4.7MF	20%	50V
C87	1-130-475-00	MYLAR	0.0022MF	5%	50V	C802	1-123-875-11	ELECT	10MF	20%	50V
C88	1-136-562-11	FILM	0.0082MF	5%	630V	C803	1-136-153-00	FILM	0.01MF	5%	50V
C101	1-124-499-11	ELECT	1MF	20%	50V	C804	1-124-499-11	ELECT	1MF	20%	50V
C102	1-124-927-11	ELECT	4.7MF	20%	50V	C805	1-124-499-11	ELECT	1MF	20%	50V
C103	1-136-158-00	FILM	0.027MF	5%	50V	C806	1-124-925-11	ELECT	2.2MF	20%	50V
C104	1-124-477-11	ELECT	47MF	20%	16V	C807	1-161-494-00	CERAMIC	0.022MF	30%	25V
C106	1-162-286-31	CERAMIC	220PF	10%	50V	CN201	*1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P			
C107	1-123-875-11	ELECT	10MF	20%	50V	CN501	*1-566-858-11	SOCKET, CONNECTOR 11P (SYSTEM CONTROL 1)			
C108	1-131-587-11	TANTALUM	0.68MF	10%	35V	CN502	*1-566-859-11	SOCKET, CONNECTOR 15P (SYSTEM CONTROL 2)			
C109	1-123-875-11	ELECT	10MF	20%	50V	CN801	*1-564-339-71	PIN, CONNECTOR 5P			
C110	1-124-902-00	ELECT	0.47MF	20%	50V	CN802	*1-564-341-51	PIN, CONNECTOR 7P			
C111	1-123-875-11	ELECT	10MF	20%	50V	CN810	*1-506-503-71	PIN, CONNECTOR 9P			
C112	1-123-875-11	ELECT	10MF	20%	50V	CN811	*1-506-503-61	PIN, CONNECTOR 9P			
C113	1-124-925-11	ELECT	2.2MF	20%	50V	CN812	*1-564-336-51	PIN, CONNECTOR 2P			
C114	1-123-875-11	ELECT	10MF	20%	50V	CNP11A	*1-564-501-11	PIN, CONNECTOR 8P			
C115	1-161-374-11	CERAMIC	0.0015MF	30%	16V	CNP11B	*1-564-501-11	PIN, CONNECTOR 8P			
						CNP12A	*1-564-337-51	PIN, CONNECTOR 3P			

Ref.No	Part No.	Description
CNP12B	*1-564-337-61	PIN, CONNECTOR 3P
CNP13A	*1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P
CNP13B	*1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P
CNP81A	*1-564-706-31	PIN, CONNECTOR (SMALL TYPE) 4P
CNP81B	*1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P
CNP82A	*1-564-339-51	PIN, CONNECTOR 5P
CNP82B	*1-564-339-61	PIN, CONNECTOR 5P
CNP83	*1-564-340-61	PIN, CONNECTOR 6P
IC81A	8-759-111-44	IC UPC4570C-1
IC81B	8-759-111-44	IC UPC4570C-1
L41	1-410-780-11	INDUCTOR 27MMH
L61	1-410-780-11	INDUCTOR 27MMH
CP801	1-233-120-11	COMPOSITION CIRCUIT BLOCK
CP802	1-233-119-11	COMPOSITION CIRCUIT BLOCK
D11A	8-719-940-76	DIODE 1SS132
D11B	8-719-940-76	DIODE 1SS132
D101	8-719-970-98	DIODE MPY3371X
D102	8-719-970-98	DIODE MPY3371X
D103	8-719-970-98	DIODE MPY3371X
D104	8-719-970-96	DIODE MVR3361X
D105	8-719-970-96	DIODE MVR3361X
D106	8-719-970-96	DIODE MVR3361X
D201	8-719-970-98	DIODE MPY3371X
D202	8-719-970-98	DIODE MPY3371X
D203	8-719-970-98	DIODE MPY3371X
D204	8-719-970-96	DIODE MVR3361X
D205	8-719-970-96	DIODE MVR3361X
D206	8-719-970-96	DIODE MVR3361X
D81	8-719-940-76	DIODE 1SS132
D501	8-719-001-05	DIODE UZL-9L2
D502	8-719-000-59	DIODE UZL-6H2
D601	1-807-689-11	DIODE SLP9070
D602	1-807-689-11	DIODE SLP9070
D603	8-719-969-90	DIODE SLP3070K
D604	8-719-969-90	DIODE SLP3070K
D605	8-719-969-90	DIODE SLP3070K
D606	1-807-689-31	DIODE SLP4070
D607	1-807-689-11	DIODE SLP9070
D608	8-719-969-90	DIODE SLP3070K
D609	8-719-969-90	DIODE SLP3070K
D610	8-719-969-90	DIODE SLP3070K
D701	8-719-200-77	DIODE 10E2N
D702	8-719-200-77	DIODE 10E2N
D703	1-106-937-11	DIODE GMA-01
D704	1-806-937-11	DIODE GMA-01
D705	8-719-200-77	DIODE 10E2N
D706	8-719-200-77	DIODE 10E2N
D707	8-719-000-59	DIODE UZL-6H2
D708	1-806-937-11	DIODE GMA-01
D709	8-719-000-48	DIODE UZL-6L1
D801	8-719-200-77	DIODE 10E2N
D802	8-719-200-77	DIODE 10E2N
D803	1-806-937-11	DIODE GMA-01
D805	1-806-937-11	DIODE GMA-01
HE101	A-2108-123-A	(DEAK B)....CHASSIS, ASSY, HEAD
HRP101	A-2108-122-A	(DEAK A)....CHASSIS, ASSY, HEAD
IC81A	8-759-111-44	IC UPC4570C-1
IC81B	8-759-111-44	IC UPC4570C-1
IC101	8-759-917-42	IC IR2E31A
IC201	8-759-917-42	IC IR2E31A
IC501	8-759-820-38	IC LA6458D
IC502	8-759-601-43	IC M4066BP

Ref.No	Part No.	Description
IC503	8-759-820-38	IC LA6458D
IC504	8-759-601-41	IC M4053BP
IC505	8-752-031-67	IC CXA1100P
IC506	8-752-032-60	IC CXA1198P
IC507	8-759-240-52	IC TC4052BP
IC801	8-752-804-34	IC CXP5048H-127S
IC802	8-759-240-52	IC TC4052BP
L41	1-410-780-11	INDUCTOR 27MMH
L61	1-410-780-11	INDUCTOR 27MMH
L501	1-408-080-00	INDUCTOR 100UH
LPF101	1-236-087-11	FILTER, LOW PASS
LPF201	1-236-087-11	FILTER, LOW PASS
M1	X-3343-408-1	(DECK A)....MOTOR ASSY
M2	X-3343-408-1	(DECK B)....MOTOR ASSY
PM1	1-454-456-11	(DECK A)....PLUNGER
PM2	1-454-456-11	(DECK B)....PLUNGER
Q11A	8-729-900-65	TRANSISTOR DTA144ES
Q11B	8-729-900-65	TRANSISTOR DTA144ES
Q12A	8-719-939-11	TRANSISTOR GP2S09-B
Q12B	8-719-939-11	TRANSISTOR GP2S09-B
Q81	8-729-802-34	TRANSISTOR 2SD1387
Q82	8-729-600-27	TRANSISTOR 2SC634SP
Q83	8-729-600-27	TRANSISTOR 2SC634SP
Q101	8-729-806-26	TRANSISTOR 2SC3901
Q102	8-729-806-38	TRANSISTOR 2SC3399
Q103	8-729-806-26	TRANSISTOR 2SC3901
Q104	8-729-806-26	TRANSISTOR 2SC3901
Q201	8-729-806-26	TRANSISTOR 2SC3901
Q202	8-729-806-38	TRANSISTOR 2SC3399
Q203	8-729-806-26	TRANSISTOR 2SC3901
Q204	8-729-806-26	TRANSISTOR 2SC3901
Q501	8-729-806-20	TRANSISTOR 2SA1345
Q502	8-729-806-38	TRANSISTOR 2SC3399
Q503	8-729-806-20	TRANSISTOR 2SA1345
Q504	8-729-806-38	TRANSISTOR 2SC3399
Q701	8-729-804-17	TRANSISTOR 2SD1666-R
Q702	8-729-820-23	TRANSISTOR 2SC3330
Q703	8-729-804-17	TRANSISTOR 2SD1666-R
Q704	8-729-820-23	TRANSISTOR 2SC3330
Q705	8-729-820-23	TRANSISTOR 2SC3330
Q706	8-729-820-10	TRANSISTOR 2SA1317-SU
Q707	8-729-820-10	TRANSISTOR 2SA1317-SU
Q708	8-729-804-67	TRANSISTOR 2SB1133-R
Q801	8-729-801-83	TRANSISTOR 2SB1013
Q802	8-729-820-23	TRANSISTOR 2SC3330
Q803	8-729-801-83	TRANSISTOR 2SB1013
Q804	8-729-806-20	TRANSISTOR 2SA1345
Q805	8-729-801-93	TRANSISTOR 2SD1387
Q806	8-729-806-26	TRANSISTOR 2SC3901
Q807	8-729-801-83	TRANSISTOR 2SB1013
Q808	8-729-806-20	TRANSISTOR 2SA1345
Q809	8-729-801-93	TRANSISTOR 2SD1387
Q810	8-729-806-26	TRANSISTOR 2SC3901
Q811	9-986-159-01	TRANSISTOR 2SA1348
Q812	9-986-159-01	TRANSISTOR 2SA1348
Q813	8-729-806-20	TRANSISTOR 2SA1345
Q814	8-729-806-20	TRANSISTOR 2SA1345
Q815	8-729-806-20	TRANSISTOR 2SA1345
Q816	9-986-159-01	TRANSISTOR 2SA1348
Q817	8-729-820-23	TRANSISTOR 2SC3330

RESISTOR

R11	1-247-834-11	CARBON	1.3K	5%	1/4W
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Ref.No	Part No.	Description				
R12	1-249-414-11	CARBON	560	5%	1/4W	
R13	1-247-818-11	CARBON	300	5%	1/4W	
R14A	1-249-408-11	CARBON	180	5%	1/4W	
R14B	1-249-408-11	CARBON	180	5%	1/4W	
R17A	1-249-437-11	CARBON	47K	5%	1/4W	
R17B	1-249-437-11	CARBON	47K	5%	1/4W	
R18A	1-249-437-11	CARBON	47K	5%	1/4W	
R18B	1-249-437-11	CARBON	47K	5%	1/4W	
R41A	1-247-881-00	CARBON	120K	5%	1/4W	
R41B	1-247-881-00	CARBON	120K	5%	1/4W	
R42A	1-249-405-11	CARBON	100	5%	1/4W	
R42B	1-249-405-11	CARBON	100	5%	1/4W	
R43A	1-247-882-11	CARBON	130K	5%	1/4W	
R43B	1-247-882-11	CARBON	130K	5%	1/4W	
R44A	1-249-426-11	CARBON	5.6K	5%	1/4W	
R44B	1-249-426-11	CARBON	5.6K	5%	1/4W	
R45	1-249-430-11	CARBON	12K	5%	1/4W	
R61A	1-247-881-00	CARBON	120K	5%	1/4W	
R61B	1-247-881-00	CARBON	120K	5%	1/4W	
R62A	1-249-405-11	CARBON	100	5%	1/4W	
R62B	1-249-405-11	CARBON	100	5%	1/4W	
R63A	1-247-882-11	CARBON	130K	5%	1/4W	
R63B	1-247-882-11	CARBON	130K	5%	1/4W	
R64A	1-249-426-11	CARBON	5.6K	5%	1/4W	
R64B	1-249-426-11	CARBON	5.6K	5%	1/4W	
R65	1-249-430-11	CARBON	12K	5%	1/4W	
R81A	1-249-409-11	CARBON	220	5%	1/4W	
R81B	1-249-409-11	CARBON	220	5%	1/4W	
R82A	1-249-409-11	CARBON	220	5%	1/4W	
R82B	1-249-409-11	CARBON	220	5%	1/4W	
R83	1-249-429-11	CARBON	10K	5%	1/4W	
R84	1-212-853-00	FUSIBLE	6.8	5%	1/4W	F
R85	1-249-434-11	CARBON	27K	5%	1/4W	
R86	1-249-434-11	CARBON	27K	5%	1/4W	
R101	1-249-437-11	CARBON	47K	5%	1/4W	
R102	1-249-417-11	CARBON	1K	5%	1/4W	
R103	1-249-441-11	CARBON	100K	5%	1/4W	
R104	1-249-435-11	CARBON	33K	5%	1/4W	
R105	1-249-435-11	CARBON	33K	5%	1/4W	
R106	1-249-429-11	CARBON	10K	5%	1/4W	
R107	1-249-421-11	CARBON	2.2K	5%	1/4W	
R108	1-249-441-11	CARBON	100K	5%	1/4W	
R109	1-249-422-11	CARBON	2.7K	5%	1/4W	
R110	1-249-420-11	CARBON	1.8K	5%	1/4W	
R111	1-249-436-11	CARBON	39K	5%	1/4W	
R112	1-249-437-11	CARBON	47K	5%	1/4W	
R113	1-249-419-11	CARBON	1.5K	5%	1/4W	
R114	1-249-423-11	CARBON	3.3K	5%	1/4W	
R115	1-249-428-11	CARBON	8.2K	5%	1/4W	
R116	1-249-433-11	CARBON	22K	5%	1/4W	
R117	1-249-423-11	CARBON	3.3K	5%	1/4W	
R118	1-249-441-11	CARBON	100K	5%	1/4W	
R119	1-249-413-11	CARBON	470	5%	1/4W	
R120	1-249-429-11	CARBON	10K	5%	1/4W	
R121	1-249-426-11	CARBON	5.6K	5%	1/4W	
R122	1-249-425-11	CARBON	4.7K	5%	1/4W	
R201	1-249-437-11	CARBON	47K	5%	1/4W	
R202	1-249-417-11	CARBON	1K	5%	1/4W	
R203	1-249-441-11	CARBON	100K	5%	1/4W	
R204	1-249-435-11	CARBON	33K	5%	1/4W	
R205	1-249-435-11	CARBON	33K	5%	1/4W	
R206	1-249-429-11	CARBON	10K	5%	1/4W	
R207	1-249-421-11	CARBON	2.2K	5%	1/4W	
R208	1-249-441-11	CARBON	100K	5%	1/4W	
R209	1-249-422-11	CARBON	2.7K	5%	1/4W	

Ref.No	Part No.	Description				
R210	1-249-420-11	CARBON	1.8K	5%	1/4W	
R211	1-249-436-11	CARBON	39K	5%	1/4W	
R212	1-249-437-11	CARBON	47K	5%	1/4W	
R213	1-249-419-11	CARBON	1.5K	5%	1/4W	
R214	1-249-423-11	CARBON	3.3K	5%	1/4W	
R215	1-249-428-11	CARBON	8.2K	5%	1/4W	
R216	1-249-433-11	CARBON	22K	5%	1/4W	
R217	1-249-423-11	CARBON	3.3K	5%	1/4W	
R218	1-249-441-11	CARBON	100K	5%	1/4W	
R219	1-249-413-11	CARBON	470	5%	1/4W	
R220	1-249-429-11	CARBON	10K	5%	1/4W	
R221	1-249-426-11	CARBON	5.6K	5%	1/4W	
R222	1-249-425-11	CARBON	4.7K	5%	1/4W	
R501	1-249-417-11	CARBON	1K	5%	1/4W	
R502	1-249-433-11	CARBON	22K	5%	1/4W	
R503	1-215-460-00	METAL	43K	1%	1/6W	
R504	1-249-437-11	CARBON	47K	5%	1/4W	
R505	1-249-437-11	CARBON	47K	5%	1/4W	
R506	1-247-739-11	CARBON	100	5%	1/2W	
R507	1-249-429-11	CARBON	10K	5%	1/4W	
R508	1-249-417-11	CARBON	1K	5%	1/4W	
R510	1-247-864-11	CARBON	24K	5%	1/4W	
R512	1-249-437-11	CARBON	47K	5%	1/4W	
R513	1-249-417-11	CARBON	1K	5%	1/4W	
R514	1-249-441-11	CARBON	100K	5%	1/4W	
R515	1-247-868-11	CARBON	36K	5%	1/4W	
R516	1-247-876-11	CARBON	75K	5%	1/4W	
R517	1-247-874-11	CARBON	62K	5%	1/4W	
R518	1-247-892-11	CARBON	360K	5%	1/4W	
R519	1-247-870-11	CARBON	43K	5%	1/4W	
R520	1-249-439-11	CARBON	68K	5%	1/4W	
R521	1-247-881-00	CARBON	120K	5%	1/4W	
R522	1-247-878-00	CARBON	91K	5%	1/4W	
R523	1-249-438-11	CARBON	56K	5%	1/4W	
R524	1-247-889-00	CARBON	270K	5%	1/4W	
R525	1-247-878-00	CARBON	91K	5%	1/4W	
R526	1-247-880-11	CARBON	110K	5%	1/4W	
R527	1-247-868-11	CARBON	36K	5%	1/4W	
R528	1-247-876-11	CARBON	75K	5%	1/4W	
R529	1-247-870-11	CARBON	43K	5%	1/4W	
R530	1-247-880-11	CARBON	110K	5%	1/4W	
R531	1-249-433-11	CARBON	22K	5%	1/4W	
R532	1-247-870-11	CARBON	43K	5%	1/4W	
R533	1-247-878-00	CARBON	91K	5%	1/4W	
R534	1-247-881-00	CARBON	120K	5%	1/4W	
R535	1-249-438-11	CARBON	56K	5%	1/4W	
R536	1-247-878-00	CARBON	91K	5%	1/4W	
R537	1-249-438-11	CARBON	56K	5%	1/4W	
R538	1-249-422-11	CARBON	2.7K	5%	1/4W	
R539	1-249-424-11	CARBON	3.9K	5%	1/4W	
R540	1-249-437-11	CARBON	47K	5%	1/4W	
R541	1-249-439-11	CARBON	68K	5%	1/4W	
R542	1-247-739-11	CARBON	100	5%	1/2W	
R601	1-247-842-11	CARBON	3K	5%	1/4W	
R602	1-249-420-11	CARBON	1.8K	5%	1/4W	
R603	1-249-418-11	CARBON	1.2K	5%	1/4W	
R604	1-249-420-11	CARBON	1.8K	5%	1/4W	
R605	1-249-418-11	CARBON	1.2K	5%	1/4W	
R606	1-249-423-11	CARBON	3.3K	5%	1/4W	
R607	1-249-420-11	CARBON	1.8K	5%	1/4W	
R608	1-249-418-11	CARBON	1.2K	5%	1/4W	
R609	1-249-423-11	CARBON	3.3K	5%	1/4W	
R610	1-249-420-11	CARBON	1.8K	5%	1/4W	
R611	1-249-418-11	CARBON	1.2K	5%	1/4W	
R612	1-249-420-11	CARBON	1.8K	5%	1/4W	

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

Ref.No	Part No.	Description				
R613	1-249-418-11	CARBON	1.2K	5%	1/4W	
R701	1-249-421-11	CARBON	2.2K	5%	1/4W	
R702	1-249-421-11	CARBON	2.2K	5%	1/4W	
R703	1-249-421-11	CARBON	2.2K	5%	1/4W	
R704	1-249-421-11	CARBON	2.2K	5%	1/4W	
R705	1-249-421-11	CARBON	2.2K	5%	1/4W	
R706	1-249-421-11	CARBON	2.2K	5%	1/4W	
R707	1-249-409-11	CARBON	220	5%	1/4W	
R708	1-249-418-11	CARBON	1.2K	5%	1/4W	
R709	1-249-418-11	CARBON	1.2K	5%	1/4W	
R710	1-249-417-11	CARBON	1K	5%	1/4W	
R711	1-249-417-11	CARBON	1K	5%	1/4W	
R712	1-249-437-11	CARBON	47K	5%	1/4W	
R713	1-249-421-11	CARBON	2.2K	5%	1/4W	
R714	△ 1-207-672-00	WIREWOUND	2.2	10%	5W	F
R801	1-249-433-11	CARBON	22K	5%	1/4W	
R802	1-249-417-11	CARBON	1K	5%	1/4W	
R803	1-249-433-11	CARBON	22K	5%	1/4W	
R804	1-249-421-11	CARBON	2.2K	5%	1/4W	
R805	1-249-421-11	CARBON	2.2K	5%	1/4W	
R807	1-249-438-11	CARBON	56K	5%	1/4W	
R808	1-247-887-00	CARBON	220K	5%	1/4W	
R809	1-249-419-11	CARBON	1.5K	5%	1/4W	
R810	1-249-425-11	CARBON	4.7K	5%	1/4W	
R811	1-249-421-11	CARBON	2.2K	5%	1/4W	
R812	1-249-421-11	CARBON	2.2K	5%	1/4W	
R813	1-247-887-00	CARBON	220K	5%	1/4W	
R814	1-249-438-11	CARBON	56K	5%	1/4W	
R815	1-249-425-11	CARBON	4.7K	5%	1/4W	
R816	1-249-429-11	CARBON	10K	5%	1/4W	
R817	1-249-437-11	CARBON	47K	5%	1/4W	
R818	1-249-437-11	CARBON	47K	5%	1/4W	
R819	1-249-437-11	CARBON	47K	5%	1/4W	
R820	1-249-425-11	CARBON	4.7K	5%	1/4W	
R821	1-249-433-11	CARBON	22K	5%	1/4W	
R822	1-249-393-11	CARBON	10	5%	1/4W	
R823	1-249-411-11	CARBON	330	5%	1/4W	
R824	1-249-411-11	CARBON	330	5%	1/4W	
R825	1-249-407-11	CARBON	150	5%	1/4W	
R826	1-249-407-11	CARBON	150	5%	1/4W	
R827	1-249-407-11	CARBON	150	5%	1/4W	
R828	1-249-407-11	CARBON	150	5%	1/4W	
R829	1-249-410-11	CARBON	270	5%	1/4W	
R830	1-249-407-11	CARBON	150	5%	1/4W	
R831	1-249-407-11	CARBON	150	5%	1/4W	
R832	1-249-407-11	CARBON	150	5%	1/4W	
R840	1-249-437-11	CARBON	47K	5%	1/4W	
RV41A	1-228-989-00	RES, ADJ, CARBON 470				
RV41B	1-228-989-00	RES, ADJ, CARBON 470				
RV42	1-230-499-11	RES, ADJ, CARBON 100K				
RV61A	1-228-989-00	RES, ADJ, CARBON 470				
RV61B	1-228-989-00	RES, ADJ, CARBON 470				
RV62	1-230-499-11	RES, ADJ, CARBON 100K				
RV101	1-228-994-00	RES, ADJ, CARBON 10K				
RV201	1-228-994-00	RES, ADJ, CARBON 10K				
RV501	1-238-247-11	RES, VAR, CARBON 50K/50K (BALANCE)				
RV502	1-238-248-11	RES, VAR, CARBON 20K/20K (REC LEVEL)				
RY81	1-515-614-11	RELAY				
S11A	1-571-281-21	SWITCH, LEAF (HALF)				
S11B	1-571-281-21	SWITCH, LEAF (HALF)				
S12	1-571-281-21	SWITCH, LEAF				
S13	1-571-281-21	SWITCH, LEAF				
S14A	1-571-281-21	SWITCH, LEAF (CrO ₂)				

Ref.No	Part No.	Description				
S14B	1-571-281-21	SWITCH, LEAF (CrO ₂)				
S501	1-571-298-11	SWITCH, SLIDE (DOLBY NR)				
S601	1-554-303-21	SWITCH, KEY BOARD (< (DECK A))				
S602	1-554-303-21	SWITCH, KEY BOARD (> (DECK A))				
S603	1-554-303-21	SWITCH, KEY BOARD (▶▶ (DECK A))				
S604	1-554-303-21	SWITCH, KEY BOARD (◀◀ (DECK A))				
S605	1-554-303-21	SWITCH, KEY BOARD (■ (DECK A))				
S606	1-554-303-21	SWITCH, KEY BOARD (●)				
S607	1-554-303-21	SWITCH, KEY BOARD (< (DECK B))				
S608	1-554-303-21	SWITCH, KEY BOARD (> (DECK B))				
S609	1-554-303-21	SWITCH, KEY BOARD ()				
S610	1-554-303-21	SWITCH, KEY BOARD (REC)				
S611	1-554-303-21	SWITCH, KEY BOARD (▶▶ (DECK B))				
S612	1-554-303-21	SWITCH, KEY BOARD (◀◀ (DECK B))				
S613	1-554-303-21	SWITCH, KEY BOARD (■ (DECK B))				
S614	1-554-303-21	SWITCH, KEY BOARD (DUBBING NORMAL SPEED)				
S615	1-554-303-21	SWITCH, KEY BOARD (DUBBING HIGH SPEED)				
S616	1-571-296-11	SWITCH, SLIDE (DIRECTION MODE)				
T81	1-433-331-11	TRANSFORMER, BIAS OSCILLATION				
TP801	*1-560-060-00	PIN, CONNECTOR 2P				
X801	1-567-772-11	VIBRATOR, CERAMIC (4.19MHz)				

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