

TC-W421

SERVICE MANUAL

*US Model
Canadian Model
E Model*



TC-W421 is the cassette deck section of the stereo component system SEN-421CD.

Model Name Using Similar Mechanism	HST-121/221
Tape Transport Mechanism Type	TCM-180VW-H5

SPECIFICATIONS

Recording system	4-track 2-channel stereo
Frequency response (DOLBY NR OFF)	With TYPE II cassette (Sony UCX-S): 30 – 14,000 Hz (± 3 dB) With TYPE I cassette (Sony HF-S): 30 – 13,000 Hz (± 3 dB)
Wow and flutter	0.12% WRMS (NAB)
Dimensions	Approx. 430 x 120 x 280 mm (w/h/d) (17 x 4 $\frac{3}{4}$ x 11 $\frac{1}{8}$ inches)
Weight	Approx. 3.5 kg (7 lb 12 oz) net

Design and specifications are subject to change without notice.

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STEREO CASSETTE DECK
SONY®



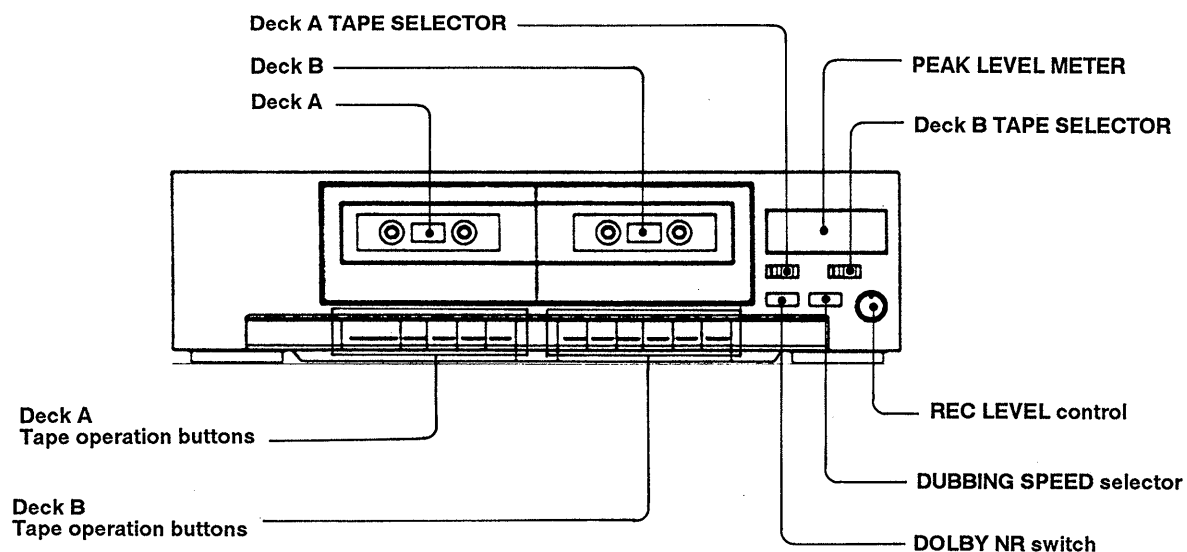
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SECTION 1 GENERAL

PARTS IDENTIFICATION

— Front Panel —



SECTION 2

ADJUSTMENTS

2-1. MECHANICAL ADJUSTMENT

PRECAUTION

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

record/playback head	pinch rollers
erase head	rubber belts
capstan	idler
- 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 in the rated power supply voltage unless otherwise noted.

Torque Measurement

Mode	Torque Meter	Meter reading
FWD	CQ-102C	30 – 70 g•cm (0.42 – 0.97 oz•inch)
FWD back tension	CQ-102C	1 – 5 g•cm (0.014 to 0.063 oz•inch)
FF, REW	CQ-201B	70 – 160 g•cm (0.97 – 2.21 oz•inch)

2-2. ELECTRICAL ADJUSTMENTS

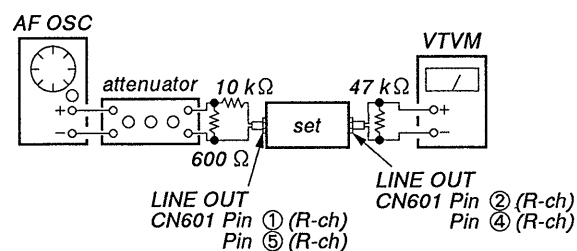
Note: The adjustment should be performed in the order given in the service manual. As a rule, adjustments about playback should be performed before those about recording. The adjustments should be performed for L-CH and R-CH.

- 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.

– Record Mode –



0 dB=0.775 V

• Standard Input Level

Input terminal	LINE IN (CN601 Pin ①, ⑤)
Source impedance	10 kΩ
Input level	0.25 V (– 10 dB)

• Standard Output Level

Output terminal	LINE OUT (CN601 Pin ②, ④)
Load impedance	47kΩ
Output level	0.32 V (– 7.7 dB)

• Test tape

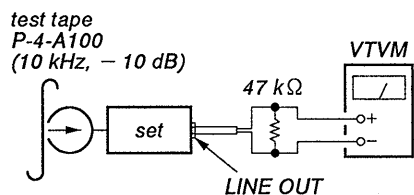
Type	Signal	Used for
P-4-A100	10 kHz, – 10 dB	Azimuth adjustment
P-4-L300	315 Hz, 0 dB	PB level adjustment
WS-48A	3 kHz, 0 dB	Tape speed adjustment

Record/Playback Head Azimuth Adjustment

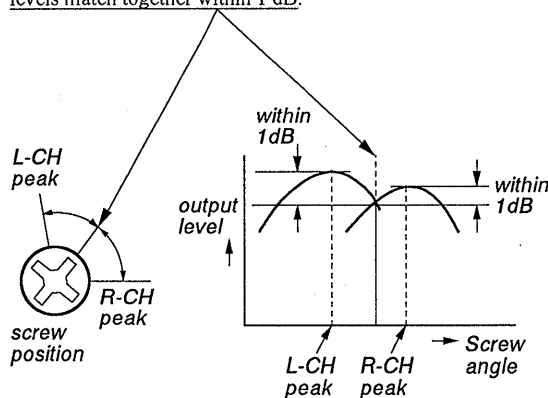
DECK A **DECK B**

Procedure:

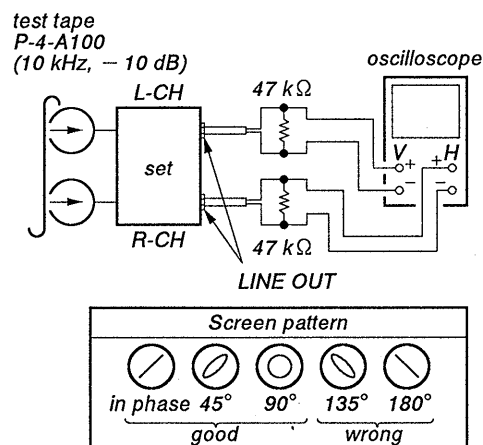
1. Mode: Playback



2. 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 1 dB.

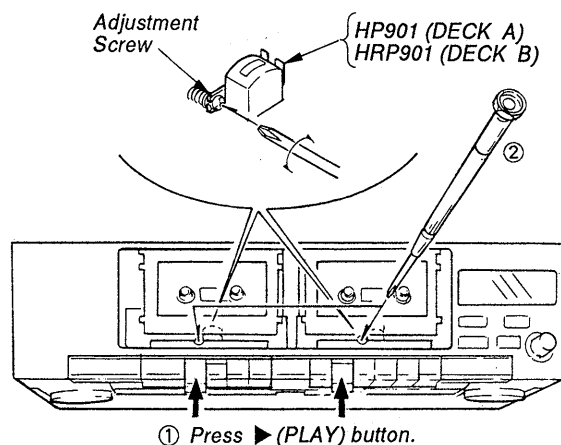


3. Phase Check
Mode: Playback



4. After the adjustment, lock the screws with locking compound.

Adjustment Location: Record/Playback head

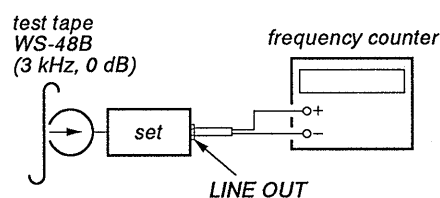


Tape Speed Adjustment **DECK A** **DECK B**

Procedure:

Mode: Playback

Perform high speed adjustment before normal speed adjustment.



(high speed adjustment)

1. Set to FWD playback mode.
2. Short test pin CN504 on Main board.
3. Adjust RV501 on main board so that the frequency counter reading becomes $6,000 \pm 60$ Hz.
4. After adjustment, disconnect CN504 shorted in step 2.

(normal speed adjustment)

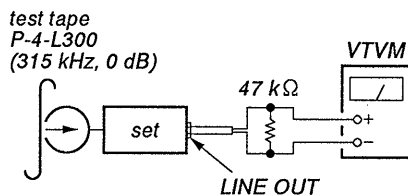
1. Set to FWD playback mode.
2. Adjust RV502 on Main board so that the frequency counter reading becomes $3,000 \pm 30$ Hz.

Frequency difference between the beginning and the end of the tape should be within 5%.

Adjustment Location: main board (See Page 6.)

Playback Level Adjustment **DECK A** **DECK B****Procedure:**

Mode: Playback



Adjust RV101 (L-ch) and RV201 (R-ch) for DECK A and RV102 (L-ch) and RV202 (R-ch) for DECK B so that the reading on VTVM meets the adjustment limits below.

Adjustment Limits:LINE OUT level: -7.7 ± 0.5 dB (0.30 – 0.34 V)

Level difference between channels: less than 0.5 dB

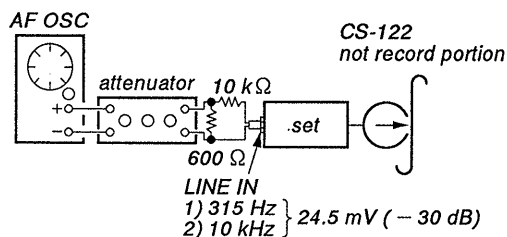
Check that the LINE OUT level does not change even if Playback and Stop operation is repeated several times.

Adjustment Location: Main board (See Page 6.)**Record Bias Adjustment** **DECK B****Starting:**

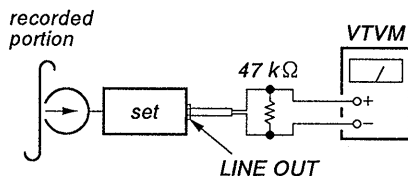
REC LEVEL control: Standard Record (See page 3.)

Procedure:

1. Mode: Record



2. Mode: Playback



3. Playback the signal recorded in step 1.

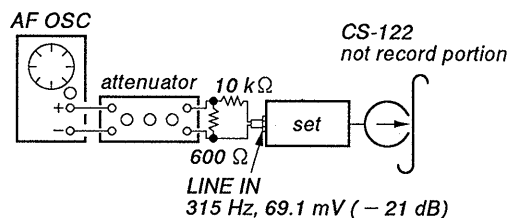
Confirm that the 10 kHz playback output is 0 ± 0.5 dB relative to the 315 Hz output. If necessary, adjust RV403 (L-ch) and RV503 (R-ch) and repeat the steps given above.

Adjustment Location: main board (See Page 6.)**Record Level Adjustment** **DECK B****Starting:**

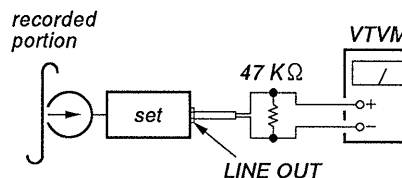
REC LEVEL control: Standard Record (See page 3.)

Procedure:

1. Mode: Record



2. Mode: Playback



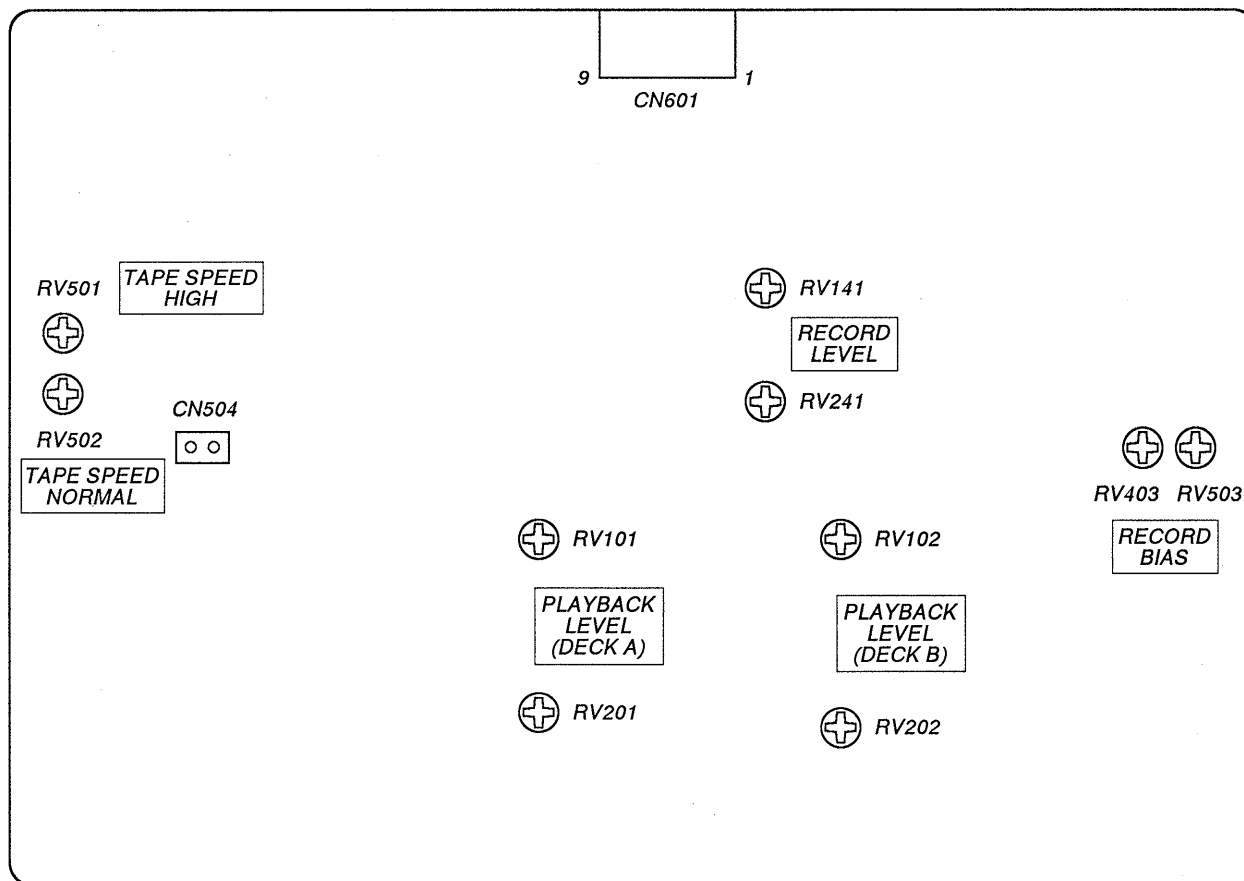
3. Playback the signal recorded in step 1.

Confirm that signal level is within the adjustment limits below. If necessary, adjust RV141 (L-ch) and RV241 (R-ch) and repeat the step 1 – 2.

Adjustment Limits: -22.7 dB ± 0.5 dB (53.6 – 60.2 mV)**Adjustment Location:** main board (component side) (See Page 6.)

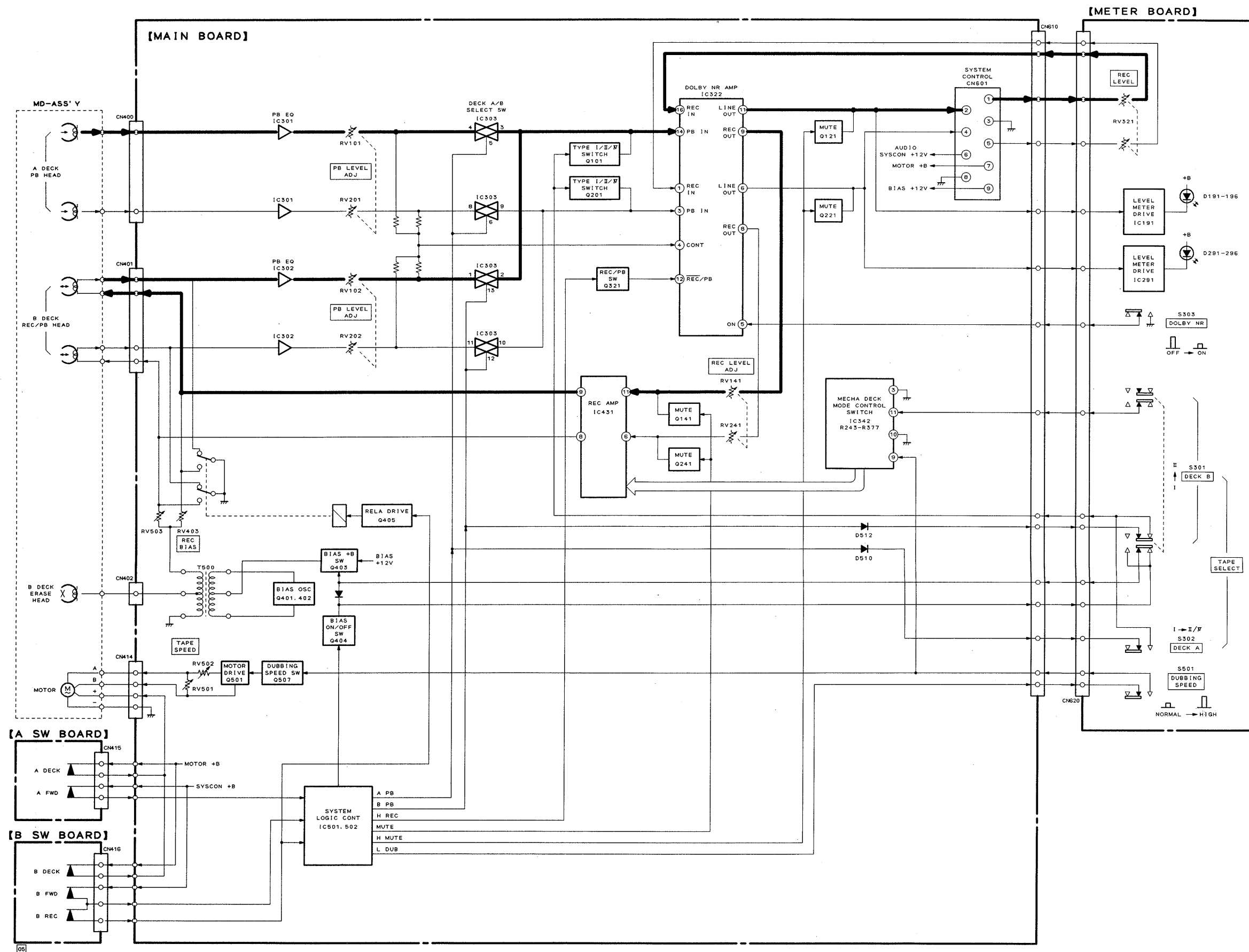
• Adjusting Parts Location

[MAIN BOARD] — Component Side —



SECTION 3 DIAGRAMS

3-1. BLOCK DIAGRAM



3-2. PRINTED WIRING BOARDS

Note on Schematic Diagram:

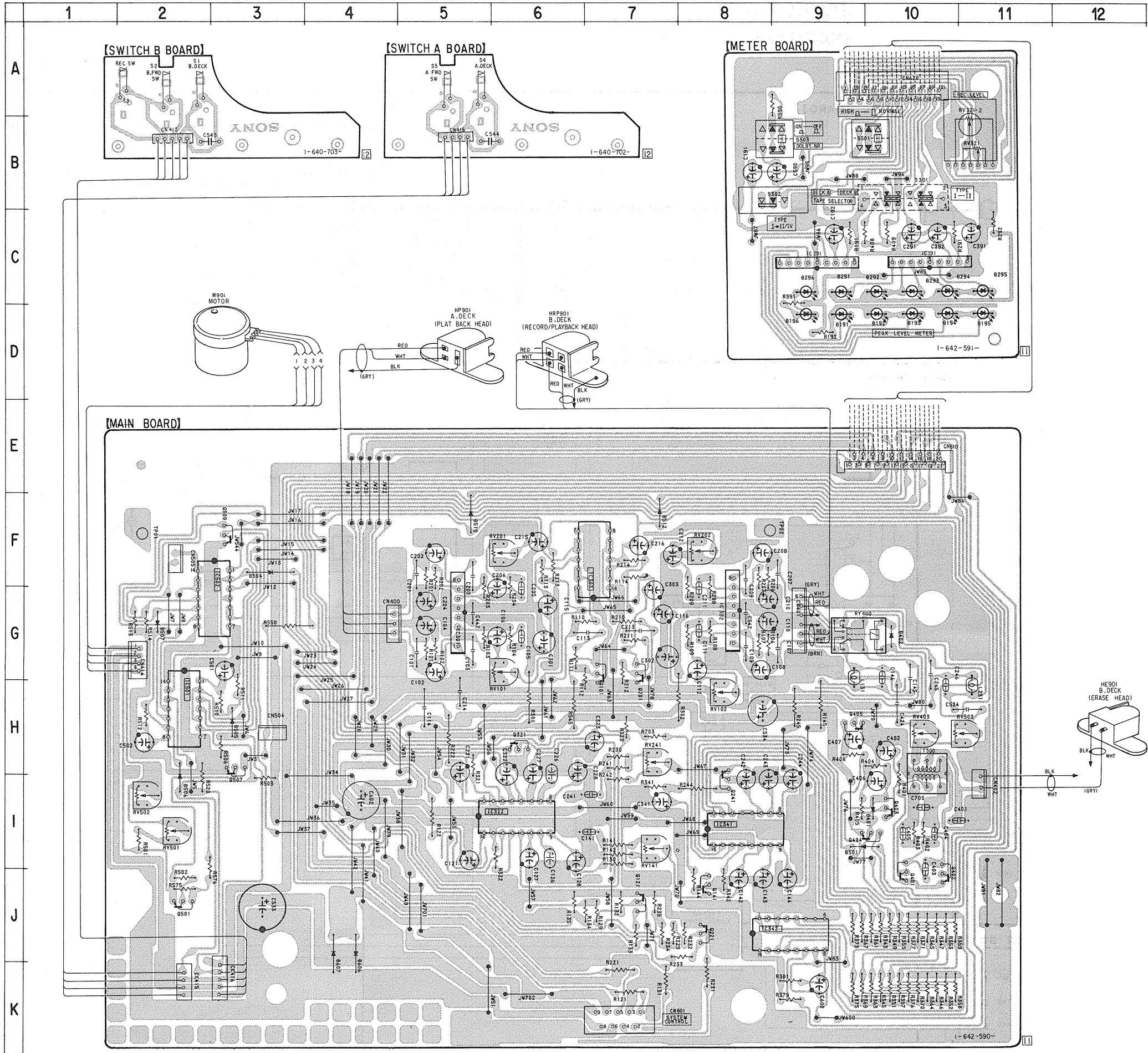
- All capacitors are in μF unless otherwise noted. pF ; μF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}$ W or less unless otherwise specified.
- **B+** : B+ Line.
- **□** : panel designation.
- **□** : adjustment for repair.
- Power voltage is fed with TA-AV421 from CN601 SYSTEM CONTROL.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
no mark : REC/PB
() : HIGH SPEED DUBBING
< > : REC
- Voltages are taken with a VOM (10 M Ω /V).
Voltage variations may be noted due to normal production tolerances.
- Signal path.
□ : PB (DECK B)
□ : REC (DECK B)

Note on Printed Wiring Board:

- : parts extracted from the component side.

• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D191	D-9	IC291	C-9
D192	D-10	IC301	G-5
D193	D-10	IC302	G-8
D194	D-10	IC303	F-7
D195	D-11	IC322	I-6
D196	D-9	IC341	I-8
D291	D-9	IC342	J-9
D292	D-10	IC501	H-2
D293	D-10	IC502	G-3
D294	D-10		
D295	D-11	Q101	G-7
D296	D-9	Q121	J-7
D401	I-10	Q141	J-8
D402	G-10	Q201	G-7
D501	I-9	Q221	J-8
D504	F-3	Q241	I-8
D505	H-3	Q321	H-6
D506	I-2	Q401	J-10
D507	G-2	Q402	J-10
D510	F-5	Q403	I-10
D512	F-7	Q404	I-10
D606	J-4	Q405	H-9
D607	J-4	Q501	J-2
		Q507	H-3
IC191	C-10	Q509	F-3



Semiconductor Lead Layouts

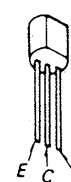
DTA114ES
DTA144ES
DTC114ES
2SC1815-Y
2SC2603-EF



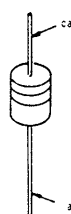
DTC144ES
2SA1175-HFE



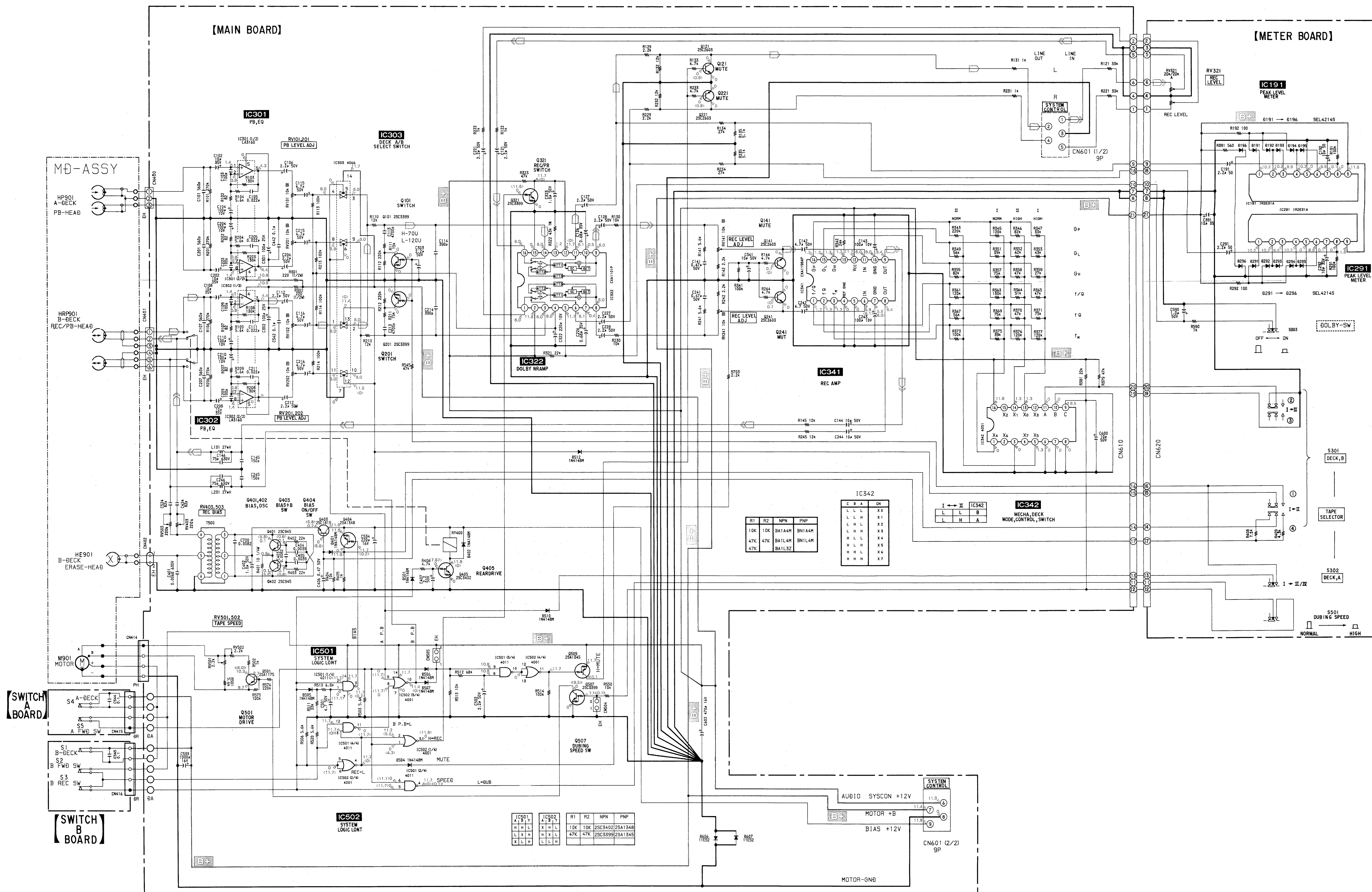
2SC945P



1SS120
11ES2



SEL4214S



SECTION 4

EXPLODED VIEWS

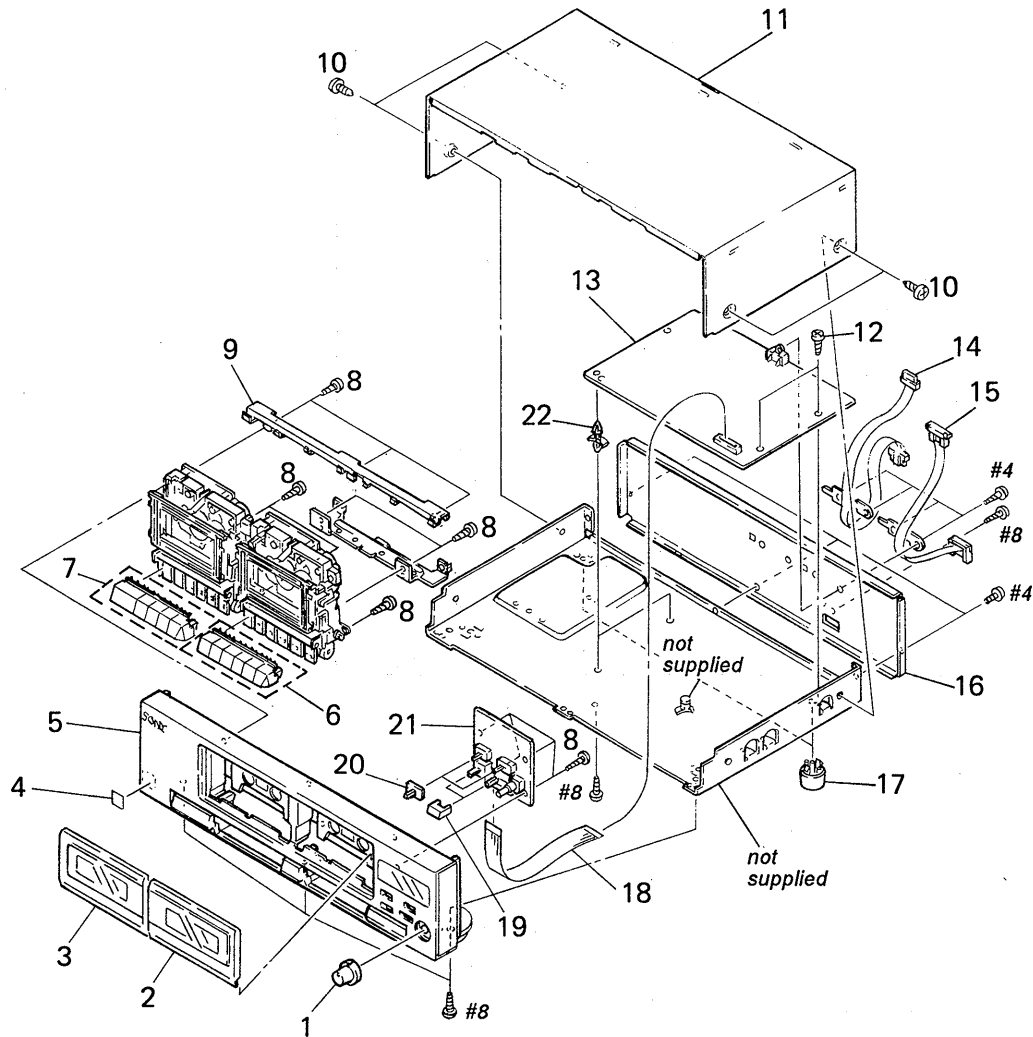
NOTE:

- -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
- 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 this parts list.

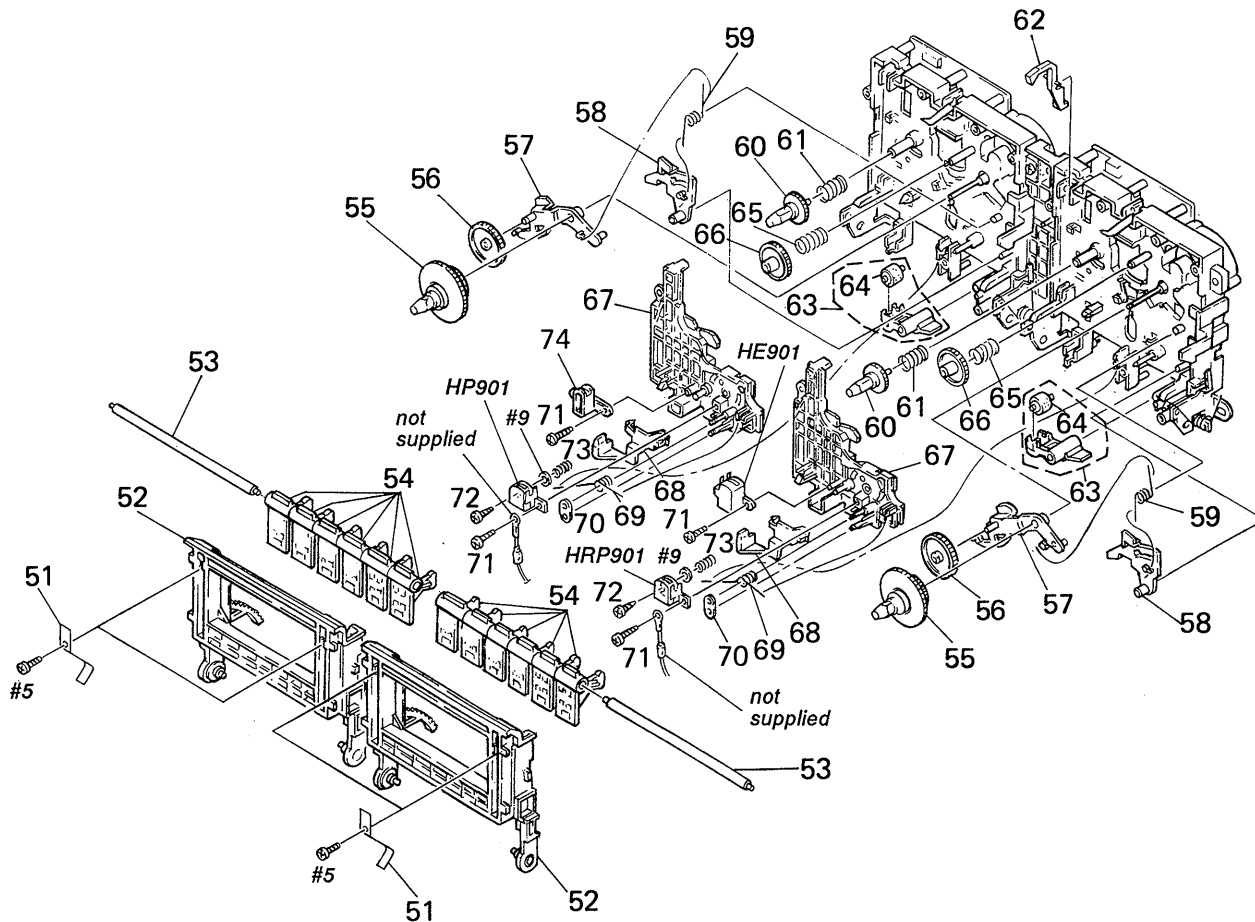
(1) FRONT PANEL AND CHASSIS SECTION



Ref. No.	Part No.	Description	Remark
1	4-949-640-11	KNOB (DIA. 21)	
2	A-4325-437-A	LID (B) ASSY, CASSETTE (US)	
2	A-4325-439-A	LID (B) ASSY, CASSETTE (Canadian, E)	
3	A-4325-436-A	LID (A) ASSY, CASSETTE (US)	
3	A-4325-438-A	LID (A) ASSY, CASSETTE (Canadian, E)	
4	3-703-710-41	STICKER, SONY SYMBOL (12)	
5	A-2004-012-A	PANEL ASSY, FRONT (US)	
5	A-2004-013-A	PANEL ASSY, FRONT (Canadian)	
5	A-2004-014-A	PANEL ASSY, FRONT (E)	
6	4-949-639-01	BUTTON (BLOCK B)	
7	4-949-638-01	BUTTON (BLOCK A)	
8	4-928-635-21	SCREW, +BV (2. 6X10) TAPPING	
9	3-375-844-01	BRACKET (CASE)	
10	3-363-099-01	SCREW (CASE +3X8 TP2)	
* 11	4-943-088-71	CASE	
12	4-886-821-11	SCREW, S TIGHT, +PTTWH 3X6	

Ref. No.	Part No.	Description	Remark
* 13	A-2006-717-A	MAIN BOARD, COMPLETE	
14	1-690-674-21	CORD (WITH CONNECTOR) (US)	
15	1-690-672-11	CORD (WITH CONNECTOR) (US)	
* 16	3-375-840-01	PANEL, BACK (US)	
* 16	3-375-840-11	PANEL, BACK (Canadian)	
* 16	3-375-840-21	PANEL, BACK (E)	
17	X-4941-228-1	FOOT ASSY	
18	1-590-243-11	WIRE, FLAT TYPE (21 CORE)	
19	4-949-658-01	BUTTON (TC)	
20	4-948-273-01	KNOB, SLIDE	
* 21	1-642-591-11	METER BOARD	
* 22	3-346-265-11	HOLDER, PC BOARD	

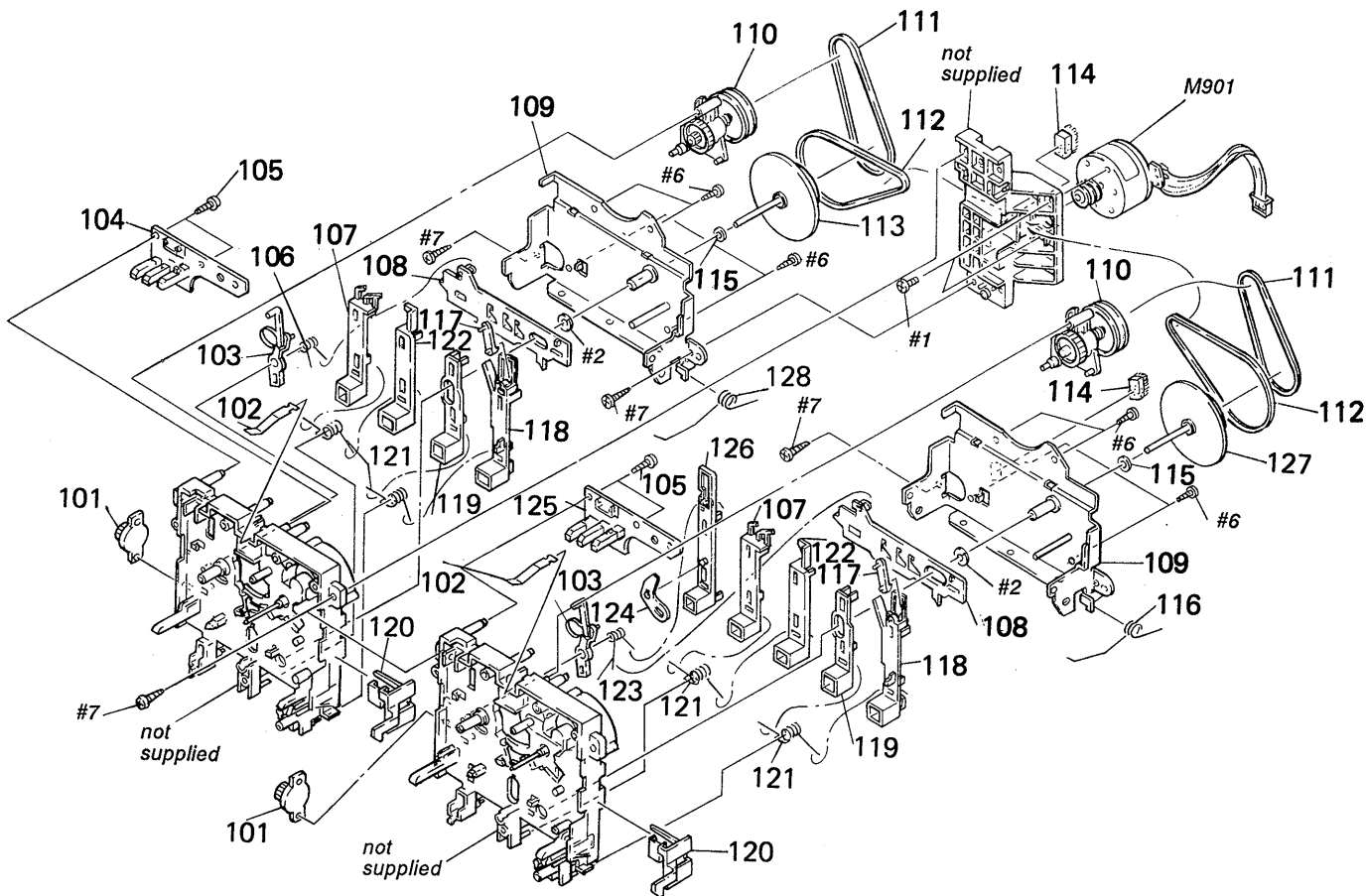
(2) MECHANISM DECK (TCM-180VW-H5)



Ref. No.	Part No.	Description	Remark
51	3-358-209-01	SPRING (CASSETTE HOLDER), LEAF	
52	3-358-266-02	HOLDER, CASSETTE	
53	3-371-917-01	SHAFT (BUTTON SHAFT 4)	
54	3-369-335-01	LEVER (BUTTON BASE F)	
55	X-3358-203-1	TABLE (T) ASSY, REEL	
* 56	3-358-284-01	GEAR (TU GEAR)	
* 57	3-358-252-01	LEVER (TU ARM)	
* 58	3-358-253-01	LEVER (SHUT-OFF LEVER)	
59	3-358-243-01	SPRING (TU-SHUT), TORSION	
60	3-358-248-01	GEAR (SUPPLY REEL)	
61	3-358-208-01	SPRING (SUPPLY), COMPRESSION	
* 62	3-358-204-01	LEVER (REC SAFETY)	
63	X-3358-204-1	LEVER (PINCH LEVER) ASSY	
64	3-578-143-11	PINCH ROLLER	
65	3-358-207-01	SPRING (FF GEAR), COMPRESSION	

Ref. No.	Part No.	Description	Remark
* 66	3-358-224-01	GEAR (FF GEAR)	
67	3-358-265-01	SLIDER (HEAD PC BOARD A)	
* 68	3-358-251-01	LEVER (TENSION DETECTION ARM)	
69	3-358-228-01	SPRING, TORSION	
* 70	3-358-215-01	BUSHING (WIRE KIT RETAINER)	
71	3-358-288-11	SCREW (T), AZIMUTH	
72	3-358-288-01	SCREW (T), AZIMUTH	
73	3-358-234-01	SPRING (AZIMUTH), COMPRESSION	
* 74	3-363-931-01	GUIDE, TAPE	
HE901	1-543-673-11	HEAD, MAGNETIC (ERASE)	
HP901	1-543-319-11	HEAD, MAGNETIC (REC/PB)	
HRP901	1-543-319-11	HEAD, MAGNETIC (REC/PB)	

(3) MECHANISM DECK (TCM-180VW-H5)



Ref. No.	Part No.	Description	Remark
101	3-319-224-41	DAMPER, SMALL	
102	3-358-227-01	SPRING, LEAF	
103	3-358-286-01	LEVER (MOTOR LEVER)	
* 104	1-640-702-11	LEAF SW (A) BOARD	
105	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
106	3-358-214-01	SPRING (LOCK), TORSION	
107	3-358-258-01	SLIDER (REW)	
* 108	3-358-249-01	SLIDER (LOCK PLATE)	
* 109	X-3358-208-1	BRACKET (B) ASSY	
110	X-3358-202-1	LEVER (FR ARM) ASSY	
111	3-358-230-01	BELT (A1)	
112	3-364-777-01	BELT (WH)	
113	X-3358-205-1	FLYWHEEL (A) ASSY	
* 114	3-358-289-01	SPACER (VIBRATION PROOF MAT)	

Ref. No.	Part No.	Description	Remark
115	3-701-437-01	WASHER	
116	3-358-229-01	SPRING (LOADING), TORSION	
* 117	3-358-226-01	LEVER (PAUSE LEVER)	
118	3-358-260-01	SLIDER (PAUSE)	
119	3-358-256-01	SLIDER (STOP/EJECT)	
* 120	3-358-261-02	SLIDER (HOLDER LOCK)	
121	3-358-232-01	SPRING (S-P F-R), TORSION	
122	3-358-257-01	SLIDER (FF)	
123	3-358-233-01	SPRING (REC-LOCK), TORSION	
* 124	3-358-255-01	LEVER (GB LEVER)	
* 125	1-640-703-11	LEAF SW (B) BOARD	
126	3-358-259-01	SLIDER (REC)	
127	X-3358-206-1	FLYWHEEL (B) ASSY	
128	3-358-287-01	SPRING (LOADING A), TORSION	
M901	X-3362-377-1	MOTOR (WH) ASSY	

LEAF SW (A)

LEAF SW (B)

MAIN

SECTION 5 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

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

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

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
*	1-640-702-11	LEAF SW (A) BOARD *****	
		< CAPACITOR >	
C544	1-164-159-11	CERAMIC 0.1MF	50V
		< CONNECTOR >	
* CN416	1-564-497-11	PIN, CONNECTOR 4P	
		< SWITCH >	
S4	1-571-736-11	SWITCH, LEAF	
S5	1-571-736-11	SWITCH, LEAF	

*	1-640-703-11	LEAF SW (B) BOARD *****	
		< CONNECTOR >	
* CN415	1-564-498-11	PIN, CONNECTOR 5P	
		< CAPACITOR >	
C545	1-164-159-11	CERAMIC 0.1MF	50V
		< SWITCH >	
S1	1-571-736-11	SWITCH, LEAF	
S2	1-571-736-11	SWITCH, LEAF	
S3	1-571-736-11	SWITCH, LEAF	

*	A-2006-717-A	MAIN BOARD, COMPLETE *****	
		< CAPACITOR >	
C101	1-162-291-31	CERAMIC 560PF	10% 50V

Ref. No.	Part No.	Description	Remark
C102	1-126-096-11	ELECT 10uF	20% 35V
C103	1-162-282-31	CERAMIC 100PF	10% 50V
C104	1-124-443-00	ELECT 100uF	20% 10V
C105	1-136-157-00	FILM 0.022uF	5% 50V
C106	1-124-925-11	ELECT 2.2uF	20% 100V
C107	1-162-291-31	CERAMIC 560PF	10% 50V
C108	1-126-096-11	ELECT 10uF	20% 35V
C109	1-162-282-31	CERAMIC 100PF	10% 50V
C110	1-124-443-00	ELECT 100uF	20% 10V
C111	1-136-157-00	FILM 0.022uF	5% 50V
C112	1-124-257-00	ELECT 2.2uF	20% 50V
C113	1-161-377-00	CERAMIC 0.0047uF	20% 16V
C114	1-162-289-31	CERAMIC 390PF	10% 50V
C115	1-124-927-11	ELECT 4.7uF	20% 100V
C116	1-124-927-11	ELECT 4.7uF	20% 100V
C121	1-124-925-11	ELECT 2.2uF	20% 100V
C126	1-131-587-11	TANTALUM 0.68uF	5% 35V
C127	1-124-925-11	ELECT 2.2uF	20% 100V
C128	1-124-925-11	ELECT 2.2uF	20% 100V
C141	1-136-173-00	FILM 0.47uF	5% 50V
C142	1-124-927-11	ELECT 4.7uF	20% 100V
C143	1-124-443-00	ELECT 100uF	20% 10V
C144	1-124-907-11	ELECT 10uF	20% 50V
C145	1-162-284-31	CERAMIC 150PF	10% 50V
C146	1-136-273-91	FILM 75PF	5% 630V
C201	1-162-291-31	CERAMIC 560PF	10% 50V
C202	1-126-096-11	ELECT 10uF	20% 35V
C203	1-162-282-31	CERAMIC 100PF	10% 50V
C204	1-124-443-00	ELECT 100uF	20% 10V
C205	1-136-157-00	FILM 0.022uF	5% 50V
C206	1-124-925-11	ELECT 2.2uF	20% 100V
C207	1-162-291-31	CERAMIC 560PF	10% 50V
C208	1-126-096-11	ELECT 10uF	20% 35V
C209	1-162-282-31	CERAMIC 100PF	10% 50V
C210	1-124-443-00	ELECT 100uF	20% 10V
C211	1-136-157-00	FILM 0.022uF	5% 50V

Ref. No.	Part No.	Description	Remark		
C212	1-124-925-11	ELECT	2. 2uF	20%	100V
C213	1-161-377-00	CERAMIC	0. 0047uF	20%	16V
C214	1-162-289-31	CERAMIC	390PF	10%	50V
C215	1-124-927-11	ELECT	4. 7uF	20%	100V
C216	1-124-927-11	ELECT	4. 7uF	20%	100V
C221	1-124-925-11	ELECT	2. 2uF	20%	100V
C226	1-131-587-11	TANTALUM	0. 68uF	5%	35V
C227	1-124-925-11	ELECT	2. 2uF	20%	100V
C228	1-124-925-11	ELECT	2. 2uF	20%	100V
C241	1-136-173-00	FILM	0. 47uF	5%	50V
C242	1-124-927-11	ELECT	4. 7uF	20%	100V
C243	1-124-443-00	ELECT	100uF	20%	10V
C244	1-124-907-11	ELECT	10uF	20%	50V
C245	1-162-284-31	CERAMIC	150PF	10%	50V
C246	1-136-273-91	FILM	75PF	5%	630V
C301	1-124-478-11	ELECT	100uF	20%	25V
C302	1-124-478-11	ELECT	100uF	20%	25V
C303	1-124-925-11	ELECT	2. 2uF	20%	100V
C322	1-126-176-11	ELECT	220uF	20%	10V
C323	1-124-903-11	ELECT	1uF	20%	50V
C341	1-124-907-11	ELECT	10uF	20%	50V
C401	1-136-561-11	FILM	0. 0068uF	5%	630V
C402	1-124-903-11	ELECT	1uF	20%	50V
C403	1-130-482-00	MYLAR	0. 0082uF	5%	50V
C404	1-130-478-00	MYLAR	0. 0039uF	5%	50V
C405	1-130-478-00	MYLAR	0. 0039uF	5%	50V
C406	1-124-902-00	ELECT	0. 47uF	20%	50V
C407	1-124-925-11	ELECT	2. 2uF	20%	100V
C424	1-162-280-31	CERAMIC	82PF	10%	50V
C442	1-164-159-11	CERAMIC	0. 1uF		50V
C501	1-124-927-11	ELECT	4. 7uF	20%	100V
C502	1-124-925-11	ELECT	2. 2uF	20%	100V
C524	1-162-280-31	CERAMIC	82PF	10%	50V
C533	1-124-360-00	ELECT	1000uF	20%	16V
C534	1-124-120-11	ELECT	220uF	20%	25V
C542	1-164-159-11	CERAMIC	0. 1uF		50V
C600	1-124-907-11	ELECT	10uF	20%	50V
C602	1-126-103-11	ELECT	470uF	20%	16V
C700	1-130-482-00	MYLAR	0. 0082uF	5%	50V
< CONNECTOR >					
* CN400	1-564-506-11	PLUG, CONNECTOR 3P			
* CN401	1-564-509-11	PLUG, CONNECTOR 6P			
* CN402	1-564-505-11	PLUG, CONNECTOR 2P			
* CN414	1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P			
* CN504	1-564-505-11	PLUG, CONNECTOR 2P			
* CN505	1-564-505-11	PLUG, CONNECTOR 2P			
CN601	1-565-949-11	SOCKET, CONNECTOR 9P			

Ref. No.	Part No.	Description	Remark
CN610	1-568-838-11	SOCKET, CONNECTOR 21P	
< DIODE >			
D401	8-719-912-20	DIODE 1SS120	
D402	8-719-912-20	DIODE 1SS120	
D501	8-719-912-20	DIODE 1SS120	
D504	8-719-912-20	DIODE 1SS120	
D505	8-719-912-20	DIODE 1SS120	
D506	8-719-912-20	DIODE 1SS120	
D507	8-719-912-20	DIODE 1SS120	
D510	8-719-912-20	DIODE 1SS120	
D512	8-719-912-20	DIODE 1SS120	
D606	8-719-200-82	DIODE 11ES2	
D607	8-719-200-82	DIODE 11ES2	
< IC >			
IC301	8-759-800-36	IC LA3160	
IC302	8-759-800-36	IC LA3160	
IC303	8-759-000-49	IC MC14066BCP	
IC322	8-752-057-19	IC CXA1101P	
IC341	8-752-038-02	IC CXA1198AP	
IC342	8-759-000-47	IC MC14051BCP	
IC501	8-759-140-11	IC uPD4011BC	
IC502	8-759-040-01	IC MC14001BCP	
< COIL >			
L131	1-410-780-11	INDUCTOR 27mH	
L231	1-410-780-11	INDUCTOR 27mH	
< TRANSISTOR >			
Q101	8-729-900-89	TRANSISTOR DTC144ES	
Q121	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q141	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q201	8-729-900-89	TRANSISTOR DTC144ES	
Q221	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q241	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q321	8-729-900-89	TRANSISTOR DTC144ES	
Q401	8-729-194-57	TRANSISTOR 2SC945-P	
Q402	8-729-194-57	TRANSISTOR 2SC945-P	
Q403	8-729-281-52	TRANSISTOR 2SC1815-Y	
Q404	8-729-900-61	TRANSISTOR DTA114ES	
Q405	8-729-900-80	TRANSISTOR DTC114ES	
Q501	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q507	8-729-900-89	TRANSISTOR DTC144ES	
Q509	8-729-900-65	TRANSISTOR DTA144ES	
< RESISTOR >			
R101	1-247-889-00	CARBON 270K 5% 1/4W	

MAIN

Ref. No.	Part No.	Description	Remark		
R102	1-249-404-00	CARBON	82	5%	1/4W
R103	1-247-882-11	CARBON	130K	5%	1/4W
R104	1-249-426-11	CARBON	5.6K	5%	1/4W
R106	1-247-889-00	CARBON	270K	5%	1/4W
R107	1-249-404-00	CARBON	82	5%	1/4W
R108	1-247-882-11	CARBON	130K	5%	1/4W
R109	1-249-426-11	CARBON	5.6K	5%	1/4W
R110	1-249-430-11	CARBON	12K	5%	1/4W
R111	1-249-431-11	CARBON	15K	5%	1/4W
R112	1-247-887-00	CARBON	220K	5%	1/4W
R113	1-249-441-11	CARBON	100K	5%	1/4W
R114	1-249-441-11	CARBON	100K	5%	1/4W
R121	1-249-435-11	CARBON	33K	5%	1/4W
R122	1-249-417-11	CARBON	1K	5%	1/4W
R129	1-249-421-11	CARBON	2.2K	5%	1/4W
R130	1-249-429-11	CARBON	10K	5%	1/4W
R131	1-249-417-11	CARBON	1K	5%	1/4W
R132	1-249-430-11	CARBON	12K	5%	1/4W
R133	1-249-425-11	CARBON	4.7K	5%	1/4W
R134	1-249-434-11	CARBON	27K	5%	1/4W
R135	1-247-848-11	CARBON	5.1K	5%	1/4W
R141	1-249-426-11	CARBON	5.6K	5%	1/4W
R142	1-249-421-11	CARBON	2.2K	5%	1/4W
R144	1-249-425-11	CARBON	4.7K	5%	1/4W
R145	1-249-430-11	CARBON	12K	5%	1/4W
R201	1-247-889-00	CARBON	270K	5%	1/4W
R202	1-249-404-00	CARBON	82	5%	1/4W
R203	1-247-882-11	CARBON	130K	5%	1/4W
R204	1-249-426-11	CARBON	5.6K	5%	1/4W
R206	1-247-889-00	CARBON	270K	5%	1/4W
R207	1-249-404-00	CARBON	82	5%	1/4W
R208	1-247-882-11	CARBON	130K	5%	1/4W
R209	1-249-426-11	CARBON	5.6K	5%	1/4W
R210	1-249-430-11	CARBON	12K	5%	1/4W
R211	1-249-431-11	CARBON	15K	5%	1/4W
R212	1-247-887-00	CARBON	220K	5%	1/4W
R213	1-249-441-11	CARBON	100K	5%	1/4W
R214	1-249-441-11	CARBON	100K	5%	1/4W
R221	1-249-435-11	CARBON	33K	5%	1/4W
R222	1-249-417-11	CARBON	1K	5%	1/4W
R229	1-249-421-11	CARBON	2.2K	5%	1/4W
R230	1-249-429-11	CARBON	10K	5%	1/4W
R231	1-249-417-11	CARBON	1K	5%	1/4W
R232	1-249-430-11	CARBON	12K	5%	1/4W
R233	1-249-425-11	CARBON	4.7K	5%	1/4W
R234	1-249-434-11	CARBON	27K	5%	1/4W
R235	1-247-848-11	CARBON	5.1K	5%	1/4W
R241	1-249-426-11	CARBON	5.6K	5%	1/4W
R242	1-249-421-11	CARBON	2.2K	5%	1/4W

Ref. No.	Part No.	Description	Remark		
R244	1-249-425-11	CARBON	4.7K	5%	1/4W
R245	1-249-430-11	CARBON	12K	5%	1/4W
R301	1-260-091-11	CARBON	220	5%	1/2W
R302	1-260-091-11	CARBON	220	5%	1/2W
R321	1-249-433-11	CARBON	22K	5%	1/4W
R322	1-215-460-00	METAL	43K	1%	1/6W
R323	1-249-437-11	CARBON	47K	5%	1/4W
R341	1-249-441-11	CARBON	100K	5%	1/4W
R342	1-247-864-11	CARBON	24K	5%	1/4W
R343	1-247-887-00	CARBON	220K	5%	1/4W
R345	1-247-881-00	CARBON	120K	5%	1/4W
R346	1-249-440-11	CARBON	82K	5%	1/4W
R347	1-249-435-11	CARBON	33K	5%	1/4W
R349	1-249-438-11	CARBON	56K	5%	1/4W
R351	1-249-436-11	CARBON	39K	5%	1/4W
R352	1-247-874-11	CARBON	62K	5%	1/4W
R353	1-247-870-11	CARBON	43K	5%	1/4W
R355	1-249-440-11	CARBON	82K	5%	1/4W
R357	1-247-876-11	CARBON	75K	5%	1/4W
R358	1-249-437-11	CARBON	47K	5%	1/4W
R359	1-249-434-11	CARBON	27K	5%	1/4W
R361	1-247-881-00	CARBON	120K	5%	1/4W
R363	1-247-882-11	CARBON	130K	5%	1/4W
R364	1-247-872-11	CARBON	51K	5%	1/4W
R365	1-249-437-11	CARBON	47K	5%	1/4W
R367	1-249-438-11	CARBON	56K	5%	1/4W
R369	1-247-876-11	CARBON	75K	5%	1/4W
R370	1-249-437-11	CARBON	47K	5%	1/4W
R371	1-247-876-11	CARBON	75K	5%	1/4W
R373	1-249-441-11	CARBON	100K	5%	1/4W
R375	1-249-436-11	CARBON	39K	5%	1/4W
R376	1-247-881-00	CARBON	120K	5%	1/4W
R377	1-247-881-00	CARBON	120K	5%	1/4W
R379	1-249-437-11	CARBON	47K	5%	1/4W
R381	1-249-433-11	CARBON	22K	5%	1/4W
R401	1-249-393-11	CARBON	10	5%	1/4W
R402	1-249-433-11	CARBON	22K	5%	1/4W
R403	1-249-433-11	CARBON	22K	5%	1/4W
R404	1-249-429-11	CARBON	10K	5%	1/4W
R405	1-249-417-11	CARBON	1K	5%	1/4W
R406	1-249-425-11	CARBON	4.7K	5%	1/4W
R501	1-249-426-11	CARBON	5.6K	5%	1/4W
R502	1-249-417-11	CARBON	1K	5%	1/4W
R503	1-249-426-11	CARBON	5.6K	5%	1/4W
R506	1-249-426-11	CARBON	5.6K	5%	1/4W
R510	1-249-427-11	CARBON	6.8K	5%	1/4W
R511	1-249-435-11	CARBON	33K	5%	1/4W
R512	1-249-439-11	CARBON	68K	5%	1/4W
R513	1-249-429-11	CARBON	10K	5%	1/4W

MAIN

METER

Ref. No.	Part No.	Description	Remark
R514	1-249-441-11	CARBON 100K 5% 1/4W	
R520	1-249-426-11	CARBON 5.6K 5% 1/4W	
R545	1-249-437-11	CARBON 47K 5% 1/4W	
R550	1-249-429-11	CARBON 10K 5% 1/4W	
R575	1-249-441-11	CARBON 100K 5% 1/4W	
R576	1-247-887-00	CARBON 220K 5% 1/4W	
R703	1-249-421-11	CARBON 2.2K 5% 1/4W	

< VARIABLE RESISTOR >

RV101	1-238-600-11	RES, ADJ, CARBON 10K	
RV102	1-238-600-11	RES, ADJ, CARBON 10K	
RV141	1-238-600-11	RES, ADJ, CARBON 10K	
RV201	1-238-600-11	RES, ADJ, CARBON 10K	
RV202	1-238-600-11	RES, ADJ, CARBON 10K	
RV241	1-238-600-11	RES, ADJ, CARBON 10K	
RV403	1-238-604-11	RES, ADJ, CARBON 220K	
RV501	1-238-598-11	RES, ADJ, CARBON 2.2K	
RV502	1-238-598-11	RES, ADJ, CARBON 2.2K	
RV503	1-238-604-11	RES, ADJ, CARBON 220K	

< RELAY >

RY400	1-515-614-11	RELAY	
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< TRANSFORMER >

T500	1-433-394-11	TRANSFORMER, BIAS OSCILLATION	
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* 1-642-591-11 METER BOARD

< CAPACITOR >

C191	1-124-925-11	ELECT 2.2uF 20% 100V	
C192	1-124-907-11	ELECT 10uF 20% 50V	
C291	1-124-257-00	ELECT 2.2uF 20% 50V	
C292	1-126-096-11	ELECT 10uF 20% 35V	
C391	1-126-096-11	ELECT 10uF 20% 35V	
C590	1-124-903-11	ELECT 1uF 20% 50V	

< CONNECTOR >

* CN620	1-568-864-11	SOCKET, CONNECTOR 21P	
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< DIODE >

D191	8-719-304-32	LED SEL4214S-C	
D192	8-719-304-32	LED SEL4214S-C	
D193	8-719-304-32	LED SEL4214S-C	
D194	8-719-304-32	LED SEL4214S-C	
D195	8-719-304-32	LED SEL4214S-C	

Ref. No.	Part No.	Description	Remark
D196	8-719-304-32	LED SEL4214S-C	
D291	8-719-304-32	LED SEL4214S-C	
D292	8-719-304-32	LED SEL4214S-C	
D293	8-719-304-32	LED SEL4214S-C	
D294	8-719-304-32	LED SEL4214S-C	
D295	8-719-304-32	LED SEL4214S-C	
D296	8-719-304-32	LED SEL4214S-C	

< IC >

IC191	8-759-917-42	IC IR2E31A	
IC291	8-759-917-42	IC IR2E31A	

< RESISTOR >

R191	1-249-441-11	CARBON 100K 5% 1/4W	
R192	1-249-405-11	CARBON 100 5% 1/4W	
R291	1-249-441-11	CARBON 100K 5% 1/4W	
R292	1-249-405-11	CARBON 100 5% 1/4W	
R391	1-249-414-11	CARBON 560 5% 1/4W	
R408	1-247-852-11	CARBON 7.5K 5% 1/4W	
R409	1-247-846-11	CARBON 4.3K 5% 1/4W	
R590	1-249-417-11	CARBON 1K 5% 1/4W	

< VARIABLE RESISTOR >

RV321	1-241-815-11	RES, VAR, CARBON 20K/20K (REC LEVEL)	
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< SWITCH >

S301	1-571-062-11	SWITCH, SLIDE (DECK B TAPE SELECTOR)	
S302	1-692-060-11	SWITCH, LEVER(SLIDE) (DECK A TAPE SELECT)	
S303	1-572-714-11	SWITCH, PUSH (DOLBY NR)	
S501	1-572-714-11	SWITCH, PUSH (DUBBUNG SPEED)	

MISCELLANEOUS

1-590-243-11	WIRE, FLAT TYPE (21 CORE)	
1-690-672-11	CORD (WITH CONNECTOR) (US)	
1-690-674-21	CORD (WITH CONNECTOR) (US)	
HE901	1-543-673-11	HEAD, MAGNETIC (ERASE)
HP901	1-543-319-11	HEAD, MAGNETIC (REC/PB)
HRP901	1-543-319-11	HEAD, MAGNETIC (REC/PB)
M901	X-3362-377-1	MOTOR (WH) ASSY

ACCESSORIES & PACKING MATERIALS

*	3-375-945-01	CUSHION	
*	3-376-136-01	CUSHION (HALF)	

Ref. No.	Part No.	Description	Remark
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HARDWARE LIST

#1	7-621-775-20	SCREW +B 2.6X5	
#2	7-623-921-01	RING, RETAINING, CAPSTAN	
#3	7-682-548-04	SCREW +BVTT 3X8 (S)	
#4	7-682-548-09	SCREW +BVTT 3X8 (S)	
#5	7-685-103-19	SCREW +P 2X5 TYPE2 NON-SLIT	
#6	7-685-133-19	SCREW +P 2.6X6 TYPE2	
#7	7-685-135-19	SCREW +BTP 2.6X10 TYPE2 N-S	
#8	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#9	7-688-001-01	W 2, SMALL	

SONY SERVICE MANUAL

US Model
Canadian Model
E Model

CORRECTION-1

Please correct your service manual.

 : Corrected portion

Page

Incorrect

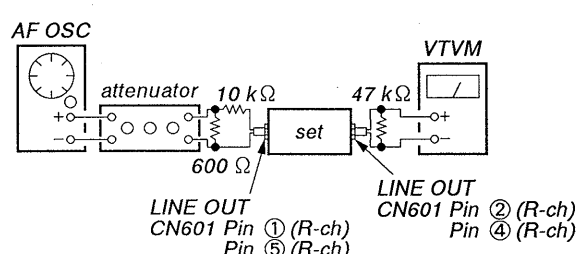
3

2-2. ELECTRICAL ADJUSTMENTS

Note: The adjustment should be performed in the order given in the service manual. As a rule, adjustments about playback should be performed before those about recording. The adjustments should be performed for L-CH and R-CH.

- 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.

— Record Mode —



0 dB=0.775 V

- Standard Input Level**

Input terminal	LINE OUT (CN601 Pin ①, ⑤)
Source impedance	10 kΩ
Input level	0.25 V (- 10dB)

- Standard Output Level**

Output terminal	LINE OUT (CN601 Pin ②, ④)
Load impedance	47 kΩ
Output level	0.32 V (- 7.7 dB)

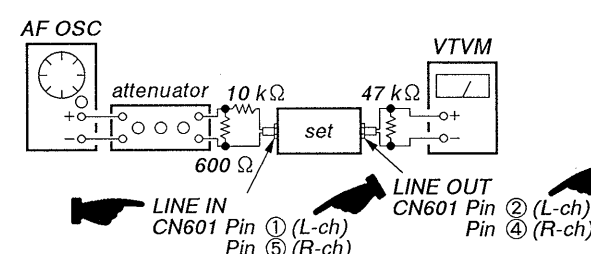
Correct

2-2. ELECTRICAL ADJUSTMENTS

Note: The adjustment should be performed in the order given in the service manual. As a rule, adjustments about playback should be performed before those about recording. The adjustments should be performed for L-CH and R-CH.

- Switches and controls should be set as follows unless otherwise specified.
DOLBY NR switch: OFF
TAPE SELECTOR switch: TYPE-1 (NORMAL)
- 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.
Before recording short in CN505 with a lead wire, otherwise MUTING function and output signal does not appear at LINE-OUT terminals.

— Record Mode —



0 dB=0.775 V

- Standard Input Level**

Input terminal	LINE OUT (CN601 Pin ①, ⑤)
Source impedance	10 kΩ
Input level	0.5 V (- 3.8 dB)

- Standard Output Level**

Output terminal	LINE OUT (CN601 Pin ②, ④)
Load impedance	47 kΩ
Output level	0.5 V (- 3.8 dB)

Page	Incorrect	Correct																								
3	Test tape <table border="1"> <thead> <tr> <th>Type</th><th>Signal</th><th>Used for</th></tr> </thead> <tbody> <tr> <td>P-4-A100</td><td>10 kHz, - 10 dB</td><td>Azimuth adjustment</td></tr> <tr> <td>P-4-L300</td><td>315 Hz, 0 dB</td><td>PB level adjustment</td></tr> <tr> <td>WS-48A</td><td>3 kHz, 0 dB</td><td>Tape speed adjustment</td></tr> </tbody> </table>	Type	Signal	Used for	P-4-A100	10 kHz, - 10 dB	Azimuth adjustment	P-4-L300	315 Hz, 0 dB	PB level adjustment	WS-48A	3 kHz, 0 dB	Tape speed adjustment	Test tape <table border="1"> <thead> <tr> <th>Type</th><th>Signal</th><th>Used for</th></tr> </thead> <tbody> <tr> <td>P-4-A100</td><td>10 kHz, - 10 dB</td><td>Azimuth adjustment</td></tr> <tr> <td>P-4-L300</td><td>315 Hz, 0 dB</td><td>PB level adjustment</td></tr> <tr> <td>WS-48B</td><td>3 kHz, 0 dB</td><td>Tape speed adjustment</td></tr> </tbody> </table>	Type	Signal	Used for	P-4-A100	10 kHz, - 10 dB	Azimuth adjustment	P-4-L300	315 Hz, 0 dB	PB level adjustment	WS-48B	3 kHz, 0 dB	Tape speed adjustment
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WS-48B	3 kHz, 0 dB	Tape speed adjustment																								
5	Record Bias Adjustment DECK B Starting: REC LEVEL control: Standard Record (See page 3.) Procedure: 1. Mode: Record	Record Bias Adjustment DECK B Starting: REC LEVEL control: Standard Record (See page 3.) Procedure: 1. Mode: Record																								
5	Record Level Adjustment DECK B Starting: REC LEVEL control: Standard Record (See page 3.) Procedure: 1. Mode: Record 3. Playback the signal recorded in step 1. Confirm that signal level is within the adjustment limits below. If necessary, adjust RV141 (L-ch) and RV241 (R-ch) and repeat the step 1 - 2. Adjustment Limits: - 22.7 dB $\pm$ 0.5 dB (53.6 - 60.2 mV) Adjustment Location: main board (component side) (See Page 6.)	Record Level Adjustment DECK B Starting: REC LEVEL control: Standard Record (See page 3.) Procedure: 1. Mode: Record 3. Playback the signal recorded in step 1. Confirm that signal level is within the adjustment limits below. If necessary, adjust RV141 (L-ch) and RV241 (R-ch) and repeat the step 1 - 2. Adjustment Limits: - 23.8 dB $\pm$ 0.5 dB (47.2 - 53.0 mV) Adjustment Location: main board (component side) (See Page 6.)																								
6																										