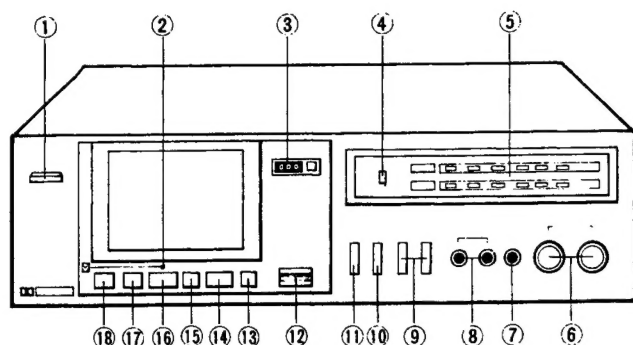


HITACHI **SERVICE MANUAL**

TK
No. 1445E
D-E25
(U, C, FS, BS, AU, W)

Use this manual together with the ML-1 mechanism Technical Information (No.1473).

HITA-00383


CONTENTS

Specifications	2
Disassembly	2
Adjustment	3
Inspection of mechanism.....	4
Lubrication.....	4
Schematic diagram	5
Circuit board diagram.....	7
Exploded view (Cabinet).....	10
Replacement parts list	11

KEY TO ILLUSTRATIONS

- | | |
|-----------------------------|-------------------------|
| 1. Power (Mains) switch | 10. Dolby NR switch |
| 2. Playback indicator | 11. REC Mute switch |
| 3. Tape counter | 12. Eject button |
| 4. Recording indicator | 13. Pause button |
| 5. Level indicators | 14. Stop button |
| 6. Recording level controls | 15. Fast forward button |
| 7. Headphone socket | 16. Playback button |
| 8. Microphone sockets | 17. Rewind button |
| 9. Tape select switches | 18. Record button |

SAFETY PRECAUTION

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety related characteristics, always use genuine Hitachi's replacement parts. Especially critical parts in the power circuit block should not be replaced with other makes. Critical parts are marked with  in the schematic diagram and circuit board diagram.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

Printed by: Schaltungsdienst Lange, Berlin (Germany)

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

STEREO CASSETTE TAPE DECK

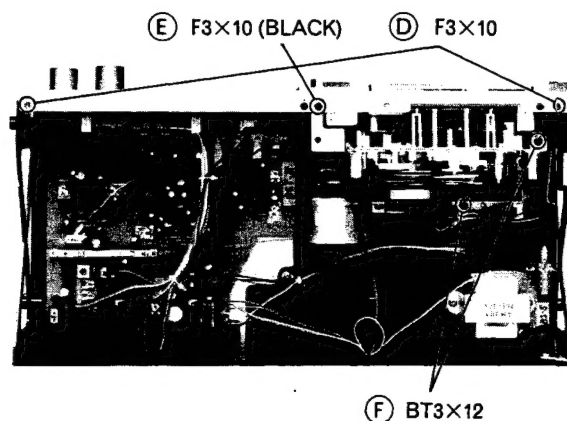
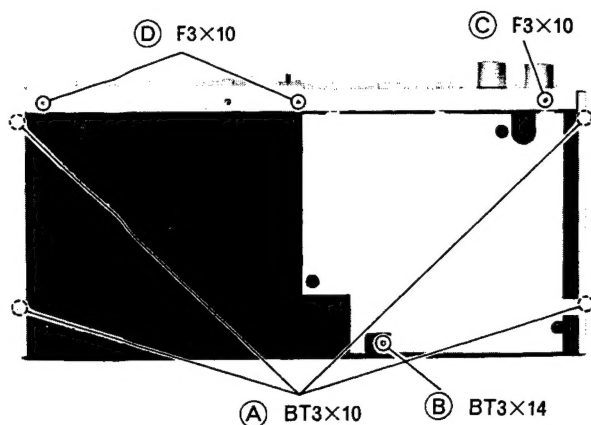
December 1980
TOKAI WORKS

SPECIFICATIONS

Semi-conductors :		Wow and Flutter :	0.05% (WRMS)
ICs :	3		0.17%*
Transistors :	17	Input Sensitivity and Impedance :	
Diodes :	13(U), 14(C)	Microphone :	0.3mV, 300 ohms~5k ohms
	15(FS, BS, AU, W)	Line in :	75mV, 50k ohms or more
LEDs :	14	DIN (Record/Playback) :	0.35mV, 3.3k ohms (FS, BS, AU, W)
Track System :	4 track 2 channel stereo	Output Level :	500mV
Tape :	Cassette tape (C-30, 60, 90)	Output Load Impedance :	
Tape Speed :	4.75cm/s	Line out :	50k ohms or more
Recording System and		DIN (Record/Playback) :	50k ohms or more (FS, BS, AU, W)
Bias Frequency :	AC bias, 85 kHz	Headphone :	8 ohms~2k ohms
Erasing System :	AC erase	Distortion :	1.2% (1 kHz, 160 nwb/m)
Erase Ratio :	65 dB or more (at 1 kHz)	Crosstalk :	60 dB or more (at 1 kHz)
Frequency Response :		Channel Separation :	30 dB or more (at 1 kHz)
ER/UD (NOR) :	20 Hz~15 kHz	Power Supply :	AC 120V, 60 Hz (U, C) AC 100-110V/115-127V/ 200-220V/230-250V, 50/60 Hz (W)
	30 Hz~14 kHz (± 3 dB)		AC 220V, 50 Hz (FS)
	30 Hz~14 kHz *		AC 240V, 50 Hz (BS, AU)
EX/SX (CrO ₂) :	20 Hz~16 kHz		
	30 Hz~15 kHz (± 3 dB)	Power Consumption :	8W
	30 Hz~15 kHz *	Dimensions :	110(H)×435(W)×201(D)mm
ME (Metal) :	20 Hz~17 kHz	Weight :	2.8 kg
	30 Hz~16 kHz (± 3 dB)	Motor :	Electronically controlled DC motor
	30 Hz~16 kHz *	Heads :	Metal SL Record/playback head Three-gap ferrite Erase head
S/N (Signal to Noise Ratio) :			
Dolby NR OFF :	58 dB (Weighted A, Reference 3% THD Metal Tape)		
	57 dB*		
Dolby NR ON :	66 dB (Weighted A, Reference 3% THD Metal Tape)		
	65 dB*		

* According to DIN 45 500

DISASSEMBLY



1. Cassette door

Depress the eject button to open the cassette door. Lift up the cassette door to remove it.

2. Upper cover

Remove (A) (four) screws.

3. Bottom cover

Remove (B), (C) (two) screws.

4. Front panel

1) Remove two knobs (Record level).

2) Remove (C), (D), (E) (six) screws.

5. Cassette chassis

Remove (F) (two) screws.

ADJUSTMENT

Perform the following adjustments in the sequence stated after cleaning the head, pressure roller, and capstan with a head cleaning stick moistened in alcohol. Also, unless specially indicated otherwise, set the switches and controls to the positions indicated in the table.

Symbol No.	Switches and Controls	Position	Symbol No.	Switches and Controls	Position
S2	Dolby NR switch	OFF	RV1L, R	Record level controls	Max.
S4, S5	Tape select switches	ER/UD (NOR)			

* According to DIN 45 500

Item	Adjustments	Measuring Instrument and Connection			Check Tape	Mode	Adjusted Position	Adjusted Value	Remarks	
		Measuring Instrument	Input Terminal	Output Terminal						
1	Tape speed	• Frequency counter	—	LINE OUT	MTT-111, 3000 Hz (3150 Hz*)	Playback	Semi-variable resistor in the motor	3000 Hz +30 Hz -10 Hz (3150 Hz*)	See Note 1	
2	Head azimuth	• VTVM	—	LINE OUT	MTT-316, 12.5 kHz	Playback	Azimuth adjusting screw	Output Max.	See Note 2	
3	Playback gain	• VTVM	—	LINE OUT	MTT-150, 400 Hz, 20m Maxwell	Playback	RT1L, R	775 mV	See Note 3	
4	Level indicator						RT4L, R	Level indicators indicate 0 dB	See Note 4	
5	(1)	Bias leakage	Set the tape select switches (S4, S5) to CrO2 position.							
	(2)		• Frequency counter	—	TP2L, R	—	Record	.L2	83–85kHz	See Note 5
6	(1)	Bias current	• VTVM	—	TP3L, R and TP4L, R	—	Record	RT5L, R	10V	See Note 6
	(2)		Set RT3L, R to the center.							
	(3)		• Audio oscillator (1kHz/13kHz, 0 dB–23 dB) • Attenuator • VTVM	LINE IN	LINE OUT	ER/UD tape	Record/playback	RT5L, R	Output difference within ±0.5 dB	See Note 7
7	Record/playback output level	• Audio oscillator (400Hz, 0dB)	LINE IN	—	ER/UD tape	Record/playback	RT3L, R	Level indicators indicate 0 dB	See Note 8	
8	Dolby NR	• Audio oscillator (5kHz) • VTVM	LINE IN	TP1L, R	—	Record	RT2	Boosted by 8dBm±0.1dB	See Note 9	

Note :

- Adjust within 30 sec. after heat-running for more than 20 minutes.
- When the maximum values of both channels are different, tune to the maximum value of the L channel. In this case, the difference between the maximum values of both channels should be within 2 dB.
- Playback a test tape (MTT-150, 400 Hz 20m Maxwell) and adjust RT1L, R so that the level of LINE OUT jacks become 775mV.
- With the condition shown in item 3, adjust RT4L, R so that the level indicators indicate 0 dB.

- Set the tape select switches (S4, S5) to the CrO₂ position in the recording mode. Adjust L2 so that the bias frequency of TP2L, R becomes 83—85 kHz.
- Adjust RT5L, R so that the bias voltage between TP3L, R and TP4L, R becomes 10V in the recording mode.
- 1) Set RT3L, R to the center.
2) Feed a 1 kHz signal to the LINE IN jacks in the recording mode and adjust the audio oscillator output so that the level indicators indicate 0 dB. Then, adjust the attenuator to lower the output level by 23 dB.
3) Record the signal on ER/UD tape with the conditions of item 2), then continue to record with the audio oscillator frequency set to 13 kHz.
- Playback the recorded signal and adjust RT5L, R so

that the output level difference between two frequencies is within ± 0.5 dB measured at the LINE OUT jacks.

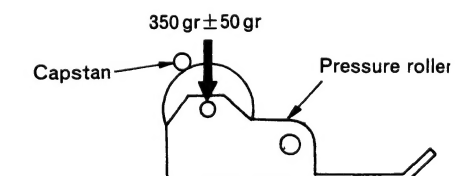
- 1) Feed a 400 Hz signal to the LINE IN jacks in the recording mode and adjust the audio oscillator output so that the level indicators indicate 0 dB.
- 2) Record the signal on ER/UD tape with the conditions of item 1).
- 3) Playback the recorded signal and adjust RT3L, R so that the level indicators indicate 0 dB.
9. Feed a 5 kHz signal to the LINE IN jacks in the recording mode and adjust the audio oscillator output so that the level of TP1L, R becomes -30.4 dBm ± 0.1 dB. Then, adjust RT2 so that the level is boosted by 8 dBm ± 0.1 dB when the Dolby NR switch (S2) is set to ON.

INSPECTION OF MECHANISM

Check Item		Reference Value	Remarks
1	Pressure of pressure roller	350 $\pm$ 50 gr	Note 1
2	Take-up	33 to 65 gr-cm	Measure in playback mode
	FF	70 to 120 gr-cm	Measure in FF mode
	Rewind	70 to 120 gr-cm	Measure in REW mode
3	Take-up side	6 gr-cm	With counter
	Supply side	1 to 3 gr-cm	Without counter
4	Flywheel thrust gap	0.05 to 0.5mm	—
5	Brake force	More than 10 gr-cm	—

Note 1. Pressure of pressure roller

Set this unit in the playback mode and press the pressure roller in the direction of the arrow using a fan type tension gauge, and measure the pressure when the pressure roller is released from the capstan.

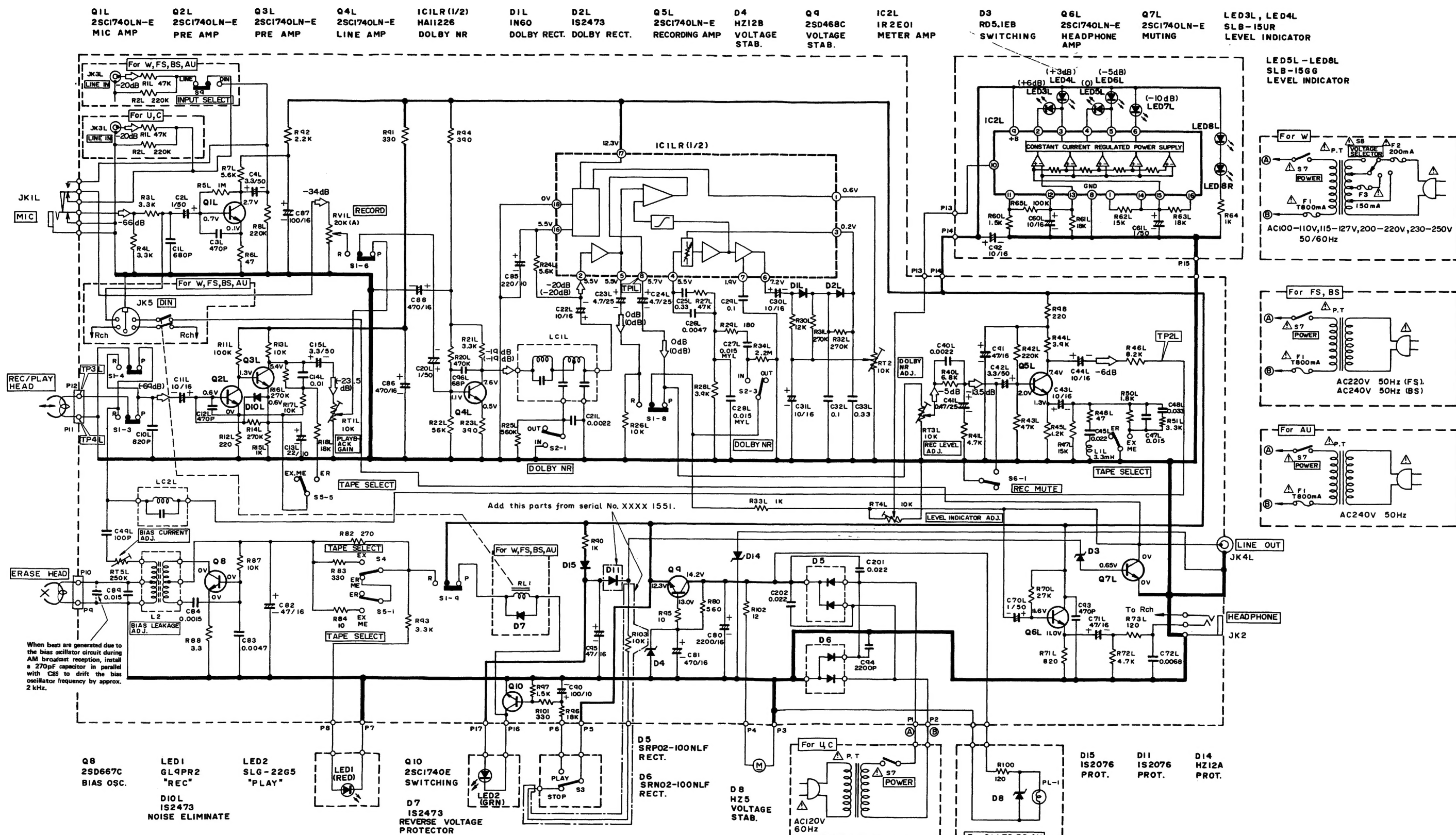


LUBRICATION

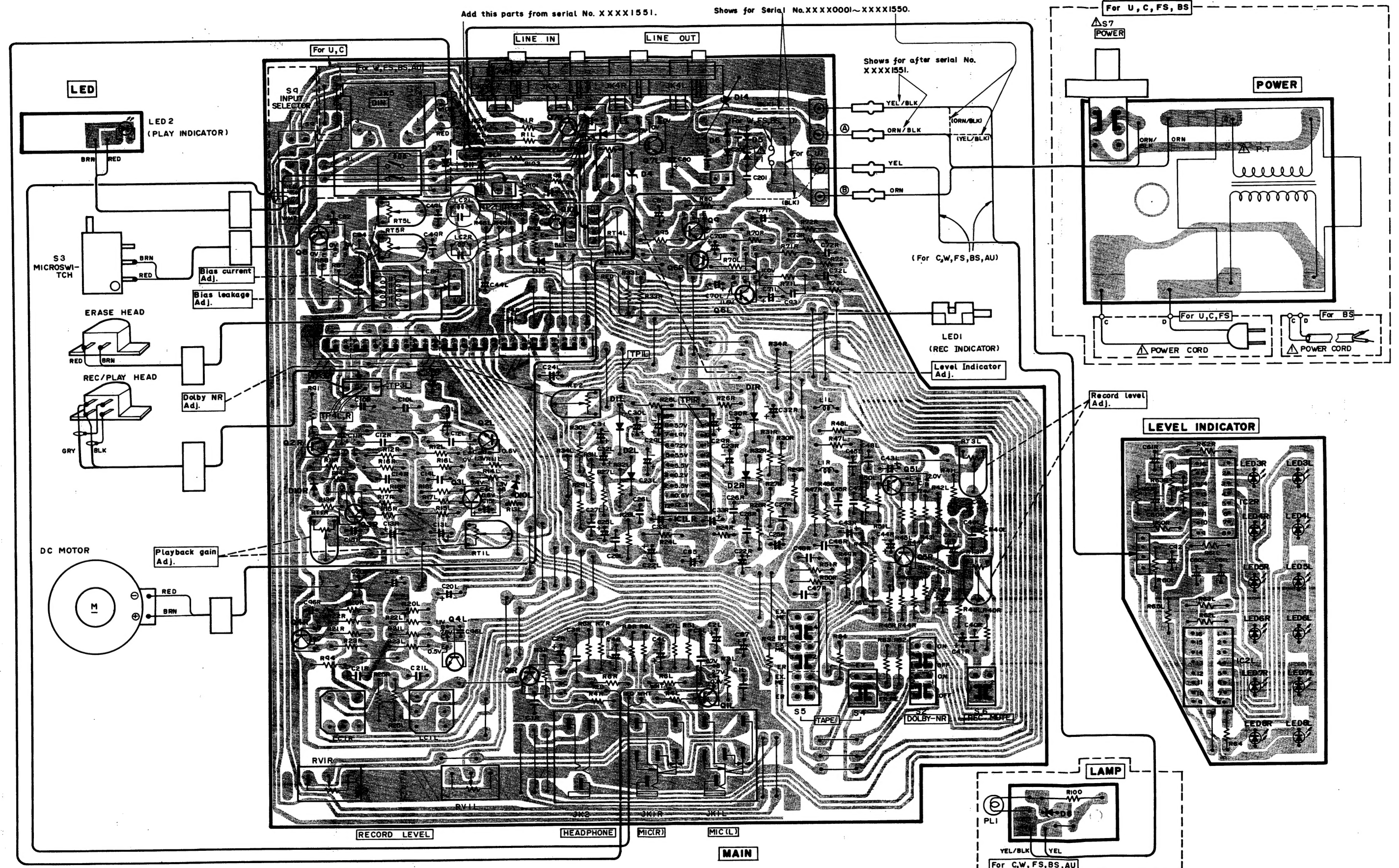
Lubricate one or two drops of oil to rotating point or lubricate grease to sliding point. Lubricate the respective parts listed once every 1000 hours or once a year under normal conditions of use. Avoid oiling them excessively, or rotation may become irregular because of oil splashes.

Lubrication		Oil or Grease
Rotary section	Metal and metal	Pan motor oil (10W-40)
	Mold and metal	Sonic slider oil (#1600)
Sliding section	Metal and metal	Hitasol (MC-138)
	Mold and mold Mold and metal	White grease (FL-LUBE-A)
Spring resonance prevention		Froil (GB-T1-1)

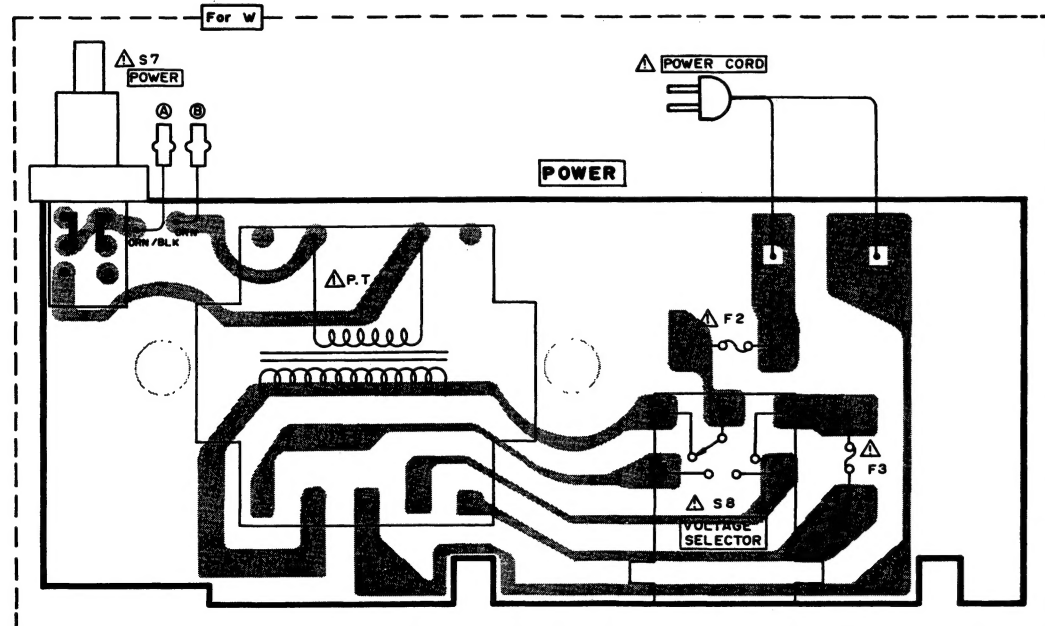
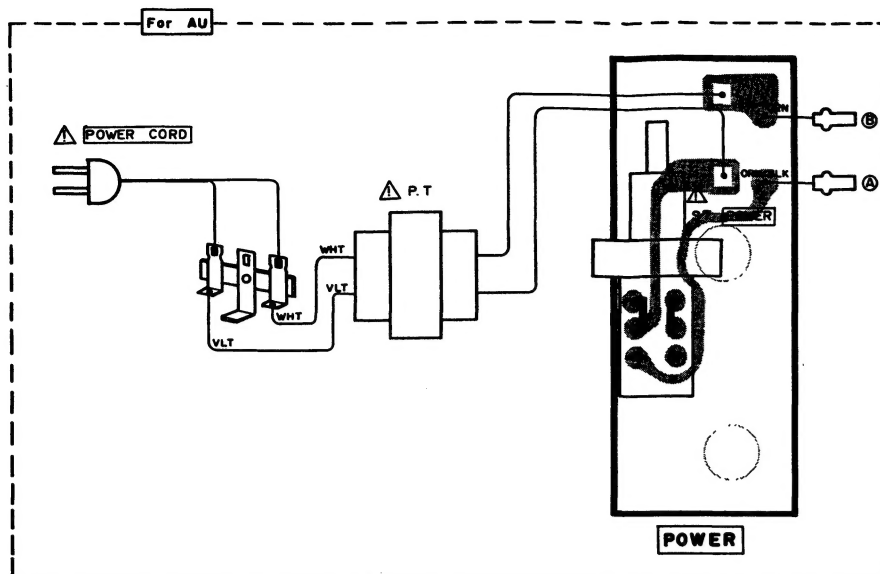
SCHEMATIC DIAGRAM



CIRCUIT BOARD DIAGRAM



EXPLODED VIEW (Cabinet)



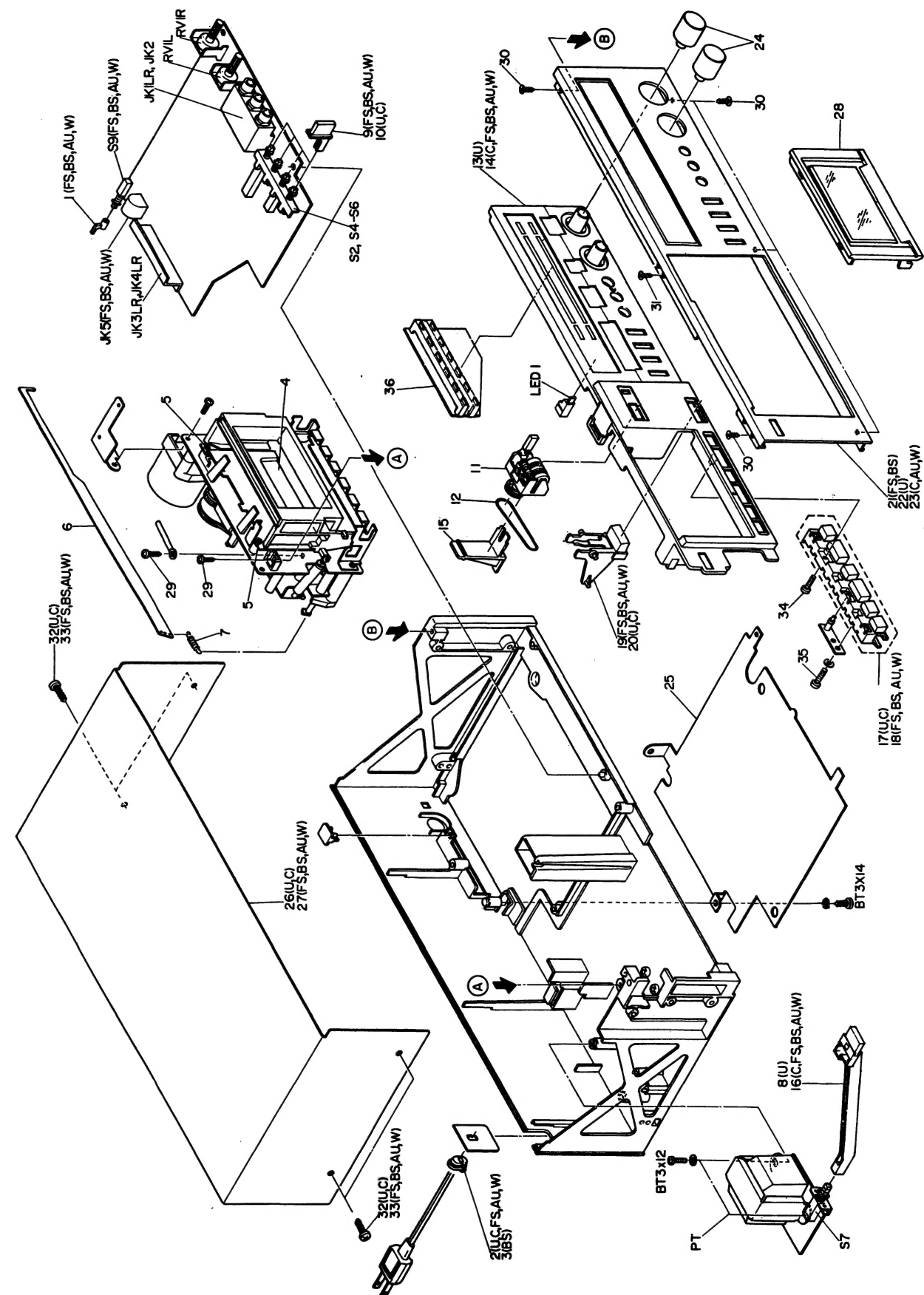
Note

1. Voltage measured at base of chassis with minimum volume control and no signal.
2. Nomenclature of Resistors and Capacitors.

Circuit No.	Value		Tolerance	Sort	Voltage
	No indicated	μF			
C101	No indicated	±10%	J : ± 5% M : ±20% Z : +80% - 20% D : ±0.5pF C : ±0.25pF	Ceramic Electrolytic Mylar Polyester Styrol	No indicated 50WV
	P : PF				
C102	0.001-M				
C102	0.1/16				

Circuit No.	Value		Tolerance	Wattage	Sort
	No indicated	Ω(Ohm)			
R101	No indicated	±5%	K : ±10% M : ±20%	No indicated 1/4W	No indicated Carbon film RC : Composition RW : Wire wound RS : Oxide metal film RN : Fixed metal film
	150				
RS-1-K					

3. Be sure to make your orders of resistors and capacitors with value, voltage, tolerance and sort.
4. When replacing capacitors marked with *, use specified ones stated on parts list since required temperature characteristics.

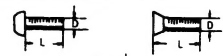


Note : Components marked without numbers in this drawing are not specified as replacement parts.

REPLACEMENT PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION	
CAPACITORS						
C 3LR	0209006	CERAMIC (RESISTOR SHAPE) 470PF+-10%	△ PT	5212594	POWER TRANSFORMER (BS)	
C10LR	0209726	CERAMIC (RESISTOR SHAPE) 820PF+-10%	△ PT	5212941	POWER TRANSFORMER (W)	
C12LR	0209006	CERAMIC (RESISTOR SHAPE) 470PF+-10%	COILS			
RESISTORS			L1LR	5150364	CHOKE COIL 3.3 MH	
RT1LR	0151808	SEMI VARIABLE RESISTOR 10K OHM	L2	5260369	BIAS OSCILLATOR COIL	
RT2	0151808	SEMI VARIABLE RESISTOR 10K OHM	MISCELLANEOUS			
RT3LR	0151808	SEMI VARIABLE RESISTOR 10K OHM		5658062	LED SOCKET (FOR LED1)	
RT4LR	0151808	SEMI VARIABLE RESISTOR 10K OHM	△	5682001	2P TERMINAL PLATE (AU)	
RT5LR	0151819	SEMI VARIABLE RESISTOR 250K OHM	△	5746157	POWER CORD (W)	
RV1LR	5000662	VARIABLE 20KOHM (A)	△	5746158	POWER CORD (FS)	
SEMI-CONDUCTORS			△	5746342	POWER CORD (BS)	
D 1LR	5331622	DIODE 1N60FM-P	△	5746442	POWER CORD (U+C)	
D 2LR	5330574	DIODE 1S2473	△	5746571	POWER CORD (AU)	
D 3	5330841	ZENER DIODE RD5.1E-B	△F1	5720175	FUSE 800MA (FS, BS, AU, W)	
D 4	5330532	DIODE SILICON HZ-12B 1.0M	△F2	0591100	FUSE 200MA (W)	
D 5	5331451	DIODE SRP02-100NLF	△F3	5720105	FUSE 0.15A (W)	
D 6	5331452	DIODE SRP02-100NLF	JK1LR	5679732	JACK (MIC)	
D 7	5330574	DIODE 1S2473 (FS, BS, AU, W)	JK2	5679732	JACK (HEADPHONE)	
D 8	5331012	ZENER DIODE HZ5B (C, FS, BS, AU, W)	JK3LR	5676261	PIN JACK ASSEMBLY (LINE IN)	
D10LR	5330571	DIODE 1S2473VE	JK4LR	5676261	PIN JACK ASSEMBLY (LINE OUT)	
D11	5330131	DIODE 1S2076	JK5	5651141	5P DIN SOCKET (FS, BS, AU, W)	
D14	5330531	ZENER DIODE HZ-12A	LC1LR	5161665	DOLBY FILTER	
D15	5330131	DIODE 1S2076	LC2LR	5120562	TRAP COIL	
IC 1	5350561	IC HA 11226	PL1	5762035	PILOT LAMP (FOR POWER SWITCH BUTTON ILLUMINATION) (C, FS, BS, AU, W)	
IC 2LR	5352401	IC IR2E01	RL1	5641141	REED RELAY (FS, BS, AU, W)	
LED1	5380271	LED GL-9PR2	S 1	5623435	SLIDE SWITCH (REC/P.B.)	
LED2	5380622	LED SLC22GG5	S 2	5634392	PUSH SWITCH (DOLBY NR)	
LED3LR	5380551	LED SLB-15UR	S 3	5633361	PUSH SWITCH (MUTING)	
LED4LR	5380551	LED SLB-15UR	S 4	5634392	PUSH SWITCH (TAPE SELECTOR)	
LED5LR	5380552	LED SLB-15GG	S 5	5634392	PUSH SWITCH (TAPE SELECTOR)	
LED6LR	5380552	LED SLB-15GG	S 6	5634392	PUSH SWITCH (REC MUTE)	
LED7LR	5380552	LED SLB-15GG	△ S 7	5637036	PUSH SWITCH (POWER)	
LED8LR	5380552	LED SLB-15GG	△ S 8	5605121	ROTARY SWITCH (VOLTAGE SELECTOR) (W)	
Q 1LR	5321295	TRANSISTOR 2SC1740E	S 9	5633311	PUSH SWITCH (LINE/DIN INPUT SELECTOR) (FS, BS, AU, W)	
Q 2LR	5321295	TRANSISTOR 2SC1740E	FOR ACCESSORIES			
Q 3LR	5321295	TRANSISTOR 2SC1740E		7740321	HEAD CLEANING STICK	
Q 4LR	5321295	TRANSISTOR 2SC1740E		5895501	PATCH CORD	
Q 5LR	5321295	TRANSISTOR 2SC1740E		5662021	SOCKET ADAPTER (W)	
Q 6LR	5321295	TRANSISTOR 2SC1740E	MISCELLANEOUS			
Q 7LR	5321295	TRANSISTOR 2SC1740E		1	6050541	KNOB (LINE/DIN INPUT SELECTOR) (FS, BS, AU, W)
Q 8	5322651	TRANSISTOR 2SD667C	△	2	0043793	BUSHING (U, C, FS, AU, W)
Q 9	5321213	TRANSISTOR 2SD468C 190MHZ 0.9HW	△	3	6711351	BUSHING (BS)
Q10	5321295	TRANSISTOR 2SC1740E		4	6634031	CASSETTE METAL
TRANSFORMERS				5	7780263	BIND TAPPING SCREW-2.6MMDX14MM
△ PT	5211932	POWER TRANSFORMER (AU)		6	7333333	RECORD PLATE
△ PT	5212592	POWER TRANSFORMER (U+C)		7	6302745	SPRING FOR RECORD PLATE
△ PT	5212593	POWER TRANSFORMER (FS)		8	6763411	PUSH BUTTON ASSEMBLY (POWER) (U)

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
MISCELLANEOUS			23	6224123	FRONT PANEL ASSEMBLY (C, AU, W)
9	6053613	PUSH BUTTON (REC MUTE, DOLBY NR, TAPE SELECTOR) (FS, BS, AU, W)	24	6289281	KNOB ASSEMBLY (RECORD LEVEL)
10	6053614	PUSH BUTTON (REC MUTE, DOLBY NR, TAPE SELECTOR) (U, C)	25	6043352	BOTTOM COVER
11	5559481	COUNTER	26	6043335	UPPER COVER (U+C)
12	6354601	BELT	27	6043336	UPPER COVER (FS, BS, AU, W)
13	6763251	FRONT FRAME ASSEMBLY (U)	28	6093033	CASSETTE DOOR
14	6763252	FRONT FRAME ASSEMBLY (C, FS, BS, AU, W)	29	8699412	BIND TAPPING SCREW-3MMDX12MM (BLACK)
15	6763241	COUNTER HOLDER	30	7781581	BT FLAT SCREW-3MMDX10MM
16	6764151	PUSH BUTTON ASSEMBLY (POWER) (C, FS, BS, AU, W)	31	7781582	FALT SCREW-3MMDX10MM (BLACK)
17	6765821	FUNCTION BUTTON ASSEMBLY (U+C)	32	8698410	BT BIND SCREW-3MMDX10MM (U+C)
18	6763464	FUNCTION BUTTON ASSEMBLY (FS, BS, AU, W)	33	8699410	BT BIND HEAD SCREW-3MMDX10MM (BLACK) (FS, BS, AU, W)
19	6053601	EJECT BUTTON (FS, BS, AU, W)	34	7780263	BIND TAPPING SCREW-2.6MMDX14MM
20	6060091	EJECT BUTTON ASSEMBLY (U, C)	35	8691312	BT BIND SCREW-2.6MMDX12MM
21	6224124	FRONT PANEL ASSEMBLY (FS, BS)	36	6763271	LED HOLDER
22	6224122	FRONT PANEL ASSEMBLY (U)			

Type of head					
P	Pan head screw		BT	Binding head tapping screw	
F	Flat countersunk head screw		BL	Bolt	
B	Binding head screw		W	Washer	
T	Round head tapping screw		E	"E" ring	
Length (L mm)					
Diameter (D mm)					

When ordering hardware excluding stated on these lists, be sure to make your orders with type and size.



HITACHI SALES CORPORATION OF AMERICA
Eastern Regional Office
 1200 Wall Street West, Lyndhurst, New Jersey 07071
 Tel. 201-935-8980
Mid-Western Regional Office
 1400 Morse Ave., Elk Grove Village, Ill. 60007
 Tel. 312-593-1550
Southern Regional Office
 510 Plaza Drive College Park, Georgia 30349
 Tel. 404-763-0360
Western Regional Office
 401 West Artesia Boulevard, Compton, California 90220
 Tel. 213-537-8383
HITACHI SALES CORPORATION OF HAWAII, INC
 3219 Koapaka Street, Honolulu, Hawaii 96819, U.S.A.
 Tel. 808-836-3621

HITACHI SALES CORP. OF CANADA Ltd.
 3300 Trans Canada Highway Pointe Claire, Quebec, H9R1B1, Canada
 Tel. 514-697-9150

HITACHI SALES EUROPA GmbH
 2 Hamburg 54, Kleine Bahnstraße 8, West Germany
 Tel. 850 60 71-75
HITACHI SALES (U.K.) Ltd.
 Hitachi House, Station Road, Hayes, Middlesex UB3 4DR, England
 Tel. 01-848-8787 (Service Centre : 01-848-3551)
HITACHI SALES SCANDINAVIA AB
 Rissneleden 8, Sundbyberg, Box 7138, S-172-07 Sundbyberg 7, Sweden
 Tel. 08-98 52 80
HITACHI SALES NORWAY A/S
 Oerebekk 1620 Gressvik P.O. Box 46 N-1601 Fredrikstad, Norway
 Tel. 032-28050
SUOMEN HITACHI OY
 Box 151, SF-15100 Lahti 10, Finland
 Tel. Lahti 44 241
HITACHI SALES A/S
 Kuldysen 13, DK-2630 Taastrup, Denmark
 Tel. 02-999200
HITACHI SALES A.G.
 5600 Lenzburg, Switzerland
 Tel. 064-513621
HITACHI-FRANCE (Radio-Télévision Electro-Ménager) S.A.
 9, Boulevard Ney 75018, Paris, France
 Tel. 201-25-00
HITACHI SALES WARENHANDELS GMBH
 A-1180/Wien, Kreuzgasse 27
 Tel. (0043222) 439367/8

HITACHI SALES AUSTRALIA Pty Ltd.
 153 Keys Road, Moorabbin, Victoria 3189 Australia
 Tel. 95-8722

HITACHI Ltd. TOKYO JAPAN
 Head Office : 5-1, 1-chome, Marunouchi, Chiyoda-ku, Tokyo
 Tel. Tokyo (212) 1111 (80 lines)
 Cable Address : "HITACHY" TOKYO
 Codes : All Codes Used