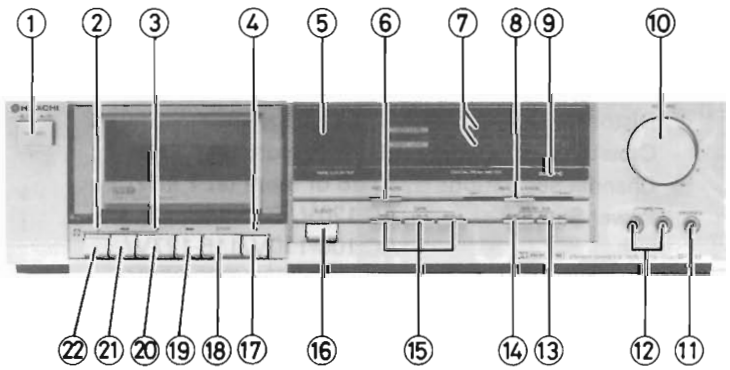
HITACHI
SERVICE MANUAL

TK | No. 1664E

D-E33
(U,C,FS,BS,AU,W)



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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.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

STEREO CASSETTE TAPE DECK

January 1982 **TOKAI WORKS**

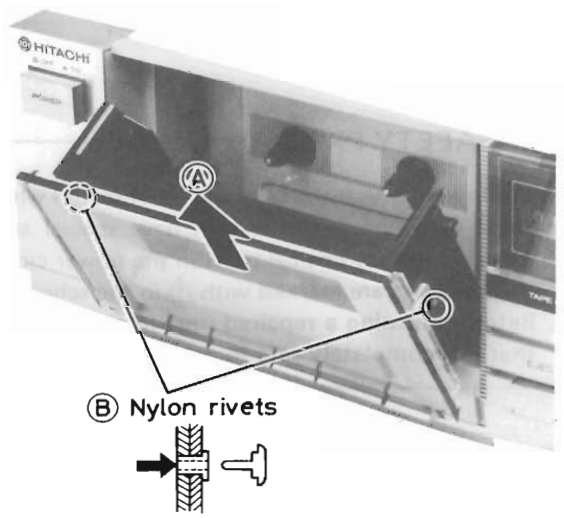
SPECIFICATIONS

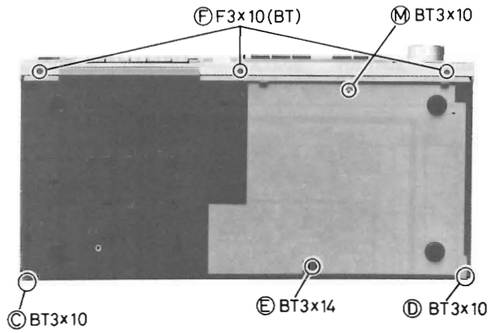
Semiconductors:	
ICs:	6
Transistors:	13
Diodes:	11
LEDs:	17
Track System:	4 track 2 channel stereo
Tape:	Cassette tape (C-30, 60, 90)
Tape Speed:	4.75 cm/s
Recording System and Bias Frequency:	AC bias, 85 kHz
Erasing System:	AC erase
Erase Ratio:	65 dB or more (at 1 kHz)
Frequency Response:	
NOR-I:	20 Hz~15 kHz
	30 Hz~14 kHz (±3 dB)
	30 Hz~14 kHz*
CrO_2-II:	20 Hz~16 kHz
	30 Hz~15 kHz (±3 dB)
	30 Hz~15 kHz*
METAL-IV:	20 Hz~17 kHz
	30 Hz~16 kHz (±3 dB)
	30 Hz~16 kHz*
S/N (Signal to Noise Ratio):	
Dolby C NR ON:	72 dB (weighted A, Reference 3% THD Metal Tape) 72 dB*
Dolby B NR ON:	66 dB (Weighted A, Reference 3% THD Metal Tape) 66 dB*
Dolby NR OFF:	58 dB (Weighted A, Reference 3% THD Metal Tape) 58 dB*
Wow and Flutter:	0.05% (WRMS) 0.17%*
Input Sensitivity and Impedance:	
Microphone:	0.5 mV, 300 ohms~5k ohms
Line in:	80 mV, 50k ohms or more
Output Level:	500 mV
Output Load Impedance:	
Line out:	50k ohms or more
Headphone:	8 ohms~ 2k ohms
Distortion:	1.0% (1 kHz, 160 nWb/m)
Crosstalk:	60 dB or more (at 1 kHz)
Channel Separation:	30 dB or more (at 1 kHz)
Power Supply:	AC 120V, 60 Hz (U, C) AC 100-110V/115-127V/ 200-220V/230-250V, 50/60 Hz (W) AC 220V, 50 Hz (FS) AC240V, 50 Hz (BS, AU)
Power Consumption:	9.5W
Dimensions:	110(H) x 435(W) x 227(D) mm
Weight:	3.4 kg
Motor:	Electronically controlled DC m
Heads:	Metal SL Record/playback hea Three-gap ferrite Erase head

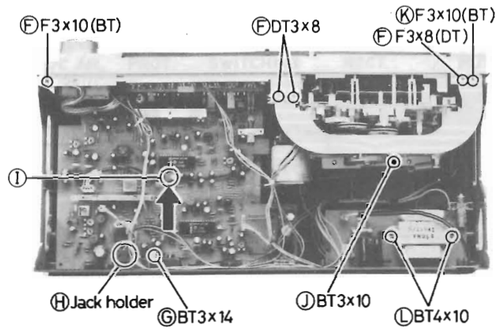
* According to DIN 45 500

DISASSEMBLY

1. **Cassette clear panel**
   1) Depress the eject button to open the cassette door.
   2) Lift up the cassette clear panel in the direction of the arrow Ⓐ .
2. **Cassette door**
   Remove Ⓑ (two) nylon rivets.
3. **Upper cover**
   Remove Ⓒ and Ⓓ (two) screws.
4. **Bottom cover**
   Remove Ⓓ , Ⓔ and Ⓜ (three) screws.
5. **Front panel**
   Remove Ⓕ (seven) screws.
6. **Main PC board**
   1) Remove Ⓔ and Ⓖ (two) screws and jack holder Ⓗ .
   2) Pull the PC board in the direction of the arrow Ⓘ.
7. **Cassette chassis**
   Remove Ⓙ and Ⓚ (two) screws.
8. **Power PC board**
   Remove Ⓛ (two) screws.







ADJUSTMENT

Perform the following adjustments in the sequence stated after cleaning the heads, pressure roller and capstan with a head cleaning stick moisted in alcohol. Also, unless otherwise specified, 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-S4	Tape select switches	NOR-I	RV1	Recording level control	Max.
S5	Dolby NR switch	OFF	RV2	Recording balance control	Center

* According to DIN 45 500

Item	Adjustments	Measuring Instrument and Connection: Measuring Instrument	Input Terminal	Output Terminal	Check Tape	Mode	Adjusted Position	Adjusted Value	Remarks
1	Tape speed	•Frequency counter	—	LINE OUT	MTT-111, 3000 Hz (3150 Hz*)	Playback	Semi-variable resistor in the motor	3000 Hz +30 −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	—	TP1L, R (IC301L,R pin (24))	MTT-150, 400 Hz, 20m Maxwell	Playback	RT1L, R	580 mV	See Note 3
4 (1)	Bias current	•VTVM	—	TP3L, R	—	Record	RT3L, R	10V	See Note 4
4 (2)		Set RT2L, R to the center. •Audio oscillator (1.25kHz/ 12.5kHz, 0dB – 23dB) •Attenuator •VTVM	LINE IN	LINE OUT	Hitachi UD tape	Record/ playback	RT3L, R	Output difference within ±1 dB	See Note 5
5	Record level	•Audio oscillator (400Hz, 0dB)	LINE IN	—	Hitachi UD tape	Record/ playback	RT2L, R	Digital peak meter indicates 0dB	See Note 6
6	Digital peak meter	•Audio oscillator (400Hz) •Attenuator •VTVM	LINE IN	LINE OUT	—	Record	RT4L, R	0 dB indicator lights	See Note 7

Note:

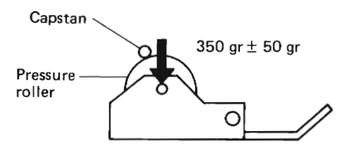
1. Adjust within 30 sec. after heat-running for more than 20 minutes.
2. When the maximum values of both channels are different, adjust to the maximum value of the L channel. In this case, the difference between the maximum values of both channels should be within 2 dB.
3. Playback a test tape (MTT - 150, 400 Hz 20 m Maxwell) and adjust RT1L, R so that the level of TP1L, R (IC301L, R pin (24)) becomes 580 mV.
4. Adjust RT3L, R so that the bias voltage of TP3L, R becomes 10V in the recording mode.
5. 1) Set RT2L, R to the center.
   2) Feed a 1.25 kHz signal to the LINE IN jacks in the recording mode and adjust the audio oscillator output so that the digital peak meter indicates 0 dB. Then, lower the attenuator output level by 23 dB.
   3) Record the signal on Hitachi UD tape with the conditions of item 2), then continue to record with the audio oscillator frequency set to 12.5 kHz.
   4) Playback the recorded signal and adjust RT3L, R so that the output level difference between two frequencies is within ±1 dB measured at the LINE OUT jacks.
6. 1) Feed a 400 Hz signal to the LINE IN jacks in the recording mode and adjust the audio oscillator output so that the digital peak meter indicates 0 dB.
   2) Record the signal on Hitachi UD tape with the conditions of item 1).
   3) Playback the recorded signal and adjust RT2L, R so that the digital peak meter indicates 0 dB.
7. 1) Feed a 400 Hz signal to the LINE IN jacks in the recording mode and adjust the audio oscillator output so that the source monitor level at LINE OUT jacks becomes −3 dBm.
   2) Adjust RT4L, R so that the 0 dB indicator of the digital peak meter lights.
   3) Lower the attenuator output level by 1 dB and adjust RT4L, R so that the 0 dB indicator goes off.

INSPECTION OF MECHANISM

	Check Item		Reference Value	Remarks
1	Pressure of pressure roller		350 gr ± 50 gr	Note 1
2	Torque	Take-up	33 to 65 gr-cm	Measure in playback mode
		Fast forward	70 to 120 gr-cm	Measure in fast forward mode
		Rewind	70 to 120 gr-cm	Measure in rewind mode
3	Back-tension	Take-up reel	6 gr-cm	Measure in playback mode (with counter)
		Supply reel	1 ~3 gr-cm	Measure in playback mode
4	Brake-torque		10 gr-cm or more	Measure in stop mode
5	Flywheel thrust gap		0.05 ~0.5 mm	———

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.

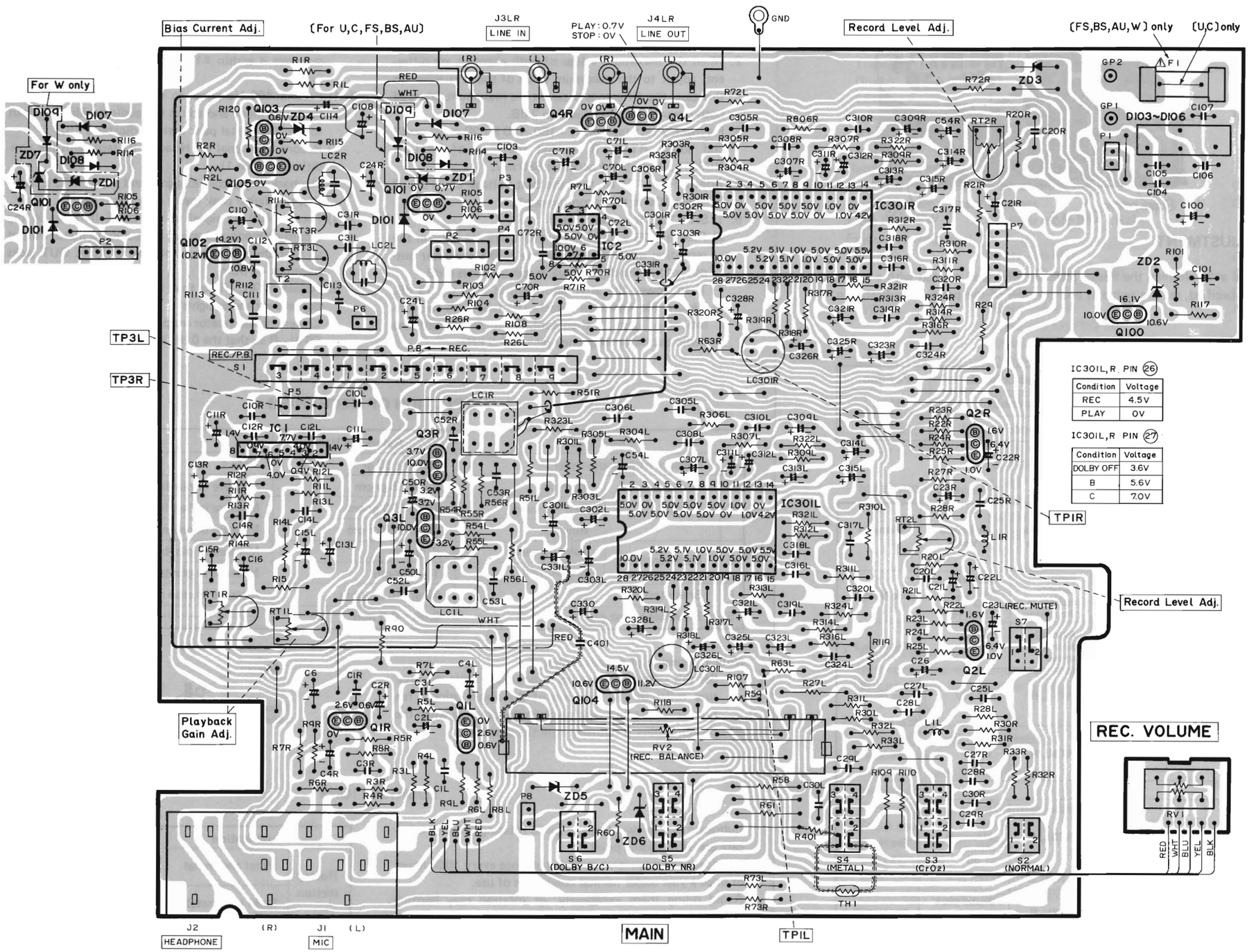


LUBRICATIONS

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 (MO-138)
	Mold and mold Mold and metal	White grease (FL-LUBE-A)
Spring resonance prevention		Froil (GB-TS-1)

CIRCUIT BOARD DIAGRAM



SCHEMATIC DIAGRAM

Note

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

	Circuit No.
Value	No indicated Ω(Ohm) M : 1000kΩ
Tolerance	No indicated ±5% K : ±10% M : ±20%
Wattage	No indicated ¼W
Sort	No indicated Carbon film RC : Composition RW : Wire wound RS : Oxide metal film RN : Fixed metal film

	Circuit No.	
Value	No indicated μF P : PF	
Tolerance	No indicated ±10% J : ± 5% M : ±20% Z : +80%, −20% D : ±0.5pF C : ±0.25pF	
Sort		Ceramic
		Electrolitic
		Mylar
		Polyester
		Styrol
Voltage	No indicated 50WV	

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.

Q1L 2SC458LG-D MIC AMP
IC1 BA328 PRE AMP
Q102 2SD667 BIAS OSC
Q101 2SC2603 SWITCHING (DURING PLAY)
IC2 μPC4557 HEADPHONE AMP
Q2L 2SC2603 REC AMP
Q105 2SC2603 SWITCHING (DURING POWER ON)
D109 IS2076 PROT.
D108 IS2076 DISCHARGE
ZD4 HZ-9B(FOR U,C, FS,BS,AU) HZ-7C(FOR W) SWITCHING
Q103 2SC2603 SWITCHING
D107 IS2076 PROT.
D101 IS2076 PROT.
Q100 2SD330 VOLTAGE STAB.
ZD2 HZ-11 VOLTAGE STAB.
Q3L 2SC2603 LINE AMP
Q104 2SD468 VOLTAGE STAB.
ZD5 HZ-7 VOLTAGE STAB.
ZD6 HZ-6 VOLTAGE STAB.
IC301L HAI2038 DOLBY B/C NR, REC/P.B. SWITCHING
ZD3 HZ-12 PROT.
ZD1 RD5.1EB SWITCHING
D103 ~ 106 IS237IA RECT.
Q4L 2SD467 MUTING

RECORDING
PLAYBACK

IC301L,R PIN (26)

Condition	Voltage
REC	4.5V
PLAY	0V

IC301L,R PIN (27)

Condition	Voltage
DOLBY OFF	3.6V
B	5.6V
C	7.0V

IC3L IR2E 02 LED DRIVE
LED5L,6L SLR54URCI LEVEL INDICATOR
LED7L-11L SLR54GC LEVEL INDICATOR

ZD7 (W only) RD2.7EB SWITCHING

IC301L,R HAI2038

LED1 REC IND. (RED)
LED2 PLAY IND. (GREEN)
LED3 PAUSE IND. (YELLOW)

VOLTAGES ARE MEASURED IN PLAYBACK MODE.
INSIDE ( ) VOLTAGES ARE MEASURED IN RECORDING MODE.

PL1 METER ILLUMINATION LAMP
PL2 DOLBY-C INDICATOR LAMP

For (U,C)
For (FS, BS, AU)
For (W)

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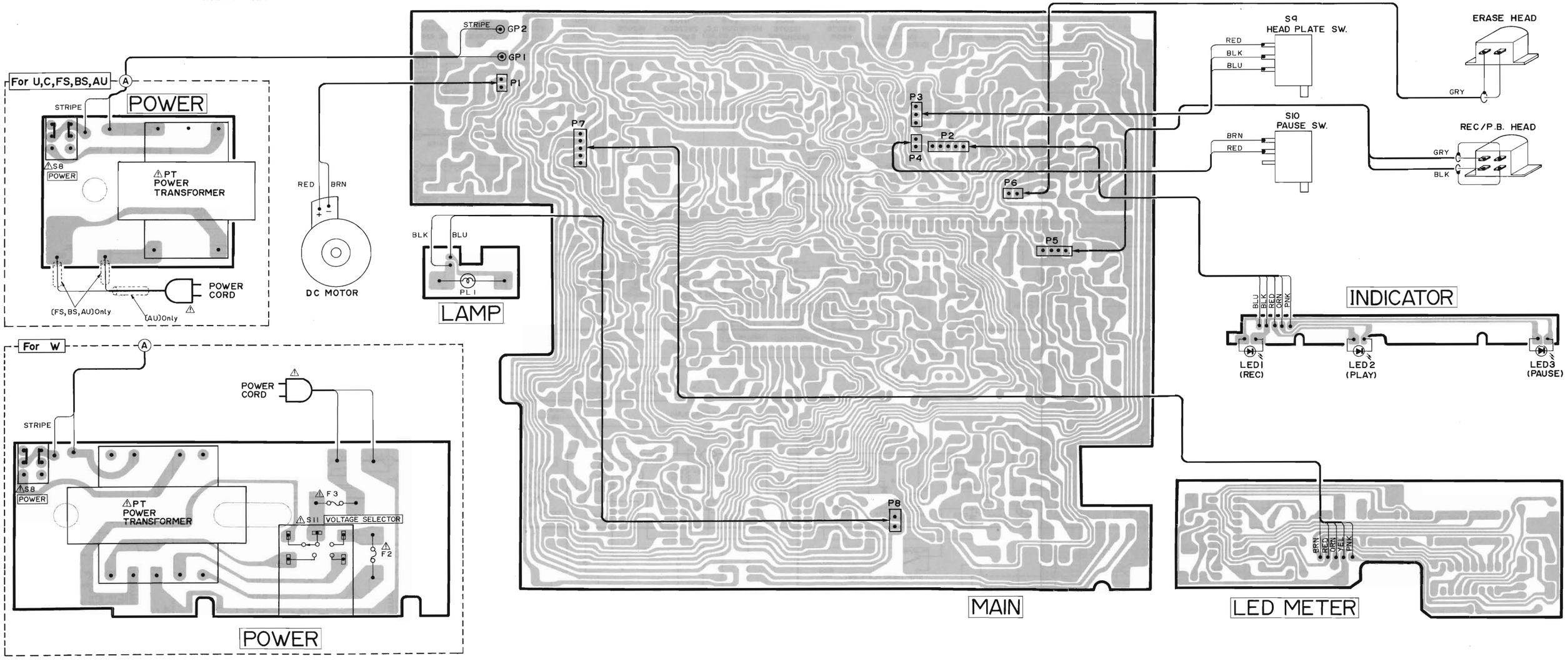
WIRING DIAGRAM

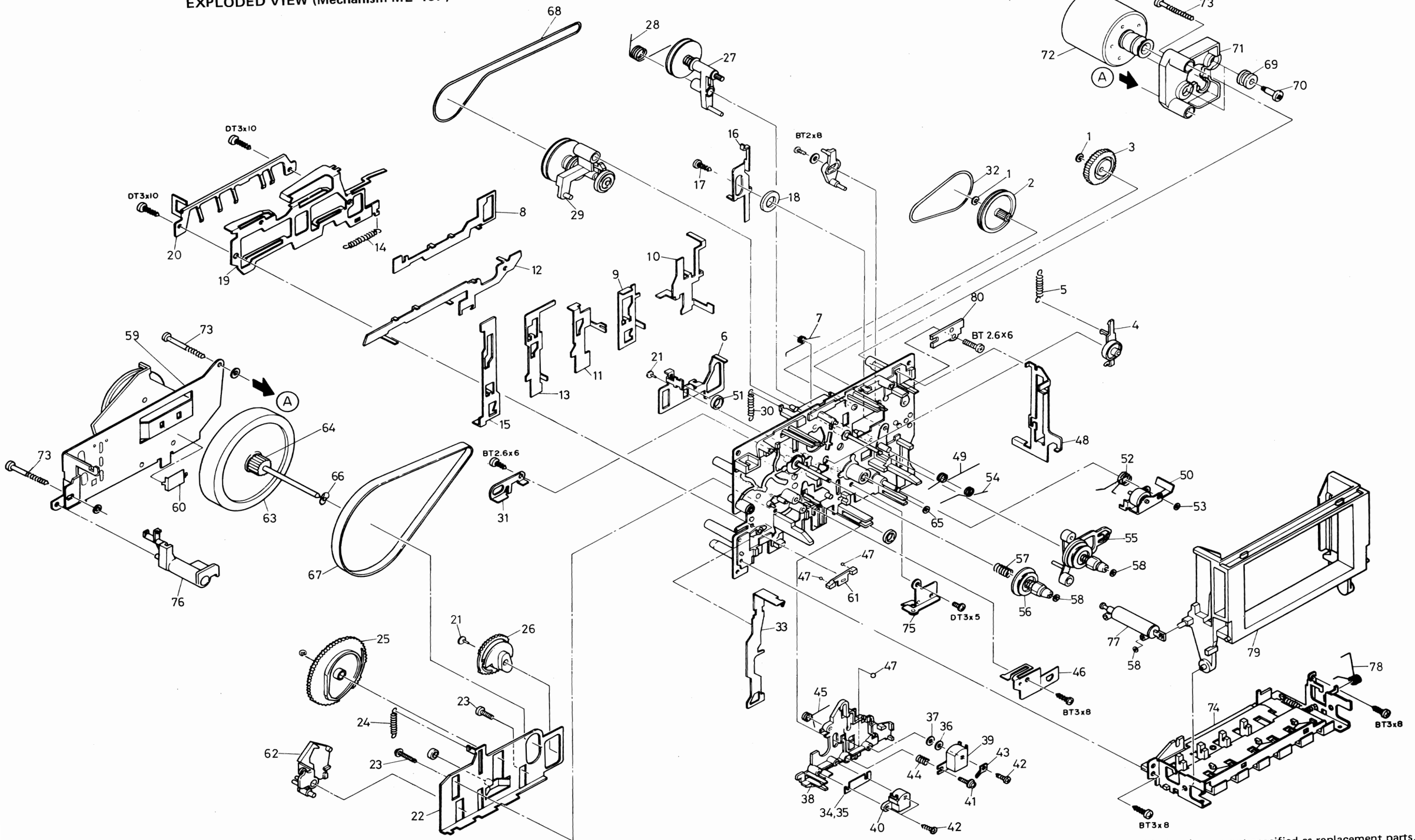


REPLACEMENT PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION
		RESISTORS
RT 1LR	5007477	SEMI VARIABLE 10K OHM
RT 2LR	5007477	SEMI VARIABLE 10K OHM
RT 3LR	5007482	SEMI VARIABLE 250K OHM
RT 4LR	5007479	SEMI VARIABLE 50K OHM
RV 1	5000875	VARIABLE RESISTOR 100K OHM(A)
RV 2	5023024	VARIABLE RESISTOR 200K OHM(SB)
R111	0170474	FUSE RESISTOR 10 OHM+-5% 1/4W
R117	0170474	FUSE RESISTOR 10 OHM+-5% 1/4W
		SEMI-CONDUCTORS
D101	5330131	DIODE 1S2076
D103-106	5330381	DIODE SILICON 1S2371
D107-109	5330131	DIODE 1S2076
IC 1	5350713	IC BA328-LN
IC 2	5352831	IC MPC4557C
IC 3LR	5365501	IC IR-2E02
IC301LR	5355111	IC HA12038
LED 1	5380631	LED SEL1112R
LED 2	5380641	LED SEL1331G
LED 3	5380651	LED SEL1741Y
LED 5LR	5380482	LED SLR53URC1
LED 6LR	5380482	LED SLR53URC1
LED 7LR	5380481	LED SLR-53GC1
LED 8LR	5380481	LED SLR-53GC1
LED 9LR	5380481	LED SLR-53GC1
LED10LR	5380481	LED SLR-53GC1
LED11LR	5380481	LED SLR-53GC1
Q 1LR	5320024	TRANSISTOR SILICON 2SC458DLG
Q 2LR	5323012	TRANSISTOR 2SC2603F
Q 3LR	5323012	TRANSISTOR 2SC2603F
Q 4LR	5323012	TRANSISTOR 2SC2603F
Q100	5323131	TRANSISTOR 2SD330ALE
Q101	5323012	TRANSISTOR 2SC2603F
Q102	5322651	TRANSISTOR 2SD667C
Q103	5323012	TRANSISTOR 2SC2603F
Q104	5321213	TRANSISTOR 2SD468C
Q105	5323012	TRANSISTOR 2SC2603F
ZD 1	5330848	ZENER DIODE RD5.1EB2
ZD 2	5330555	ZENER DIODE HZ11B2
ZD 3	5330534	ZENER DIODE HZ12A3
ZD 4	5330322	ZENER DIODE SILICON TR-9S
ZD 5	5330316	ZENER DIODE HZ7C1
ZD 6	5331587	ZENER DIODE RD5.6E-B1
		TRANSFORMERS
⚠PT	5212592	POWER TRANSFORMER (U,C)
⚠PT	5212593	POWER TRANSFORMER (FS)
⚠PT	5212594	POWER TRANSFORMER (BS,AU)
⚠PT	5212941	POWER TRANSFORMER (W)
T 2	5260461	BIAS OSCILLATOR COIL
		COILS
L 1LR	5150364	CHOKE COIL 3.3 MH
		MISCELLANEOUS
⚠	5746342	POWER CORD (BS)
⚠	5746443	POWER CORD (U,C)
⚠	5746571	POWER CORD (AU)
⚠	5746661	POWER CORD (W,FS)
⚠F 1	5720174	FUSE 630MA (W,FS,BS,AU)
⚠F 2	5720105	FUSE 150MA (W)
⚠F 3	0591100	FUSE 200MA (W)
J 1LR	5679824	JACK (MIC)
J 2	5679824	JACK (HEADPHONE)
J 3LR	5676261	PIN JACK ASSEMBLY (LINE IN)
J 4LR	5676261	PIN JACK ASSEMBLY (LINE OUT)
LC 1LR	5161665	DOLBY FILTER
LC 2LR	5120562	TRAP COIL
LC301LR	5120564	TRAP COIL
LM 1	5765071	LAMP (METER ILLUMINATION)
LM 2	5765071	LAMP (DOLBY-C INDICATOR)
S 1	5623435	SLIDE SWITCH (REC./P.B.)
S 2-6	5634436	PUSH SWITCH (TAPE, DOLBY NR, DOLBY B/C)
S 7	5634361	PUSH SWITCH (REC MUTE)
⚠S 8	5637038	PUSH SWITCH (POWER)
S 9	5633361	PUSH SWITCH (PLAY)
S10	5633361	PUSH SWITCH (PAUSE)
⚠S11	5605121	ROTARY SWITCH (VOLTAGE SELECTOR) [W]
		FOR ACCESSARIES
	7740321	HEAD CLEANING STICK
	5894163	PATCH CORD
⚠	5652291	SOCKET ADAPTER (W)

SYMBOL-NO	P-NO	DESCRIPTION
	MECHANISM (ML-10F)	
1	7788061	POLY SLIDER WASHER
2	6430982	PULLEY GEAR FOR AUTO STOP
3	6431291	CAM GEAR
4	6762725	FF ARM ASSEMBLY
5	6540702	SPRING
6	7331678	BRAKE PLATE
7	6546562	SPRING FOR BRAKE PLATE
8	7337198	AUTO STOP PREVENTION SLIDER ASSEMBLY
9	7337128	FF SLIDER
10	7331786	PAUSE SLIDER
11	7331718	PLAY SLIDER
12	7340006	LOCK PLATE
13	7339992	REWIND SLIDER
14	6300083	SPRING
15	7347943	RECORD SLIDER
16	7343241	AUTO STOP SENSING LEVER
17	7781133	BT SCREW-3MMD
18	7787951	WASHER
19	6535114	LEAF SPRING
20	6535282	LEAF SPRING
21	7552446	PIN
22	7331879	POWER ASSIST SLIDER ASSEMBLY
23	7781135	BT SCREW-3MMD
24	6542021	SPRING FOR POWER ASSIST
25	6431541	POWER ASSIST GEAR
26	6430976	PAUSE GEAR
27	6762675	TAKE UP ARM ASSEMBLY
28	6546453	SPRING FOR TAKE UP ARM
29	6762645	REWIND ARM ASSEMBLY
30	6301704	SPRING
31	7333965	REWIND HOLDER
32	6355382	BELT
33	7347951	RECORD PREVENTION SLIDER
34	7757052	SPACER
35	7757051	SPACER
36	7771441	WASHER - 2 MMD
37	7771442	WASHER-2MMD
38	6765806	HEAD BASE
39	5449021	RECORD PLAYBACK HEAD
40	5445351	ERASE HEAD
41	7781005	SCREW FOR HEAD MOUNTING
42	8784138	BIND TAPPING SCREW-2MMDX8MM
43	7342491	EARTH PLATE
44	6321733	HEAD SPRING C
45	6547731	HEAD PLATE SPRING
46	6534246	HEAD HOLDER SPRING
47	0948492	BALL - 2MMD
48	7347931	EJECT SLIDER
49	6546518	SPRING FOR EJECT SLIDER
50	7329781	PRESSURE ROLLER ARM ASSEMBLY
51	6586007	BRAKE RUBBER
52	6547553	SPRING FOR PRESSURE ROLLER
53	7786219	POLYESTER WASHER
54	6546507	SPRING
55	6414234	TURNTABLE ASSEMBLY
56	6414021	TURNTABLE ASSEMBLY
57	6305892	BACK TENSION SPRING
58	7786115	POLYESTER WASHER
59	7345153	FLYWHEEL SUPPORT ASSEMBLY
60	6530926	FLYWHEEL SUPPORT SPRING
61	6765041	BALL SUPPORT
62	6765598	POWER ASSIST LOCK ARM
63	6374052	FLYWHEEL ASSEMBLY
64	6431501	FLYWHEEL GEAR
65	7786623	POLY SLIDER WASHER
66	7772623	SPRING
67	6357163	FLYWHEEL BELT
68	6355381	BELT
69	6576082	RUBBER PLATE
70	7539004	MOTOR FIXING SCREW
71	6766011	MOTOR HOLDER
72	6420843	DC MOTOR ASSEMBLY
73	7781147	BT BIND HEAD SCREW-3MMDX30MM
74	7341333	BUTTON HOLDER ASSEMBLY
75	7334765	STOP ARM ASSEMBLY
76	6763115	RECORD CHANGE ARM
77	6769221	DAMPER ASSEMBLY
78	6546485	SPRING FOR CASSETTE HOLDER
79	6770512	CASSETTE HOLDER
80	7343301	E STOPPER

EXPLODED VIEW (Mechanism-ML-10F)



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

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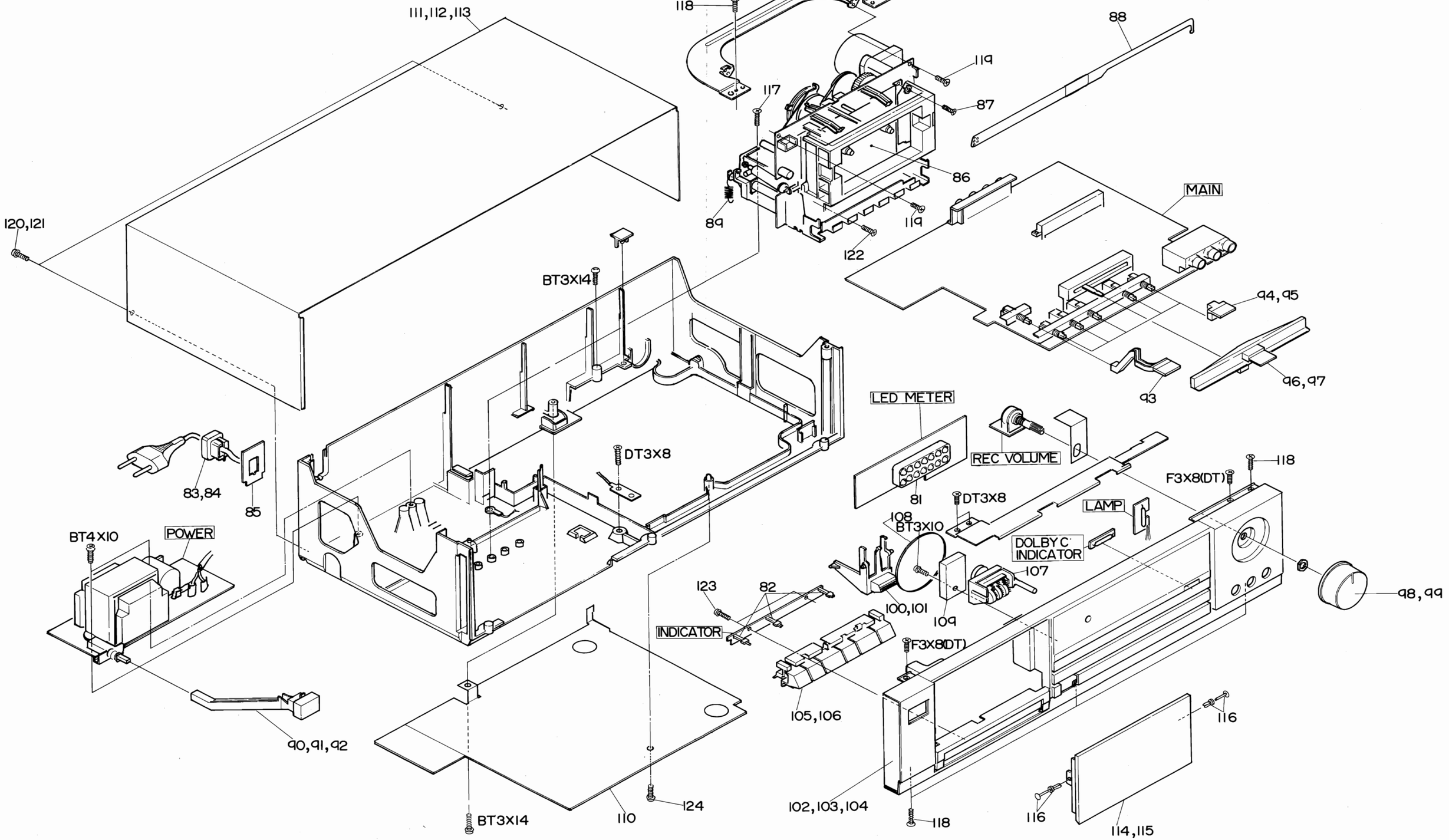
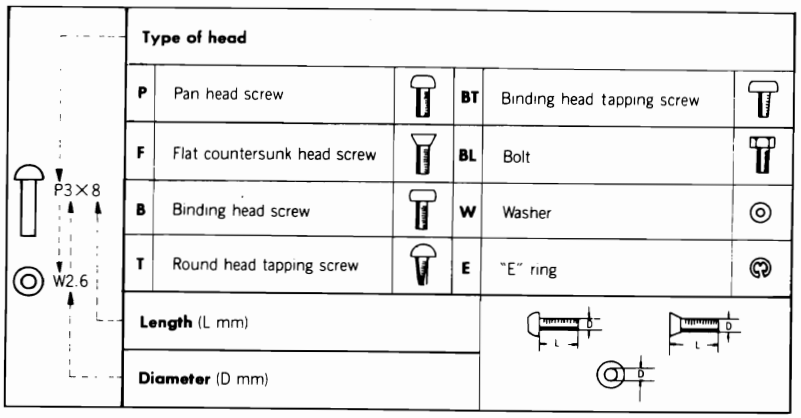
EXPLODED VIEW (Cabinet)



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

SYMBOL-NO	P-NO	DESCRIPTION
		FOR CASSETTE DECK ASSEMBLY (S)
81	6769431	LED SPACER
82	6770641	LED SPACER
		MISCELLANEOUS
⚠ 83	6794401	BUSHING (U, C, W, FS, AU)
⚠ 84	6794411	BUSHING (BS)
85	7347131	BUSHING HOLDER
86	6634034	CASSETTE METAL
87	0678316	DT SCREW-2.6MMDX16MM(BLACK)
88	7333333	RECORD PLATE
89	6302746	SPRING FOR RECORD PLATE
90	6768024	PUSH BUTTON ASSEMBLY (POWER) (U,C,W,AU)
91	6768025	PUSH BUTTON ASSEMBLY (POWER) (FS)
92	6768028	PUSH BUTTON ASSEMBLY (POWER) (BS)
93	6055761	PUSH BUTTON (REC MUTE)
94	6055751	PUSH BUTTON (TAPE, DOLBY NR, DOLBY B/C) [U, C, W, FS, AU]
95	6055753	PUSH BUTTON (TAPE, DOLBY NR, DOLBY B/C) [BS]
96	6292401	SLIDE KNOB ASSEMBLY (REC BALANCE) [U, C, W, FS, AU]
97	6292402	SLIDE KNOB ASSEMBLY (REC BALANCE) [BS]
98	6288851	KNOB ASSEMBLY (REC. LEVEL) [U, C, W, FS, AU]
99	6288852	KNOB ASSEMBLY (REC. LEVEL) [BS]
100	6292161	EJECT BUTTON ASSEMBLY (U, C, W, FS, AU)

SYMBOL-NO	P-NO	DESCRIPTION
101	6292162	EJECT BUTTON ASSEMBLY (BS)
102	6770692	FRONT FRAME ASSEMBLY (U,C,W,AU)
103	6770693	FRONT FRAME ASSEMBLY (FS)
104	6770697	FRONT FRAME ASSEMBLY (BS)
105	6060511	FUNCTION BUTTON ASSEMBLY (U, C, W, FS, AU)
106	6060512	FUNCTION BUTTON ASSEMBLY (BS)
107	5559482	COUNTER
108	6354663	BELT
109	6771651	COUNTER HOLDER
110	6045154	BOTTOM COVER
111	6045051	UPPER COVER (W,FS,AU)
112	6045052	UPPER COVER (U,C)
113	6045053	UPPER COVER (BS)
114	6093741	CASSETTE DOOR ASSEMBLY (U, C, W, FS, AU)
115	6093742	CASSETTE DOOR ASSEMBLY (BS)
116	6795242	NYLON RIVET
117	8699410	BT BIND SCREW- 3MMD x 10MM (BLACK)
118	7781581	BT FLAT SCREW-3MMDX10MM
119	8602408	DT FLAT SCREW-3MMDx8MM
120	8698410	BT BIND SCREW-3MMDX10MM (W, FS, BS, AU)
121	8699410	BT BIND HEAD SCREW-3MMDX10MM (BLACK) [U, C]
122	8691312	BT BIND SCREW-2.6MMDX12MM
123	7780264	BT BIND SCREW - 2.6MMD x 14MM
124	8691410	BT BIND SCREW - 3MMD x 10MM



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

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