



HITACHI

SERVICE MANUAL

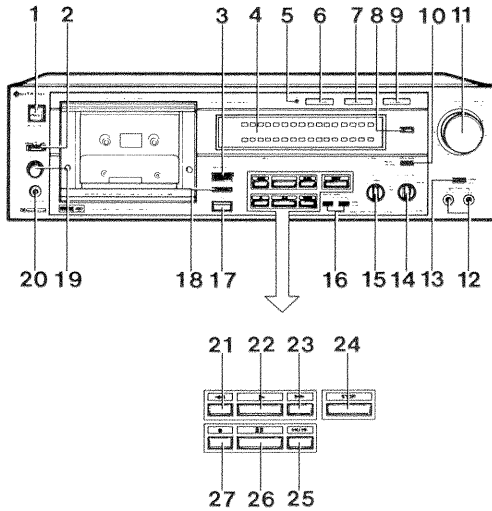
TK

No. 1498E

D-1100M

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

Use this manual together with the D-1100M Technical Information Service Manual (No. 1499).



CONTENTS

Specifications	2
Disassembly	3
Adjustment.....	4
Inspection of mechanism.....	6
Lubrication.....	6
Block diagram	7
Replacement parts list.....	9
Schematic diagram	10
Circuit board diagram.....	13
Wiring diagram	17
Exploded view (Cassette chassis).....	21
Exploded view (Cabinet).....	23

KEY TO ILLUSTRATIONS

- | | |
|-----------------------------|--------------------------------|
| 1 POWER (MAINS) SWITCH | 15 TAPE SELECT SWITCH |
| 2 TIMER SWITCH | 16 AUTO/MEMORY REWIND SWITCHES |
| 3 TAPE COUNTER | 17 EJECT BUTTON |
| 4 DIGITAL PEAK METER | 18 COUNTER RESET BUTTON |
| 5 ATRS FUNCTION INDICATOR | 19 OUTPUT LEVEL CONTROL |
| 6 ATRS START BUTTON | 20 HEADPHONE JACK |
| 7 ATRS BUTTON | 21 REWIND BUTTON |
| 8 PEAK HOLD SWITCH | 22 PLAYBACK BUTTON |
| 9 FIXED BUTTON | 23 FAST FORWARD BUTTON |
| 10 MONITOR SWITCH | 24 STOP BUTTON |
| 11 RECORDING LEVEL CONTROLS | 25 REC. MUTE BUTTON |
| 12 MICROPHONE JACKS | 25 PAUSE BUTTON |
| 13 INPUT SELECT SWITCH | 27 RECORD BUTTON |
| 14 DOLBY NR SWITCH | |

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 Δ 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

FEBRUARY 1981

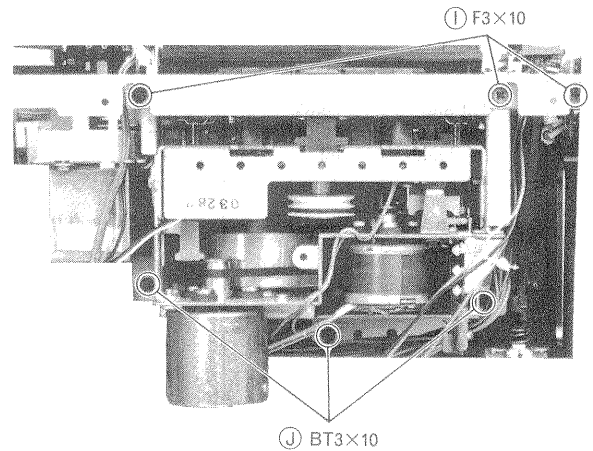
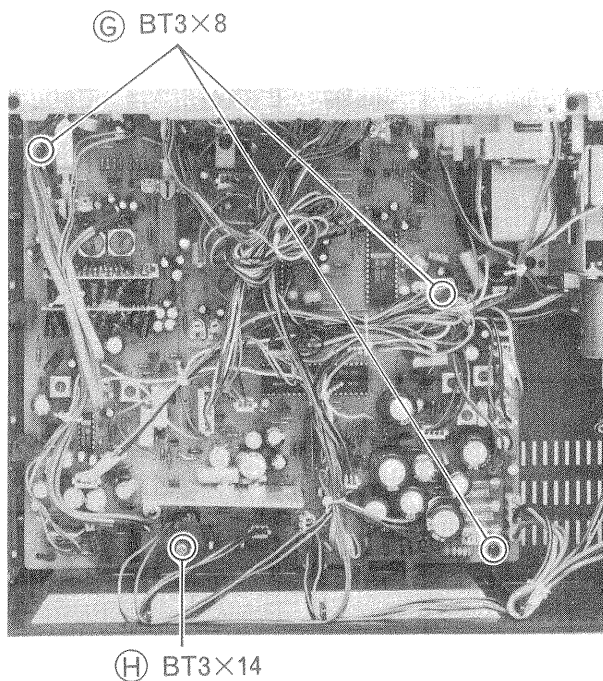
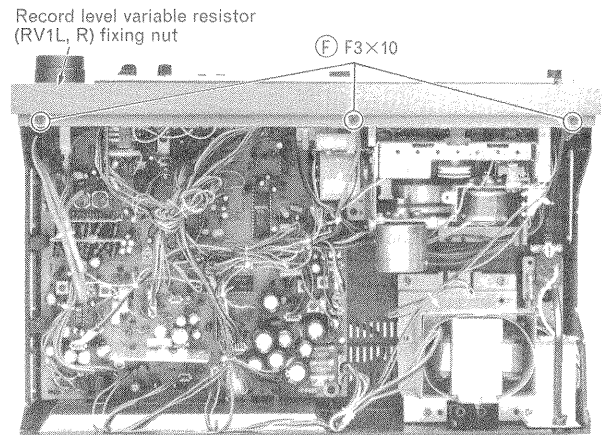
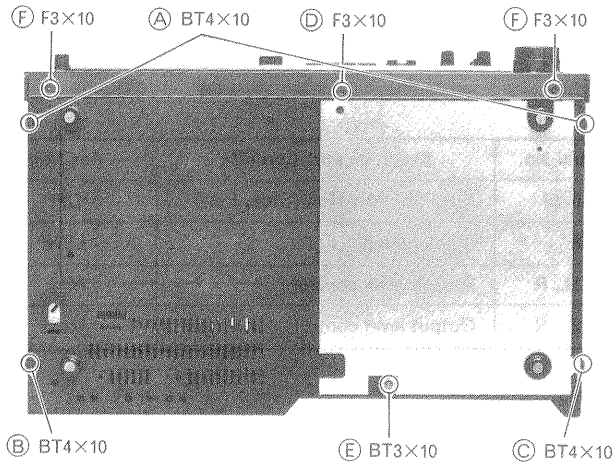
TOKAI WORKS

SPECIFICATIONS

Semi-conductors :		Dolby NR ON :	69 dB (Weighted A, Reference 3% THD, Metal tape)
ICs :	11		69 dB*
Transistors :	60 (U, C)	Wow and Flutter :	~ 0.038% (WRMS)
	61 (FS, BS, AU, W)		0.12%*
FETs :	2	Input Sensitivity and Impedance :	
Diodes :	60 (U, C)	Microphone :	0.3mV, 300 ohms-5 kohms
	62 (FS, BS, AU, W)	Line in :	60mV, 50 kohms or more
LEDs :	4	DIN (Record/Playback) :	0.3mV, 5 kohms (FS, BS, AU, W)
Varistors :	1 (W, FS, BS, AU)	Output Level :	500mV
Track System :	4 track 2 channel stereo	Output Load Impedance :	
Tape :	Cassette tape (C-30, 60, 90)	Line out :	50 kohms or more
Tape Speed :	4.75cm/s	DIN (Record/Playback) :	470 kohms or more (FS, BS, AU, W)
Recording System and		Headphone :	8 ohms-2 kohms
Bias Frequency :	AC bias, 105 kHz	Distortion :	0.8% (1 kHz 0VU)
Erasing System :	AC erase	Channel Separation :	30 dB (at 1 kHz)
Erase Ratio :	65 dB or more (at 1 kHz)	Cross Talk :	60 dB (at 1 kHz)
Frequency Range :		Power Supply :	AC 120V, 60 Hz (U, C)
Fixed :			AC 100-110V/115-127V/ 200-220V/230-250V, 50/60 Hz (W)
ER/UD (NOR)	20 Hz - 19 kHz		AC 220V, 50 Hz (FS)
	25 Hz - 18 kHz*		AC 240V, 50 Hz (BS, AU)
EX/SX (CrO ₂)	20 Hz - 21 kHz	Power Consumption :	36W
	25 Hz - 19 kHz*	Dimensions :	130(H)×435(W)×266(D)mm
FeCr	20 Hz - 19 kHz	Weight :	7.5 kg
	25 Hz - 18 kHz*	Motor :	DC Servomotor×1 DC motor×1
ME (METAL)	20 Hz - 21 kHz	Heads :	New close gap Metal R & P head (ferrite) Double-gap Metal erase head (Permalloy)
	25 Hz - 20 kHz*	ATRS specifications :	Microcomputer used : 4-bit 1-chip microcomputer
ATRS :	The following performance is obtained with almost all tapes on the market at present.		Bias variation steps : 16 Sensitivity & Equalization adjustment steps : 16 each (variable by 0.5 dB per step)
ER/UD (NOR)	30 Hz - 17 kHz (±3 dB)		
	25 Hz - 18 kHz*		
EX/SX (CrO ₂)	30 Hz - 18 kHz (±3 dB)		
	25 Hz - 18 kHz*		
FeCr	30 Hz - 17 kHz (±3 dB)		
	25 Hz - 18 kHz*		
ME (METAL)	30 Hz - 19 kHz (±3 dB)		
	25 Hz - 18 kHz*		
S/N (Signal to Noise Ratio) :			
Dolby NR OFF :	60 dB (Weighted A, Reference 3% THD, Metal tape)		
	60 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), (B) and (C) (four) screws.

3. Bottom cover

Remove (C), (D) and (E) (three) screws.

4. Front panel

- 1) Remove five knobs (OUTPUT, TAPE, DOLBY NR, RECORD LEVEL L & R).
- 2) Remove (D) and (F) (six) screws.
- 3) Remove one record level variable resistor (RV1L, R) fixing nut.

5. Main P.C. Board

Remove (E), (G) and (H) (five) screws.

6. Cassette chassis

Remove (I) and (J) (six) 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
S 1	Dolby NR switch	OFF	S16, 17	Auto/Memory Rew (Stop, Play)	OFF
S 2	Tape switch	ER/UD (NOR)	S18	Input switch	LINE
S 3	Monitor switch	TAPE	RV1L, R	Record level control	Max.
S13	Timer switch	OFF	RV2L, R	Output level control	Max.

* 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 +20 Hz - 5 Hz (3150 Hz*)	See Note 1
2	(1) Tilt and height of the head	· Head adjusting jig	—	—	—	Playback	Screw (A), (B), (C)	—	See Note 2
	(2) Head azimuth	· VTVM	—	LINE OUT	MTT-116K or MTT-114 (10 kHz)	Playback	Screw (C)	Output Max.	See Note 3
3	Digital peak meter	· Audio oscillator (400 Hz) · VTVM	LINE IN	TP1L, R	—	Record	RT901L, R	0 dB	See Note 4
4	Playback gain	· VTVM	—	TP2L, R	MTT-150, 400 Hz, 20m Maxwell	Playback	RT5L, R	775mV	See Note 5

Note :

- Adjust within 30 sec. after heat-running for more than 20 minutes.
- Tighten screws (A), (B), (C) shown in Fig. 1. Next, check that the head is installed in the right angle to the head plate using head adjusting jig. (Adjust the right angle using screws (A) and (B)).
Adjust height using screw (C) after adjusting tilt. When screw (C) is turned more than half a rotation at that time, right angle cannot be obtained, so re-adjust tilt.
- 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.
- Feed a 400 Hz signal to the LINE IN jacks in the recording mode and adjust the audio oscillator output so that the level of TP1L, R becomes 775mV. Then, adjust RT901L, R so that the digital peak meters indicate 0 dB.
- Playback a test tape (MTT-150, 400 Hz 20m Maxwell) and adjust RT5L, R so that the level of TP2L, R becomes 775mV.

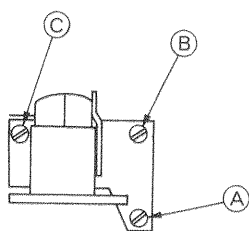


Fig. 1

ATRS circuit adjustment

Item	Adjustments	Measuring Instrument and Connection			Check Tape	Mode	Adjusted Position	Adjusted Value	Remarks
		Measuring Instrument	Input Terminal	Output Terminal					
1	Set RT1, RT2L(R), RT4L(R) and RT6L(R) to the center.								
2	Bias current	· Audio oscillator (1.5 kHz/15 kHz, 0 dB–20 dB) · Attenuator · VTVM	LINE IN	LINE OUT	ER/UD tape	Record	RT4L, R	Output difference within ± 0.5 dB	See Note 1
3	Bias trap	Set RV1L, R (Record level control) to Minimum.							See Note 2
		· VTVM	—	TP3L, R	—	Record	L4L, R	Min.	
4	Record level	· Audio oscillator (1 kHz, 0 dB–20 dB) · Attenuator · VTVM	LINE IN	LINE OUT	ER/UD tape	Record	RT2L, R	Output difference within 0.2 dB	See Note 3
5	AF oscillator	Set the AUTO/MEMORY REW PLAY-STOP switches (S16, S17) to ON after connecting a diode (1K60 or another Germanium diode) as shown in Fig. 2.							See Note 4
		· VTVM	—	TP4L or R	—	—	RT1	0 dB \pm 0.2 dB	
6	A/D conversion.	· Audio oscillator (1 kHz, 0 dB–20 dB) · Attenuator · VTVM	LINE IN	LINE OUT	ER/UD tape	Record	RT6L, R	0 dB \pm 0.3 dB	See Note 5

Note :

- 1) Set the monitor switch to the SOURCE position and feed a 1.5 kHz signal to the LINE IN jacks in the recording mode.
 - 2) Adjust the audio oscillator output so that the digital peak meter indicates 0 dB. Then, adjust the attenuator to lower the output level by 20 dB.
 - 3) Set the monitor switch to the TAPE position and read the playback output level of LINE OUT jacks.
 - 4) Then, set the audio oscillator frequency to 15 kHz and read the playback output level of LINE OUT jacks.
 - 5) Adjust RT4L, R so that the output level difference between two frequencies is within ± 0.5 dB.
2. With the condition shown in item 2, set RV1L, R (Record level control) to Minimum. Then, adjust L4L, R so that the level of TP3L, R becomes minimum.
3. 1) Set the monitor switch to the SOURCE position and feed a 1 kHz signal to the LINE IN jacks in the recording mode.
 - 2) Adjust the audio oscillator output so that the digital peak meter indicates 0 dB. Then, adjust the attenuator to lower the output level by 20 dB.
 - 3) Set the monitor switch to the TAPE position and adjust RT2L, R so that the output level difference between SOURCE and TAPE is within 0.2 dB at LINE OUT jacks.
4. 1) Connect the VTVM to TP4L or R, press the PLAY button and read the output of the 1 kHz signal.
 - 2) Next, press the REC button, read the output of the 12.5 kHz signal and adjust RT1 so that the output difference between 1 kHz signal and 12.5 kHz signal is 0 dB \pm 0.2 dB.

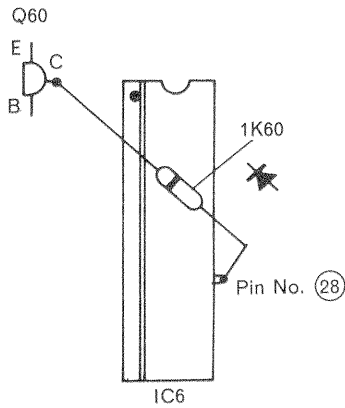


Fig. 2

5. 1) Set the monitor switch to the SOURCE position and feed a 1 kHz signal to the LINE IN jacks in the recording mode.
- 2) Adjust the audio oscillator output so that the digital peak meter indicates 0 dB. Then, adjust the attenuator to lower the output level by 20 dB.
- 3) Press the START button for testing, and then set the unit to the recording mode again ; then read the output of the VTVM when the MONITOR switch is changed over, and adjust RT6L, R so that the output when the MONITOR switch is set to TAPE is 0 dB ± 0.3 dB with respect to the output when the MONITOR switch is set to SOURCE.

INSPECTION OF MECHANISM

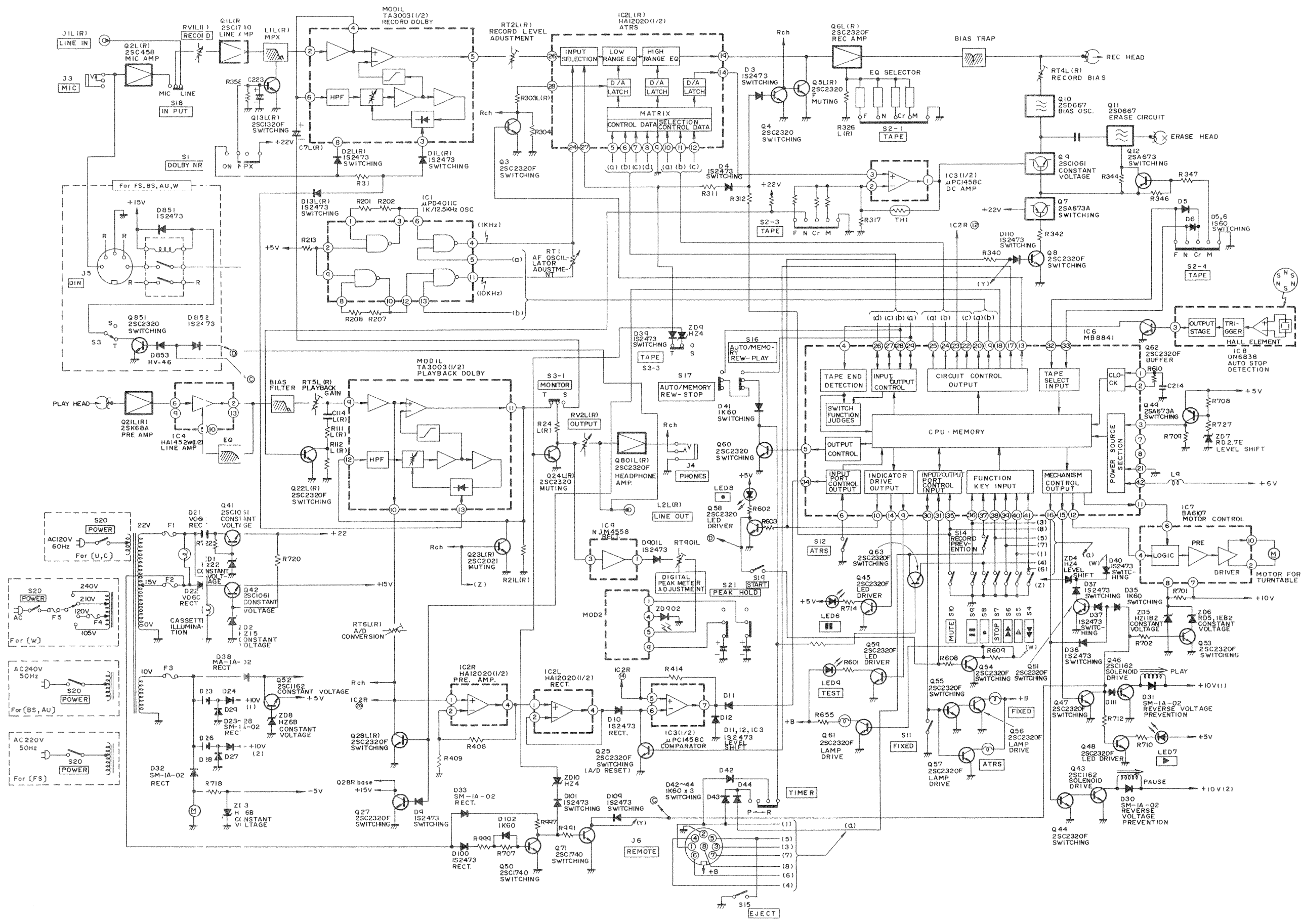
Check Item		Reference Value	Remarks
1	Pressure of Pressure roller	Take-up side	300 to 400 gr
		Supply side	170 to 250 gr
2	Torque	Take-up	35 to 65 gr-cm
		Fast forward	75 to 120 gr-cm
		Rewind	75 to 120 gr-cm
3	Back-tension	Take-up side	Less than 6 gr-cm
		Supply side	7 to 12 gr-cm
4	Flywheel thrust gap	0.05 to 0.5 mm	—
5	Pressure of take-up roller	200 to 250 gr	Measure in playback mode
6	Brake force	More than 15 gr-cm	Measure in playback mode

LUBRICATION

Lubricate one or two drops of oil to rotating point or lubricate grease to sliding point. Lubricate the respective parts listed below 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
Rotally 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	White grease (FL-LUBE-A)
	Mold and metal	Froil (GB-TS-1)
Spring resonance prevention		Froil (GB-TS-1)

BLOCK DIAGRAM



REPLACEMENT PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
CAPACITORS					
C 64	0268433	POLYPROPYLENE 5600PF+-5%	D901L	5330572	DIODE SILICON 1S2473HC 100M
RESISTORS					
△ CR1	0219902	CR PACK 120 OHM 0.0033#F 450V (U)	D901R	5330571	DIODE 1S2473VE
△ CR1	0219907	CR PACK (C)	IC 1	5359501	IC MPD4011C
RT 1	0151817	SEMI VARIABLE RESISTOR 20KOHM B	IC 2LR	5352271	IC HA12020
RT 2LR	0151817	SEMI VARIABLE RESISTOR 20KOHM B	IC 3	5350591	IC MPC1458C
RT 4LR	0151818	SEMI VARIABLE RESISTOR 100KOHM	IC 4	5350301	IC HA-1452
RT 5LR	0151808	SEMI VARIABLE RESISTOR 10K OHM	IC 6	5365541	IC MB8841
RT 6LR	0151360	SEMI VARIABLE RESISTOR 5KOHM	IC 7	5352221	IC BA6107
RT901LR	0151818	SEMI VARIABLE RESISTOR 100KOHM	IC 8	5391031	HALL ELEMENT DN6838
RV 1	5000556	VARIABLE RESISTOR 20KOHM(A)	IC 9	5350601	IC NJM4558D
RV 2	5000616	VARIABLE RESISTOR 10KOHM(B)	LED 6	5380651	LED SEL1741Y
R726	0170407	FUSE RESISTOR 100HM+-5% 1/2W	LED 7	5380641	LED SEL1331G
SEMI-CONDUCTORS					
D 1LR	5330573	DIODE 1S2473	LED 8	5380631	LED SEL1112R
D 2LR	5330573	DIODE 1S2473	LED 9	5380482	LED SLR53URC1
D 3	5330573	DIODE 1S2473	MOD1LR	5356834	MODULE TA3003DR
D 4	5330573	DIODE 1S2473	Q 1LR	5321662	TRANSISTOR 2SC2021S
D 5	5331052	DIODE 1K60RLF-2	Q 2LR	5320024	TRANSISTOR SILICON 2SC458DLG 230M
D 6	5331052	DIODE 1K60RLF-2	Q 3	5322622	TRANSISTOR 2SC2320F
D 9	5330571	DIODE 1S2473VE	Q 4	5322622	TRANSISTOR 2SC2320F
D 10-12	5330573	DIODE 1S2473	Q 5LR	5322622	TRANSISTOR 2SC2320F
D 13LR	5330573	DIODE 1S2473	Q 6LR	5322622	TRANSISTOR 2SC2320F
D 21	5330101	DIODE SILICON V06C	Q 7	5320603	TRANSISTOR SILICON 2SA673A-C 80MHZ 400MW
D 22	5330101	DIODE SILICON V06C	Q 8	5322622	TRANSISTOR 2SC2320F
D 23	5331422	DIODE SM-1A-02	Q 9	5320671	TRANSISTOR SILICON 2SC1061B 5M
D 24	5331422	DIODE SM-1A-02	Q 10	5322651	TRANSISTOR 2SD667C
D 26-32	5331422	DIODE SM-1A-02	Q 11	5322651	TRANSISTOR 2SD667C
D 33	5331422	DIODE SM-1A-02	Q 12	5320603	TRANSISTOR SILICON 2SA673A-C 80MHZ 400MW
D 35	5331052	DIODE 1K60RLF-2	Q 13LR	5322622	TRANSISTOR 2SC2320F
D 36	5330573	DIODE 1S2473	Q 21LR	5321506	TRANSISTOR 2SK68A-N
D 37	5330573	DIODE 1S2473	Q 22LR	5322622	TRANSISTOR 2SC2320F
D 38	5331422	DIODE SM-1A-02	Q 23LR	5321662	TRANSISTOR 2SC2021S
D 39	5330571	DIODE 1S2473VE	Q 24LR	5322622	TRANSISTOR 2SC2320F
D 40	5330573	DIODE 1S2473	Q 25	5322622	TRANSISTOR 2SC2320F
D 41-44	5331052	DIODE 1K60RLF-2	Q 27	5322622	TRANSISTOR 2SC2320F
D 46	5330571	DIODE 1S2473VE	Q 28LR	5322622	TRANSISTOR 2SC2320F
D 50	5330571	DIODE 1S2473VE	Q 41	5320671	TRANSISTOR SILICON 2SC1061B 5M
D100	5330571	DIODE 1S2473VE	Q 42	5320671	TRANSISTOR SILICON 2SC1061B 5M
D101	5330571	DIODE 1S2473VE	Q 43	5320643	TRANSISTOR SILICON 2SC1162 150M
D102	5331051	DIODE 1K60	Q 44	5322622	TRANSISTOR 2SC2320F
D104-111	5330573	DIODE 1S2473	Q 45	5322622	TRANSISTOR 2SC2320F
D112	5330573	DIODE 1S2473	Q 46	5320643	TRANSISTOR SILICON 2SC1162 150M
D113	5330573	DIODE 1S2473	Q 47	5322622	TRANSISTOR 2SC2320F
D114	5330101	DIODE SILICON V06C	Q 48	5322622	TRANSISTOR 2SC2320F
D115	5330573	DIODE 1S2473	Q 49	5320603	TRANSISTOR SILICON 2SA673A-C 80MHZ 400MW
D851	5330571	DIODE 1S2473VE (FS,BS,AU,W)	Q 50	5321295	TRANSISTOR 2SC1740E
D852	5330571	DIODE 1S2473VE (FS,BS,AU,W)	Q 51	5322622	TRANSISTOR 2SC2320F
D853	5340022	VARISTOR SILICON HV-46 (FS,BS,AU,W)			

SCHEMATIC DIAGRAM

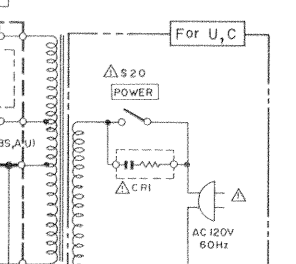
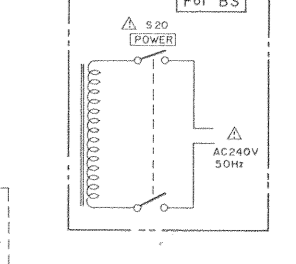
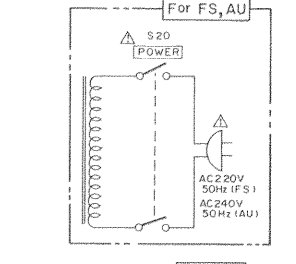
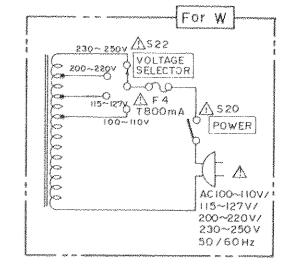
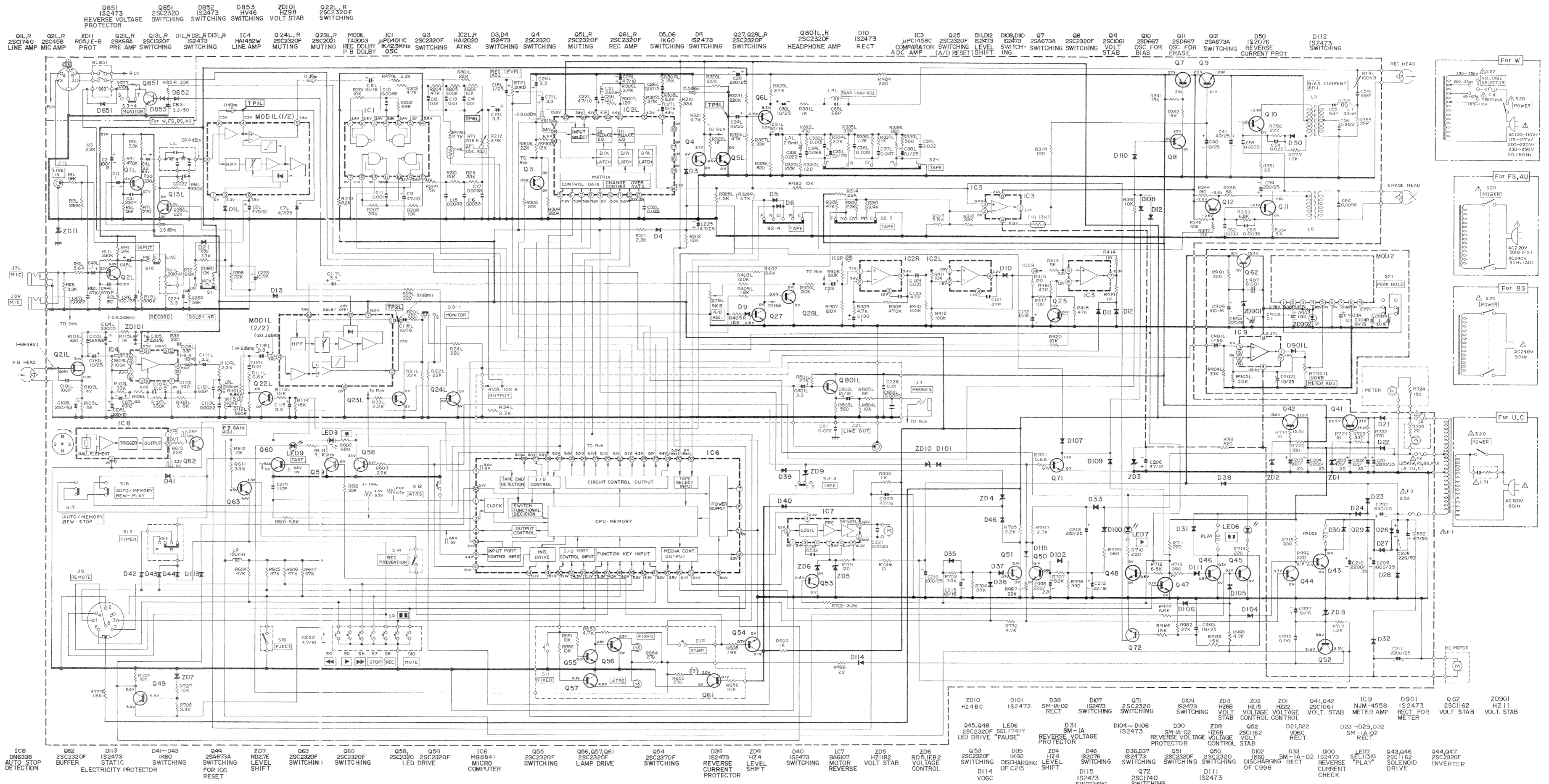
Note

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

Resistor	
Value	No indicated Ω(Ohm) M : 1000kΩ
Tolerance	No indicated ±5% K : ±10% M : ±20%
Wattage	No indicated 1/4W
Sort	No indicated Carbon film RC : Composition RW : Wire wound RS : Oxide metal film RN : Fixed metal film

Capacitor	
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 Electrolytic 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.



IC8
DN6338
AUTO STOP
DETECTION

Q62
2SC2320F
BUFFER

D13
IS2473
STATIC
ELECTRICITY PROTECTOR

D41~D43
IK60
SWITCHING

Q44
2SA673A
SWITCHING
FOR IC6
RESET

ZD7
R027E
LEVEL
SHIFT

Q63
2SC2320F
SWITCHING

Q60
2SC2320F
SWITCHING

Q58
2SC2320F
LED DRIVE

Q54
2SC2320F
SWITCHING

D34
IS2473
REVERSE
CURRENT
PROTECTOR

D39
IS2473
LEVEL
SHIFT

D40
IS2473
SWITCHING

IC7
BA6107
MOTOR
REVERSE

ZD5
HZ1B2
VOLT STAB

ZD6
RD6, IEB2
VOLTAGE
CONTROL

Q53
2SC2320F
SWITCHING

D114
V06C

Q55
2SC2320F
SWITCHING

D115
IS2473
SWITCHING

Q51
2SC2320F
SWITCHING

D111
IS2473

D33
SM-IA-02
REVERSE
CURRENT
CHECK

Q43, Q46
SEL131G
"PLAY"

Q44, Q47
2SC1162
2SC2320F
INVERTER

ZD10
HZ4BC

D101
IS2473

D38
SM-IA-02
RECT.

D107
IS2473
SWITCHING

Q71
2SC2320
SWITCHING

D104
IS2473
SWITCHING

ZD3
HZ6B
VOLT STAB

ZD2
HZ15
VOLTAGE
CONTROL

ZD1
HZ22
VOLTAGE
CONTROL

Q41, Q42
2SC1061
VOLT. STAB

IC9
NJM-4558
METER AMP

D91
IS2473
RECT FOR
METER

Q62
2SC1162
VOLT. STAB

ZD901
HZ11
VOLT. STAB

Q45, Q48
LED6
SEL1741Y
LED DRIVE "PAUSE"

D31
SM-IA-02
REVERSE VOLTAGE
PROTECTOR

D104~D106
IS2473
REVERSE VOLTAGE
CONTROL

D30
SM-IA-02
REVERSE VOLTAGE
CONTROL

ZD8
HZ6B
VOLT STAB

Q52
2SC1162
VOLT. STAB

D102
IK60
DISCHARGING
OF C99B

D33
SM-IA-02
REVERSE
CURRENT
CHECK

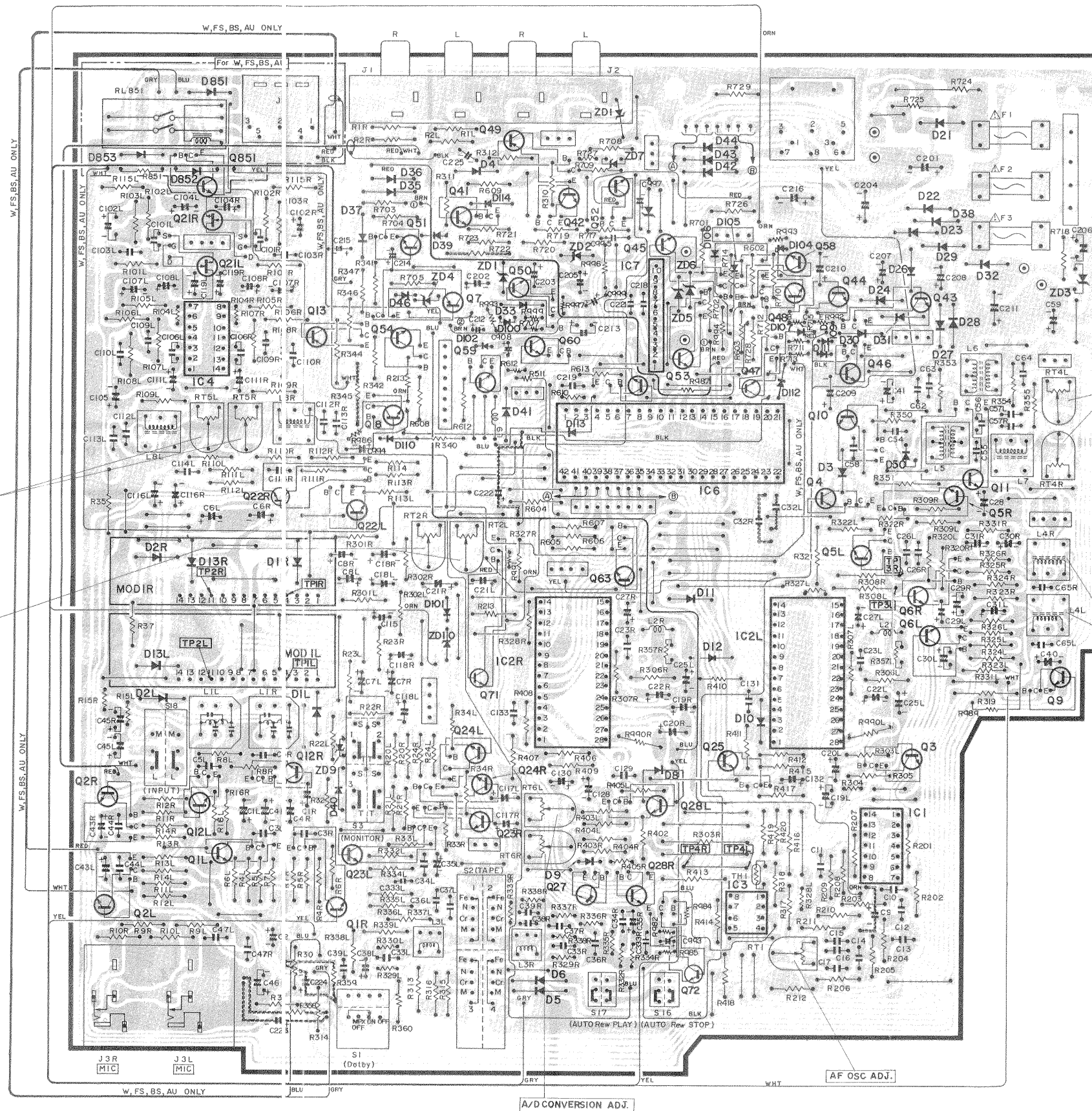
D100
IS2473
REVERSE
CURRENT
CHECK

LED7
SEL131G
"PLAY"

Q43, Q46
SEL131G
"PLAY"

Q44, Q47
2SC1162
2SC2320F
INVERTER

CIRCUIT BOARD DIAGRAM



IC1				IC2R				IC2L				IC4				IC7	
14	5.6	1	24	14	3.1	15	0	14	3.1	15	0	7	6.2	8	6.2	10	0.2
13	0	2	5.6	13	0	16	0	13	0	17	0	6	5.9	9	5.9	9	0.1
12	3.1	3	2.4	12	0.1	17	0	12	0.1	17	0	5	6.2	10	6.2	8	16.2
11	5.6	4	5.6	11	5.0	18	0	11	5.0	18	0	4	11.5	11	11.5	7	5.4
10	3.1	5	0	10	5.0	14	4.8	10	5.0	14	4.8	3	10.9	12	10.9	6	—
9	5.6	6	2.4	9	0	20	4.3	9	0	20	4.3	2	5.9	13	5.9	5	0.1
8	3.1	7	0	8	5.0	21	4.4	8	5.0	21	4.4	1	0	14	—	4	2.2
				7	5.0	22	4.1	7	5.0	22	4.1					3	5.4
				6	5.0	23	4.1	6	5.0	23	4.1					2	4.0
				5	5.0	24	3.8	5	5.0	24	3.8					1	0
				4	7.4	25	15.0	4	2.2	25	15.0						
				3	1.2	26	3.8	3	1.2	26	3.8						
				2	7.4	27	0.1	2	1.8	27	0.1						
				1	7.1	28	6.6	1	1.6	28	6.6						

IC3			
B	-2.6	1	-2.1
7	-2.0	2	0
6	1.2	3	0.4
5	3.2	4	-6.0

IC6																				
—	—	5.0	—	—	3.4	—	—	0.1	0.1	2.2	0.1	4.6	0.1	0.1	3.5	0.1	4.2	0.1	0.1	0
4.2	4.1	4.0	3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.2
—	5.0	4.5	5.0	5.0	4.5	5.0	0.1	0.1	0	5.0	4.5	0.1	5.0	5.0	5.0	5.0	5.0	5.0	0.1	0.1

MOD IR, L													
14	13	12	11	10	9	8	7	6	5	4	3	2	1
0	2.5	7.5	7.5	7.4	7.4	7.5	15.0	7.5	7.5	7.5	2.3	7.4	0

Q1R,L		Q2R,L		Q3		Q4		Q5R,L		Q6R,L		Q7		Q8	
B	1.3	B	0.7	B	0.6	B	0	B	0.6	B	3.6	B	23	B	0
C	8.4	C	6.0	C	0	C	2.1	C	0	C	8.3	C	-2.6	C	2.3
E	0.7	E	0.12	E	0	E	0	E	0	E	3.0	E	23	E	0

Q9		Q10		Q11		Q12R,L		Q13		Q21R,L		Q22R,L		Q23R,L	
B	-2.1	B	-2.6	B	-2.1	B	0	B	-2.6	S	0.3	B	0.6	B	0
C	-2.6	C	-2.6	C	-2.6	C	0	C	-2.6	G	0.05	C	0	C	0
E	-2.6	E	0	E	0	E	0	E	-2.6	D	7.0	E	0	E	0

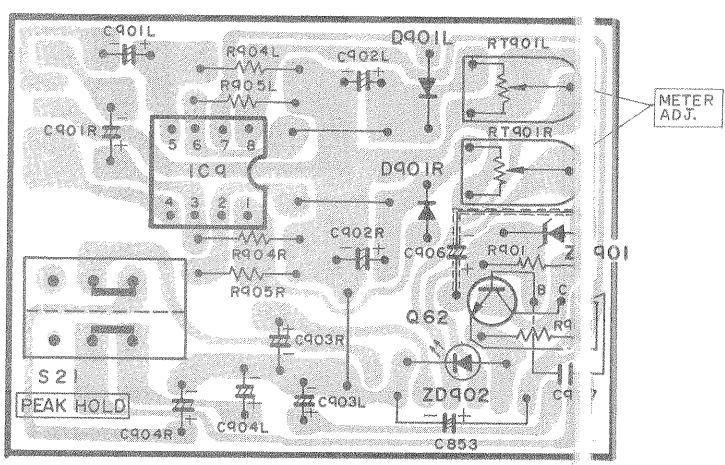
Q24R,L		Q25		Q27		Q28R,L		Q41		Q42		Q43		Q44	
B	0	B	1.0	B	0.6	B	0.6	B	24.1	B	15.5	B	0.1	B	0.7
C	0	C	1.2	C	0	C	0	C	31.0	C	21.8	C	31	C	0
E	0	E	0	E	0	E	0	E	23.5	E	15.0	E	0	E	0

Q45		Q46		Q47		Q48		Q49		Q50		Q51		Q52	
B	0.6	B	0.8	B	0.1	B	0.6	B	4.4	B	0.6	B	0.7	B	5.6
C	0.1	C	0.2	C	1.5	C	0	C	5.0	C	1.0	C	0.1	C	12.5
E	0	E	0	E	0	E	0	E	5.0	E	0	E	0	E	5.0

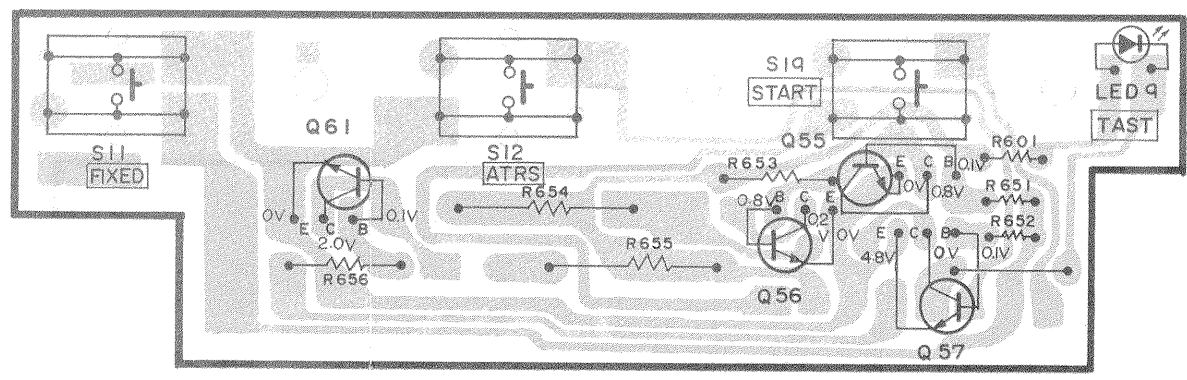
Q53		Q54		Q58		Q59		Q60		Q62		Q63		Q851	
B	0.6	B	0.7	B	0	B	0	B	0.6/0	B	0.6/0	B	4.5	B	Play: 0.6
C	0	C	0.1	C	3.8	C	2.0	C	50/0	C	50/0	C	4.5	C	0
E	0	E	0	E	0	E	0	E	0	E	0	E	4.4	E	0

Main PC Board

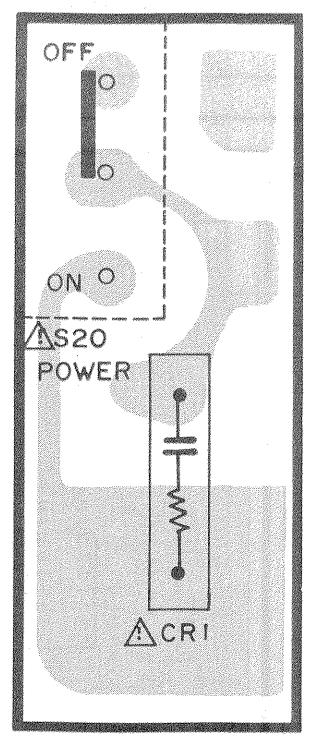
IC 9								Q 62	
1	2	3	4	5	6	7	8	B	10
-14	0	0	-15.4	0	0	-14	9.37	C	15
								E	1



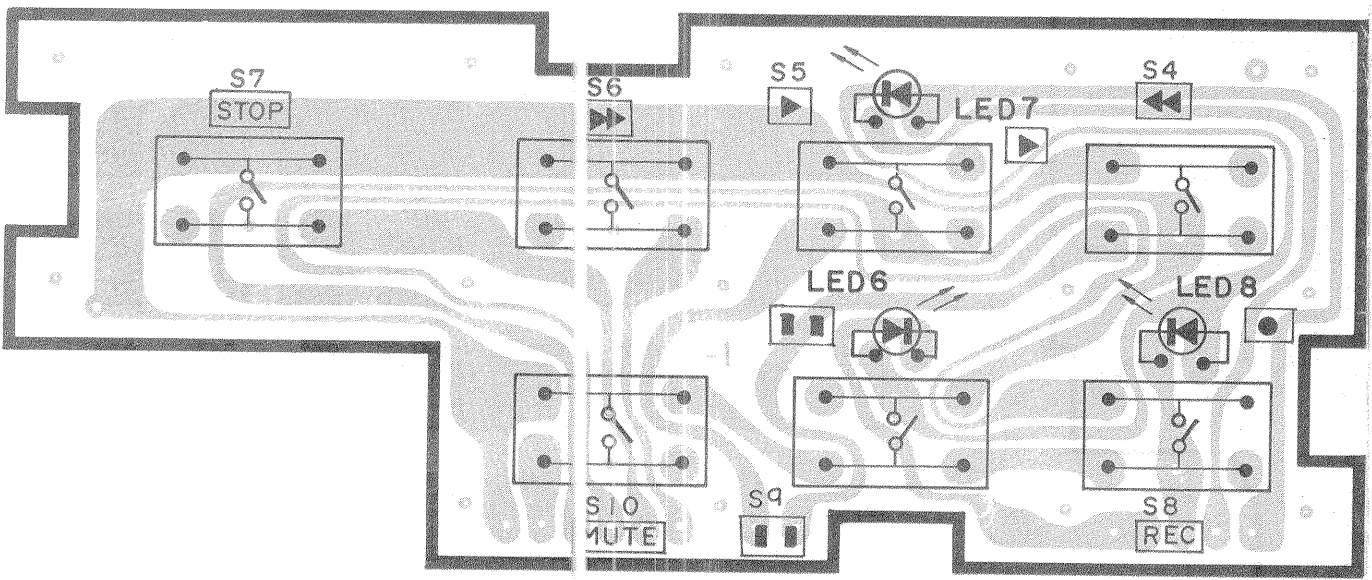
Meter PC Board



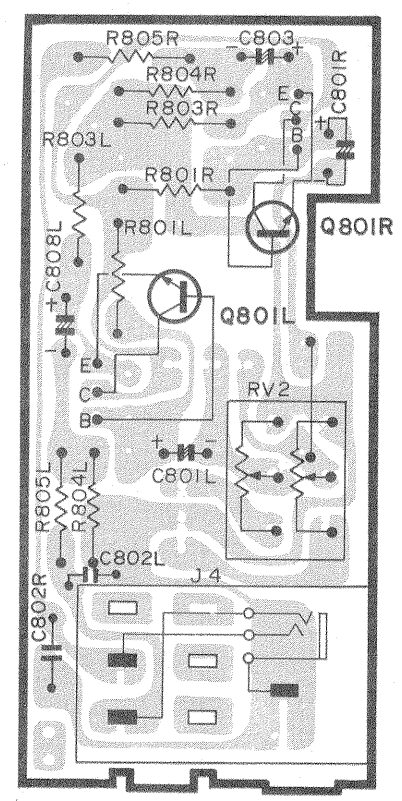
ATRS PC Board



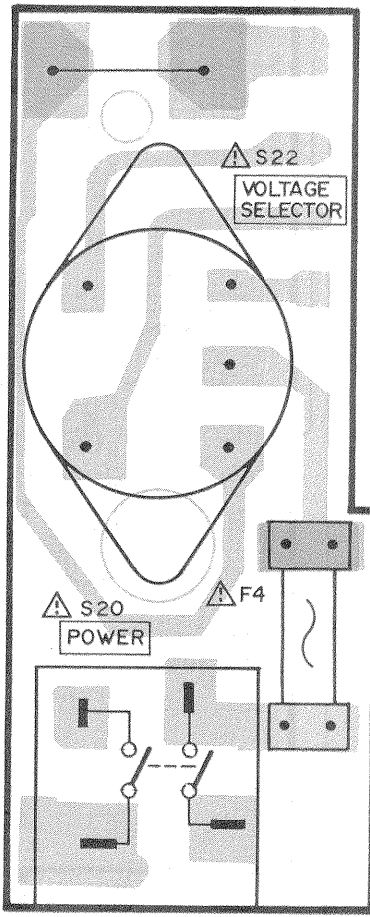
Power PC Board (For U, C)



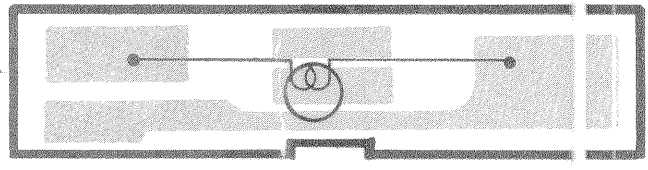
Operation Key PC Board



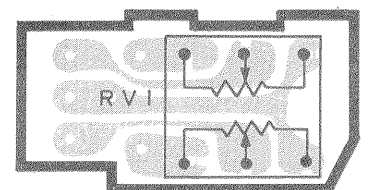
Headphone PC Board



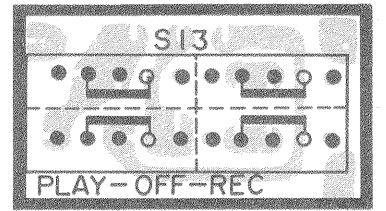
Power PC Board (For W)



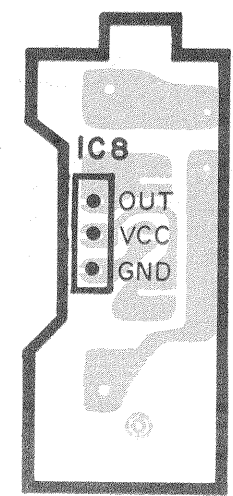
Lamp PC Board



Rec. Level PC Board

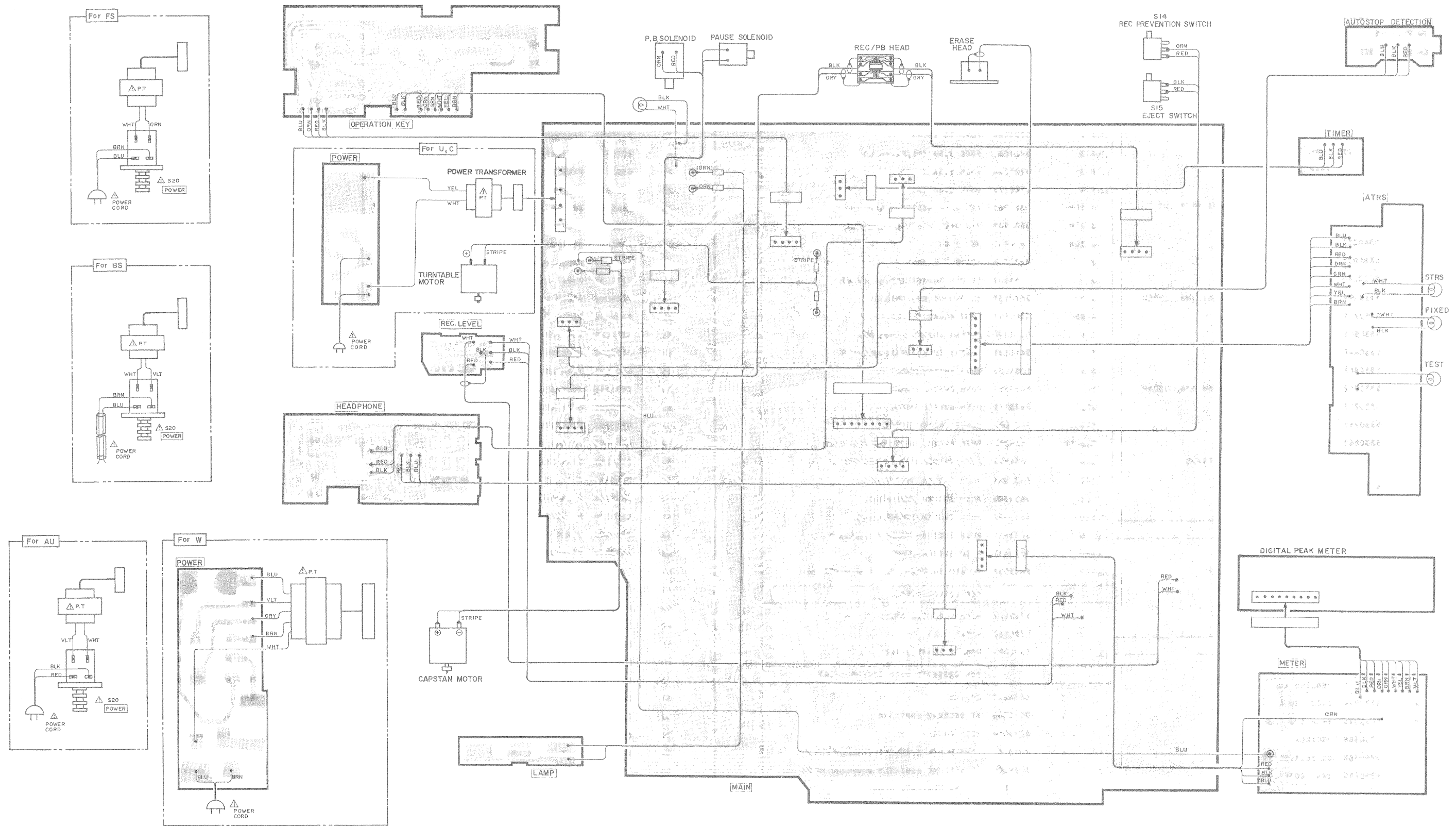


Timer PC Board



Auto Stop PC Board












WIRING DIAGRAM



SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
SEMI-CONDUCTORS			MISCELLANEOUS		
Q 52	5320643	TRANSISTOR SILICON 150M 2SC1162	△	5746158	POWER CORD (W,FS)
Q 53	5322622	TRANSISTOR 2SC2320F	△	5746342	POWER CORD (BS)
Q 54	5322622	TRANSISTOR 2SC2320F	△	5746442	POWER CORD (U,C)
Q 55-57	5321662	TRANSISTOR 2SC2021S	△	5746571	POWER CORD (AU)
Q 58-60	5322622	TRANSISTOR 2SC2320F		5762034	LAMP (FIXED, ATRS, METER)
Q 61	5321662	TRANSISTOR 2SC2021S		5765022	LAMP (CASSETTE ILLUMINATION)
Q 62	5320643	TRANSISTOR SILICON 150M 2SC1162	△ F 1	5720179	FUSE 1A (FS,BS,AU,W)
Q 62	5322622	TRANSISTOR 2SC2320F	△ F 1	5721164	FUSE 1A (U,C)
Q 63	5322622	TRANSISTOR 2SC2320F	△ F 2	5721063	FUSE 1.25AT (FS,BS,AU,W)
Q 71	5321295	TRANSISTOR 2SC1740E	△ F 2	5721164	FUSE 1A (U,C)
Q 72	5321295	TRANSISTOR 2SC1740E	△ F 3	5721064	FUSE 2.5A (FS,BS,AU,W)
Q801LR	5322622	TRANSISTOR 2SC2320F	△ F 3	5721224	FUSE 2.5A (U,C)
Q851	5322622	TRANSISTOR 2SC2320F (FS,BS,AU,W)	△ F 4	5720175	FUSE 0.8A (W)
TH 1	5340231	THERMISTER 112302-2	J 1LR	5676261	PIN JACK ASSEMBLY (LINE IN)
TH 1LR	5340231	THERMISTER 112302-2	J 2LR	5676261	PIN JACK ASSEMBLY (LINE OUT)
ZD 1	5331013	ZENER DIODE HZ22	J 3LR	5674201	MIC JACK
ZD 2	5330541	ZENER DIODE HZ-15	J 4	5674262	HEADPHONE JACK
ZD 3	5330392	ZENER DIODE SILICON HZ6B 1MHZ 400MW	J 5	5651141	5P DIN SOCKET (FS,BS,AU,W)
ZD 4	5330711	ZENER DIODE HZ4BC	J 6	5677131	8P DIN SOCKET (REMOTE)
ZD 5	5330555	ZENER DIODE HZ11B2	RL851	5641141	REED RELAY (FS,BS,AU,W)
ZD 6	5330848	ZENER DIODE RD5.1E-B2	S 1	5612297	ROTARY SWITCH (DOLBY NR)
ZD 7	5330847	ZENER DIODE RD2.7E-B2	S 2	5613381	ROTARY SWITCH (TAPE SELECTOR)
ZD 8	5330392	ZENER DIODE SILICON HZ6B 1MHZ 400MW	S 3	5634353	PUSH SWITCH (MONITOR)
ZD 9	5330711	ZENER DIODE HZ4BC	S11	5633351	PUSH SWITCH (FIXED)
ZD 10	5330711	ZENER DIODE HZ4BC	S12	5633351	PUSH SWITCH (ATRS)
ZD 11	5330841	ZENER DIODE RD5.1E-B	S13	5620082	SLIDE SWITCH (TIMER)
ZD901	5330322	DIODE-ZENER SILICON 10K TR-9S	S16-17	5634368	PUSH SWITCH (AUTO REW PLAY/STOP)
ZD901	5330551	ZENER DIODE HZ11A	S18	5634306	PUSH SWITCH (INPUT SELECTOR)
ZD902	5380101	LED SLP-24B	S19	5633351	PUSH SWITCH (TEST START)
TRANSFORMERS			S21	5634306	PUSH SWITCH (PEAK HOLD)
△ PT	5212905	POWER TRANSFORMER (W)	△ S20	5633482	PUSH SWITCH-POWER (U,C)
△ PT	5212951	POWER TRANSFORMER (U,C)	△ S20	5633541	PUSH SWITCH-POWER (FS,BS,AU)
△ PT	5212952	POWER TRANSFORMER (FS)	△ S20	5633641	PUSH SWITCH-POWER (W)
△ PT	5212953	POWER TRANSFORMER (BS)	△ S22	5605083	ROTARY SWITCH-VOLTAGE SELECTOR (W)
△ PT	5212954	POWER TRANSFORMER (AU)	FOR ACCESSORIES		
COILS				7740321	HEAD CLEANING STICK
L 1LR	5161663	DOLBY FILTER		5894163	PATCH CORD
L 2LR	0333151	PEAKING COIL 36MH	△	5662021	SOCKET ADAPTER (W)
L 3LR	5120274	CHOKE COIL	FOR CASSETTE DECK ASSEMBLY (A)		
L 4LR	5260215	TRAP COIL 33HH	1	6534251	SPRING
L 5	5260368	OSCILLATOR TRANSFORMER	2	0671306	DT SCREW-2.6MMDX6MM
L 6	5260368	OSCILLATOR TRANSFORMER	3	6973414	HEAD BASE
L 7	5260215	TRAP COIL 33HH	4	7318789	HEAD PLATE ASSEMBLY (BLACK) (U, FS, W)
L 8LR	5260215	TRAP COIL 33HH	5	7334343	HEAD PLATE ASSEMBLY (SILVER) (C, FS, BS, AU)
L 9	5152031	CHOKE COIL 180MH	6	5444853	RECORD PLAYBACK HEAD
L 10	5152073	CHOKE COIL 8.2MICROH	7	6321246	HEAD SPRING
			8	7781752	SPECIAL SCREW
			9	7786215	POLYSLIDER WASHER
			10	7321221	ERASE HEAD BASE

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
FOR CASSETTE DECK ASSEMBLY (A)					
11	5445313	ERASE HEAD	61	7768682	THRUST SUPPORT
12	6320744	HEAD SPRING	62	7290501	GOVERNOR
13	7781921	PAN HEAD SCREW-2MMDX25MM	63	0671305	DT SCREW-2.6MMDX5MM
14	7780554	SCREW	64	5576884 5576881	DC MOTOR ASSEMBLY (PLAY)
15	0948492	BALL - 2MMD	65	5576884 5576881	DC MOTOR ASSEMBLY (FF/REWIND)
16	6532991	HEAD PLATE SPRING	66	6576084	RUBBER PLATE
17	7311982	ERASE STOP PLATE	67	7539002	SCREW FOR MOTOR MOUNTING
18	7536872	LOCK LEVER PIN	68	6762216	CASSETTE TRAY ASSEMBLY (SILVER) (C, FS, BS, AU)
19	6545957	SPRING	69	6762215	CASSETTE TRAY ASSEMBLY (BLACK) (U, FS, W)
20	7329782	PRESSURE ROLLER ARM ASSEMBLY	70	7786628	POLYSLIDER WASHER
21	7778856	POLYESTER WASHER	71	6354684	BELT FOR FF,REWIND
22	6383475	PRESSURE ROLLER ARM ASSEMBLY	72	7786115	POLYESTER WASHER
23	7772623	SPRING	73	7778855	POLYSLIDER WASHER
24	6545334	SPRING	74	7312114	PLAY ARM ASSEMBLY
25	7786215	POLYSLIDER WASHER	75	6422401	COUNTER PULLEY
26	7778856	POLYESTER WASHER	76	5642662	SOLENOID ASSEMBLY (PLAY)
27	7329041	PAUSE LEVER (L) (SILVER) (C, FS, BS, AU)	77	6540015	DAMPER SPRING
28	7329051	PAUSE LEVER (R) (SILVER) (C, FS, BS, AU)	78	7778848	POLYSLIDER WASHER
29	7329042	PAUSE LEVER (L) (BLACK) (U, FS, W)	79	6753014	EJECT ARM ASSEMBLY
30	7329052	PAUSE LEVER (R) (BLACK) (U, FS, W)	80	6546085	SPRING FOR EJECT ARM
31	6414021	TURNTABLE ASSEMBLY	81	7325822	EJECT SLIDER ASSEMBLY
32	6305892	BACK TENSION SPRING	82	6301722	SPRING
33	6414023	TURNTABLE ASSEMBLY (SUPPLY)	FOR CASSETTE DECK ASSEMBLY (B)		
34	7786115	POLYESTER WASHER	83	7740602	FELT LEG
35	6320731	BACK TENSION SPRING LEFT	84	6711351	BUSHING (BS)
36	6752856	CASSETTE HOLDER SPRING	85	6760443	EJECT LEVER
37	6752873	RECORD PREVENTION ARM	86	6760111	LAMP HOLDER
38	7331331	TRAY BRACKET ASSEMBLY	87	5762036	PILOT LAMP
39	7781582	FLAT SCREW-3MMDX10MM(BLACK)	88	6355064	COUNTER BELT
40	5633361	PUSH SWITCH	89	6764981	COUNTER HOLDER
41	0671310	DT SCREW-2.6MMDX10MM	90	5559462	COUNTER (BLACK) (U, FS, W)
42	7330392	BRAKE FUNCTION ARM	91	5559461	COUNTER (SILVER) (C, FS, BS, AU)
43	6413817	FF/REWIND BASE ASSEMBLY	92	6052253	RESET BUTTON ASSEMBLY (BLACK) (U, FS, W)
44	7312125	PAUSE SLIDER ASSEMBLY	93	6052252	RESET BUTTON ASSEMBLY (SILVER) (C, FS, BS, AU)
45	7330382	PAUSE ARM	94	6631388	CASSETTE METAL ASSEMBLY (BLACK) (U, FS, W)
46	6300987	SPRING	95	6631385	CASSETTE METAL ASSEMBLY (SILVER) (C, FS, BS, AU)
47	7312511	PLAY ARM ASSEMBLY	96	6763002	SWITCH LEVER (W)
48	6322473	SPRING	97	6758042	SWITCH LEVER (U, C, FS, BS, AU)
49	5642522	DC SOLENOID ASSEMBLY	98	6290981	PUSH BUTTON ASSEMBLY -POWER (BLACK) (U, FS, W)
50	5633361	PUSH SWITCH	99	6290982	PUSH BUTTON ASSEMBLY -POWER (SILVER) (C, FS, BS, AU)
51	0671310	DT SCREW-2.6MMDX10MM	100	6291141	SLIDE KNOB -TIMER (BLACK) (U, FS, W)
52	7745241	INSULATION FIBER	101	6295621	SLIDE KNOB -TIMER (SILVER) (C, FS, BS, AU)
53	6373325	FLYWHEEL ASSEMBLY (R)	102	6762071	PUSH BUTTON ASSEMBLY -INPUT (BLACK) (U, FS, W)
54	7778848	POLYSLIDER WASHER	103	6762074	PUSH BUTTON ASSEMBLY -INPUT (SILVER) (C, FS, BS, AU)
55	7772623	SPRING	104	6762076	PUSH BUTTON ASSEMBLY - MONITOR (BLACK) (U, FS, W)
56	7786626	WASHER	105	6762075	PUSH BUTTON ASSEMBLY - MONITOR (SILVER) (C, FS, BS, AU)
57	7786623	POLYSLIDER WASHER	106	6299381	PUSH BUTTON - AUTO REWIND (BLACK) (U, FS, W)
58	6373305	FLYWHEEL ASSEMBLY (L)	107	6053981	PUSH BUTTON - AUTO REWIND (SILVER) (C, FS, BS, AU)
59	6357301	FLYWHEEL BELT	108	6762064	PUSH BUTTON ASSEMBLY (START)
60	6355214	BELT	109	6762065	PUSH BUTTON ASSEMBLY (ATR\$)

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
FOR CASSETTE DECK ASSEMBLY (B)			MISCELLANEOUS		
110	6762066	PUSH BUTTON ASSEMBLY (FIXED)	136	6672055	FRONT PANEL ASSEMBLY (BLACK) (U, FS, W)
111	6182222	HEAD COVER ASSEMBLY (BLACK) (U, FS, W)	137	6672056	FRONT PANEL ASSEMBLY (SILVER) (C, FS, BS, AU)
112	6182221	HEAD COVER ASSEMBLY (SILVER) (C, FS, BS, AU)	138	6042805	BOTTOM COVER
113	6762982	LED HOLDER ASSEMBLY	139	6043298	UPPER COVER (C)
114	5310521	DIGITAL PEAK METER	140	6043299	UPPER COVER (BS, AU, FS)
115	6299232	PUSH BUTTON - PEAK HOLD (BLACK) (U, FS, W)	141	6043297	UPPER COVER (U, W, FS)
116	6053971	PUSH BUTTON - PEAK HOLD (SILVER) (C, FS, BS, AU)	142	6288176	KNOB ASSEMBLY - RECORD LEVEL R (BLACK) (U, FS, W)
117	6762021	FUNCTION FRAME (SILVER) (C, FS, BS, AU)	143	6288175	KNOB ASSEMBLY - RECORD LEVEL R (SILVER) (C, FS, BS, AU)
118	6762022	FUNCTION FRAME (BLACK) (U, FS, W)	144	6288164	KNOB ASSEMBLY - RECORD LEVEL L (BLACK) (U, FS, W)
119	8699408	BT BIND HEAD SCREW - 3MMDX8MM (BLACK)	145	6288163	KNOB ASSEMBLY - RECORD LEVEL L (SILVER) (C, FS, BS, AU)
120	8699410	BT BIND HEAD SCREW - 3MMDX10MM (BLACK)	146	6288461	KNOB ASSEMBLY - OUTPUT (BLACK) (U, FS, W)
121	0678312	DT SCREW - 2.6MMDX12MM (BLACK)	147	6288462	KNOB ASSEMBLY - OUTPUT (SILVER) (C, FS, BS, AU)
122	7780915	BIND TAPPING SCREW - 2MMDX5MM	148	6288323	KNOB - TAPE, DOLBY NR (BLACK) (U, FS, W)
123	7781581	BT FLAT SCREW - 3MMDX10MM	149	6288281	KNOB - TAPE, DOLBY NR (SILVER) (C, FS, BS, AU)
124	7781582	FLAT SCREW - 3MMDX10MM (BLACK)	150	6328412	SPRING
125	6762331	FUNCTION P.W.B ASSEMBLY WITH BUTTON (BLACK) (U, FS, W)	151	6299262	EJECT BUTTON (BLACK) (U, FS, W)
126	6762332	FUNCTION P.W.B ASSEMBLY WITH BUTTON (SILVER) (C, FS, BS, AU)	152	6053961	EJECT BUTTON (SILVER) (C, FS, BS, AU)
127	6299275	BUTTON - PLAY, PAUSE, STOP (BLACK) (U, FS, W)	153	6303057	SPRING FOR EJECT KNOB
128	6299271	BUTTON - PLAY, PAUSE, STOP (SILVER) (C, FS, BS, AU)	154	6092982	CASSETTE DOOR ASSEMBLY (BLACK) (U, FS, W)
129	6299276	BUTTON - FF, REWIND (BLACK) (U, FS, W)	155	6092983	CASSETTE DOOR ASSEMBLY (SILVER) (C, FS, BS, AU)
130	6299272	BUTTON - FF, REWIND (SILVER) (C, FS, BS, AU)	156	8699610	BT BIND SCREW - 4MMDX10MM (U, C, FS, W)
131	6299277	BUTTON - REC (BLACK) (U, FS, W)	157	8691610	BT BIND SCREW - 4MMDX10MM (FS, BS, AU)
132	6299273	BUTTON - REC (SILVER) (C, FS, BS, AU)	158	7781582	FLAT SCREW - 3MMDX10MM (BLACK) (U, FS, W)
133	6299278	BUTTON - MUTE (BLACK) (U, FS, W)	159	7781581	BT FLAT SCREW - 3MMDX10MM (C, FS, BS, AU)
134	6299274	BUTTON - MUTE (SILVER) (C, FS, BS, AU)			
135	6749484	LED SPACER			

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.

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