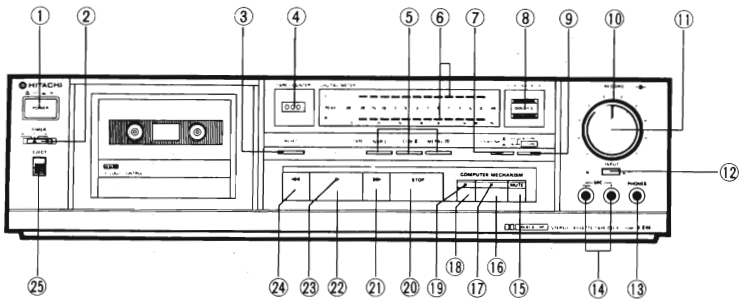
HITACHI
SERVICE MANUAL

TK | **No. 1687E**

D-E44
(U,C,FS,BS,AU,W)



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㉑ FAST FORWARD BUTTON
㉒ PLAYBACK BUTTON
㉓ PLAYBACK INDICATOR
㉔ REWIND BUTTON
㉕ EJECT 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.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

STEREO CASSETTE TAPE DECK

February 1982 **TOKAI WORKS**

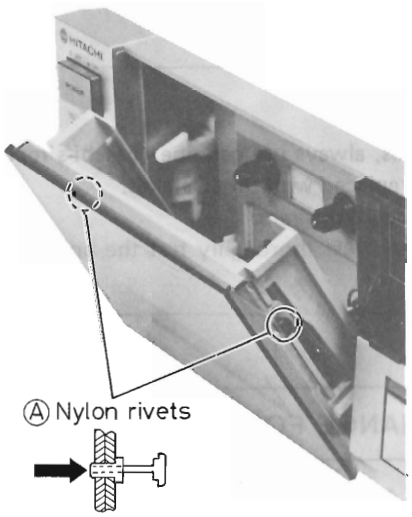
SPECIFICATIONS

Semiconductors:	
Modules:	1
ICs:	6
Transistors:	33
Diodes:	27
LEDs:	3
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 ~ 16 kHz
	30 Hz ~ 15 kHz (±3 dB)
	30 Hz ~ 15 kHz*
CrO_2-II:	20 Hz ~ 17 kHz
	30 Hz ~ 16 kHz (±3 dB)
	30 Hz ~ 16 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 (A weighted, Reference 3% T.H.D.)
	72 dB*
Dolby B NR ON:	66 dB (A weighted, Reference 3% T.H.D.)
	66 dB*
Dolby NR OFF:	58 dB (A weighted, Reference 3% T.H.D.)
	58 dB*
Wow and Flutter:	0.04% (WRMS)
	0.13%*
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 220V, 50 Hz(FS)
	AC 240V, 50 Hz(BS, AU)
	AC 100 – 110V, 115 – 127V, 200 – 220V, 230 – 250V, 50/60 Hz(W)
Power Consumption:	22W
Dimensions:	110(H) x 435(W) x 282(D) mm
Weight:	4.6 kg
Motor:	Electronically controlled DC motor
Heads:	Metal SL R & P head
	Three-gap ferrite Erase head

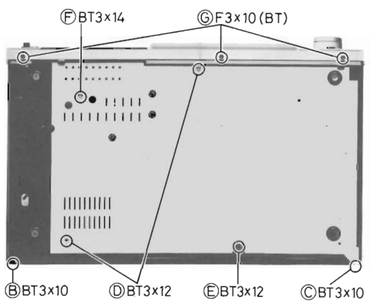
* According to DIN 45 500

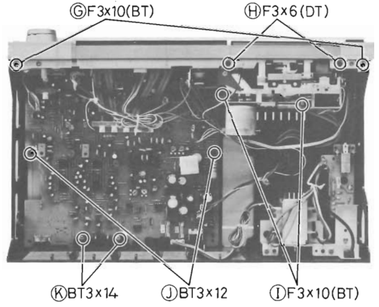
DISASSEMBLY

1. **Cassette door**
   Depress the eject button to open the cassette door.
   Remove Ⓐ (two) nylon rivets and remove the cassette door.



2. **Top cover**
   Remove Ⓑ and Ⓒ (two) screws.
3. **Bottom cover**
   Remove Ⓒ, Ⓓ, Ⓔ and Ⓕ (five) screws.
4. **Front panel**
   Remove Ⓖ and Ⓗ (seven) screws. When removing the front panel, be careful that the lead wires are not damaged.
5. **Cassette chassis**
   Remove Ⓕ, Ⓗ and Ⓘ (five) screws.
6. **Main PC board**
   After removing the front panel, remove Ⓔ, Ⓙ and Ⓚ (five) screws.





ADJUSTMENTS

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
S2-1 ~ S2-3	Tape select switches	NOR-I	S4	Timer switch	OFF
S2-4	Dolby NR switch	OFF	RV01	Record level controls	MAX.
S3	Input select switch	LINE	RV02	Output level control	MAX.

* According to DIN45 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 (3150Hz*)	Playback	Semi-variable resistor in the motor	3000Hz +30Hz −10 (3150Hz*)	See Note 1
2	Head azimuth	• VTVM	—	LINE OUT	MTT-216 or MTT-316 12.5 kHz	Playback	Azimuth adjusting screw	Output Max.	See Note 2
3	Playback gain	• VTVM	—	TP1L, R	MTT-150 (400Hz, 200 nWb/m)	Playback	RT01L, R	580 mV	See Note 3
4	Digital peak meter	• Audio oscillator (400Hz) • Attenuator • VTVM	LINE IN	TP1L, R	—	Record	RT201L, R	0 dB indicator lights	See Note 4

Item	Adjustments	Measuring Instrument and Connection: Measuring Instrument	Input Terminal	Output Terminal	Check Tape	Mode	Adjusted Position	Adjusted Value	Remarks
5	Bias current	Set RT02L, R to the center.							
		• Audio oscillator (1.2kHz/ 12 kHz 0dB – 20dB) • Attenuator • VTVM	LINE IN	LINE OUT	Hitachi UD tape	Record/ playback	RT401L, R	Output difference within ±0.5dB	See note 5
6	Record level	• Audio oscillator (400Hz) • Attenuator • VTVM	LINE IN	TP1L, R	Hitachi UD tape	Record/ playback	RT02L, R	580mV −10dB ±0.5dB	See Note 6
7	(1) (2) Bias frequency	Set the tape select switches (S2-1 ~ S2-3) to the Metal position.							
		• Frequency counter	—	TP2L, R	—	Record	L401	85±0.5kHz	See Note 7

Note:

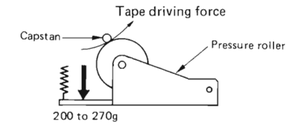
1. Adjust within 30 sec. after heat-running for more than 20 minutes.
2. When the maximum values of both channels are different, adjust to the maximum value of the L channel. In this case, the difference between the maximum values of both channels should be within 2 dB.
3. Playback a test tape (MTT-150, 400 Hz 200 nWb/m) and adjust RT01L, R so that the level of TP1L, R becomes 580 mV.
4. 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 of TP1L, R becomes 580 mV.
   2) Then, adjust the attenuator to lower the input level by 0.5 dB.
   3) Adjust RT201L, R so that the 0 dB indicators of the digital peak meter lights.
5. 1) Set RT02L, R to the center.
   2) Feed a 1.2 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, adjust the attenuator to lower the input level by 20 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 kHz.
   4) Playback the recorded signal and adjust RT401L, R so that the output level difference between two frequencies is within ±0.5 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 level of TP1L, R becomes 580 mV. Then, adjust the attenuator to lower the input level by 10 dB.
   2) Record the signal on Hitachi UD tape with the conditions of item 1).
   3) Playback the recorded signal and adjust RT02L, R so that the level of TP1L, R becomes 580 mV −10dB ±0.5 dB.
7. Set the tape select switches (S2-1 ~ S2-3) to the Metal position in the recording mode. Adjust L401 so that the bias frequency of TP2L, R becomes 85 ± 0.5 kHz.

INSPECTION OF MECHANISM

	Check Item		Reference Value	Remarks
1	Pressure of pressure roller		200 to 270g	Note 1
2	Tape driving force		120g or more	
3	Torque	Take-up	40 to 65g – cm	Measure in playback mode
		Fast forward	75 to 110g – cm	Measure in fast forward mode
		Rewind	75 to 110g – cm	Measure in rewind mode
4	Back-tension	Take-up reel	1.7 to 5g – cm	Measure in playback mode
		Supply reel	2.5 to 4.0g – cm	
5	Brake-torque	Take-up reel	50 to 100g – cm	Measure in stop mode
		Supply reel	50 to 100g – cm	
6	Head plate return strength		200g or more	Measure in stop mode
7	Play lock allowance		300g or more	Measure in playback mode

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.



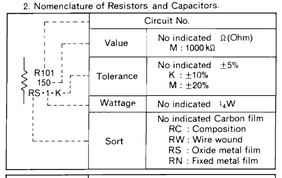
LUBRICATIONS

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		Floil (GB-TS-1)

Note

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

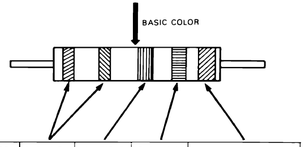


Circuit No.		
Value		No indicated Ω(Ohm) M : 1000kΩ
Tolerance		No indicated ±5% K : ±10% M : ±20%
Wattage		No indicated 1/4W
Sort		No indicated Carbon film RC : Composition RW : Wire wound RS : Oxide metal film RN : Fixed metal film
Circuit No.		
Value		No indicated μF P : PF
Tolerance		No indicated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

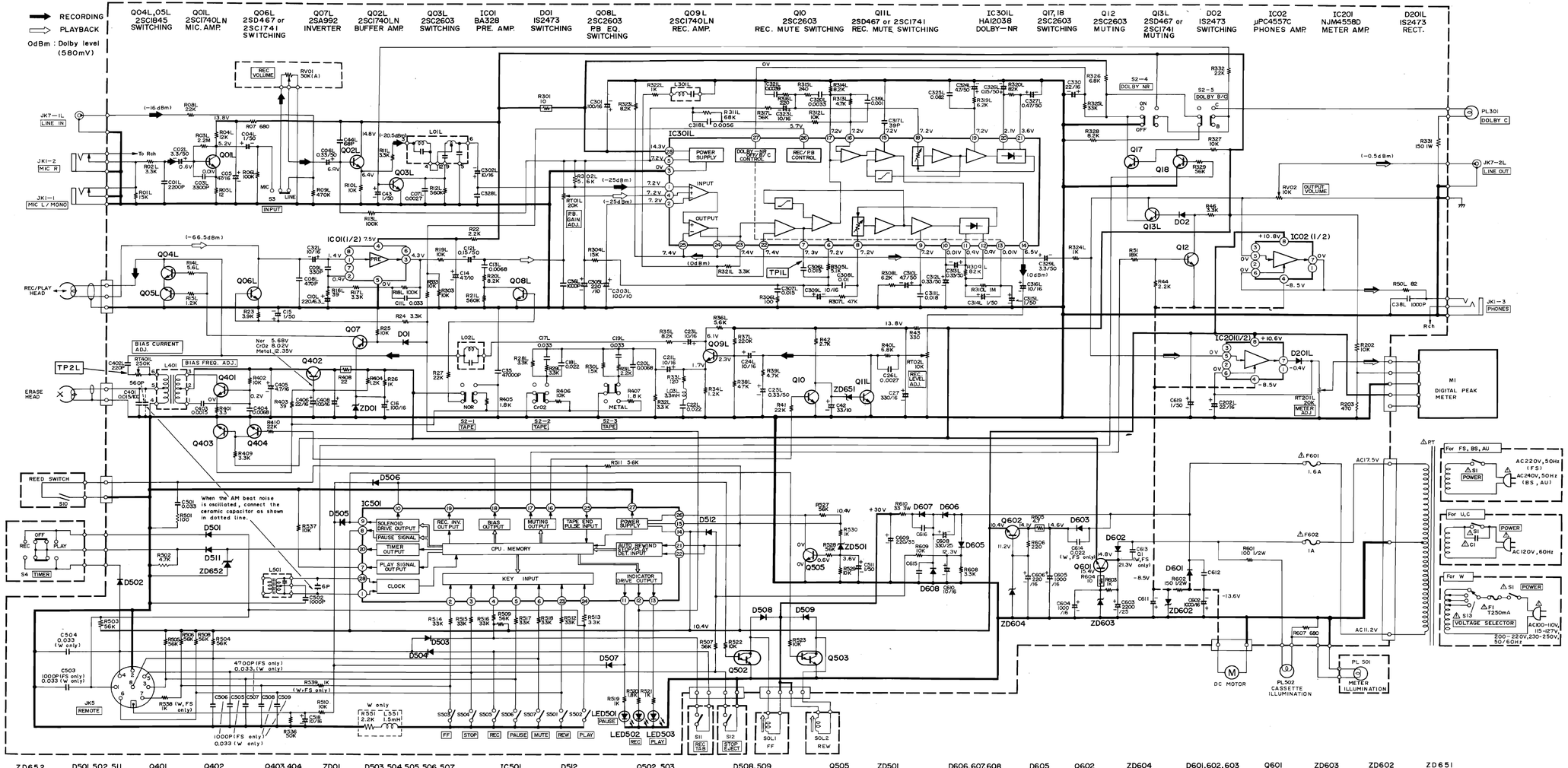
HOW TO READ CAPACITY OF RESISTOR SHAPE CAPACITORS

COLOR	RATED VOLTAGE
Pink	25V
Light green	50V

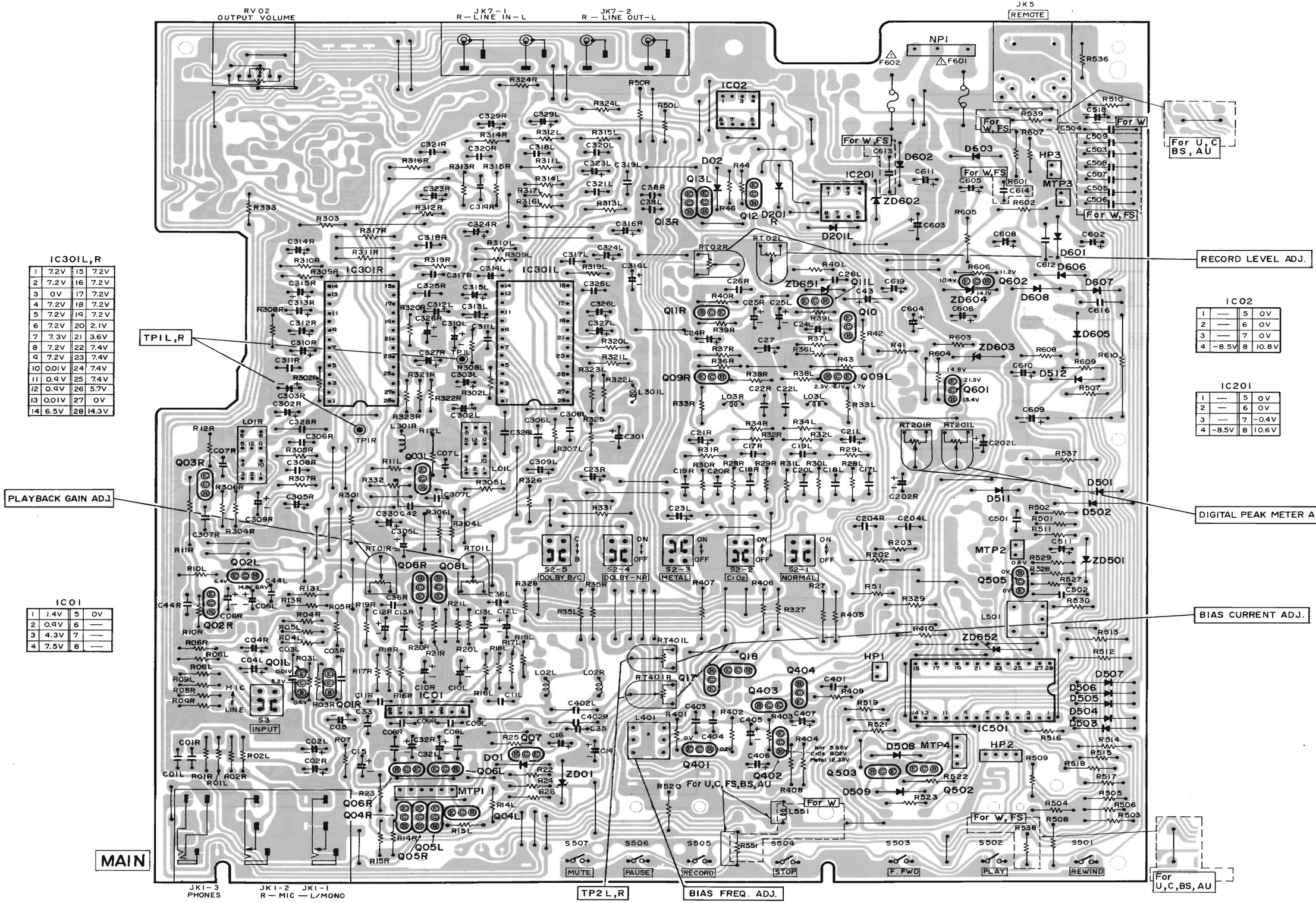


COLOR	CAPACITY	MULTIPLE	TOLERANCE	CHARACTERISTICS
Black	0	10^0	±20%	For temperature compensation
Brown	1	10^1		
Red	2	10^2		
Orange	3	10^3		
Yellow	4	10^4		
Green	5	10^5		
Blue	6			
Violet	7			
Grey	8		±30%	High dielectric constant type
White	9			For temperature compensation
Gold		10^{-1}	±5%	
Silver			±10%	High dielectric constant type

SCHEMATIC DIAGRAM



CIRCUIT BOARD DIAGRAM



IC301L,R

1	7.2V	15	7.2V
2	7.2V	16	7.2V
3	0V	17	7.2V
4	7.2V	18	7.2V
5	7.2V	19	7.2V
6	7.2V	20	2.1V
7	7.3V	21	3.6V
8	7.2V	22	7.4V
9	7.2V	23	7.4V
10	0.01V	24	7.4V
11	0.9V	25	7.4V
12	0.9V	26	5.7V
13	0.01V	27	0V
14	6.5V	28	14.3V

IC02

1	—	5	0V
2	—	6	0V
3	—	7	0V
4	-8.5V	8	10.8V

IC201

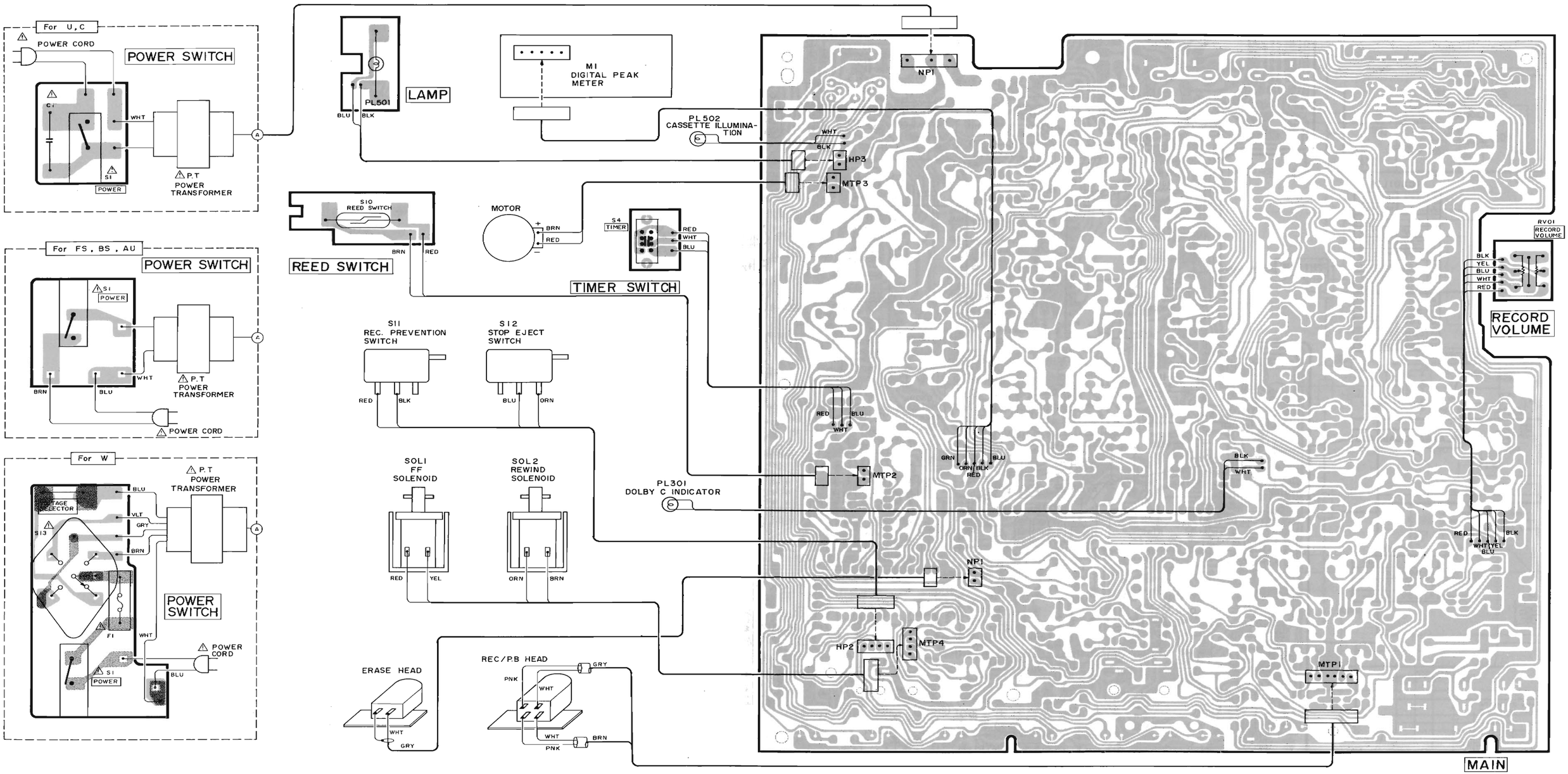
1	—	5	0V
2	—	6	0V
3	—	7	-0.4V
4	-8.5V	8	10.6V

IC01

1	1.4V	5	0V
2	0.9V	6	—
3	4.3V	7	—
4	7.5V	8	—

D-E44	D-E44

WIRING DIAGRAM

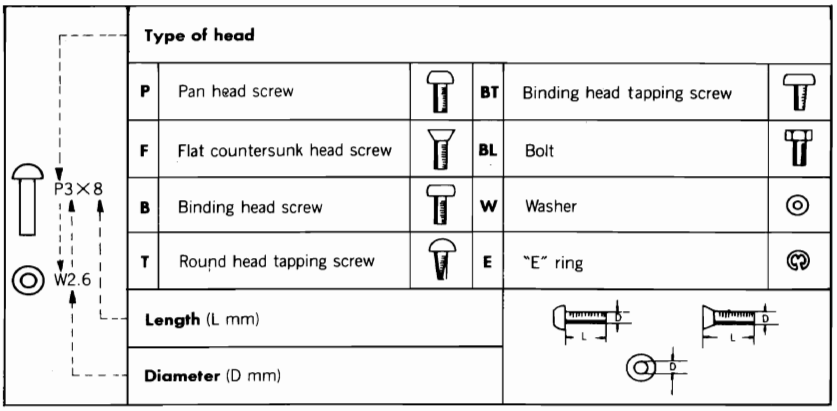


REPLACEMENT PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION
		CAPACITORS
⚠C 1	0249781	CERAMIC CAPACITOR 0.01MF (U,C)
C 03LR	0209023	CERAMIC DISC (RESISTOR SHAPE) 3300PF+-30%
C311LR	0268155	MYLAR 0.018MF+-5%
C318LR	0268153	MYLAR 5600PF+-5%
C321LR	0268157	MYLAR 3900PF+-5%
C325LR	0268156	MYLAR 0.082MF+-5%
C402LR	0209002	CERAMIC DISC (RESISTOR SHAPE) 220PF +-10%
C502	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000P F+-10%
C503	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000P F+-10% (FS)
C505-506	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000P F+-10% (FS)
C507	0209024	CERAMIC DISC (RESISTOR SHAPE) 4700P F+-30% (FS)
C508-509	0209010	CERAMIC DISC (RESISTOR SHAPE) 1000P F+-10% (FS)
		RESISTORS
RT 01LR	5007478	SEMI VARIABLE 20K OHM
RT 02LR	5007477	SEMI VARIABLE 10K OHM
RT201LR	5007478	SEMI VARIABLE 20K OHM
RT401LR	5007482	SEMI VARIABLE 250K OHM
RV 01	5000846	VARIABLE RESISTOR 50K OHM(A)
RV 02	5000791	VARIABLE RESISTOR 10K OHM(B)
R301	0170542	FUSE RESISTOR 10 OHM+-5% 1/4W
R331	0111039	OXIDE METAL FLIM 150 OHM+-5% 1W
R408	0170543	FUSE RESISTOR 22 OHM+-5% 1/4W
R604	0170542	FUSE RESISTOR 10 OHM+-5% 1/4W
R605	0170541	FUSE RESISTOR 4.7 OHM+-5% 1/4W
R610	0171013	OXIDE METAL FILM 33 OHM+-5% 3W
		SEMI-CONDUCTORS
D 01	5330573	DIODE 1S2473
D 02	5330573	DIODE 1S2473
D201LR	5330573	DIODE 1S2473
D501	5330573	DIODE 1S2473
D502	5330573	DIODE 1S2473
D503-507	5330573	DIODE 1S2473
D508	5331841	DIODE ERB12-01
D509	5331841	DIODE ERB12-01
D511	5330573	DIODE 1S2473
D512	5330573	DIODE 1S2473
D601-603	5331841	DIODE ERB12-01
D605	5330573	DIODE 1S2473
D606-608	5331841	DIODE ERB12-01
IC 01	5350713	IC BA328-LN
IC 02	5352831	IC MPC4557C
IC201	5350601	IC NJM4558D
IC301LR	5355111	IC HA12038
IC501	5359725	IC MPD554-81
LED501	5380481	LED SLR-54GC
LED502	5380482	LED SLR54URC1
LED503	5380481	LED SLR-54GC
Q 01LR	5321298	TRANSISTOR 2SC1740LN-SE
Q 02LR	5321298	TRANSISTOR 2SC1740LN-SE
Q 03LR	5323013	TRANSISTOR 2SC2603EF
Q 04LR	5323031	TRANSISTOR 2SC1845EF
Q 05LR	5323031	TRANSISTOR 2SC1845EF
Q 06LR	5321194	TRANSISTOR 2SD467BC
Q 07	5323041	TRANSISTOR 2SA992FE
Q 08LR	5323013	TRANSISTOR 2SC2603EF
Q 09LR	5321298	TRANSISTOR 2SC1740LN-SE
Q 10	5323013	TRANSISTOR 2SC2603EF
Q 11LR	5321194	TRANSISTOR 2SD467BC
Q 12	5323013	TRANSISTOR 2SC2603EF
Q 13LR	5321194	TRANSISTOR 2SD467BC
Q 17	5323013	TRANSISTOR 2SC2603EF
Q 18	5323013	TRANSISTOR 2SC2603EF
Q401	5322651	TRANSISTOR 2SD667C
Q402	5321213	TRANSISTOR 2SD468C
Q403	5323013	TRANSISTOR 2SC2603EF
Q404	5323013	TRANSISTOR 2SC2603EF
Q502	5323071	TRANSISTOR 2SD947
Q503	5323071	TRANSISTOR 2SD947
Q505	5323013	TRANSISTOR 2SC2603EF
Q601	5323131	TRANSISTOR 2SD330ALE
Q602	5321213	TRANSISTOR 2SD468C
ZD 01	5330311	ZENER DIODE SILICON HZ7A
ZD501	5330311	ZENER DIODE SILICON HZ7A
ZD602	5330321	ZENER DIODE HZ-9A
ZD603	5330541	ZENER DIODE HZ-15
ZD604	5330552	ZENER DIODE HZ11B
ZD651	5330847	ZENER DIODE RD2.7E-B2
ZD652	5330534	ZENER DIODE HZ12A3
		COILS
L 01LR	5162171	DOLBY FILTER
L 02LR	5120562	TRAP COIL
L 03LR	5150364	CHOKE COIL 3.3 MH
L301LR	5120564	TRAP COIL
L401	5260441	BIAS OSCILLATOR COIL
L501	5132113	CHOKE COIL
L551	5152107	CHOKE COIL (W)

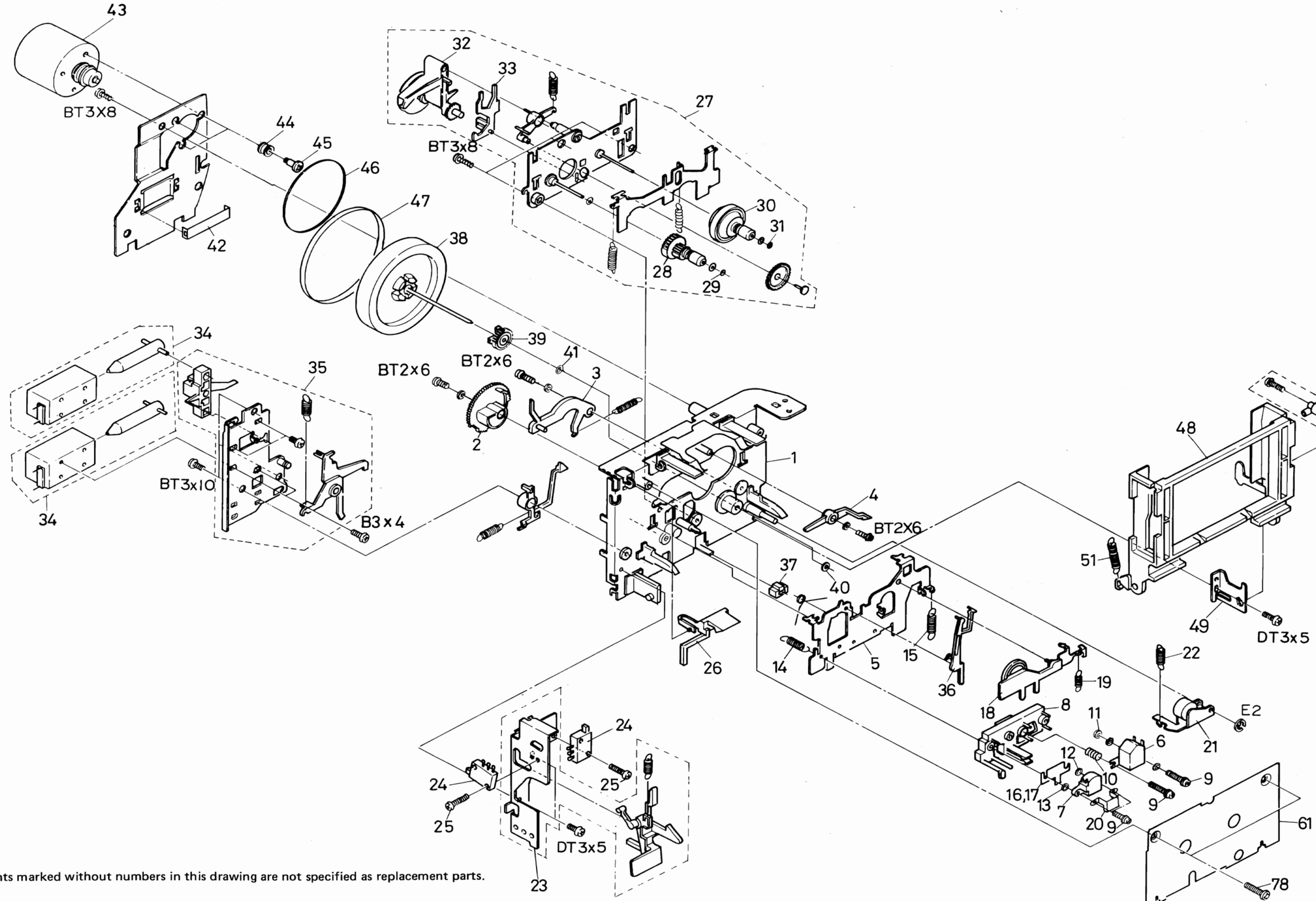
(Continue to page 22)

SYMBOL-NO	P-NO	DESCRIPTION
		MECHANISM (FL-90F)
1	7346821	CHASSIS BASE HOLDER ASSEMBLY
2	6430887	PLAY GEAR
3	6761784	PLAY ARM
4	6761821	PICK UP ARM
5	7339097	HEAD PLATE ASSEMBLY
6	5449021	RECORD PLAYBACK HEAD
7	5445351	ERASE HEAD
8	6761755	HEAD PLATE
9	7775211	SPECIAL SCREW
10	6321733	HEAD SPRING C
11	7771441	WASHER - 2 MMD
12	7771442	WASHER-2MMD
13	7771444	WASHER-2MMD
14	6302375	SPRING
15	6301022	SPRING
16	7332762	HEAD SPACER
17	7332764	HEAD SPACER
18	6761709	TAKE UP IDLER ASSEMBLY
19	6320578	SPRING FOR TAKE UP IDLER
20	6990651	INSULATION PLATE FOR HEAD
21	7330581	PRESSURE ROLLER ARM ASSEMBLY
22	6301361	SPRING
23	7330666	EJECT HOLDER ASSEMBLY
24	5633361	PUSH SWITCH
25	0671310	DT SCREW-2.6MMDX10MM
26	6761815	RECORD PREVENTION ARM
27	6761697	REEL BASE ASSEMBLY
28	6414202	TURNTABLE ASSEMBLY (SUPPLY)
29	7786745	POLYESTER WASHER
30	6414213	TURNTABLE ASSEMBLY (TAKE UP)
31	7786745	POLYESTER WASHER
32	6761673	FF/REWIND ARM ASSEMBLY
33	6761733	SELECT SLIDER
34	5642921	DC SOLENOID
35	7330726	SOLENOID PLATE ASSEMBLY
36	6761742	REWIND ARM
37	6581042	RUBBER FOR RECORD PREVENTION
38	6373751	FLYWHEEL ASSEMBLY
39	6430932	FLYWHEEL GEAR
40	7787566	POLY SLIDER WASHER
41	7772623	SPRING
42	6534162	FLYWHEEL SUPPORT SPRING
43	5576765	DC MOTOR ASSEMBLY
44	6589591	RUBBER PLATE
45	7539007	SPECIAL SCREW
46	6355193	BELT
47	6357301	FLYWHEEL BELT
48	6768913	CASSETTE HOLDER
49	7330603	CASSETTE HOLDER SUPPORT
50	6763431	DAMPER ASSEMBLY
51	6301723	SPRING FOR CASSETTE HOLDER



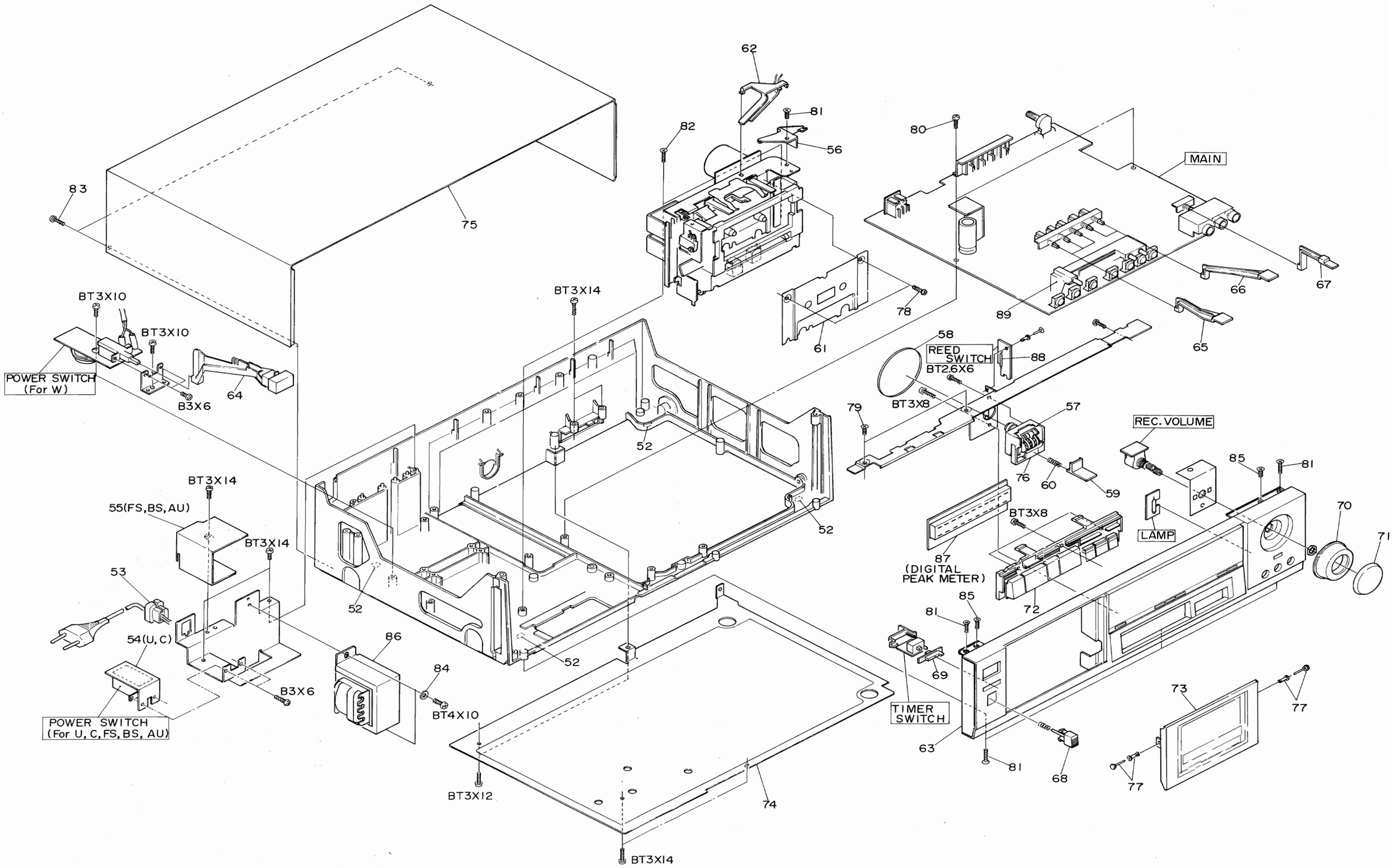
When ordering hardware excluding stated on these lists, be sure to make your orders with type and size.

EXPLODED VIEW (Mechanism — FL-90F)



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

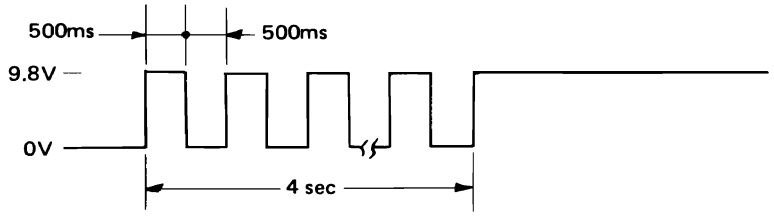
EXPLODED VIEW (Cabinet)

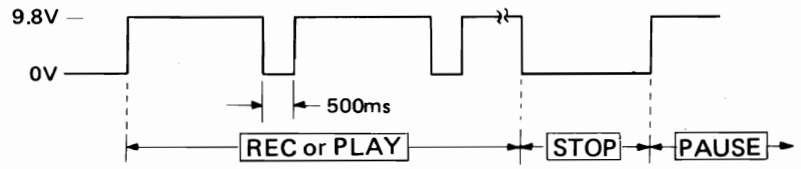


Note: Components marked without numbers in this drawing are not specified as replacement parts.

SYMBOL-NO	P-NO	DESCRIPTION
		MISCELLANEOUS
52	7740603	FELT LEG
⚠ 53	6794401	BUSHING (U, C, W, FS, AU)
⚠ 53	6794411	BUSHING (BS)
54	7756282	TERMINAL COVER (U,C)
55	7758241	SWITCH COVER (FS,BS,AU)
56	6767761	HOLDER
57	5559552	COUNTER
58	6354663	BELT
59	6056001	RESET BUTTON
60	6303115	SPRING FOR RESET BUTTON
61	7341184	CASSETTE METAL ASSEMBLY
62	6761962	LAMP HOLDER
63	3248854	FRONT PANEL ASSEMBLY (U, C, W, FS, AU)
63	6225313	FRONT PANEL ASSEMBLY (BS)
64	3293421	PUSH BUTTON ASSEMBLY (POWER) [U, C, FS, AU]
64	3293422	PUSH BUTTON ASSEMBLY (POWER) [W]
64	6768026	PUSH BUTTON ASSEMBLY (POWER) [BS]
65	6292361	PUSH BUTTON (NORMAL/CrO_2 /METAL)
66	6292371	PUSH BUTTON (DOLBY NR/DOLBY B/C)
67	3292794	PUSH BUTTON ASSEMBLY (INPUT) [U, C, W, FS, AU]
67	6055473	PUSH BUTTON ASSEMBLY (INPUT) [BS]
68	3292374	EJECT BUTTON ASSEMBLY (U, C, W, FS, AU)
68	6054863	EJECT BUTTON ASSEMBLY (BS)
69	3292535	SLIDE KNOB (TIMER) [U, C, W, FS, AU]
69	6291714	SLIDE KNOB (TIMER) [BS]
70	3292421	KNOB ASSEMBLY (RECORD-R) [U, C, W, FS, AU]
70	6289373	KNOB ASSEMBLY (RECORD-R) [BS]
71	3292411	KNOB ASSEMBLY (RECORD-L) [U, C, W, FS, AU]
71	6288683	KNOB ASSEMBLY (RECORD-L) [BS]
72	4097705	FUNCTION BUTTON ASSEMBLY (U, C, W, FS, AU)
72	6771793	FUNCTION BUTTON ASSEMBLY (BS)
73	3948321	CASSETTE DOOR ASSEMBLY (U, C, W, FS, AU)
73	6093772	CASSETTE DOOR ASSEMBLY (BS)
74	6044693	BOTTOM COVER
75	4434101	UPPER COVER (W,FS,AU)
75	4434352	UPPER COVER (U,C)
75	6045505	UPPER COVER (BS)
76	6758054	RESET BODY
77	6795242	NYLON RIVET
78	0678312	DT SCREW-2.6MMDX12MM (BLACK)
79	8602406	DT FLAT SCREW-3MMDx6MM
80	8699412	BIND TAPPING SCREW-3MMDX12MM(BLACK)
81	7781581	BT FLAT SCREW-3MMDX10MM
82	7781582	FLAT SCREW-3MMDX10MM(BLACK)
83	8698410	BT BIND SCREW-3MMDX10MM (W,FS,BS,AU)
83	8699410	BT BIND HEAD SCREW-3MMDX10MM (BLACK) [U, C]
84	0626577	SPECIAL WASHER
85	8601408	DT FLAT SCREW-3MMDx8MM
⚠ 86	5213061	POWER TRANSFORMER (U,C)
⚠ 86	5213064	POWER TRANSFORMER (W)
⚠ 86	5213062	POWER TRANSFORMER (FS)
⚠ 86	5213063	POWER TRANSFORMER (BS,AU)
87	5310491	DIGITAL PEAK METER
88	5641431	REED RELAY
89	6771691	LED HOLDER ASSEMBLY

IC501 (μPD554C 081, for mechanism control) PIN FUNCTION TABLE

Pin No.	Pin symbol	Function
1	$CLOCK_1$	These pins are externally attached to the resonance circuit to operate the built-in clock oscillation circuit which is to be the reference of the microprocessor operation and the oscillation frequency is set to 400 kHz.
28	$CLOCK_0$	
2	$\overline{FF}$	FF mode input pin. Judged to be the FF mode with Lo potential input.
3	$\overline{STOP}$	Stop mode input pin. Judged to be the STOP mode with the Lo potential input.
4	$\overline{REC}$	REC mode input pin. Judged to be the REC mode with the Lo potential input.
5	$\overline{PAUSE}$	PAUSE mode input pin. Judged to be the PAUSE mode with the Lo potential input.
6	$\overline{REC\ MUTE}$	REC MUTE input pin. Judged to be the REC MUTE mode when Lo potential is input during REC or REC/PAUSE mode.
7	PLAY SIGNAL	PLAY signal output pin. Outputs the pulse with approx. 50 ms width during transfer to play mode or REC mode, and sets the PLAY mode input pin (24) to the Lo potential input.
8	PAUSE SIGNAL	• PAUSE signal output pin. Connected to Vss pin because this is not used. tial during other modes.
9	REWIND SOL.	• Rewind solenoid drive control output pin. Outputs Hi potential during REC, PLAY, REW. When the mode is changed over in the FF mode, Hi potential is output after the inhibit time (700 ms). • Test program judgement input pin. When it is connected to Vss pin (pin (14)) and power is turned ON, it is judged and the test program is being executed.
10	FF SOL.	• FF solenoid drive control output pin. Outputs Hi potential during REC, PLAY, FF. When the mode is changed over in the REW mode, Hi potential is output after the inhibit time (700 ms).
11	PAUSE INDI.	Pause indicator output pin. Hi potential is output during pause and the pause indicator lights. The flashing pulse is output at intervals of 1 sec during AUTO REC MUTE, and normal Hi potential is output after a 4 sec elapse of AUTO REC MUTE time.  (During AUTO REC MUTE)
12	RECORD INDI.	• REC indicator output pin. Hi potential is output during REC, REC PAUSE and REC HOLD. Hi potential is output after the inhibit time (60ms) when the mode is changed in the PLAY mode, and Hi potential is output after the inhibit time (760ms) when the mode is changed in the FF or REW mode. • When the REC and PLAY buttons are pressed simultaneously or the timer switch is set to "REC" within 4 sec after the power is supplied and resetting is complete, Hi potential is output after resetting.

Pin No.	Pin symbol	Function
13	PLAY INDI.	• Play indicator output pin. The light-off pulse (500ms) is output while synchronizing with the tape end detector pulse during REC and PLAY, and Hi potential is output during pause. • When the REC and PLAY buttons are pressed simultaneously or the timer switch is set to "REC" within 4 sec after the power is supplied and resetting is complete, the flashing pulse is output at intervals of 600ms for 4 sec after resetting is complete, and normal Hi potential is output after this. 
14	Vss	Hi side power pin. Applies +10V.
15	TEST	Microprocessor TEST pin. Connected to Vss pin because this is not used.
16	$\overline{\text{REC MUTE}}$	REC amp muting control output pin. Outputs Hi potential after the inhibit time (450ms) during REC. When the mode is changed in FF and REW, the inhibit time is 1.1 sec, and Lo potential is output in general.
17	$\overline{\text{LINE MUTE}}$	Line amp final stage muting control output pin. Outputs Hi potential after elapse of the inhibit time (450ms) during REC, REC HOLD, REC PAUSE and PLAY. When the mode is changed in the FF and REW modes, the inhibit time is 1.1 sec and Lo potential is output in general.
18	BIAS	Output pin to operate the bias oscillation circuit during REC mode. Outputs Lo potential in general and outputs Hi potential after the inhibit time (120ms) during the REC mode. When the mode is changed in the FF and REW modes, the inhibit time is 820ms.
19	REC INV.	REC indicator inversion output pin. Blank pin because this is not used.
20	TIMER	Timer REC/PLAY detector signal output pin. Outputs Lo potential until 1 cycle of the main program is completed via the inhibit time (4s) after power is supplied, and feeds back to the REC input or PLAY input pin via the timer switch to judge the timer REC/PLAY function. Returns to Hi potential output after 1 cycle (approx. 4ms) of the main program is completed.
21	$\overline{\text{A.R.S.}}$	Auto rewind stop input pin. Connected to Vss pin because this is not used.
22	$\overline{\text{A.R.P.}}$	Auto rewind play input pin. Connected to Vss pin because this is not used.
23	$\overline{\text{REW}}$	REW mode input pin. Judged to be the rewind mode with Lo potential input.
24	$\overline{\text{PLAY}}$	PLAY mode input pin. Judged to be the play mode with Lo potential input.
25	$\overline{\text{REEL PULSE}}$	• Tape end detector reel pulse input pin. When the take-up reel disc stops turning, the pulse output is not present, and tape end detection judgement is done with no pulse input (Negative edge) for 3 sec or more during record and play, and for 1 sec or more during FF and REW modes. • Tape count when the memory rewind function is operating is done by counting the pulses input.
26	RESET	Reset pin. Set this pin Hi to Lo potential to perform initial resetting when power is supplied.
27	VGG	Power pin. Connected to GND.

SYMBOL-NO	P-NO	DESCRIPTION
		MISCELLANEOUS
⚠	5746342	POWER CORD (BS)
⚠	5746443	POWER CORD (U,C)
⚠	5746571	POWER CORD (AU)
⚠	5746661	POWER CORD (W,FS)
⚠ F 1	5720178	FUSE 250MA (W)
⚠ F601	5721061	FUSE 1.6A (W,FS,BS,AU)
⚠ F601	5721161	FUSE 1.6A (U,C)
⚠ F602	5720179	FUSE 1A (W,FS,BS,AU)
⚠ F602	5721164	FUSE 1A (U,C)
JK1	5679823	JACK (MIC, HEADPHONE)
JK5	5677131	8P DIN SOCKET (REMOTE)
JK7	5676261	PIN JACK ASSEMBLY (LINE IN, LINE OUT)
PL501	5765071	LAMP (METER ILLUMINATION)
PL301	5762035	LAMP (DOLBY C INDICATOR)
PL502	5762035	LAMP (CASSETTE ILLUMINATION)
⚠ S 1	5633842	PUSH SWITCH (POWER) [U, C]
⚠ S 1	5633843	PUSH SWITCH (POWER) [FS, BS, AU, W]
S 2	5634437	PUSH SWITCH (TAPE, DOLBY NR, DOLBY B/C)
S 3	5634363	PUSH SWITCH (INPUT)
S 4	5624131	SLIDE SWITCH (TIMER)
⚠ S 13	5605083	ROTARY SWITCH (VOLTAGE SELECTOR) [W]
S501-507	5633771	PUSH SWITCH (REW, PLAY, FF, STOP, REC, PAUSE, MUTE)
		FOR ACCESSORIES
	7740321	HEAD CLEANING STICK
	5894163	PATCH CORD
⚠	5652291	SOCKET ADAPTER (W)

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D-E44 TK No. 1687E TOKAI

U,C,FS,BS,AU,W

Printed in Japan (K)