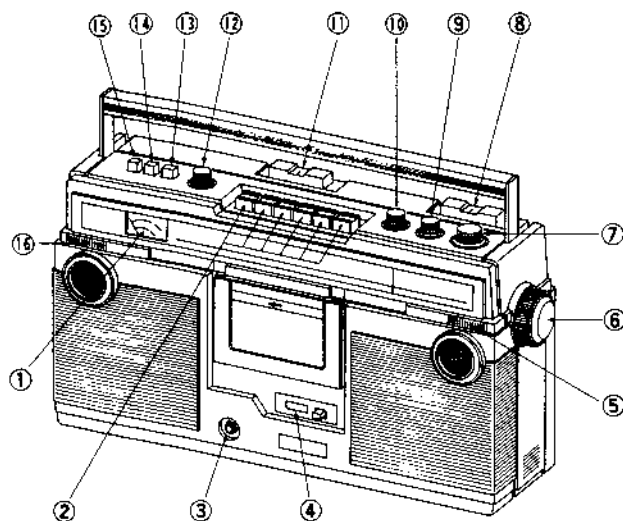


SERVICE MANUAL

No. 987



KEY TO ILLUSTRATIONS

- ① REC/TUN/BATT 3 WAY METER
- ② CASSETTE OPERATION BUTTONS
- ③ HEADPHONE JACK
- ④ TAPE COUNTER
- ⑤ BUILT-IN MICROPHONE (Right)
- ⑥ TUNING CONTROL
- ⑦ VOLUME CONTROL
- ⑧ BAND SELECTOR (FM/MW/LW)
- ⑨ TREBLE CONTROL
- ⑩ BASS CONTROL
- ⑪ FUNCTION SELECTOR (TAPE/RADIO/SLEEP)
- ⑫ BALANCE CONTROL
- ⑬ AFC SWITCH (ON/OFF)
- ⑭ MODE SWITCH (STEREO/MONO)
- ⑮ TAPE SWITCH (Nor/CrO₂)
- ⑯ BUILT-IN MICROPHONE (Left)

SPECIFICATIONS

GENERAL

Semi-conductors	6 IC's, 6 transistors, 20 diodes
Power Supply	AC: 220V, 50 Hz (E) 240V, 50 Hz (BS) DC: 9V ("D" × 6)
Power Consumption	10W
Speaker	12 cm, 4Ω × 2 5 cm, 8Ω × 2
Power Output	1.8W (T.H.D. 10%)
Dimensions	23.3 (H) × 42.2 (W) × 11.7 (D) cm
Weight	4.7 kg (with batteries)

RADIO

Circuit System	FM/MW/LW 3 band Superheterodyne
Tuning Range	FM: 87.5 – 108 MHz MW: 530 – 1605 kHz LW: 150 – 350 kHz
Intermediate Frequency	FM: 10.7 MHz MW/LW: 465 kHz
Sensitivity	FM: 12 dB MW: 48 dB LW: 53 dB
Antenna	FM: Telescopic antenna MW/LW: Ferrite core antenna
Accessory	FM dipole antenna (BS)

TAPE RECORDER

Tape	Cassette tape
Tape Speed	4.75 cm/s
Track System	4 track, 2 channel
Recording System	AC bias, 27/29 kHz
Erasing System	Quasi AC erase
Frequency Range	Normal: 50 – 10,000 Hz CrO ₂ : 50 – 12,000 Hz
S/N Ratio	45 dB
Cross Talk	40 dB
Input Sensitivity and Impedance	Mic: –55 dBm, 600 ohms DIN: 50k ohms
Output level and Impedance	DIN: 5k ohms Speaker: 4 ohms
Erase Ratio	60 dB
Motor	DC micromotor
Fast Forwarding or Rewinding Time	120 sec. (Using C-60)

TAPE RECORDER WITH FM/MW/LW RADIO

July 1977

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.

EXPLANATION OF NEW CIRCUIT

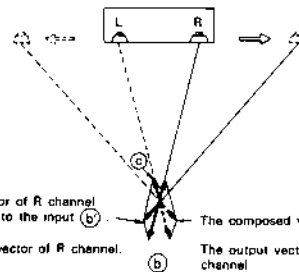
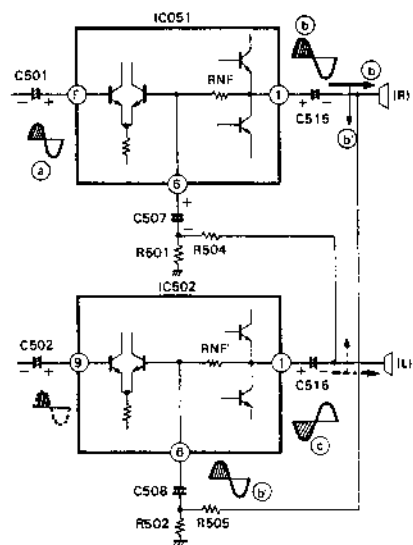
OUTPUT CIRCUIT

With the stereo set accommodated in one box, the stereophonic effect is inferior because of the small distance between the left and right speakers, and so the output circuit as shown in the figure below has been adopted in the TRK-5190E to obtain a more effective stereophonic sound.

As shown in the diagram, when the positive half-cycle signal (a) is applied to the input pin (9) of IC501 (502), the positive half-cycle signal (b) with the same phase is taken to the output pin (1). When the positive half-cycle signal (b) is applied to the input pin (6), the negative half-cycle which is out of phase is outputted because a differential amplification circuit is used. This works as negative feedback, and the amount of feedback is determined by the ratio of R501 (502) and RNF (RNF').

R504 (503) is the resistor for applying the output of the R channel to the input pin (6) of the L channel (IC502) and the output of the L channel to the input pin (6) of the R channel. Considering just the R channel, the total of the in-phase components (b) of the input pin (9) and the negative-phase-sequence component (c) is outputted to the output pin (1). In the same way, the output of the L channel is the total of the in-phase components of the input and the negative-phase-sequence output of the R channel.

The above is shown in the figure using vectors. Outputs are composed in the air and a directional feeling at the listening point becomes the same as that when the distance between the left and right speakers is made larger due to sum of vectors, and the stereo effect is increased.

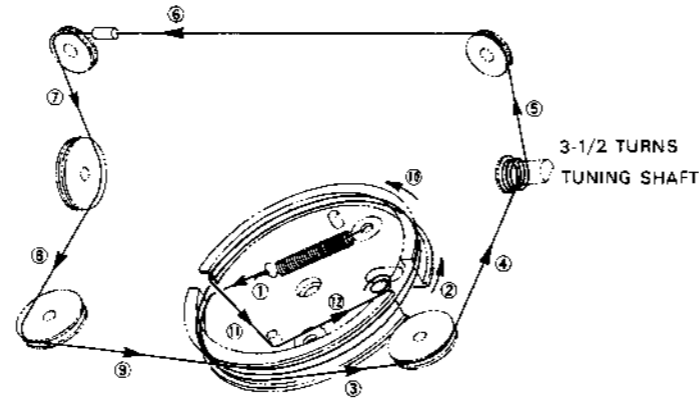


The output vector of R channel component due to the input (b).
 The composed vector of L channel.
 The composed vector of R channel.
 The output vector of the input (a) of R channel.

DIAL CORD STRINGING

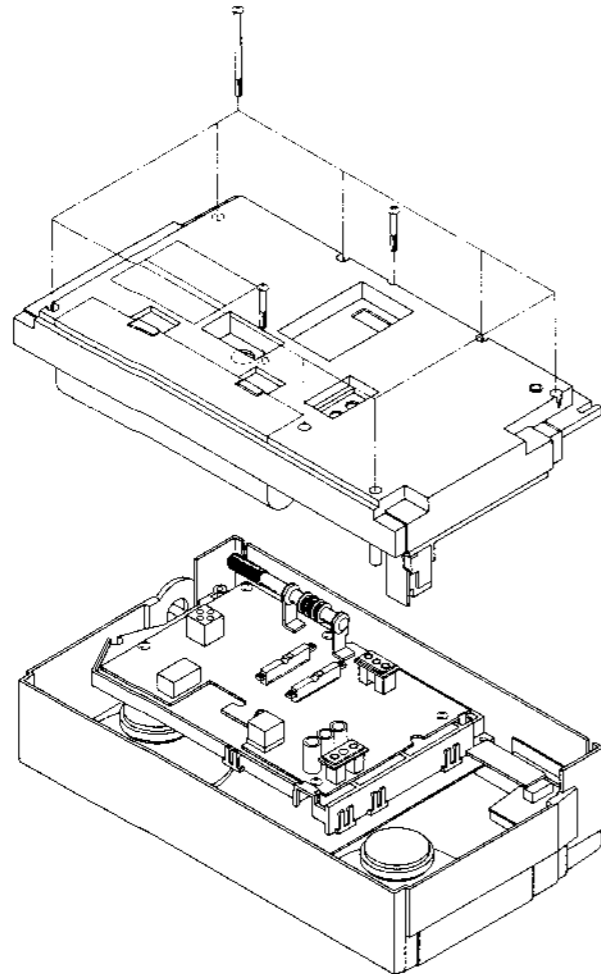
METHOD

1. Set pointer (TUNING SHAFT) to low frequency position.
2. Turn pulley fully counterclockwise.
3. String dial cord to direction of arrow (No. ① ~ ⑫).

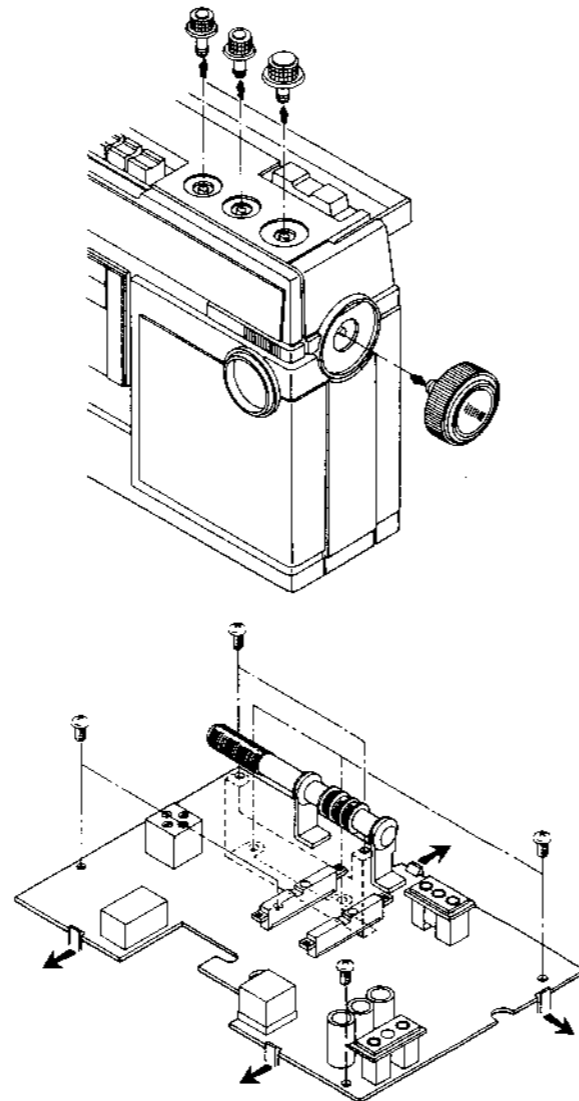


DISASSEMBLY

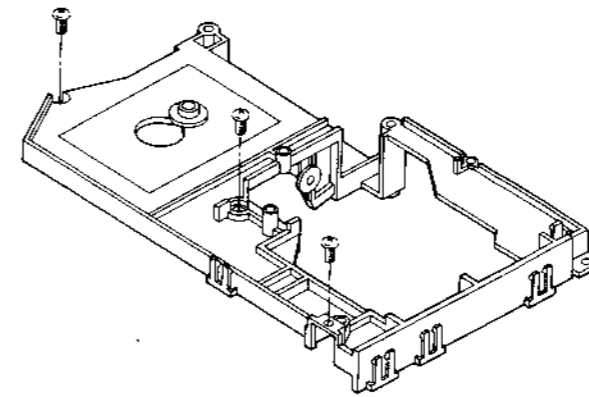
1. Rear case



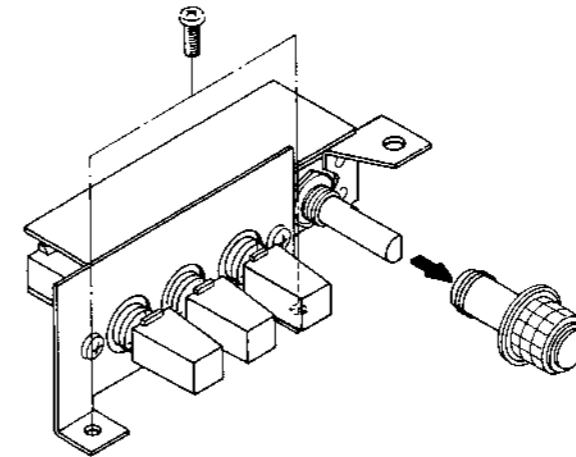
2. Main P.C.B.



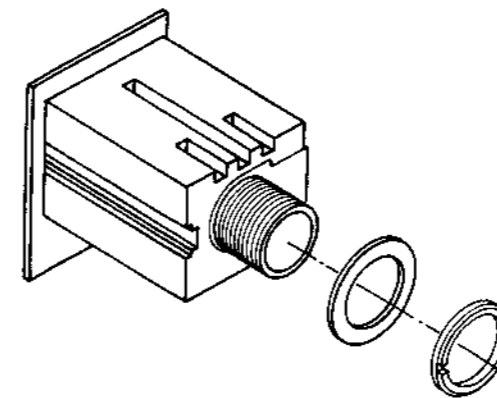
3. Radio chassis



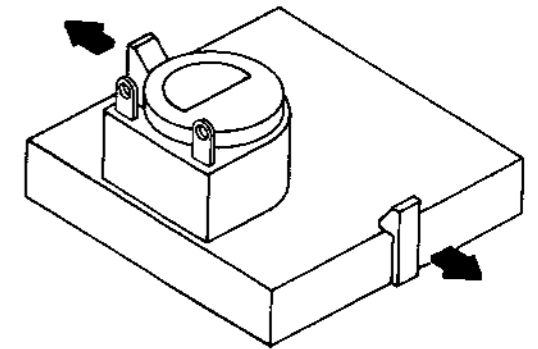
4. Volume P.C.B.



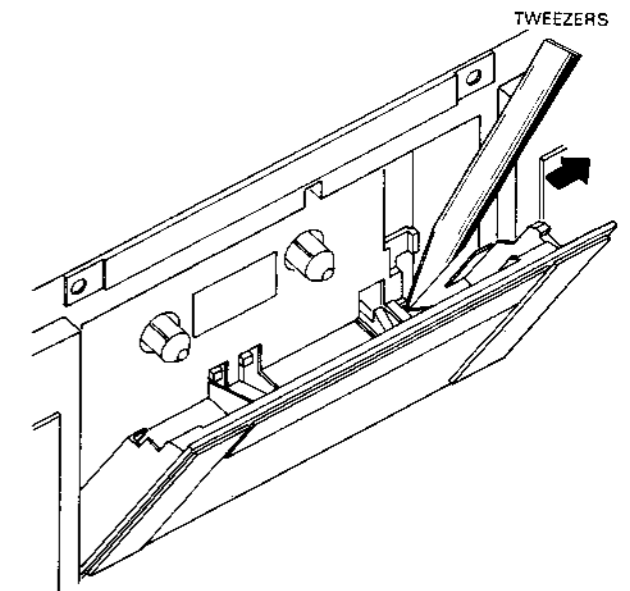
5. Headphone jack P.C.B.



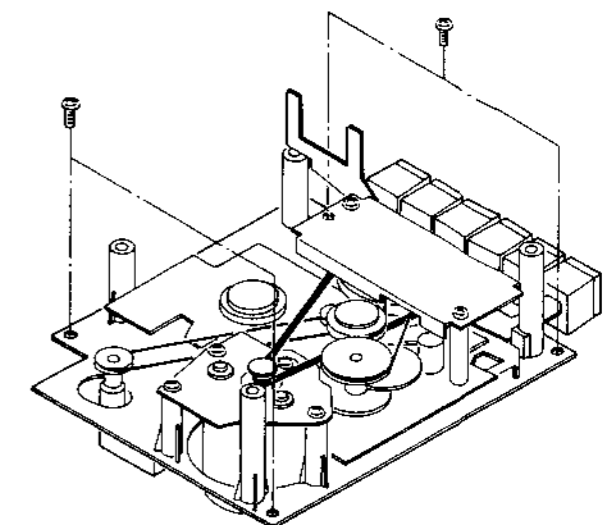
6. Level meter



7. Cassett lid



8. Deck chassis



LUBRICATION

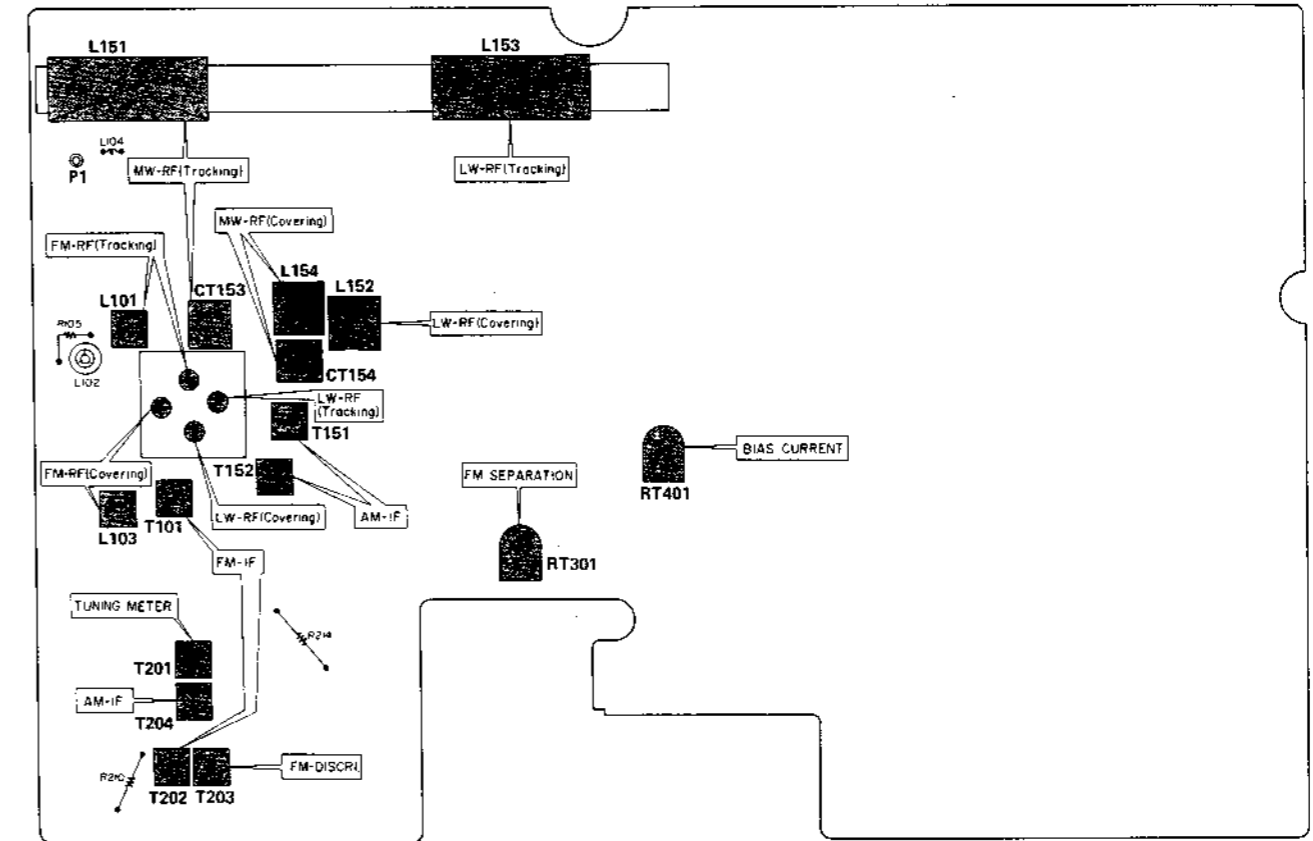
Lubricate one or two drops of machine oil rotating point or lubricate grease to sliding point.
Lubricate the respective parted below once every 1000 hours or once a year under normal conditions of use.
Avoid oiling then excessively, or rotation may become irregular because of oil splashes.

	Lubrication point	Oil or Grease
Cassette deck	Motor shaft bearing	Oil
	Capstan shaft bearing	Oil
	Pinch roller shaft bearing	Oil

INSPECTION

Mode	Item	Pressure or Torque
Playback	Pressure of pressure roller	300g +50 -70 g
	Pressure of take-up roller	50 - 120g
	Take-up torque	40 - 70g.cm
	Supply reel back tension	3g.cm or less
Rewind	Rewind torque	55 - 85g.cm
	Take-up reel back tension	4.5g.cm or less
Fast Forward	Fast Forward torque	55 - 85g.cm

ALIGNMENT INSTRUCTIONS (RADIO)



ADJUSTMENT (TAPE RECORDER)

Sequence	Setting	Connection	Adjust for	
			Adjust	Indication
1	Mode: Playback Tape: f 10 kHz (MTT-116)	VTVM J5, J6 : EXT. SP 		V max.
2	Mode: Record Tape: —		RT401	8V

ADJUSTMENT (RADIO)

Sequence	Connection		Setting		Adjust for	
	Input	Output	Tuning	Signal	Adjust	Indication
1	FM-IF	Set core (T203: fully clockwise)				
2	FM DISCRI		f max.	10.7 MHz	T101 T202	10.7 MHz Straight line
3	(Covering) FM-RF (Tracking)		f min.	87 MHz	L103	V max.
			f max.	109 MHz	CT102	
			90 MHz	90 MHz	L101	
			106 MHz	106 MHz	CT101	
4	MW/LW-IF		f max.	465 kHz	T151 T152 T204	465 kHz
5	(Covering) MW-RF (Tracking)		f min.	515 kHz	L154	V max.
			f max.	1650 kHz	CT154	
			600 kHz	600 kHz	L151	
			1400 kHz	1400 kHz	CT153	
			f min.	145 kHz	L152	
			f max.	360 kHz	CT152	
6	(Covering) LW-RF (Tracking)		160 kHz	160 kHz	L153	
			330 kHz	330 kHz	CT151	
7	FM Separation	Apply output of stereo signal generator (98 MHz, 600 dB, pilot signal 10%, L+R signal 30%) to terminal P1. Adjust RT301 so that separation is maximized.				
8	TUNING METER	In FM reception, adjust T201 for maximum deflection of the tuning meter.				

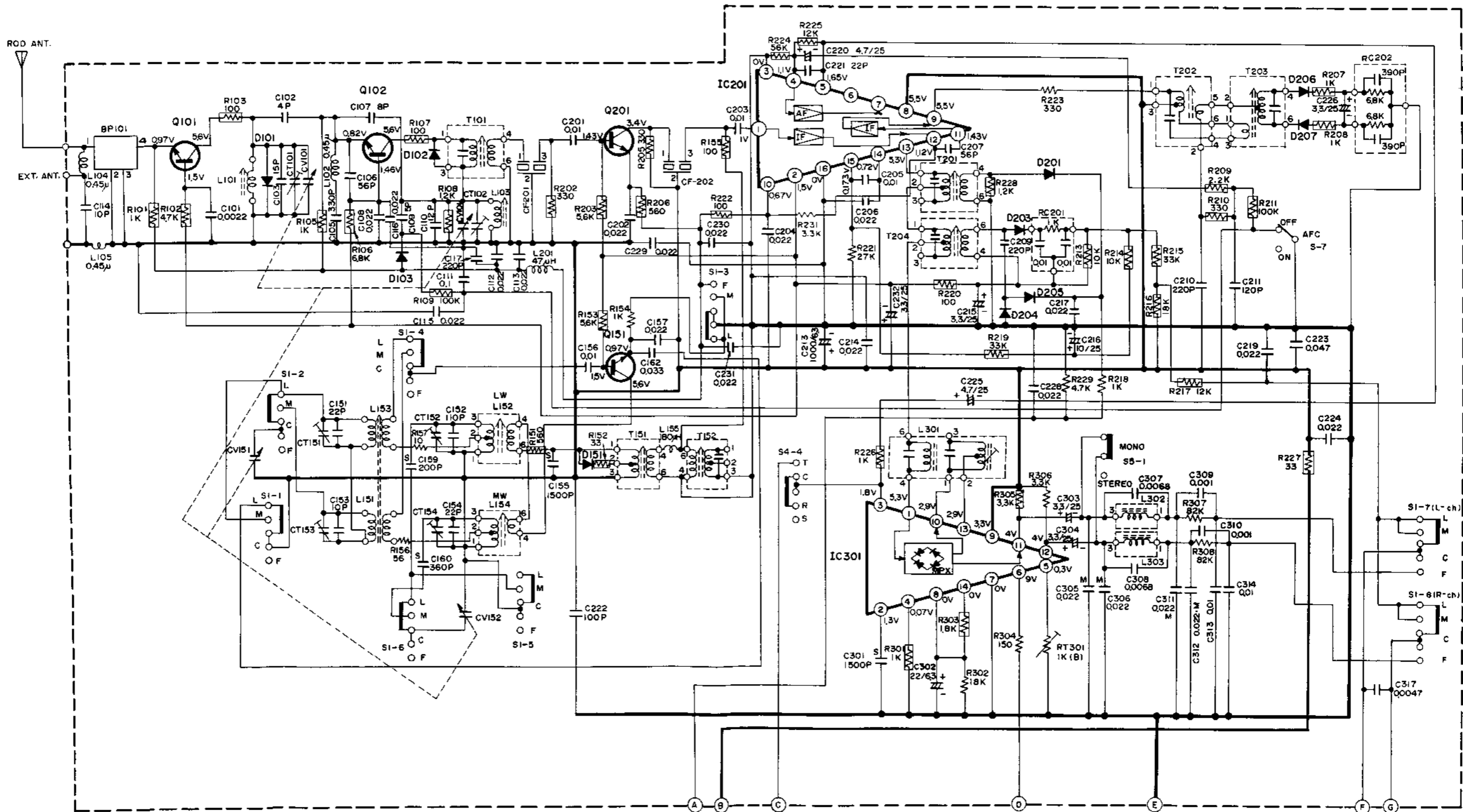
REPLACEMENT PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
CAPACITORS					
CT101	5052191	PLASTIC FILM VARIABLE	D406	0575001	DIODE GERMANIUM 1N34A 10MHZ 50MW 140NS
CT102	5052191	PLASTIC FILM VARIABLE	D601	5330373	DIODE 5V-010
CT151	5052191	PLASTIC FILM VARIABLE	D602	5330374	DIODE 5V-020
CT152	5052191	PLASTIC FILM VARIABLE	IC201	5351061	IC AN25300
CT153	5050191	TRIMMER 10PF	IC301	5351141	IC LA3301
CT154	5050191	TRIMMER 10PF	IC401	5350601	IC TA1020
CV101	5052191	PLASTIC FILM VARIABLE	IC402	5350521	IC TA1021
CV102	5052191	PLASTIC FILM VARIABLE	IC501	5350502	IC LA4102R
CV151	5052191	PLASTIC FILM VARIABLE	IC502	5350502	IC LA4102R
CV152	5052191	PLASTIC FILM VARIABLE	Q101	5321271	TRANSISTOR SILICON 2SC1674L 480MHZ 250MW
C107	0246428	CERAMIC DISCAL	Q102	5321271	TRANSISTOR SILICON 2SC1674L 600MHZ 250MW
C109	0246425	CERAMIC DISCAL 5P-D	Q151	5321201	TRANSISTOR SILICON 2SC1675-L 230MHZ 200MW
C110	0246442	CERAMIC 12PF 5% DC50WV	Q201	5321201	TRANSISTOR SILICON 2SC1675-L 230MHZ 200MW
RESISTORS					
RC201	0186001	CR PACK 1KOHM 10% 0.01MF+00X+20% X 2	Q401	5321291	TRANSISTOR 2SC1740R
RC202	0186357	CR PACK	Q402	5321291	TRANSISTOR 2SC1740R
RC601	0186451	CR PACK	TRANSFORMERS		
RC602	0186451	CR PACK	T001	5211921	POWER 4VA, 4000S(E)
RT301	0151006	SEMI VARIABLE 1X OHM B	T001	5212123	POWER (BS)
RT401	0151007	SEMI VARIABLE 500 OHM	T101	5140017	FM IF
RV401	5000293	VARIABLE 100K OHM(B)	T151	5130034	AM IF
RV402	5000293	VARIABLE 100K OHM(B)	T152	5130031	AM IF 200 OHM = 3K OHM
RV403	5000294	VARIABLE 100K OHM(C)	T201	5140019	FM IF
RV404	5000294	VARIABLE 100K OHM(C)	T202	5140012	DISCRIMINATOR-1ST
RV405	5000281	VARIABLE 50K OHM(B)	T203	5140034	FM IF
RV406	5000274	VARIABLE 10K OHM(B)	T204	5130033	AM IF
RV407	5000274	VARIABLE 10K OHM(B)	COILS		
SEMI-CONDUCTORS					
D101	5330131	DIODE SILICON 1S2076 100MHZ 250MW 5MS	L101	5126006	FM RF 0.5 MICRO B
D102	5330572	DIODE SILICON 1S2473HC 100MHZ 250MW 10NS	L102	5150791	CHOKE
D103	5330661	DIODE SILICON 1S2790 200MHZ 80MW	L103	5126362	FM-OSC
D151	0575001	DIODE GERMANIUM 1N34A 10MHZ 50MW 140NS	L104	5150791	CHOKE
D201	5330731	DIODE GERMANIUM 1N60 80MHZ 50MW	L151	5113192	FERRITE ANTENNA
D203	5330721	DIODE GERMANIUM 1N34A 10MHZ 50MW	L152	5120174	FM OSCILLATOR
D204	5330731	DIODE GERMANIUM 1N60 80MHZ 50MW	L153	5113192	FERRITE ANTENNA
D205	5330731	DIODE GERMANIUM 1N60 80MHZ 50MW	L153	5152091	CHOKE 100MICRO H
D206	5330732	DIODE GERMANIUM 1N60P 80MHZ 50MW	L154	5120195	FM OSCILLATOR
D207	5330732	DIODE GERMANIUM 1N60P 80MHZ 50MW	L201	51520B3	CHOKE
D401	0575001	DIODE GERMANIUM 1N34A 10MHZ 50MW 140NS	L301	5161561	HP FILTER
D402	0575001	DIODE GERMANIUM 1N34A 10MHZ 50MW 140NS	L302	5120189	30KHZ TUNER
D403	5330572	DIODE SILICON 1S2473HC 100MHZ 250MW 10NS	L303	5120189	30KHZ TUNER
D404	5330572	DIODE SILICON 1S2473HC 100MHZ 250MW 10NS	L401	5120304	TRAP
D405	0575001	DIODE GERMANIUM 1N34A 10MHZ 50MW 140NS	L402	5120304	TRAP
MISCELLANEOUS					
ANT	5752341	RDD ANTENNA			
BP101	5161551	FM BAND PASS FILTER			
CF201	5160211	CERAMIC FILTER CF107A			

TRK-5280E TRK-5280E

SCHEMATIC DIAGRAM (RADIO)

Q101 2SC1674 FM RF AMP. D101 IS2076 FM LIMITER. Q102 2SC1674 FM CONV. D103 IS2790 FM AFC. D102 IS2473HC FM LIMITER. Q201 2SC1675 FM IF AMP. D151 IN34A AUX. AGC. Q151 2SC1675 AM CONV. IC201 AN253 FM/AM IF AMP. D203 IN34A AM DET. D201, D204, D205 IN60 FM/AM TUN. METER. D206, D207 IN60P FM DISC. IC301 LA3301 FM MPX.



TRK-5280E TRK-5280E

SCHEMATIC DIAGRAM (TAPE RECORDER)

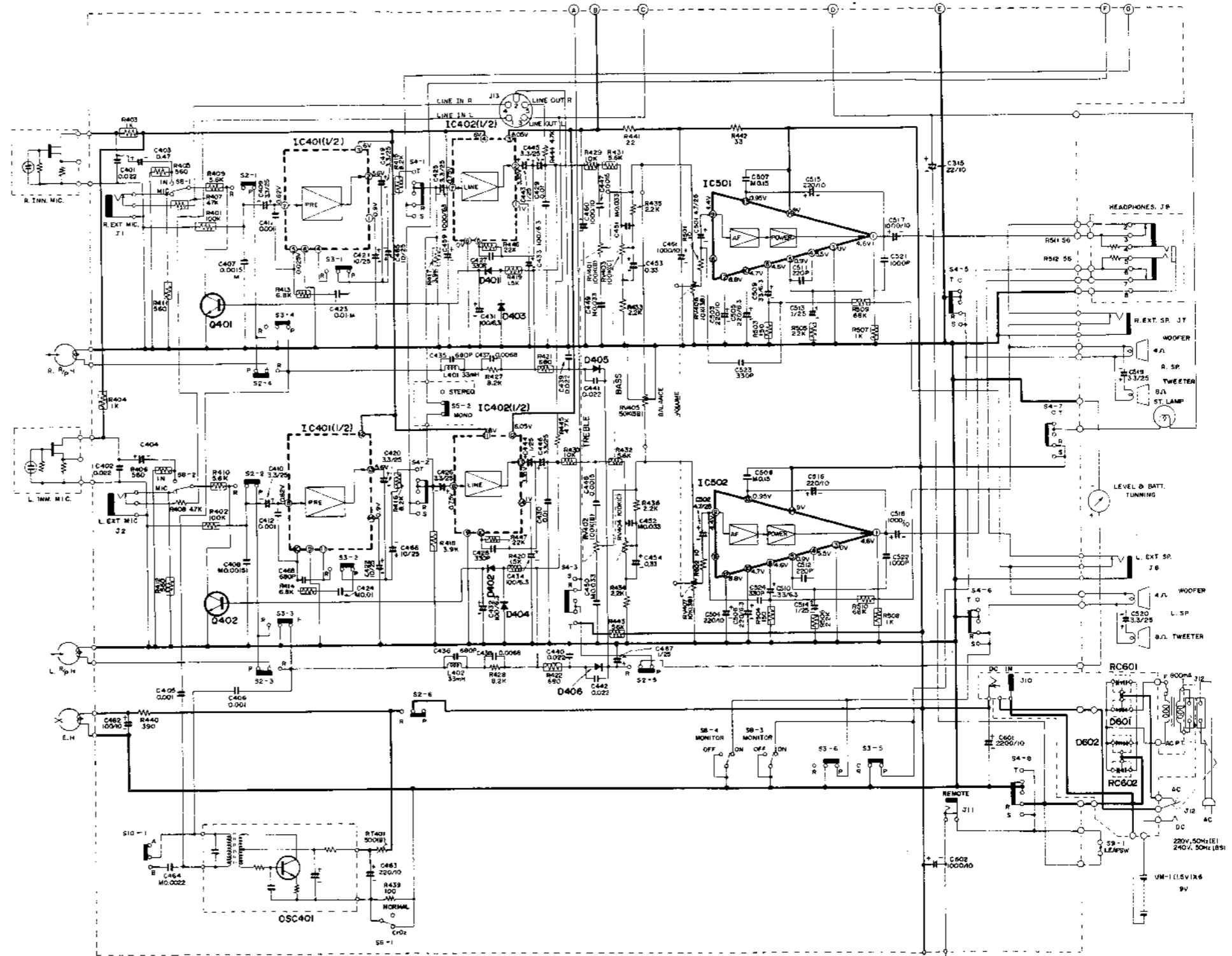
Note:

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

		Circuit No.
R101 150— RS-1-K	Value	No indicated Ω (Ohm) M: 1000 kΩ
	Tolerance	No indicated ±5% K: ±10% M: ±20%
	Wattage	No indicated 1/4W
C101 0.001-M	Sort	No indicated Carbon film RC: Composition RW: Wire wound RS: Oxide metal film RN: Fixed metal film

		Circuit No.
C102 0.1/16	Value	No indicated μF P: PF
	Tolerance	No indicated ±10% J: ±5% M: ±20% Z: +80% -20% D: ±0.5 pF C: ±0.25 pF
	Sort	Ceramic Electrolytic Mylar Polyester Styrol
C103 0.1/16	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.



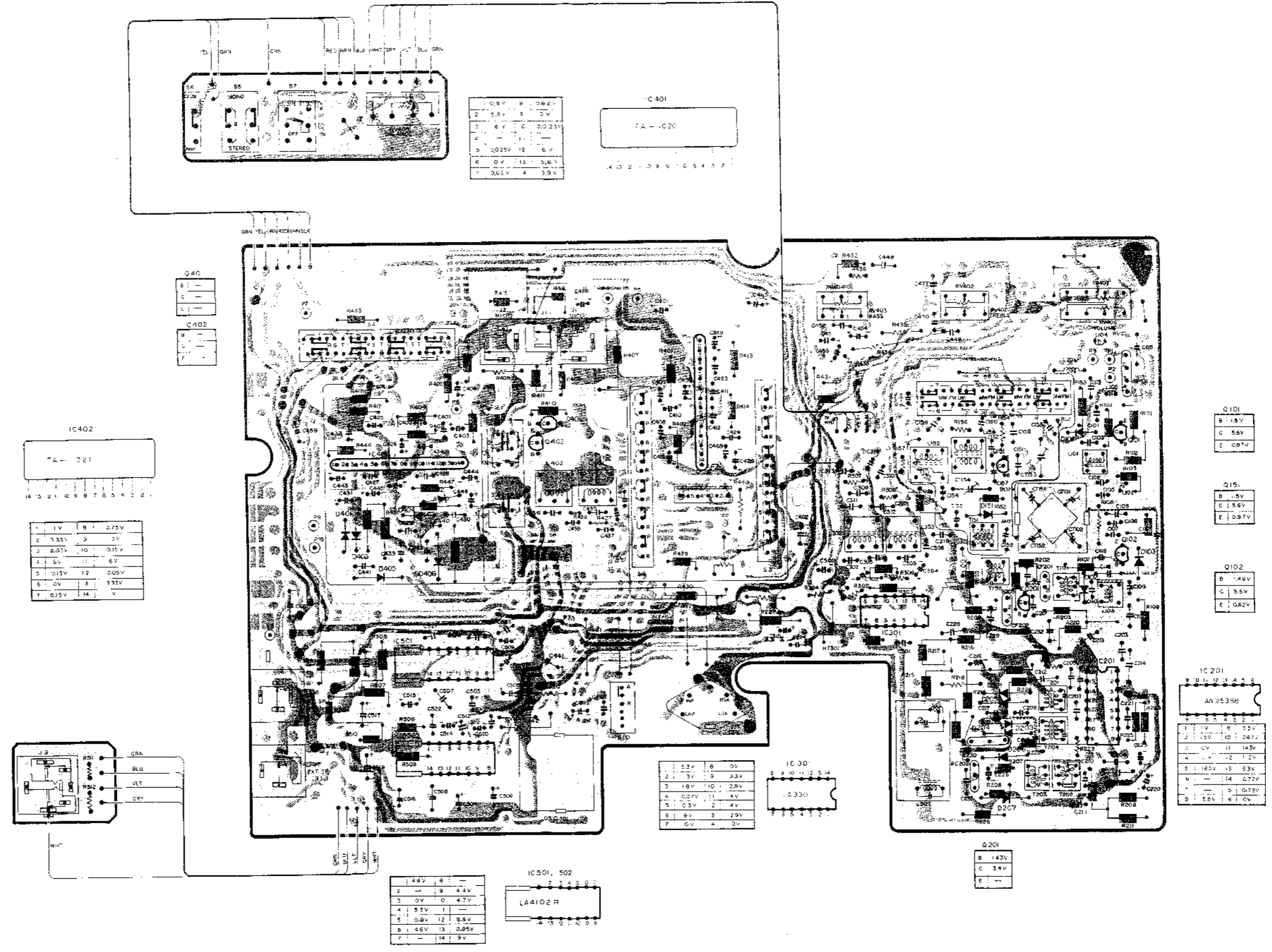
SYMBOL	SWITCHES	POSITION	SYMBOL	SWITCHES	POSITION
S1-1 ~ 8	BAND SELECTOR	LW	S6-1	DC/2/NORMAL SELECTOR	OFF
S2-1 ~ 6	REC./PLAY SWITCH	PLAY	S7	AFC SWITCH	OFF
S3-1 ~ 6	REC./PLAY SWITCH	PLAY	S8-1 ~ 5	MIC/SPEAKER SELECTOR	MIC
S4-1 ~ 8	TAPE/RADIO/SLEEP SELECTOR	RADIO	S9-1	LEAF SW	ON
S5-1 ~ 2	STEREO/MONO SELECTOR	MONO	S10-1	RIP SW	OFF

Q401	IC401(V/2)	IC402(I/2)	Q402	D401	D403	D405	D402	D404	D406	IC501, IC502	D601	D602
2SC1740R	TA1020	TA1021	2SC1740R	IN34A	IS2473	IN34A	IN34A	IS2473	IN34A	LA4102	SV-01B	SV-02B
ALC	PRE	AMR LINE AMP.	ALC	ALC	ALC	RECT.	ALC	ALC	RECT.	POWER AMP.	RECT.	RECT.

TRK-5280E TRK-5280E

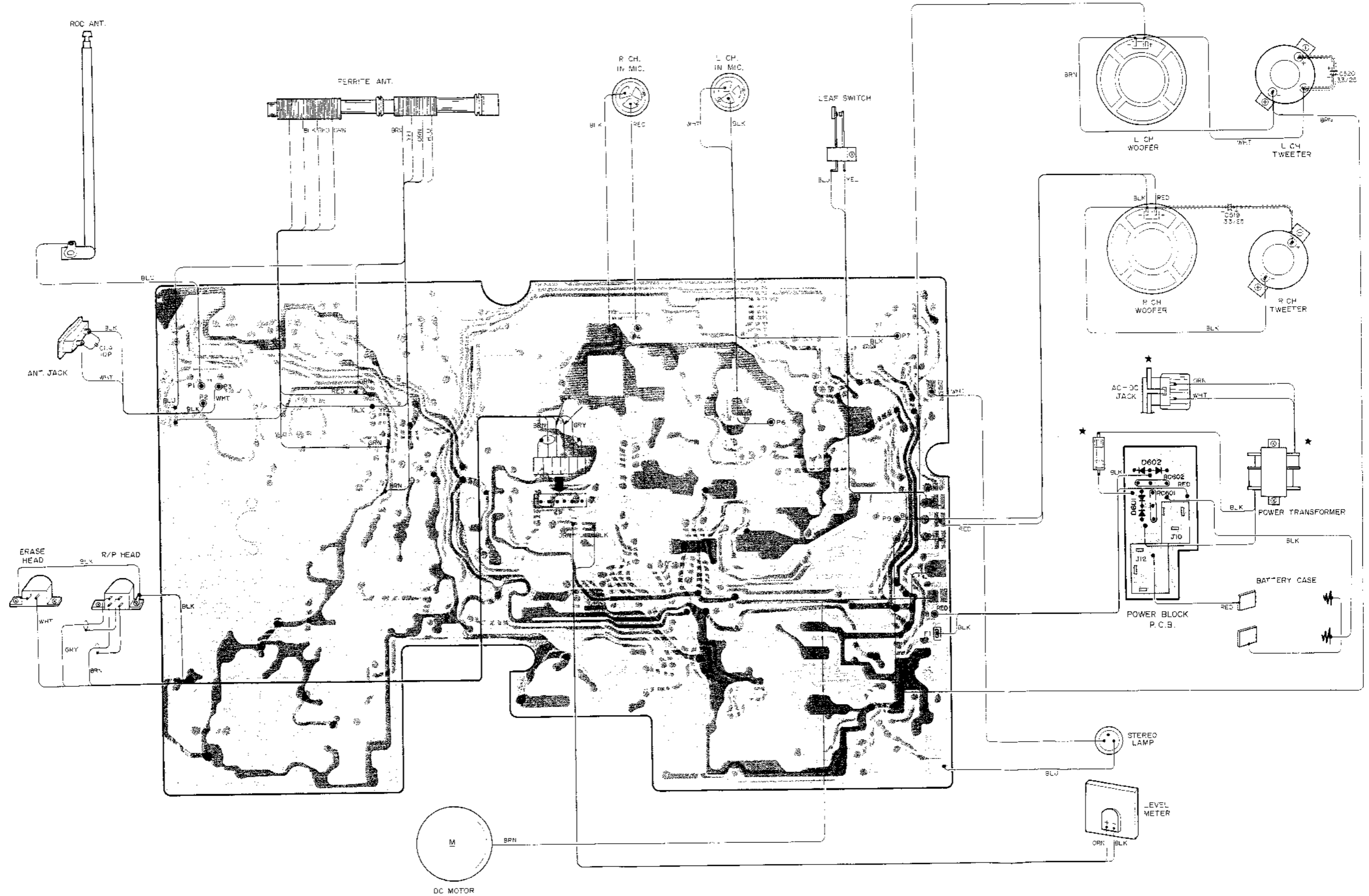
CIRCUIT BOARD DIAGRAM

☐ : SIDE OF THE COMPONENT EARTH ☐ : SIDE OF THE COMPONENT SIGNAL, + B, ETC. ☐ : EARTH ☐ : SIGNAL, + B, ETC.



TRK-5280E TRK-5280E

WIRING DIAGRAM

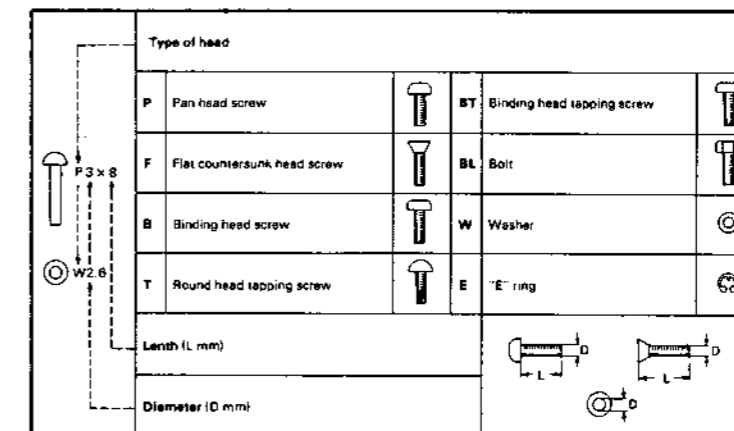


REPLACEMENT PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
CF202	5160211	CERAMIC FILTER CF107A	17	7286252	PR PLATE
FM ANT+J	5671661	FM ANTENNA TERMINAL	18	7286143	LOCK PLATE
F001	5720175	FUSE 0.8A	19	6530471	CASSETTE HOLDER
J 1	5679431	JACK PLATE	20	6740971	BRAKE FUNCTION ARM
J 2	5679431	JACK PLATE	21	6740981	EJECT ARM
J 7	5679432	JACK PLATE	22	6741183	EJECT SLIDER
J 8	5679432	JACK PLATE	23	6741111	AS FUNCTION PLATE
J 9	5670454	HEAD PHONE JACK	24	6741711	SWITCH FUNCTION ARM
J10	5653241	AC-DC SOCKET	25	7287692	SW PLATE
J12	5653241	AC-DC SOCKET	26	7286513	RC PLATE
J13	5653211	DIN JACK	27	7288494	FUNCTION PLATE
LM	5554411	LEVEL METER (BS)	28	6308102	SPRING
LM	5554413	LEVEL METER (E)	29	6307733	SPRING
MIC	5421014	MICROPHONE	30	6307711	SPRING
OSC401	5260642	OSC BLOCK	31	6300373	SPRING
PL	5760822	LAMP	32	7286241	PAUSE LOCK PIECE
S 1	5620382	SLIDE SWITCH	33	7286211	RECORD SLIDER
S 2	5623271	SLIDE SWITCH	34	7286222	REWIND SLIDER
S 3	5623271	SLIDE SWITCH	35	7286042	PAUSE SLIDER ASSEMBLY
S 4	5620382	SLIDE SWITCH	36	7286061	STOP SLIDER
S 5	5634114	PUSH SWITCH	37	7286171	PLAY SLIDER
S 6	5634114	PUSH SWITCH	38	7286203	FF SLIDER
S 7	5634114	PUSH SWITCH	39	7286193	RECORDING LOCK LEVER
S 8	5620701	SLIDE SWITCH	40	5572612	MOTOR ASSEMBLY
SP	5401511	SPEAKER-5CM	41	6576083	RUBBER PLATE
SP	5406221	SPEAKER-12CM	42	7575001	COLLAR
S10	5621181	SLIDE SWITCH	43	0711309	PAN HEAD SCREW - 2.6MM X 9MM
S11	5603231	LEAF SWITCH	44	8811113	WASHER - 2.6MM X 2 REQ'D
FOR ACCESSARYS			45	7287813	RC LEVER
5743898 POWER CORD (E)			46	6329192	FF FUNCTION LEVER
5746341 CORD ASSEMBLY (BS)			47	6304161	SPRING
FOR CASSETTE DECK ASSEMBLY (A)			48	7292041	TURNTABLE HOLDER ASSEMBLY
1	6050202	BUTTON ASSEMBLY	49	6300373	SPRING
2	6050201	BUTTON ASSEMBLY	50	6324814	SPRING
3	0948492	BALL - 2MMD	51	7286031	FR LEVER
4	7105833	HEAD PLATE	52	6412302	TAKE UP ARM ASSEMBLY
5	6321734	SPRING	53	6301101	SPRING
6	5444551	RECORD PLAYBACK HEAD	54	6301232	SPRING
7	7780912	TAPPING SCREW-2MMDX8MM	55	6301022	SPRING
8	7781004	SCREW	56	6740996	FR ARM ASSEMBLY
9	5445101	ERASE HEAD	57	6300981	SPRING
10	7780912	TAPPING SCREW-2MMDX8MM	58	6301361	SPRING
11	0948492	BALL - 2MMD	59	6323064	SPRING
12	6329631	HEAD PLATE HOLDER	60	6301011	LOCK LEVER SPRING
13	6383142	PRESSURE ROLLER ARM ASSEMBLY	61	6300991	SPRING
14	6307741	SPRING	62	6372551	FLYWHEEL ASSEMBLY
15	7286182	PR LEVER	63	6357131	FLYWHEEL BELT
16	6741102	RECORD PREVENTION ARM	64	6421224	AS PULLEY
			65	6354601	BELT
			66	6743881	THRUST SUPPORT

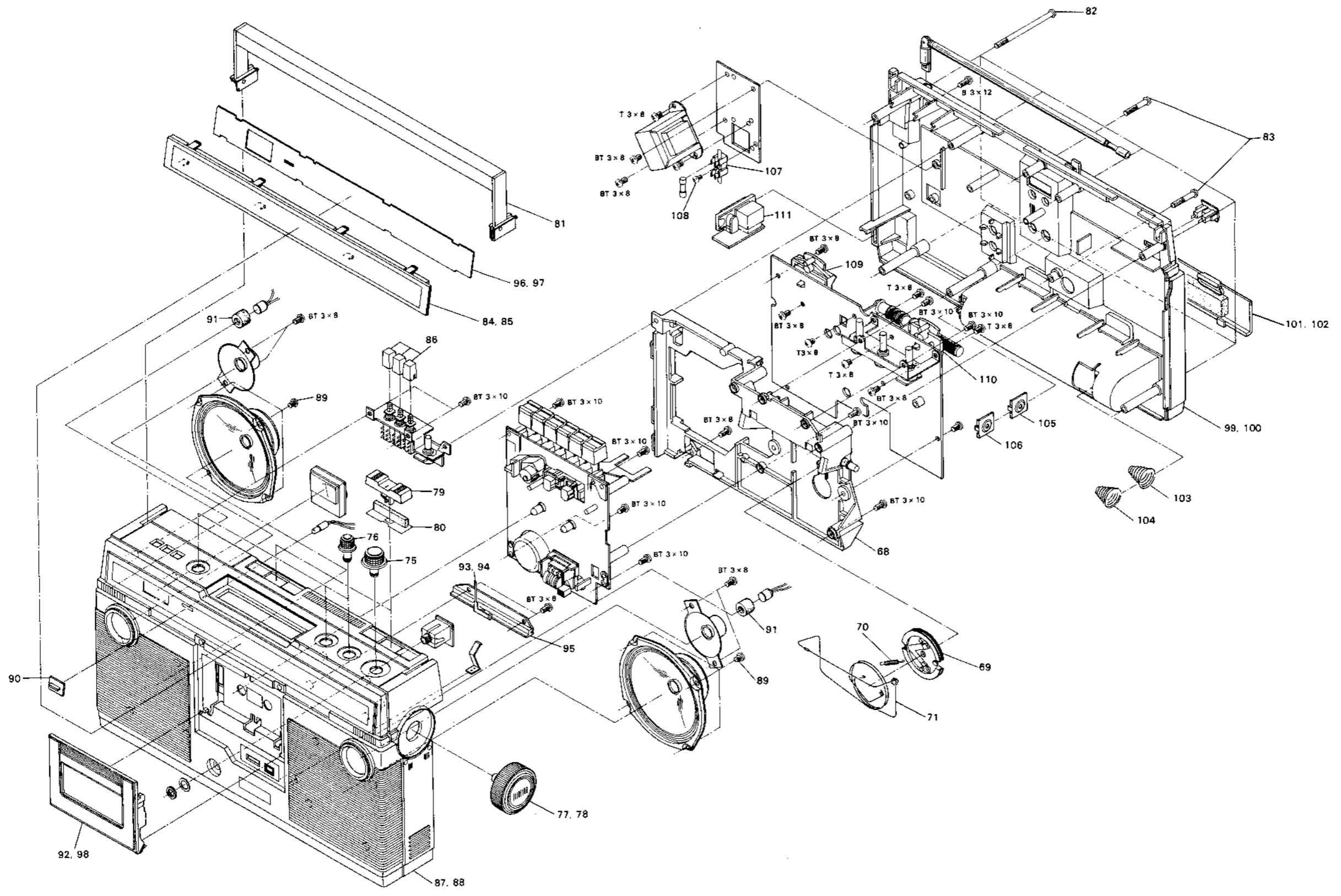
REPLACEMENT PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
FOR CASSETTE DECK ASSEMBLY (A)			86	6259971	KNOB
67	7786602	POLYSLIDER WASHER	87	6138662	FRONT CASE ASSEMBLY (BS)
FOR CASSETTE DECK ASSEMBLY (B)			88	6138664	FRONT CASE ASSEMBLY (E)
68	6743972	CHASSIS ASSEMBLY	89	7781134	BINDING SCREW
69	6421073	PULLEY	90	6712962	LAMP WINDOW
70	6316231	SPRING M	91	6570061	MIC COVER
71	7539831	STOPPER	92	6090923	CASSETTE LID ASSEMBLY (BS)
72	6530272	RECORD SPRING	93	6399574	POINTER ASSEMBLY (BS)
73	5559071	COUNTER (M2)	94	6399575	POINTER ASSEMBLY (E)
74	6354471	COUNTER BELT	95	6743991	POINTER GUIDE
MISCELLANEOUS			96	6478946	SCALE PLATE (BS)
75	6281921	KNOB ASSEMBLY	97	6478947	SCALE PLATE (E)
76	6281901	KNOB ASSEMBLY	98	6090929	CASSETTE LID ASSEMBLY (E)
77	6281566	TUNING KNOB ASSEMBLY (E)	99	6138712	REAR CASE ASSEMBLY (E)
78	6281564	TUNING KNOB ASSEMBLY (BS)	100	6138713	REAR CASE ASSEMBLY (BS)
79	6296302	SLIDE KNOB	101	6173212	BATTERY LID ASSEMBLY (E)
80	7767814	SPACER (S)	102	6173213	BATTERY LID ASSEMBLY (BS)
81	6333435	HANDLE ASSEMBLY	103	0681129	SPRING A
82	7781301	TAPPING SCREW-3MMDX80MM	104	6324112	SPRING
83	7777948	BIND HEAD FORMING TIGHTENING SCREW	105	7450342	TERMINAL
84	6201394	CLEAR PANEL ASSEMBLY (BS)	106	7450341	TERMINAL
85	6201393	CLEAR PANEL ASSEMBLY (E)	107	5720011	1P FUSE HOLDER
			108	0711306	PAN HEAD SCREW-2.6MMDX6MM
			109	6741393	LEVER ASSEMBLY
			110	6744243	LEVER ASSEMBLY
			111	5659121	BACK COVER



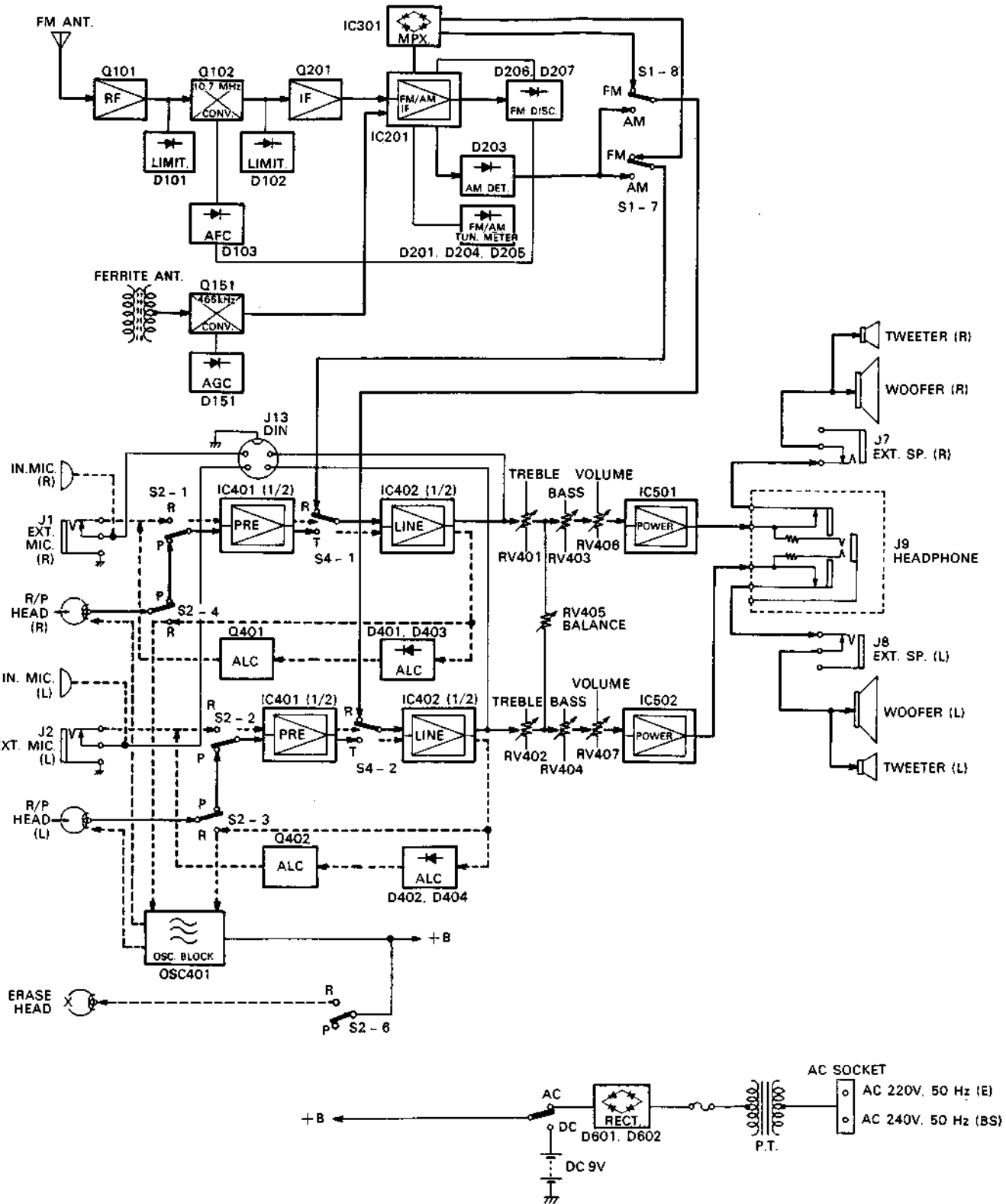
When ordering hardware excluding stated on these lists, be sure to make your orders with type and size.

CABINET EXPLODED VIEW



IN
HI
IN.
EXT.
H
ER
H

BLOCK DIAGRAM



CASSETTE MECHANISM EXPLODED VIEW

