

SERVICE MANUAL

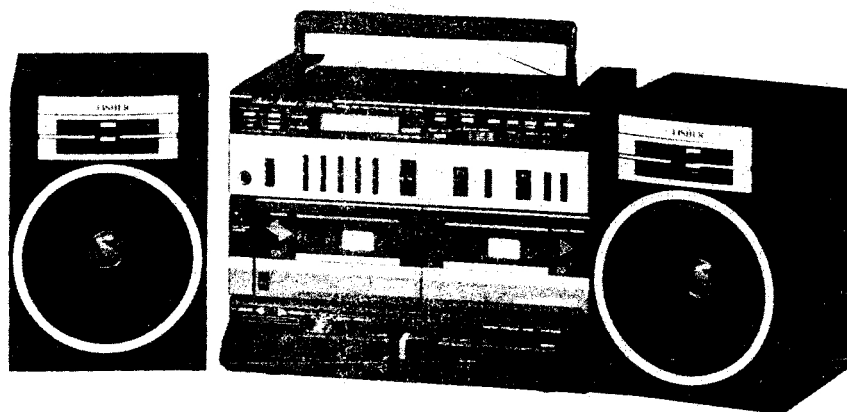


FISHER

AC/DC STEREO HIGH FIDELITY SYSTEM

PH-W704L

(EUROPE)



142 469 06

SPECIFICATIONS

Power Source

AC 120/220V, 50/60Hz

DC 12V

(UM-1, HP 2, D Cell, Monozelle, R 20) x 8

Output Power (Max. music power) 4.5W x 2 (10%/THD)

Power Consumption 24W

Current Consumption (at Vol. Min.)

Record mode 250mA

Playback mode 190mA

Fast Forward mode 190mA

Rewind mode 210mA

Recording System AC Bias

Erasing System AC Erasing

Tape Speed 1-7/8ips. $\pm 3\%$

Wow & Flutter 0.15% (WRMS)

Torque

Playback 30 ~ 60g-cm

Fast Forward/Rewind more than 60g-cm

Fast Forward/Rewind Time 160sec. (with C-60)

Frequency Response

Fe₂O₃ 100Hz ~ 12,500Hz

Erase Ratio (Overall, with Fe₂O₃) 60dB

Signal to Noise Ratio (with Fe₂O₃) 40dB

Crosstalk (with Fe₂O₃)

Track to Track 50dB

Channel Separation (with Fe₂O₃) 40dB

Harmonic Distortion (K₃/with Fe₂O₃) 4%

Hum & Noise (at Vol. Min.) -60dBs

Input Sensitivity and impedance

MIC. 1.4mV/4.7k Ω

LINE IN 400mV/50k Ω

Output Level and Impedance

LINE OUT 500mV/47k Ω load

EXT. Speaker 3.2 Ω

Headphones 32 Ω

Frequency Range

LW 153 ~ 281kHz

MW 531 ~ 1,602kHz

SW 5.9 ~ 15.5MHz

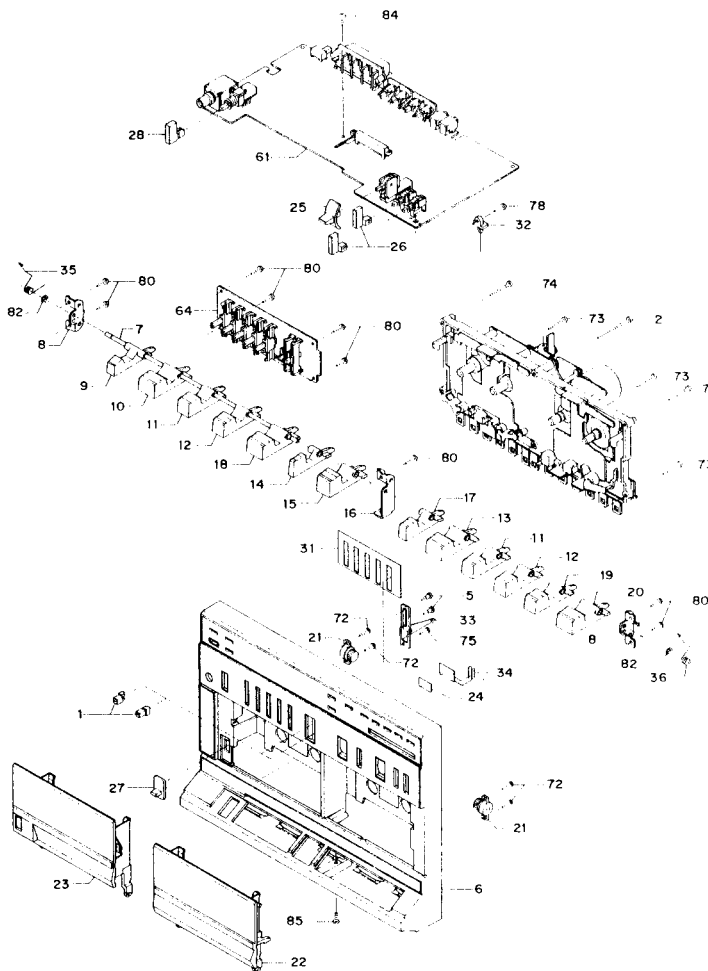
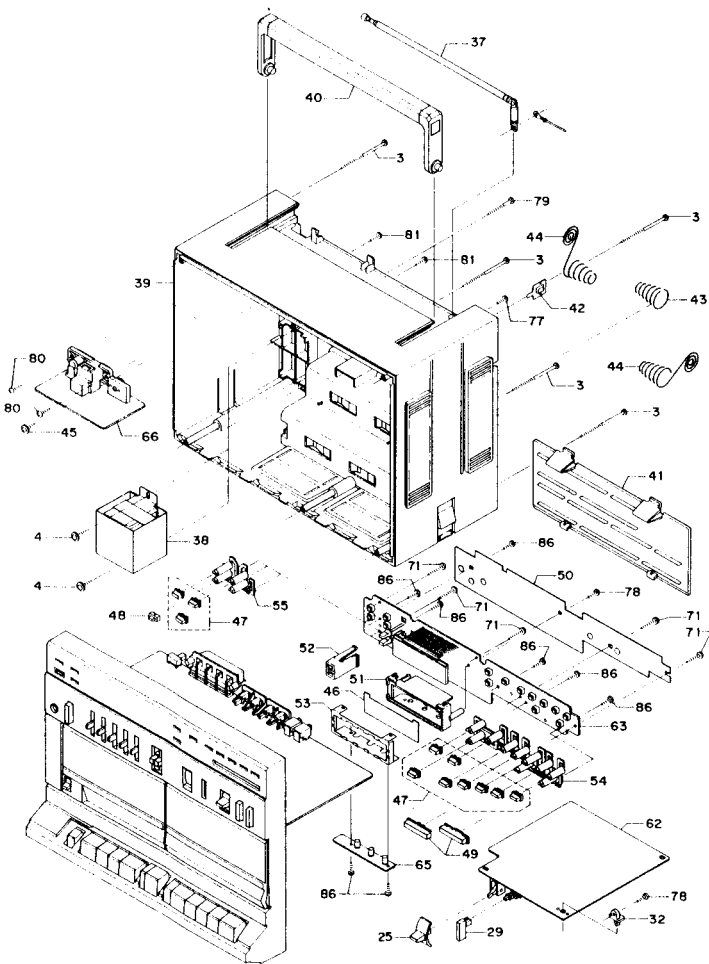
FM 87.5 ~ 108.0MHz

— Specifications subject to change without notice. —

CABINET PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
PACKAGE				43	141-2-3829-20800	Spring Battery	1
	131-6-4559-11200	Serial No. Sheet	3	44	141-2-3829-22400	Spring Battery	2
	141-6-1419-95904	Individual Carton	1	45	141-2-4219-14200	Screw	1
	141-6-1469-26000	Case Styrofoam Top	1	46	141-2-1519-57800	Reflection LCD	1
	141-6-1469-26100	Case Styrofoam Bottom	1	47	141-2-1659-96201	Knob Push Function	11
	141-6-1469-27300	Pad	1	48	141-2-1659-96401	Knob Push Reset	1
	141-6-2519-21390	Poly Cover	1	49	141-2-1659-98700	Knob Tuning	2
	141-6-2519-21490	Poly Cover	2	50	141-2-3229-67500	Shield Plate	1
ACCESSORIES				51	141-2-3779-25600	Holder LCD	1
	△ 4-2432-00290	Power Cord	1	52	141-2-3779-25700	Holder LED	1
	4-6619-70310	Dry Cell Pack (UM-3X2)	1	53	141-2-3889-06600	Cover LCD	1
	131-6-2719-10401	Bag Fan	1	54	141-2-6219-05600	Arm Touch Switch A	1
	141-6-2519-11022	Poly Cover 110 X 220	1	55	141-2-6219-05700	Arm Touch Switch B	1
	141-6-4519-27939	Certificate Card	1	61	141-0-1939-22852	Amplifier P.C.B. Assy	1
	141-6-4729-07400	Label Caution	1	62	141-0-1939-25130	Radio Tuner P.C.B. Assy	1
	141-6-4729-07700	Label Caution	1	63	141-0-1939-25140	Control Tuner P.C.B. Assy	1
	141-6-4729-37866	Label Caution Battery	1	64	141-0-1939-22402	Graphic Equalizer P.C.B. Assy	1
	142-6-4119-33598	Instruction Book	1	65	141-0-1939-26900	LED P.C.B. Assy	1
				66	141-0-1939-24861	Power P.C.B. Assy	1
CABINET				71	411 023 4508	SCR S-TPG PAN 3X12	5
	4-2352-02800	Socket Lug Wire Assy	1	72	411 023 1002	SCR S-TPG PAN 2.6X10	4
	141-2-4729-07100	Wire Band	9	73	411 023 6304	SCR S-TPG PAN 3X20	3
1	141-2-1649-52300	Knob Slide	2	74	411 023 6700	SCR S-TPG PAN 3X25	2
2	141-2-4219-11200	Screw	1	75	411 021 0304	SCR S-TPG BIN 2X4	1
3	141-2-4219-14801	Screw	5	77	411 040 4802	SCR PAN 2.6X8	1
4	141-2-4219-22600	Poly Wave Screw	2	78	411 023 3303	SCR S-TPG PAN 2.6X8	3
5	141-2-4219-14000	Screw	2	79	411 001 1703	SCR S-TPG PAN 3X30	1
6	141-0-1129-30502	Cabinet Top Assy	1	80	411 023 4003	SCR S-TPG PAN 3X10	12
7	141-2-6129-07700	Spindle Button	1	81	411 023 4201	SCR S-TPG PAN 3X10	2
8	141-2-2629-08100	Bracket Button A	2	82	411 000 9908	RING E 3	2
9	141-2-1659-91700	Button Direction	1	84	411 002 8503	SCR PAN 3X6	1
10	141-2-1659-91200	Button Stop/Eject 1	1	85	411 002 9104	SCR PAN 3X8	1
11	141-2-1659-91100	Button Rewind	2	86	411 023 2801	SCR S-TPG PAN 2.6X6	8
12	141-2-1659-91600	Button FF	2	NOTES:			
13	141-2-1659-91500	Button Play 2	1	1. Parts order must contain Model Number, Part Number and Description.			
14	141-2-1659-90700	Button High Speed	1	2. Ordering quantity of screws and resistors must be multiple of 10 pcs.			
15	141-2-1659-90800	Button Dubbing	1	PRODUCT SAFETY NOTICE Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol △ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with △, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.			
16	141-2-2629-12100	Bracket Button B	1				
17	141-2-1659-91000	Button Rec	1				
18	141-2-1659-91400	Button Play 1	1				
19	141-2-1659-90900	Button Pause	1				
20	141-2-1659-91300	Button Stop/Eject 2	1				
21	141-0-5519-07902	Gear Eject Assy	2				
22	141-2-1249-60701	Lid Cassette Right	1				
23	141-2-1249-60801	Lid Cassette Left	1				
24	141-2-1439-19500	Sheet Plate Reverse	1				
25	141-2-1629-11800	Knob Lever	2				
26	141-2-1659-98800	Knob Push	2				
27	141-2-1649-52400	Knob Reverse Mode	1				
28	141-2-1659-67900	Knob Power	1				
29	141-2-1659-68000	Knob Push	1				
31	141-2-3229-64500	Shield Plate	1				
32	141-2-3779-26600	Holder PCB	2				
33	141-2-6219-05500	Arm Reverse Mode	1				
34	141-2-7319-88600	Plate Reverse	1				
35	141-2-8549-41300	Spring Lid Cassette 1	1				
36	141-2-8549-41400	Spring Lid Cassette 2	1				
37	4-2449-70370	Rod Antenna	1				
38	△ 4-2512-21823	Power Trans [T901]	1				
39	141-2-1129-58105	Cabinet Bottom	1				
40	141-0-1719-11003	Handle Assy	1				
41	141-2-1339-41100	Lid Battery	1				
42	141-2-3829-09400	Terminal Battery Anode	1				

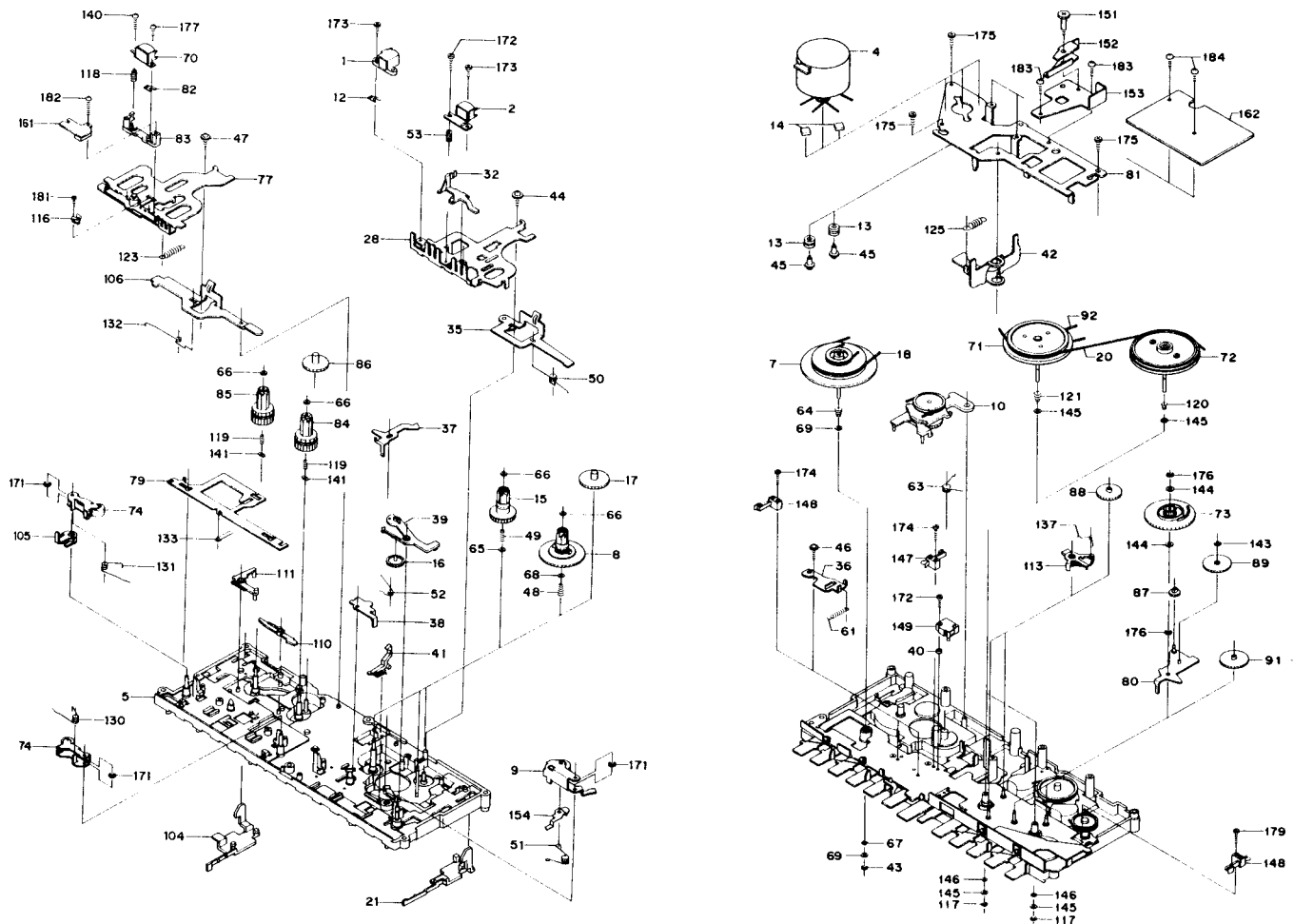
CABINET EXPLODED VIEW



MECHANISM PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
MECHANISM				22	141-2-7319-71400	Rod Stop Eject R	1
	4-2352-02159	Connector 1P Assy (GND)	1	23	141-2-7319-71500	Rod Pause	1
	4-2352-02634	Connector 6P Assy [CN301]	1	24	141-2-7319-71600	Rod F FWD	1
	4-2352-02697	Connector 2P Assy [CN303]	1	25	141-2-7319-71700	Rod Rewind	1
	403 042 3600	ELECT 100U M 16V [804]	1	26	141-2-7319-72500	Plate Switch Motor R	1
	141-2-4729-03700	Lug	1	27	141-2-7319-72600	Plate Lock	1
	141-2-4729-07100	Wire Band	5	28	141-2-7319-72800	Base Slide	1
1	4-2429-72200	Erase Head [HD3]	1	29	141-2-7319-77200	Rod Play	1
2	4-2429-73170	R/P Head [HD2]	1	30	141-2-7319-83700	Plate AMP Switch	1
4	4-5279-71643	Motor [M801]	1	31	141-2-7319-83900	Rod Record	1
5	141-0-3119-27801	Chassis Assy	1	32	141-2-7419-98500	Lever Sensor ASO	1
6	141-0-3519-26500	Bracket Rod Assy	1	33	141-2-7419-99400	Lutch Pause	1
7	141-0-5219-15601	Flywheel Compl 2.2	1	34	141-2-7419-99600	Lever Stopper Rec	1
8	141-0-5319-09800	Fix Take-up Assy	1	35	141-2-7419-99800	Lever Cassette Fix R	1
9	141-0-5419-03201	Pinchroller Assy	1	36	141-2-7419-99900	Lever Dubbing	1
10	141-0-5519-14200	Idler Assy	1	37	141-2-7429-00200	Lever ASO	1
12	141-2-3529-18100	Spacer Head	1	38	141-2-7429-00300	Lever Cue Review	1
13	141-2-4459-11800	Cushion Motor	2	39	141-2-7439-49200	Arm Take-up	1
14	141-2-4469-31800	Damper	2	40	141-2-8259-15000	Spacer	1
15	141-2-5319-17400	Fix Supply Reel	1	41	141-2-8419-11700	Interlock Lever	1
16	141-2-5519-65200	Gear Take-up	1	42	141-2-8419-17200	Lever R/P Switch	1
17	141-2-5519-65400	Gear F FWD	1	43	141-2-4579-05800	E Ring Te-4	1
18	141-2-5649-29600	Belt Flywheel	1	44	141-2-4219-05400	Screw Washer	1
19	141-2-5649-29700	Belt Idler	1	45	141-2-4219-30100	Screw	2
20	141-2-5649-29400	Belt Drive	1	46	141-2-4219-42100	Screw	1
21	141-2-7319-71100	Plate Lock Lid L	1	47	141-2-4219-13201	Screw Washer	2

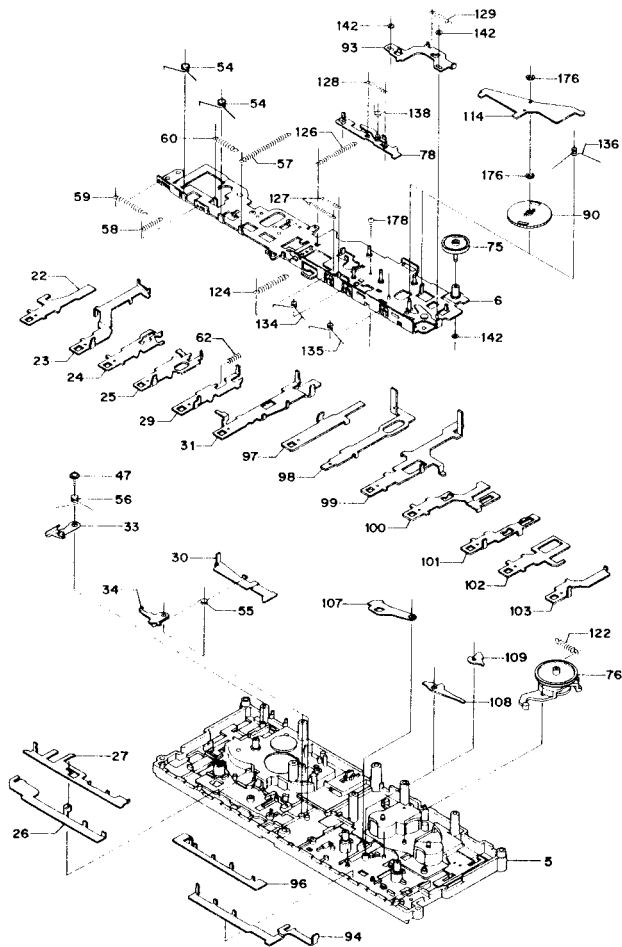
MECHANISM EXPLODED VIEW



MECHANISM PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
48	141-2-8559-15200	Spring Reel	1	74	141-0-5419-04300	Pinchroller Assy	2
49	141-2-8559-15400	Spring Supply	1	75	141-0-5519-14100	Pulley Drive Assy	1
50	141-2-8529-30600	Spring Cassette Lock R	1	76	141-0-5519-14300	Pulley FF Assy	1
51	141-2-8529-30300	Spring Pinch Roller	1	77	141-0-7319-35400	Base Slide Assy	1
52	141-2-8529-32400	Spring Take-up	1	78	141-0-7319-35500	Plate ACT ASO Assy	1
53	141-2-8559-14900	Spring Head	1	79	141-0-7319-35600	Plate Change Assy	1
54	141-2-8529-30200	Spring Rod	2	80	141-0-7439-20800	Arm Take-up Assy	1
55	141-2-8529-31000	Spring Stop Rec	1	81	141-2-3519-83600	Bracket Motor	1
56	141-2-8529-30400	Spring Pause Lutch	1	82	141-2-3529-18103	Spacer Head	1
57	141-2-8549-33700	Spring Rod Base	1	83	141-2-3529-53300	Spacer Head	1
58	141-2-8549-34800	Spring Lever ASO	1	84	141-2-5319-19000	Reel Forward	1
59	141-2-8519-03600	Spring Shut-off Lever	1	85	141-2-5319-19100	Reel Reverse	1
60	141-2-8549-37400	Spring Plate Motor	1	86	141-2-5519-71800	Gear FF	1
61	141-2-8549-04500	Spring Eject	1	87	141-2-5519-72100	Gear Play	1
62	141-2-8559-14300	Spring Base Slide	1	88	141-2-5519-72200	Gear Reel	1
63	141-2-8529-36700	Spring Arm Idler	1	89	141-2-5519-72300	Gear Take-up	1
64	141-2-8559-17800	Spring Flywheel	1	90	141-2-5519-72700	Gear Reverse	1
65	141-2-4539-27601	Washer	1	91	141-2-5519-73800	Gear Reel A	1
66	141-2-4539-15700	Washer	4	92	141-2-5649-29500	Belt FF	1
67	141-2-4539-45100	Washer	1	93	141-2-7319-83200	Plate Trigger	1
68	141-2-4539-35500	Washer	1	94	141-2-7319-83300	Plate Stop Eject	1
69	141-2-4539-45000	Washer	2	96	141-2-7319-83500	Plate Lock	1
70	4-2429-72721	Play Head [HD1]	1	97	141-2-7319-84100	Rod Dubbing	1
71	141-0-5219-14100	Flywheel Assy 1.8	1	98	141-2-7319-84300	Rod Speed Switch	1
72	141-0-5219-15900	Flywheel Compl 2.00	1	99	141-2-7319-84500	Rod Play	1
73	141-0-5319-10000	Friction Assy	1	100	141-2-7319-84700	Rod FF	1

MECHANISM EXPLODED VIEW (Continued)



MECHANISM PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty
101	141-2-7319-84900	Rod Rewind	1
102	141-2-7319-85100	Rod Stop	1
103	141-2-7319-85300	Rod Reverse	1
104	141-2-7319-85600	Plate Lock Lid	1
105	141-2-7429-04500	Lever Flap	1
106	141-2-7429-04600	Lever Fix Cassette	1
107	141-2-7429-04800	Lever Dubbing Play	1
108	141-2-7429-04900	Lever Cue Review	1
109	141-2-7429-05200	Lever Rewind	1
110	141-2-7429-05300	Brake FWD	1
111	141-2-7429-05400	Brake REV	1
113	141-2-7429-05600	Lever ASO	1
114	141-2-7429-06900	Lever Mode Change PH	1
116	141-2-8539-61200	Spring Head Switch	1
117	141-2-4579-05800	E Ring Te-4	2
118	141-2-8559-14900	Spring Head	1
119	141-2-8559-17100	Spring Reel	2
120	141-2-8559-17000	Spring Capstan	1
121	141-2-8559-17800	Spring Flywheel	1
122	141-2-8549-38200	Spring Arm Idler	1
123	141-2-8549-38300	Spring Base Slide	1
124	141-2-8549-38400	Spring Rod Play	1
125	141-2-8549-38800	Spring Lever R/P	1
126	141-2-8549-38700	Spring Rod Speed Switch	1
127	141-2-8549-40300	Spring	2
128	141-2-8549-40400	Spring Plate ACT ASO	1

MECHANISM PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty
129	141-2-8519-97600	Spring Lever ASO	1
130	141-2-8529-38000	Spring Pinch FWD	1
131	141-2-8529-38100	Spring Pinch REV	1
132	141-2-8529-37800	Spring Lock Cassette	1
133	141-2-8529-38400	Spring Take-up	1
134	141-2-8529-38200	Spring Rod	1
135	141-2-8529-38300	Spring Rod Stop	1
136	141-2-8529-38500	Spring Trigger	1
137	141-2-8529-37700	Spring Lever ASO	1
138	141-2-8529-37500	Spring ACT ASO	1
140	141-2-4219-28100	Screw, Pan Hd., +M2.0X8.6	1
141	141-2-4539-43200	Washer Reel	2
142	141-2-4539-35000	Washer	3
143	141-2-4539-27800	Washer	1
144	141-2-4539-19800	Washer	2
145	141-2-4539-44800	Washer	4
146	141-2-4539-27603	Washer	2
147	4-2319-74362	Leaf Switch (Play) [S308]	1
148	4-2319-74360	Leaf Switch (Motor 1) [S306]	1
148	4-2319-74360	Leaf Switch (Motor 2) [S307]	1
149	4-2319-78590	Lever Switch (Dubbing) [S309]	1
151	141-2-4219-29600	Screw	1
152	141-2-8419-17700	Lever Record	1
153	141-2-8459-05100	Bracket R/P Switch	1
154	141-2-7429-06600	Lever Arm Pinch	1
161	141-0-1939-20482	Switch P.C.B. Assy	1
162	141-0-1939-22442	Control P.C.B. Assy	1
171	411 015 9009	RING E 2	3
172	411 030 7509	SCR BIN 2X7	2
173	411 030 6403	SCR BIN 2X5	2
174	411 021 0205	SCR S-TPG BIN 2X12	2
175	411 021 3107	SCR S-TPG BIN 2.6X8	3
176	411 015 7906	RING E 1.5	4
177	412 019 4304	SCR PAN 2X6	1
178	411 022 7807	SCR S-TPG PAN 2X6	1
179	411 023 1408	SCR S-TPG PAN 2.6X12	1
181	411 017 7300	SCR PAN PCS 1.4X2	1
182	411 038 7501	SCR PAN 2X12	1
183	411 023 1002	SCR S-TPG PAN 2.6X10	1
184	411 023 3303	SCR S-TPG PAN 2.6X8	2

- NOTES:
- 1. Parts order must contain Model Number, Part Number and Description.
 - 2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

ELECTRICAL ADJUSTMENTS

EQUIPMENT REQUIRED

- VTVM (2 sets)
- Frequency Counter
- Dualtrace Oscilloscope
- DC Constant-voltage Regulator
- Dummy Load (47k Ω)
- Coil (1~10mH)
- Test Tapes
- ‡ 3kHz Test Tape (Example: TEAC MTT-111) for Tape Speed Adjustment
- ‡ 10kHz Test Tape (Example: TEAC MTT-114) for Head Azimuth Adjustment
- Test Tape for Oscillation Frequency Adjustment
- ‡ CrO₂ Tape (Example: TDK AC 512)
- Alignment Tool

Unless especially specified, set the unit and measuring instruments as follows:

- Power Switch ON
- Function Switch TAPE
- OSC Switch 1
- Graphic Equalizer Controls 0 (click position)
- Volume Controls Arbitrary

NOTE:

- ‡ Supply 12V DC from the constant-voltage regulator to the EXT. Power Jack.
- ‡ The Electrical Adjustment should be performed in the order as described below.

TAPE SPEED ADJUSTMENT

1. First detach the Cabinet Bottom from the unit and connect the dummy load (47k Ω) and the frequency counter to the left or right channel LINE OUT terminal.
2. Then insert a 3kHz test tape (Example: TEAC MTT-111) into the cassette compartment of the TAPE 2 side. and set it in the playback mode.
3. Adjust the potentiometer (P801) in the CONTROL P.C.B. until the frequency counter reads 3,000Hz $\pm$ 30Hz.

HEAD AZIMUTH ADJUSTMENT

Connect the dualtrace oscilloscope and the VTVM to both channel LINE OUT.

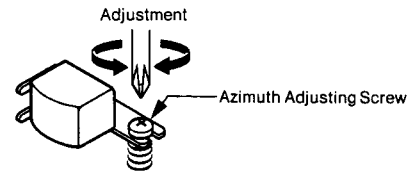
Then, set the dualtrace oscilloscope as follows:

- ‡ MODE CHOP (chopped)
- ‡ SOURCE INT (internal), CH1 or CH2
- ‡ SWEEP MODE AUTO (automatic)

NOTE:

Adjust the field on the oscilloscope with the VOLT. ADJ. and TIME ADJ.

1. Insert a 10kHz test tape (Example: TEAC MTT-114) into the cassette compartment.
2. While playing back the test tape, turn the azimuth adjusting screw until the wave forms of the right and left channels are superimposed and set to optimum at maximum reading on the VTVM.
3. Set the unit to the reverse playback mode and check the head azimuth (TAPE 1 side only).
4. After the adjustment, secure the adjusting screw with paint or glue.



OSCILLATION FREQUENCY ADJUSTMENT

1. Set the Tape Select Switch to "CrO₂" position and insert a CrO₂ tape (Example: TDK AC 512) into the cassette compartment of the TAPE 2 side.
2. Set the OSC switch to the "1" position.
3. Connect the coil (1~10mH) to the frequency counter and allow it to come near the OSC trans (T301) of AMPLIFIER P.C.Board.
4. Set the TAPE 2 side in the recording mode and turn and adjust the core of the OSC trans, so that the figure of the frequency counter should become 85kHz $\pm$ 50Hz.

TUNER ADJUSTMENTS

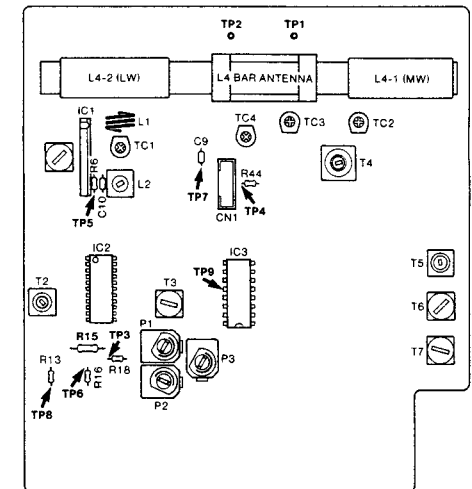
EQUIPMENT REQUIRED

- AM Standard Signal Generator
- FM Standard Signal Generator
- Generator Scope
- Loop Antenna for MW,LW
- Dummy Antenna (30 Ω /10pF) for SW
- Dummy Antenna (75 Ω , unbalanced type) for FM
- Ceramic Capacitor (10pF)
- Electrolytic Capacitor (1 μ F)
- Carbon Resistor (100k Ω , 330k Ω)
- VTVM
- DC Voltmeter (High Impedance)

TUNER CONTROL IC REFERENCE OSCILLATION FREQUENCY ADJUSTMENT

1. Connect a frequency counter to Pin 28 (XO) of IC401 in the Control Tuner P.C.B. through a resistor 330k Ω .
2. Adjust the TC401 in the Control Tuner P.C.B. until the oscillation frequency of IC401 becomes 75kHz $\pm$ 0.3Hz.

TUNER P.C.BOARD ALIGNMENT POINTS (TOP VIEW)



MW ALIGNMENT

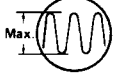
Standard Test Frequency 400Hz and Modulation 30% at AM

Step	Alignment	Connections		Frequency of Signal Generator	Tuning Frequency Setting	Adjustments	Remarks
		INPUT	OUTPUT				
1	Calibration of IF	Connect the coil (5~6 turn) to the output of generator and allow it to come near the bar antenna.	Connect input terminal of generator to Pin 12 of IC2 (TP3) through capacitor (1 μ F).	460kHz	531 kHz	T3	Obtain symmetrical curve and maximum amplitude.
2	Calibration of Tuning Range	—	Connect DC voltmeter to TP4.	—	1,602kHz	T6	Reading on the DC voltmeter is 8.0V.
3	Adjustment of Tracking	Connect loop antenna to output of AM signal generator. Place loop antenna 60cm away from bar antenna.	Connect VTVM with 3.2 Ω dummy load and oscilloscope to Speakers terminal.	612kHz	612kHz	L4-1 (bar ant.)	Obtain sine-wave of 400Hz and maximum amplitude.
4				1,404kHz	1,404kHz	TC3	

TUNER ADJUSTMENTS (Continued)

LW ALIGNMENT

Standard Test Frequency 400Hz and Modulation 30% at AM

Step	Alignment	Connections		Frequency of Signal Generator	Tuning Frequency Setting	Adjustments	Remarks
		INPUT	OUTPUT				
1	Calibration of Tuning Range	—	Connect DC voltmeter to TP4.	—	281 kHz	T7	Reading on the DC voltmeter is 6.0V.
2	Adjustment of Tracking	Connect loop antenna to output of AM signal generator. Place loop antenna 60cm away from bar antenna.	Connect VTVM with 3.2Ω dummy load and oscilloscope to Speakers terminal.	171 kHz	171 kHz	L4-2 (bar ant.)	Obtain sine-wave of 400Hz and maximum amplitude. 
3				270 kHz	270 kHz	TC4	

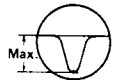
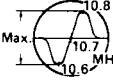
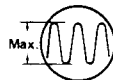
SW ALIGNMENT

Standard Test Frequency 400Hz and Modulation 30% at AM

Step	Alignment	Connections		Frequency of Signal Generator	Tuning Frequency Setting	Adjustments	Remarks
		INPUT	OUTPUT				
1	Calibration of Tuning Range	—	Connect DC voltmeter to TP4.	—	15.5 MHz	T5	Reading on the DC voltmeter is 7.8V.
2	Adjustment of Tracking	Connect AM signal generator to antenna terminals (TP1 and TP2) through dummy antenna (30Ω/10pF).	Connect VTVM with 3.2Ω dummy load and oscilloscope to Speakers terminal.	6.5 MHz	6.5 MHz	T4	Obtain sine-wave of 400Hz and maximum amplitude. 
3				14.0 MHz	14.0 MHz	TC2	

FM ALIGNMENT

Standard Test Frequency 400Hz and Deviation 22.5kHz

Step	Alignment	Connections		Frequency of Signal Generator	Tuning Frequency Setting	Adjustments	Remarks
		INPUT	OUTPUT				
1	Calibration of IF	Connect output terminal of generator to Pin 8 of IC1 (TP5) through capacitor (10pF).	Connect input terminal of generator to Pin 10 of IC2 (TP6) through capacitor (1μF).	10.7 MHz	87.5 MHz	Turn T2 (blue core) fully counter-clockwise and then, adjust T1.	Obtain symmetrical curve and maximum amplitude. 
2						T2 (blue core)	Obtain S curve and maximum amplitude. 
3	Calibration of Tuning Range	—	Connect DC voltmeter to TP7.	—	108.0 MHz	L2	Reading on the DC voltmeter is 6.5V.
4	Adjustment of Tracking	Connect FM signal generator to antenna terminals (TP1 and TP2) through dummy antenna (75Ω, unbalanced type).	Connect VTVM with 3.2Ω dummy load and oscilloscope to Speakers terminal.	90.0 MHz	90.0 MHz	L1	Obtain sine-curve and maximum amplitude. 
5				106.0 MHz	106.0 MHz	TC1	

TUNER ADJUSTMENTS (Continued)

FM/MW STATION DETECT SENSITIVITY ALIGNMENT

Step	Alignment	Connections		Frequency of Signal Generator	Tuning Frequency Setting	Adjustments	Remarks
		INPUT	OUTPUT				
1	FM	Connect FM signal generator to antenna terminals (TP1 and TP2) through dummy antenna (75Ω, unbalanced type).	Connect a DC voltmeter into both sides of the resistor R15.	90.0 MHz (ANT. input 60dBμ)	90.0 MHz	T2	Reading on the DC voltmeter is less than ±5mV.
2			Connect DC voltmeter to TP8.	90.0 MHz (ANT. input 20dBμ)	90.0 MHz	P2	Reading on the DC voltmeter should meet at the point of "LOW" level changed from the "HIGH" level.
3	MW	Connect loop antenna to output of AM signal generator. Place loop antenna 60 cm away from bar antenna.	Connect DC voltmeter to TP8.	612 kHz (ANT. input 52dBμ)	612 kHz	P1	Reading on the DC voltmeter should meet at the point of "LOW" level changed from the "HIGH" level.

NOTE: In the first instance, perform the adjustment for FM.

FM MPX (Multiplex) ADJUSTMENT

19kHz (V.C.O.) ADJUSTMENT

- Before the adjustment, set the switches as follows:
 - Function Switch RADIO
 - FM Mode Switch STEREO
 - Band Select Switch FM
- Connect a frequency counter to Pin 12 of IC3 (TP9) through a resistor 100kΩ.
- Adjust the potentiometer (P3) until the oscillation frequency of IC3 becomes 19kHz (±20Hz).

P.C.BOARD PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
AMPLIFIER P.C.B. ASSY				Q312	405 019 2708	TR 2SC536-F-NP	1
61	141-0-1939-22852	Amplifier P.C.B. Assy	1	Q313	405 019 2708	TR 2SC536-F-NP	1
	141-2-3689-14600	Radiator IC (for IC303)	1	C101	403 073 7004	CERAMIC 470P K 50V	1
	411 023 9800	SCR S-TPG PAN 3X8 (for IC303)	2	C102	403 073 7004	CERAMIC 470P K 50V	1
	131-2-9800-02300	Jumper (Graphic EQ, 4P)	1	C103	403 072 8200	CERAMIC 330P K 50V	1
	131-2-9800-02301	Jumper (Graphic EQ, 3P)	1	C104	403 039 7901	ELECT 100U M 10V	1
	4-2369-73783	Pin 1P	2	C105	403 048 7602	ELECT 0.47U M 50V	1
CN301	4-2369-73390	Connector 6P	1	C106	403 060 8700	POLYESTER 0.033U K 50V	1
CN302	4-2369-73360	Connector 3P	1	C107	403 058 3700	POLYESTER 0.015U K 50V	1
CN303	4-2369-73790	Connector 2P	1	C108	403 042 0302	ELECT 100U M 16V	1
CN304	4-2369-74750	Plug 8P	1	C109	403 042 0302	ELECT 10U M 16V	1
CN305	4-2369-75100	Plug 4P	1	C111	403 074 6303	CERAMIC 560P K 50V	1
CN307	4-2369-73790	Connector 2P	1	C112	403 001 9100	CERAMIC 6800P N 16V	1
CN308	4-2369-74390	Plug 6P	1	C113	403 073 3204	CERAMIC 390P K 50V	1
F301	4-2349-70620	Protector, ICP-N5	1	C114	403 071 6207	CERAMIC 220P K 50V	1
J101	4-2352-01160	Jack 3P (Mic)	1	C115	403 039 7901	ELECT 100U M 10V	1
J102	4-2352-01160	Jack 3P (Mic)	1	C116	403 049 1609	ELECT 1U M 50V	1
J301	4-2352-02550	Pin Jack 2P (LINE IN)	1	C117	403 061 4404	POLYESTER 0.039U K 50V	1
J302	4-2352-02550	Pin Jack 2P (LINE OUT)	1	C118	403 058 3700	POLYESTER 0.015U K 50V	1
J303	4-2352-01170	Jack 7P 6.45 (Headphones)	1	C120	403 074 9205	CERAMIC 680P K 50V	1
J304	4-2379-71270	4P Push Terminal (Speakers)	1	C121	403 075 3400	CERAMIC 82P K 50V	1
S301	4-2312-06380	Slide Switch (Record/Play)	1	C122	403 071 6207	CERAMIC 220P K 50V	1
S302	4-2319-78080	Lever Switch (Function)	1	C123	403 001 5300	CERAMIC 2200P N 16V	1
S303	4-2319-79460	Push Switch (Power)	1	C124	403 047 9607	ELECT 0.1U M 50V	1
S304	4-2319-75590	Slide Switch (OSC)	1	C126	403 047 9607	ELECT 0.1U M 50V	1
S310	4-2319-78940	Push Switch (Tape Select 2)	1	C127	403 049 1609	ELECT 1U M 50V	1
S311	4-2319-78940	Push Switch (Tape Select 1)	1	C128	403 042 0302	ELECT 10U M 16V	1
L101	4-2552-00140	AF Coil (4.7mH)	1	C130	403 049 1609	ELECT 1U M 50V	1
L102	4-2729-70480	Coil (33mH)	1	C131	403 069 1207	CERAMIC 1000P K 50V	1
L201	4-2552-00140	AF Coil (4.7mH)	1	C133	403 039 7901	ELECT 100U M 10V	1
L202	4-2729-70480	Coil (33mH)	1	C134	403 022 7703	CERAMIC 33P J 50V	1
L301	4-2659-70240	Loading Coil (1mH)	1	C135	403 069 5205	CERAMIC 0.01U K 50V	1
L304	4-2659-70432	Choke Coil Ring	1	C136	403 039 7901	ELECT 100U M 10V	1
T301	4-2589-73091	OSC Trans	1	C137	405 058 5803	POLYESTER 0.15U K 50V	1
D101	407 061 2309	DIODE 1SS95	1	C138	403 043 3104	ELECT 2200U M 16V	1
D201	407 061 2309	DIODE 1SS95	1	C201	403 073 7004	CERAMIC 470P K 50V	1
D301	407 061 2309	DIODE 1SS95	1	C202	403 073 7004	CERAMIC 470P K 50V	1
D303	407 061 2309	DIODE 1SS95	1	C203	403 072 8200	CERAMIC 330P K 50V	1
D304	407 061 2309	DIODE 1SS95	1	C204	403 039 7901	ELECT 100U M 10V	1
D308	407 061 2309	DIODE 1SS95	1	C205	403 048 7602	ELECT 0.47U M 50V	1
D309	407 063 9603	ZENER DIODE MTZJ9.1A	1	C206	403 060 8700	POLYESTER 0.033U K 50V	1
D311	407 061 2309	DIODE 1SS95	1	C207	403 058 3700	POLYESTER 0.015U K 50V	1
D312	407 061 2309	DIODE 1SS95	1	C208	403 042 0302	ELECT 10U M 16V	1
IC301	409 002 4700	IC BA3416BL	1	C209	403 042 0302	ELECT 10U M 16V	1
IC302	409 002 4007	IC BA3306	1	C211	403 074 6303	CERAMIC 560P K 50V	1
IC303	409 017 9509	IC LA4505	1	C212	403 001 9100	CERAMIC 6800P N 16V	1
O101	405 021 0501	TR 2SD1012-G	1	C213	403 073 3204	CERAMIC 390P K 50V	1
O102	405 011 0009	TR 2SC1571-G-L-NP	1	C214	403 071 6207	CERAMIC 220P K 50V	1
O103	405 019 3804	TR 2SC536-G-NP	1	C215	403 039 7901	ELECT 100U M 10V	1
O104	405 019 3804	TR 2SC536-G-NP	1	C216	403 049 1609	ELECT 1U M 50V	1
O105	405 010 9904	TR 2SC1571-F-L-NP	1	C217	403 061 4404	POLYESTER 0.039U K 50V	1
O106	405 011 0009	TR 2SC1571-G-L-NP	1	C218	403 058 3700	POLYESTER 0.015U K 50V	1
O107	405 021 0501	TR 2SD1012-G	1	C220	403 074 9205	CERAMIC 680P K 50V	1
O201	405 021 0501	TR 2SD1012-G	1	C221	403 075 3400	CERAMIC 82P K 50V	1
O202	405 011 0009	TR 2SC1571-G-L-NP	1	C222	403 071 6207	CERAMIC 220P K 50V	1
O203	405 019 3804	TR 2SC536-G-NP	1	C223	403 001 5300	CERAMIC 2200P N 16V	1
O204	405 019 3804	TR 2SC536-G-NP	1	C224	403 047 9607	ELECT 0.1U M 50V	1
O205	405 010 9904	TR 2SC1571-F-L-NP	1	C226	403 047 9607	ELECT 0.1U M 50V	1
O206	405 011 0009	TR 2SC1571-G-L-NP	1	C227	403 049 1609	ELECT 1U M 50V	1
O207	405 021 0501	TR 2SD1012-G	1	C228	403 042 0302	ELECT 10U M 16V	1
O301	405 018 0200	TR 2SC3331-U	1	C230	403 049 1609	ELECT 1U M 50V	1
O307	405 019 3804	TR 2SC536-G-NP	1	C231	403 069 1207	CERAMIC 1000P K 50V	1
O308	405 019 3804	TR 2SC536-G-NP	1	C233	403 039 7901	ELECT 100U M 10V	1
O309	405 023 5306	TR 2SD400-F-MP	1	C234	403 022 7703	CERAMIC 33P J 50V	1
Q310	405 004 4502	TR 2SA608-F-NP	1	C235	403 069 5205	CERAMIC 0.01U K 50V	1
Q311	405 029 6505	TR 2SB986-S	1	C236	403 039 7901	ELECT 100U M 10V	1

P.C.BOARD PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
C237	403 058 5803	POLYESTER 0.15U K 50V	1	R142	401 028 3200	CARBON 1K JA 1/8W	1
C238	403 043 3104	ELECT 2200U M 16V	1	R144	401 030 0709	CARBON 22K JA 1/8W	1
C301	403 040 2704	ELECT 22U M 10V	1	R146	401 031 1903	CARBON 390 JA 1/8W	1
C302	403 040 2704	ELECT 22U M 10V	1	R147	401 030 0709	CARBON 22K JA 1/8W	1
C303	403 040 4807	ELECT 220U M 10V	1	R148	401 021 0701	CARBON 56 JA 1/4W	1
C304	403 040 4807	ELECT 220U M 10V	1	R149	401 099 0405	CARBON 0.47 JA 1/8W	1
C305	403 040 4807	ELECT 220U M 10V	1	R150	401 028 4207	CARBON 100K JA 1/8W	1
C306	403 040 2704	ELECT 22U M 10V	1	R201	401 031 0807	CARBON 36 JA 1/8W	1
C307	403 042 0302	ELECT 10U M 16V	1	R202	401 013 7305	CARBON 120K JA 1/4W	1
C309	403 049 1609	ELECT 1U M 50V	1	R203	401 028 3705	CARBON 10K JA 1/8W	1
C310	403 049 1609	ELECT 1U M 50V	1	R204	401 031 6601	CARBON 4.7K JA 1/8W	1
C311	403 069 5205	CERAMIC 0.01U K 50V	1	R206	401 019 1901	CARBON 3.9K JA 1/4W	1
C312	403 069 5205	CERAMIC 0.01U K 50V	1	R207	401 020 2003	CARBON 4.7K JA 1/4W	1
C313	403 081 2602	POLYPRO 2200P J 100V	1	R208	401 031 9008	CARBON 5.1K JA 1/8W	1
C314	403 069 1207	CERAMIC 1000P K 50V	1	R210	401 028 3200	CARBON 1K JA 1/8W	1
C315	403 060 6607	POLYESTER 3300P K 50V	1	R211	401 031 7202	CARBON 47K JA 1/8W	1
C327	403 049 1609	ELECT 1U M 50V	1	R212	401 032 0608	CARBON 5.6K JA 1/8W	1
C329	403 039 7901	ELECT 100U M 10V	1	R213	401 028 4207	CARBON 100K JA 1/8W	1
C330	403 043 1100	ELECT 220U M 16V	1	R215	401 031 0203	CARBON 330K JA 1/8W	1
C331	403 049 1609	ELECT 1U M 50V	1	R216	401 030 4202	CARBON 2.7K JA 1/8W	1
C333	403 049 1609	ELECT 1U M 50V	1	R217	401 029 0406	CARBON 150 JA 1/8W	1
C334	403 049 1609	ELECT 1U M 50V	1	R218	401 031 6601	CARBON 4.7K JA 1/8W	1
C335	403 040 4807	ELECT 220U M 10V	1	R219	401 028 4207	CARBON 100K JA 1/8W	1
C338	403 040 4807	ELECT 220U M 10V	1	R220	401 030 4707	CARBON 27K JA 1/8W	1
C339	403 003 2802	CERAMIC 0.022U K 25V	1	R221	401 031 5000	CARBON 43K JA 1/8W	1
C340	403 046 0605	ELECT 2200U M 25V	1	R222	401 030 4707	CARBON 27K JA 1/8W	1
C341	403 003 2802	CERAMIC 0.022U K 25V	1	R223	401 029 5500	CARBON 18K JA 1/8W	1
C342	403 069 0705	CERAMIC 1000P K 50V	1	R224	401 030 0709	CARBON 22K JA 1/8W	1
C343	403 042 3600	ELECT 100U M 16V	1	R225	401 030 4707	CARBON 27K JA 1/8W	1
C344	403 049 1609	ELECT 1U M 50V	1	R226	401 030 8705	CARBON 330 JA 1/8W	1
R101	401 031 0807	CARBON 36 JA 1/8W	1	R227	401 028 3705	CARBON 10K JA 1/8W	1
R102	401 013 7305	CARBON 120K JA 1/4W	1	R228	401 028 6607	CARBON 120 JA 1/8W	1
R103	401 028 3705	CARBON 10K JA 1/8W	1	R229	401 028 2104	CARBON 10 JA 1/8W	1
R104	401 031 6601	CARBON 4.7K JA 1/8W	1	R230	401 028 3200	CARBON 1K JA 1/8W	1
R106	401 019 1901	CARBON 3.9K JA 1/4W	1	R231	401 031 6601	CARBON 4.7K JA 1/8W	1
R107	401 020 2003	CARBON 4.7K JA 1/4W	1	R232	401 028 7604	CARBON 12K JA 1/8W	1
R108	401 031 9008	CARBON 5.1K JA 1/8W	1	R233	401 031 9206	CARBON 51K JA 1/8W	1
R110	401 028 3200	CARBON 1K JA 1/8W	1	R234	401 016 4806	CARBON 22K JA 1/4W	1
R111	401 031 7202	CARBON 47K JA 1/8W	1	R235	401 032 7102	CARBON 75K JA 1/8W	1
R112	401 032 0608	CARBON 5.6K JA 1/8W	1	R238	401 031 6601	CARBON 4.7K JA 1/8W	1
R113	401 028 4207	CARBON 100K JA 1/8W	1	R239	401 032 1506	CARBON 560K JA 1/8W	1
R115	401 031 0203	CARBON 330K JA 1/8W	1	R240	401 028 3705	CARBON 10K JA 1/8W	1
R116	401 030 4202	CARBON 2.7K JA 1/8W	1	R241	401 030 8705	CARBON 330 JA 1/8W	1
R117	401 029 0406	CARBON 150 JA 1/8W	1	R242	401 028 3200	CARBON 1K JA 1/8W	1
R118	401 031 6601	CARBON 4.7K JA 1/8W	1	R244	401 030 0709	CARBON 22K JA 1/8W	1
R119	401 028 4207	CARBON 100K JA 1/8W	1	R246	401 031 1903	CARBON 390 JA 1/8W	1
R120	401 030 4707	CARBON 27K JA 1/8W	1	R247	401 030 0709	CARBON 22K JA 1/8W	1
R121	401 031 5000	CARBON 43K JA 1/8W	1	R248	401 021 0701	CARBON 56 JA 1/4W	1
R122	401 030 4707	CARBON 27K JA 1/8W	1	R249	401 099 0405	CARBON 0.47 JA 1/8W	1
R123	401 029 5500	CARBON 18K JA 1/8W	1	R250	401 028 4207	CARBON 100K JA 1/8W	1
R124	401 030 0709	CARBON 22K JA 1/8W	1	R301	401 028 2609	CARBON 100 JA 1/8W	1
R125	401 030 4707	CARBON 27K JA 1/8W	1	R302	401 028 2609	CARBON 100 JA 1/8W	1
R126	401 030 8705	CARBON 330 JA 1/8W	1	R303	401 028 2104	CARBON 10 JA 1/8W	1
R127	401 028 3705	CARBON 10K JA 1/8W	1	R304	401 012 4503	CARBON 100 JA 1/4W	1
R128	401 028 6607	CARBON 120 JA 1/8W	1	R305	401 032 0608	CARBON 5.6K JA 1/8W	1
R129	401 028 2104	CARBON 10 JA 1/8W	1	R318	401 030 0709	CARBON 22K JA 1/8W	1
R130	401 028 3200	CARBON 1K JA 1/8W	1	R321	401 020 7503	CARBON 51 JA 1/4W	1
R131	401 031 6601	CARBON 4.7K JA 1/8W	1	R322	401 031 5505	CARBON 47 JA 1/8W	1
R132	401 028 7604	CARBON 12K JA 1/8W	1	R323	401 030 0204	CARBON 2.2K JA 1/8W	1
R133	401 031 9206	CARBON 51K JA 1/8W	1	R324	401 029 7306	CARBON 2.7 JA 1/8W	1
R134	401 016 4806	CARBON 22K JA 1/4W	1	R327	401 016 3809	CARBON 2.2K JA 1/4W	1
R135	401 032 7102	CARBON 75K JA 1/8W	1	R328	401 012 8105	CARBON 100K JA 1/4W	1
R138	401 031 6601	CARBON 4.7K JA 1/8W	1	R329	401 016 4806	CARBON 22K JA 1/4W	1
R139	401 032 1506	CARBON 560K JA 1/8W	1	R330	401 028 3705	CARBON 10K JA 1/8W	1
R140	401 028 3705	CARBON 10K JA 1/8W	1	R331	401 028 4207	CARBON 100K JA 1/8W	1
R141	401 030 8705	CARBON 330 JA 1/8W	1	R332	401 030 4707	CARBON 27K JA 1/8W	1

P.C.BOARD PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
R333	401 030 4707	CARBON 27K JA 1/8W	1	Q1	405 026 8304	TR 2SK212-E	1
R335	401 031 6106	CARBON 470 JA 1/8W	1	Q2	405 021 0600	TR 2SD1012-G-SPA	1
R336	401 022 7204	CARBON 750 JA 1/4W	1	Q3	405 004 4502	TR 2SA608-F-NP	1
R337	401 029 4503	CARBON 180 JA 1/8W	1	Q4	405 016 0806	TR 2SC2839-E	1
R338	401 031 0609	CARBON 3.3M JA 1/8W	1	C1	403 033 2605	CERAMIC 8.2P K 50V	1
R339	401 030 9702	CARBON 33K JA 1/8W	1	C2	403 027 8002	CERAMIC 5.6P K 50V	1
R340	401 012 5708	CARBON 1K JA 1/4W	1	C3	403 001 2309	CERAMIC 0.01U N 16V	1
R341	401 028 4207	CARBON 100K JA 1/8W	1	C4	403 001 2309	CERAMIC 0.01U N 16V	1
R343	401 031 2405	CARBON 3.9K JA 1/8W	1	C5	403 001 2309	CERAMIC 0.01U N 16V	1
R344	401 031 2405	CARBON 3.9K JA 1/8W	1	C6	403 069 1207	CERAMIC 1000P K 50V	1
R345	401 031 2405	CARBON 3.9K JA 1/8W	1	C7	403 009 1809	CERAMIC 10P J 50V	1
R346	401 060 3305	OXIDE-MT 220 JA 1W	1	C8	403 001 2309	CERAMIC 0.01U N 16V	1
R347	401 028 4207	CARBON 100K JA 1/8W	1	C9	403 069 1207	CERAMIC 1000P K 50V	1
R348	401 028 4207	CARBON 100K JA 1/8W	1	C10	403 012 6006	CERAMIC 15P J 50V	1
R349	401 028 4207	CARBON 100K JA 1/8W	1	C11	403 012 6006	CERAMIC 15P J 50V	1
				C12	403 027 8002	CERAMIC 5.6P K 50V	1
				C13	403 069 1207	CERAMIC 1000P K 50V	1
				C14	403 069 1207	CERAMIC 1000P K 50V	1
				C15	403 001 2309	CERAMIC 0.01U N 16V	1
				C16	403 001 2309	CERAMIC 0.01U N 16V	1
				C17	403 002 2902	CERAMIC 0.01U M 25V	1
				C18	403 039 7802	ELECT 100U M 10V	1
				C19	403 050 7706	ELECT 3.3U M 50V	1
				C20	403 049 1609	ELECT 1U M 50V	1
				C21	403 001 2309	CERAMIC 0.01U N 16V	1
				C22	403 050 7706	ELECT 3.3U M 50V	1
				C23	403 042 0302	ELECT 10U M 16V	1
				C24	403 051 2007	ELECT 4.7U M 50V	1
				C25	403 002 2902	CERAMIC 0.01U M 25V	1
				C26	403 001 2309	CERAMIC 0.01U N 16V	1
				C27	403 042 0302	ELECT 10U M 16V	1
				C28	403 069 1207	CERAMIC 1000P K 50V	1
				C29	403 042 0302	ELECT 10U M 16V	1
				C30	403 051 2007	ELECT 4.7U M 50V	1
				C31	403 049 1609	ELECT 1U M 50V	1
				C32	403 041 5704	ELECT 470U M 10V	1
				C33	403 039 7802	ELECT 100U M 10V	1
				C34	403 042 0302	ELECT 10U M 16V	1
				C35	403 001 2309	CERAMIC 0.01U N 16V	1
				C36	403 042 9008	ELECT 22U M 16V	1
				C37	403 001 2309	CERAMIC 0.01U N 16V	1
				C38	403 001 2309	CERAMIC 0.01U N 16V	1
				C39	403 047 9607	ELECT 0.1U M 50V	1
				C40	403 047 9607	ELECT 0.1U M 50V	1
				C41	403 001 2309	CERAMIC 0.01U N 16V	1
				C42	403 001 2309	CERAMIC 0.01U N 16V	1
				C43	403 049 1609	ELECT 1U M 50V	1
				C44	403 048 3109	ELECT 0.22U M 50V	1
				C45	403 048 7602	ELECT 0.47U M 50V	1
				C46	403 082 4001	POLYPRO 680P J 100V	1
				C47	403 004 0500	CERAMIC 0.047U K 25V	1
				C48	403 039 7802	ELECT 100U M 10V	1</

P.C.BOARD PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
C63	403 012 6006	CERAMIC 15P J 50V	1	CN305	4-2352-03201	Connector 4P Assy	1
C66	403 051 2007	ELECT 4.7U M 50V	1	SW401	4-2312-05300	Keyboard Switch	1
C68	403 020 8106	CERAMIC 3P C 50V	1	SW402	4-2312-05300	Keyboard Switch	1
R1	401 028 3200	CARBON 1K JA 1/8W	1	SW403	4-2312-05300	Keyboard Switch	1
R2	401 028 2104	CARBON 10 JA 1/8W	1	SW404	4-2312-05300	Keyboard Switch	1
R3	401 028 4207	CARBON 100K JA 1/8W	1	SW405	4-2312-05300	Keyboard Switch	1
R4	401 028 4207	CARBON 100K JA 1/8W	1	SW406	4-2312-05300	Keyboard Switch	1
R5	401 030 9702	CARBON 33K JA 1/8W	1	SW407	4-2312-05300	Keyboard Switch	1
R6	401 029 3902	CARBON 18 JA 1/8W	1	SW408	4-2312-05300	Keyboard Switch	1
R7	401 028 4702	CARBON 1M JA 1/8W	1	SW409	4-2312-05300	Keyboard Switch	1
R8	401 031 7202	CARBON 47K JA 1/8W	1	SW410	4-2312-05300	Keyboard Switch	1
R9	401 014 2903	CARBON 150 JA 1/4W	1	SW411	4-2312-05300	Keyboard Switch	1
R10	401 012 4503	CARBON 100 JA 1/4W	1	SW412	4-2312-05300	Keyboard Switch	1
R11	401 032 0608	CARBON 5.6K JA 1/8W	1	SW413	4-2312-05300	Keyboard Switch	1
R12	401 032 5108	CARBON 68K JA 1/8W	1	SW414	4-2312-05300	Keyboard Switch	1
R13	401 028 3705	CARBON 10K JA 1/8W	1	TC401	4-2249-70812	Trimmer Condenser	1
R14	401 032 7805	CARBON 82 JA 1/8W	1	X401	4-2259-71110	Crystal 75KHz	1
R15	401 015 3800	CARBON 18K JA 1/4W	1	LC401	4-9549-70191	LCD	1
R16	401 028 3200	CARBON 1K JA 1/8W	1	D401	407 061 2200	DIODE 1SS254-TA	1
R17	401 031 6601	CARBON 4.7K JA 1/8W	1	D402	407 061 2200	DIODE 1SS254-TA	1
R18	401 028 3705	CARBON 10K JA 1/8W	1	D403	407 061 2200	DIODE 1SS254-TA	1
R19	401 012 7009	CARBON 10K JA 1/4W	1	D404	407 061 2200	DIODE 1SS254-TA	1
R20	401 032 5108	CARBON 68K JA 1/8W	1	D405	407 061 2200	DIODE 1SS254-TA	1
R21	401 028 4207	CARBON 100K JA 1/8W	1	D406	407 061 2200	DIODE 1SS254-TA	1
R22	401 030 9702	CARBON 33K JA 1/8W	1	D407	407 061 2200	DIODE 1SS254-TA	1
R23	401 030 9207	CARBON 3.3K JA 1/8W	1	D408	407 061 2200	DIODE 1SS254-TA	1
R24	401 029 9706	CARBON 220 JA 1/8W	1	D412	407 090 8709	LED LN249RPH (OPERATION)	1
R25	401 028 2609	CARBON 100 JA 1/8W	1	D413	407 090 8709	LED LN249RPH (FM STEREO)	1
R26	401 028 2609	CARBON 100 JA 1/8W	1	IC401	409 074 3205	IC UPD17156-011	1
R27	401 028 4207	CARBON 100K JA 1/8W	1	Q401	405 012 8608	TR 2SC2021-S	1
R28	401 056 2909	OXIDE-MT 47 JB 1/2W	1	Q402	405 012 8608	TR 2SC2021-S	1
R29	401 012 4503	CARBON 100 JA 1/4W	1	Q403	405 012 8608	TR 2SC2021-S	1
R30	401 031 2405	CARBON 3.9K JA 1/8W	1	Q404	405 012 8608	TR 2SC2021-S	1
R31	401 031 2405	CARBON 3.9K JA 1/8W	1	C401	403 001 2309	CERAMIC 0.01U N 16V	1
R32	401 030 0204	CARBON 2.2K JA 1/8W	1	C402	403 001 2309	CERAMIC 0.01U N 16V	1
R33	401 030 0204	CARBON 2.2K JA 1/8W	1	C403	403 001 2309	CERAMIC 0.01U N 16V	1
R34	401 030 9702	CARBON 33K JA 1/8W	1	C404	403 042 9305	ELECT 22U M 16V	1
R35	401 030 9702	CARBON 33K JA 1/8W	1	C405	404 029 1404	CERAMIC 0.022U Z 50V	1
R36	401 029 0901	CARBON 1.5K JA 1/8W	1	C406	403 003 2802	CERAMIC 0.022U K 25V	1
R37	401 031 6106	CARBON 470 JA 1/8W	1	C407	403 054 0109	ELECT 4.7U M 35V	1
R38	401 028 3705	CARBON 10K JA 1/8W	1	C408	403 054 0109	ELECT 4.7U M 35V	1
R39	401 028 3200	CARBON 1K JA 1/8W	1	C409	403 054 0109	ELECT 4.7U M 35V	1
R40	401 029 1502	CARBON 15K JA 1/8W	1	C410	404 029 1503	CERAMIC 0.047U Z 50V	1
R41	401 028 9806	CARBON 15 JA 1/8W	1	C411	404 029 1503	CERAMIC 0.047U Z 50V	1
R42	401 032 4002	CARBON 680 JA 1/8W	1	C412	403 008 5204	CERAMIC 10P D 50V	1
R43	401 029 9102	CARBON 22 JA 1/8W	1	C413	403 022 7703	CERAMIC 33P J 50V	1
R44	401 031 7202	CARBON 47K JA 1/8W	1	C414	403 001 2309	CERAMIC 0.01U N 16V	1
R45	401 028 4207	CARBON 100K JA 1/8W	1	C415	403 072 8200	CERAMIC 330P K 50V	1
R46	401 028 2104	CARBON 10 JA 1/8W	1	C416	403 068 9402	CERAMIC 100P K 50V	1
R47	401 016 3809	CARBON 2.2K JA 1/4W	1	C417	403 068 9402	CERAMIC 100P K 50V	1
R48	401 028 4702	CARBON 1M JA 1/8W	1	C418	403 068 9402	CERAMIC 100P K 50V	1
R49	401 056 2909	OXIDE-MT 47 JB 1/2W	1	C419	403 068 9402	CERAMIC 100P K 50V	1
R50	401 031 7202	CARBON 47K JA 1/8W	1	C420	403 068 9402	CERAMIC 100P K 50V	1
R51	401 031 7202	CARBON 47K JA 1/8W	1	C421	403 068 9402	CERAMIC 100P K 50V	1
R52	401 029 9102	CARBON 22 JA 1/8W	1	R401	401 030 0204	CARBON 2.2K JA 1/8W	1
R53	401 030 9702	CARBON 33K JA 1/8W	1	R402	401 030 0204	CARBON 2.2K JA 1/8W	1
				R403	401 028 3705	CARBON 10K JA 1/8W	1
				R404	401 030 0204	CARBON 2.2K JA 1/8W	1
				R405	401 030 9207	CARBON 3.3K JA 1/8W	1
				R406	401 028 2609	CARBON 100 JA 1/8W	1
				R407	401 028 2609	CARBON 100 JA 1/8W	1
				R408	401 028 3705	CARBON 10K JA 1/8W	1
				R409	401 028 3705	CARBON 10K JA 1/8W	1
				R410	401 030 8705	CARBON 330 JA 1/8W	1
				R411	401 030 9207	CARBON 3.3K JA 1/8W	1
				R412	401 030 9702	CARBON 33K JA 1/8W	1

CONTROL TUNER P.C.B. ASSY

63	141-0-1939-25140	Control Tuner P.C.B. Assy	1
	141-2-3229-67400	Shield Plate	1
	4-2379-71350	Lug Wire Assy	1
CN1	4-2352-03282	Connector 6P Assy	1
CN2	4-2352-02936	Connector 8P Assy	1
CN4	4-2352-02357	Connector 7P Assy	1

P.C.BOARD PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
GRAPHIC EQUALIZER P.C.B. ASSY							
64	141-0-1939-22402	Graphic Equalizer P.C.B. Assy	1	S901	△ 4-2319-75770	Rotary Switch (Voltage Select)	1
L501	4-2539-71690	Coil (15mH)	1	D901	407 005 2105	DIODE DS1350-KB3	1
L601	4-2539-71690	Coil (15mH)	1	D902	407 005 2105	DIODE DS1350-KB3	1
VR501	4-2229-77240	Slide Volume (B-50kΩ)	1	D903	407 005 2105	DIODE DS1350-KB3	1
VR601	4-2229-77240	Slide Volume (B-50kΩ)	1	D904	407 005 2105	DIODE DS1350-KB3	1
VR701	4-2229-77230	Slide Volume (SW-50kΩx2)	1	D905	407 063 9207	ZENER DIODE MTZJ7.5B	1
VR702	4-2229-77230	Slide Volume (SW-50kΩx2)	1	C901	403 074 2701	CERAMIC 0.047U Z 50V	1
VR703	4-2229-77230	Slide Volume (SW-50kΩx2)	1	C902	403 074 2701	CERAMIC 0.047U Z 50V	1
VR704	4-2229-77230	Slide Volume (SW-50kΩx2)	1	C903	403 074 2701	CERAMIC 0.047U Z 50V	1
VR705	4-2229-77230	Slide Volume (SW-50kΩx2)	1	C904	403 074 2701	CERAMIC 0.047U Z 50V	1
IC701	409 068 2009	IC BA3824LS	1	C905	403 042 3600	ELECT 100U M 16V	1
C501	403 047 1502	ELECT 4.7U M 25V	1	C906	403 039 7901	ELECT 100U M 10V	1
C502	403 069 0705	CERAMIC 1000P K 50V	1	R901	401 100 2008	OXIDE-MT 100 JB 1W	1
C503	403 047 1502	ELECT 4.7U M 25V	1	R902	401 019 9600	CARBON 47 JA 1/4W	1
C504	403 048 7602	ELECT 0.47U M 50V	1	SWITCH P.C.B. ASSY			
C505	403 060 8700	POLYESTER 0.033U K 50V	1	161	141-0-1939-20482	Switch P.C.B. Assy	1
C506	403 048 3109	ELECT 0.22U M 50V	1	CN302	4-2352-02785	Connector 3P Assy	1
C507	403 063 0503	POLYESTER 6800P K 50V	1	S305	4-2319-79451	Slide Switch (FWD/REV)	1
C508	403 063 2606	POLYESTER 0.068U K 50V	1	CONTROL P.C.B. ASSY			
C509	403 059 4102	POLYESTER 2200P K 50V	1	162	141-0-1939-22442	Control P.C.B. Assy	1
C510	403 059 6601	POLYESTER 0.022U K 50V	1	CN304	4-2352-02933	Connector 8P Assy	1
C511	403 074 9007	CERAMIC 680P K 50V	1	F801	4-2349-70570	Protector, ICP-N15	1
C512	403 058 3700	POLYESTER 0.015U K 50V	1	S801	4-2319-73990	Leaf Switch (High Speed)	1
C513	403 047 1502	ELECT 4.7U M 25V	1	L801	4-2539-70301	Micro Inductor (100μH)	1
C514	403 060 6607	POLYESTER 3300P K 50V	1	P801	4-2229-76139	Potentiometer (B-2.2kΩ)	1
C515	403 063 2606	POLYESTER 0.068U K 50V	1	D801	407 061 2309	DIODE 1SS95	1
C601	403 047 1502	ELECT 4.7U M 25V	1	D802	407 061 2309	DIODE 1SS95	1
C602	403 069 0705	CERAMIC 1000P K 50V	1	D803	407 063 8408	ZENER DIODE MTZJ12C	1
C603	403 047 1502	ELECT 4.7U M 25V	1	D805	407 061 2309	DIODE 1SS95	1
C604	403 048 7602	ELECT 0.47U M 50V	1	Q801	405 024 9907	TR 2SD734-F	1
C605	403 060 8700	POLYESTER 0.033U K 50V	1	Q802	405 018 0101	TR 2SC3331-T	1
C606	403 048 3109	ELECT 0.22U M 50V	1	Q803	405 019 2708	TR 2SC536-F-NP	1
C607	403 063 0503	POLYESTER 6800P K 50V	1	Q804	405 019 2708	TR 2SC536-F-NP	1
C608	403 063 2606	POLYESTER 0.068U K 50V	1	C801	403 044 0300	ELECT 47U M 16V	1
C609	403 059 4102	POLYESTER 2200P K 50V	1	C802	403 042 3600	ELECT 100U M 16V	1
C610	403 059 6601	POLYESTER 0.022U K 50V	1	C803	403 043 1100	ELECT 220U M 16V	1
C611	403 074 9007	CERAMIC 680P K 50V	1	R801	401 031 6106	CARBON 470 JA 1/8W	1
C612	403 058 3700	POLYESTER 0.015U K 50V	1	R802	401 028 9301	CARBON 13K JA 1/8W	1
C613	403 047 1502	ELECT 4.7U M 25V	1	R803	401 030 2505	CARBON 2.4K JA 1/8W	1
C614	403 060 6607	POLYESTER 3300P K 50V	1	R804	401 030 0709	CARBON 22K JA 1/8W	1
C615	403 063 2606	POLYESTER 0.068U K 50V	1	R805	401 030 0709	CARBON 22K JA 1/8W	1
C701	403 041 5704	ELECT 470U M 10V	1	R806	401 030 0204	CARBON 2.2K JA 1/8W	1
R501	401 029 0901	CARBON 1.5K JA 1/8W	1	R807	401 030 0709	CARBON 22K JA 1/8W	1
R502	401 030 8705	CARBON 330 JA 1/8W	1				
R503	401 030 9207	CARBON 3.3K JA 1/8W	1				
R601	401 029 0901	CARBON 1.5K JA 1/8W	1				
R602	401 030 8705	CARBON 330 JA 1/8W	1				
R603	401 030 9207	CARBON 3.3K JA 1/8W	1				
R701	401 028 2609	CARBON 100 JA 1/8W	1				

LED P.C.B. ASSY

65	141-0-01939-2690	LED P.C.B. Assy	1
D409	407 062 7006	LED SEL1413E	1
D410	407 062 7006	LED SEL1413E	1
D411	407 062 7006	LED SEL1413E	1

POWER P.C.B. ASSY

66	141-0-1939-24861	Power P.C.B. Assy	1
	△ 4-2352-01940	Fuse Clip	2
	4-2359-79040	Socket Wire Assy	1
CN307	4-2352-02880	Connector 2P Assy	1
F901	△ 4-2349-70260	Fuse (T2A)	1
J901	△ 4-2359-75682	AC/DC Power Socket	1

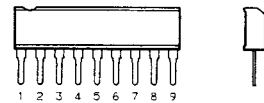
NOTES:

- Parts order must contain Model Number, Part Number and Description.
- Ordering quantity of screws and resistors must be multiple of 10 pcs.

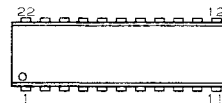
IC & TRANSISTOR LEAD IDENTIFICATION

TRANSISTOR	FRONT VIEW	BOTTOM VIEW
2SA608 2SC536 2SC1571 2SC3331 2SD734		
	ECB	ECB
2SD400		
	ECB	ECB
2SD1012		
	ECB	ECB
2SC2021 2SC2839		
	ECB	ECB
2SB986		
	ECB	ECB
2SK212		
	DSG	DSG
TERMINAL NAME B → BASE G → GATE C → COLLECTOR S → SOURCE E → EMITTER D → DRAIN		

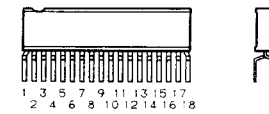
**BA3306
BA4412 FRONT/SIDE VIEWS**



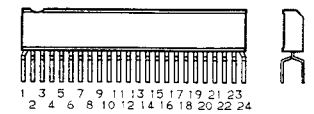
LA1265 TOP VIEW



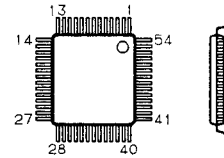
BA3416BL FRONT/SIDE VIEWS



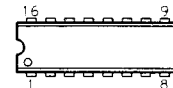
BA3824LS FRONT/SIDE VIEWS



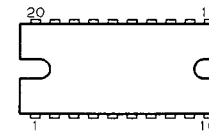
UPD1715G-011 TOP/SIDE VIEWS



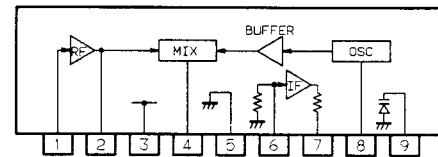
BA1335 TOP VIEW



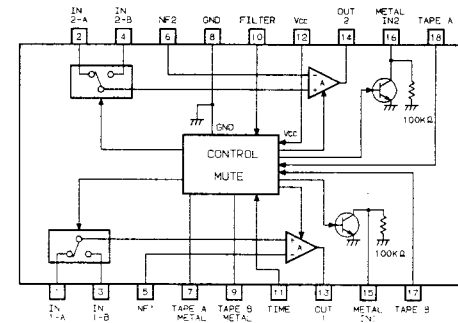
LA4505 TOP VIEW



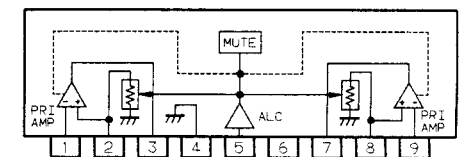
BA4412 BLOCK DIAGRAM



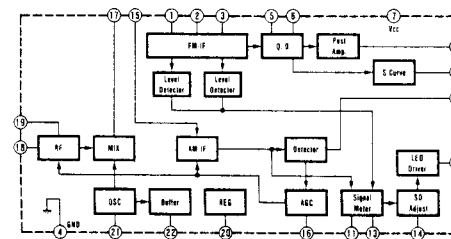
BA3416BL BLOCK DIAGRAM



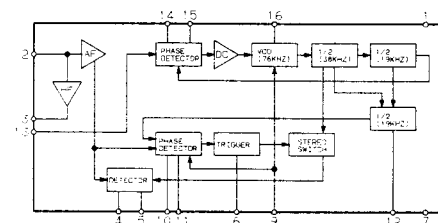
BA3306 BLOCK DIAGRAM



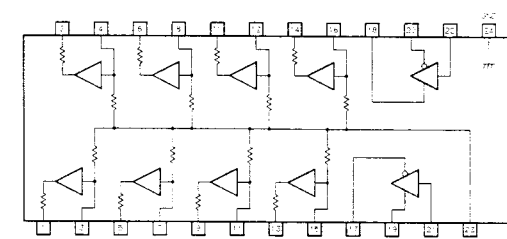
LA1265 BLOCK DIAGRAM



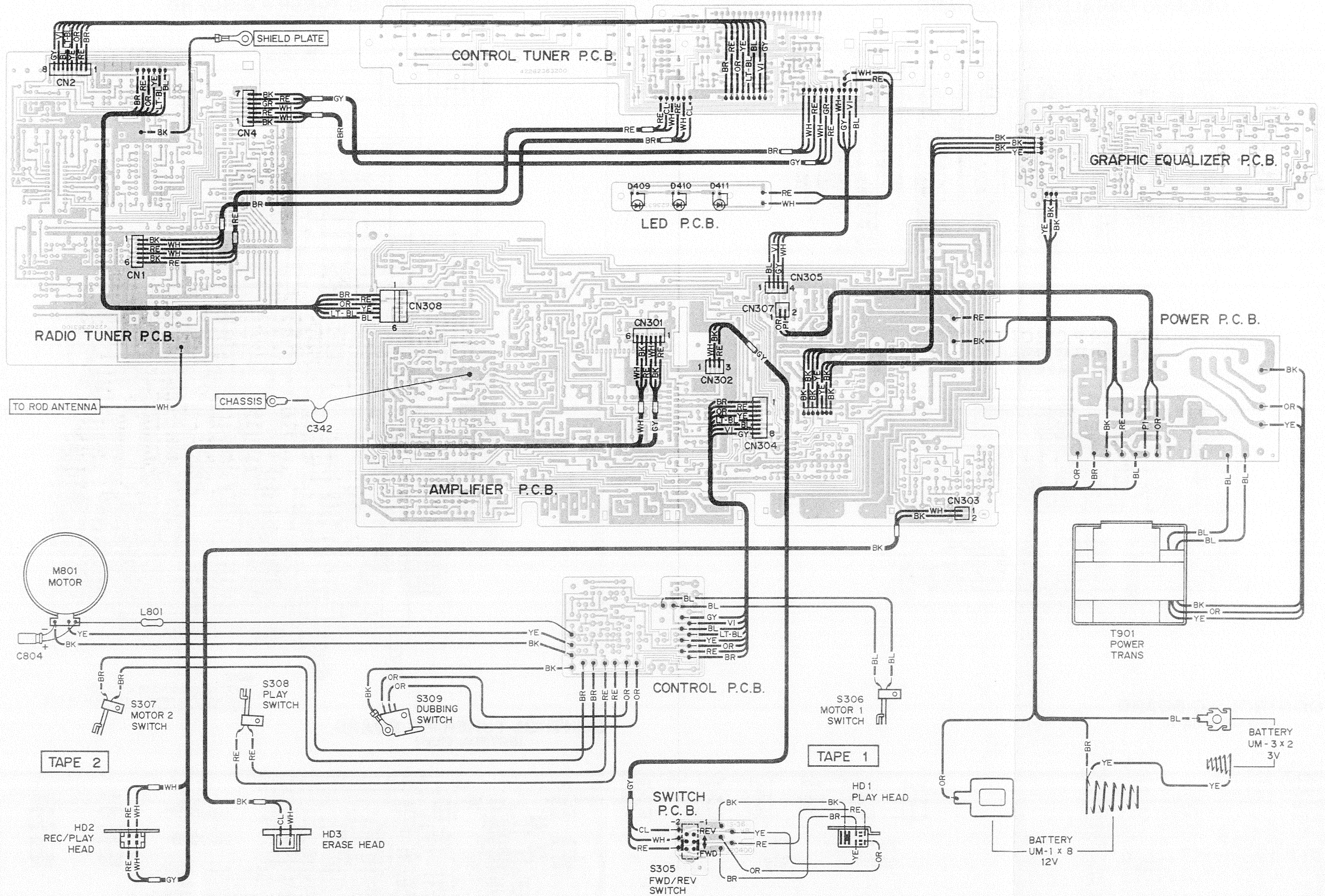
BA1335 BLOCK DIAGRAM



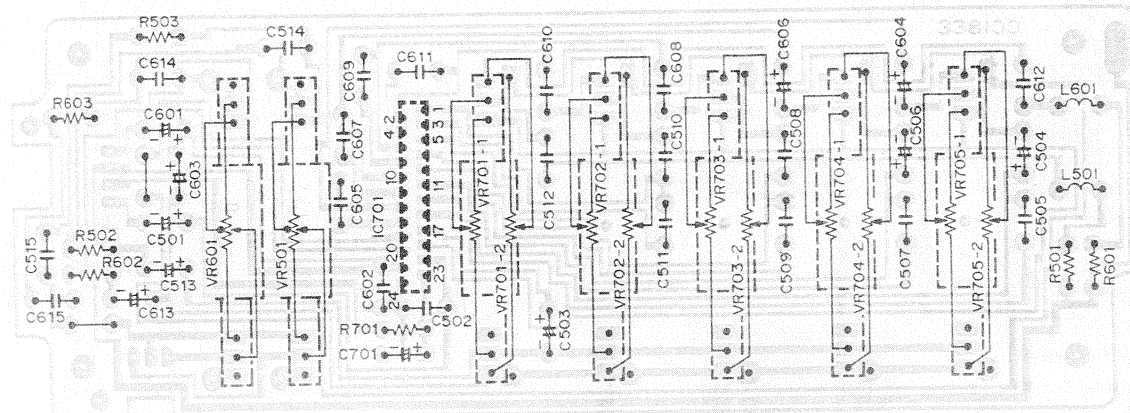
BA3824LS BLOCK DIAGRAM



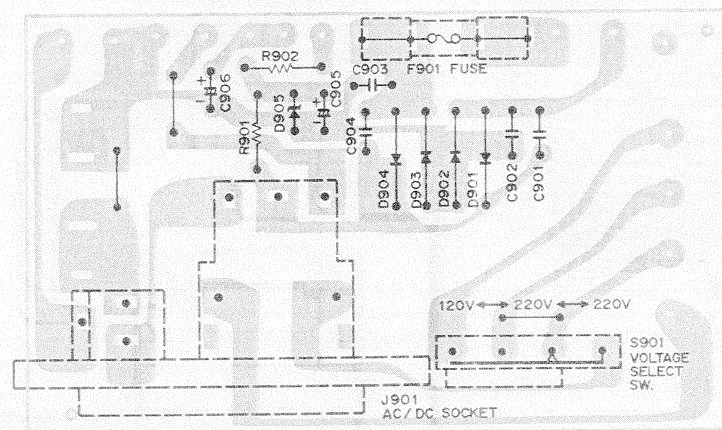
WIRING DIAGRAM



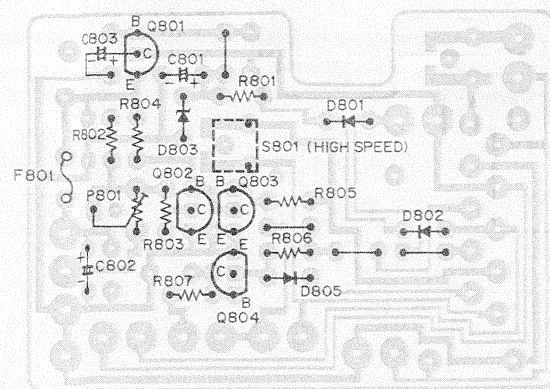
**GRAPHIC EQUALIZER P.C.BOARD
(BOTTOM VIEW)**



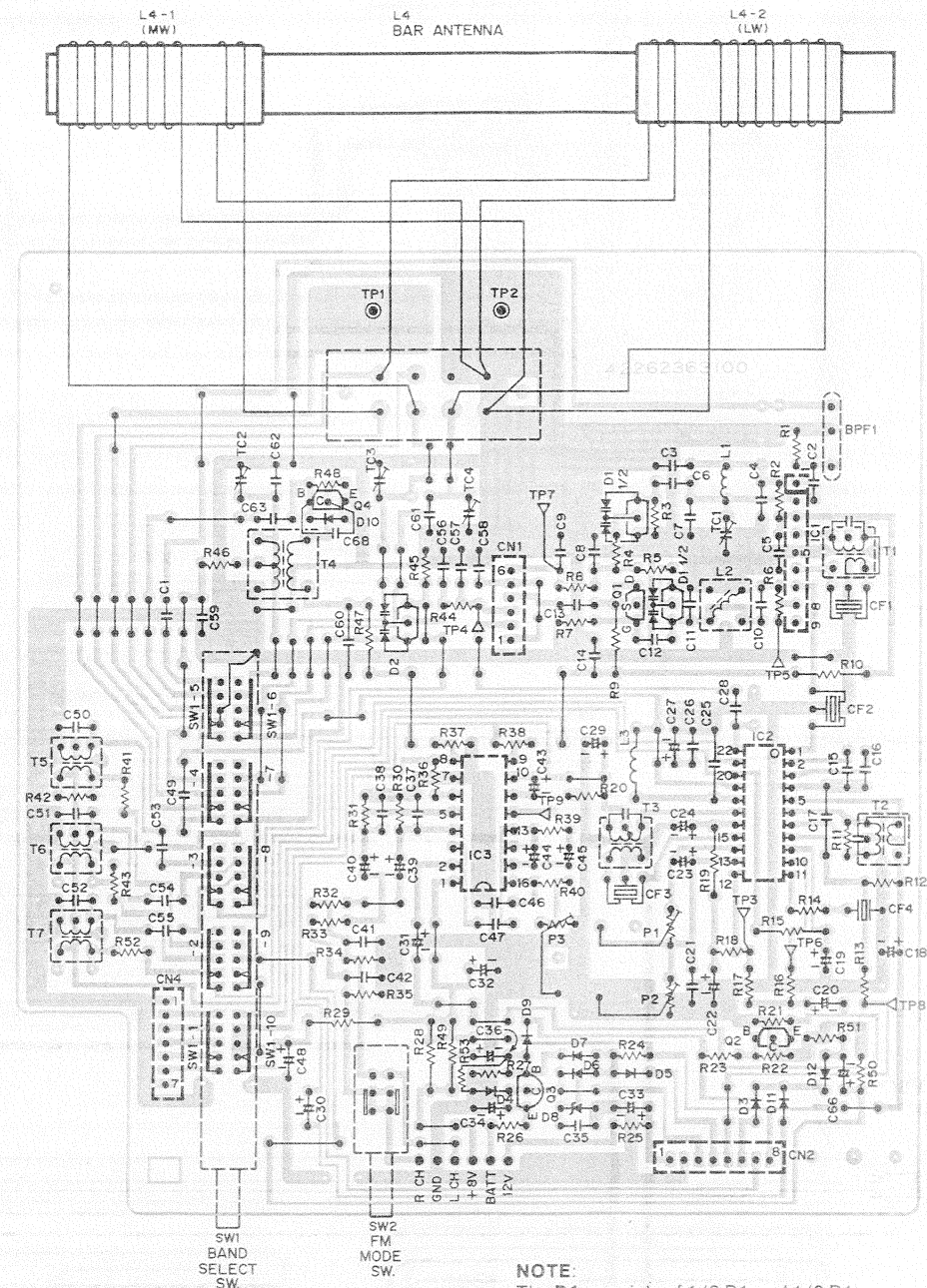
**POWER P.C.BOARD
(BOTTOM VIEW)**



**CONTROL P.C.BOARD
(BOTTOM VIEW)**

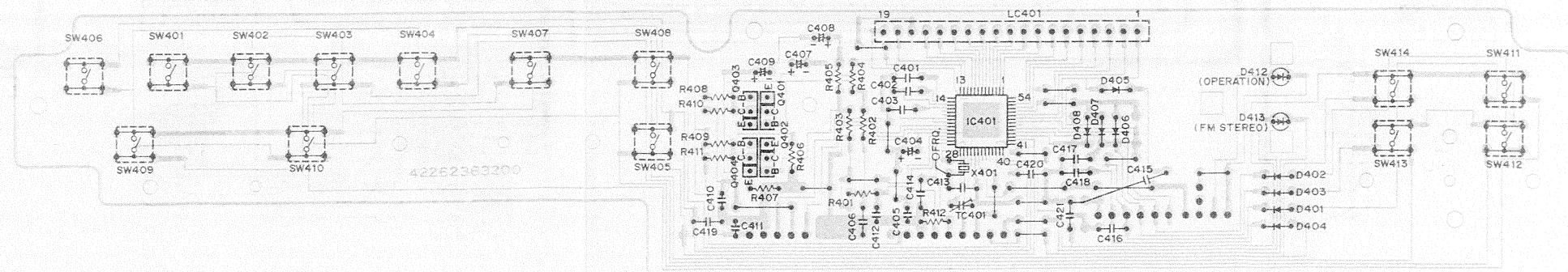


**RADIO TUNER P.C.BOARD
(BOTTOM VIEW)**

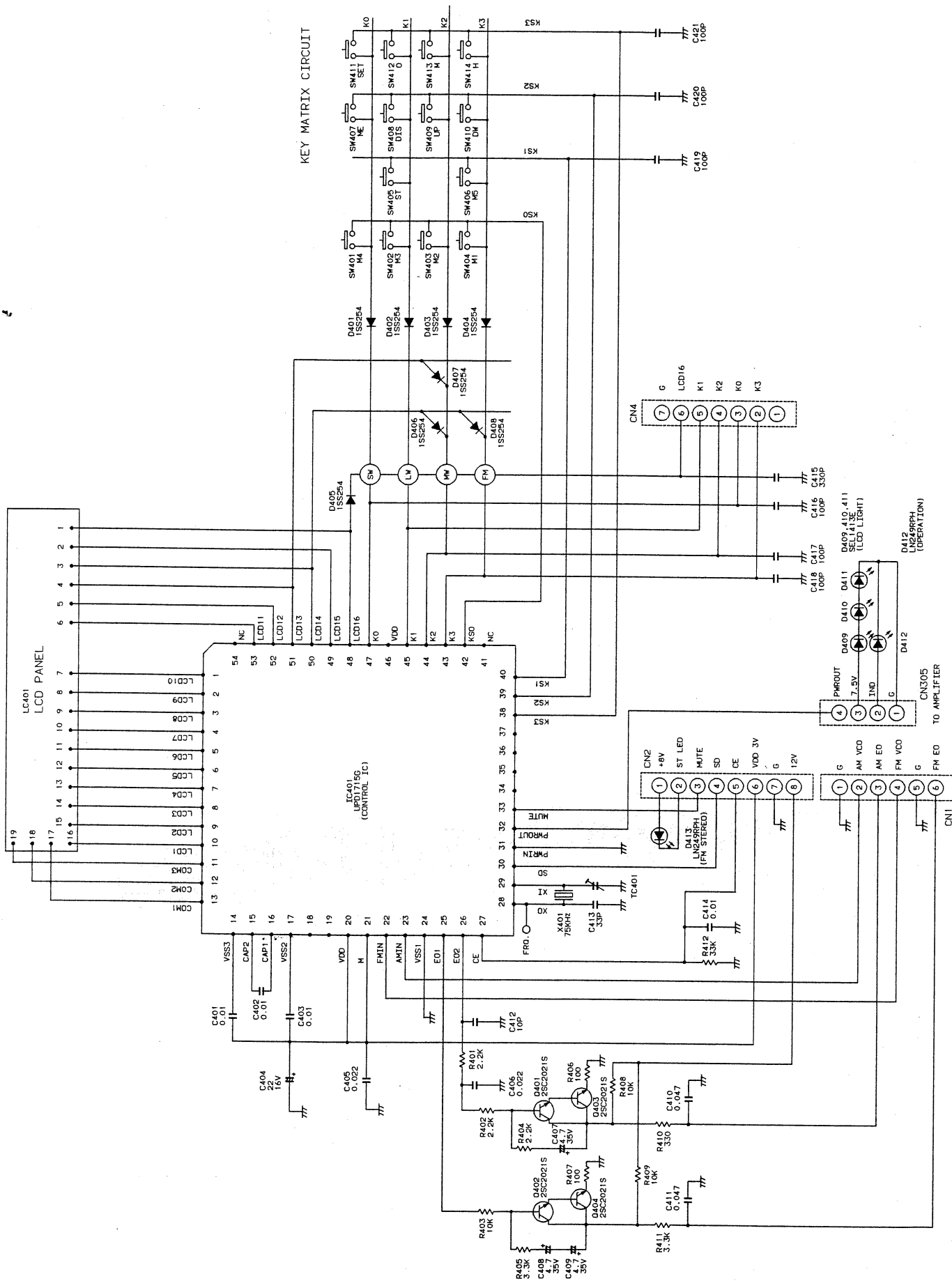


NOTE:
The D1 consists of 1/2 D1 and 1/2 D1.
When replacing, obtain a new pair of D1 (1/2
D1 and 1/2 D1) at the same time.

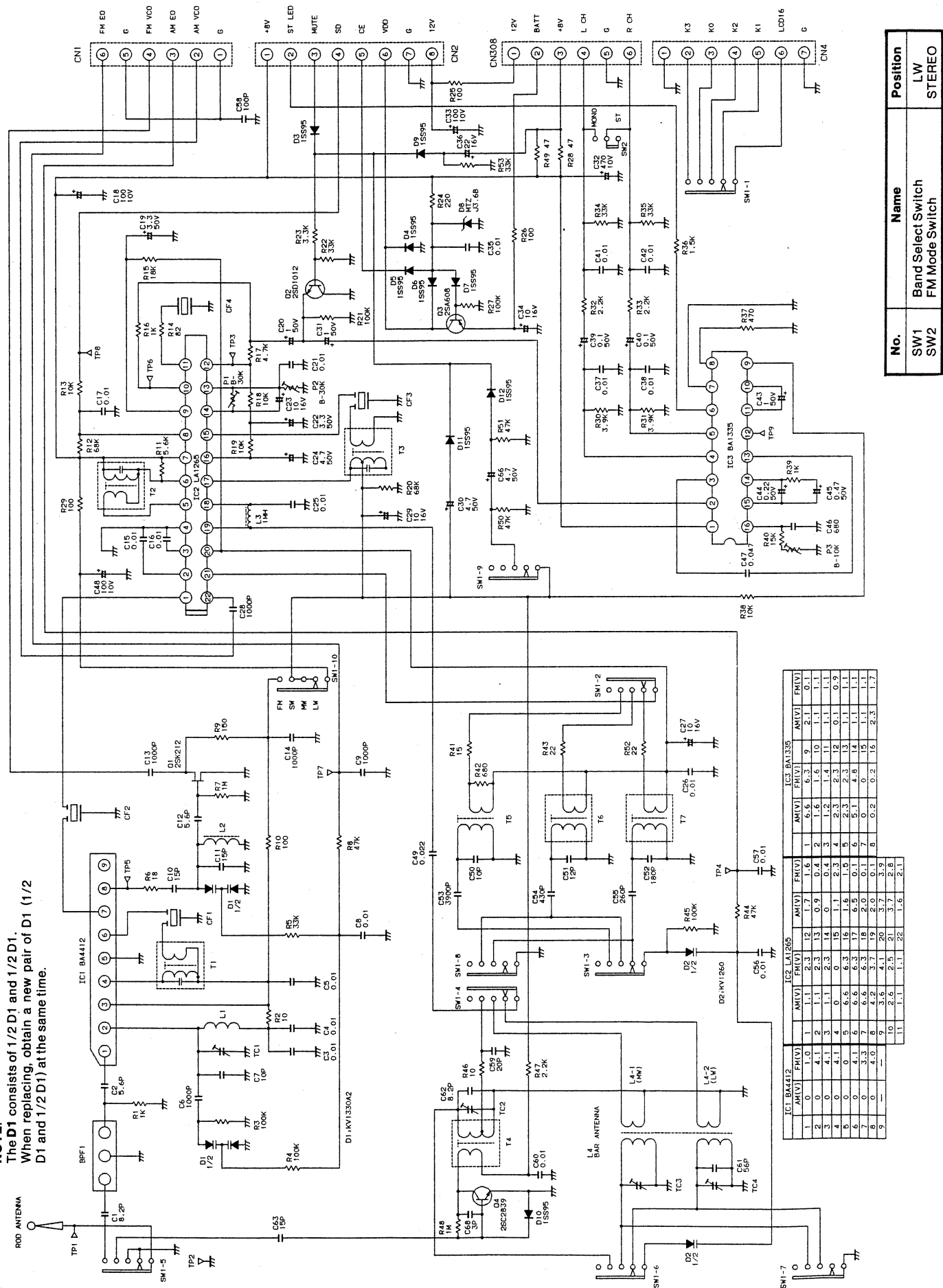
**CONTROL TUNER P.C.BOARD
(BOTTOM VIEW)**



SCHEMATIC DIAGRAM (Control Tuner)



SCHEMATIC DIAGRAM (Radio Tuner)

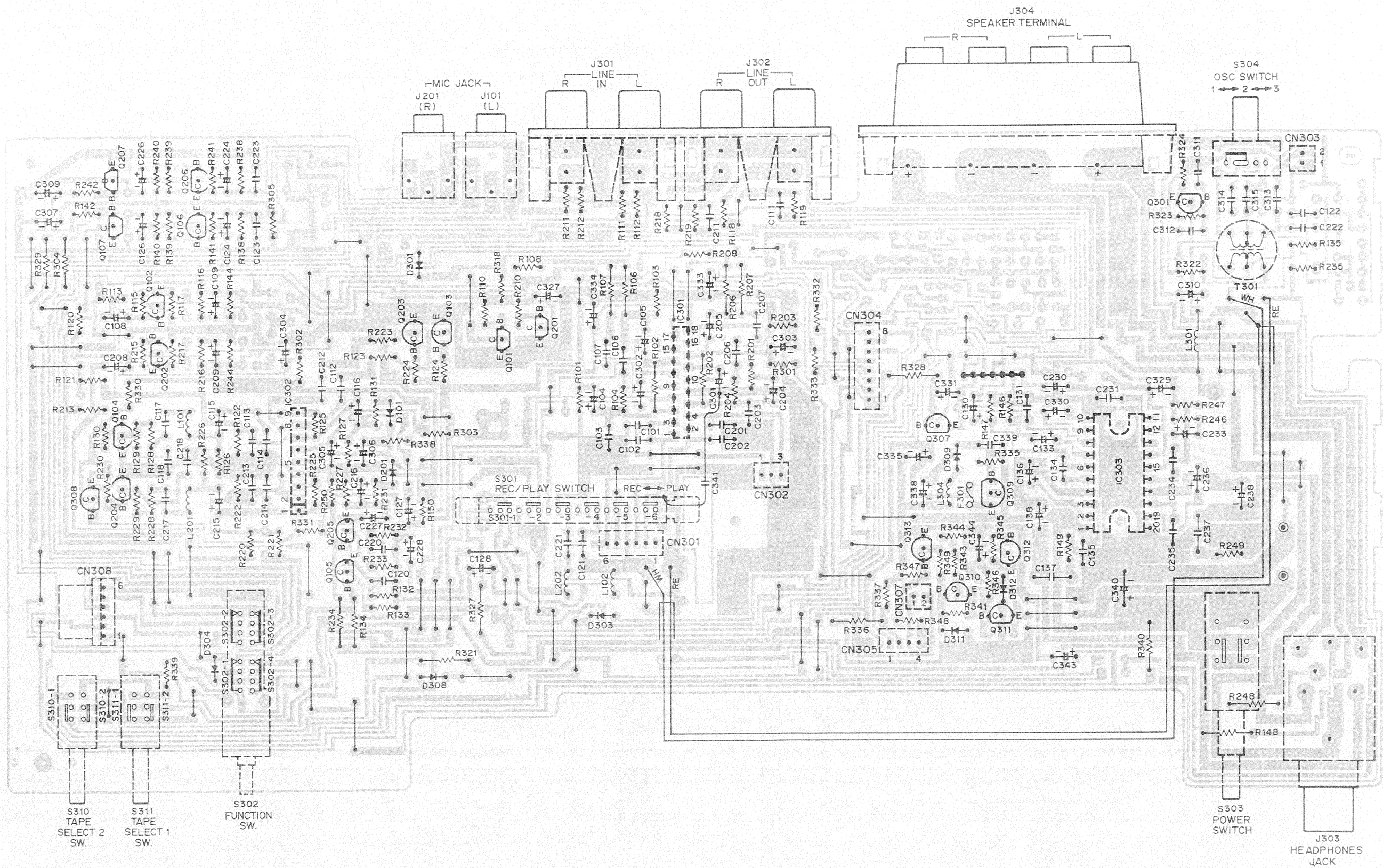


NOTE:
The D1 consists of 1/2 D1 and 1/2 D1.
When replacing, obtain a new pair of D1 (1/2 D1 and 1/2 D1) at the same time.

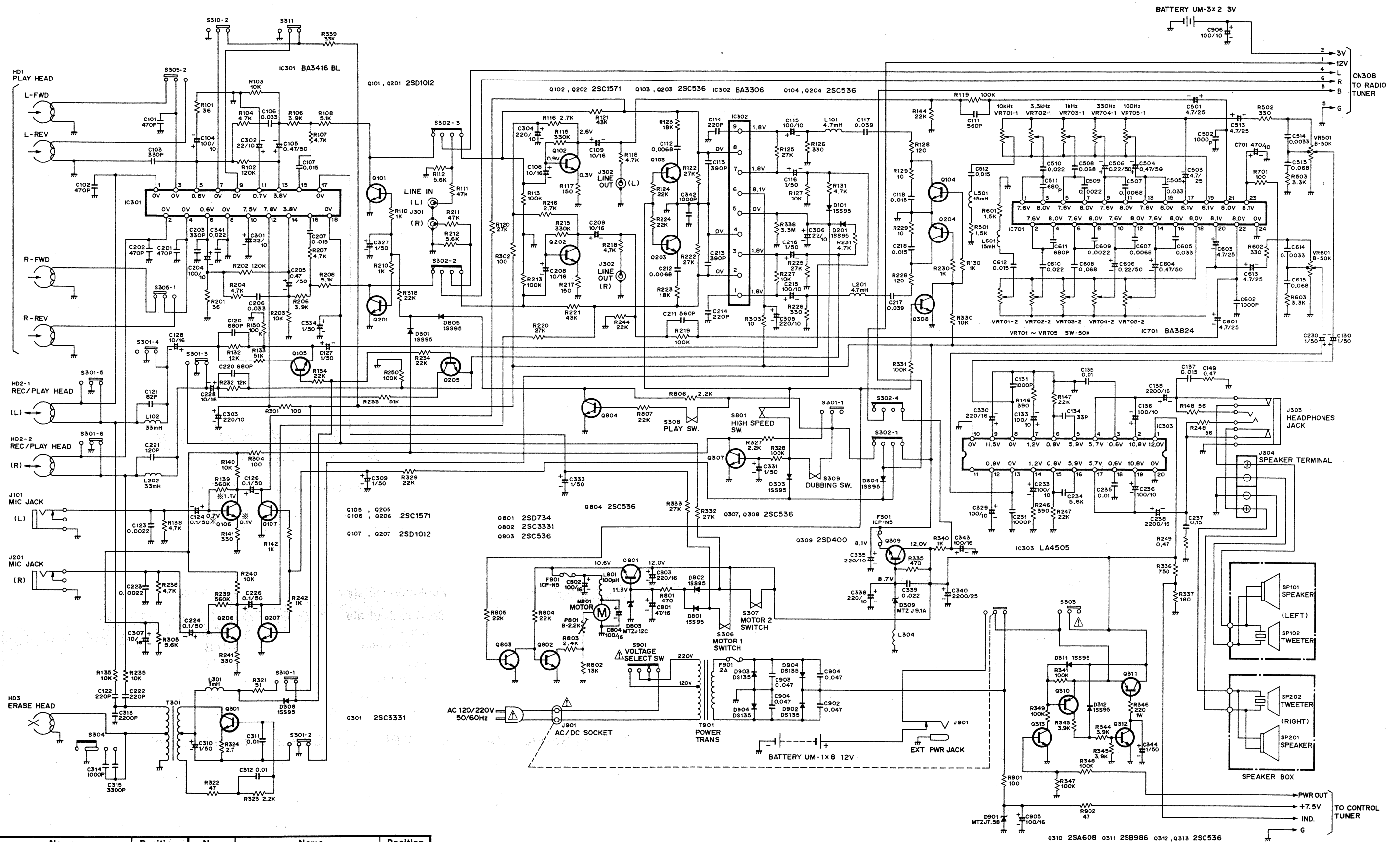
FCI B44412	EQ3 L11266			EQ3 B41335		
	ANVU	ANVU	ANVU	ANVU	ANVU	ANVU
1	0	1.0	1.1	2.3	1.2	1.7
2	0	1.1	2.3	1.2	0.9	1.6
3	0	4.1	2	1.1	2.3	0.9
4	0	4.1	2	1.1	2.3	0.9
5	0	4.1	2	1.1	2.3	0.9
6	0	4.1	2	1.1	2.3	0.9
7	0	4.1	2	1.1	2.3	0.9
8	0	4.1	2	1.1	2.3	0.9
9	—	—	—	—	—	—

No.	Name	Position
SW1	Band Select Switch	LW
SW2	FM Mode Switch	STEREO

AMPLIFIER P.C. BOARD (BOTTOM VIEW)



SCHEMATIC DIAGRAM (Amplifier)



No.	Name	Position	No.	Name	Position
S301	Record/Play Switch	PLAY	S308	Play Switch	OFF
S302	Function Switch	TAPE	S309	Dubbing Switch	OFF
S303	Power Switch	OFF	S310	Tape Select 2 Switch	NORMAL
S304	OSC Switch	1	S311	Tape Select 1 Switch	NORMAL
S305	FWD/REV Switch	FWD	S801	High Speed Switch	OFF
S306	Motor 1 Switch	OFF	S901	Voltage Select Switch	220V
S307	Motor 2 Switch	OFF			

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol Δ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with Δ , use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual.

Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

NOTES:

- All resistors values are indicated in "ohm" ($K=10^3$, $M=10^6$).
- All capacitors values are indicated in " μF " ($P=10^{-12}$).
- All voltages indicated on the schematics are measured under the following conditions.
 - Use a V.T.V.M.
- All voltages $\pm 10\%$ with respect to chassis ground.
- No signals at input terminals.
- AC input at 220 volts 50 Hz.
- This is a basic schematic diagram.

Because Fisher products are subject to continuous improvement, Fisher Corporation reserves the right to make any changes or modifications without notice.

SPEAKER BOX PARTS LIST

Ref. No.	Part No.	Description	Q'ty
SPEAKER BOX			
1	4-1519-72431	Speaker 120mm (2.4ohm) [SP101 & SP201]	2
2	131-2-3205-12700	Wood Reinf	2
3	141-0-1129-31200	Speaker Box Top Assy	2
Following the speakers are included in Speaker Box Top.			
	4-1519-71211	Speaker (300ohm) [SP102 & SP202]	2
4	141-2-1129-58300	Speaker Box Bottom Right	1
5	141-2-1129-59400	Speaker Box Bottom Left	1
6	4-2439-73160	Parallel Wire	2
11	141-2-4219-14200	Screw	8
12	411 001 1703	SCR S-TPG PAN 3X30	8

- NOTES:**
1. Parts order must contain Model Number, Part Number and Description.
 2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

SPEAKER BOX EXPLODED VIEW

