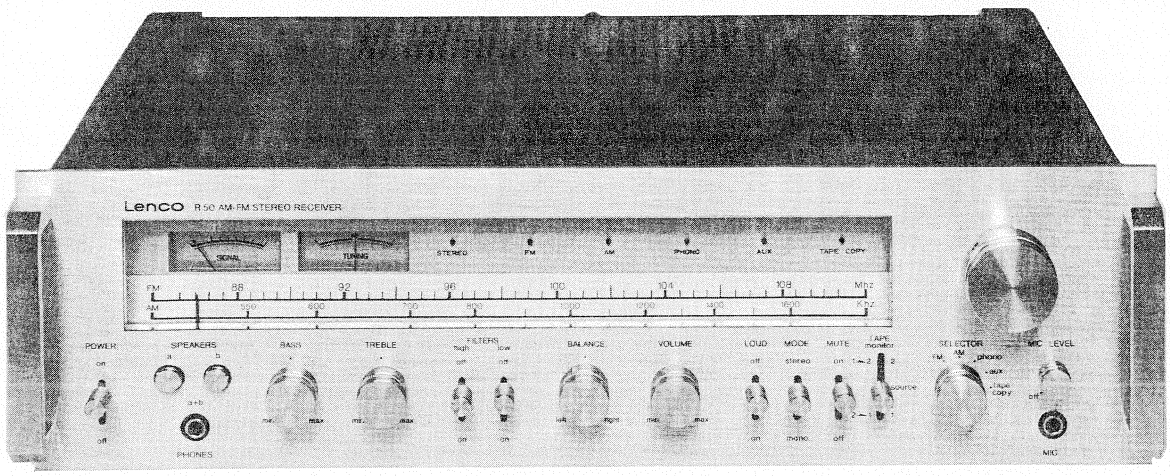
Service Manual



Lenco

Stereo Receiver R 50

Correct Ordering of Spare Parts

When ordering spare parts please specify the complete name, part number, and the relevant page number of the service manual for each required part.
By this method you will be sure to obtain the required part.

Contents

Lenco R50

Technical Data

Amplifier Section

Nominal Power, 8 Ω	2×40 W
Distortion at 1 kHz with 40 W output from both channels	0.2 %
Frequency Response at 5 W	10—40,000 Hz
Power Bandwidth	20—40,000 Hz
Sensitivity, Phono	2.5 mV / 50 kΩ
Equalization, Phono	RIAA ± 1 dB
Sensitivity, Microphone	2.5 mV / 50 kΩ
Sensitivity, AUX, TAPE	160 mV / 50 kΩ
Treble Control	±10 dB at 10 kHz
Bass Control	±10 dB at 100 Hz
Loudness	+ 8 dB at 100 Hz
	+ 4 dB at 10 kHz
High Filter	— 8 dB at 10 kHz
Low Filter	— 8 dB at 100 Hz
Weighted S/N Ratio, to DIN	
— Phono	≥ 56 dB
— AUX, TAPE	≥ 58 dB
Cross Talk	≥ 55 dB at 1 kHz
	≥ 38 dB at 10 kHz

FM Section

Antenna Connections	240—300 Ω Sym
	60— 75 Ω Asym
Tuning Range	87.5—108 MHz
Sensitivity (mono, 60 Ω input, 26 dB S/N △ f = 40 kHz)	1.8 μV
Limiting level	1.5 μV
Distortion, mono	≤ 0.2 %
S/N Ratio (mono, input 1 mV)	≥ 55 dB
Capture Ratio	1.5 dB
IF Rejection	≥ 90 dB
Image Rejection	≥ 80 dB
Frequency Response	20—15,000 Hz
Channel Separation	≥ 40 dB
Stereo switching level	5 μV

AM Section

Frequency Range MW	525—1650 kHz
Sensitivity (S/N 20 dB)	20 μV (antenna inp.)
Distortion	1 %
Image Rejection	≥ 50 dB
S/N Ratio	≥ 50 dB

General Data

Power Consumption	250 W max.
Dimensions	490×390×132 mm
Weight	13 kg

General Troubleshooting Chart

If the set is otherwise operating satisfactorily, the more common causes of trouble may be generally attributed to the following:

1. Incorrect connections or loose terminal contacts. Check the connection of speaker, record player, tape recorder, antenna and power cord.
2. Improper operation. Before operating any audio component, be sure to read the manufacturer's instructions.
3. Improper location of audio components. The proper positioning of components, such as speakers and turntable, is vital to stereo.
4. Defective audio components. The following are some other common causes of mailfunction and what to do about them.

Program	Sympton	Probable cause	What to do
AM, FM, MPX reception	1. Constant or intermittent noise heard at times or in a certain area	1. Discharge or oscillation caused by electrical appliances, such as fluorescent lamp, TV set, D.C. motor rectifier or oscillator 2. Natural phenomena, such as atmospheric static or thunderbolts 3. Insufficient antenna input due to ferroconcrete wall or long distance from the station 4. Interference from other electrical appliances	1. Attach a noise limiter to the electrical appliance causing the noise, or to the amplifiers power sources 2. Install an outdoor antenna and ground the set to raise the signal-to-noise ratio 3. Reverse the power cord plug 4. If the noise occurs at a certain frequency, attach a wave trap to the antenna input 5. Keep the set at a proper distance from other electrical appliances
	2. The needle of the signal and tuning meter does not move very much	1. The set is located in a weak signal area 2. An FM or TV broadcasting station is near at hand	1. Place the set to receive maximum signal strength 2. Ground the set to the earth
	3. The zero point of the meter not stable	1. Regional difference in field intensity	1. The unit is not at fault
AM reception	1. Noise heard at a particular time of a day in a certain area of any part of dial	1. Due to the nature of AM broadcast	1. In some cases, the noise can be eliminated by grounding the set or reversing the power cord plug-receptacle connections
	2. High-frequency noise	1. Adjacent channel interference or beat interference 2. TV set too close to audio system	1. Although such noise cannot be eliminated by the set, it is advisable to adjust the TREBLE control from midpoint to left and switch on the HIGH FILTER 2. Keep the TV set at a proper distance from the audio system
	3. Broadcasting interference	1. Antenna's input sensitivity is too strong	1. Connect resistor (1K-10K) in series to antenna terminal

Program	Sympton	Probable cause	What to do
FM reception	1. Noisy	1. Poor noise limiting effect or too low S/N ratio due to insufficient antenna input	1. Install the antenna for maximum signal strength 2. If this does not prove effective, use an outdoor antenna designed exclusively for FM. When you use a TV antenna for both TV and FM with a divider make sure TV reception is not affected 3. An exclusively long antenna may cause noise
	Note: FM reception is affected considerably by transmission condition of station power and antenna efficiency. As a result, you may receive one station quite well while receiving another station poorly		
	2. Noise heard like scratching	1. Ignition noise caused by an automobile engine	1. Install the antenna and its lead-in wire in proper distance from the road or raise the antenna input as described above
	3. Tuning noise between stations	1. This results from the nature of the FM reception. As the station signal becomes weak, the noise limiter effect is decreased and the amplification of the limiter, in turn, is enlarged generating noise	1. Turn the MUTING switch on. It reduces the sensitivity, and therefore it should be used sparingly
FM/MPX reception	1. Noise heard during FM/MPX reception while not heard during FM mono reception	1. Weaker signal because the service area of the FM/MPX broadcast is only half that of the FM mono broadcast	1. Install the antenna for maximum antenna input 2. Switch on the high filter and/or turn the TREBLE control from midpoint to left 3. Switch to mono
	2. Clearness of channel separation decreases during reception	1. Excess heat in IC	1. Circulation of air is important to the set. Be sure that air is flowing under the set 2. Switch of for a time
	3. The stereo indicator blinks on and off	1. Interference 2. Too weak RF signal	1. The indicator is not at fault, adjust VR 101 2. Switch to mono
Record playing or tape playback	1. Hum or howling	1. Record player placed too close to speaker 2. Wire other than shielded wire used 3. Loose terminal contact 4. Shielded wire too close to line cord, fluorescent lamp or other electrical appliances 5. Nearby amateur radio station or TV transmission antenna	1. Place a cushion between the player and the speaker or place them further away from each other 2. The connecting shielded wire should be as short as possible 3. Switch on the LOW FILTER and adjust the BASS control from midpoint to left 4. Consult the nearest Radio Regulatory Bureau
	2. Surface noise	1. Worn or old record 2. Worn stylus 3. Stylus dusty 4. Improper needle pressure	1. Recondition the playback head of the tape recorder or the stylus of the record player 2. Adjust the TREBLE control 3. HIGH FILTER on
All stereo programs	BALANCE control is not at midpoint when equal sound comes from left and right channels	It is important to adjust for equal sound comes from both channels. It should not always be set to the midpoint	Set the MODE switch to mono and then set the BALANCE control to a position where equal sound comes from both channels

FM Alignment Procedure

Step	Align	Generator	Dial setting	Adjust	Adjust for
1.	IF			Front end IF	Maximum noise output
2.	Discriminator	1) Sweep generator 2) 98 MHz 400 Hz 75 kHz deviation	 98 MHz	FM detector T101 top and bottom core T101 Top core T101 Front end IF	Maximum S curve Center meter Center position Minimum distortion Minimum distortion
3.	OSC	88 MHz 400 Hz 75 kHz deviation	88 MHz	Front end Lo	Maximum
4.	OSC	108 MHz 400 Hz 75 kHz deviation	108 MHz	Front end Tco	Maximum
5.	Reiterate 3 and 4				
6.	High-frequency Amp. circuit	90 MHz 400 Hz 75 kHz deviation	90 MHz	Front end LR1, LR2, LA	Maximum
7.	High-frequency Amp. circuit	106 MHz 400 Hz 75 kHz deviation	106 MHz	Front end TCR1, TCR2, TCA	Maximum
8.	Reiterate 6 and 7				
9.	FM Stereo lamp			VR101	19 kHz setting with frequency counter connected to P119
10.	Stereo separation	98 MHz 400 Hz 75 kHz deviation one channel only	98 MHz	VR102	Maximum output difference between P116, P117 output from L output and that from R output of SSG

Note: To align, connect the output of FM SSG to 75 ohm antenna terminal and connect the FM output P116 or P117 to VTVM or oscilloscope to indicate output.

AM Alignment Procedure

Step	Align	SSG	Dial setting	Adjust	Adjust for
1.	IF	455 kHz ± 30 kHz		IFT1 T003	Best IF curve Maximum
2.	OSC	535 kHz 400 Hz 30 % modulation	535 kHz	OSC T002	Maximum
3.	OSC	1600 kHz 400 Hz 30 % modulation	1,600 kHz	OSC trimmer Front end AM2	Maximum
4.	Reiterate 2 and 3				
5.	RF AMP	600 kHz 400 Hz 30 % modulation	600 kHz	RF coil T001	Maximum
6.	Antenna Circuit	1,400 kHz 400 Hz 30 % modulation	1,400 kHz	Front end	Maximum

Note: To align, connect AM S.S.G. to AM antenna terminal and connect oscilloscope and VTVM to P008 to indicate output.

Protection Circuit

1. Transient Muting

A. Biasing circuit

This circuit is designed to protect from damage which may be caused to speakers and main amplifier by incorrect connection to a high supply voltage, and change of supply voltage, etc.

This is a bias circuit which delays the operation of the main amplifier when power is turned on.

If rectified voltage is over 40 volts or till the completion charge of C602, or if the unit is turned off, Q603 is turned on immediately and there appears a voltage of +26 V to P+ and P—. Under the normal conditions, Q601 and Q602 are turned on and the P+ and P— become the ground voltage level.

B. The circuit P is a protection circuit which consists of D501, D502, Q505 and Q506.

If P+ voltage is more than the turn on voltage of Q505, Q505 is turned on thus shunting the input current of power transistor Q509.

Likewise, if P— voltage is more than the turn on voltage of Q506, this shunts the input current of Q510. Hence this circuit protects the speaker and power transistor from damage during switch on, etc.

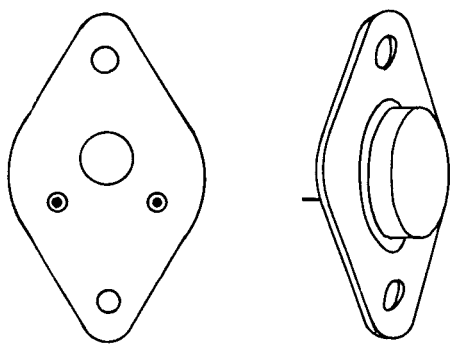
2. Current Limiter 'L'

This circuit is designed as a protection circuit to protect the speakers and power transistors from damage when the output current increases due to an output short or overload.

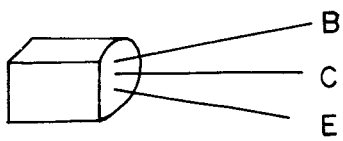
If the current through R521 and R522 gives a voltage drop across the resistors which is greater than the turn on voltage of Q507 and Q508, then Q507 and Q508 are turned on and the input to Q509 and Q510 is shunted.

Hence this circuit protects the power transistors and speakers from damage by limiting the current.

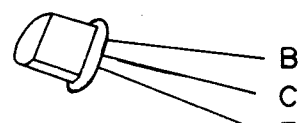
Transistor Views



2N 3055

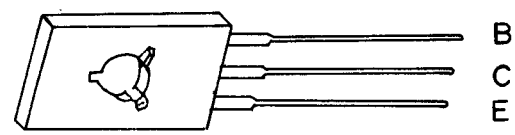


2SA 777
2SC 828



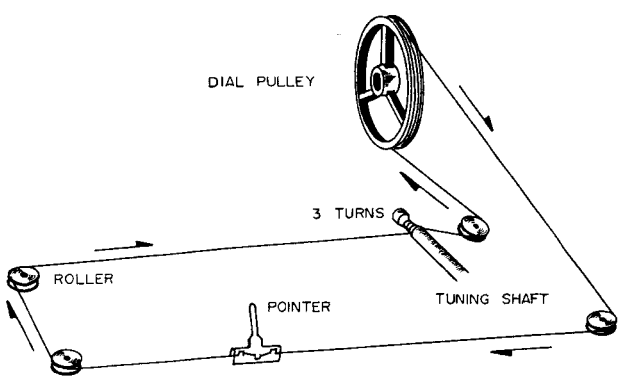
2SA 841
2SA 561
2SC 381
2SC 732
2SC 733

2SC 734
2SC 1681



2SA 794
2SC 1567

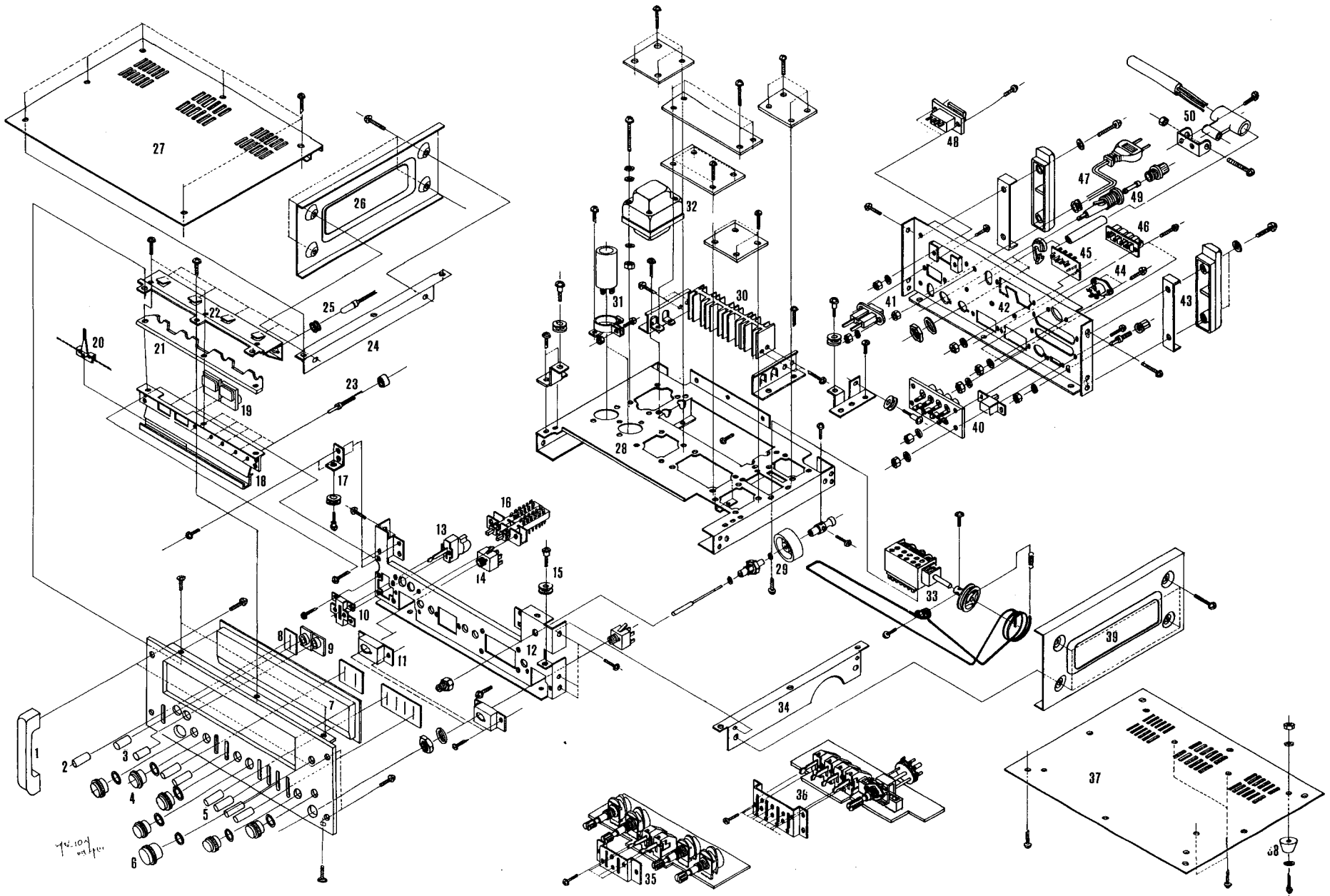
R-50 DIAL CORD STRINGING



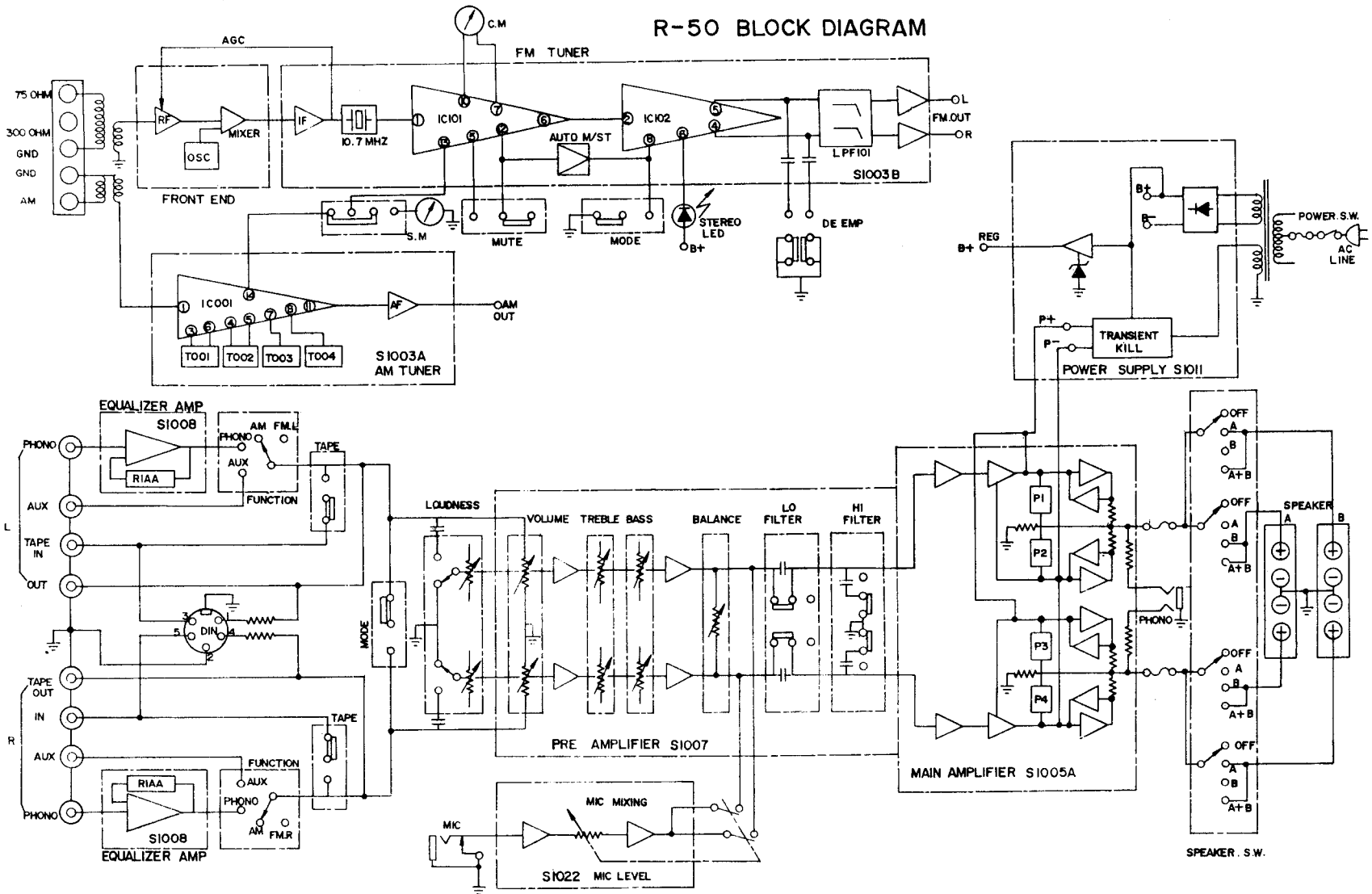
Description of Exploded View

1. Handle
2.—6. Knob
7. Acryl lens (dial scale)
8. Felt (lever switch)
9. Bezel (push switch)
10. Bracket, power switch
11. Bracket, phone jack
12. Front frame
13. Power switch
14. Phone jack
15. Pivot, roller
16. Speaker switch
17. Bracket, roller
18. Dial scale
19. Meter (signal, tuning)
20. Dial pointer
21. Acryl reflector
22. Bracket, lamp holder
23. LED, LED holder
24. Bracket, left side
25. Lamp, grommet
26. Cover, left side
27. Cover, upper
28. Main frame
29. Tuning mechanism assy.
30. Heat sink
31. Elect. cap. (8200 uf/50 wv)
32. Transformer
33. Front end, dial cord
34. Bracket, right side
35. P.C.B. (pre-amp)
36. P.C.B. (switch)
37. Cover, bottom
38. Rubber foot
39. Cover, right side
40. RCA jack 8p, de-emp sw.
41. AC socket
42. Rear frame
43. Socket protector
44. Din socket 5p
45. Antenna terminal
46. Speaker terminal
47. AC cord, plug
48. Voltage selector
49. fuse, fuse holder
50. AM antenna assy.

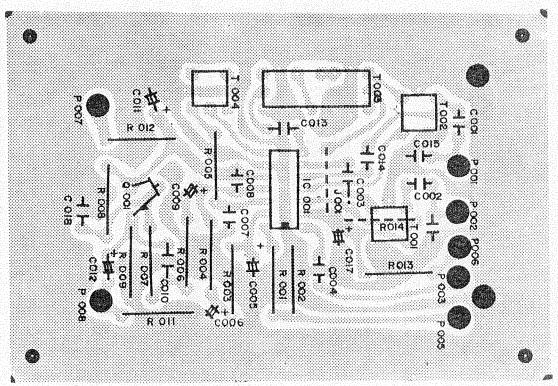
R50 EXPLODED VIEW



R-50 BLOCK DIAGRAM

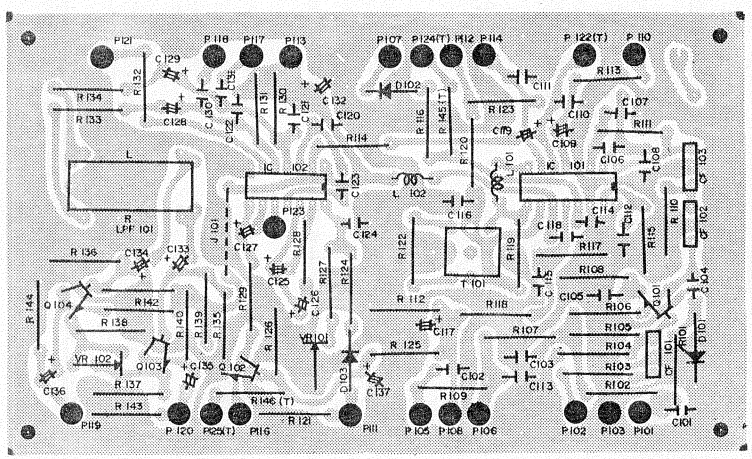


P.C.B. and Parts List R50
S1003A AM BD



SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
R 001	1.5K	C 001	470 P	C015	20 P
R 002	1 K	C 002	0.047 (SR400)	C016	SR400 10 P
R003	10K	C 003	0.01 UF	C017	4.7UF16V
R004	10K	C004	0.01UF	C018	0.004UF
R 005	270 OHM	C005	1UF 50WV	Q101	2SC 733
R006	1.5K	C 006	10UF 16V	IC101	HA-1151
R 007	3.9K	C007	0.002 UF	T 001	AM RF COIL SR-400
R008	1.5M	C008	0.01 UF	T002	AM OSC COIL
R009	3.9K	C009	0.047UF	T003	AM IF T-1
		C010	0.047 UF	T004	AM IFT-2
R011	100K	C011	47UF16 V	J 001	
R012	270	C012	0.1UF16V		
R013	470	C013	0.01 UF		
R014	3.9K	C014	0.01UF		

S1003B FM Tuner BD



SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
R 101	33K 1/4W±5%	R 120	5.6K 1/4W±5%	R139	47K 1/4W±5%	C114	0.047MF +80 -20	C137	4.7MF 16WV	VR101	4.7K B
R102	56K "	R121	100K "	R140	4.7K "	C115	0.047 "			VR102	4.7K B
R103	100Ω "	R122	2.2K "	R141	47K "	C116	0.047 "	D101	IN 60		
R104	680Ω "	R123	330Ω "	R142	4.7K "	C117	1MF 50WV	D102	MA 161		
R105	4.7K "	R124	22K "	R143	100K "	C118	0.047MF +80 -20	D103	MA 161	(M):	MYLAR ±5%
R106	330Ω "	R125	22K "	R144	100K "	C119	4.7MF 16WV	Q101	2SC 381	(P):	Poly ±5%
R107	100Ω "	R126	12K "	R145	47K(T) "	C120	580P ±5%	Q102	2SC 733		
R108	560Ω "	R127	18K "	R146	100K(T) "	C121	0.02MF(M)	Q103	2SC 732		
R109	100Ω "	R128	1K "	C101	0.047MF +80 -20	C122	0.02MF(M)	Q104	2SC 732		
R110	47K "	R129	10K "	C102	0.02MF "	C123	0.047MF(M)				
R111	330Ω "	R130	3.9K "	C103	0.02MF "	C124	470P (P)	IC101	HA-1137		
R112		R131	3.9K "	C104	50P ±10%	C125	0.22MF 50WV	IC102	HA-1156		
R113	22K "	R132	1.2K "	C105	0.02MF +80 -20	C126	0.47MF 50WV	L101	18 MH		
R114	100Ω "	R133	1.2K "	C106	0.047 "	C127	0.47MF 50WV	L102	2.2 MH		
R115	10K "	R134	1.2K "	C107	0.047 "	C128	4.7MF 16WV	T-101	FM DETECTOR	(72406)	
R116	22K "	R135	5.6K "	C108	0.047 "	C129	4.7MF 16WV	CF101	SFE 10.7MA		
R117	47K "	R136	5.6K "	C109	4.7MF 16WV	C130	0.01MF(M)	CF102	"		
R118	2.2K "	R137	680 "	C110	180P ±5%	C131	0.01MF(M)	CF103	"		
R119	5.6K "	R138	680 "	C111	0.47MF +80 -20	C132	100MF 16WV	LPF	170-BLR		
				C112	0.047 "	C133	4.7MF 16WV	J101	JUMP WIRE	D	
				C113	0.02 "	C134	4.7MF 16WV				
						C135	1MF 50WV				

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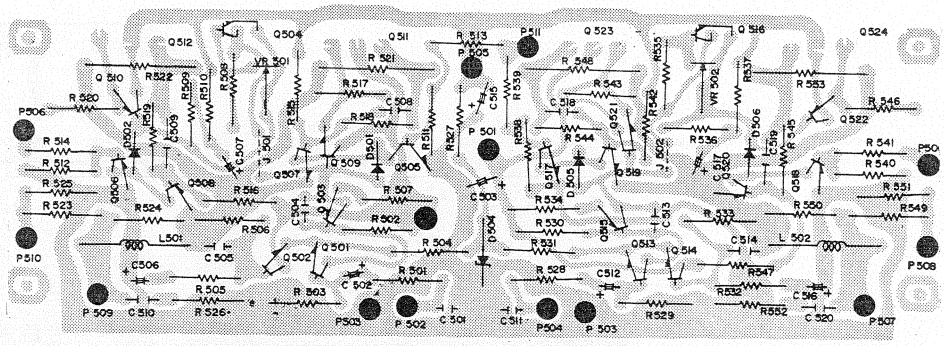
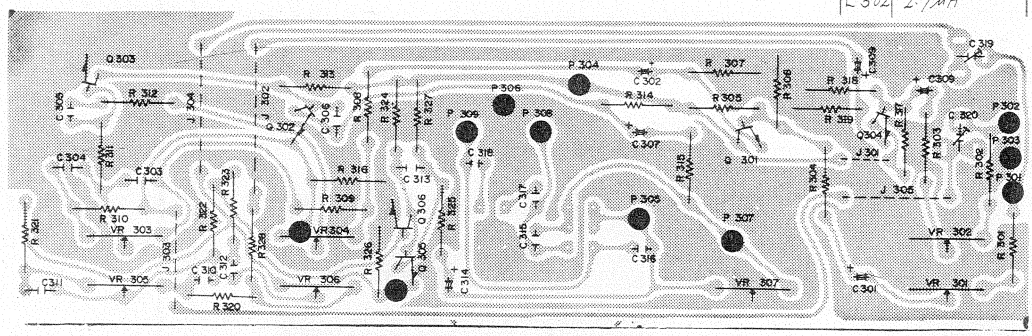


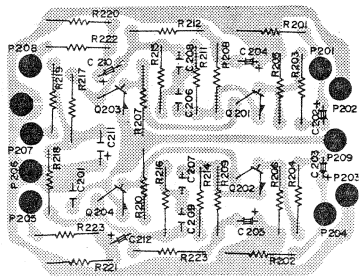
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
R501	1KΩ 1/4W ±5%	R521	0.33Ω 2W ±10%	R541	10K 1/4W ±5%	C509	0.01μF ±20%	Q511	2SD428
R502	1.5K "	R522	0.33 "	R542	22K "	C510	0.047 ±20%	Q512	2SB553
R503	6.8K "	R523	330 "	R543	120 "	C511	470P ±10%	Q513	2SC1681
R504	22K "	R524	3.3 "	R544	560 "	C512	0.47μF 50WV	Q514	2SC1681
R505	2.7K "	R525	15 "	R545	560 "	C513	20P ±10%	Q515	2SA777
R506	6.8K "	R526	10 "	R546	120 "	C515	1μF 50WV	Q516	2SC828
R507	15Ω "	R527	2.2K "	R547	22K "	C516	10μF 10WV	Q517	2SC734
R508	560 "	R528	1K "	R548	0.33Ω 2W±10%	C517	47μF 35WV	Q518	2SA561
R509	2.7K "	R529	6.8K "	R549	330Ω 1W±5%	C518	0.01μF ±20%	Q519	2SC734
R510	2.2K "	R530	1.5K "	R550	3.3 " 1/4W "	C519	0.01μF ±80%	Q520	2SA561
R511	4.7K "	R531	22K "	R551	15 " 1/4W±5%	Q501	2SC1681	Q521	2SC1567
R512	4.7K "	R532	2.7K "	R552	10 " 1W ±5%	Q502	2SC1681	Q522	2SA794
R513	10K "	R533	6.8K "	R553	0.33 " 2W ±10%	Q503	2SA777	D501	MA161
R514	10K "	R534	15 "	C501	470P ±10%	Q504	2SC828	D502	MA161
R515	22K "	R535	560 "	C502	0.47μF 50WV	Q505	2SC734	D504	HZ14
R516	22K "	R536	2.7K "	C503	1μF 50WV	Q506	2SA561	D505	MA161
R517	120 "	R537	2.7K "	C504	20P ±10%	Q507	2SC734	D506	MA161
R518	560 "	R538	4.7K "	C506	10μF 10WV	Q508	2SA561	VR501	500Ω B
R519	560 "	R539	10K "	C507	47μF 35WV	Q509	2SC1567	VR502	500Ω B
R520	120 "	R540	4.7K "	C508	0.01μF ±20%	Q510	2SA794	L501	2.7μH
								L502	2.7μH

S1007J
Tone Control BD



SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
R301	10K 1/4W ±5%	R316	680 1/4W ±5%	C301	2.2μF 16WV(T-T)	C316	0.001μF ±5%(M)	VR301	100K A 1/2
R302	10K "	R317	220K "	C302	4.7μF 16WV	C317	0.0068μF ±5%(M)	VR302	100K A 1/2
R303	3.9K "	R318	220K "	C303	0.047μF ±5%	C318	0.0068 "	VR303	100K B 1/2
R304	3.9K "	R319	27K "	C304	0.047μF ±5%(M)	C319	30P TC	VR304	100K B 1/2
R305	220K "	R320	10K "	C305	0.001μF ±5% "	C320	30P TC	VR305	100K B 1/2
R306	220K "	R321	10K "	C306	30P ±10%			VR306	100K B 1/2
R307	27K "	R322	22K "	C307	4.7μF 16WV	Q301	2SC1681	VR307	100K B
R308	470 "	R323	4.7K "	C308	2.2μF 16WV(T-T)	Q302	2SC732	J301-4	JUMP WIRE
R309	10K "	R324	150K "	C309	4.7μF 16WV	Q303	2SC732		
R310	10K "	R325	1K "	C310	0.047μF ±5%(M)	Q304	2SC1681		
R311	22K "	R326	680 "	C311	0.047 "	Q305	2SC732		
R312	4.7K "	R327	4.7K "	C312	0.01 "	Q306	2SC732		
R313	150K "	R328	470 "	C313	30P ±10%				
R314	4.7K "			C314	4.7μF 16WV				
R315	1K "			C315	0.001μF ±5%(M)				

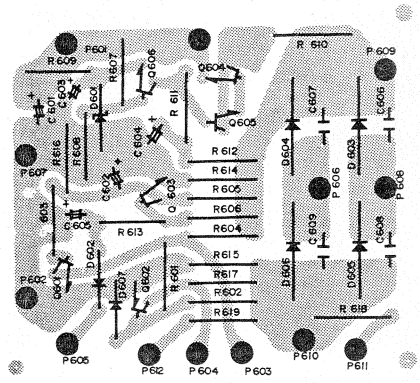
EQ BD S1008K



SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
R 201	220K 1/4W ± 5%	R 219	1K 1/4W ± 5%
R 202	220K "	R 220	220K "
R 203	4.7K "	C 201	4.7UF 16V
R 204	4.7K "	C 202	4.7UF 16V (T.T)
R 205	56K "	C 203	4.7UF 16V
R 206	56K "	C 204	100UF 10V
R 207	27K "	C 205	100UF 10V
R 208	560 "	C 206	0.0022 μF ± 5% (MY)
R 209	560 "	C 207	0.0022 "
R 210	27K "	C 208	0.0082 "
R 211	33K "	C 209	0.0082 "
R 212	100K "	C 210	4.7UF 16V
R 213	100K "	C 211	220UF 25
R 214	33K "	C 212	4.7UF 16V
R 215	820K "	Q 201	2SC1681
R 216	820K "	Q 202	2SC1681
R 217	15K "	Q 203	2SA 841
R 218	15K "	Q 204	2SA 841

A

S1011J SUP BD

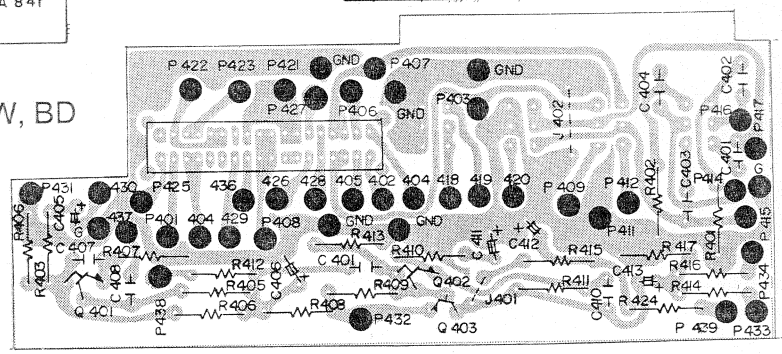


S1011J

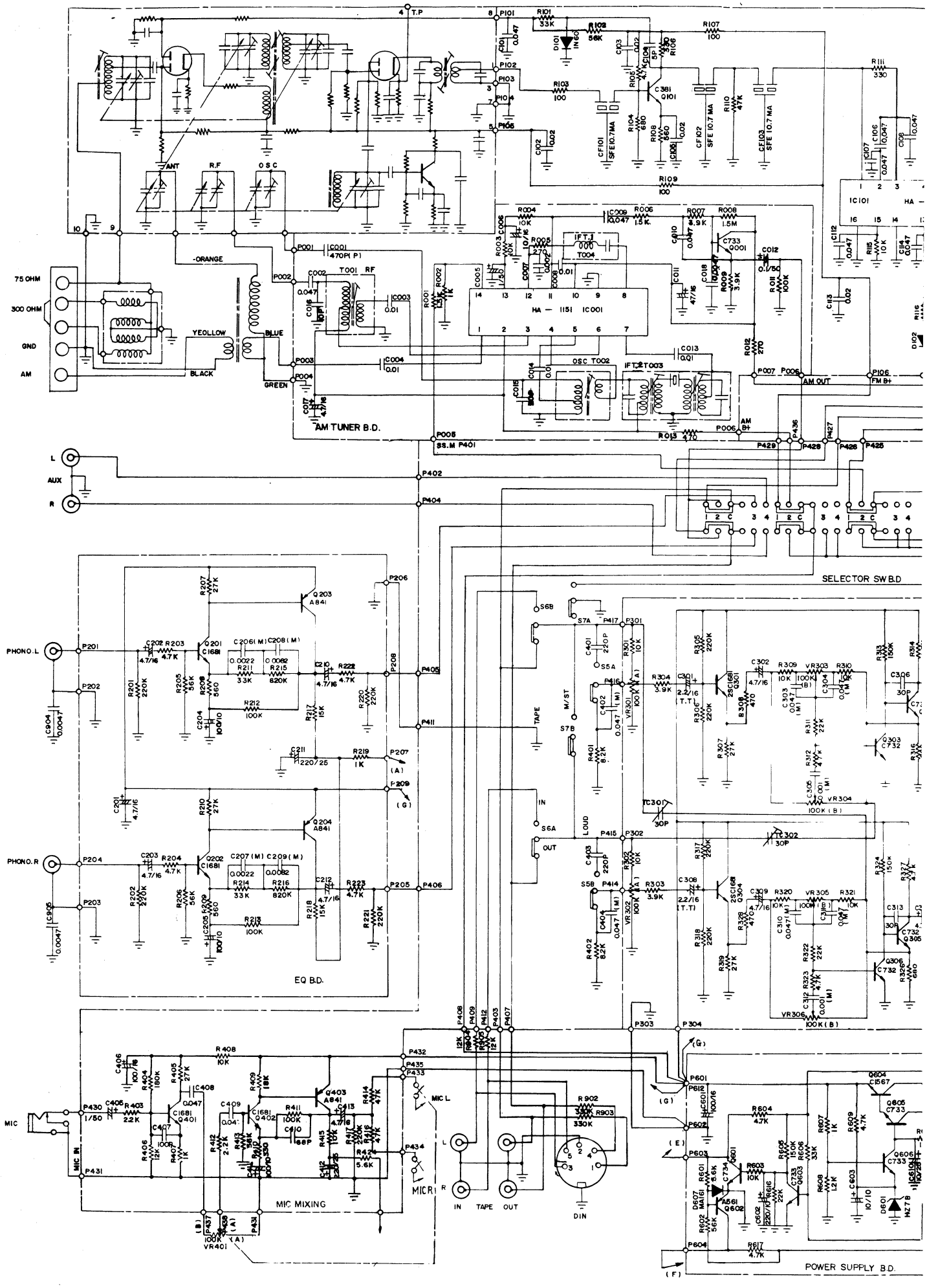
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
R601	5.6K 1/4W ± 5%	C601	100μF 16WV	D601	HZ 7B
R602	56K "	C602	220μF 10WV	D602	MA161
R603	10K "	C603	10μF 10WV	D603	30DI or U05B
R604	4.7K "	C604	100μF 25WV	D604	"
R605	150K "	C605	33μF 10WV	D605	"
R606	33K "	C606	0.0047μF ± 10%	D606	"
R607	1K "	C607	0.0047μF ± 10%	D607	MA161
R608	1.2K "	C608	0.0047μF ± 10%		
R609	4.7K "	C609	0.0047μF "		
R610	150 "			Q601	2SC734
R611	10K "			Q602	2SA561
R612	10K "			Q603	2SC733
R613	4.7K "			Q604	2SC1567
R614	4.7K "			Q605	2SC733
R615	4.7K "			Q606	2SC733
R616	22K "				
R617	4.7K "				
R618	3.9K 1/4W ± 5%				
R619	2.2K 1/4W ± 5%				

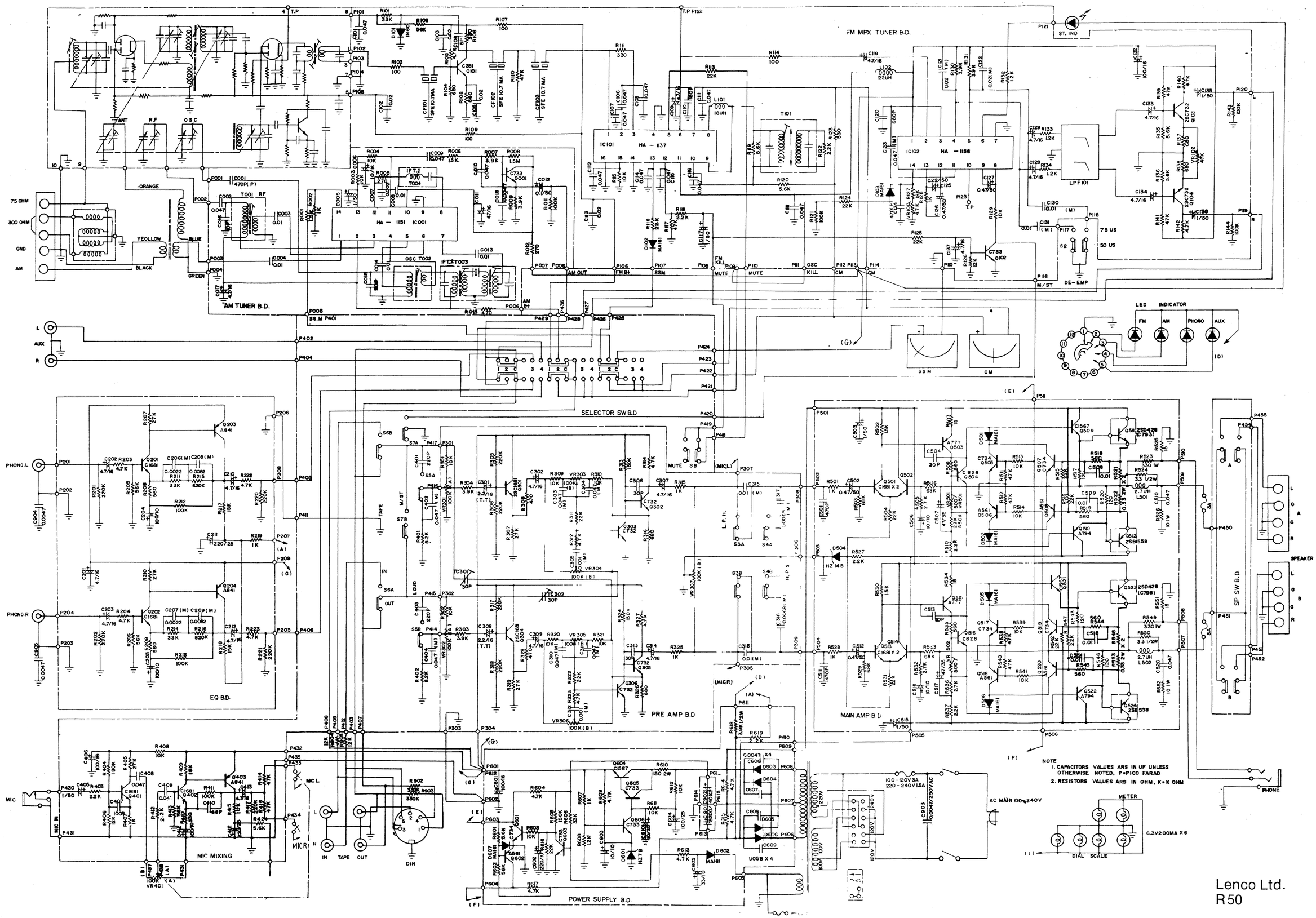
C D

S1022J Mic and Selector SW, BD



SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
R 401	8.2K 1/4W ± 5%	R 413	56K 1/4 ± 10%	C 401	220P ± 10%	C 413	4.7UF 16WV
R 402	8.2K "	R 414	47K "	C 402	0.047UF +80 −20	Q 401	2SC 1681
R 403	2.2K "	R 415	10K "	C 403	220P ± 10%	Q 402	2SC 1681
R 404	180K "	R 416	47K "	C 404	0.047 UF +80 −20	Q 403	2SA 841
R 405	27K "	R 417	220K "	C 405	1UF 50WV		
R 406	12K "	R 418		C 406	100UF 16WV		
R 407	1K "	R 419		C 407	100P ± 10%		
R 408	10K "	R 420		C 408	0.047UF +80 −20		
R 409	18K "	R 421		C 409	0.047 "		
R 410	330 "			C 410	68P ± 10%		
R 412	2.2K "	R 424	5.6K ± 5% 1/2W	C 411			
R 411	100K "			C 412	220UF 25WV		


AM TUNER B.D.
EQ B.D.
SELECTOR SW B.D
MIC MIXING
POWER SUPPLY B.D.
ANT
R.F
O S C
-ORANGE
YEOLLOW
BLUE
BLACK
GREEN
75 OHM
300 OHM
GND
AM
PHONO.L
PHONO.R
MIC
MIC IN
L
AUX
R
IN
TAPE
OUT
DIN
AM OUT
FM B+
AM B+
M/ST
LOUD
TAPE
IN
OUT



Lenco Ltd.
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