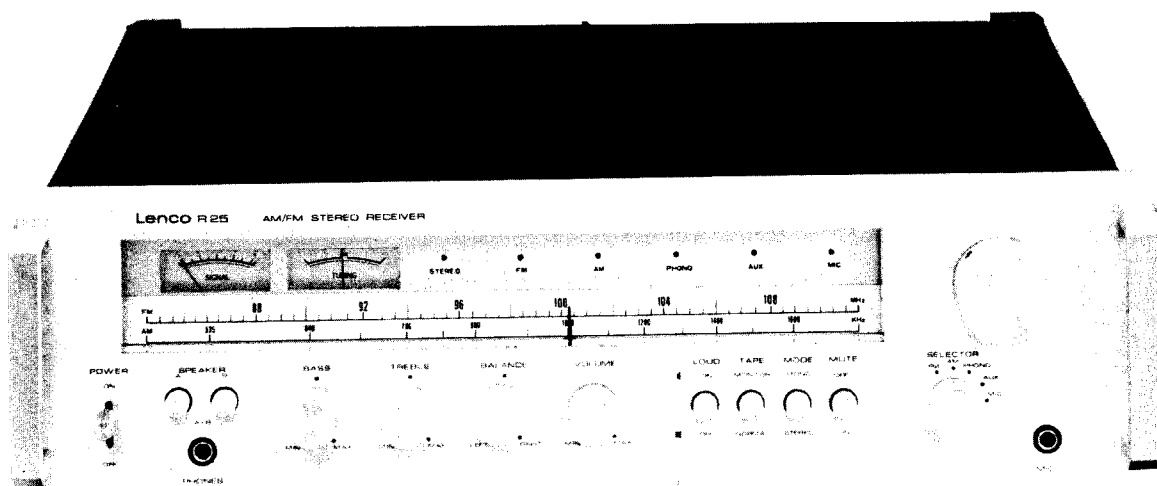


Service Manual



Lenco

Stereo Receiver R 25

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

	Page
Technical Data	1
General Troubleshooting Chart	1, 2
FM Alignment Procedure	3
AM Alignment Procedure	3
Protection Circuit	4
Transistor Views	4
Dial Cord Stringing	4
Description of Exploded View	4
Exploded View	5
Block Diagram	6
P.C.B. and Parts List	7, 8, 9
Schematic Diagram	9

Lenco R25

The R 25 receiver conforms to the most recent technical developments. Its functional design includes arrangement of all operating controls for convenient operation.

Technical Data

Amplifier Section

Nominal Power, 8 Ω	2 × 19 W
Distortion at 1 kHz with output from both channels, 19 W	0.5 %
Frequency Response	10—40,000 Hz
Power Bandwidth	20—20,000 Hz
Sensitivity, Phono	2.5 mV / 50 kΩ
Equalization, Phono	RIAA ± 1.5 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	+ 7 dB at 100 Hz + 4 dB at 10 kHz
Weighted S/N Ratio, to DIN	
— Phono	≥ 60 dB
— AUX, TAPE	≥ 62 dB
Cross Talk	≥ 52 dB at 1 kHz ≥ 33 dB at 10 kHz

FM Section

Antenna Connections	240—300 Ω Sym. 60— 75 Ω Asym. 87.5—108 MHz
Tuning Range	
Sensitivity (mono, 60 Ω input, 26 dB S/N Δ 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)	30 μV (ant. input)
Distortion	2 %
Image Rejection	≥ 45 dB
S/N Ratio	≥ 45 dB

General Data

Power Consumption	150 W max.
Dimensions	490 × 390 × 132 mm
Weight	11 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 malfunction and what to do about them.

Program	Symptom	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-acceptacle 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	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 P123
10.	Stereo separation	98 MHz 400 Hz 75 kHz deviation one channel only	98 MHz	VR102	Maximum output difference between P119, P120 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 P119 or P120 to VTVM or oscilloscope to indicate output.

AM Alignment Procedure

Step	Align	SSG	Dial setting	Adjust	Adjust for
1.	IF	455 kHz \pm 30 kHz		IFT1 T003 IFT2 T004	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 AM1, AM3	Maximum

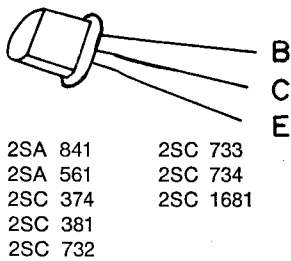
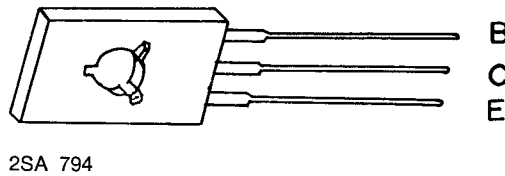
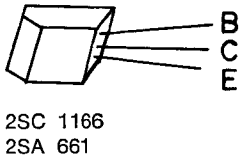
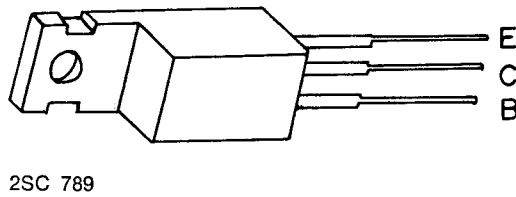
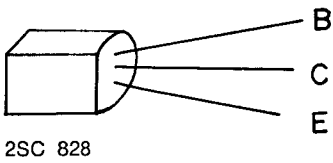
Note: To align, connect AM S.S.G. to AM antenna terminal and connect oscilloscope and VTVM to P008 to indicate output.

Protection Circuit

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 R520 and R521 gives a voltage drop across the resistors which is greater than the turn on voltage of Q506 and Q508, then Q506 and Q508 are turned on and the input to Q504 and Q509 is shunted. Hence this circuit protects the power transistors and speakers from damage by limiting the current.

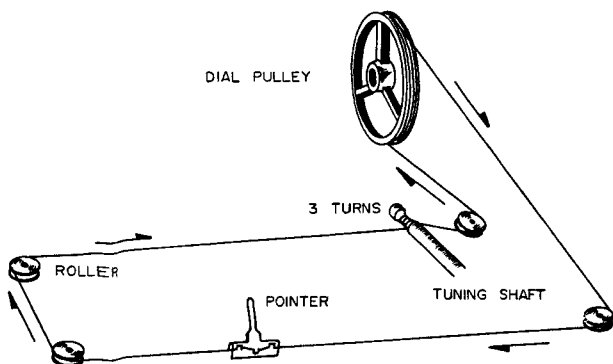
Transistor Views



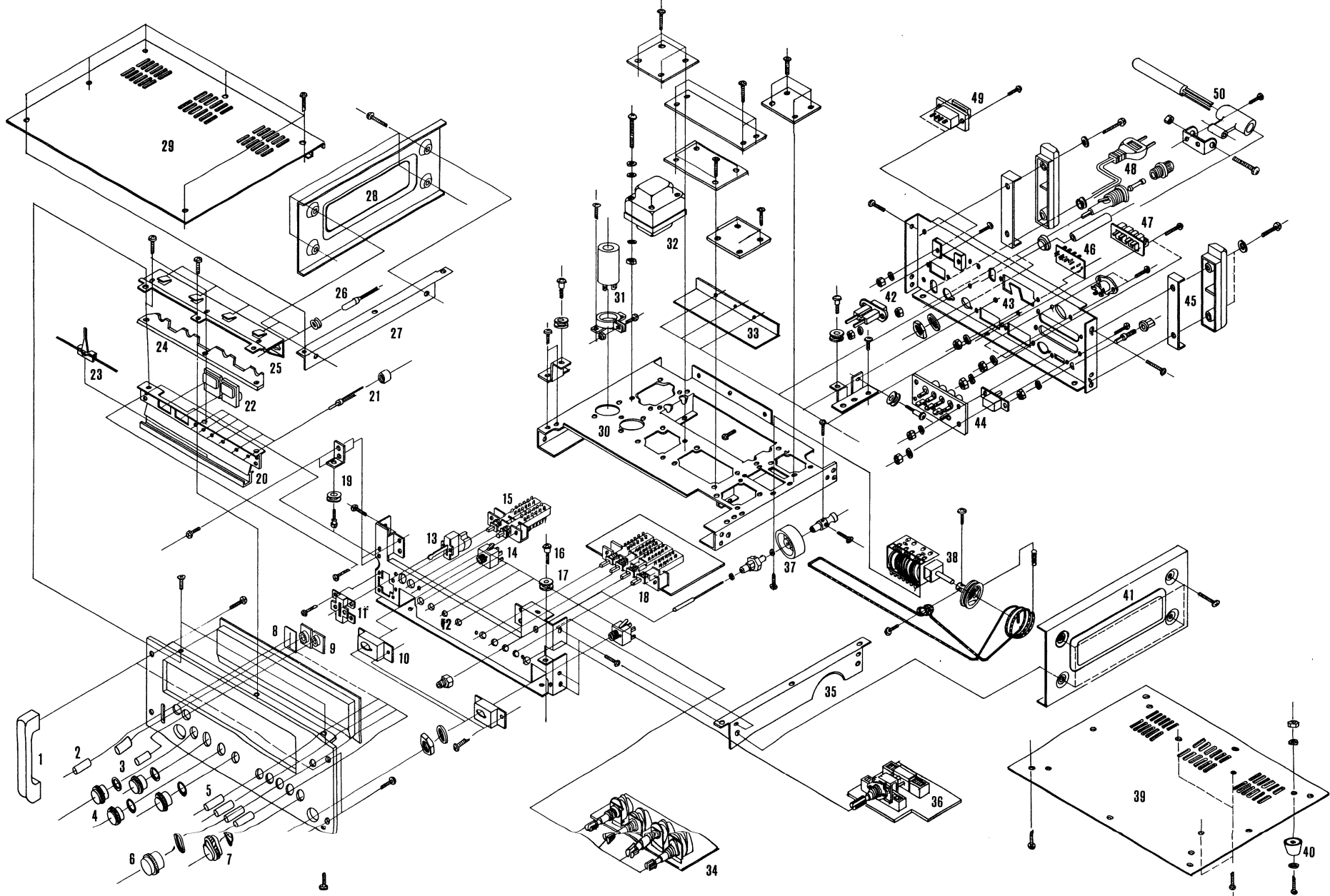
Description of Exploded View

- | | |
|----------------------------|-------------------------------|
| 1. Handle | 26. Lamp, grommet |
| 2. Knob | 27. Bracket, left side |
| 3. Knob | 28. Cover, left side |
| 4. Knob | 29. Cover upper |
| 5. Knob | 30. Main frame |
| 6. Knob | 31. Elect. cap. 4700 uF/35 wV |
| 7. Knob | 32. Power transformer |
| 8. Felt (lever switch) | 33. Heat sink |
| 9. Bezel (push switch) | 34. P.C.B. pre-amp. |
| 10. Bracket, phone jack | 35. Bracket, right side |
| 11. Bracket, power switch | 36. P.C.B. switch |
| 12. Front frame | 37. Tuning mechanism assy |
| 13. Power switch | 38. Front end |
| 14. Phone jack | 39. Bottom cover |
| 15. Speaker switch | 40. Rubber foot |
| 16. Pivot | 41. Cover, right side |
| 17. Roller | 42. AC socket |
| 18. Push switch | 43. Rear frame |
| 19. Roller | 45. Socket protector |
| 20. Scale | 46. Antenna terminal |
| 21. LED, LED holder | 47. Speaker terminal |
| 22. Meter (tuning, signal) | 48. AC cord with plug |
| 23. Dial pointer | 49. Voltage selector |
| 24. Acryl reflector | 50. AM antenna assy |
| 25. Bracket, lamp holder | |

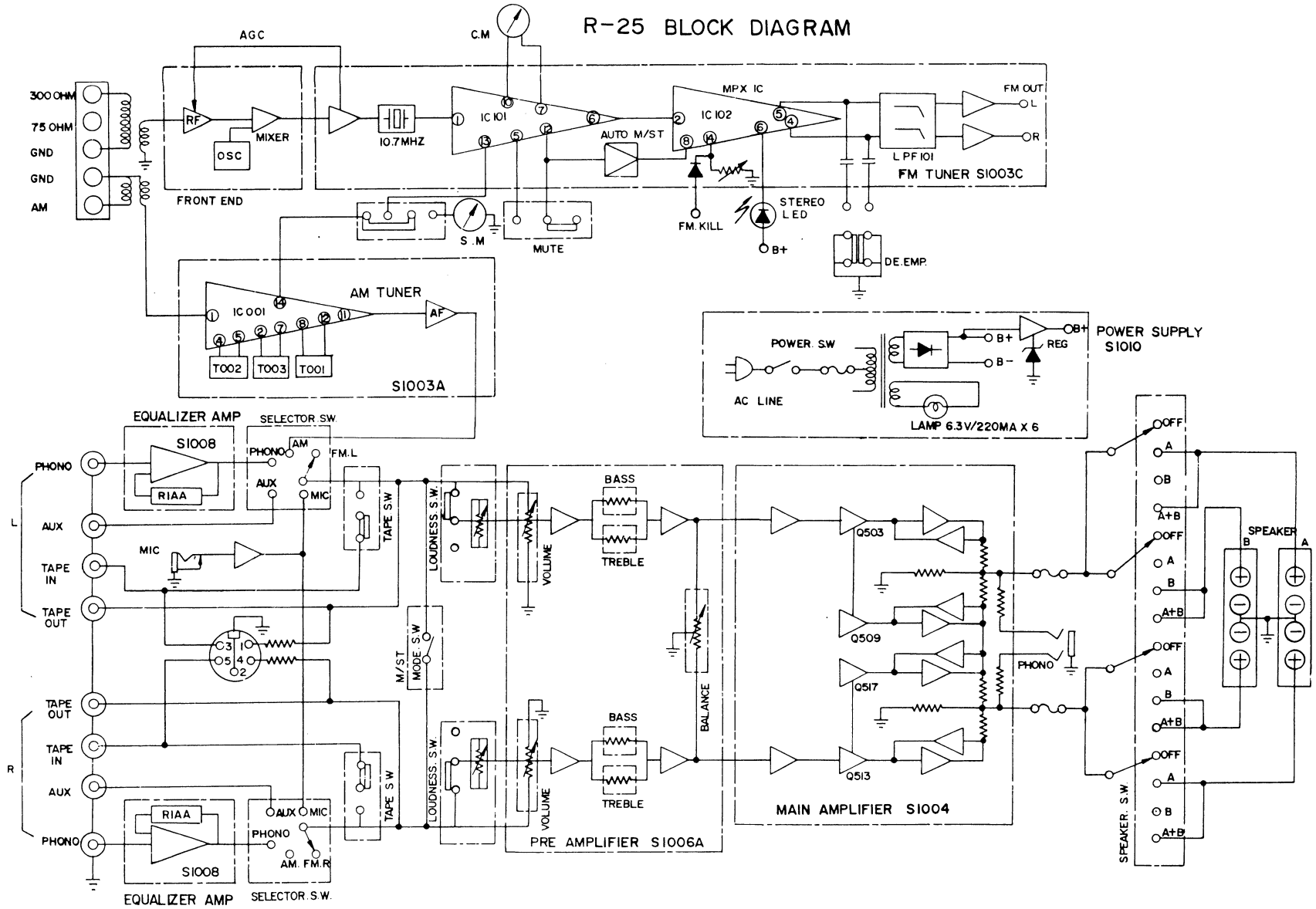
R-25 DIAL CORD STRINGING



R25 EXPLODED VIEW

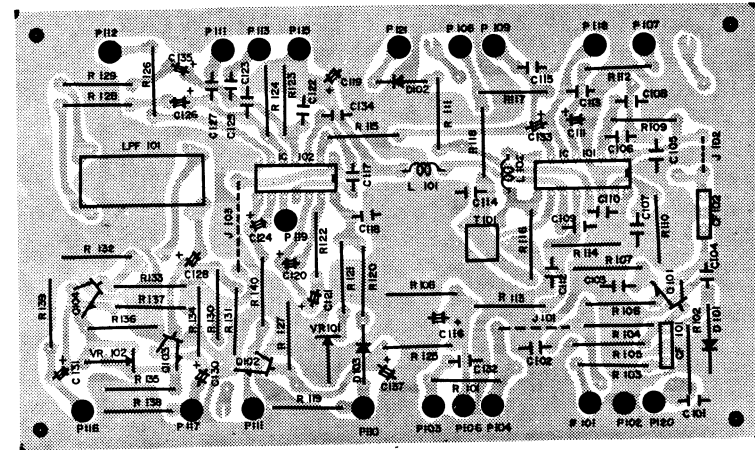
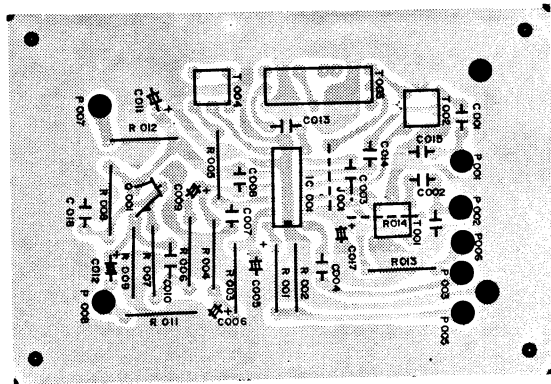


R-25 BLOCK DIAGRAM



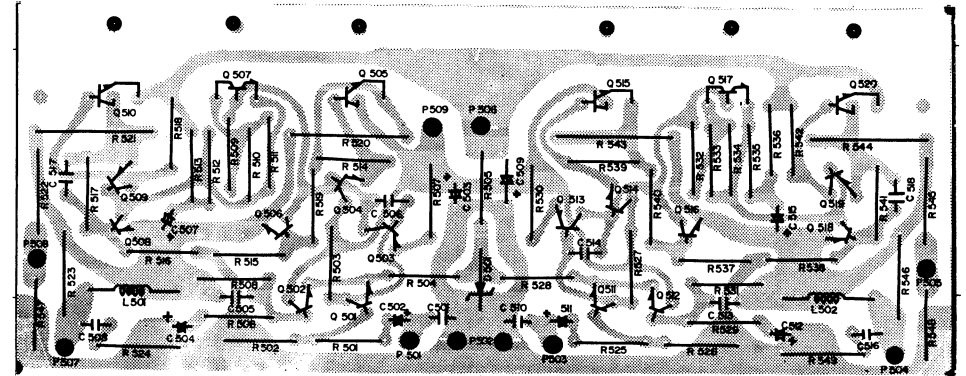
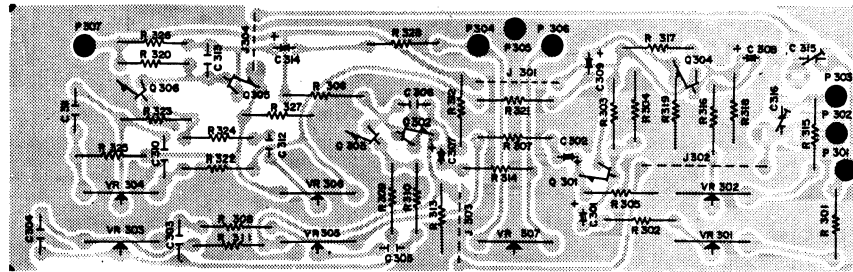
P.C.B. and Parts List R25
S1003A

S1003C



SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
R 001	1.5K	C 001	470 P	C015	20P SR400
R 002	1 K	C 002	0.047 4SR400	C016	10P
R003	10K	C 003	0.01 UF	C017	4.7UF16V
R004	10K	C 004	0.01UF	C018	0.004UF
R 005	270 OHM	C 005	1UF 50WV	Q 101	2SC 733
R006	1.5K	C 006	10UF 16V	IC101	HA-1151
R 007	3.9K	C 007	0.002 UF	T 001	AM RFCOIL SR-400
R008	1.5M	C 008	0.01 UF	T 002	AM OSC COIL
R009	3.9K	C 009	0.047UF	T 003	AM IF T-1
		C 010	0.047 UF	T 004	AM IFT - 2
R 011	100K	C 011	47UF16V	J 001	
R 012	270	C 012	0.01UF		
R 013	470	C 013	0.01 UF		
R 014	3.9K	C 014	0.01UF		

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
R101	220 Ω 1/4W ±5%	R119	100K 1/4W ±5%	R138	100K 1/4W ±5%	C116	1MF 50WV	C135	47MF 16WV
R102	820 "	R120	22K "	R139	100K "	C117	0.047MF ±5%CM	C136	
R103	100 "	R121	18K "	R140	10 K "	C118	470P ±5% (CP)	C137	47MF 16WV
R104	4.7K "	R122	1K "	C101	0.04MF ±80-20	C119	100MF 16WV	D101	1N 60
R105	680 "	R123	3.9K "	C102	0.047 "	C120	0.22MF 50WV	D102	MA161
R106	330 "	R124	3.9K "	C104	0.02 "	C121	0.47MF 50WV	D103	MA161
R107	560 "	R125	100K "	C105	0.047 "	C122	0.02MF ±5%CM	Q101	2SC 381
R108		R126	1.2K "	C106	0.047 "	C123	0.02MF ±5%CM	Q102	2SC 733
R109	330 "	R127	12K "	C107	0.047 "	C124	0.47MF 50WV	Q103	2SC 732
R110	10K "	R128	1.2K "	C108	0.047 "	C125	0.01MF ±5%CM	Q104	2SC 732
R111	22K "	R129	1.2K "	C109	0.047 "	C126	4.7MF 16WV		
R112	22K "	R130	4.7K "	C108	0.047 "	C127	0.01MF ±5%CM	IC101	MA1137
R113	2.2K "	R131	5.6K "	C109	0.047 "	C128	4.7MF 16WV	IC102	MA1156
R114	47K "	R132	5.6K "	C110	0.047 "	C129	4.7MF 16WV	L101	2.2μH
R115	100 "	R133	47K "	C111	4.7MF 16WV	C130	1MF 50WV	L102	18μH
R116	3.9K "	R134	4.7K "	C112	0.047MF ±80	C131	1MF 50WV	VR101	4.7K
R117	330 "	R135	680 "	C113	180P ±10%	C132	0.02MF ±80	VR102	4.7K
R118	5.6K "	R136	680 "	C114	0.047MF ±80	C133	4.7MF 16WV	L.P.F	170 BLR
		R137	4.7K "	C115	0.047MF ±80	C134	680P ±10%	J101-3	JUMP WIRE

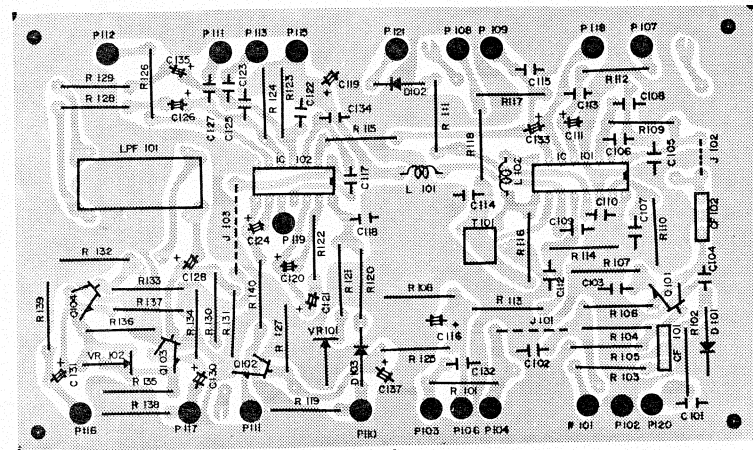
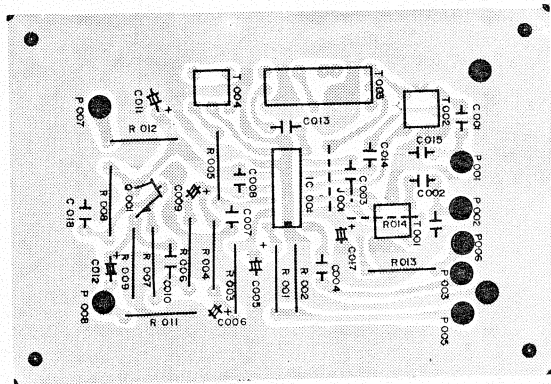


SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
R301	10K 1/4W ± 5%	R316	3.9K 1/4W ± 5%	C301	2.2µF 16WV(T.T)	VR301	100K A 1/2
R302	3.9K "	R317	220K "	C302	4.7µF 16WV	VR302	100K A 1/2
R303	220K "	R318	220K "	C303	0.047µF ± 5%(CM)	VR303	100K B 1/2
R304	220K "	R319	27K "	C304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

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
R501	1K 1/4W ± 5%	R513	200 "	R535	1.5K 1/4W ± 5%	C503	1µF 50WV	Q501	2SC 374		
R502	68K "	R514	200 "	R536	1.2K "	C502	0.47µF 50WV	Q502	2SC 374		
R503	27K "	R520	0.27 * 2W	R537	10K "	C503	1µF 50WV	Q503	2SA 661		
R504	10K "	R521	0.27 " "	R538	10K "	C504	4.7µF 16WV	Q504	2SC 1165		
R505	820 "	R522	270 1/2W ± 5%	R539	120 "	C508	56P ± 10%	Q505	D526		
R506	3.9K "	R523	3.3 " "	R540	200 "	C507	22µF 35WV	Q506	2SC 734		
R507	15 "	R524	10 " "	R541	200 "	C508	0.047µF ± 3%	Q507	2SC 828		
R508	68K "	R525	1K 1/4W ± 5%	R542	120 "	C509	1µF 50WV	Q508	2SA 561		
R509	680 "	R526	68K "	R543	0.27 2W	C510	470P ± 10%	Q509	2SA 661		
R510	1.5K "	R527	2.7K "	R544	0.27 2W	C511	0.47µF 50WV	Q510	2SD 526		
R511	680 "	R528	10K "	R545	270 1/2W ± 5%	C512	4.7µF 16WV	Q511	2SC 374		
R512	1.5K "	R529	3.9K "	R546	3.3 " "	C514	56P ± 10%	Q512	2SC 374		
R513	1.2K "	R530	15 "	R547	15 "	C515	22µF 35WV	Q513	2SA 661		
R514	120 "	R531	68K "	R548	15 "	C516	0.047µF ± 3%	Q514	2SC 1166		
R515	10K "	R532	680 "	R549	10 " "	C517	0.02 "	Q515	2SD 526		
R516	10K "	R533	1.5K "	C501	470P ± 10%	C518	0.02 "	Q516	2SC 734		
R517	200 "	R534	680 "	C502	0.47µF 50WV	D501	MZ 11B	Q517	2SC 828		
						L501	2.7MH	Q518	2SA 561		
						L502	2.7MH	Q519	2SA 661		

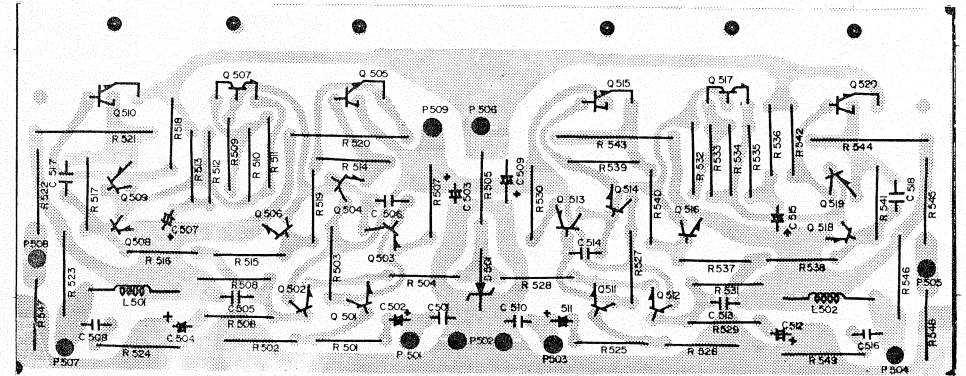
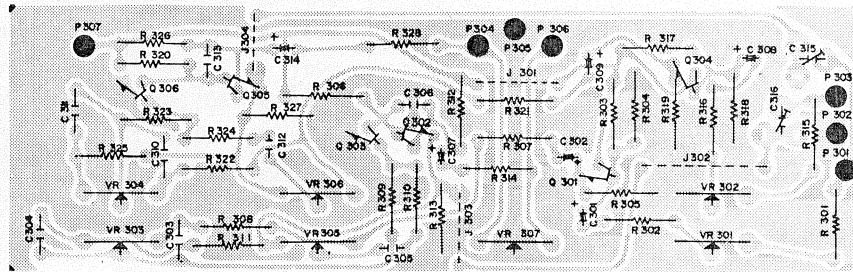
P.C.B. and Parts List R25
S1003A

S1003C



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	C 004	0.01UF	C018	0.004UF
R 005	270 OHM	C005	1UF 50WV	Q 101	2SC 733
R006	1.5K	C 006	10UF 16V	IC101	HA-1151
R 007	3.9K	C007	0.002 UF	T 001	AM RFCOIL SR-400
R008	1.5M	C008	0.01 UF	T002	AM OSC COIL
R009	3.9K	C009	0.047UF	T003	AMIF T-1
		C010	0.047 UF	T004	AM IFT - 2
R011	100K	C011	47UF16V	J 001	
R012	100K	C012	0.1UF16V		
R013	470	C013	0.01 UF		
R014	3.9K	C014	0.01UF		

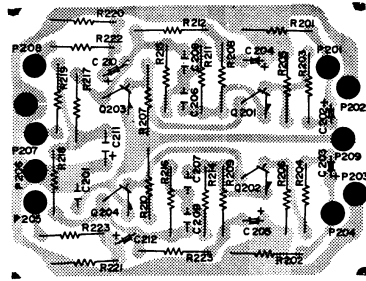
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
R101	220 Ω 1/4W±5%	R119	100K 1/4W±5%	R138	100K 1/4W±5%	C116	1MF 50WV	C135	47MF 16WV
R102	820 "	R120	22K "	R139	100K "	C117	0.047MF±5%AV	C136	
R103	100 "	R121	18K "	R140	10 K "	C118	470P±5%(CP)	C137	4.7MF 16WV
R104	4.7K "	R122	1 K "	C101	0.04MF±80 -20	C119	100MF 16WV	D101	1N 60
R105	680 "	R123	3.9K "	C102	0.047 "	C120	0.22MF 50WV	D102	MA161
R106	330 "	R124	3.9K "	C104	0.02 "	C121	0.47MF 50WV	D103	MA161
R107	560 "	R125	100K "	C105	0.047 "	C122	0.02MF±5%(CM)	Q101	2SC381
R108		R126	1.2K "	C106	0.047 "	C123	0.02MF±5%(CM)	Q102	2SC733
R109	330 "	R127	12 K "	C107	0.047 "	C124	0.47MF 50WV	Q103	2SC732
R110	10K "	R128	1.2K "	C108	0.047 "	C125	0.01MF±5%(CM)	Q104	2SC732
R111	22K "	R129	1.2K "	C109	0.047 "	C126	4.7MF 16WV		
R112	22K "	R130	47K "	C108	0.047 "	C127	0.01MF±5%(CM)	IC101	MA1137
R113	2.2K "	R131	5.6K "	C109	0.047 "	C128	4.7MF 16WV	IC102	MA1156
R114	2.2K "	R132	5.6K "	C110	0.047 "	C129	4.7MF 16WV	L101	2.2MH
R114	4.7K "	R133	47K "	C111	4.7MF 16WV	C130	1MF 50WV	L102	18MH
R115	100 "	R134	4.7K "	C112	0.047MF±80	C131	1MF 50WV	VR101	4.7K
R116	3.9K "	R135	680 "	C113	180P±10%	C132	0.02MF±80	VR102	4.7K
R117	330 "	R136	680 "	C114	0.047MF±80	C133	4.7MF 16WV	L.P.F	170 BLR
R118	5.6K "	R137	4.7K "	C115	0.047MF±80	C134	680P±10%	J101-3	0 JUMP WIRE



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

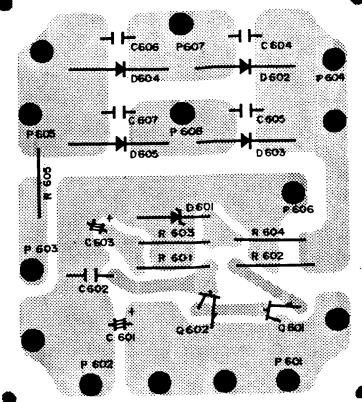
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
R501	1K 1/4W ± 5%	R513	200 "	R535	1.5K 1/4W ± 5%	C503	1µF 50WV	Q501	2SC 374		
R502	68K "	R514	200 "	R536	1.2K "	C502	0.47µF 50WV	Q502	2SC 374		
R503	27K "	R520	0.27 1/2W	R537	10K "	C503	1µF 50WV	Q503	2SA 661		
R504	10K "	R521	0.27 "	R538	10K "	C504	4.7µF 16WV	Q504	2SC 1165		
R505	820 "	R522	270 1/2W ± 5%	R539	120 "	C506	56P ± 10%	Q505	D525		
R506	3.9K "	R523	3.3 "	R540	200 "	C507	22µF 35WV	Q506	2SC 734		
R507	15 "	R524	10 "	R541	200 "	C508	0.047µF ± 3%	Q507	2SC 828		
R508	68K "	R525	1K 1/4W ± 5%	R542	120 "	C509	1µF 50WV	Q508	2SA 561		
R509	680 "	R526	68K "	R543	0.27 2W	C510	470P ± 10%	Q509	2SA 661		
R510	1.5K "	R527	2.7K "	R544	0.27 2W	C511	0.47µF 50WV	Q510	2SD 525		
R511	680 "	R528	10K "	R545	270 1/2W ± 5%	C512	4.7µF 16WV	Q511	2SC 374		
R512	1.5K "	R529	3.9K "	R546	3.3 "	C514	56P ± 10%	Q512	2SC 374		
R513	1.2K "	R530	15 "	R547	15 "	C515	22µF 35WV	Q513	2SA 661		
R514	120 "	R531	68K "	R548	15 "	C516	0.047µF ± 3%	Q514	2SC 1166		
R515	10K "	R532	680 "	R549	10 "	C517	0.02 "	Q515	2SD 526		
R516	10K "	R533	1.5K "	C501	470P ± 10%	D501	MZ 11B	Q516	2SC 734		
R517	200 "	R534	680 "	C502	0.47µF 50WV	L501	2.7µH	Q517	2SC 828		
						L502	2.7µH	Q518	2SA 561		
								Q519	2SA 661		

S1008K



SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
R 201	220 K $\frac{1}{4}W$	R 219	1 K $\frac{1}{4}W \pm 5\%$
R 202	220 K "	R 220	220 K "
R 203	4.7 K "	C 201	4.7UF16V
R 204	4.7 K "	C 202	4.7UF16V (T.T)
R 205	56 K "	C 203	4.7UF16V
R 206	56 K "	C 204	100UF10V
R 207	27 K "	C 205	100UF10V
R 208	560 "	C 206	0.0022 $\mu F \pm 5\%$ (M)
R 209	560 "	C 207	0.0022 "
R 210	27 K "	C 208	0.0082 "
R 211	33 K "	C 209	0.0082 "
R 212	100K "	C 210	4.7UF 16V
R 213	100K "	C 211	220UF 25
R 214	33 K "	C 212	4.7UF 16V
R 215	820K "	Q 201	2SC1681
R 216	820K "	Q 202	2SC1681
R 217	15 K "	Q 203	2SA 841
R 218	15 K "	Q 204	2SA 841 A

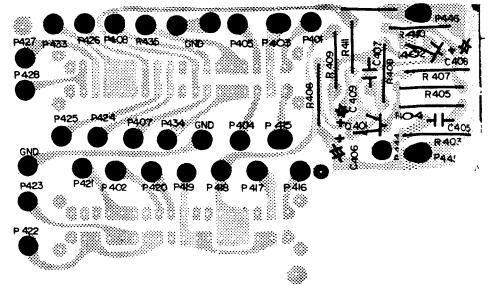
S1010J



S1010J

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
R601	100 Ω $\frac{1}{4}W \pm 5\%$	D601	MZ14 B
R602	47 " $\frac{1}{2}W$ "	D602	30D1 or U05B
R603	4.7K $\frac{1}{2}W$ "	D603	"
R604	820 Ω $\frac{1}{4}W$ "	D604	"
R605	3.3K $\frac{1}{4}W \pm 5\%$	D605	"
C601	220 μF 16 WV	Q601	2SA 794
C602	0.1 μF $\pm 8\%$	Q602	2SC 733
C603	220 μF 16 WV		
C604	0.01 μF $\pm 8\%$		
C605	0.01 "		
C606	0.01 "		
C607	0.01 "		

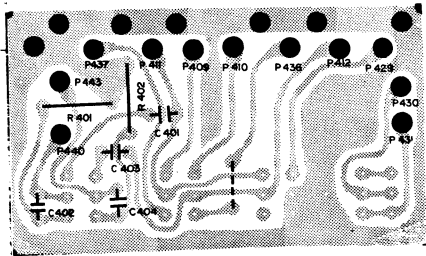
S1023



S1023

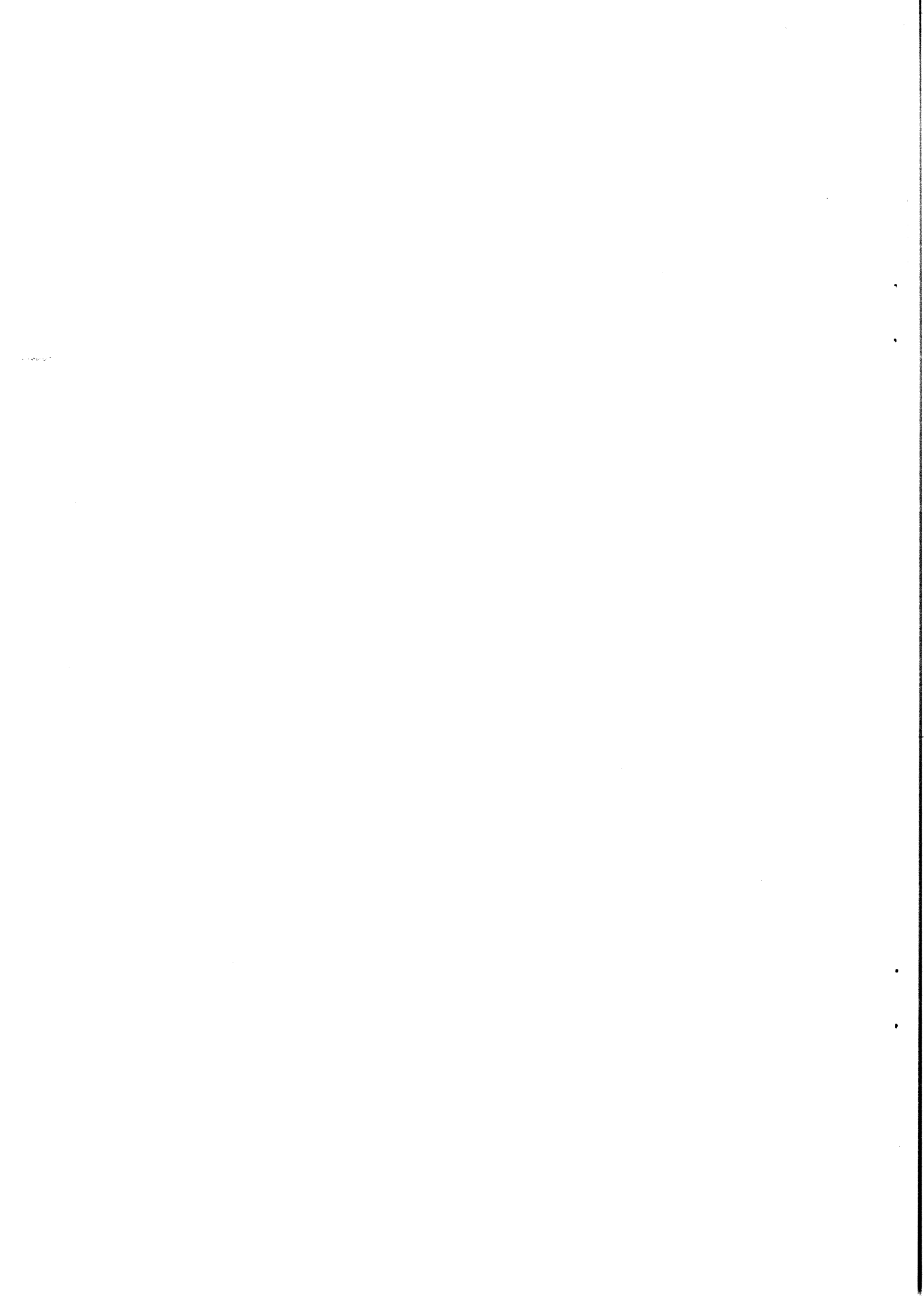
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
R403	3.3K $\frac{1}{4}W \pm 5\%$	C405	0.047 $\mu F \pm 8\%$
R404	3.9K "	C406	100 μF 5 WV
R405	47K "	C407	100P
R406	56K "	C408	100 μF 6.3V
R407	2.2K "	C409	4.7 μF 6 WV
R408	220K "		
R409	82K "		
R410	1.5K "		
R411	3.3K "		
R412	220K "		

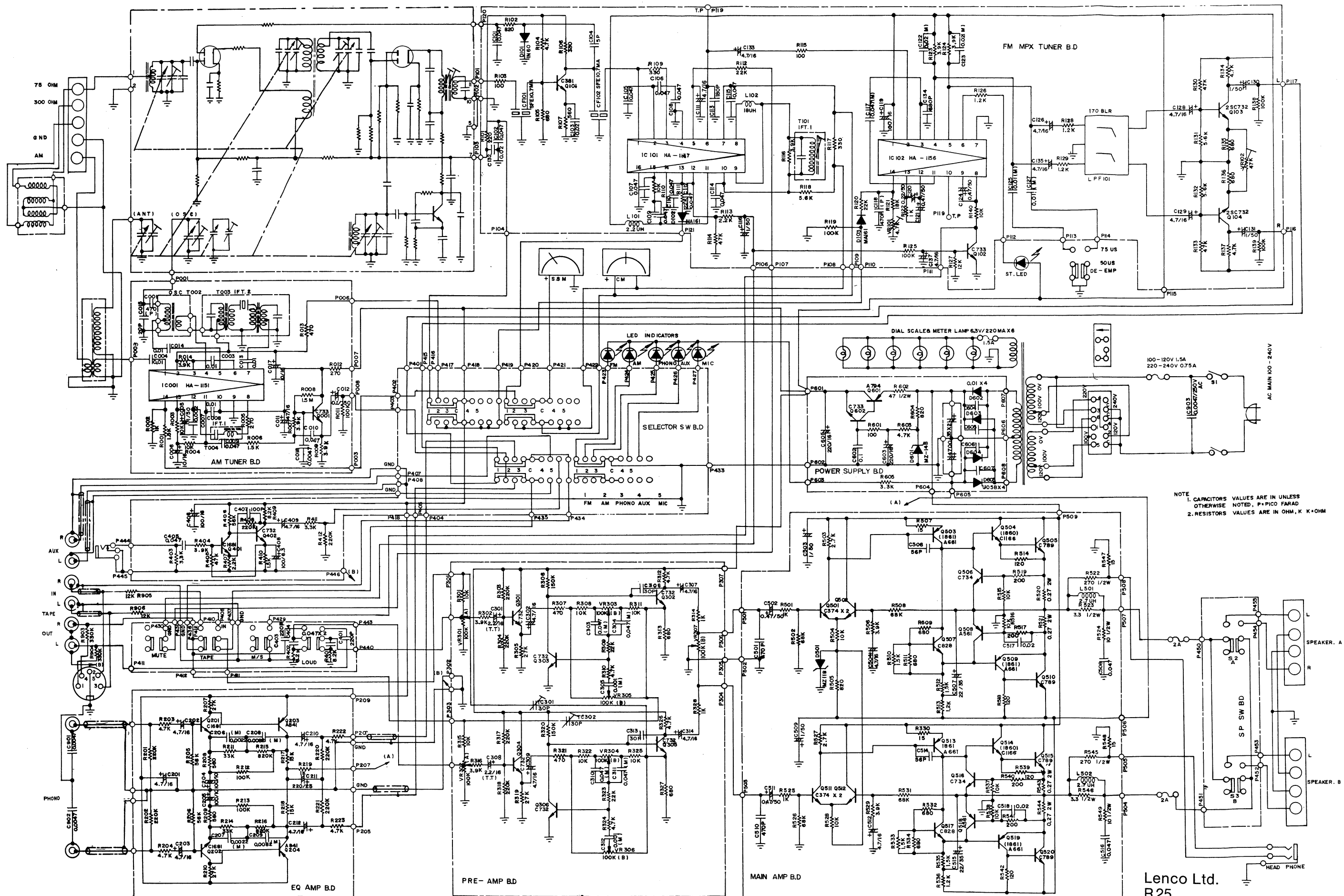
S1013 Sw.



S1013

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
R401	8.2K $\frac{1}{4}W \pm 5\%$	C401	220P $\pm 10\%$
R402	8.2K "	C402	0.047 $\mu F \pm 5\%$
J401	JUMP WIRE	C403	0.047 "
		C404	220P $\pm 10\%$





Lenco Ltd.
R25