

ALIGNMENT PROCEDURE

Equipment Required —

1. DC VTVM
2. RF Signal Generator
3. Sweep Generator
4. Oscilloscope
5. FM Stereo Signal Simulator

Preliminary Procedure —

1. In all tests both outputs must be terminated with 8 OHM loads (dummy resistors).
2. Set volume control to maximum.
3. Keep output of signal sources no higher than necessary to obtain an output reading.
4. Refer to schematic diagram for test points.

Circuit Alignment	Equipment Connection	Step	Generator Frequency	Dial Setting	Adjustments
AM					
IF	AM SIGNAL GENERATOR Radiated Signal OUTPUT METER (VTVM) Across Point "TP-2"	1	455KHz 400Hz 30% Mod.	Tuning gang fully closed	AM IFT T201, T202 & T203 Adjust for maximum output.
		2	—	—	Repeat until no further improvement can be made.
BAND		3	525KHz 400Hz 30% Mod.	Tuning gang fully closed	L202 (AM Osc. Coil) Adjust for maximum output.
		4	1650KHz 400Hz 30% Mod.	Tuning gang fully opened	C101-8 (AM Osc. Trimmer) Adjust for maximum output.
		5	—	—	Repeat Steps 3 and 4.
TRACKING		6	600KHz	Tune to signal	L201 (AM Antenna Coil) Adjust coil on ferrite core for maximum output.
		7	1400KHz	Tune to signal	C101-6 (AM Antenna Trimmer) Adjust for maximum output.
		8	—	Tune to signal	Repeat steps 6 and 7.

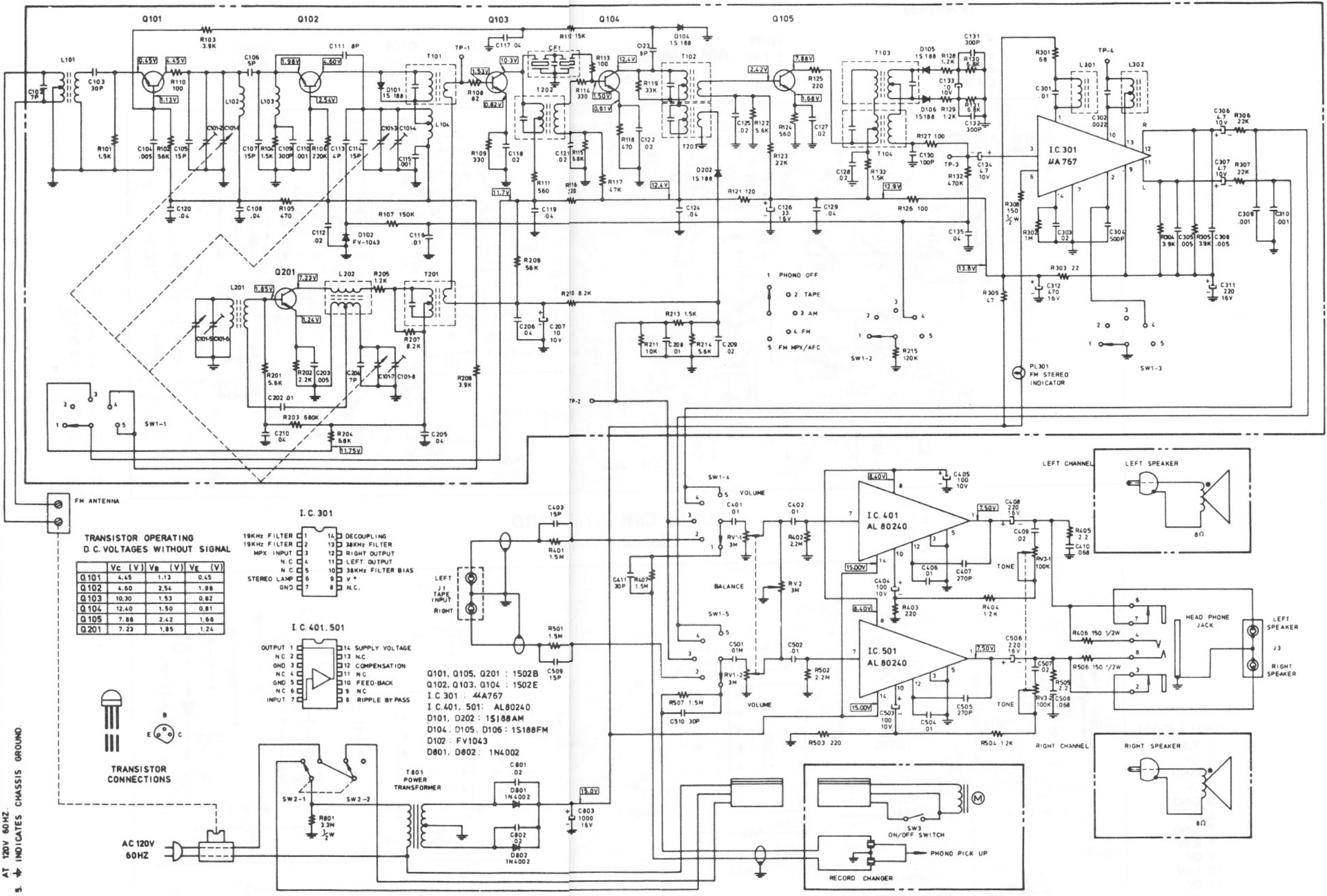
FM					
IF	FM IF SWEEP Generator through 0.02uf Ceramic Capacitor to Base of Q102.	1	10.7MHz	Tuning gang fully closed	FM IFT T101, T102, T103. Adjust for maximum symmetrical response. (10.7 at the center point)
		2	—	—	Repeat step 1.
RATIO DETECTOR	Same as above.	3	10.7MHz	Tuning gang fully closed	FM IFT - T104 Adjust for suitable "S" curve.
		4	—	—	Repeat step 3.
BAND	FM SIGNAL GENERATOR to Ant Terminals.	5	87MHz (Mod.)	Tuning gang fully closed	L104 (FM Osc. Coil) Adjust for maximum output.
		6	109MHz (Mod.)	Tuning gang fully opened	C101-4 (FM Osc. Trimmer) Adjust for maximum output.
		7	—	—	Repeat steps 5 and 6.
RF	OUTPUT METER (VTVM) to Ant. Terminals.	8	90MHz (Mod.)	Tune to signal	L102 (FM RF Coil) Adjust for maximum output.
		9	106MHz (Mod.)	Tune to signal	C101-1 (FM RF Trimmer) Adjust for maximum output.
		10	—	—	Repeat steps 8 and 9 to obtain suitable sensitivity at 90MHz and 106MHz.

FM MPX					
CHANNEL SEPARATION	FM STEREO GENERATOR Composite out connect to Ext. Mod. of FM Signal Generator. FM SIGNAL GENERATOR Connect to Ant. Terminals. OSCILLOSCOPE Across 8 ohm load.	1	98MHz	98MHz	First make sure FM Section is properly aligned; Adjust L301, L302 for minimum output from left (right) Channel when right (left) Channel is modulated. Channel separa- tion should be not less than 20dB.

Schematic Location	Part No.	Description
CAPACITORS		
C101	610011-0002	Poly Variable Capacitor Tuning
C102	740104-1070	Ceramic 7p, $\pm 0.5p$, 25V
C103	740104-4300	Ceramic 30p, $\pm 10\%$, 25V
C104	740104-6502	Ceramic .005uf, +80% -20%, 25V
C105	740104-1150	Ceramic 15p, $\pm 0.5p$, 25V
C106	740104-1050	Ceramic 5p, $\pm 0.5p$, 25V
C107	740104-1150	Ceramic 15p, $\pm 0.5p$, 25V
C108	740104-6403	Ceramic .04uf, +80% -20%, 25V
C109	740104-4301	Ceramic 300p, $\pm 10\%$, 25V
C110	740104-6102	Ceramic .001uf, +80% -20%, 25V
C111	740104-1080	Ceramic 8p, $\pm 0.5p$, 25V
C112	740104-6203	Ceramic .02uf, +80% -20%, 25V
C113	740104-1040	Ceramic 4p, $\pm 0.5p$, 25V
C114	740104-1150	Ceramic 15p, $\pm 0.5p$, 25V
C115	840104-6102	Ceramic .001uf, +80% -20%, 25V
C116	740104-5103	Ceramic .01uf, $\pm 20\%$, 25V
C117	740104-6403	Ceramic .04uf, +80% -20%, 25V
C118	740104-6203	Ceramic .02uf, +80% -20%, 25V
C119	740104-6403	Ceramic .04uf, +80% -20%, 25V
C120	740104-6403	Ceramic .04uf, +80% -20%, 25V
C121	740104-6203	Ceramic .02uf, +80% -20%, 25V
C122	740104-6203	Ceramic .02uf, +80% -20%, 25V
C123	740104-1080	Ceramic 8p, $\pm 0.5p$, 25V
C124	740104-6403	Ceramic .04uf, +80% -20%, 25V
C125	740104-6203	Ceramic .02uf, +80% -20%, 25V
C126	605004-3330	Electrolytic 33uf, 16V
C127	740104-6203	Ceramic .02uf, +80% -20%, 25V
C128	740104-6203	Ceramic .02uf, +80% -20%, 25V
C129	740104-6403	Ceramic .04uf, +80% -20%, 25V
C130	740104-4101	Ceramic 100p, $\pm 10\%$, 25V
C131	740104-4301	Ceramic 300p, $\pm 10\%$, 25V
C132	740104-4301	Ceramic 300p, $\pm 10\%$, 25V
C133	605004-2100	Electrolytic 10uf, 10V
C134	605004-2479	Electrolytic 4.7uf, 10V
C135	740104-6403	Ceramic .04uf, +80% -20%, 25V
C202	740104-5103	Ceramic .01uf, $\pm 20\%$, 25V
C203	740104-6502	Ceramic .005uf, +80% -20%, 25V
C204	740104-1070	Ceramic 7p, $\pm 0.5p$, 25V
C205	740104-6403	Ceramic .04uf, +80% -20%, 25V
C206	740104-6403	Ceramic .04uf, +80% -20%, 25V
C207	605004-2100	Electrolytic 10uf, 10V
C208	740104-5103	Ceramic .01uf, $\pm 20\%$, 25V
C209	740104-6203	Ceramic .02uf, +80% -20%, 25V
C210	740104-6403	Ceramic .04uf, +80% -20%, 25V
C301	740407-3103	Polystyrene .01uf, $\pm 5\%$, 50V
C302	740407-3222	Polystyrene .0022uf, $\pm 5\%$, 50V
C303	740104-6203	Ceramic .02uf, +80% -20%, 25V
C304	740104-4501	Ceramic 500p, $\pm 10\%$, 25V
C305	740104-5502	Ceramic .005uf, $\pm 20\%$, 25V
C306	605004-2479	Electrolytic 4.7uf, 10V
C307	605004-2479	Electrolytic 4.7uf, 10V
C308	740104-5502	Ceramic .005uf, $\pm 20\%$, 25V
C309	740104-5102	Ceramic .001uf, $\pm 20\%$, 25V
C310	740104-5102	Ceramic .001uf, $\pm 20\%$, 25V
C311	605004-3221	Electrolytic 220uf, 16V
C312	605004-3471	Electrolytic 470uf, 16V
C401	740104-5103	Ceramic .01uf, $\pm 20\%$, 25V
C402	740104-5103	Ceramic .01uf, $\pm 20\%$, 25V
C403	740104-1150	Ceramic 15p, $\pm 0.5p$, 25V
C404	605004-2101	Electrolytic 100uf, 10V
C405	605004-2101	Electrolytic 100uf, 10V

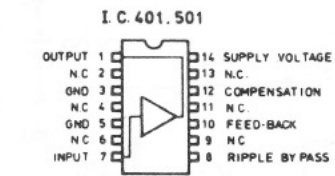
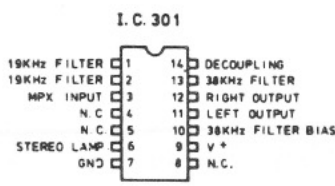
Schematic Location	Part No.	Description
C406	740104-5103	Ceramic .01uf, $\pm 20\%$, 25V
C407	740104-4271	Ceramic 270p, $\pm 10\%$, 25V
C408	605004-3221	Electrolytic 220uf, 16V
C409	740104-5203	Ceramic .02uf, $\pm 20\%$, 25V
C410	740307-4683	Mylar .068uf, $\pm 10\%$, 50V
C411	740104-4300	Ceramic 30p, $\pm 10\%$, 25V
C501	740104-5103	Ceramic .01uf, $\pm 20\%$, 25V
C502	740104-5103	Ceramic .01uf, $\pm 20\%$, 25V
C503	605004-2101	Electrolytic 100uf, 10V
C504	740104-5103	Ceramic .01uf, $\pm 20\%$, 25V
C505	740104-4271	Ceramic 270p, $\pm 10\%$, 25V
C506	605004-3221	Electrolytic 220uf, 16V
C507	740104-5203	Ceramic .02uf, $\pm 20\%$, 25V
C508	740307-4683	Mylar .068uf, $\pm 10\%$, 50V
C509	740104-1150	Ceramic 15p, $\pm 0.5p$, 25V
C510	740104-4300	Ceramic 30p, $\pm 10\%$, 25V
C801	740104-6203	Ceramic .02uf, +80% -20%, 25V
C802	740104-6203	Ceramic .02uf, +80% -20%, 25V
C803	605004-3102	Electrolytic 1000uf, 16V
DIODES		
D101	760101-0005	Germanium 1S188AM
D102	760204-0001	Varicap FV-1043
D103	760201-0001	Silicon CDG00
D104	760101-0006	Germanium 1S188FM
D105	760101-0006	Germanium 1S188FM
D106	760101-0006	Germanium 1S188FM
D202	760101-0005	Germanium 1S188AM
D801	760202-0003	Rectifier 1N4002
D802	760202-0003	Rectifier 1N4002
LAMP		
	640004-0003	Indicating Lamp, 6V, 50 mA
TRANSFORMERS		
T101	230053-0001	FM IFT
T102	230053-0002	FM IFT
T103	230053-0003	FM IFT
T104	230053-0004	FM IFT
T201	230052-0001	AM IFT
T202	230052-0002	AM IFT
T203	230052-0003	AM IFT
T801	220016-0501	Power Transformer
CERAMIC FILTER		
CF1	780001-0001	Ceramic Filter SFE-10.7mA
MISCELLANEOUS		
J2	710008-0003	AC Cord
	670003-0001	Jack, Headphone
	720015-0001	Switch, Selector
	210454-0001	Dial Pulley
	310593-0001	Dial Pointer
	350026-0001	Jack Plate Assembly
INTEGRATED CIRCUIT		
IC301	760522-0002	Stereo Separation uA767
IC401	760522-0004	Power Amp AL80240
IC501	760522-0004	Power Amp AL80240
COILS		
L101	240056-0001	FM ANT Coil 300:75 Ohm
L102	240029-0001	FM RF Coil
L103	24-058-0001	FM TRAP Coil
L104	240057-0001	FM OSC Coil
L201	240055-0501	AM ANT Coil Assembly
L202	240048-0001	AM OSC Coil
L301	240035-0001	MPX Coil
L302	240036-0001	MPX Coil
TRANSISTORS		
Q101	760213-0002	Silicon Philips ED1502B
Q102	760213-0005	Silicon Philips ED1502E
Q103	760213-0005	Silicon Philips ED1502E
Q104	760213-0005	Silicon Philips ED1502E
Q105	760213-0002	Silicon Philips ED1502B
Q201	760213-0002	Silicon Philips ED1502B

- NOTES:
1. ALL RESISTORS IN OHMS ±5%, 1/4 WATT CARBON UNLESS OTHERWISE SPECIFIED.
 2. ALL CAPACITORS IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
 3. ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.
 4. D.C. VOLTAGES ARE MEASURED FROM CHASSIS WITH NO SIGNAL AND LOUDNESS CONTROL AT MINIMUM USING A HIGH INPUT IMPEDANCE V.T.M. LINE VOLTAGE AT 120V 60HZ.
 5. ↓ INDICATES CHASSIS GROUND.



TRANSISTOR OPERATING D.C. VOLTAGES WITHOUT SIGNAL

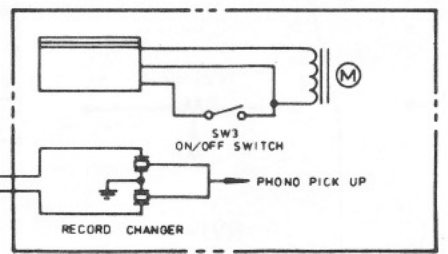
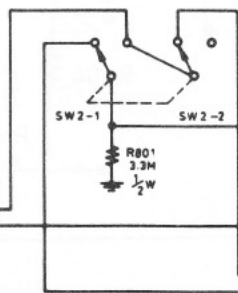
	Vc (V)	Vb (V)	Ve (V)
Q101	4.45	1.13	0.45
Q102	4.60	2.54	1.98
Q103	10.30	1.53	0.82
Q104	12.40	1.50	0.81
Q105	7.88	2.42	1.68
Q201	7.23	1.85	1.24



- Q101, Q105, Q201 : 1502B
 Q102, Q103, Q104 : 1502E
 I.C. 301 : 4A767
 I.C. 401, 501 : AL8024
 D101, D202 : 1S188AM
 D104, D105, D106 : 1S188FM
 D102 : FV1043
 D801, D802 : 1N4002



AC 120V 60HZ



**Sears 171.90502500 (Serial No's. 12500
& Above)**

Q101
E .45V
B 1.13V
C 4.45V

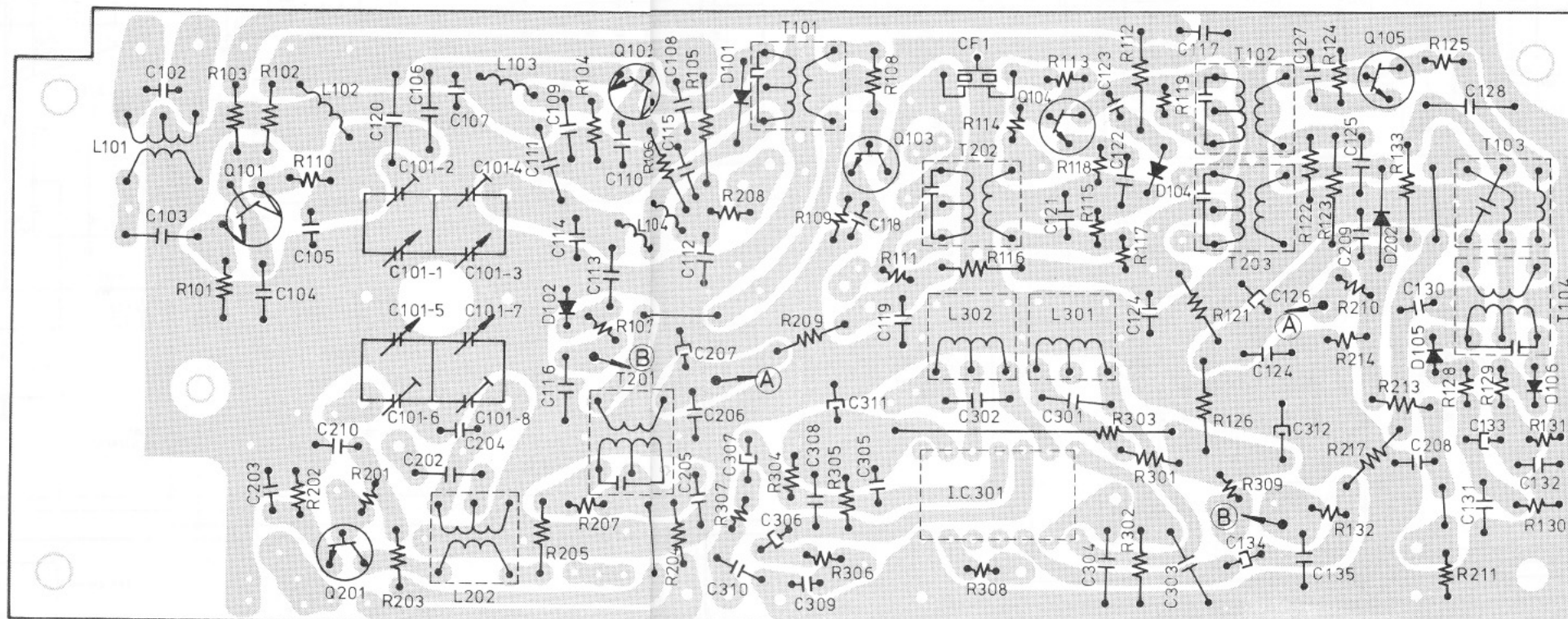
Q102
E 1.9V
B 2.5V
C 4.6V

**AM FM CIRCUIT BOARD
(Bottom View)**

Q103
E .8V
B 1.5V
C 10.3V

Q104
E .8V
B 1.5V
C 12.4V

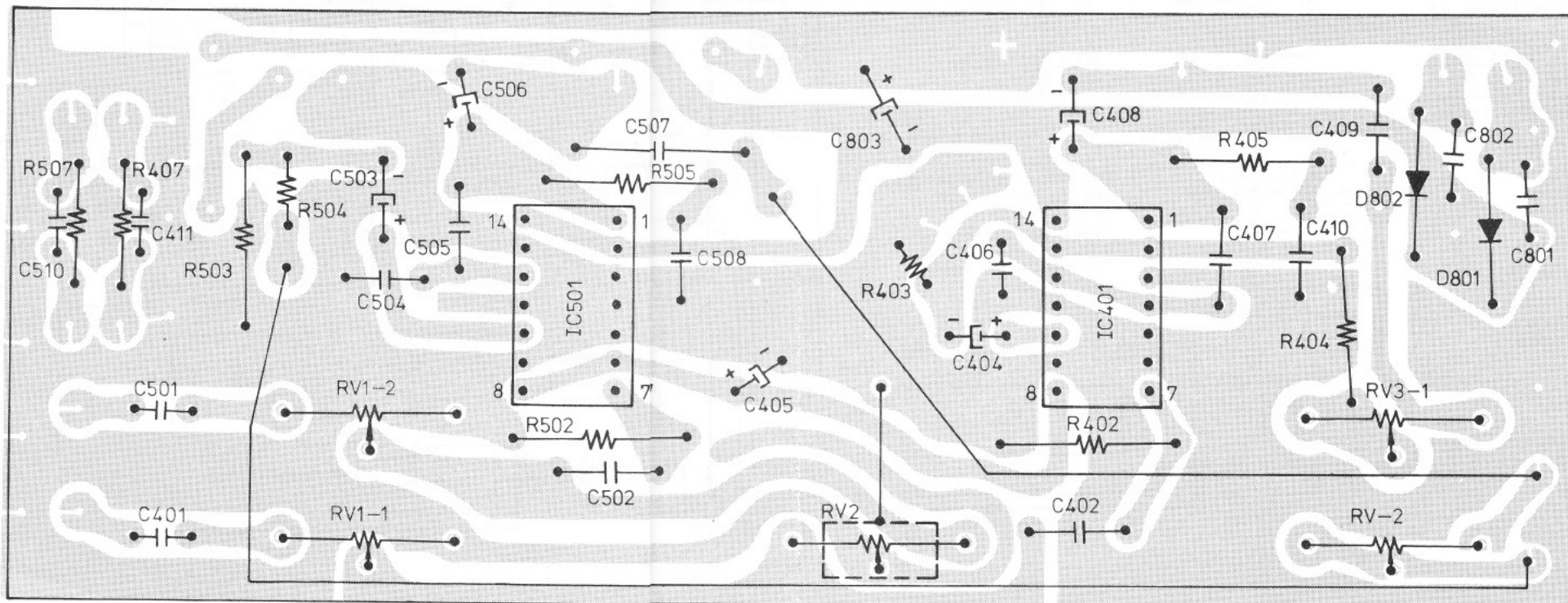
Q105
E 1.6V
B 2.4V
C 7.8V



- IC 301**
- 1 13V
 - 2 3V
 - 3 4V
 - 4 0V
 - 5 0V
 - 6 15.5V
 - 7 GND.
 - 8 0V
 - 9 13V
 - 10 5V
 - 11 10V
 - 12 10V
 - 13 5V
 - 14 0V

Q201
E 1.24V
B 1.8V
C 7.23V

**AUDIO CIRCUIT BOARD
(Bottom View)**

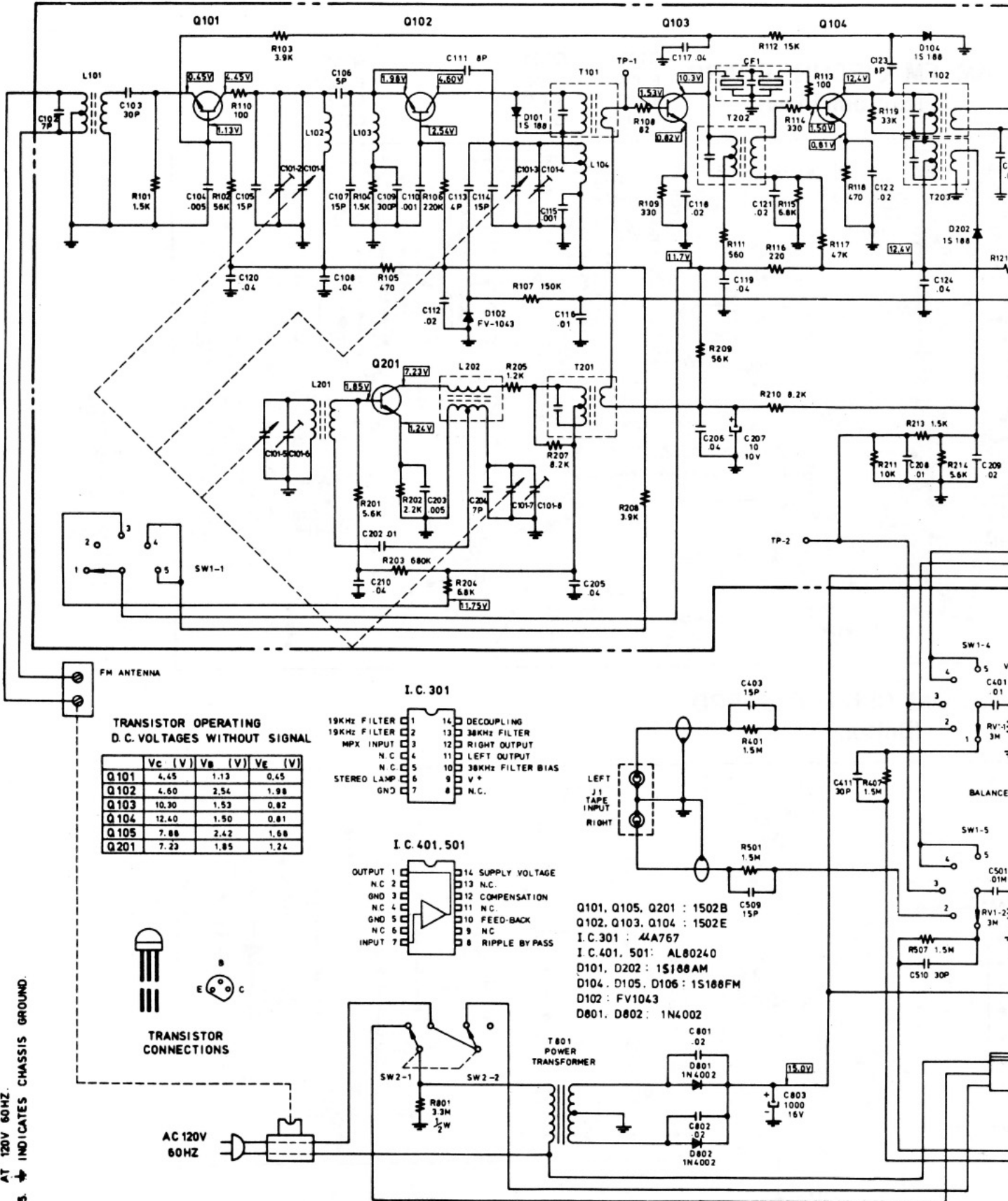


IC 401 & IC 501

- 1 7.5V
- 2 0V
- 3 GND.
- 4 0V
- 5 GND.
- 6 0V
- 7 GND.
- 8 8.4V
- 9 0V
- 10 1.3V
- 11 0V
- 12 0V
- 13 0V
- 14 15V

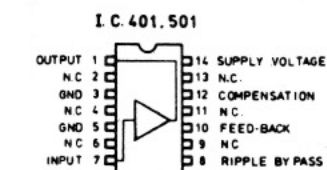
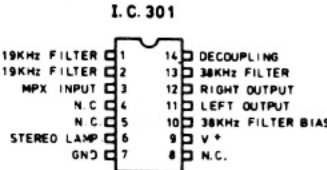
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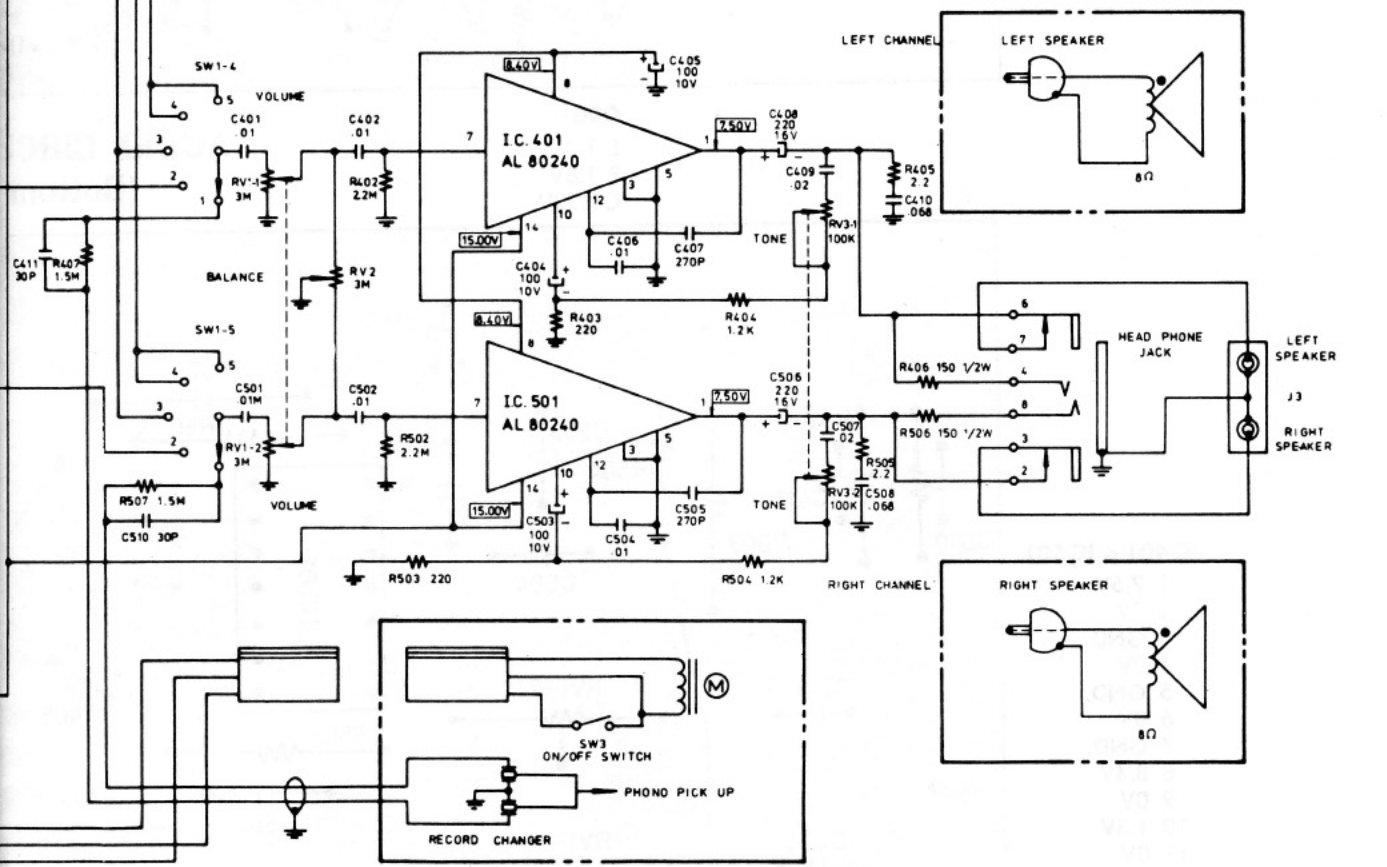
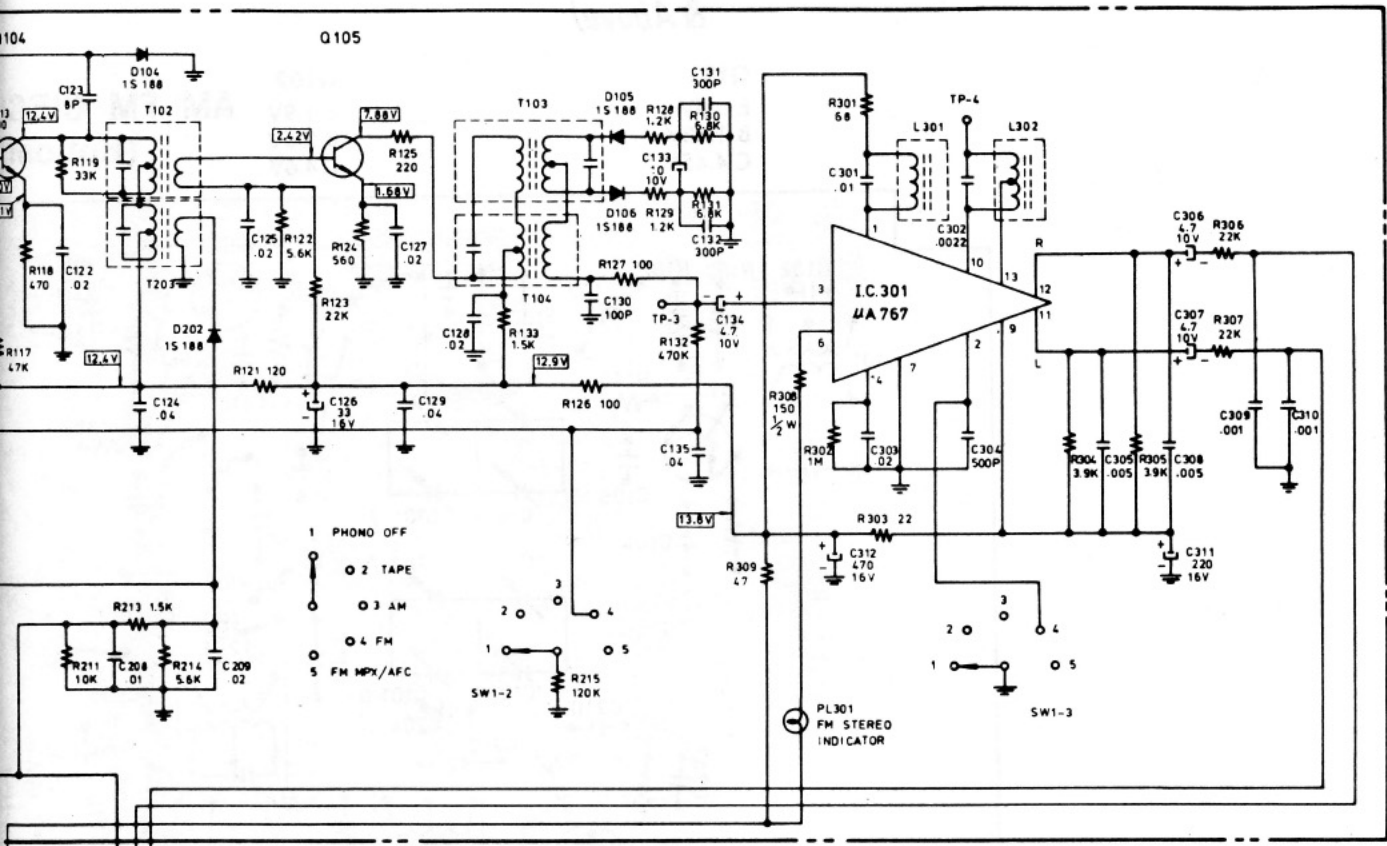
TRANSISTOR OPERATING D.C. VOLTAGES WITHOUT SIGNAL

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Q201	7.23	1.85	1.24



- Q101, Q105, Q201 : 1502B
- Q102, Q103, Q104 : 1502E
- I.C. 301 : 4A767
- I.C. 401.501 : AL80240
- D101, D202 : 1S188AM
- D104, D105, D106 : 1S188FM
- D102 : FV1043
- D801, D802 : 1N4002



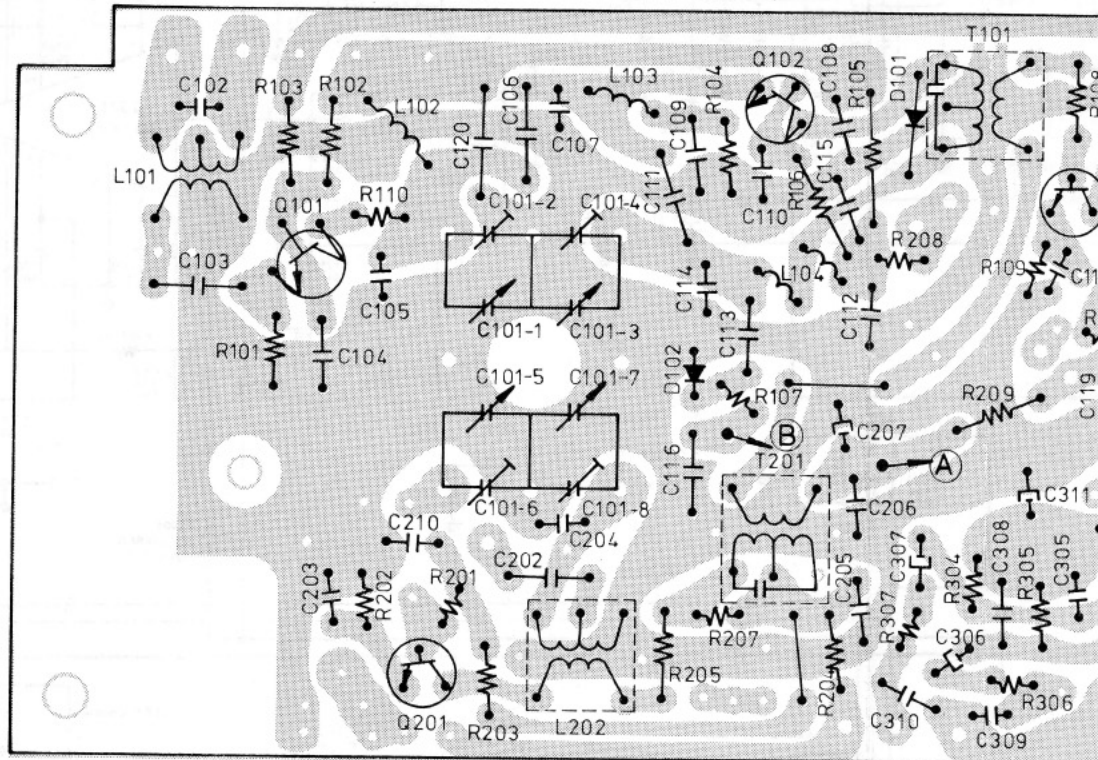


**Sears 171.90502500 (Serial No's. 12500
& Above)**

Q101
E .45V
B 1.13V
C 4.45V

Q102
E 1.9V
B 2.5V
C 4.6V

**AM FM CIRCUIT B
(Bottom View)**

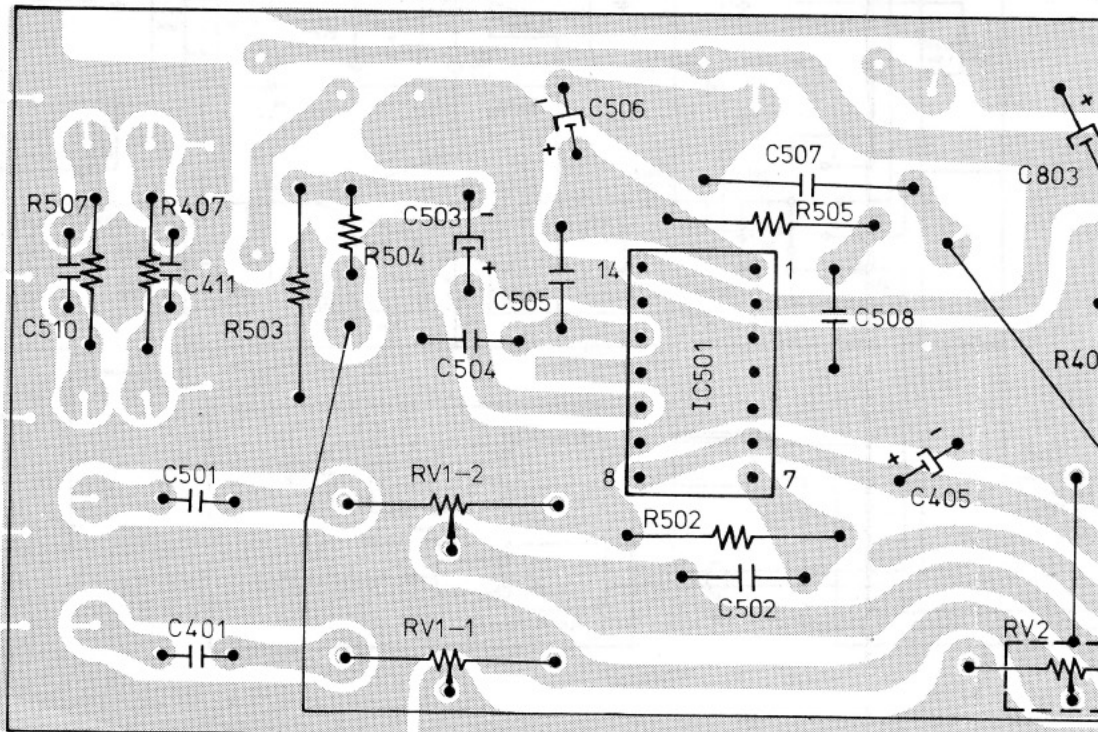


Q201
E 1.24V
B 1.8V
C 7.23V

**AUDIO CIRCUIT B
(Bottom View)**

IC 401 & IC 501

- 1 7.5V
- 2 0V
- 3 GND.
- 4 0V
- 5 GND.
- 6 0V
- 7 GND.
- 8 8.4V
- 9 0V
- 10 1.3V
- 11 0V
- 12 0V
- 13 0V
- 14 15V

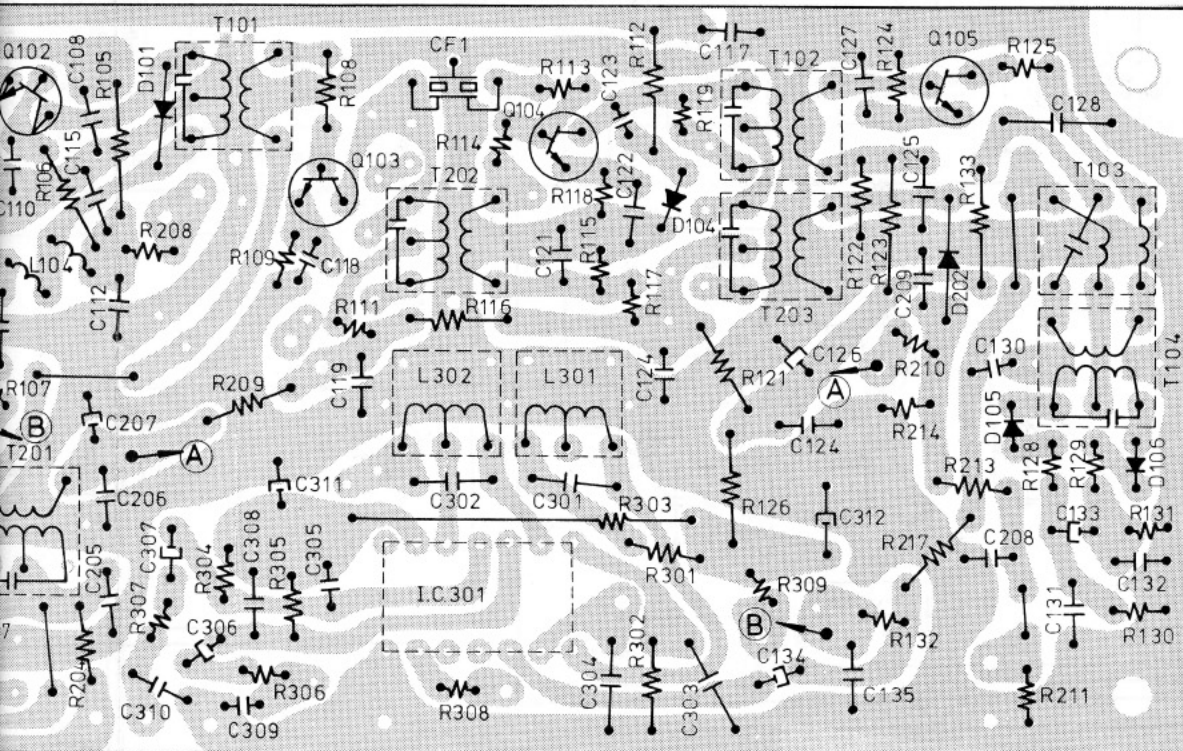


AM FM CIRCUIT BOARD (Bottom View)

Q103
E .8V
B 1.5V
C 10.3V

Q104
E .8V
B 1.5V
C 12.4V

Q105
E 1.6V
B 2.4V
C 7.8V



- IC 301**
- 1 13V
 - 2 3V
 - 3 4V
 - 4 0V
 - 5 0V
 - 6 15.5V
 - 7 GND.
 - 8 0V
 - 9 13V
 - 10 5V
 - 11 10V
 - 12 10V
 - 13 5V
 - 14 0V

AUDIO CIRCUIT BOARD (Bottom View)

