

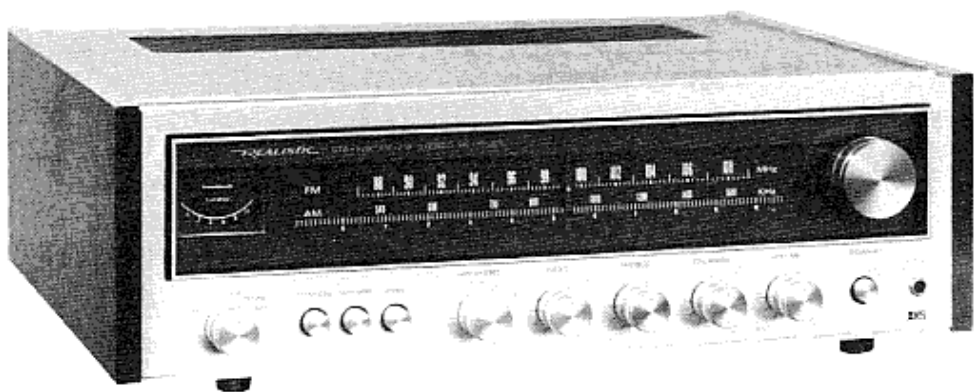
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31-2080

Service Manual

STA-52B
AM/FM STEREO RECEIVER
Catalog Number:31-2080



CUSTOM MANUFACTURED FOR RADIO SHACK  A DIVISION OF TANDY CORPORATION

1. ELECTRICAL PERFORMANCE SPECIFICATIONS

AM BAND

	UNIT	NOMINAL	LIMIT
Frequency Coverage	(kHz)	510–1650	520–1620
IF	(kHz)	455	—
Antenna Sensitivity for S/N 20 dB at 600, 1000 and 1400 kHz	(μ V/m)	200	500
Terminal Sensitivity for S/N 20 dB at 1000 kHz	(μ V)	10	—
ACA at 6 dB S/N sens. 1000 Hz	(dB)	30	22
S/N Ratio at 5 mV Input	(dB)	45	37
AGC Distortion at 100 mV, 80 % mod.	(%)	4	10
AGC Figure of Merit	(dB)	45	38
IF Rejection Ratio at 600 kHz	(dB)	36	28
Image Rejection Ratio at 1400 kHz	(dB)	45	35
Distortion at 5 mV Input	(%)	1.5	3.5
Tape Out Level at 5 mV Input	(mV)	250	200
Fidelity Bandwidth at 5 mV Input	(Hz)	50–2.7 k	70–2.3 k
Whistle Modulation of 2nd and 3rd Harmonics at 1.5 and 100 mV Input	(%)	5	10
Dial Calibration at 600 kHz	(kHz)	—	± 25
at 1400 kHz	(kHz)	—	± 50

FM BAND

Frequency Coverage (UL & C.S.A.)	(MHz)	*86.5–108.5	*88–108
Frequency Coverage (European & Australian)		**87.5–108.5	**87.5+0.2–108
IF	(MHz)	10.7	—
IHF Sensitivity at 90, 98 and 106 MHz	(μ V)	2.5 (13.2 dBf)	4.2 (17.6 dBf)
S/N Ratio at 98 MHz, 1 mV (59.2 dBf) Input	(dB)	65	55
FM Limiting, –3 dB	(μ V)	3.0	6.0
IF Rejection Ratio at 98 MHz	(dB)	80	70
Image Rejection Ratio at 106 MHz	(dB)	55	45
Capture Ratio	(dB)	2	4
ACA at 50 μ V Input, \pm 400 kHz Range	(dB)	65	45
Audio Distortion at 1 mV Input	(%)	0.5	1.0
Dial Calibration Accuracy at 90 MHz	(kHz)	± 150	± 350
at 106 MHz	(kHz)	± 150	± 350
AFC Holding Range at 1 mV Input	(kHz)	± 150	± 350
AM Suppression at 1 mV Input	(dB)	52	45
Maximum Signal Handling Capacity	(mV)	200	100
Tape Out Level at 1 mV Input	(mV)	750	750 \pm 2.5 dB
Frequency Response at 25 μ sec, 10 kHz	(dB)	5.18	5.18 \pm $\frac{1}{3}$ dB

All sets must meet the requirement of the FCC.

Frequency Response must meet 75 μ sec for UL and C.S.A. models, and 50 μ sec for European and Australian models.

**European models must not be able to tune below 87.5 MHz.

FM MPX SECTION

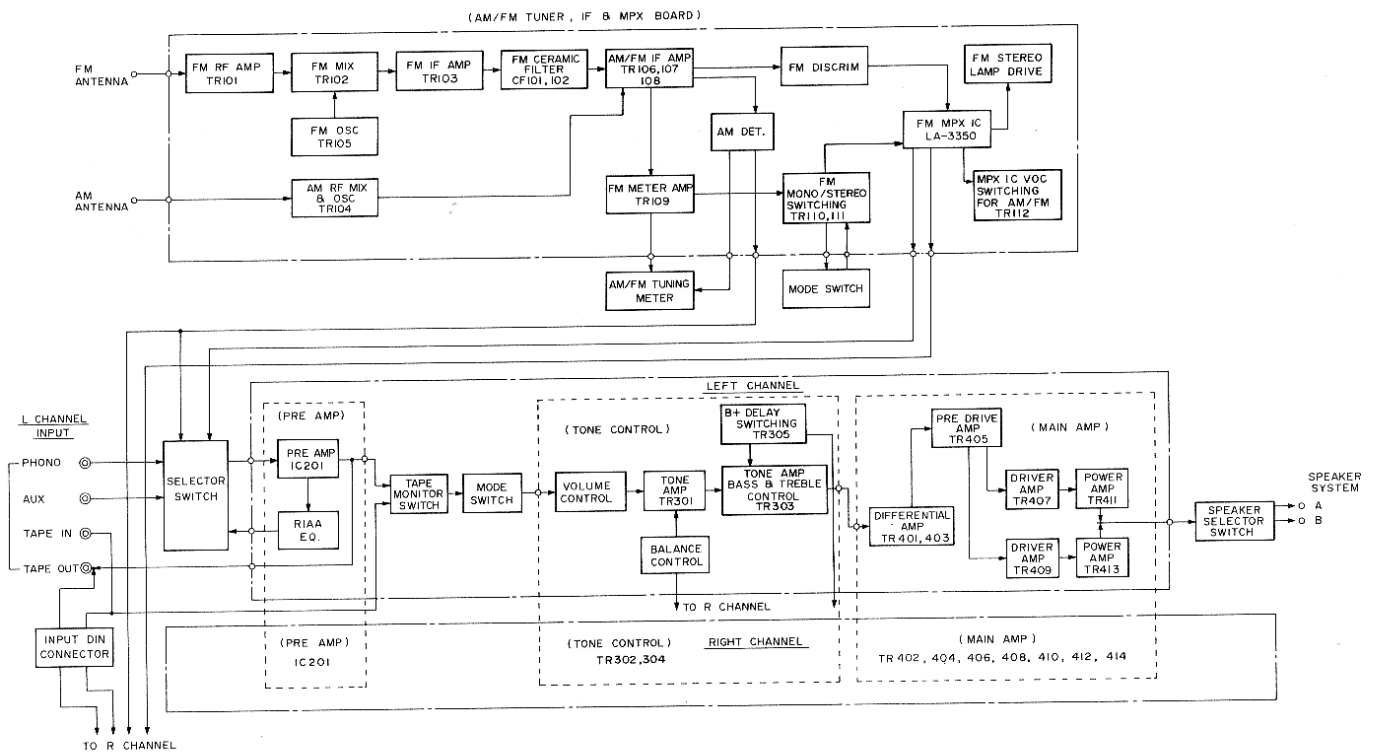
Stereo Indicator Sensitivity	(μ V)	6	12
Stereo Separation at 1 mV Input at 100 Hz	(dB)	33	25
at 1 kHz	(dB)	38	30
at 10 kHz	(dB)	30	22
Stereo Distortion at 1 mV Input, 1 kHz	(%)	0.8	1.8
Sub-carrier Rejection Ratio	(dB)	55	40
SCA Rejection Ratio	(dB)	55	40

AUDIO SECTION

	UNIT	NOMINAL	LIMIT
Input Impedance at PHONO Mag.	(Kohm)	50	—
at AUX	(Kohm)	100	—
Output Power at 0.8 % THD, 1 kHz, Both Channels Driven	(W)	22	18
Output Power at less than 0.8 % THD, from 20 Hz to 20 kHz			
Both Channels Driven, 8 ohm Load	(W)	18	16
Sensitivity for Rated Power (16 W)			
PHONO Mag.	(mV)	2.5	3.5
AUX	(mV)	150	200
Tape In	(mV)	250	300
Frequency Response at AUX, ± 2 dB	(Hz)	15–25 k	20–20 k
Bass Action at 100 Hz	(dB)	± 10	$\pm 10 \pm 2.5$
Treble Action at 10 kHz	(dB)	± 10	$\pm 10 \pm 2.5$
Hum and Noise at Volume max. (AUX)	(mV)	30	60
Hum and Noise at Volume min.	(mV)	0.8	2.5
S/N Ratio at PHONO Mag. (input shorted)	(dB)	65	55
at AUX	(dB)	68	58
Bass Compensation at 100 Hz (Volume at -30 dB position)	(dB)	+ 9	+ 9 ± 2
Treble Compensation at 10 kHz (Volume at -30 dB position)	(dB)	+ 4	+ 4 ± 2
Tape Out Level			
at RCA Jack PHONO Mag. (5 mV Input)	(mV)	250	200
AUX (200 mV Input)	(mV)	250	200
at DIN Jack (47 Kohm terminated)			
AM : 5 mV Input, 400 Hz 30 % mod.	(mV)	15	15 ± 3 dB
FM : 1 mV Input, 400 Hz 22.5 kHz dev.	(mV)	15	15 ± 3 dB
PHONO Mag. Equalizer Response at 100 Hz	(dB)	+ 13	+ 13 ± 2 dB
at 10 kHz	(dB)	- 13	- 13 ± 2 dB
PHONO Mag. Overload at 1 kHz	(mV)	110	80

NOTE: Nominal Specs represent the design specs; all units should be able to approximate these – some will exceed and some may drop slightly below these specs.
Limit Specs represent the absolute worst condition which still might be considered acceptable; in no case should a unit perform to less than within any Limit Specs.

3. BLOCK DIAGRAM



9. THE VALUE SELECTED PARTS

The values of some parts are selected at the factory for optimum operation. If the circuitry does not operate properly, you can change these values.

C101 – This is to control abnormal FM oscillator. Use larger value to decrease abnormal oscillator.

R128 – This is to control Local Oscillation Voltage.

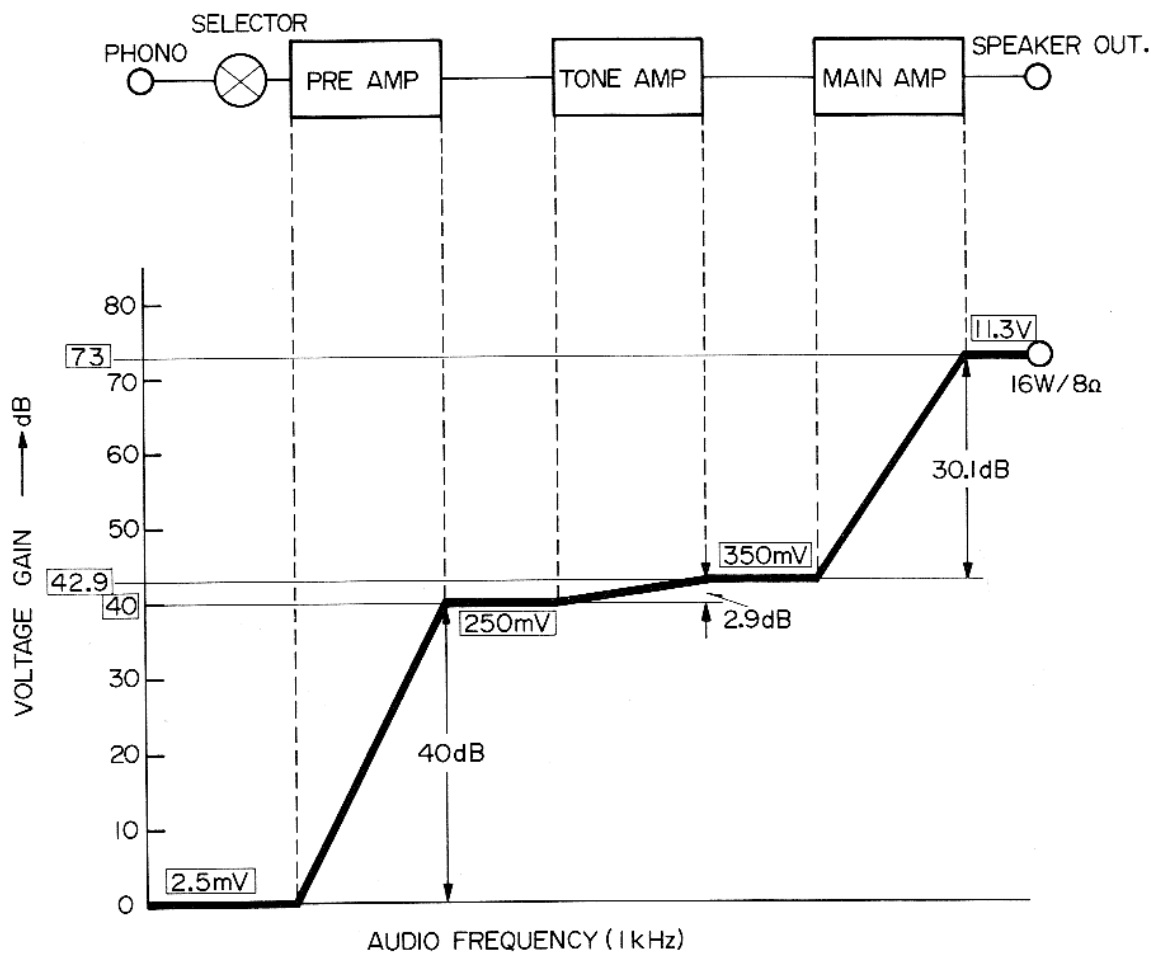
The larger the value, the lower the Local Oscillation voltage.

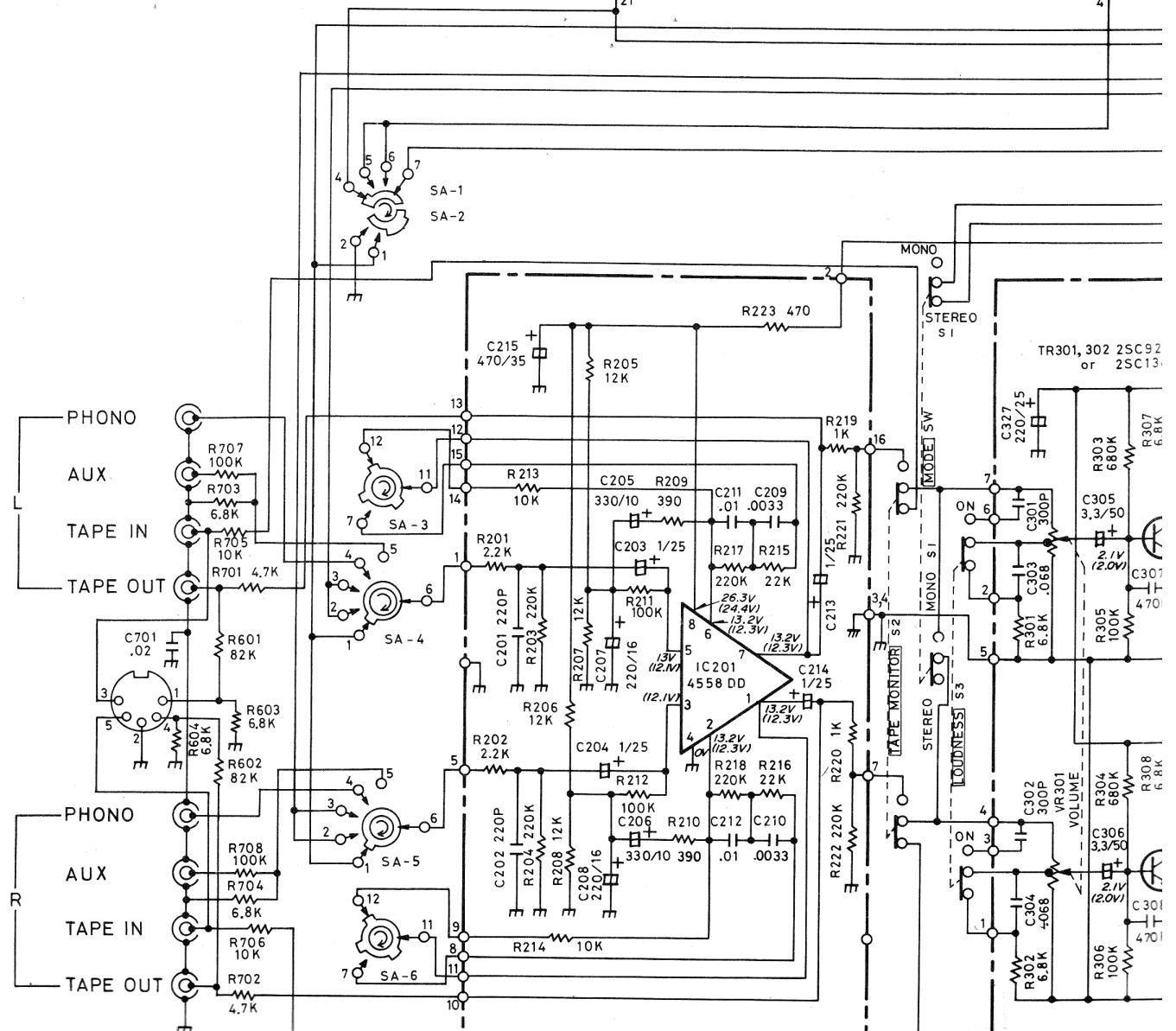
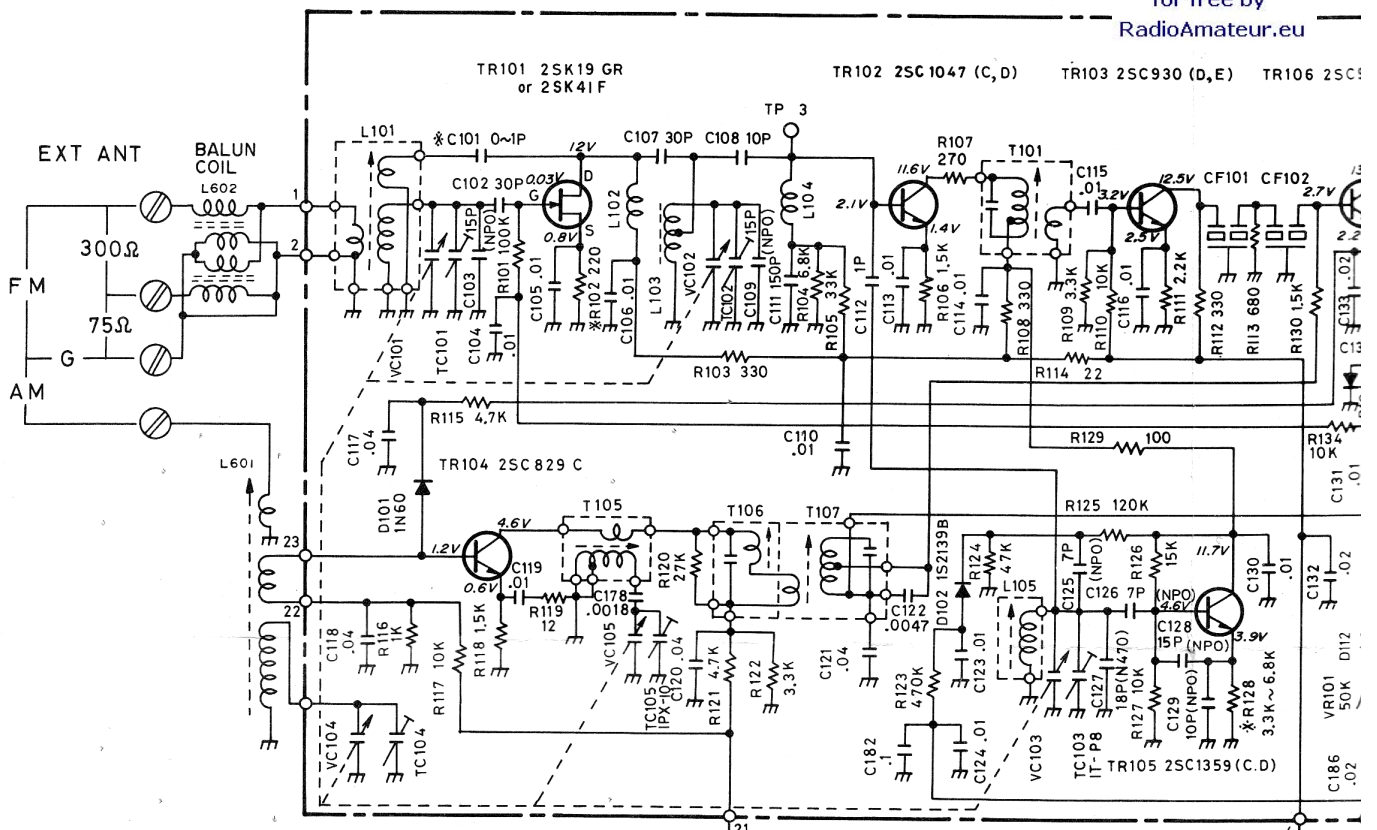
(Set for about 70 mV measured at Base of TR102 with AC RF V.T.V.M.)

R158 – This is to control AM IF output level. Use larger value to decrease AM IF output level.

R178 – This is to control FM Stereo Beacon sensitivity. Use larger value to decrease Beacon sensitivity.

10. LEVEL DIAGRAM

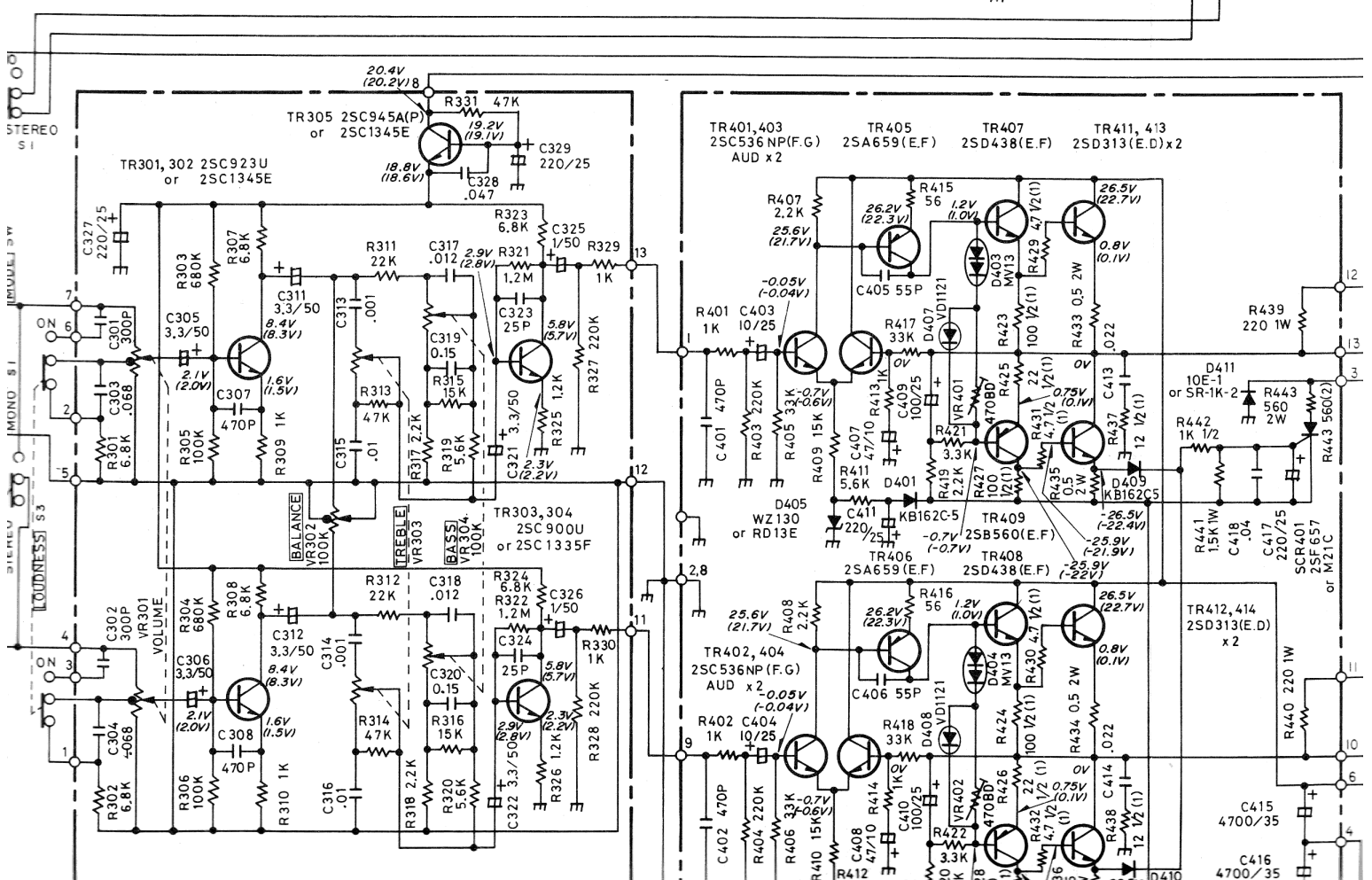
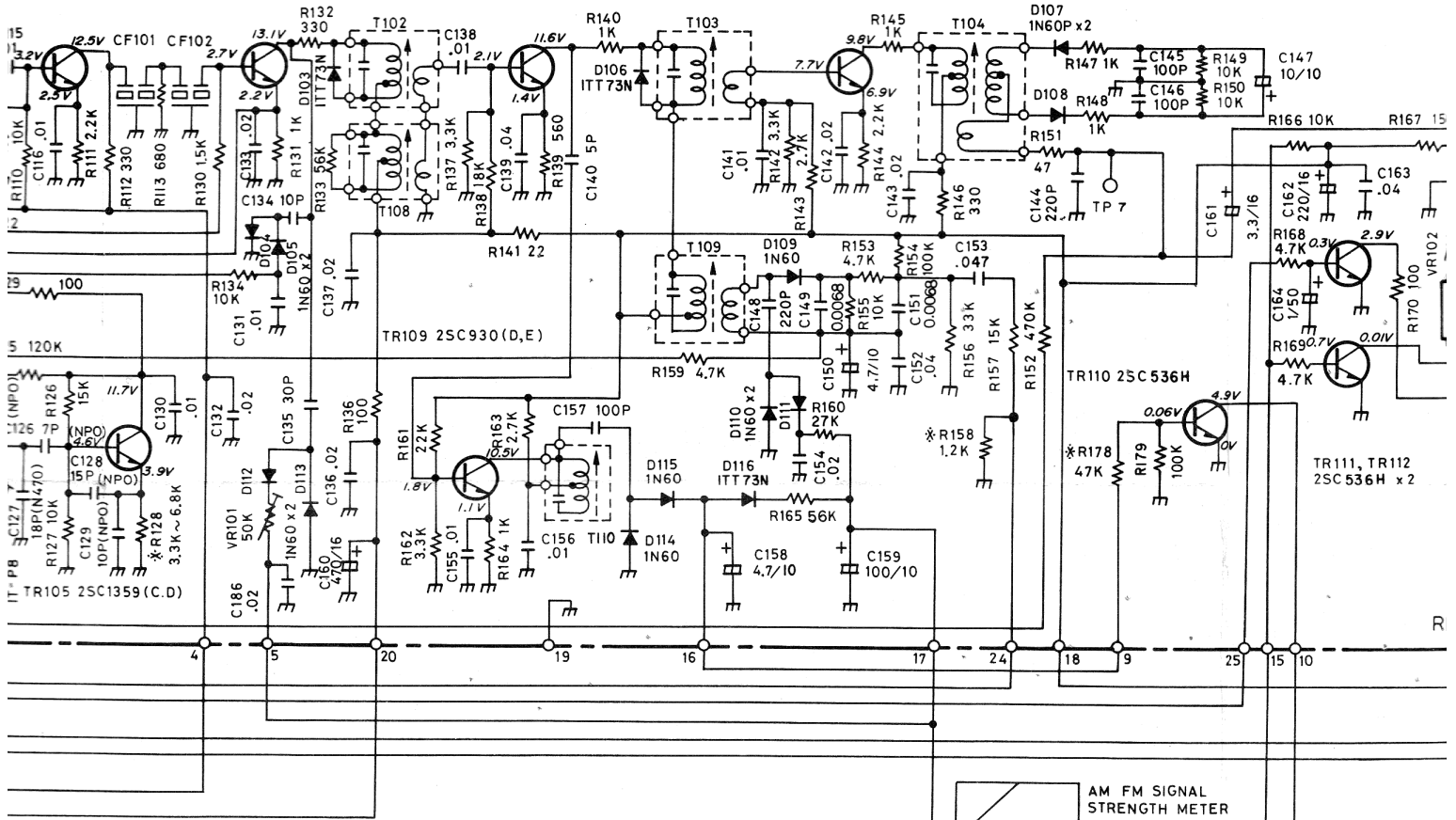


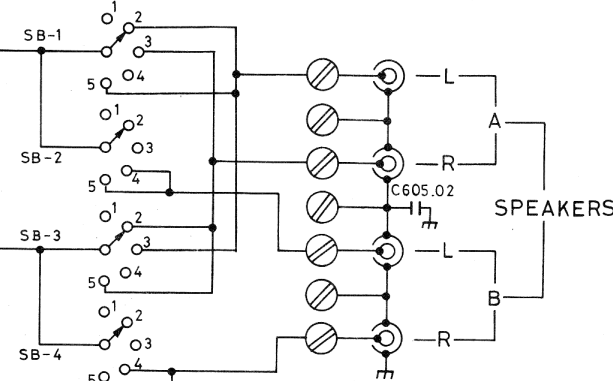
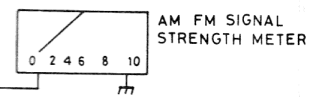
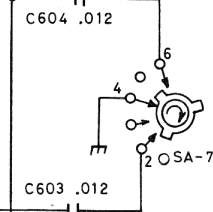
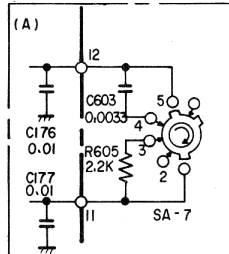
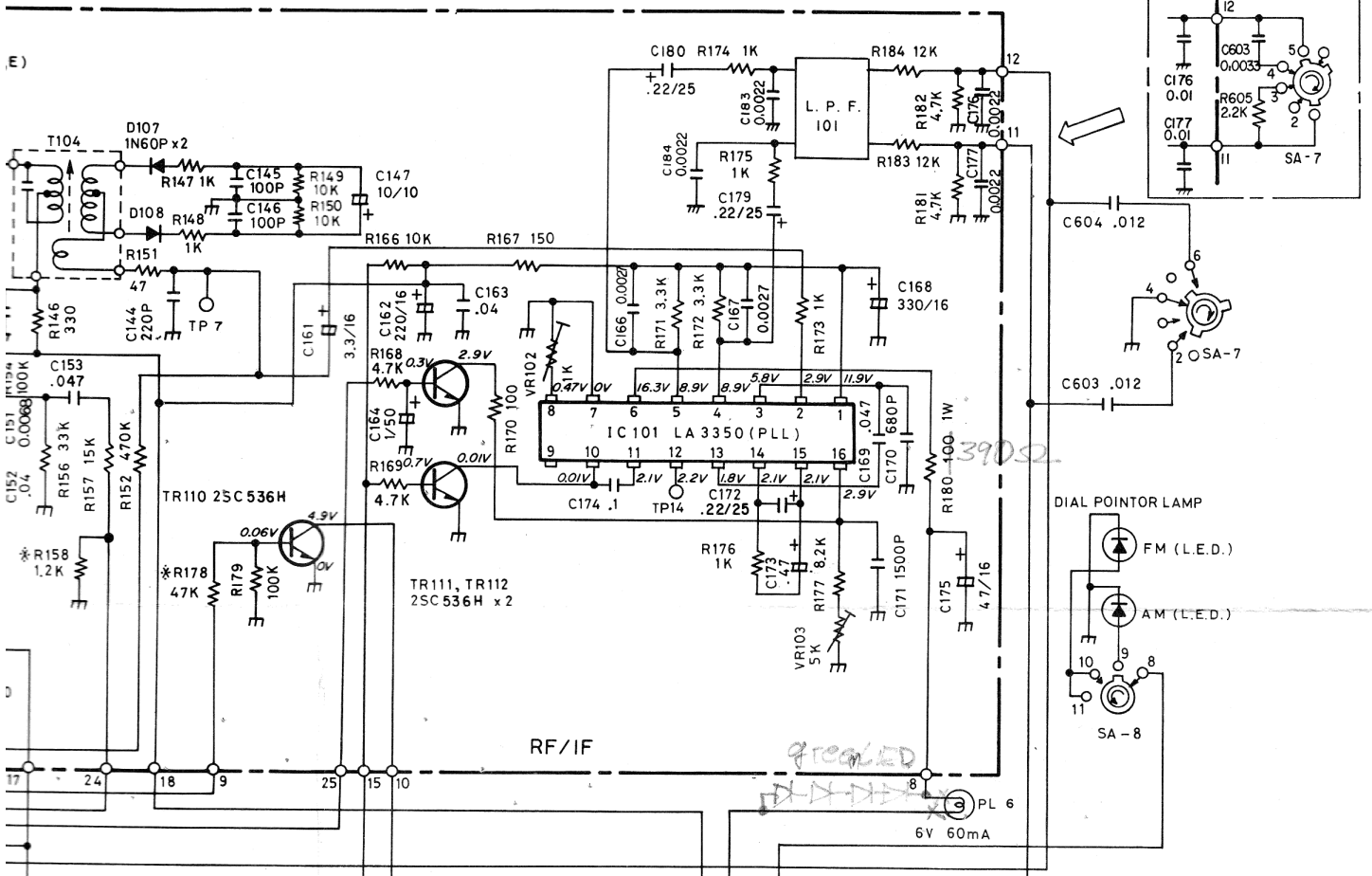


03 2SC930 (D,E) TR106 2SC930 (D,E)

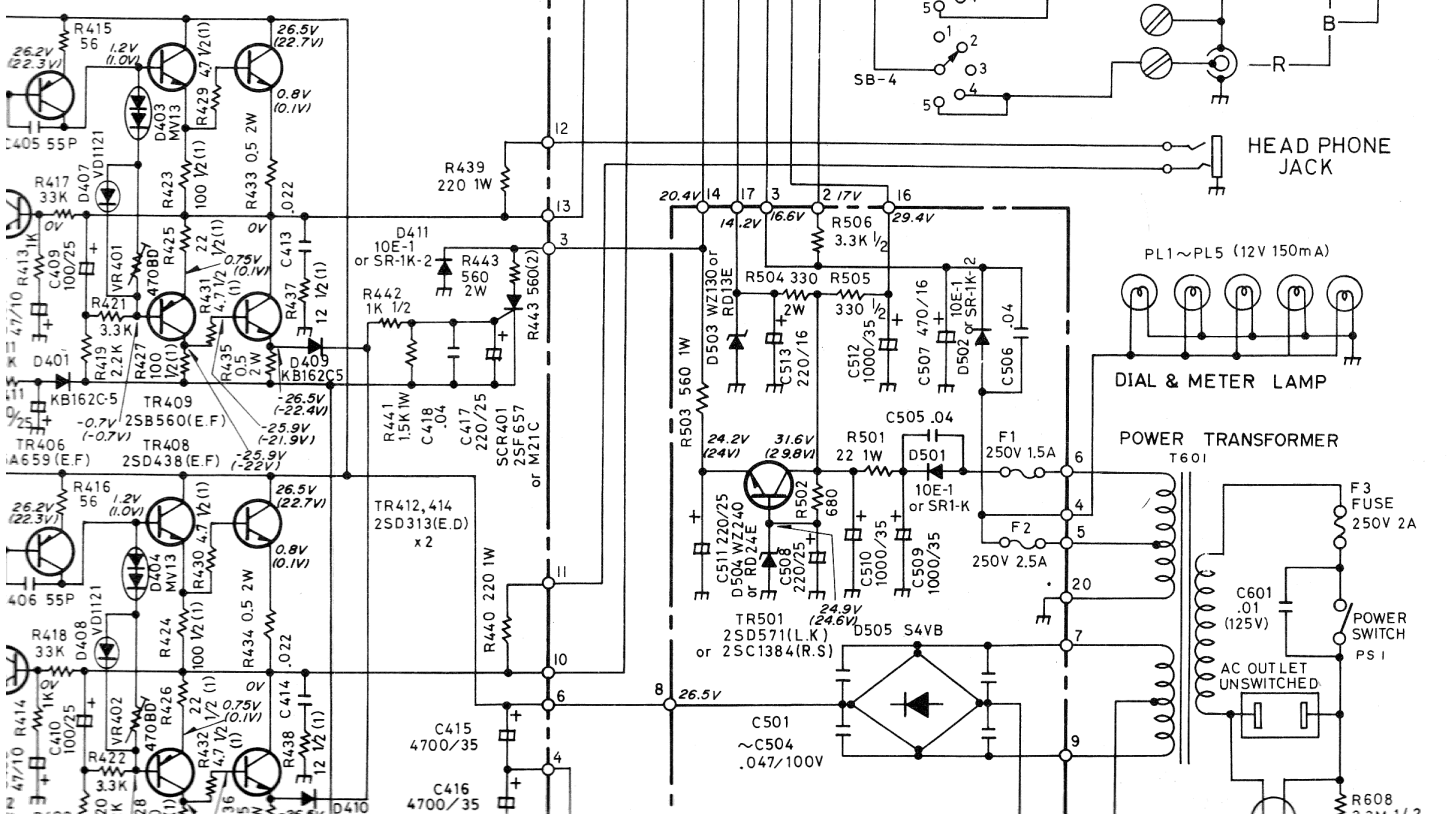
TR107 2SC930 (D,E)

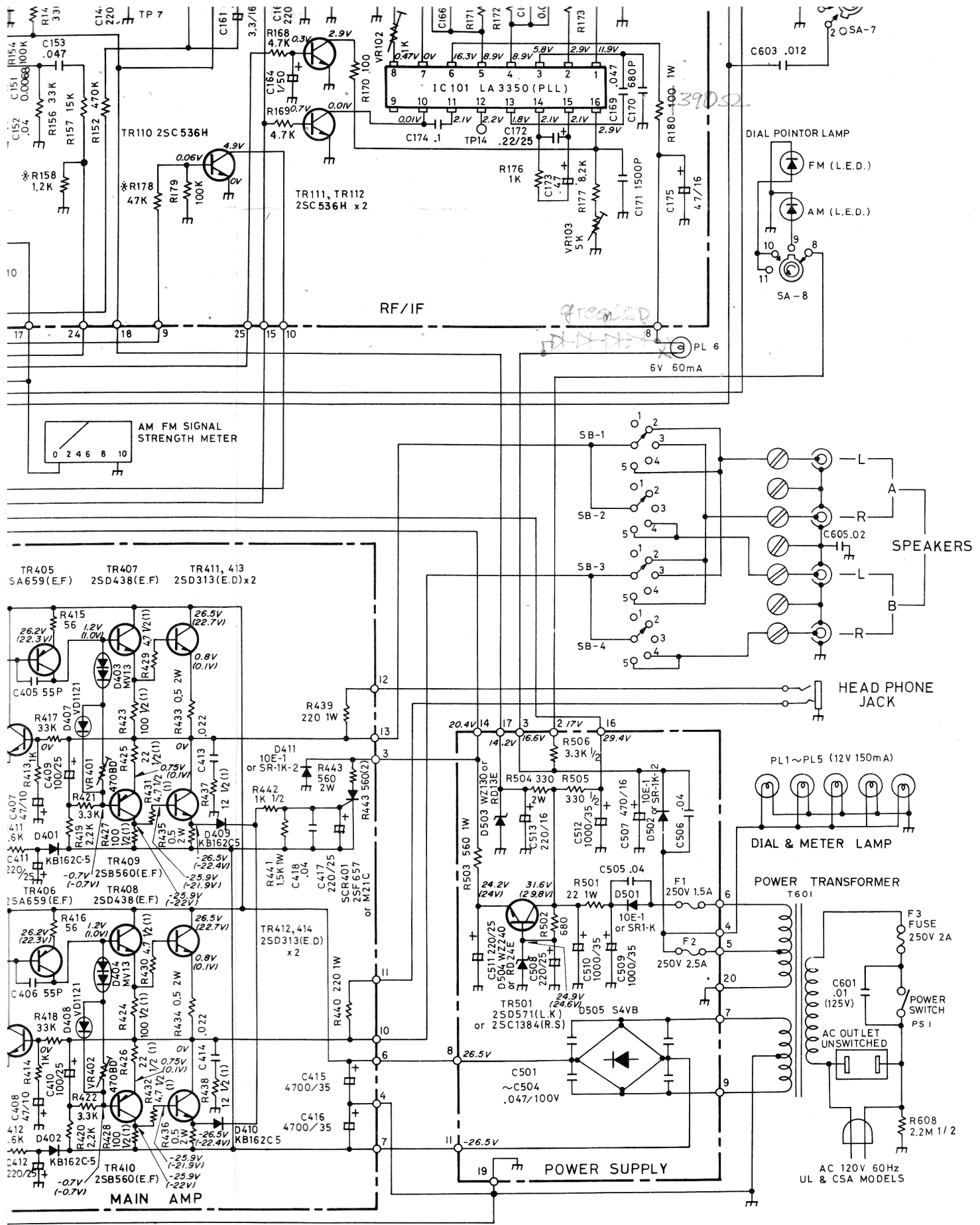
TR108 2SC930 (D,E)

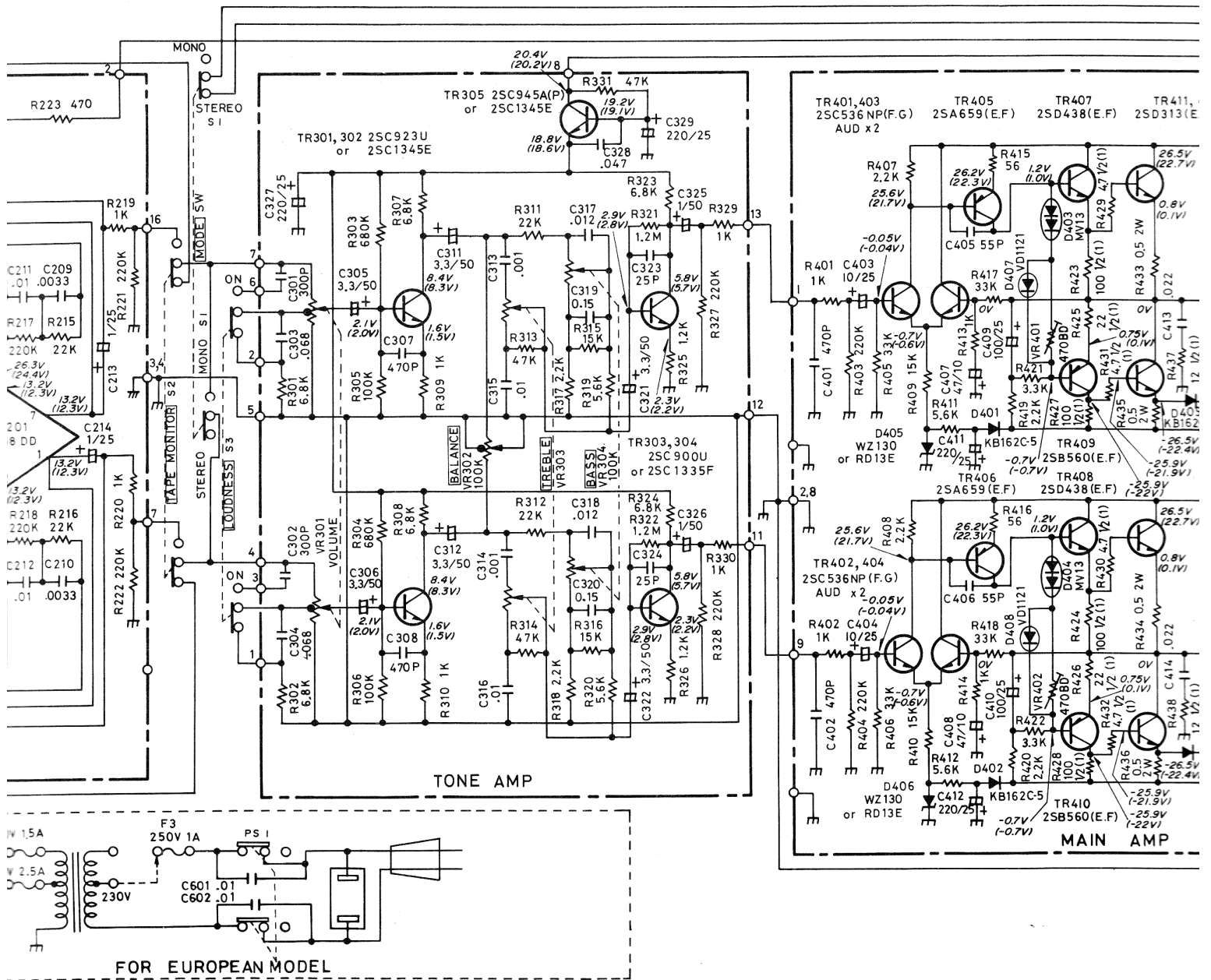
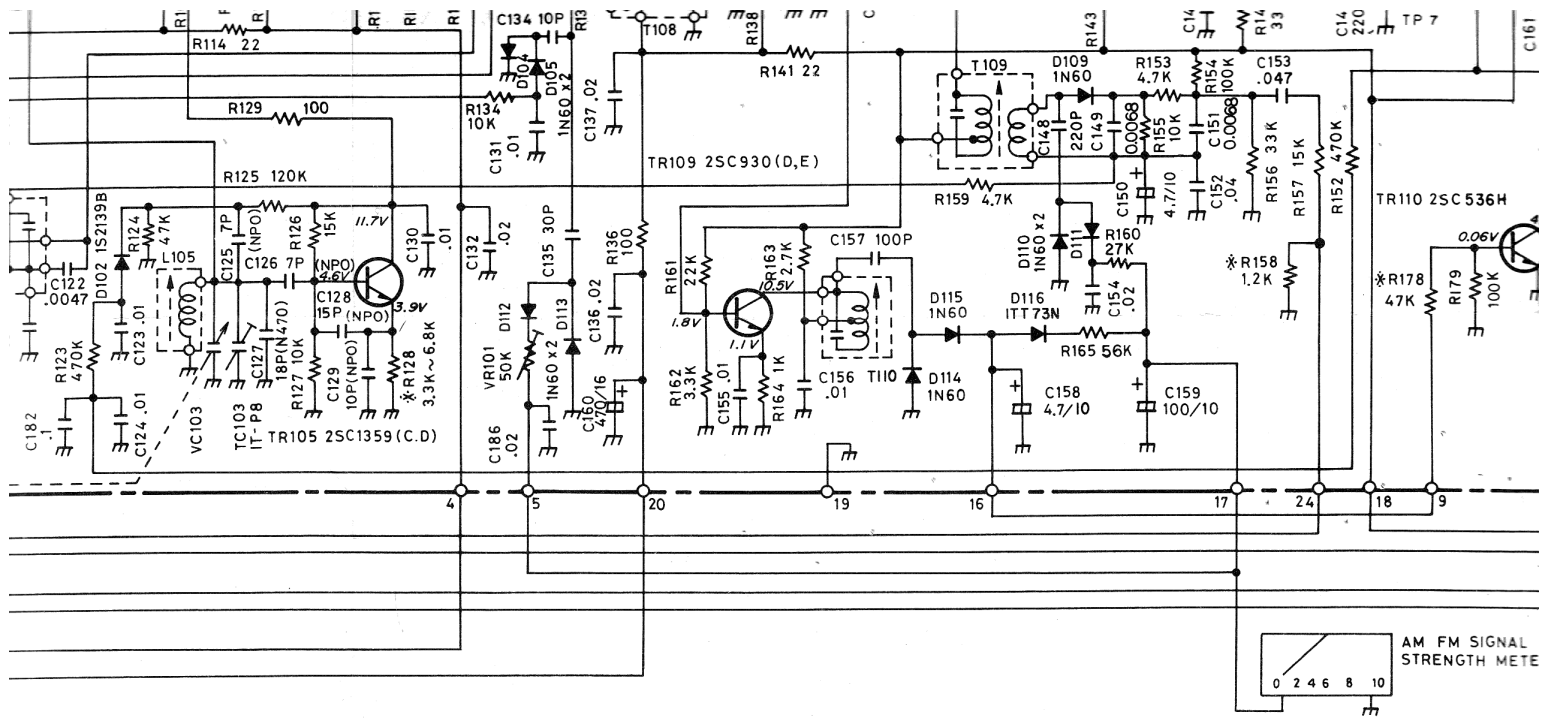




TR405 A659(E.F) TR407 2SD438(E.F) TR411, 413 2SD313(E.D)x2

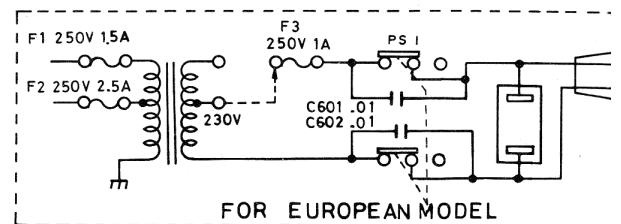
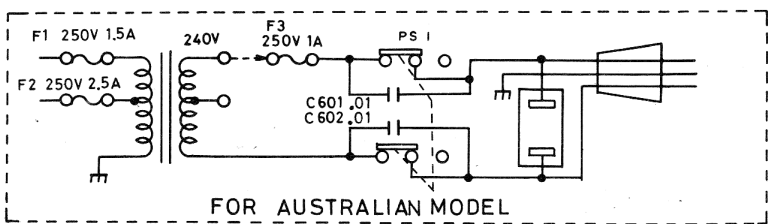
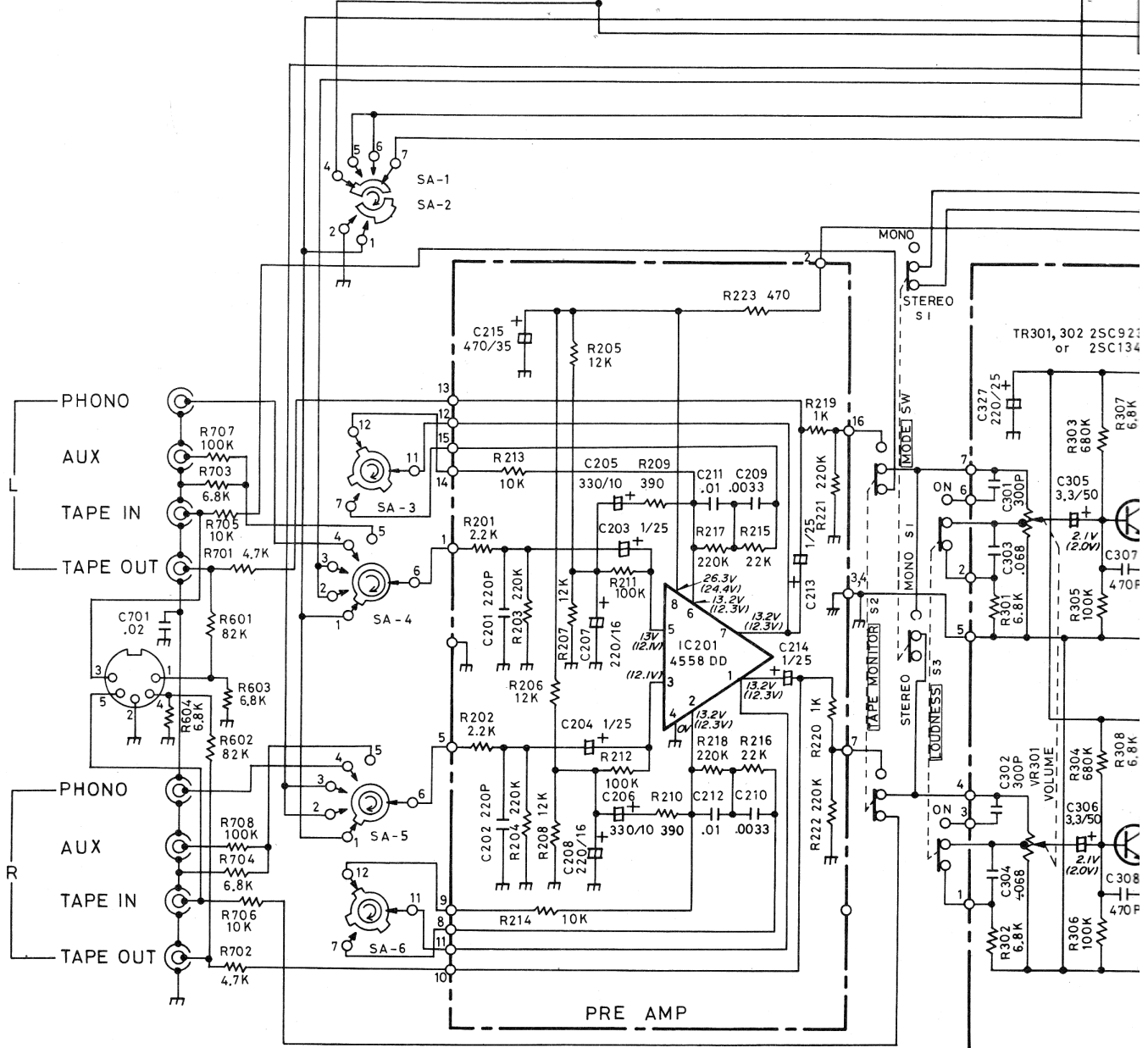
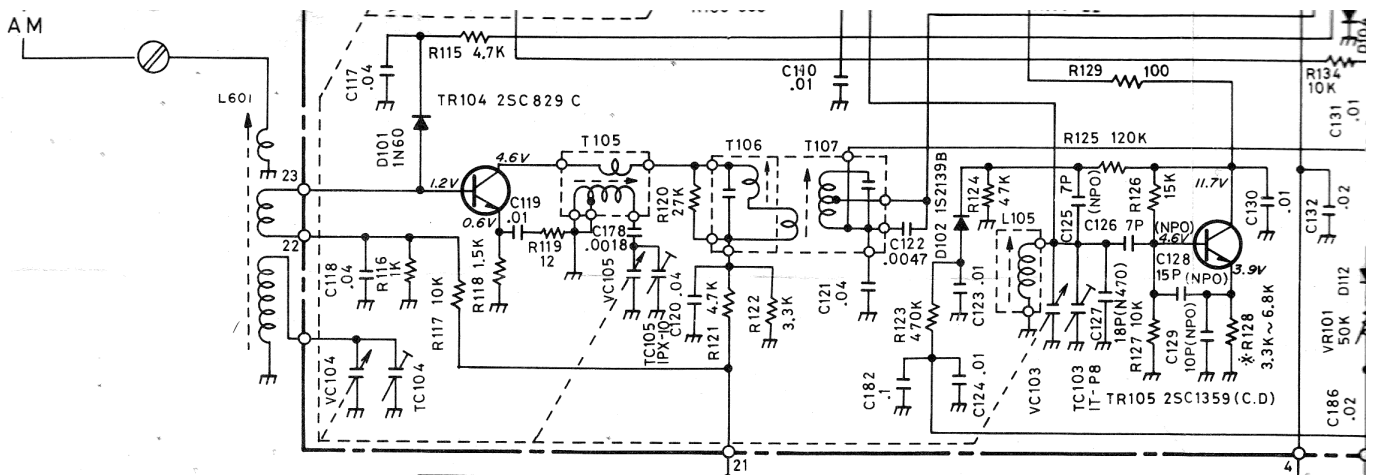






HONO, 5 - AUX
ERSE, 4 - B, 5 - A + B
PHM, M = 10⁶ OHM)

- (6) () VALUES IN MAIN AMP STAGE ARE USED FOR C.S.A. MODELS ONLY
- (7) ALL VOLTAGES ARE MEASURED TO CHASSIS GROUND WITH A VOLTMETER (10 KΩ/V).
- (8) (A) 50 μS DE-EMPHASIS CIRCUIT IS USED IN FM IF STAGE FOR EUROPEAN AND AUSTRALIAN MODELS.

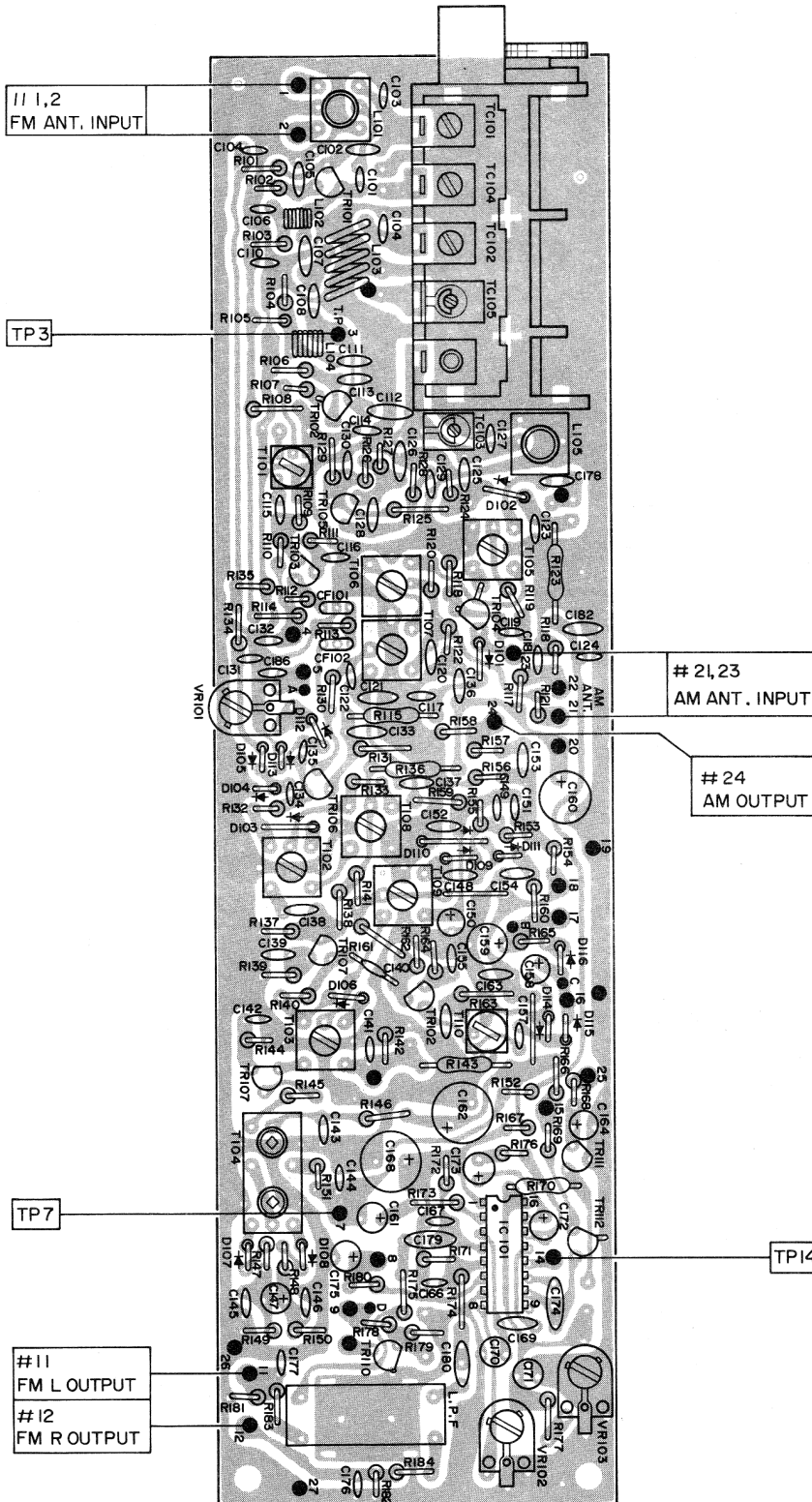


4A8

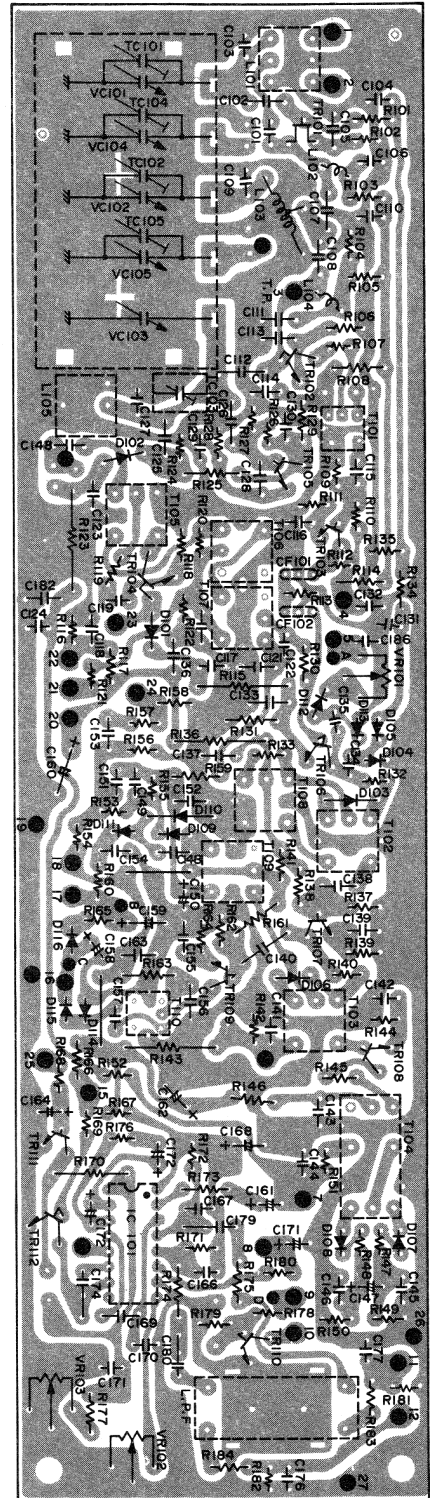
- NOTE: (1) SA-1~SA-8 FUNCTION SWITCH 1 - AM, 2 - FM, 3** - FM 25 μ S, 4 - PHONO, 5 - AUX
 (2) SB-1~SB-4 SPEAKER SELECTOR SWITCH 1 - OUT, 2 - A, 3 - A REVERSE, 4 - B, 5 - A + B
 (3) ALL RESISTANCE VALUES ARE INDICATED IN "OHM" (K = 10^3 OHM, M = 10^6 OHM)
 (4) ALL CAPACITANCE VALUES ARE INDICATED IN " μ F" (P = 10^{-6} μ F)
 (5) * VALUE MAY VARY FROM UNIT TO UNIT FOR OPTIMUM PERFORMANCE
 (6) () VALUES IN MAI
 (7) ALL VOLTAGES ARI
 (8) (A) 50 μ S DE-EMPHA
 (9) VOLTAGES ARE ME

12.RF/IF P.C.B.(TOP & BOTTOM VIEWS)

TOP VIEW

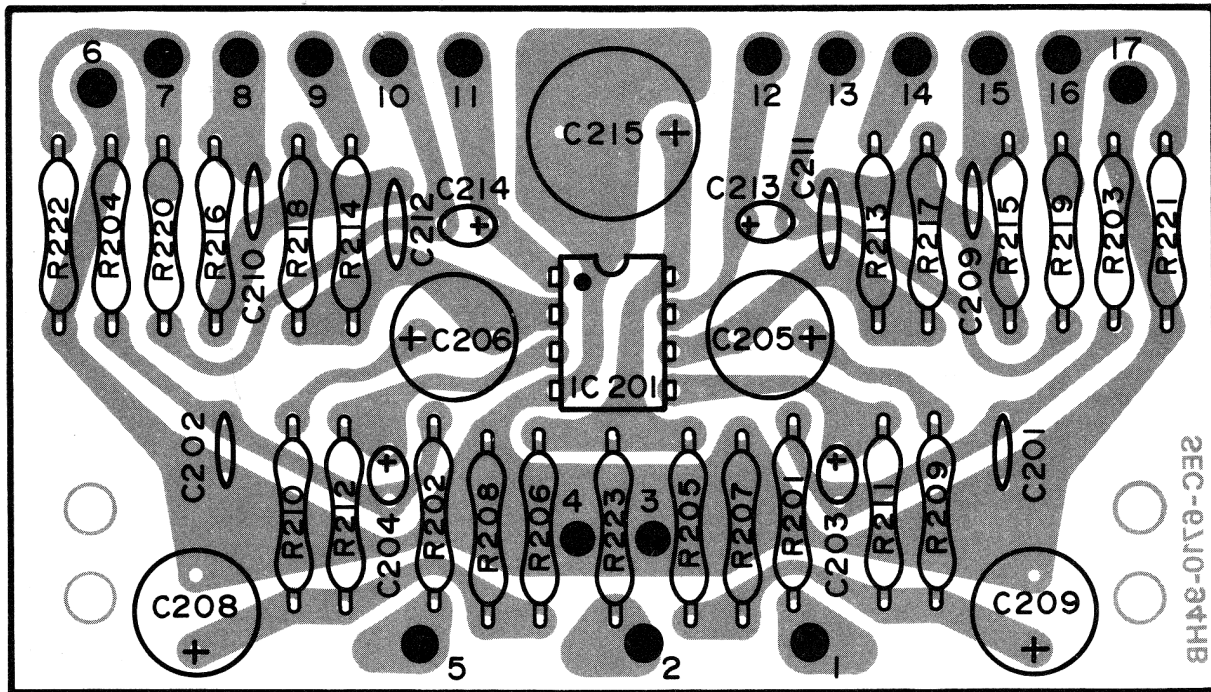


BOTTOM VIEW

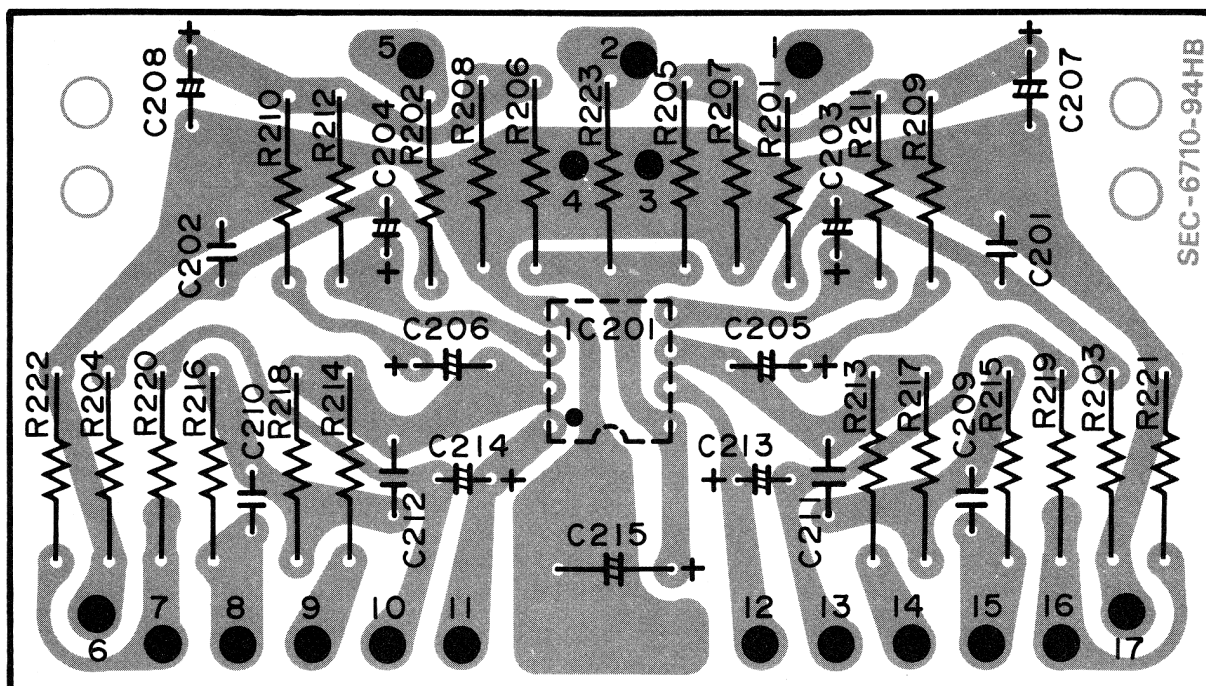


13. PRE AMP P.C.B. (TOP & BOTTO VIEWS)

TOP VIEW

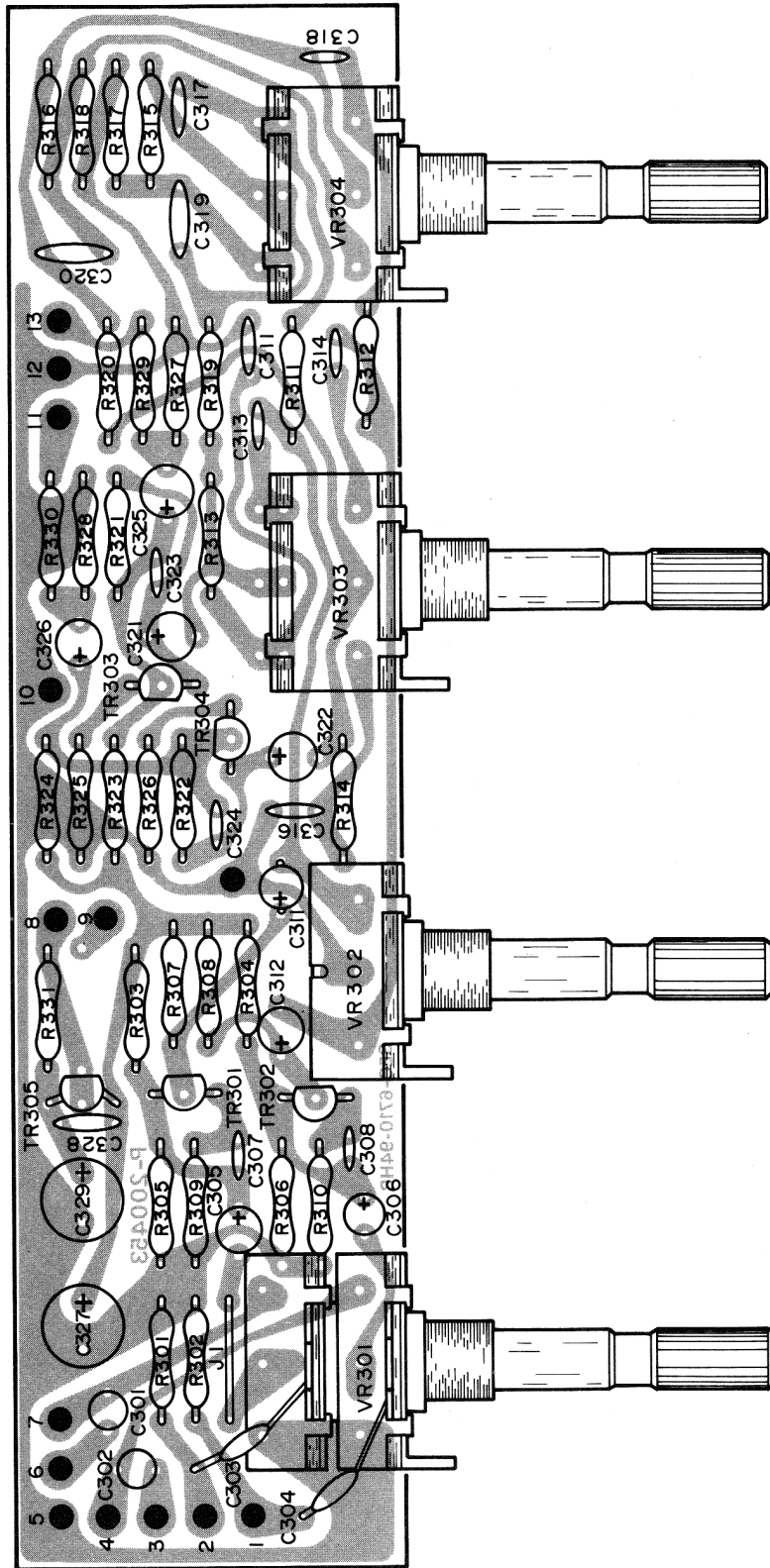


BOTTOM VIEW

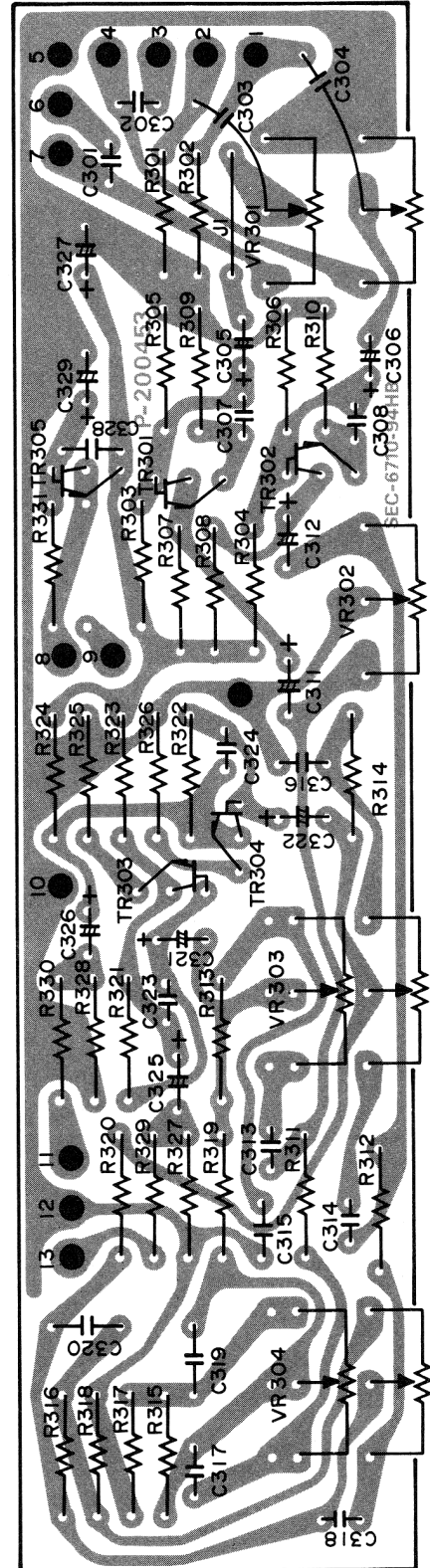


14. TONE CONTROL P.C.B. (TOP & BOTTOM VIEWS)

TOP VIEW

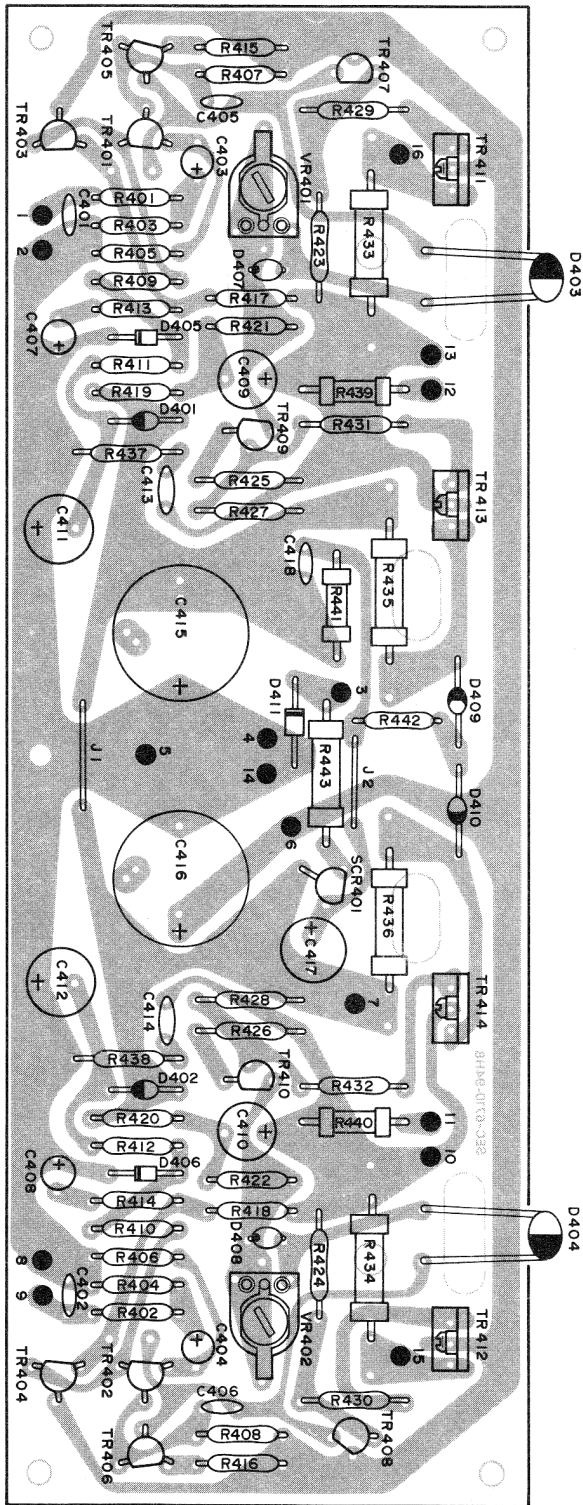


BOTTOM VIEW

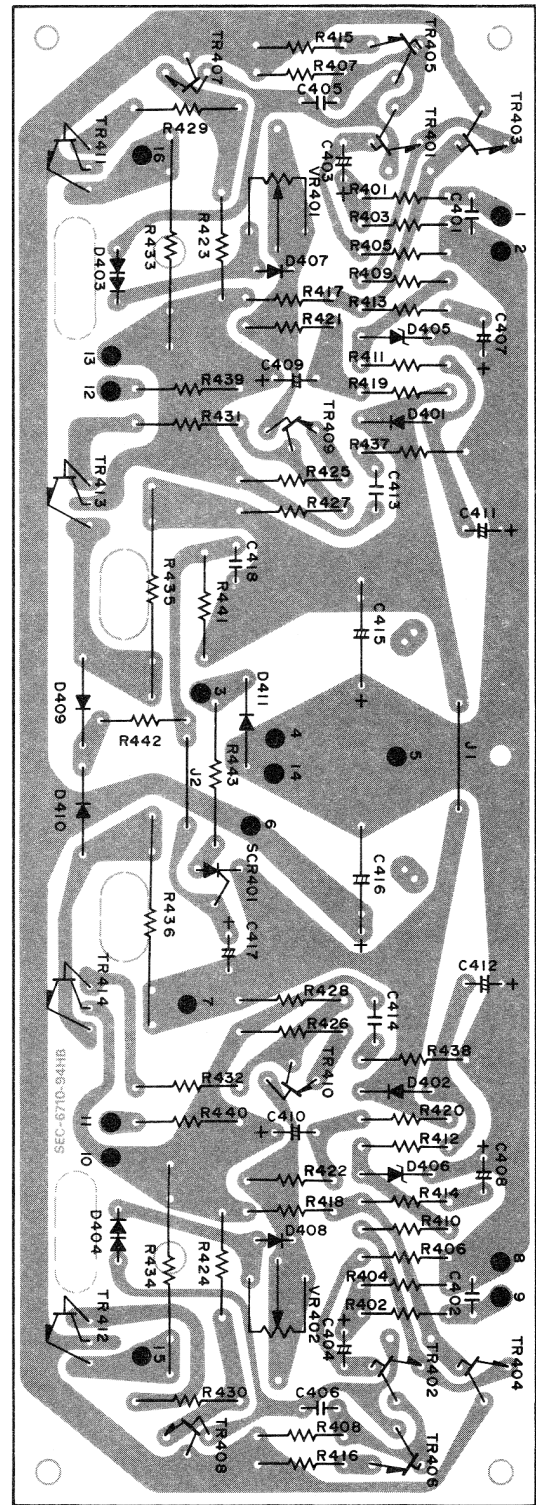


15.MAIN AMP P.C.B.(TOP & BOTTOM VIEWS)

TOP VIEW

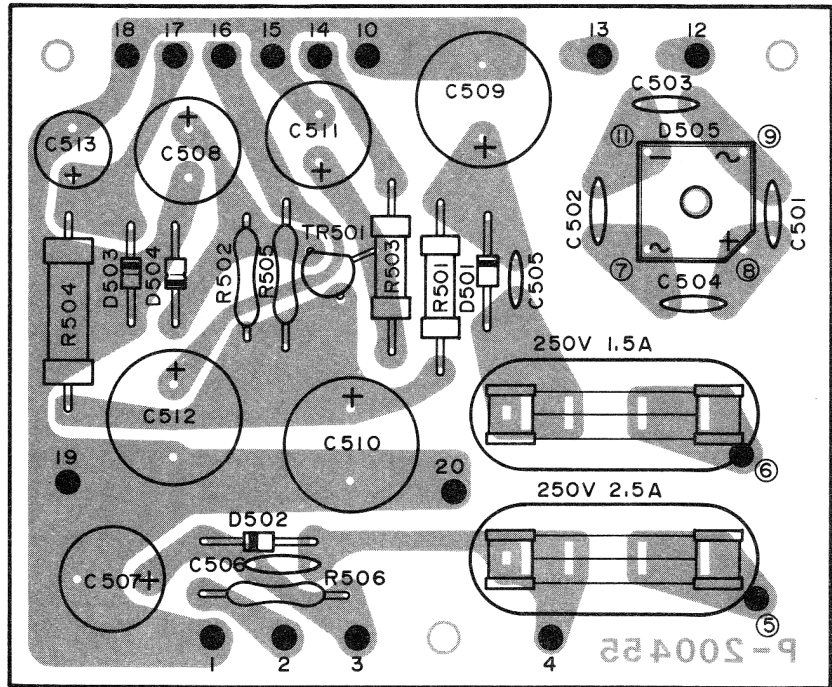


BOTTOM VIEW

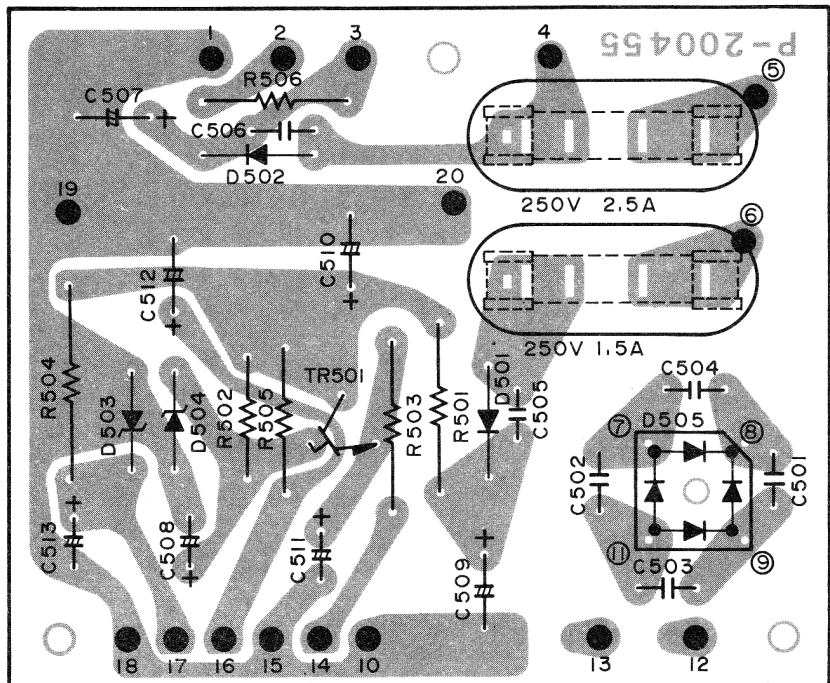


16. POWER SUPPLY P.C.B. (TOP & BOTTOM VIEWS)

TOP VIEW

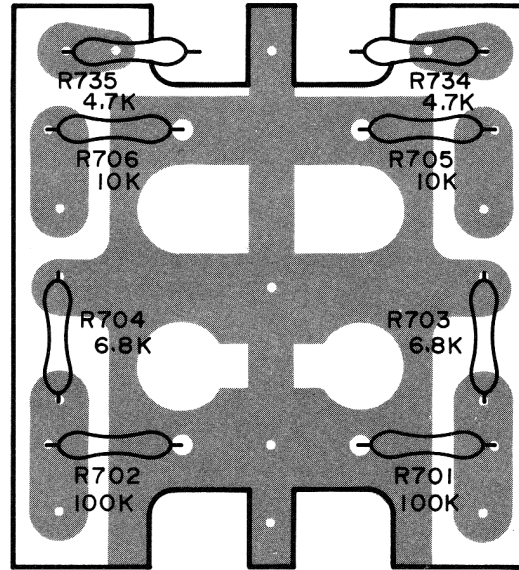


BOTTOM VIEW



17.JACK P.C.B.(TOB & BOTTOM VIEWS)

TOP VIEW



BOTTOM VIEW

