

ERIC NELSON

**The Harman-Kardon**  
**Model 330A + 330B**

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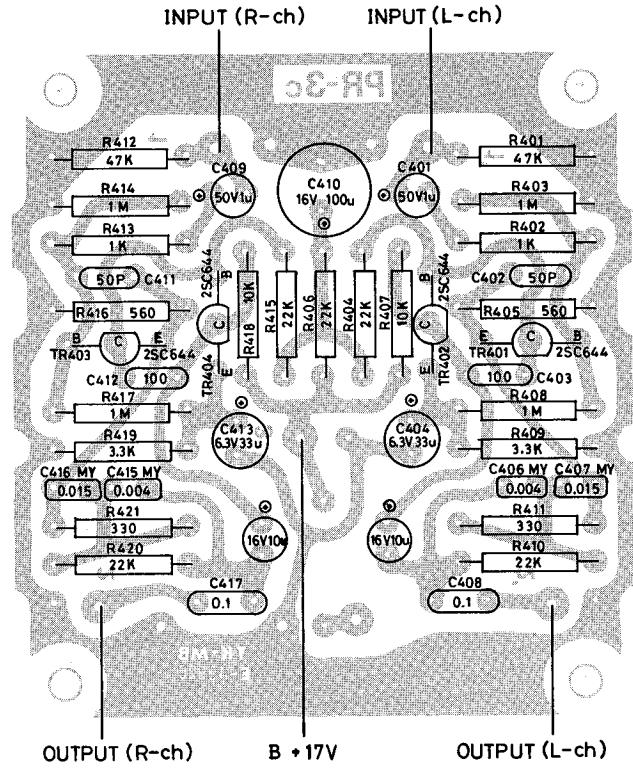
ROLAND W/ADDENDUM

**AM/FM Stereo FM**  
**Solid State Receiver**

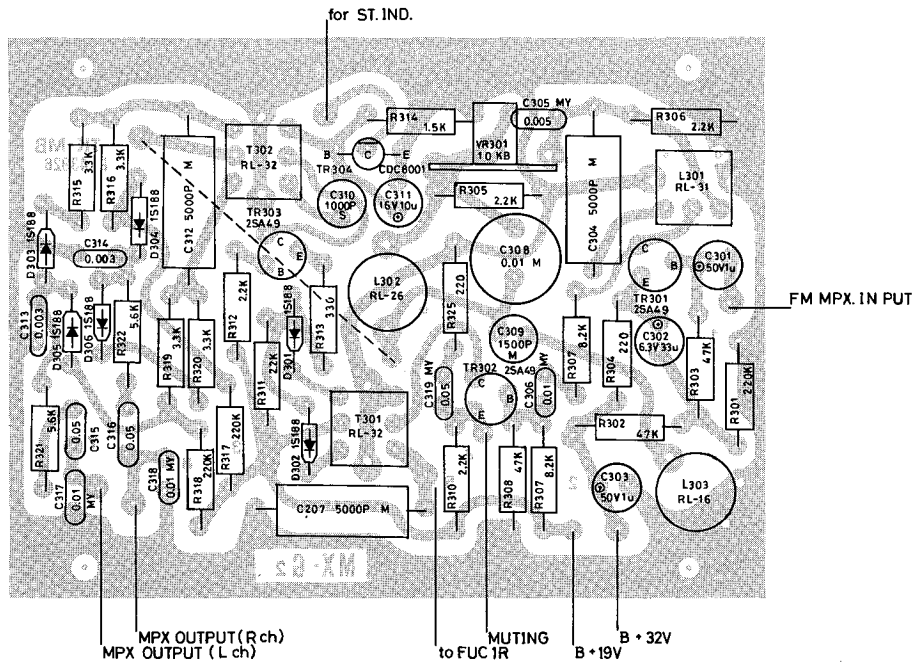
**Technical Manual**

**harman/kardon**

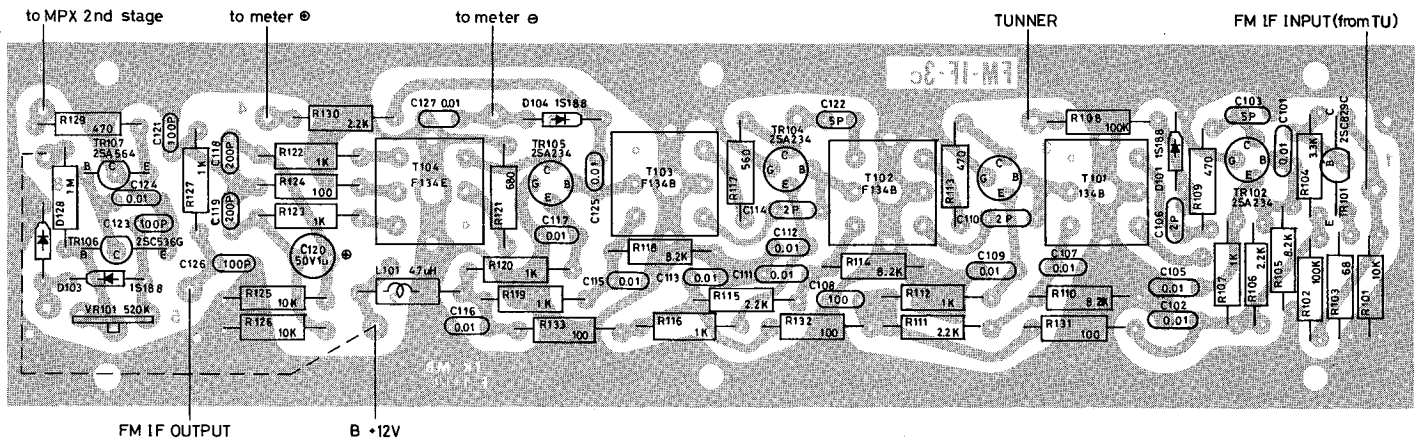
# PREAMP BOARD



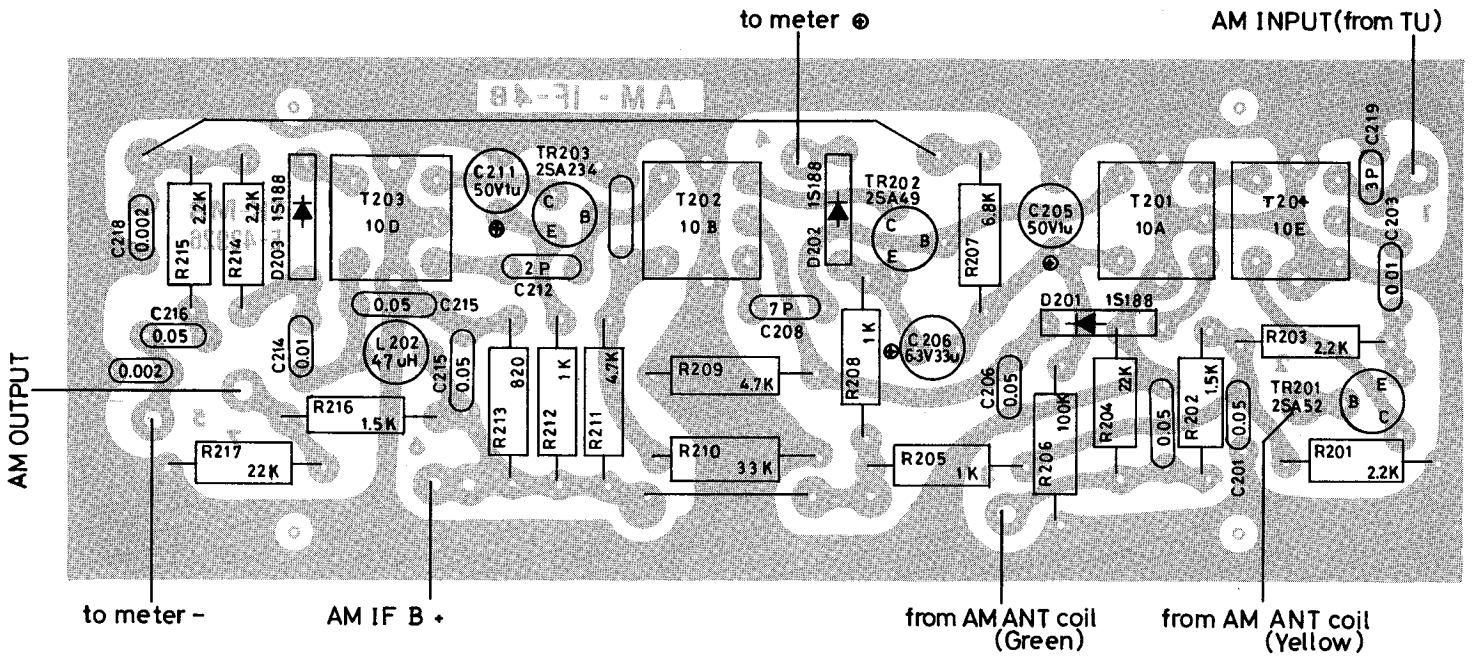
# MULTIPLEX BOARD



# FM IF BOARD



# AM IF BOARD



## FM ALIGNMENT

### FM ALIGNMENT

INSTRUMENTS: FM Signal Generator, V.T.V.M. Oscilloscope, & Distortion meter  
Set Selector Switch to " FM "

STEP	Signal Generator		Tuning Dial Setting	OUTPUT INDICATOR Connected to	Adjust	Adjust for
	Connected to	Freq.				
1	Junction of C919, C920 ( IF Input )	10.7 MHz ( unmodulated )	Quiet point on band	V.T.V.M. across R122	T104 Bottom ( Pri )	Maximum
2				( Set to Center Zero ) Junction of R127, C126 ( IF OUT PUT )		
3	Repeat steps 1 and 2 as necessary to obtain a balanced " S " curve					
4	FM Antenna terminal ( Signal strength must be kept -3db limiter saturation )	98 MHz ( 400Hz 100% MOD. )	Tune for maximum output	Oscilloscope Tape out	T103, T102, T101 & T2 ( FRONT END ) Top & Bottom	Maximum
5				Tape out	T104 Top & Bottom fine adjust	Minimum Distortion
6		88 MHz	88 MHz	V.T.V.M. Tape out	L2, L1, & T1 ( FRONT END )	Maximum
7		106 MHz	106 MHz	V.T.V.M. Tape out	TR3, TR2, & TR1 ( FRONT END )	
8	Repeat steps 6 & 7 until no further improvement is possible.					

## MPX ALIGNMENT

### MPX ALIGNMENT

INSTRUMENTS: AUDIO GENERATOR, FM STEREO GENERATOR & OSCILLOSCOPE  
SET SELECTOR SWITCH TO " FM STEREO " TUNING DIAL SETTING: STEREO SIGNAL GENERATOR FREQUENCY.

STEP	19 KHz PILOT LEVEL	Signal Generator Freq. Set to	Output Indicator Connected to	Adjust	Adjust for	
1	/	Audio Generator 67 KHz	Oscilloscope TP-1	L 302	Minimum	
2		72 KHz		L 303		
3	1 - 2%	Stereo Generator 19 KHz	TP-2	L 301 T 301, T 302	Maximum	
4	10%	1,000 Hz Composite L chan	L chan T. OUF	L 301,	Maximum and cleanest sine wave on scope	
5	10%	Composite 1,000 Hz, L chan	Tape Output R chan	VR 301	Minimum	
6			Tape Output L chan			
7		Composite 1,000 Hz R chan				
8	4 - 6%	1,000 Hz Composite L or R chan	check the stereo beacon lamp just comes on			
9	Repeat steps 7 and 8 until no further improvement is possible.					

## AM ALIGNMENT

### AM ALIGNMENT

INSTRUMENTS: AM Signal Generator. VTVM  
Set Selector Switch to " AM "

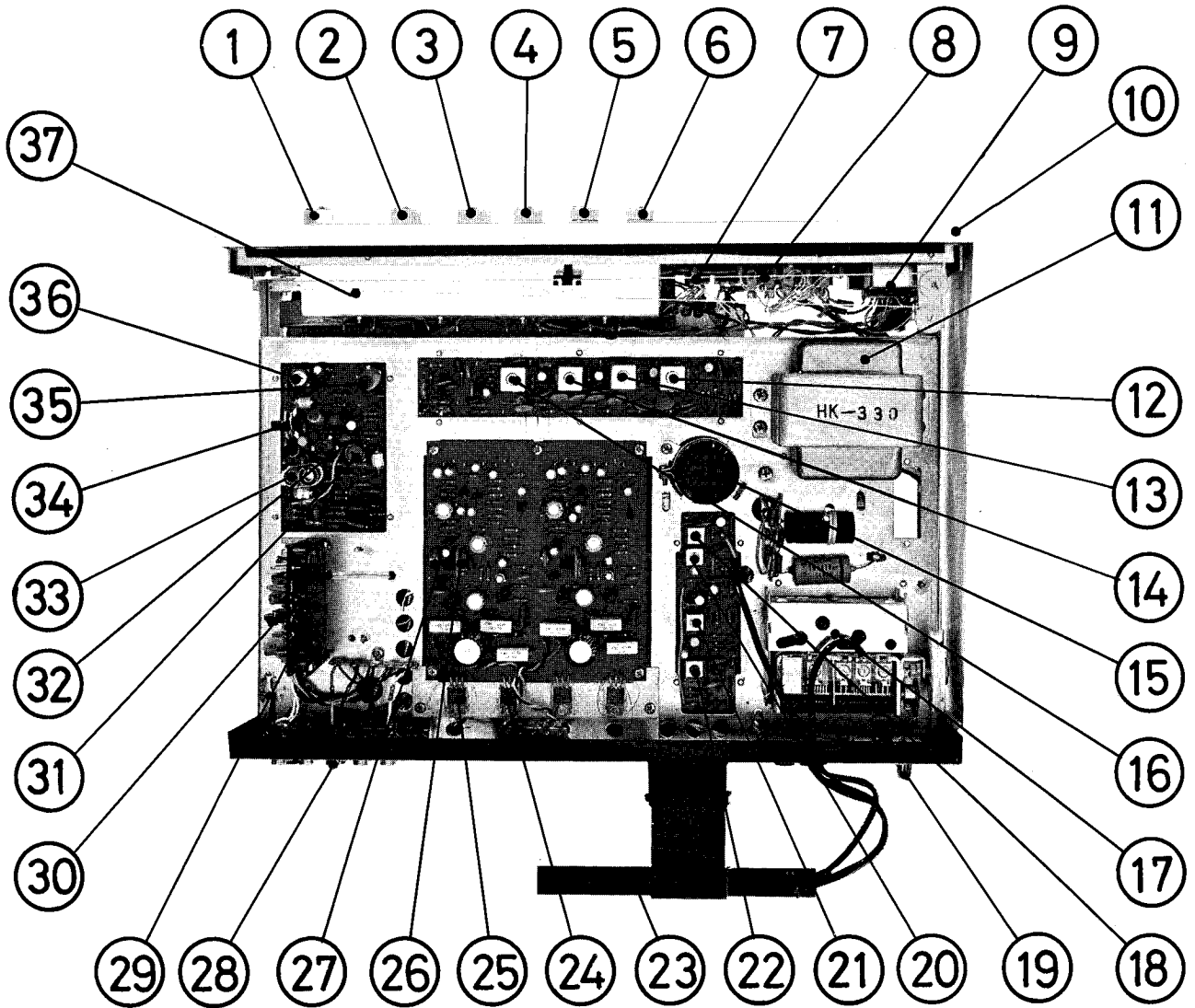
Input Signal must be kept as low as possible to avoid A.V.C. action

STEP	Signal Generator		Tuning Dial setting	OUTPUT INDICATOR	Adjust	Adjust for
	Connected to	Freq.		Connected to		
1	Tr201 Bass through a 0.01uF Capacitor	455 KHz ( 400Hz 30% MOD )	Quieting point on band	V.T.V.M. Tape out	T203, T202 & T201	Maximum
2	Use loop antenna	600 KHz ( 400Hz 30% MOD )	600 KHz		L201 & Ring of loop stick ANT	
3		1,400 KHz ( 400Hz 30% MOD )	1,400 KHz		PC4, PC5 ( FRONT END )	
4	Repeat steps 2 and 3 until no further improvement is possible					

## PREDRIVER/DRIVER ADJUSTMENT

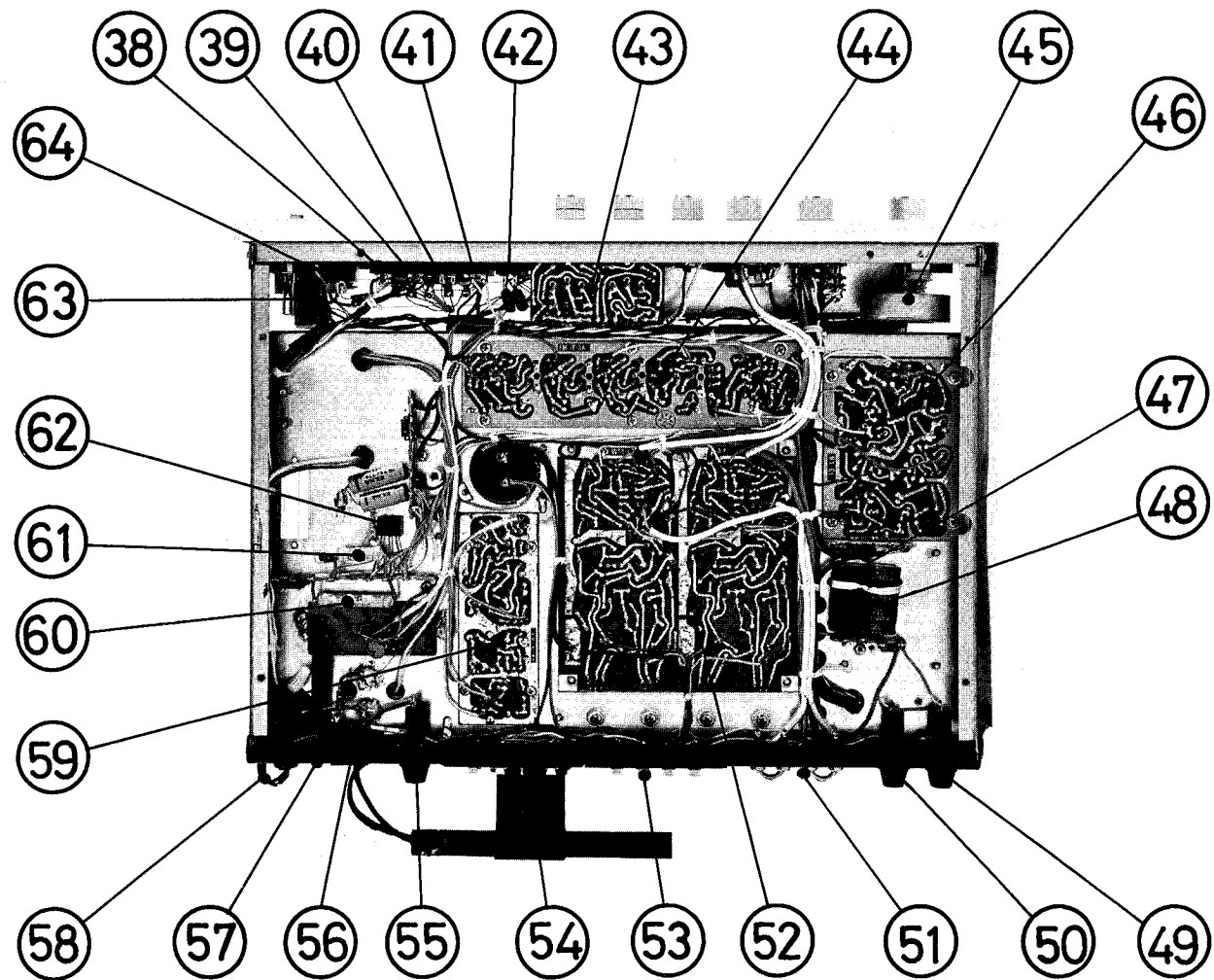
- Set Balance, Bass and Treble controls to their center position.
- Set Mode switch to "STEREO" Speaker switches to "ON" and Selector switch to "AUX".
- Connect 8 ohm (50W) resistor across L speaker terminals in parallel with the load resistor, connect the vertical input leads of the oscilloscope.
- Connect an audio generator, set for 1,000 Hz (sine wave) to the left channel "AUX" input.
- Rotate volume control to clockwise position full volume. Increase generator output until sine wave on scope just starts clipping. Adjust DC balance VR 501 fo requal clipping on the positive and negative half cycles on the signal.
- Adjust crossover potentiometer VR 502 until the crossover notch just disappears (rotate volume control to counter clockwise position to get 0.1 watt (0.9 V RMS) output), or adjust idling current, using a DC mV meter in parallel of R918 (0.5 ohm), rotate VR 502 to obtain a 10mV reading on DC mV meter. (no signal input).
- Repeat preceding steps for right channel.

TOP VIEW



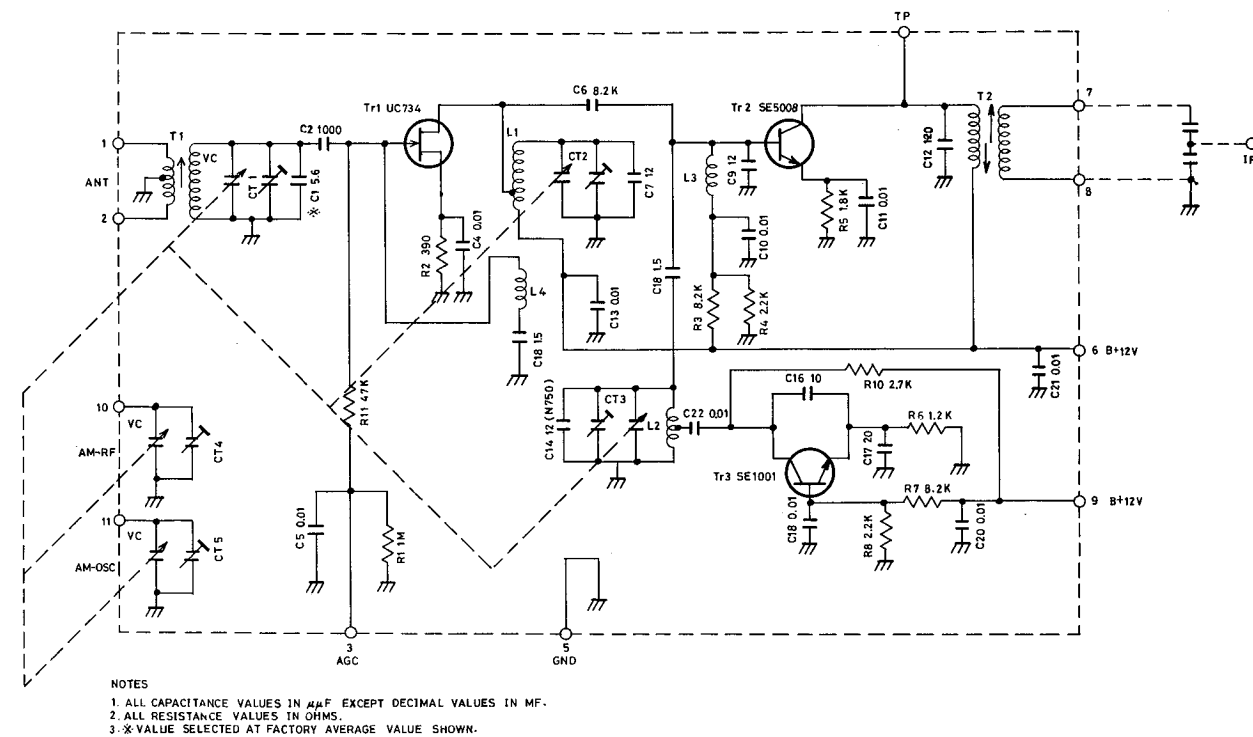
- |                         |                                   |                                  |
|-------------------------|-----------------------------------|----------------------------------|
| ① TUNING                | ⑭ FM IFT (T103)                   | ⑳ DC BALANCE ADJ. (L-CHAN TR901) |
| ② FUNCTION SWITCH       | ⑮ RIPPLE FILTER (C915)            | ㉑ INPUT TAPE OUT PINJACK         |
| ③ VOLUME CONTROL        | ⑯ FM IFT (T104)                   | ㉒ PRE AMP P.C.B. HOLDER          |
| ④ BALANCE CONTROL       | ⑰ AM FM FRONT END                 | ㉓ PRE AMP P.C.B.                 |
| ⑤ TREBLE CONTROL        | ⑱ AM I.F.T. (T204)                | ㉔ 19KHz TRANSFORMER (T301)       |
| ⑥ BASS CONTROL          | ⑲ AC LINE CORD                    | ㉕ 67 KHz S.C.A. COIL             |
| ⑦ STEREO INDICATOR LAMP | ㉚ AM I.F.T. (T201)                | ㉖ DOUBLER TRANSFORMER (T302)     |
| ⑧ FUNCTION LAMP         | ㉛ AM I.F.T. (T202)                | ㉗ SEPARATION CONTROL (VR301)     |
| ⑨ METER LAMP            | ㉜ AM I.F.T. (T203)                | ㉘ 72 KHz S.C.A. COIL             |
| ⑩ FRONT PANEL           | ㉝ AM LOOP STICK ANTENNA (L901)    | ㉙ 19KHz COIL (L301)              |
| ⑪ POWER TRANSFORMER     | ㉞ POWER TRANSISTOR (L-CHAN TR901) | ㉚ DIAL LAMP HOUSE                |
| ⑫ FM I.F.T. (T101)      | ㉟ POWER TRANSISTOR (L-CHAN TR902) |                                  |
| ⑬ FM I.F.T. (T102)      | ㊱ IDLING A D J                    |                                  |

**BOTTOM VIEW**

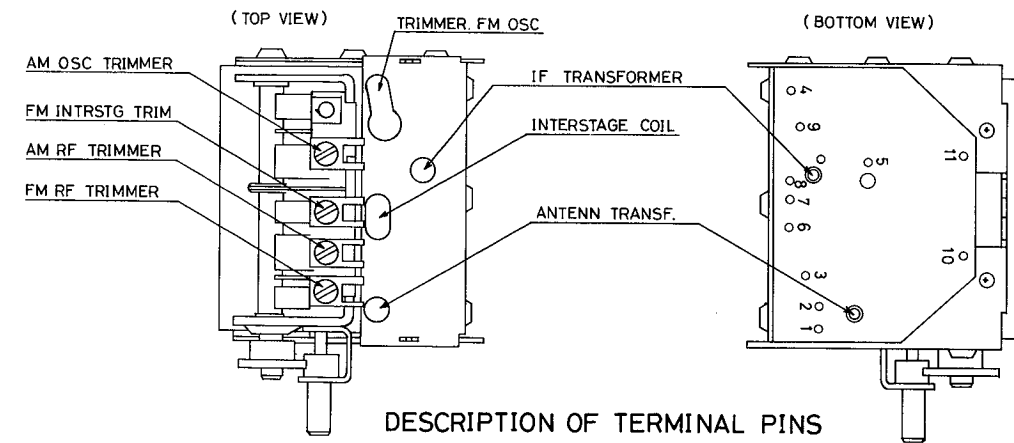


- |  |                           |
|--|---------------------------|
| 38 SPEAKER-1 SWITCH                      | 52 AF P.C.B.              |
| 39 SPEAKER-2 SWITCH                      | 53 SPEAKER SYSTEM-1       |
| 40 STEREO SWITCH                         | 54 SPEAKER SYSTEM-2       |
| 41 SOURCE SWITCH                         | 55 AC FUSE                |
| 42 CONTOUR SWITCH                        | 56 AC OUTLET              |
| 43 TONE CONTROL P.C.B.                   | 57 ANTENNA TERMINAL STRIP |
| 44 FM IF P.C.B.                          | 58 AC LINE CORD           |
| 45 FLY WHEEL                             | 59 AM IF P.C.B.           |
| 46 M.P.X. P.C.B.                         | 60 R 931                  |
| 47 35V 1000 $\mu$                        | 61 R 930                  |
| 48 35V 1000 $\mu$ } (C914) 35V2200 $\mu$ | 62 RECTIFIER              |
| 49 SPEAKER FUSE (L-CHAN)                 | 63 POWER SWITCH           |
| 50 SPEAKER FUSE (R-CHAN)                 | 64 HEAD PHONE JACK        |
| 51 PRE OUT MAIN IN PINJACK               |                           |

**AM/FM FRONT END (32SN2F1-351)  
SCHEMATIC — MODEL 330A**



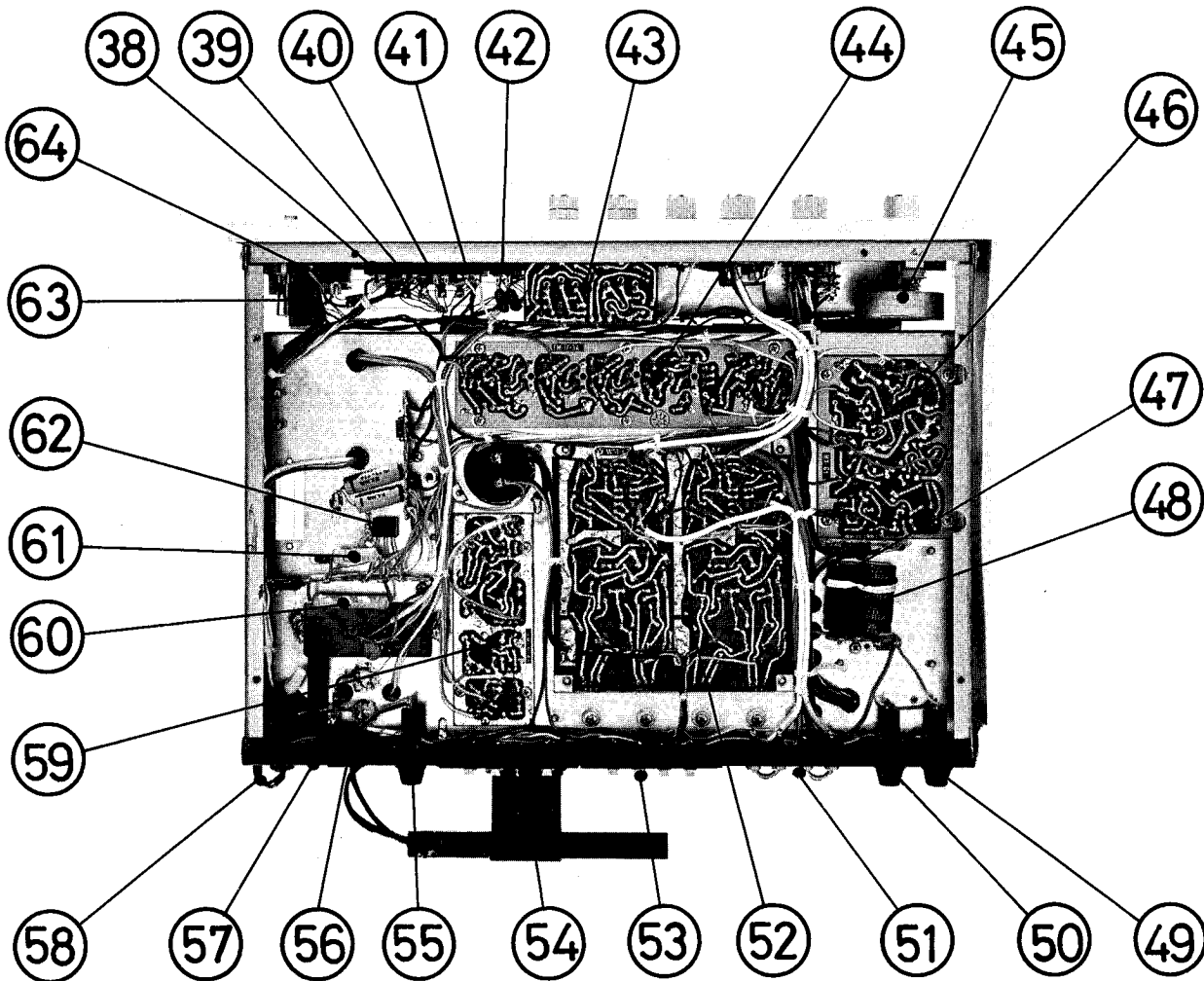
**AM/FM FRONT END (32SN2F1-351)**



**DESCRIPTION OF TERMINAL PINS**

- |                |                 |
|----------------|-----------------|
| NO. 12 ANTENNA | NO. 7 IF "COLD" |
| 3 AGC          | 8 IF "HOT"      |
| 4 AFC          | 9 B•OSC         |
| 5 PW GND       | 10 AM RF        |
| 6 B•RF-MIX     | 11 AM OSC       |

**BOTTOM VIEW**

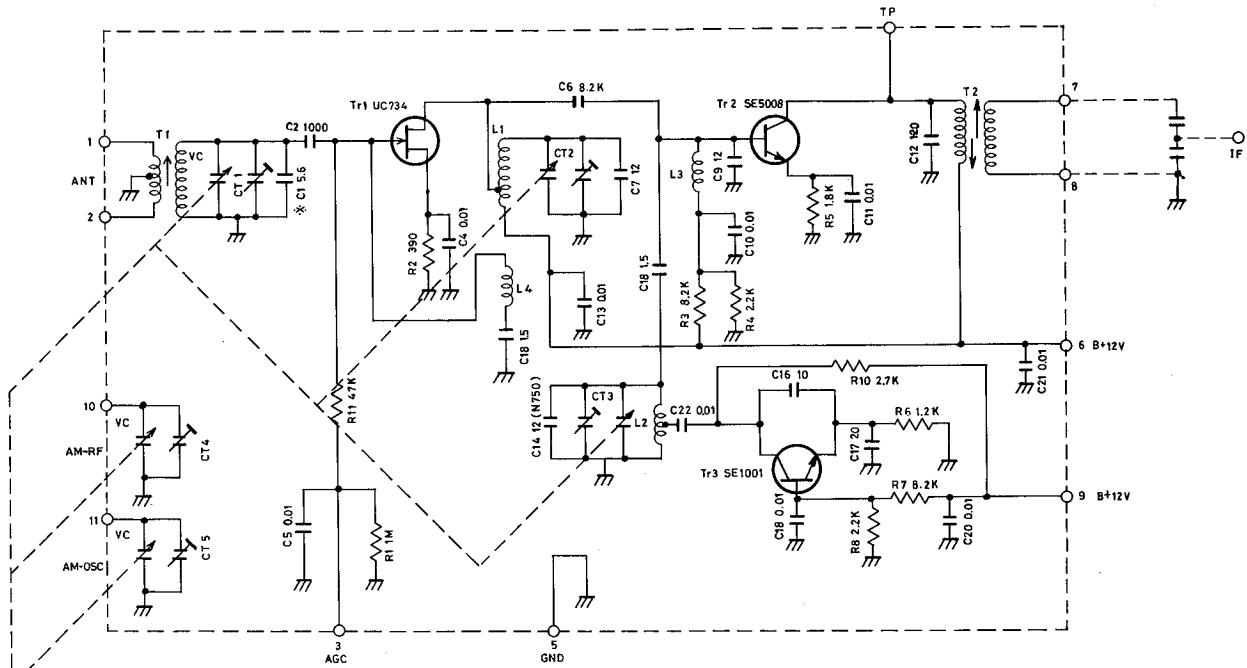


- 38 SPEAKER-1 SWITCH
- 39 SPEAKER-2 SWITCH
- 40 STEREO SWITCH
- 41 SOURCE SWITCH
- 42 CONTOUR SWITCH
- 43 TONE CONTROL P.C.B.
- 44 FM IF P.C.B.
- 45 FLY WHEEL
- 46 M.P.X. P.C.B.
- 47 35V 1000 $\mu$  } (C914) 35V2200 $\mu$
- 48 35V 1000 $\mu$  }
- 49 SPEAKER FUSE (L-CHAN)
- 50 SPEAKER FUSE (R-CHAN)
- 51 PRE OUT MAIN IN PINJACK

- 52 AF P.C.B.
- 53 SPEAKER SYSTEM-1
- 54 SPEAKER SYSTEM-2
- 55 AC FUSE
- 56 AC OUTLET
- 57 ANTENNA TERMINAL STRIP
- 58 AC LINE CORD
- 59 AM IF P.C.B.
- 60 R931
- 61 R930
- 62 RECTIFIER
- 63 POWER SWITCH
- 64 HEAD PHONE JACK

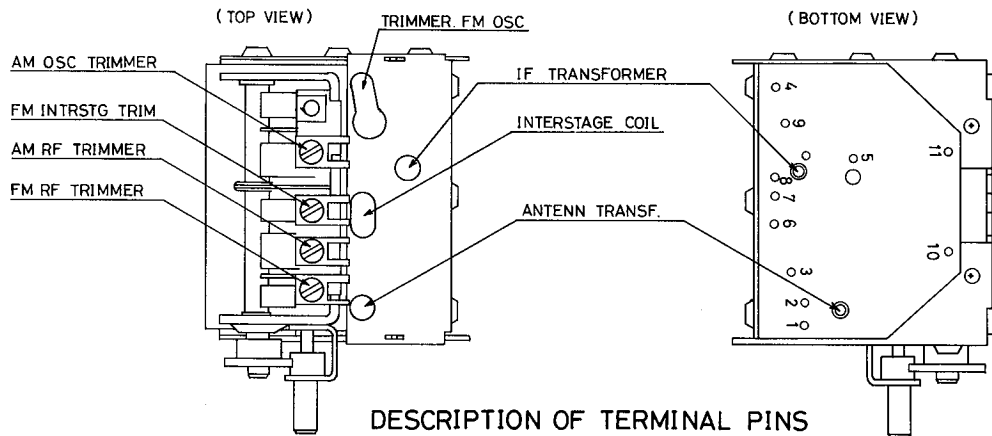


**AM/FM FRONT END (32SN2F1-351)**  
**SCHEMATIC — MODEL 330A**



- NOTES**
1. ALL CAPACITANCE VALUES IN  $\mu\text{M}\text{F}$  EXCEPT DECIMAL VALUES IN  $\text{M}\text{F}$ .
  2. ALL RESISTANCE VALUES IN OHMS.
  3. \* VALUE SELECTED AT FACTORY AVERAGE VALUE SHOWN.

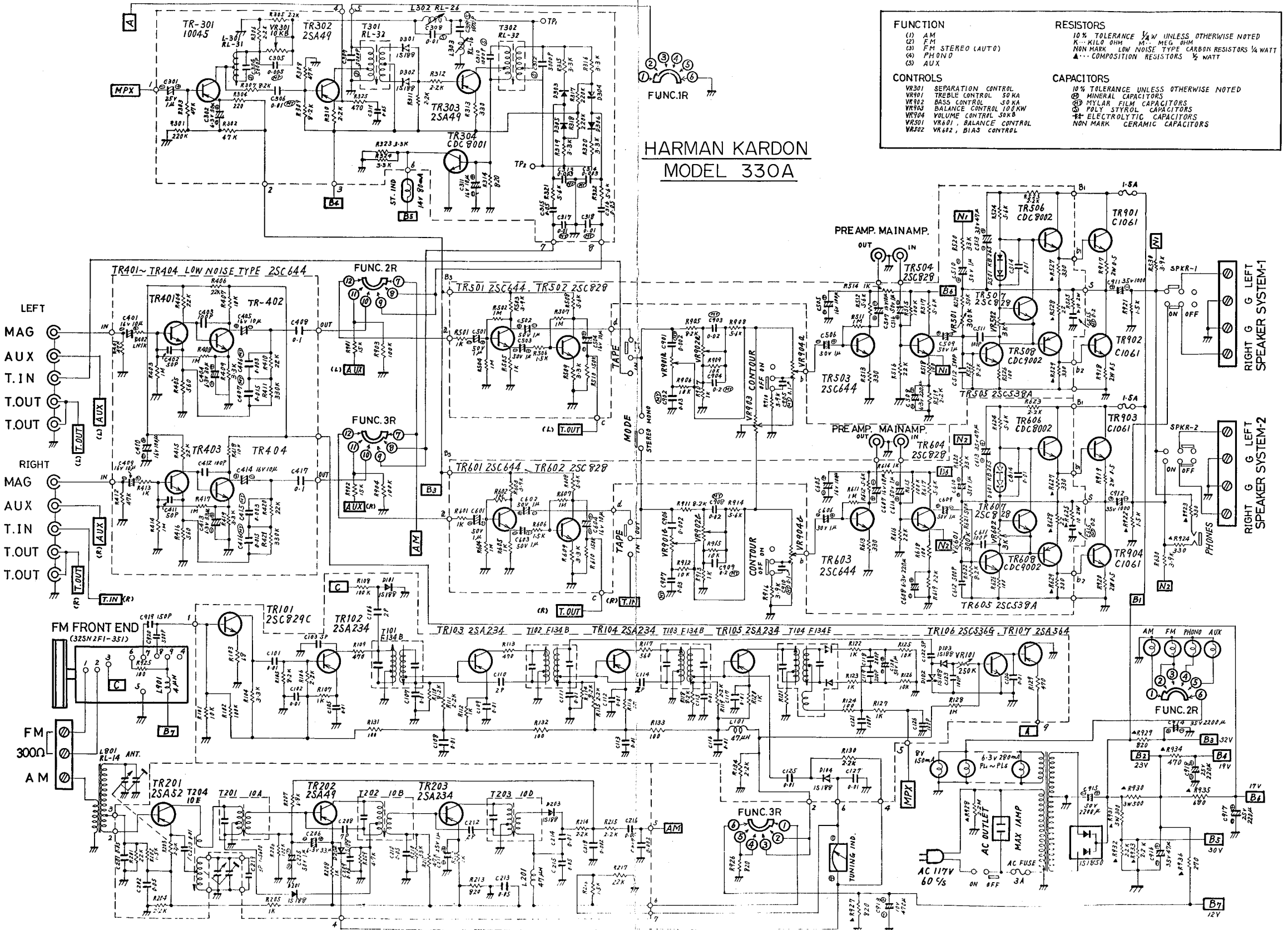
**AM/FM FRONT END (32SN2F1-351)**



**DESCRIPTION OF TERMINAL PINS**

- |                |                 |
|----------------|-----------------|
| NO. 12 ANTENNA | NO. 7 IF "COLD" |
| 3 AGC          | 8 IF "HOT"      |
| 4 AFC          | 9 B+ OSC        |
| 5 PW GND       | 10 AM RF        |
| 6 B+ RF-MIX    | 11 AM OSC       |

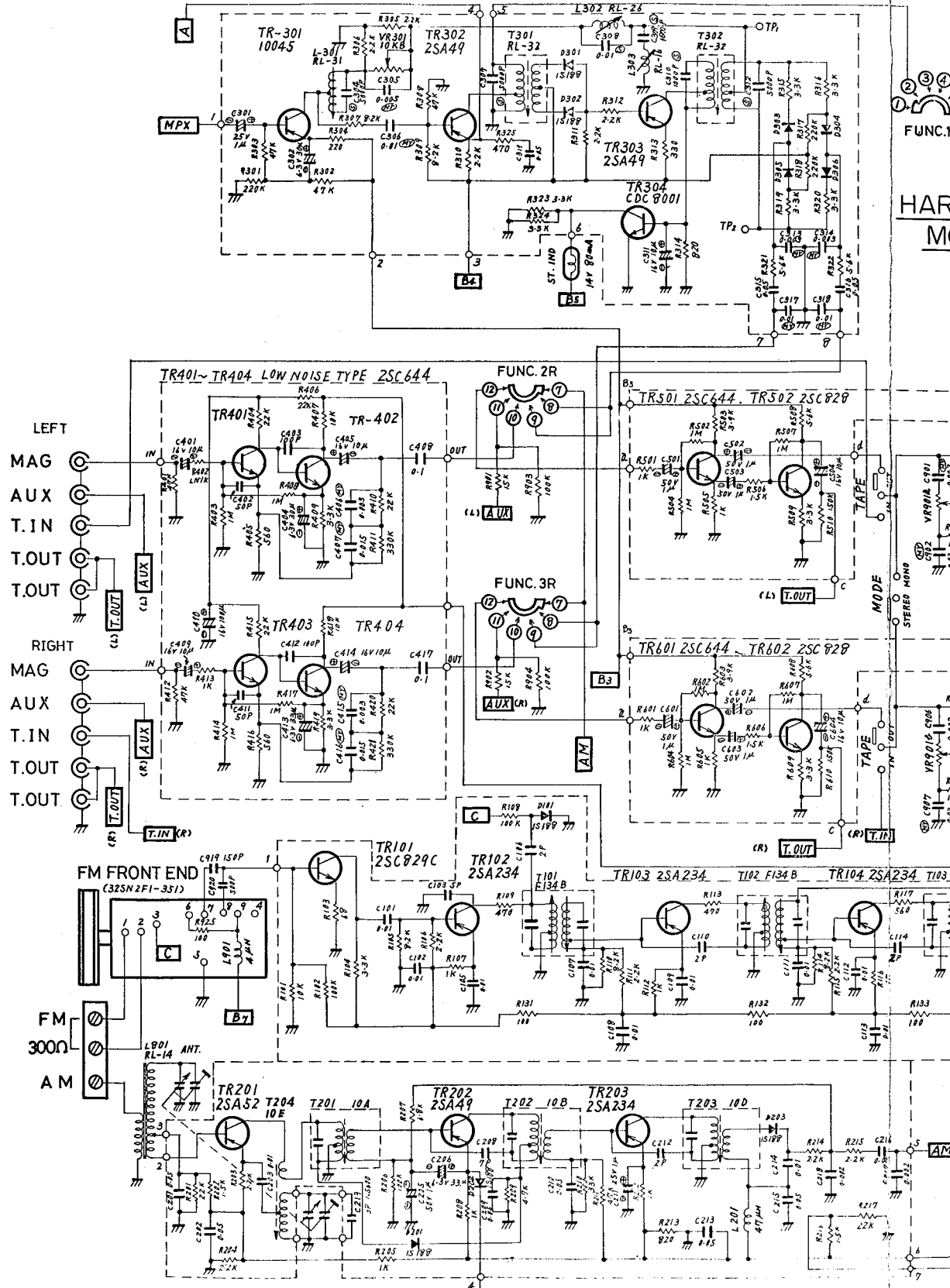
# SCHEMATIC DIAGRAM — MODEL 330A



FUNCTION	RESISTORS
(1) AM	10% TOLERANCE 1/4 W UNLESS OTHERWISE NOTED
(2) FM	K - KILO OHM M - MEG OHM
(3) FM STEREO (AUTO)	NON-MARK LOW NOISE TYPE CARBON RESISTORS 1/4 WATT
(4) PHONO	▲ - COMPOSITION RESISTORS 1/2 WATT
(5) AUX	
CONTROLS	CAPACITORS
VR301 SEPARATION CONTROL	10% TOLERANCE UNLESS OTHERWISE NOTED
VR101 TREBLE CONTROL 50 KA	Ø MINERAL CAPACITORS
VR202 BASS CONTROL 50 KA	Ø MYLAR FILM CAPACITORS
VR403 BALANCE CONTROL 100 KW	Ø POLY STYROL CAPACITORS
VR904 VOLUME CONTROL 50 K	Ø ELECTROLYTIC CAPACITORS
VR301 VR601, BALANCE CONTROL	NON MARK CERAMIC CAPACITORS
VR302 VR602, BIAS CONTROL	

HARMAN KARDON  
MODEL 330A

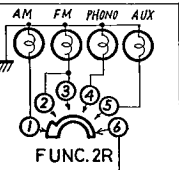
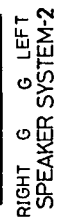
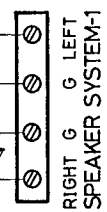
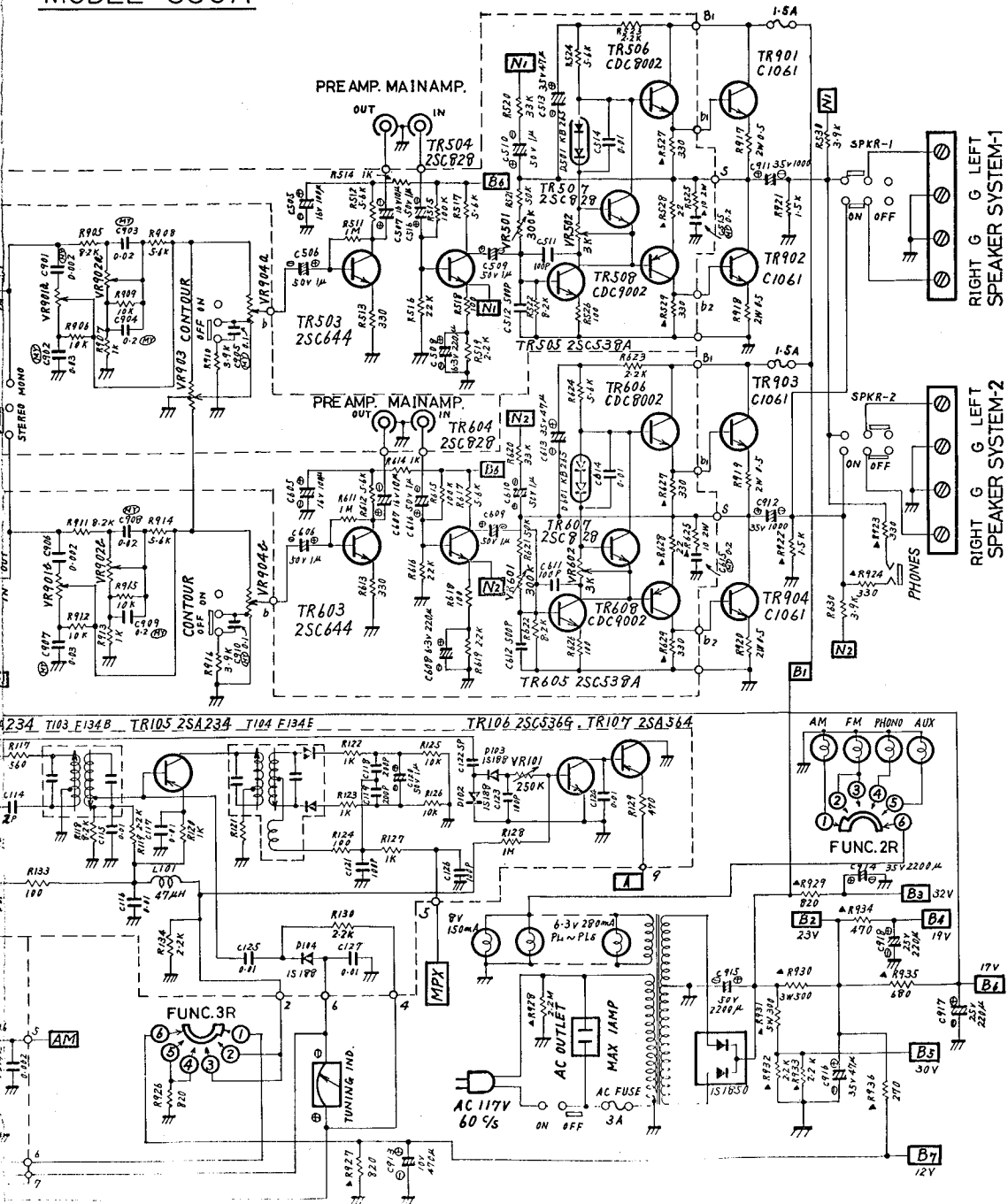
# SCHEMATIC DIAGRAM — MODEL 330A



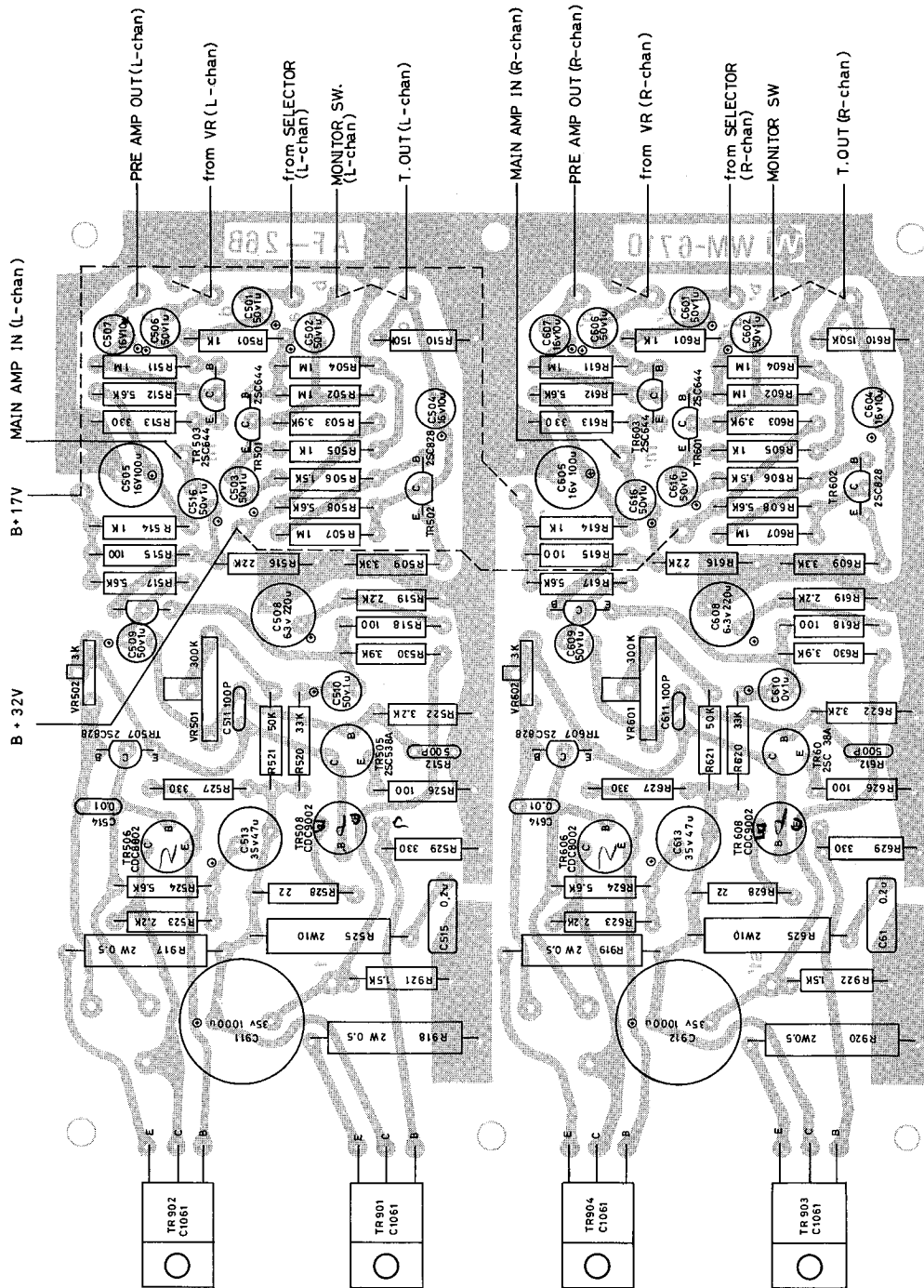


FUNCTION	RESISTORS
(1) AM	10% TOLERANCE 1/4 W UNLESS OTHERWISE NOTED
(2) FM	K...KILLO-Ω M...MEG-Ω
(3) FM STEREO (AUTO)	NON MARK LOW NOISE TYPE CARBON RESISTORS 1/4 WATT
(4) PHONO	▲...COMPOSITION RESISTORS 1/2 WATT
(5) AUX	
CONTROLS	CAPACITORS
VR301 SEPARATION CONTROL	10% TOLERANCE UNLESS OTHERWISE NOTED
VR901 TREBLE CONTROL 50 KΩ	Ⓞ MINERAL CAPACITORS
VR902 BASS CONTROL 50 KΩ	Ⓞ MYLAR FILM CAPACITORS
VR903 BALANCE CONTROL 100 KΩ	Ⓞ POLY STYROL CAPACITORS
VR904 VOLUME CONTROL 50 KΩ	Ⓞ ELECTROLYTIC CAPACITORS
VR301 VR601 BALANCE CONTROL	NON MARK CERAMIC CAPACITORS
VR302 VR402, BIAS CONTROL	

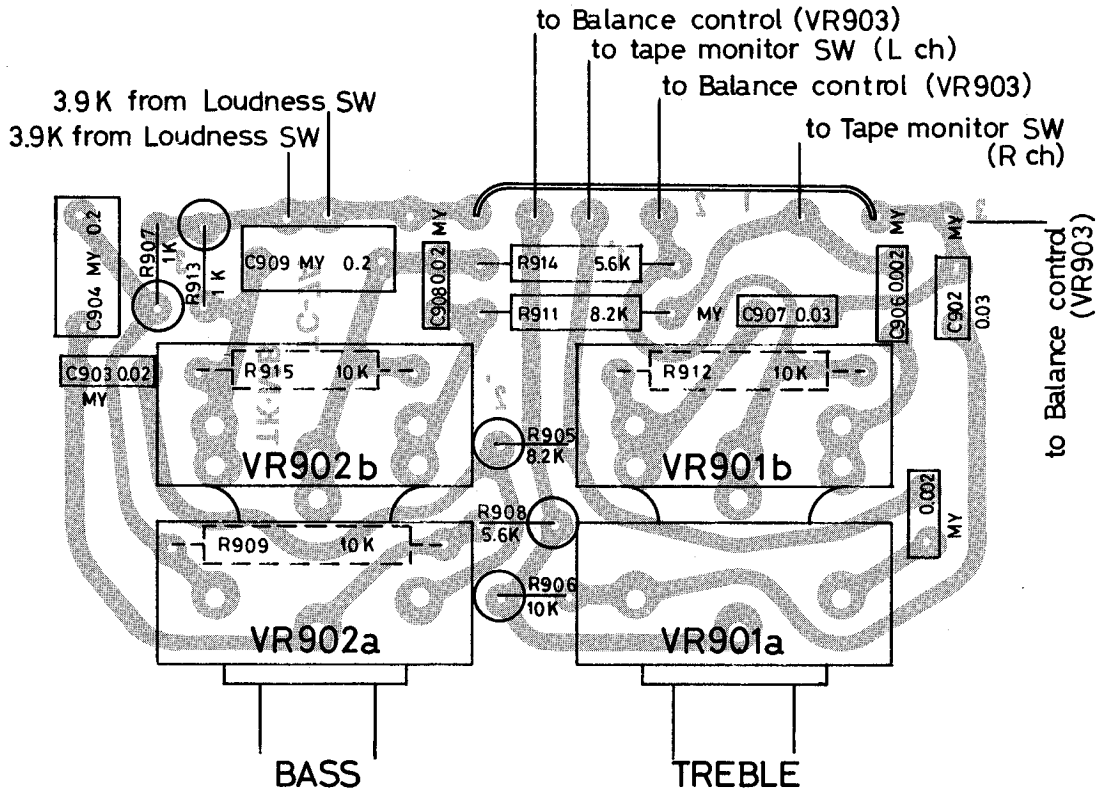
# HARMAN KARDON MODEL 330A



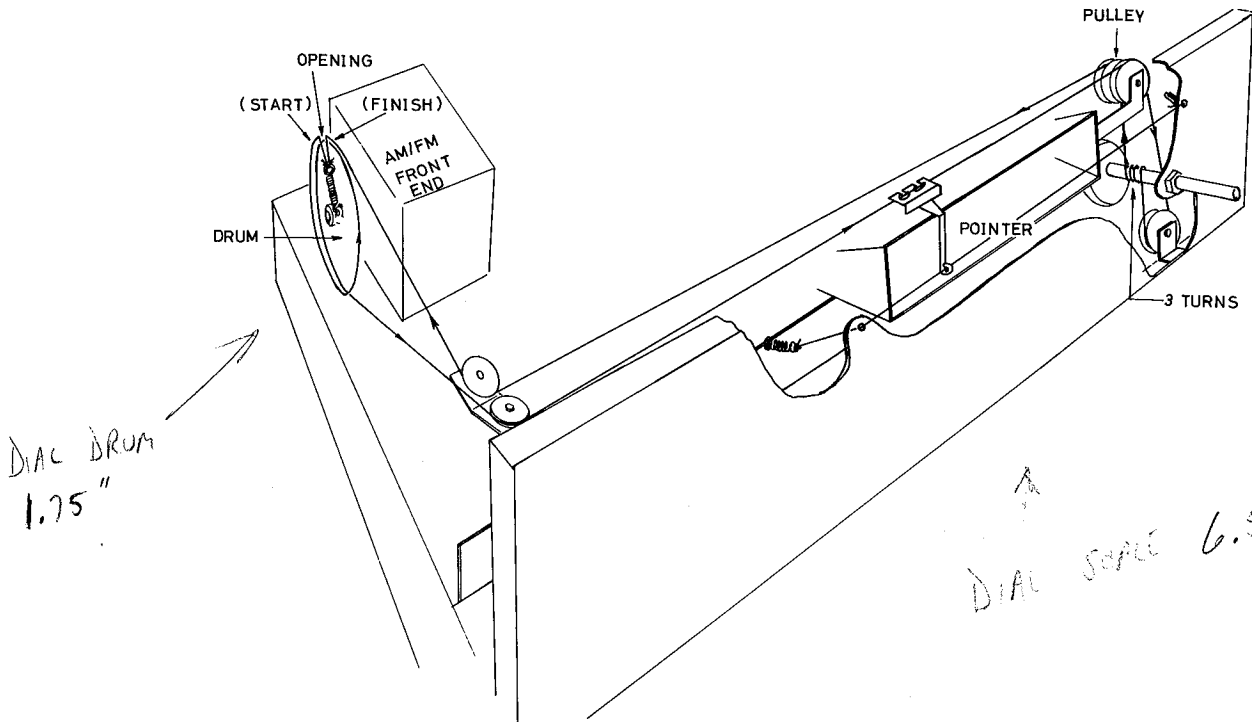
# PREDRIVER BOARD



# TONE CONTROL BOARD



# STRINGING DIAGRAM



# REPLACEMENT PARTS LIST

HK PART NO.	REF. NO.	DESCRIPTION
<b>TRANSFORMERS &amp; COILS</b>		
10127932	HK-330	Power Transformer
11024829	L03-0010	Transformer, IFT-AM 10A
11024830	L03-0011	Transformer, IFT-AM 10B
11024831	L03-0013	Transformer, IFT-AM 10D
12027934	10-E	AM Osc. Coil
11024846	L04-0010	Transformer, IFT-FM F134B
11024847	L04-0011	Transformer, IFT-FM F134E
12027935	L-301	Coil, 19KC MPX RL-31
12027936	T-301, T-302	Coil, 38KC MPX RL-32
12024856	L-303	Coil, SCA Filter RL-16
12027937	L-302	Coil, SCA Filter RL-26

## DIODES

41624836	D-303, 306	Diode SD-46
41627989	D-501, 601	Diode KB-265
42024925	---	Diode Zener IN754A
41027991	---	Diode Rectifier IS-1850
41027992	---	Diode IS-188

## CONTROLS

23525118	VR-301	MX Trim Pot 10K
22025121	VR-904	Volume Control 50K
22027926	VR-901, 902	Bass & Treble 50K
22027986	VR-903	Balance Control 100K

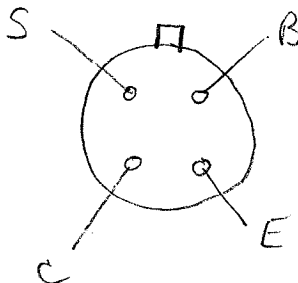
## TRANSISTORS

43024833	TR-201	Transistor, AM 2SA52
43024834	TR-202, 302, 303	Transistor, AM 2SA49
43025336	TR-203	Transistor, AM & FM 2SA234
43025620	TR-101	Transistor, FM 2SA829
43025617	TR-106	Transistor, 2SA536G

HK PART NO.	REF. NO.	DESCRIPTION
43025613	TR-107	Transistor, 2SA564
43025972	TR-304	Transistor, Beacon CDC8001
43027722	TR-301	Transistor, MPX
43024873	TR-503, 603	Transistor, Audio 2SC644
43024859	TR-504, 507 604, 607	Transistor, Audio 2SC828
43024878	TR-505, 605	Transistor, Audio 2SC538A
43024879	TR-506, 606	Transistor, Driver NPN CDC8002
43024880	TR-508, 608	Transistor, Driver PNP CDC 9002
43027987	TR-901, 904	Transistor, Output C1061

## MISCELLANEOUS

00224887	UA-0003	AM/FM Front End
65424895	S-2032	Fuse Holder
65424896	S-2041	AC Outlet
45012953	M-5011	Fuse 1.5A
45024898	M-5013	Fuse 3A
61027988	---	Top Plexiglas
00227919	---	Escutcheon Assy.
60424911	4B6-12A	Tuning Shaft
60424912	M-2101	Flywheel
12524913	I-1015	Tuning Meter
24024914	S-1022	Function Switch
25527920		Rocker Switch (5 used)
25027921	UE-H12	Power Switch
65424917	E-4001	Headphone Jack
60724954	3BM-4	Dial Pointer
46527928	---	Meter Bulb, 6V-280 MA
7253-46527929	---	Function Indicator Bulbs, 8V-150 MA
46527892	---	Stereo Beacon, 14V - 80MA
63227922	C641-B	Tuning Knob
63227923	C640-D	Knob, Single
63227924	C642-A	Knob Dual, Front
63227925	C642-B	Knob Dual, Rear



**The Harman-Kardon**  
**Model 330B** - (SERIES B-2)

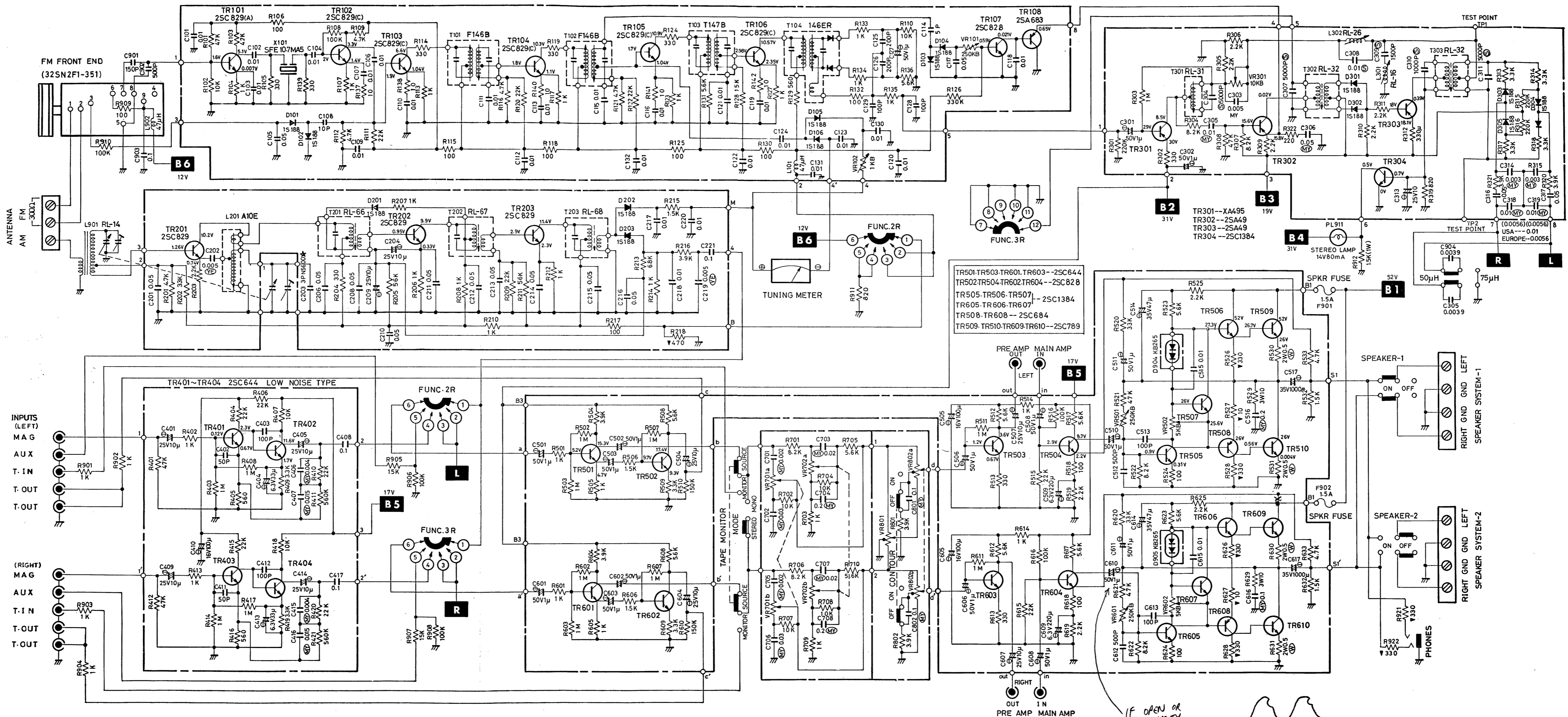
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**AM/FM Stereo FM**  
**Solid State Receiver**

**Technical Manual Addendum**  
**Serial Number 7322984 to 7327986**

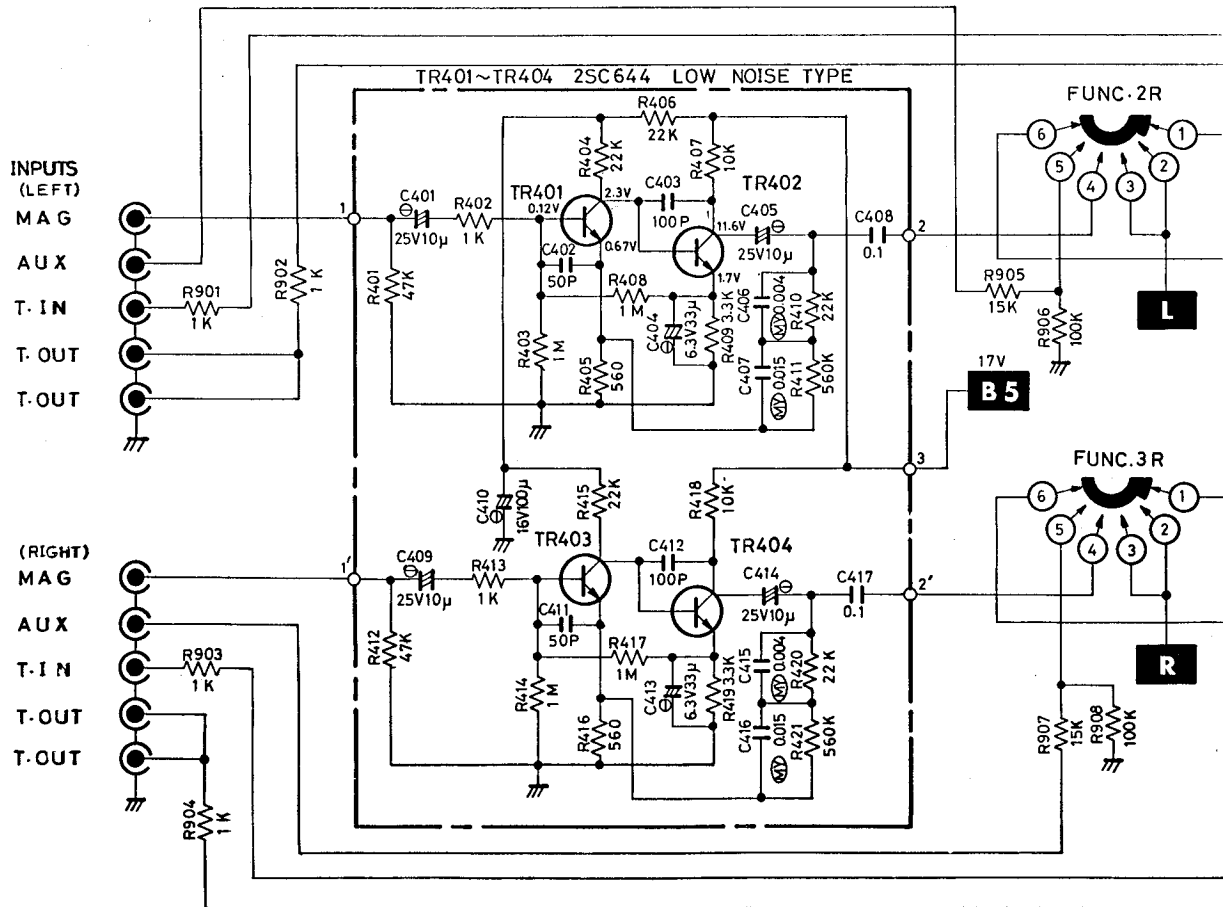
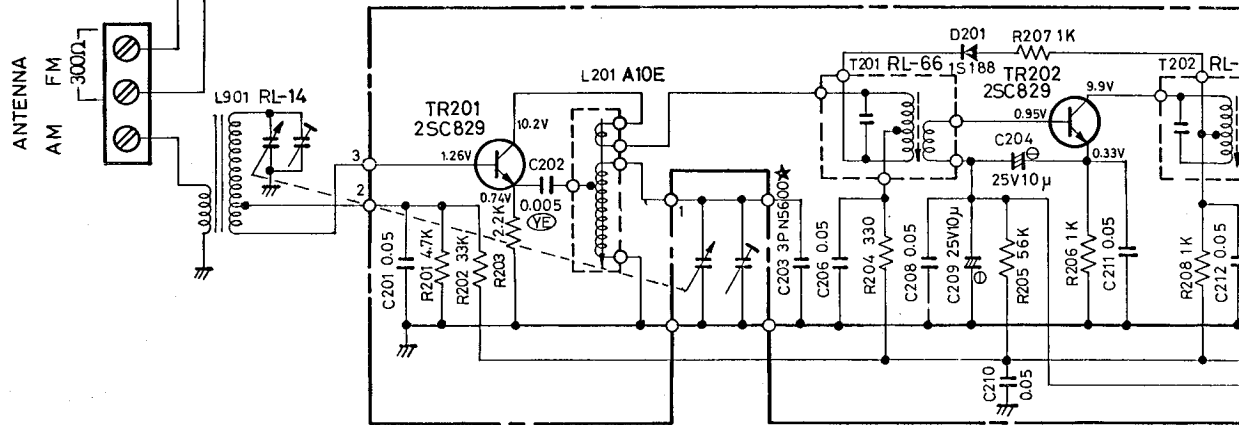
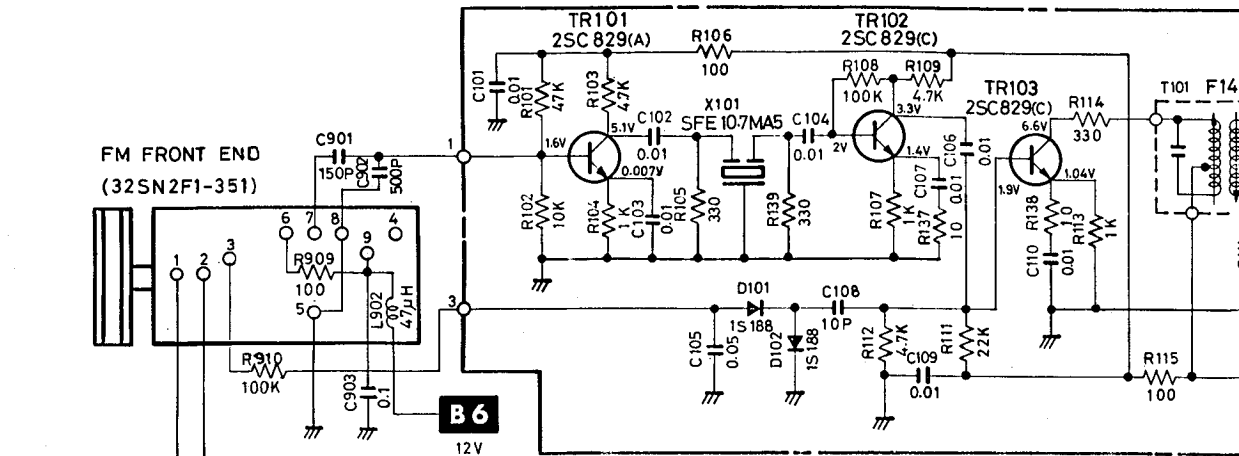
**harman/kardon**

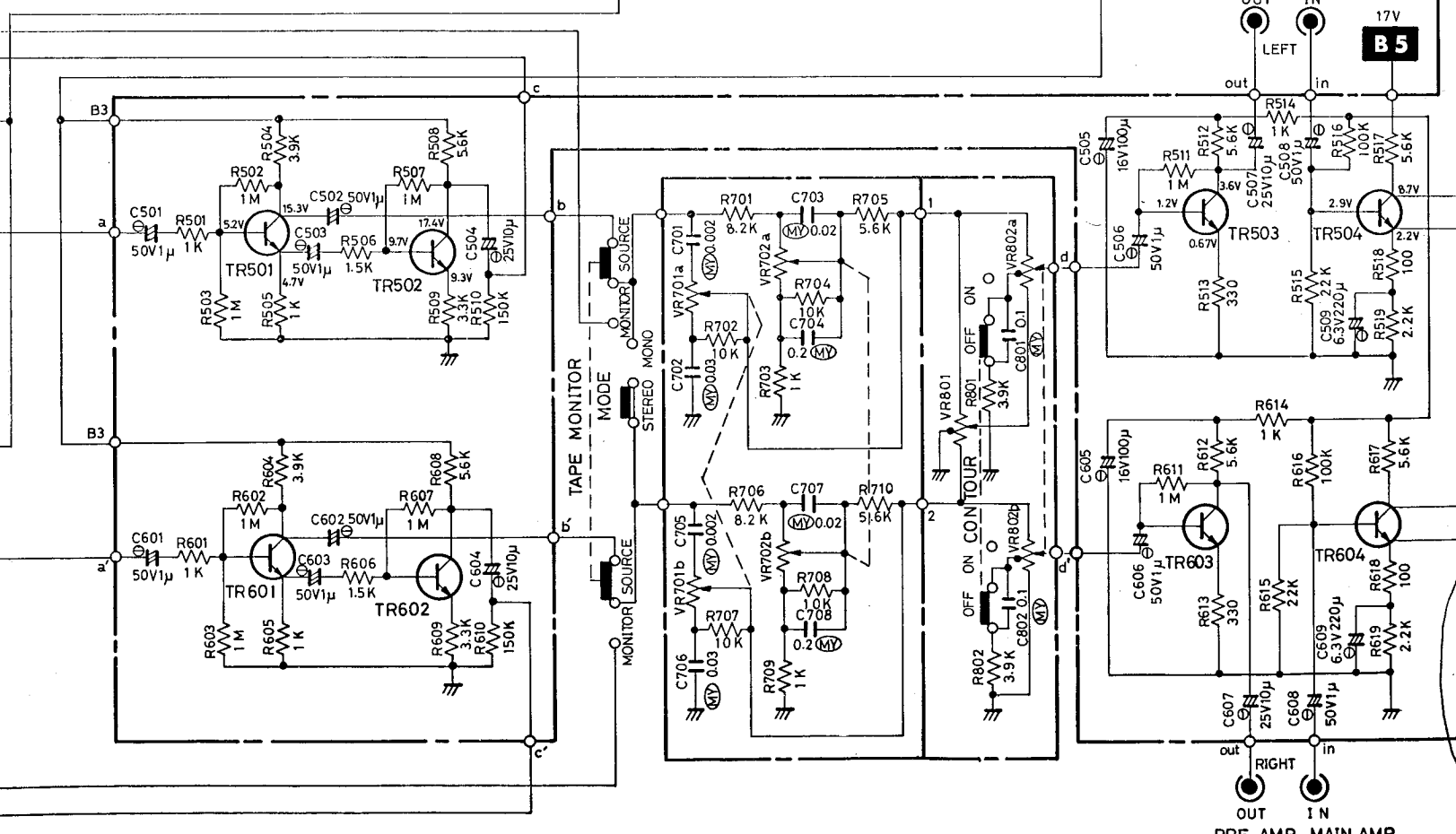
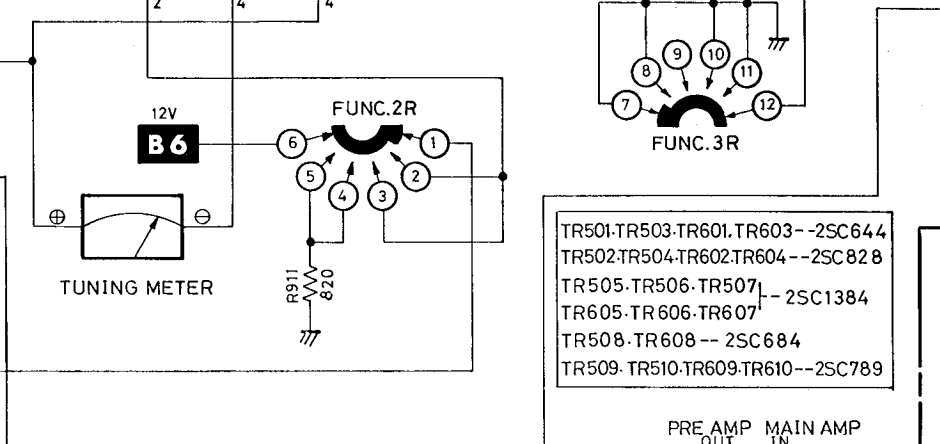
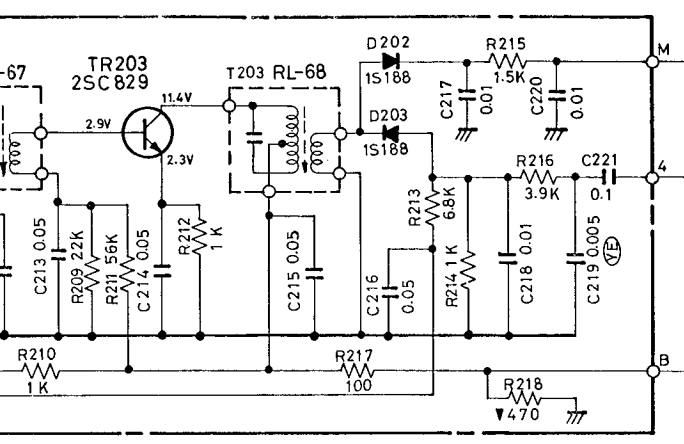
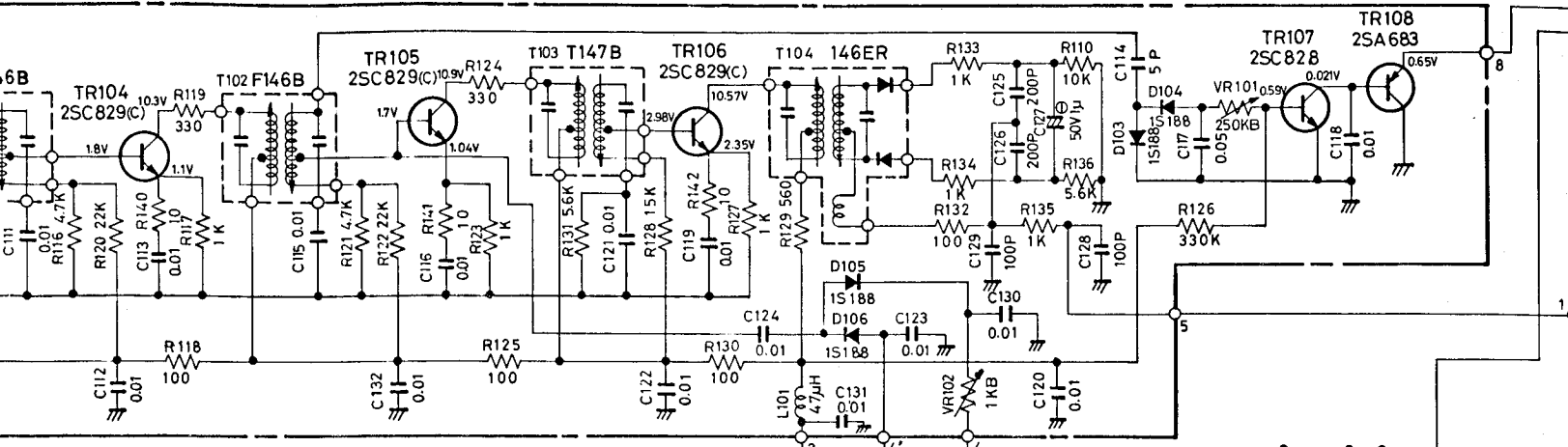




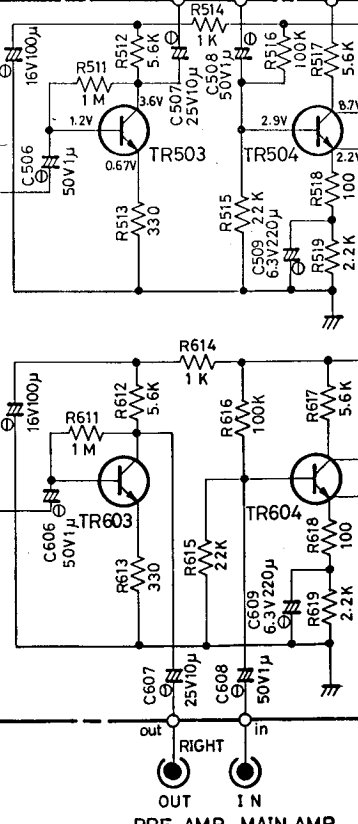
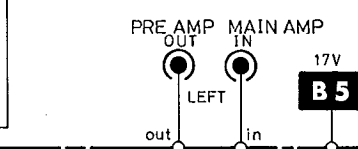
TR501-TR503, TR601, TR603 - 2SC644  
 TR502, TR504, TR602, TR604 - 2SC828  
 TR505, TR506, TR507 - 2SC1384  
 TR508, TR606, TR607  
 TR509, TR608 - 2SC684  
 TR510, TR609, TR610 - 2SC789

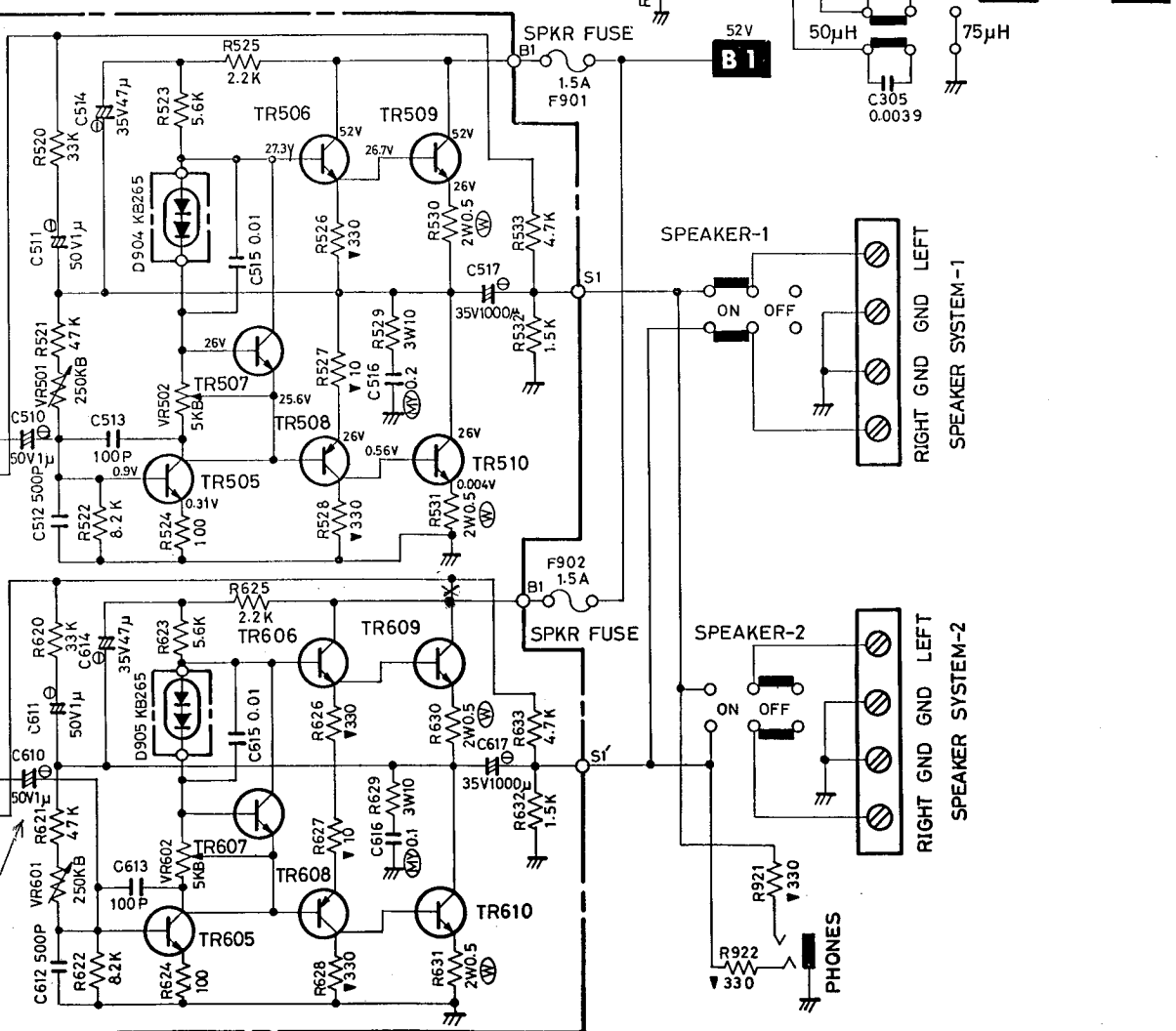
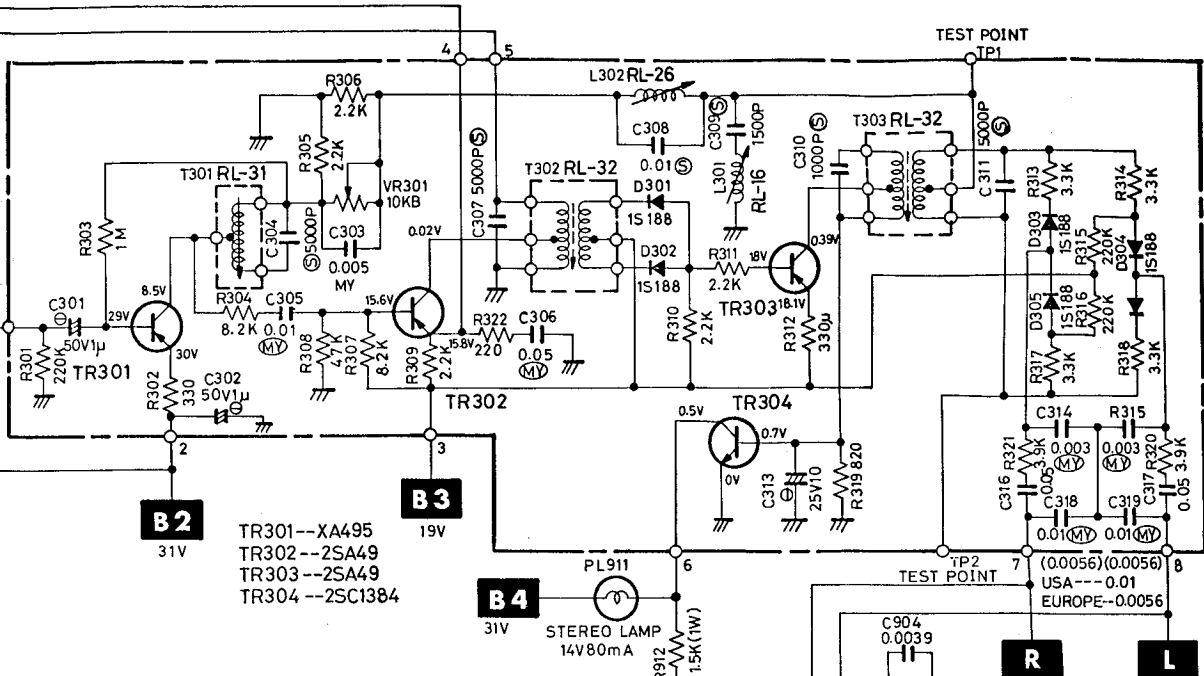
IF OPEN OR LOW CAPACITY, WAVEFORM @ 1KHZ



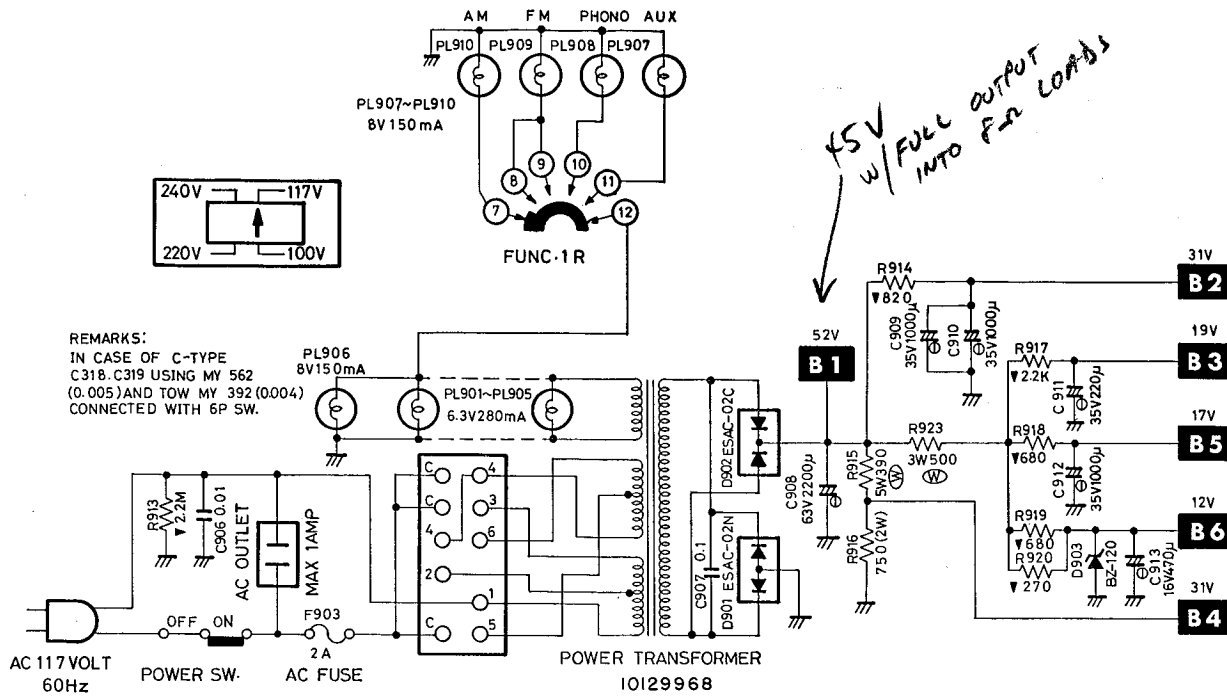


- TR501-TR503, TR601, TR603--2SC644
- TR502, TR504, TR602, TR604--2SC828
- TR505, TR506, TR507--2SC1384
- TR605, TR606, TR607
- TR508, TR608--2SC684
- TR509, TR510, TR609, TR610--2SC789





IF OPEN OR LOW CAPACITY, WAVEFORM @ 1KHZ



REMARKS:  
 IN CASE OF C-TYPE  
 C318, C319 USING MY 562  
 (0.005) AND TOW MY 392 (0.004)  
 CONNECTED WITH 6P SW.

ITEM	SCHEMATIC LOCATION (LAST)
FM IF AMP	R142 C132
AM IF AMP	R218 C221
FM MPX AMP	R322 C319
EQUALIZER	R421 C417
MAIN AMP	R533 R633 C517 C617
TONE CONTROL	R710 C708
VOLUME CONTROL	R802 C802
CHASSIS	R923 C913

**(CONTROLS)**

- VR301 SEPARATION CONTROL
- VR701a, VR701b TREBLE CONTROL 50KA
- VR702a, VR702b BASS CONTROL 50KA
- VR801 BALANCE CONTROL 250KW
- VR802a, VR802b VOLUME CONTROL 50KB
- VR501, VR601, BALANCE CONTROL
- VR502, VR602, BIAS CONTROL

**(RESISTORS)**

- 10% TOLERANCE UNLESS OTHERWISE NOTED
- K---KILO OHM
- M---MEGA OHM
- ▽--- COMPOSITION RESISTORS 1/2 WATT
- NON MARK---LOW NOISE TYPE CARBON RESISTORS 1/4 WATT
- ◻--- SQUARE RESISTORS

**(CAPACITORS)**

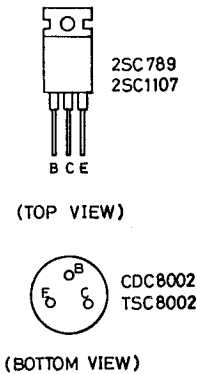
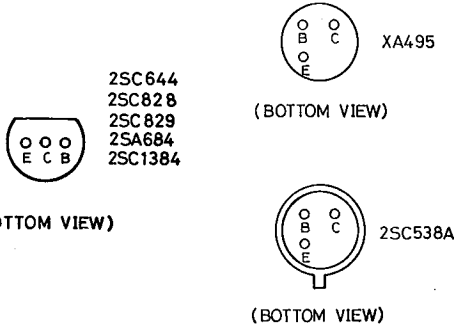
- ◻---MYLAR FILM CAPACITORS
- ★---TEMPERATURE COEFFICIENT CAPACITORS
- ⊞---ELECTROLYTIC CAPACITORS
- NON MARK---CERAMIC CAPACITOR
- UNLESS OTHERWISE NOTED IN SCHEMATIC ALL CAPACITORS VALUES ARE EXPRESSED IN MFD
- VOLTAGE READING WITH VTVM FROM THE POINT TO THE CHASSIS GROUND (LINE VOLTAGE 120 VOLT)
- VOLTAGE READING MAY VARY ±20%
- POWER: 25C789 OR 25C1107
- LOW NOISE TRANSISTOR: 25C644 OR 25C693 OR 25C732
- DRIVER: 25C1384 OR 25C1509, 25A684 OR 25A777
- RMS POWER (8Ω) 22W X1 25W X2
- ⊙---POLY STYROL CAPACITORS
- ◻---CERAMIC CAPACITORS YE TYPE

**ADDENDUM FOR MODEL 330B  
 SERIAL NUMBER 7322984 TO 7327986**

These units are basically an upgraded Model 330A incorporating the following changes:

- a) Power Supply - use new Power Transformer HK no. 10129968
- b) Output Stage - use new Output Transistors HK no. 43030544

This schematic is the corrected version for the 330B's bearing the above serial numbers.



(BOTTOM VIEW)

(BOTTOM VIEW)

(TOP VIEW)

(BOTTOM VIEW)

(BOTTOM VIEW)

