

ERIC NELSON

The Harman-Kardon
Model 330A + 330B

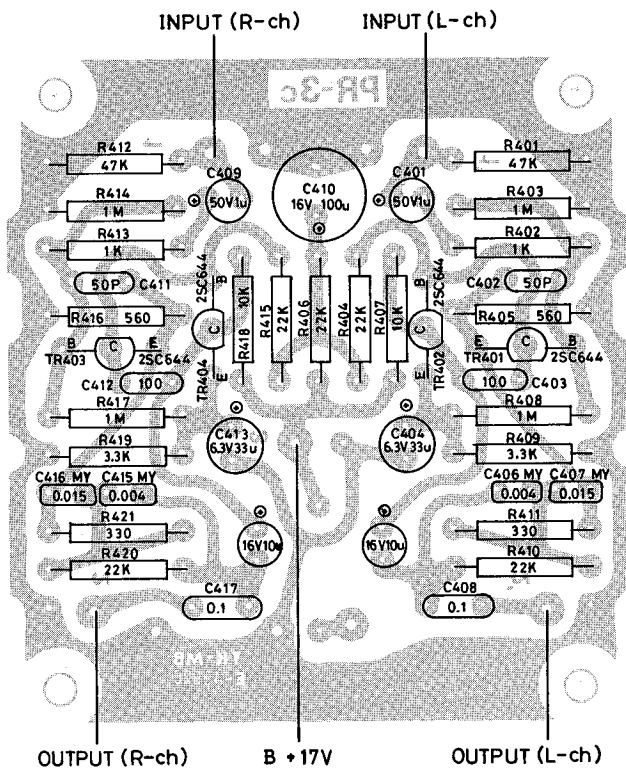
ROLAND W/ADDENDUM

AM/FM Stereo FM
Solid State Receiver

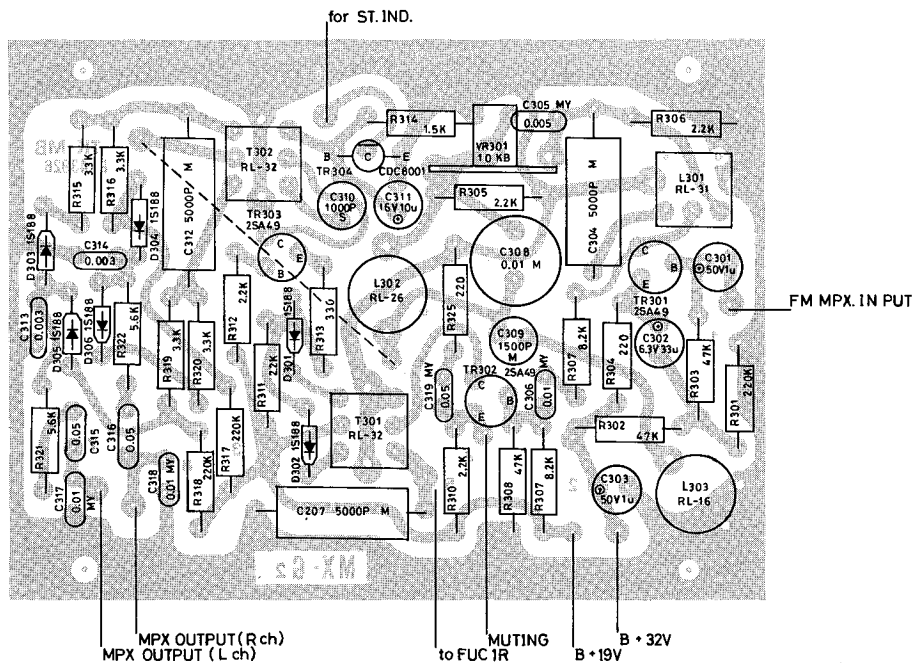
Technical Manual

harman/kardon

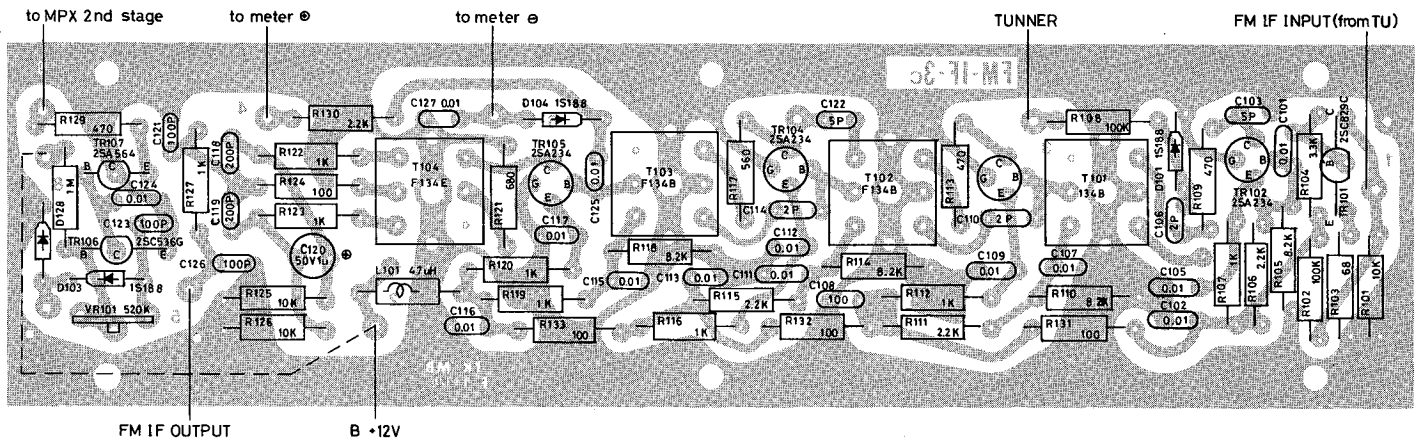
PREAMP BOARD



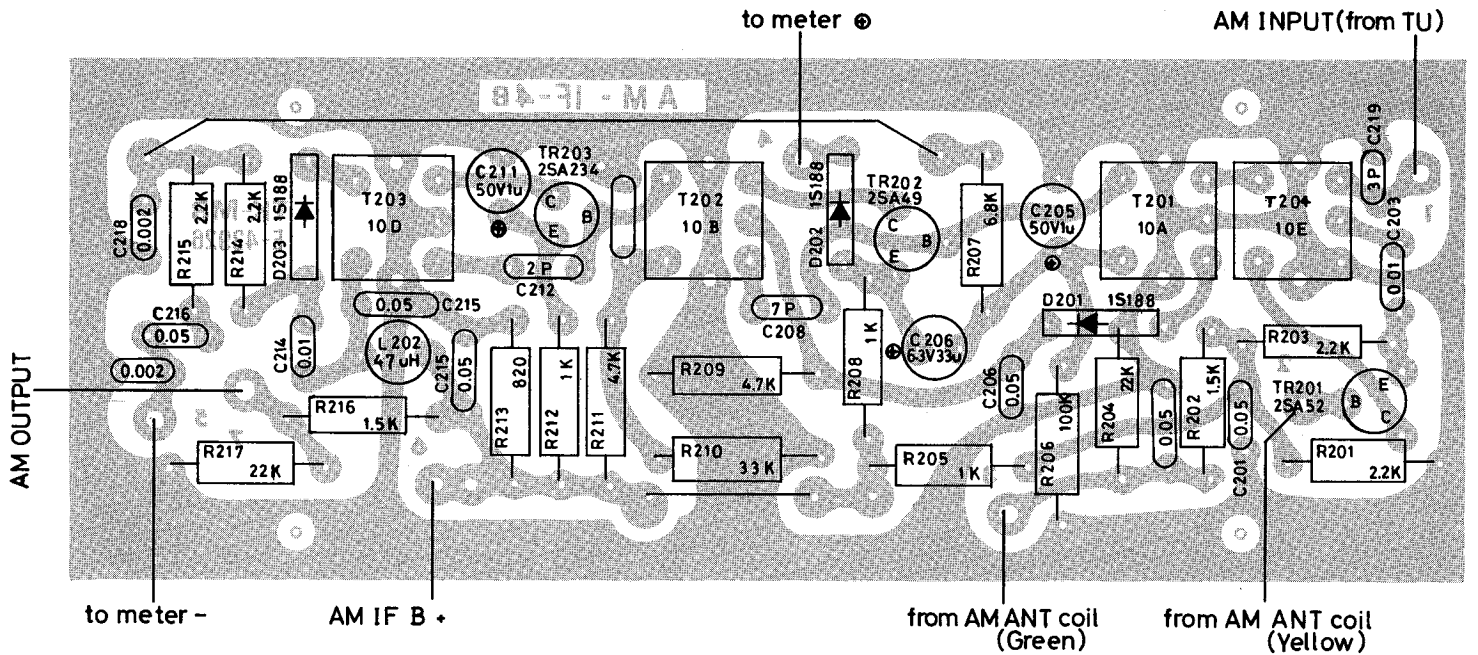
MULTIPLEX BOARD



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	Adjust	Adjust for
	Connected to	Freq.		Connected to		
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)	T104 Top (Sec)	Zero Voltage
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	<u>Signal Generator</u> Freq. Set to	<u>Output Indicator</u> 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. OUT	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		Composite 1,000 Hz R chan	Tape Output L chan			
7						
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 "

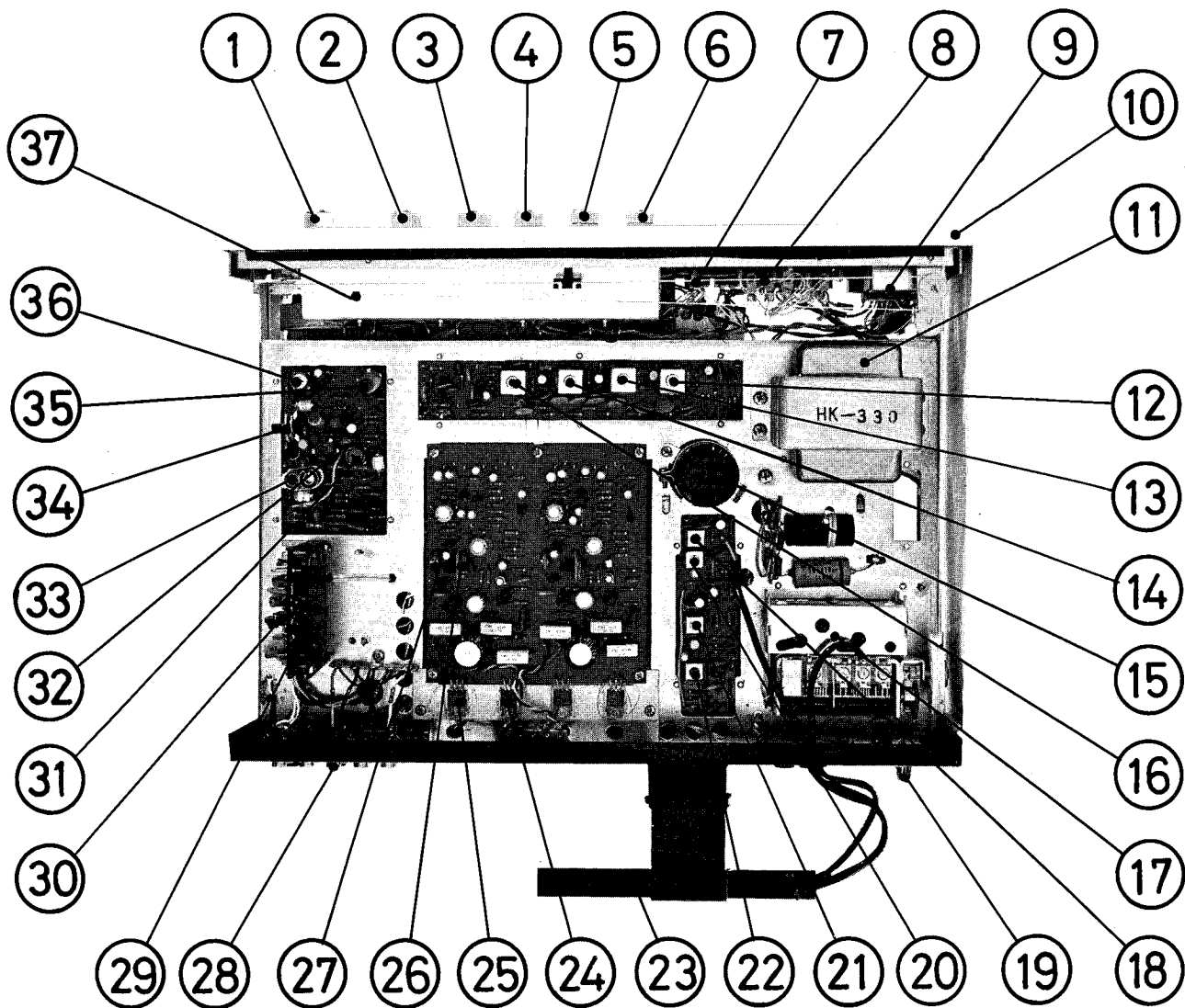
Input Signal must be kept as low as possible to avoid A.V.C. action

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	<u>V.T.V.M.</u> 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

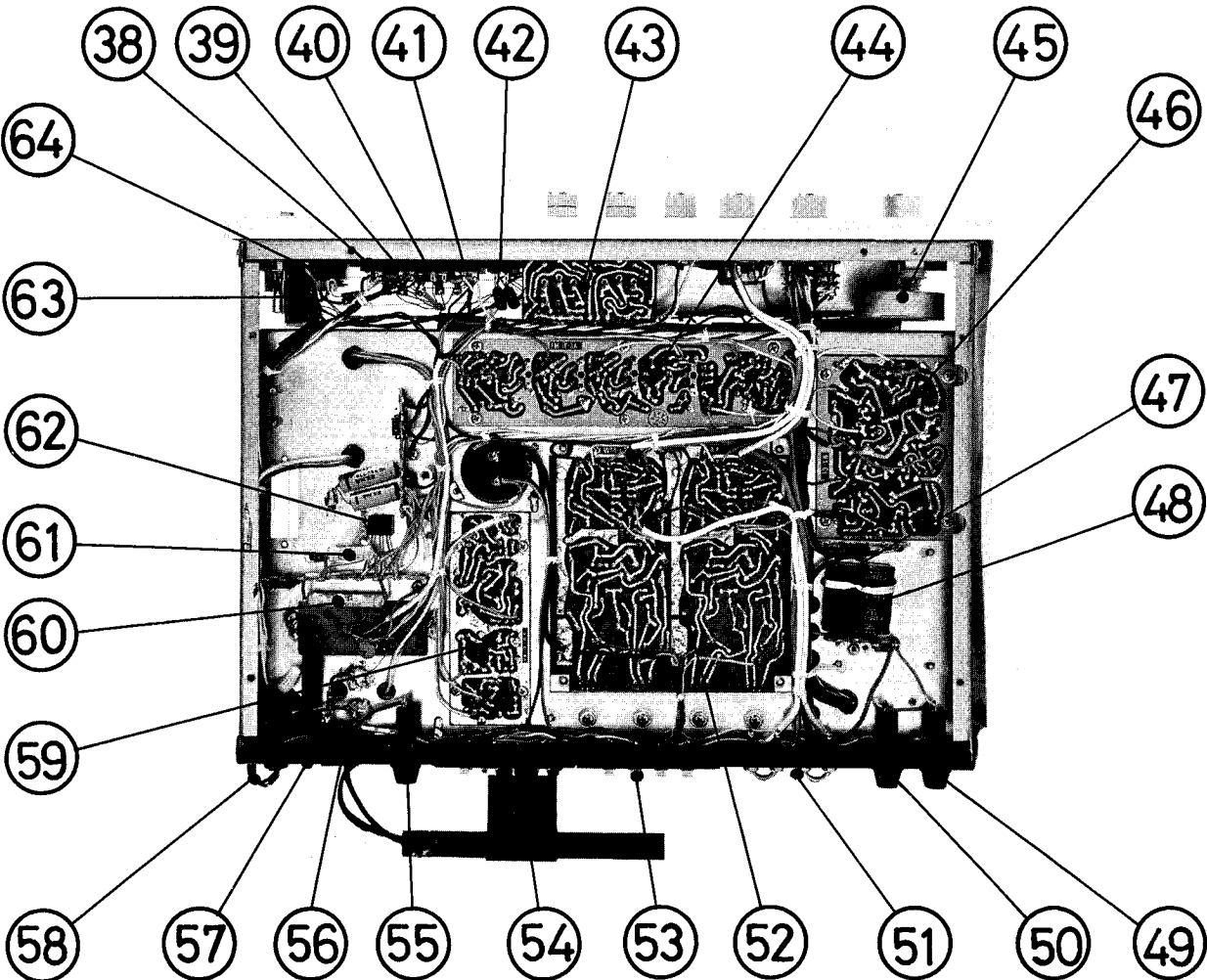
- Set Balance, Bass and Treble controls to their center position.
- Set Mode switch to "STEREO" Speaker switches to "ON" and Selector switch to "AUX".
- Connect 8 ohm (50W) resistor across L speaker terminals in parallel with the load resistor, connect the vertical input leads of the oscilloscope.
- 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 19 KHz TRANSFORMER (T301) |
| ⑥ BASS CONTROL | ⑲ AC LINE CORD | ㉕ 67 KHz S.C.A. COIL |
| ⑦ STEREO INDICATOR LAMP | ㉑ AM I.F.T. (T201) | ㉖ DOUBLER TRANSFORMER (T302) |
| ⑧ FUNCTION LAMP | ㉒ AM I.F.T. (T202) | ㉗ SEPARATION CONTROL (VR301) |
| ⑨ METER LAMP | ㉓ AM I.F.T. (T203) | ㉘ 72 KHz S.C.A. COIL |
| ⑩ FRONT PANEL | ㉔ AM LOOP STICK ANTENNA (L901) | ㉙ 19 KHz COIL (L301) |
| ⑪ POWER TRANSFORMER | ㉕ POWER TRANSISTOR (L-CHAN TR901) | ㉚ DIAL LAMP HOUSE |
| ⑫ FM I.F.T. (T101) | ㉖ POWER TRANSISTOR (L-CHAN TR902) | |
| ⑬ FM I.F.T. (T102) | ㉗ IDLING A D J | |

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 μ
- 48

35V 1000 μ
- 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

R 931
- 61

R 930
- 62

RECTIFIER
- 63

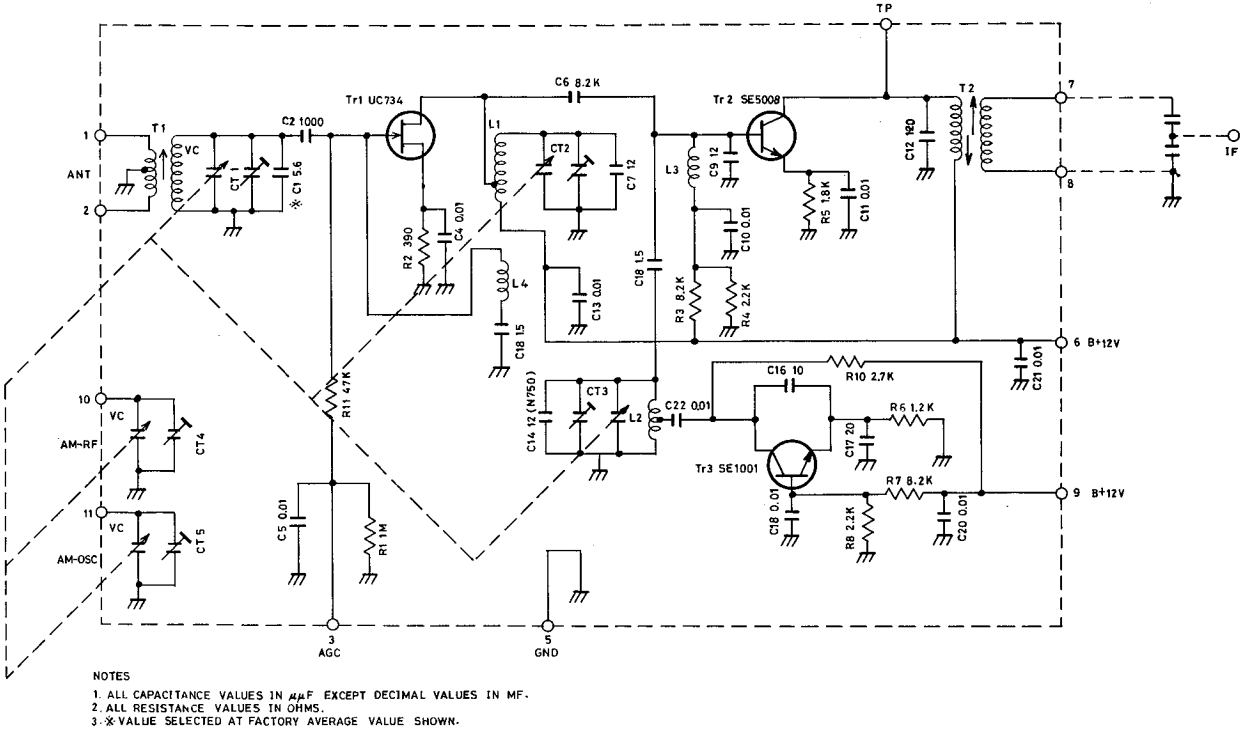
POWER SWITCH
- 64

HEAD PHONE JACK

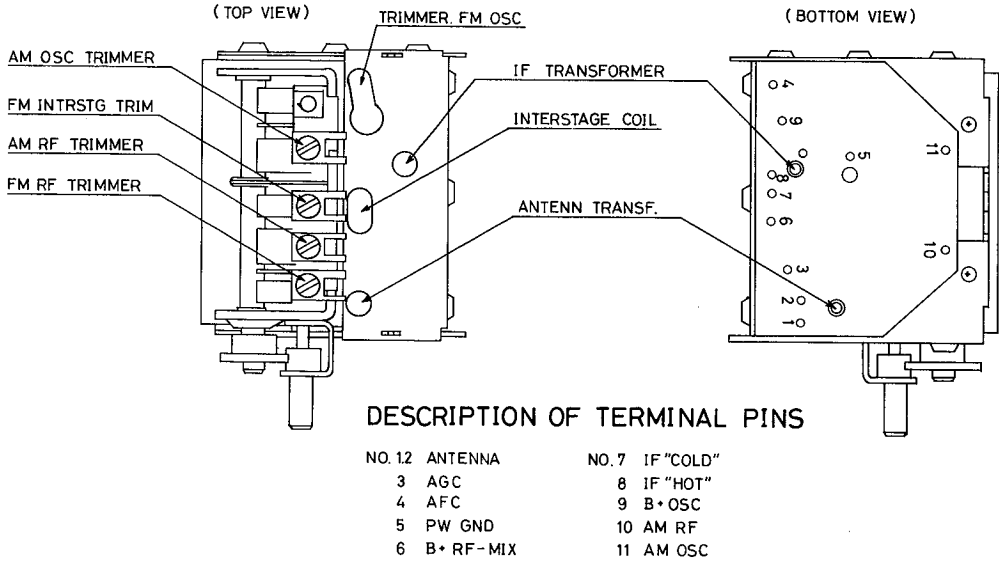
(C914)

35V2200 μ

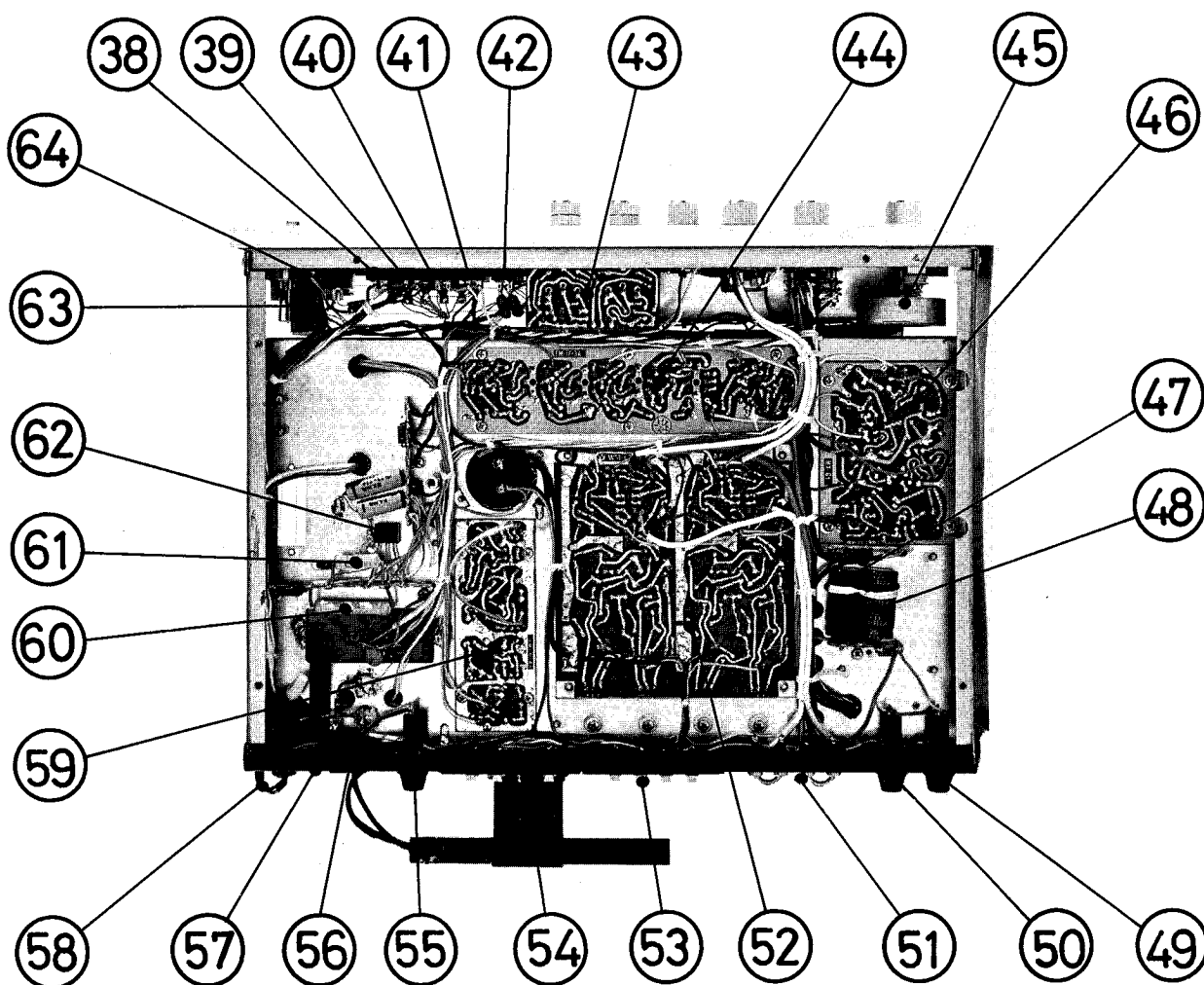
AM/FM FRONT END (32SN2F1-351)
SCHEMATIC — MODEL 330A



AM/FM FRONT END (32SN2F1-351)



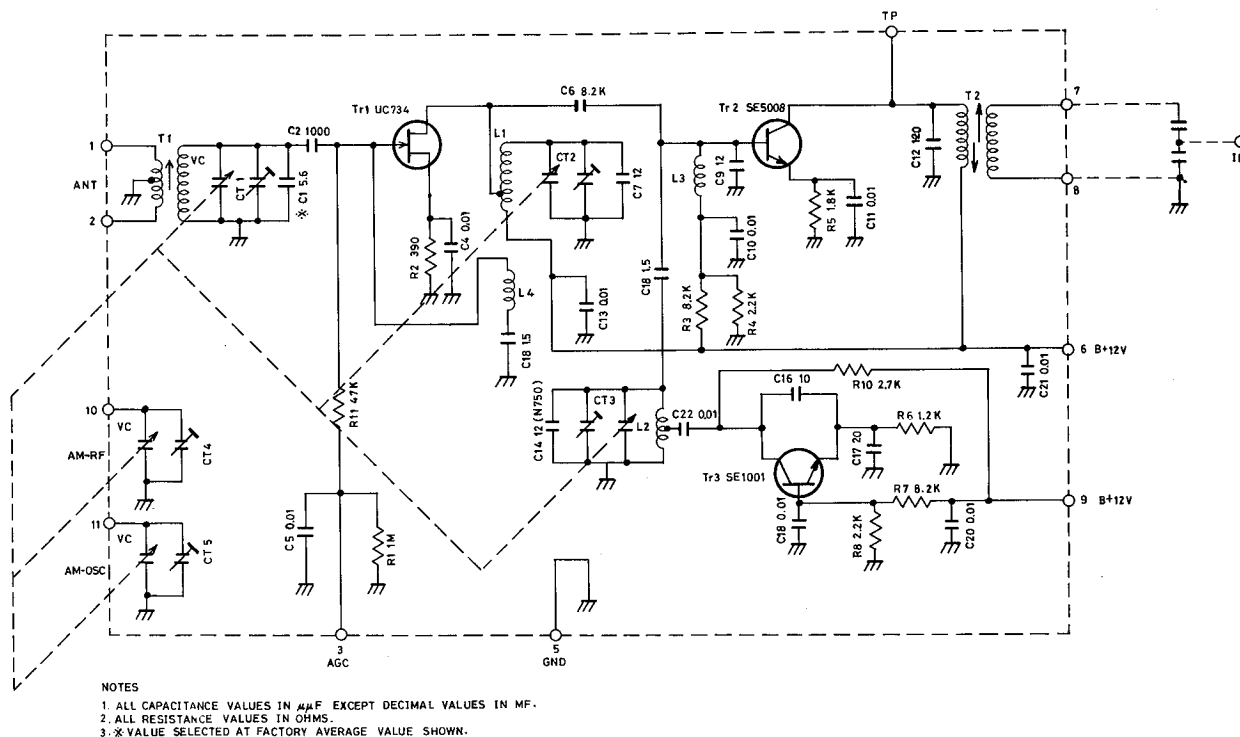
BOTTOM VIEW



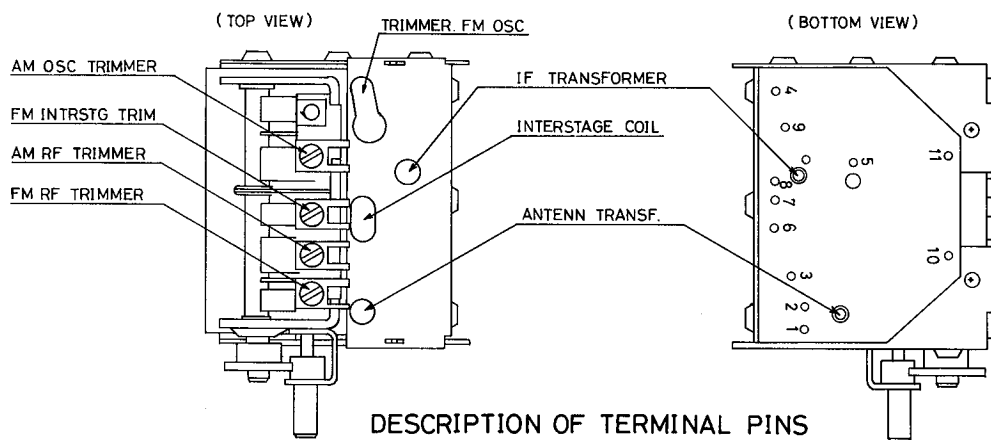
- (38) SPEAKER-1 SWITCH
- (39) SPEAKER-2 SWITCH
- (40) STEREO SWITCH
- (41) SOURCE SWITCH
- (42) CONTOUR SWITCH
- (43) TONE CONTROL P.C.B.
- (44) FM IF P.C.B.
- (45) FLY WHEEL
- (46) M.P.X. P.C.B.
- (47) 35V 1000 μ
- (48) 35V 1000 μ } (C914) 35V2200 μ
- (49) SPEAKER FUSE (L-CHAN)
- (50) SPEAKER FUSE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



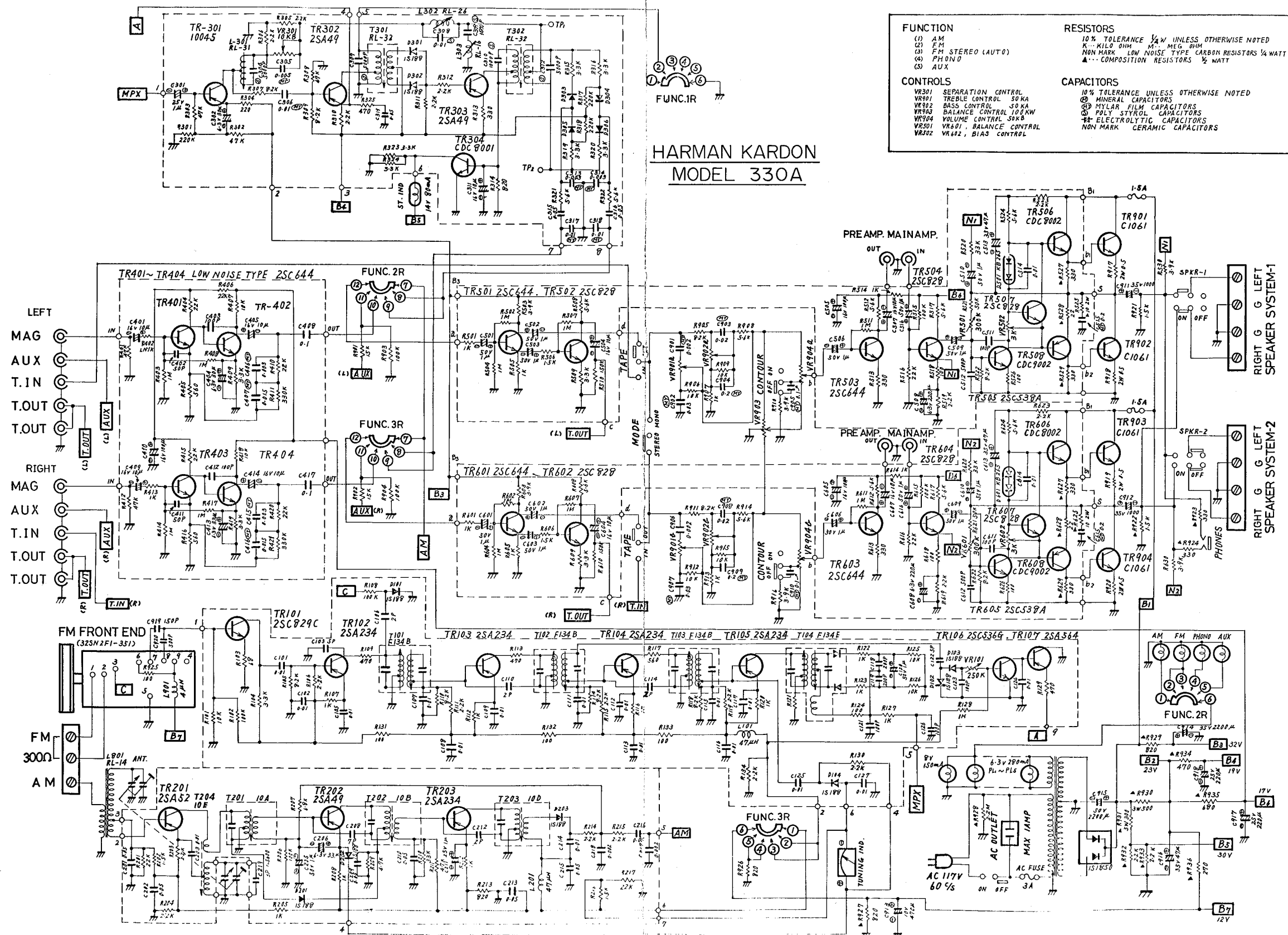
AM/FM FRONT END (32SN2F1-351)



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

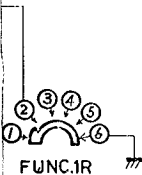
SCHEMATIC DIAGRAM — MODEL 330A



The diagram illustrates a complex electronic circuit for a radio receiver, organized into several functional blocks and stages:

- FM FRONT END (32SN2F1-351):** Located at the bottom left, it includes an antenna (ANT.) and a variable capacitor (C201) for frequency tuning. It features transistors TR201 (2SA52) and TR202 (2SA49), along with various resistors (R201-R208) and capacitors (C201-C208).
- Audio Amplifier Stages:**
 - TR401~TR404 LOW NOISE TYPE 2SC644:** A multi-stage audio amplifier section in the middle left, utilizing transistors TR401, TR402, TR403, and TR404. It includes a feedback network with resistors R401-R408 and capacitors C401-C408.
 - TR501 2SC644, TR502 2SC828:** Another audio amplifier stage in the middle right, using transistors TR501 and TR502, with resistors R501-R508 and capacitors C501-C508.
 - TR601 2SC644, TR602 2SC828:** A third audio amplifier stage at the bottom right, featuring transistors TR601 and TR602, with resistors R601-R608 and capacitors C601-C608.
- Detector and Tuning Indicator Stages:**
 - TR101 2SC829C, TR102 2SA234:** A detector and tuning indicator stage in the bottom middle, using transistors TR101 and TR102, with resistors R101-R108 and capacitors C101-C108.
 - TR203 2SA234, T203 10D:** A detector and tuning indicator stage at the bottom right, using transistors TR203 and T203, with resistors R201-R208 and capacitors C201-C208.
- Functional Blocks:**
 - FUNC. 1:** A block at the top right, likely a detector or amplifier stage, containing transistors TR301, TR302, and TR303, along with various passive components.
 - FUNC. 2R:** A block in the middle right, likely a detector or amplifier stage, containing transistors TR501 and TR502.
 - FUNC. 3R:** A block in the bottom middle, likely a detector or amplifier stage, containing transistors TR101 and TR102.
- Input and Output Sections:**
 - LEFT and RIGHT MAG, AUX, T.IN, T.OUT:** Input and output terminals for magnetic tape, auxiliary, and tuning indicator signals.
 - MPX:** A multiplexing input at the top left.
 - STEREO MONO:** A switch at the bottom right for selecting between stereo and mono sound.

The circuit is densely packed with components, including numerous resistors (R1-R100), capacitors (C1-C100), and transistors (TR1-TR100). It also includes various passive components like inductors (L1-L10) and diodes (D1-D10). The diagram is a detailed representation of a high-fidelity radio receiver circuit.



FUNCTION

- (1) AM
- (2) FM
- (3) FM STEREO (AUTO)
- (4) PHONO
- (5) AUX

CONTROLS

- VR301 SEPARATION CONTROL
- VR901 TREBLE CONTROL 50 K Ω
- VR902 BASS CONTROL 50 K Ω
- VR903 BALANCE CONTROL 100 K Ω
- VR904 VOLUME CONTROL 50 K Ω
- VR501 VR601 BALANCE CONTROL
- VR502 VR602 BIAS CONTROL

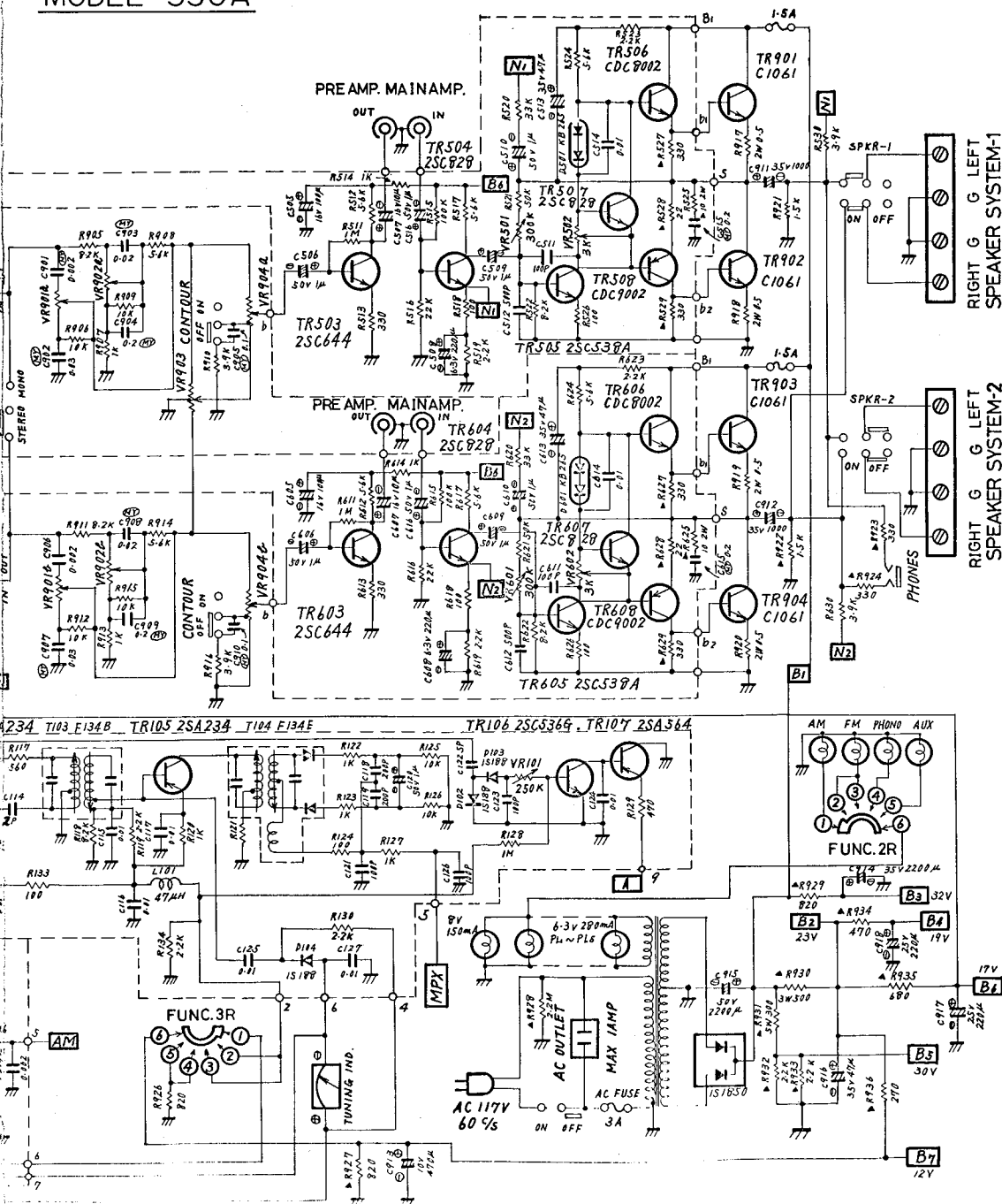
RESISTORS

10% TOLERANCE 1/4 W UNLESS OTHERWISE NOTED
 K... KILO OHM M... MEG OHM
 NON MARK LOW NOISE TYPE CARBON RESISTORS 1/4 WATT
 ▲... COMPOSITION RESISTORS 1/2 WATT

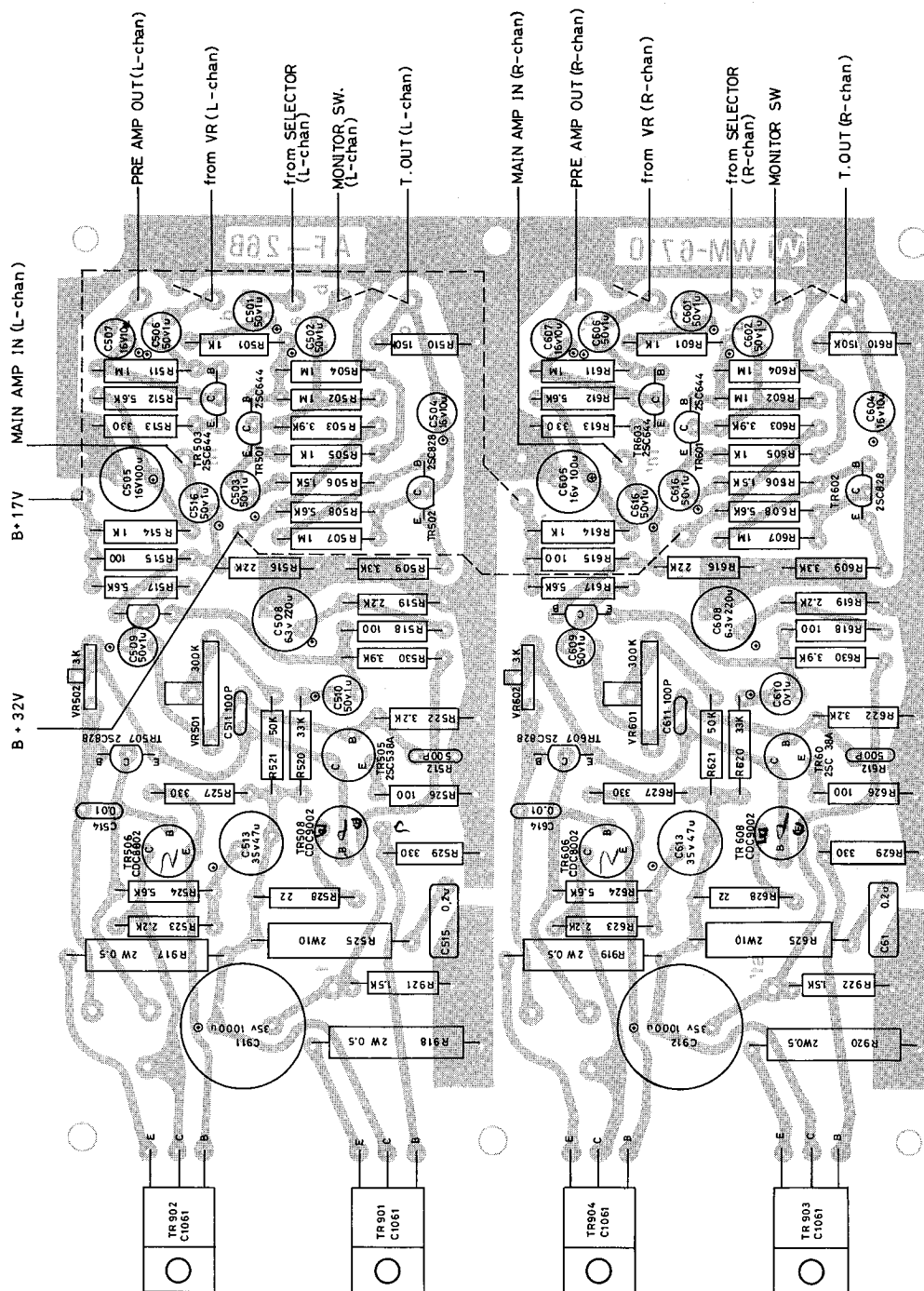
CAPACITORS

10% TOLERANCE UNLESS OTHERWISE NOTED
 ② MINERAL CAPACITORS
 ③ MYLAR FILM CAPACITORS
 ④ POLY STYROL CAPACITORS
 ⑤ ELECTROLYTIC CAPACITORS
 NON MARK CERAMIC CAPACITORS

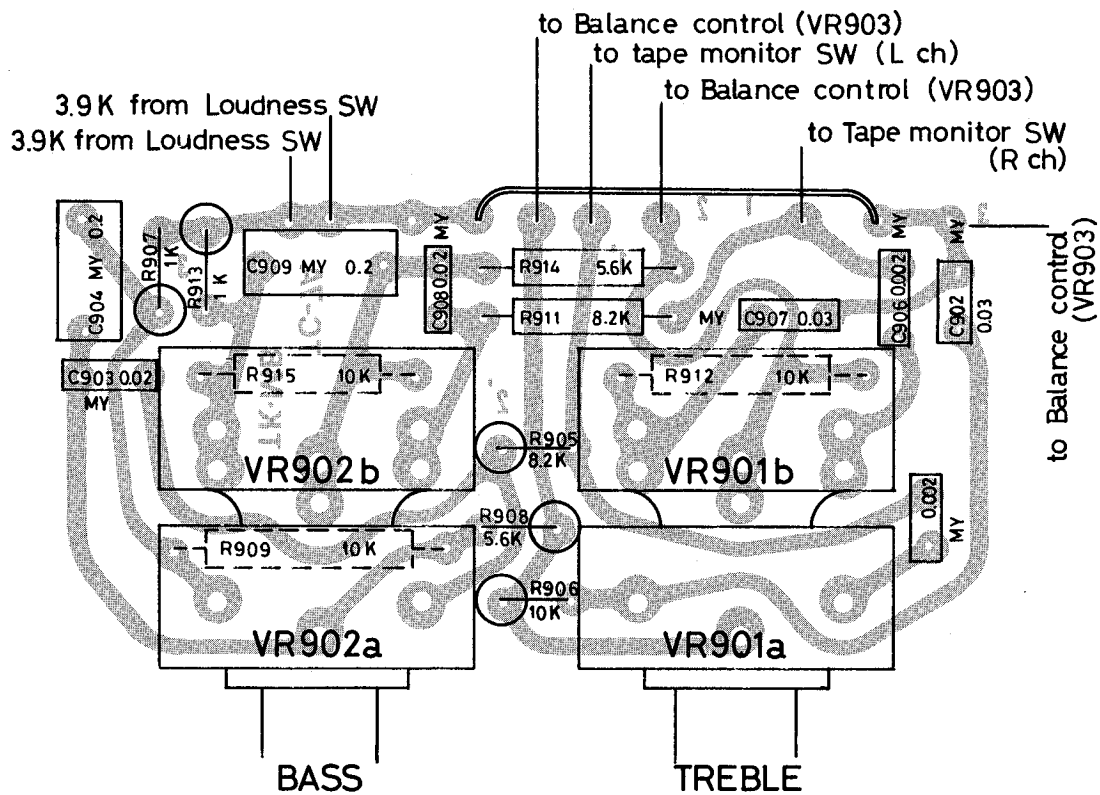
HARMAN KARDON MODEL 330A



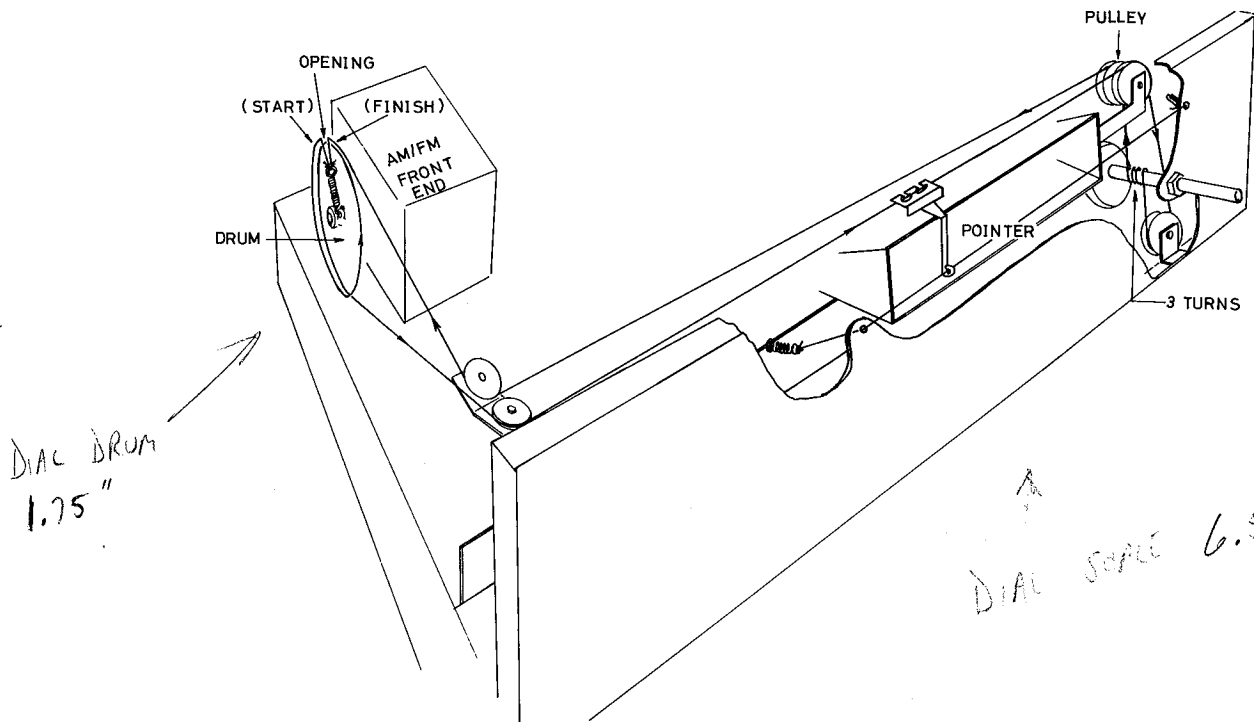
PREDRIVER BOARD



TONE CONTROL BOARD



STRINGING DIAGRAM



REPLACEMENT PARTS LIST

HK PART NO.	REF. NO.	DESCRIPTION
TRANSFORMERS & COILS		
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 1N754A
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

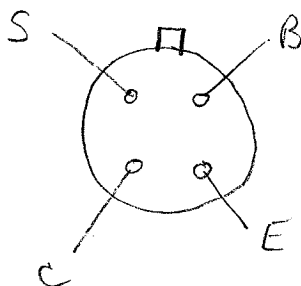
TRANSISTORS

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

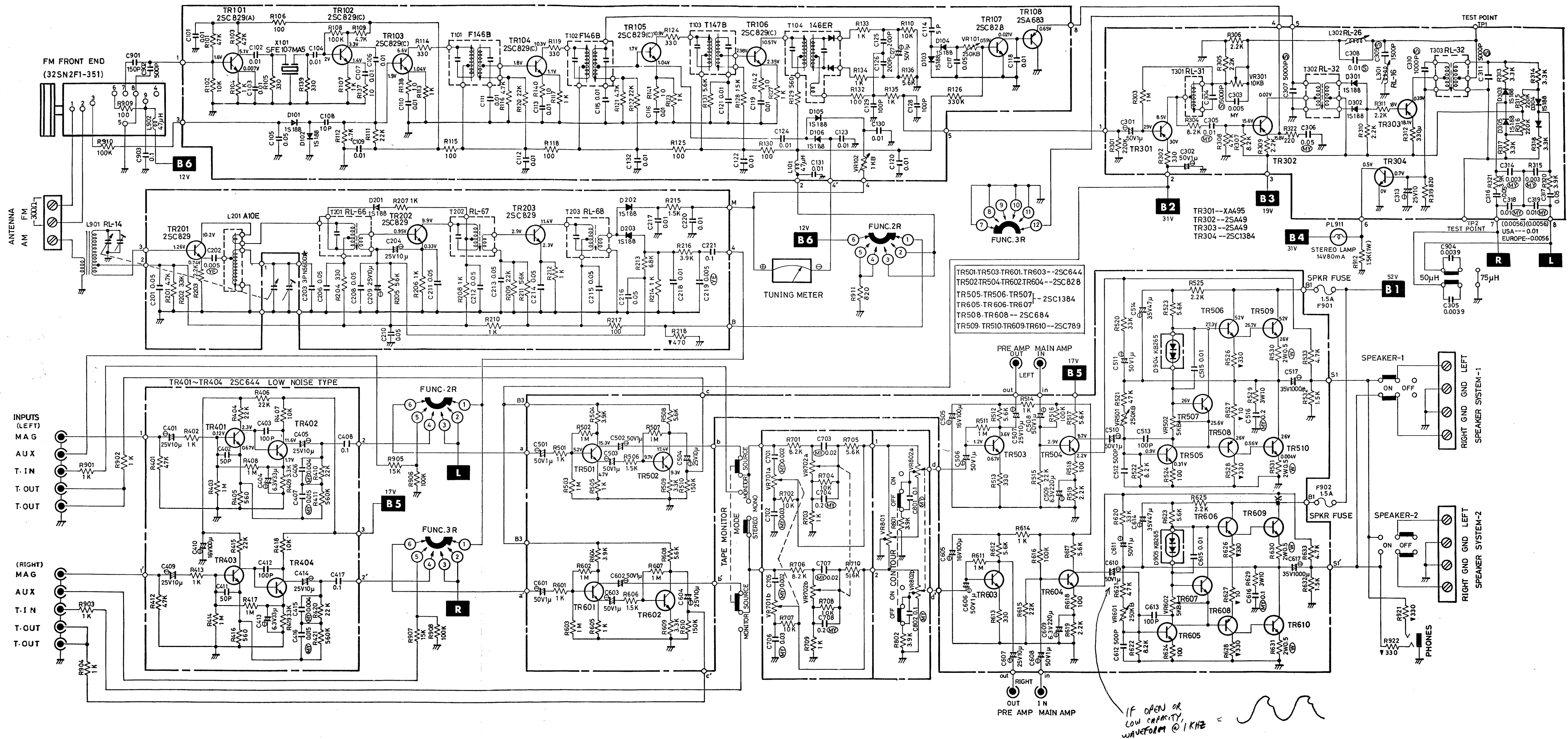


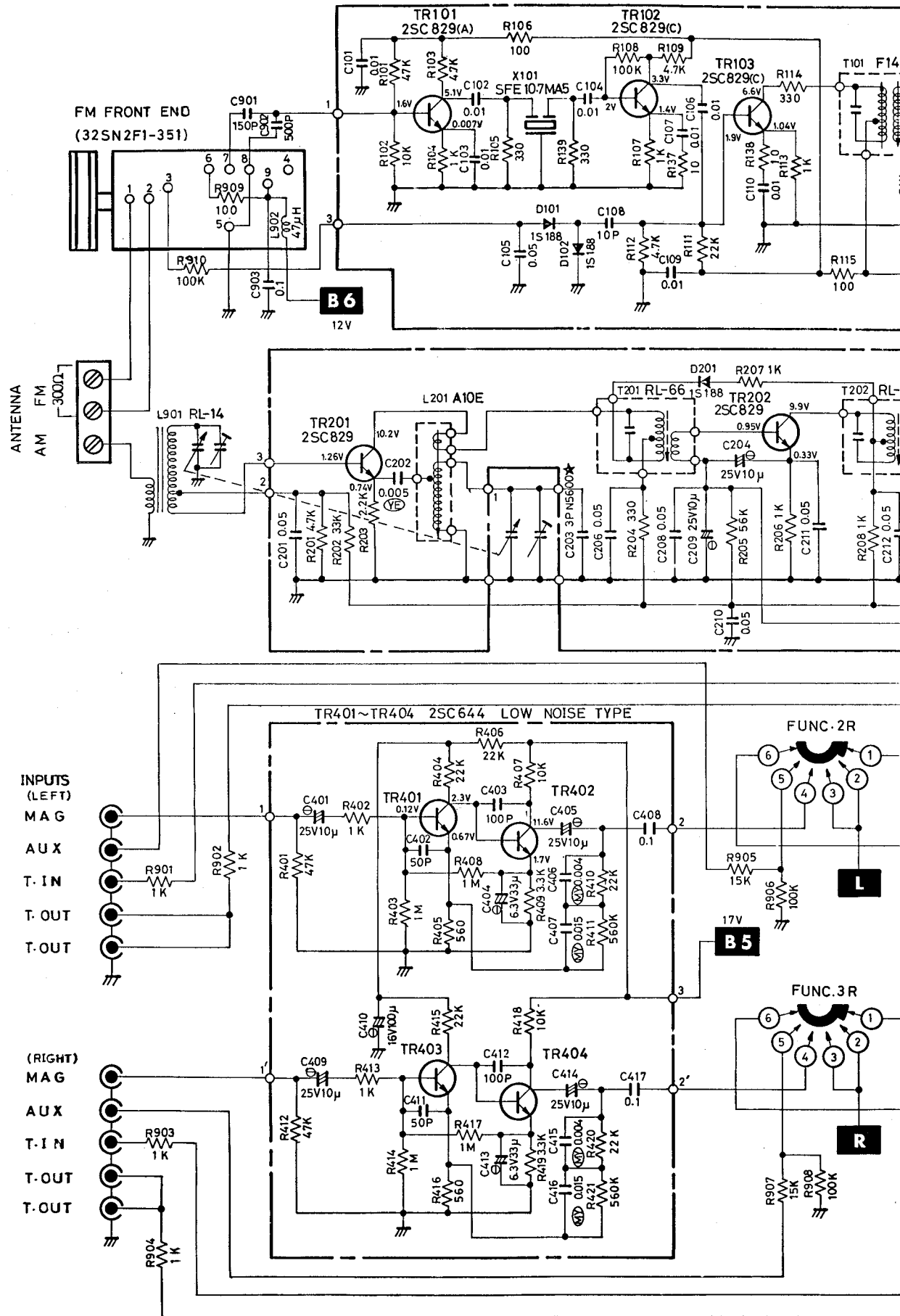
The Harman-Kardon
Model 330B - (SERIES B-2)

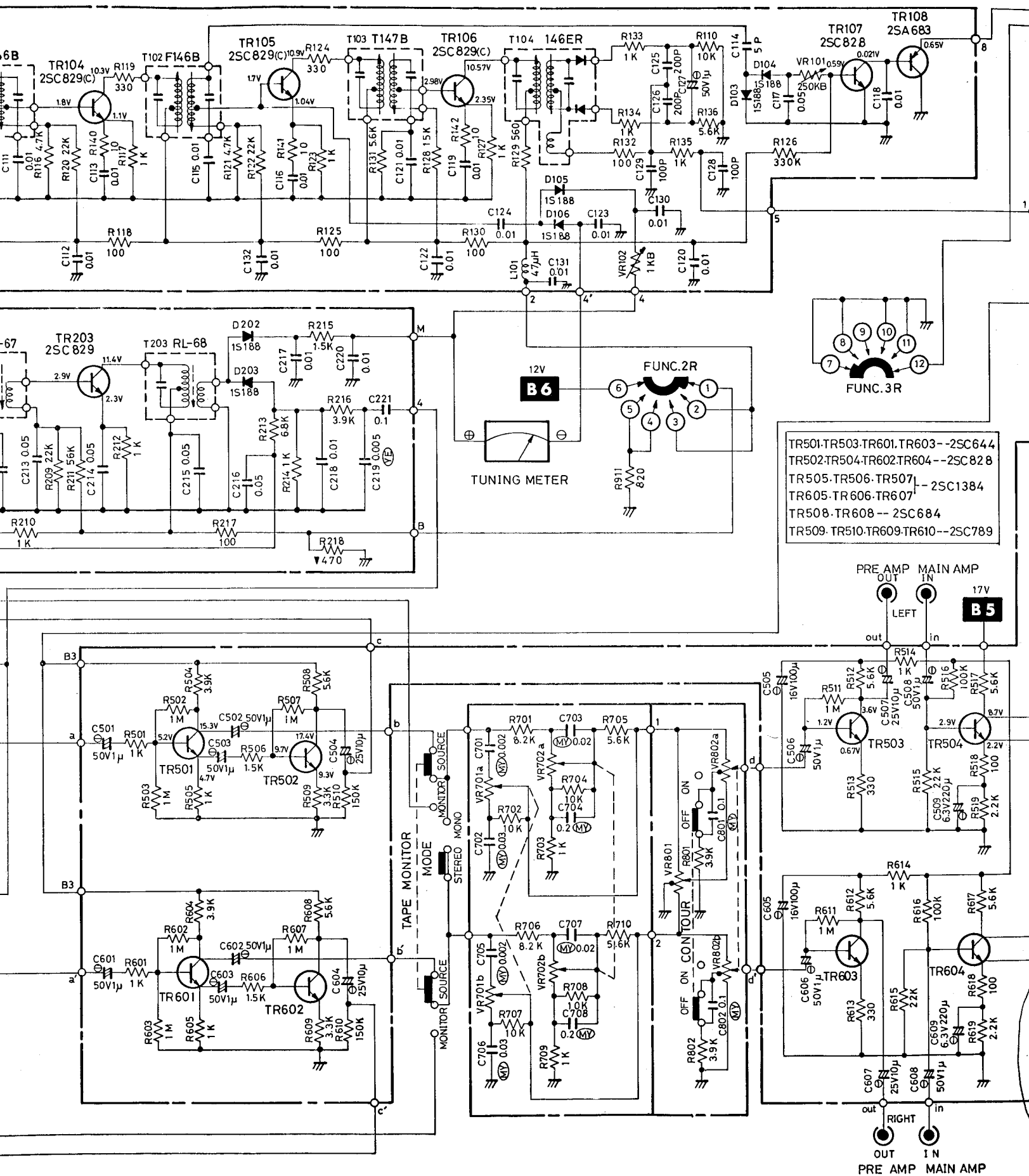
AM/FM Stereo FM
Solid State Receiver

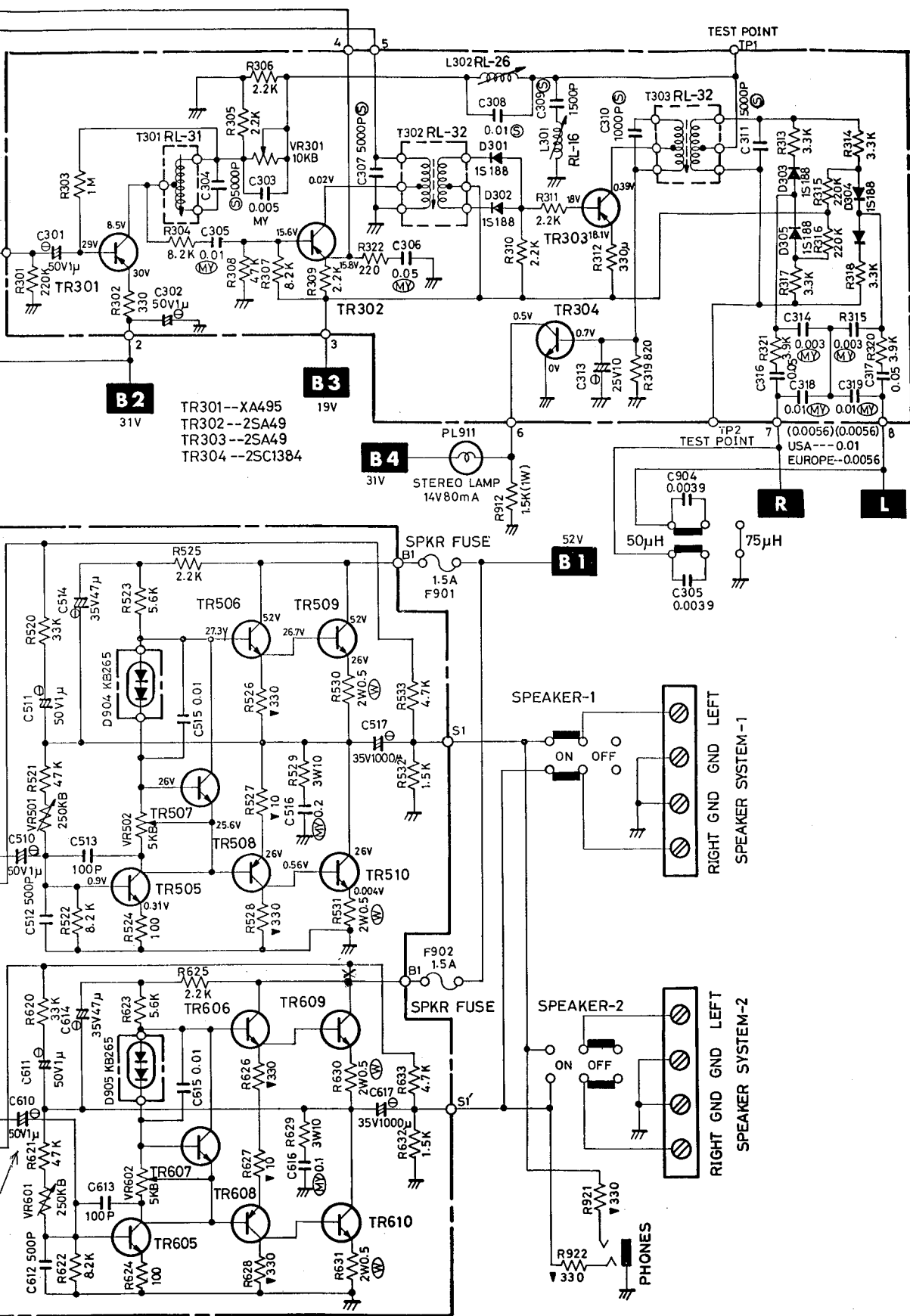
Technical Manual Addendum
Serial Number 7322984 to 7327986

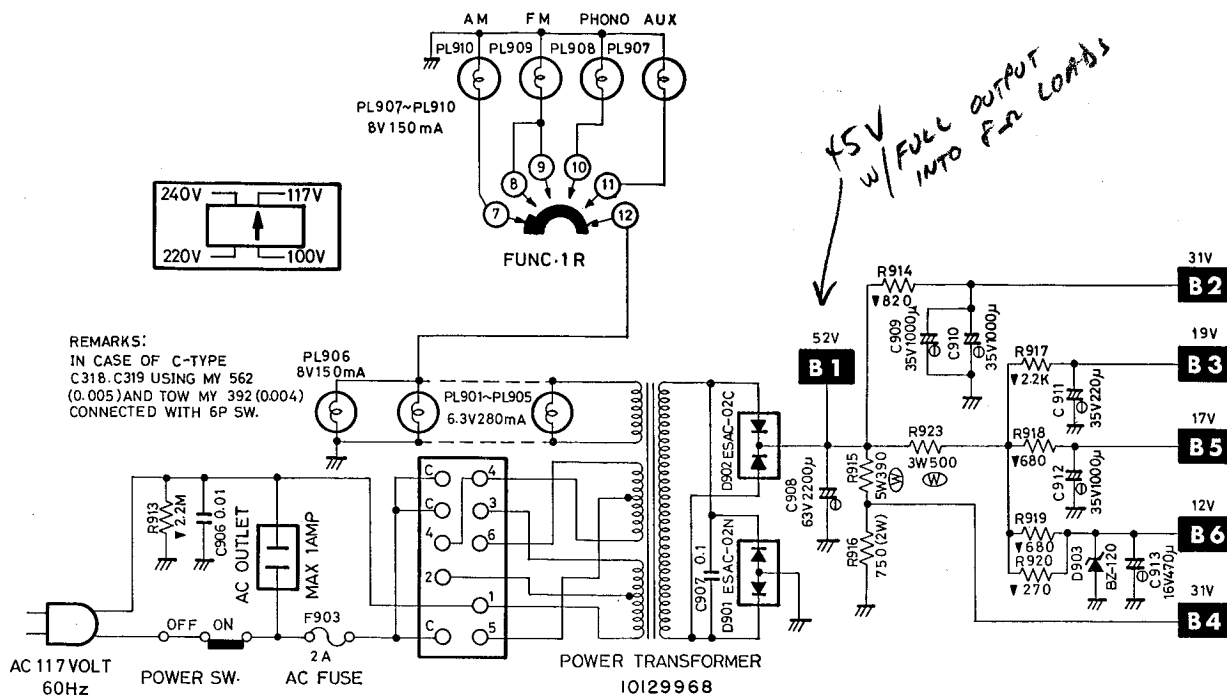
harman/kardon











45V
w/ FULL OUTPUT
INTO 8Ω LOADS

ITEM	SCHEMATIC LOCATION (LAST)
FM IF AMP	R142
AM IF AMP	C132
FM MPX AMP	R218
EQUALIZER	C221
MAIN AMP	R322
CHASSIS	C319
	R421
	C417
	R533 R633
	C517 C617
	R710
	C708
	R802
	C802
	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
V---COMPOSITION RESISTORS 1/2 WATT
NON MARK---LOW NOISE TYPE CARBON RESISTORS 1/4 WATT
□---SQUARE RESISTORS

(CAPACITORS)

MY---MYLAR FILM CAPACITORS
★---TEMPERATURE COEFFICIENT CAPACITORS
E---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: 2SC789 OR 2SC1107
LOW NOISE TRANSISTOR: 2SC644 OR 2SC693 OR 2SC732
DRIVER: 2SC1384 OR 2SC1509, 2SA684 OR 2SA777
RMS POWER (8Ω) 22W X1 25W X2
S---POLY STYROL CAPACITORS
YE---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:

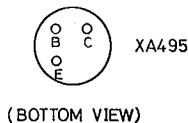
- Power Supply - use new Power Transformer HK no. 10129968
- Output Stage - use new Output Transistors HK no. 43030544

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

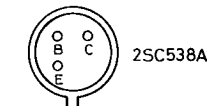
2SC644
2SC828
2SC829
2SA684
2SC1384



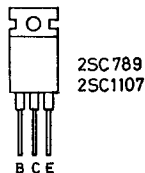
(BOTTOM VIEW)



(BOTTOM VIEW)



(BOTTOM VIEW)



(TOP VIEW)



(BOTTOM VIEW)

