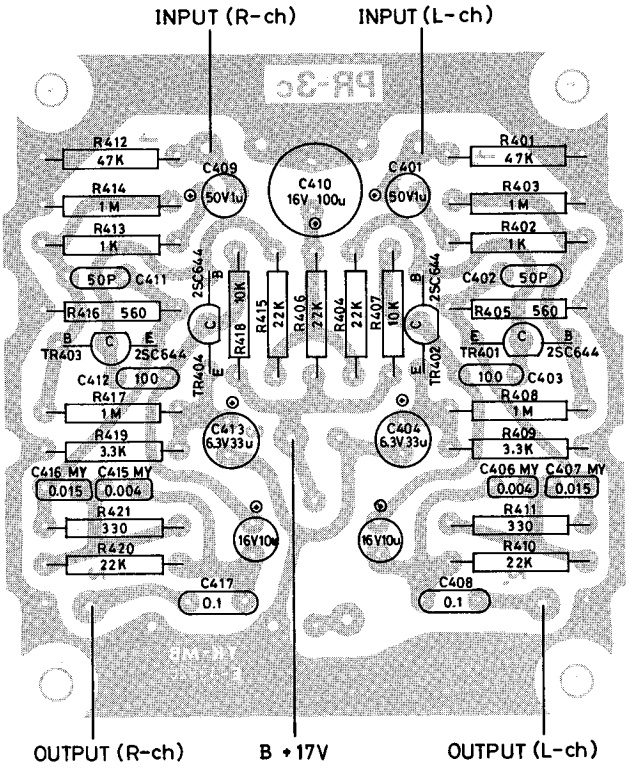
The Harman-Kardon Model 330A + 330B ROLAND W/ADDENDUM

AM/FM Stereo FM Solid State Receiver

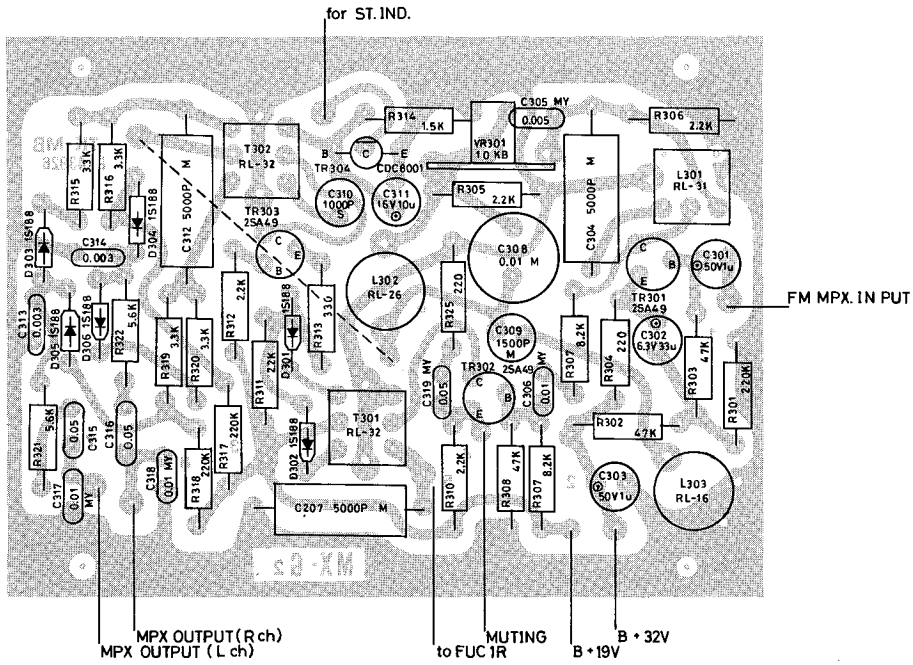
Technical Manual

harman/kardon

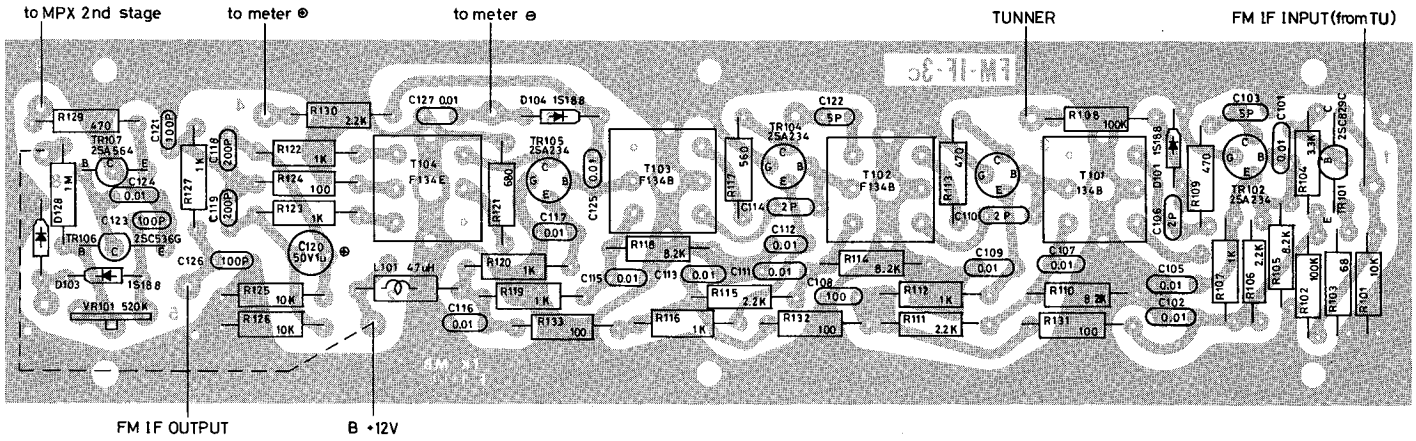
PREAMP BOARD



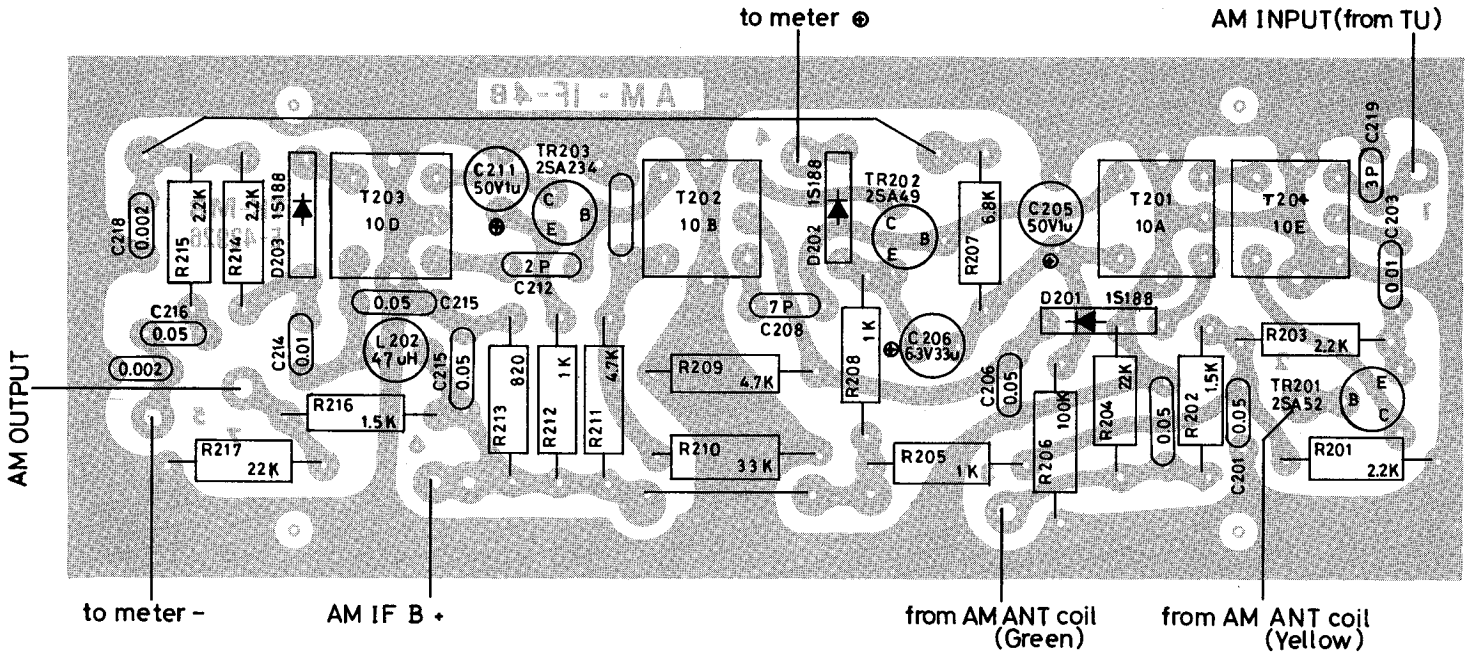
MULTIPLEX BOARD



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 (unmodu-lated)	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 limitter satulation).	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. 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					
7		Composite 1,000 Hz R chan	Tape Output L 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 "

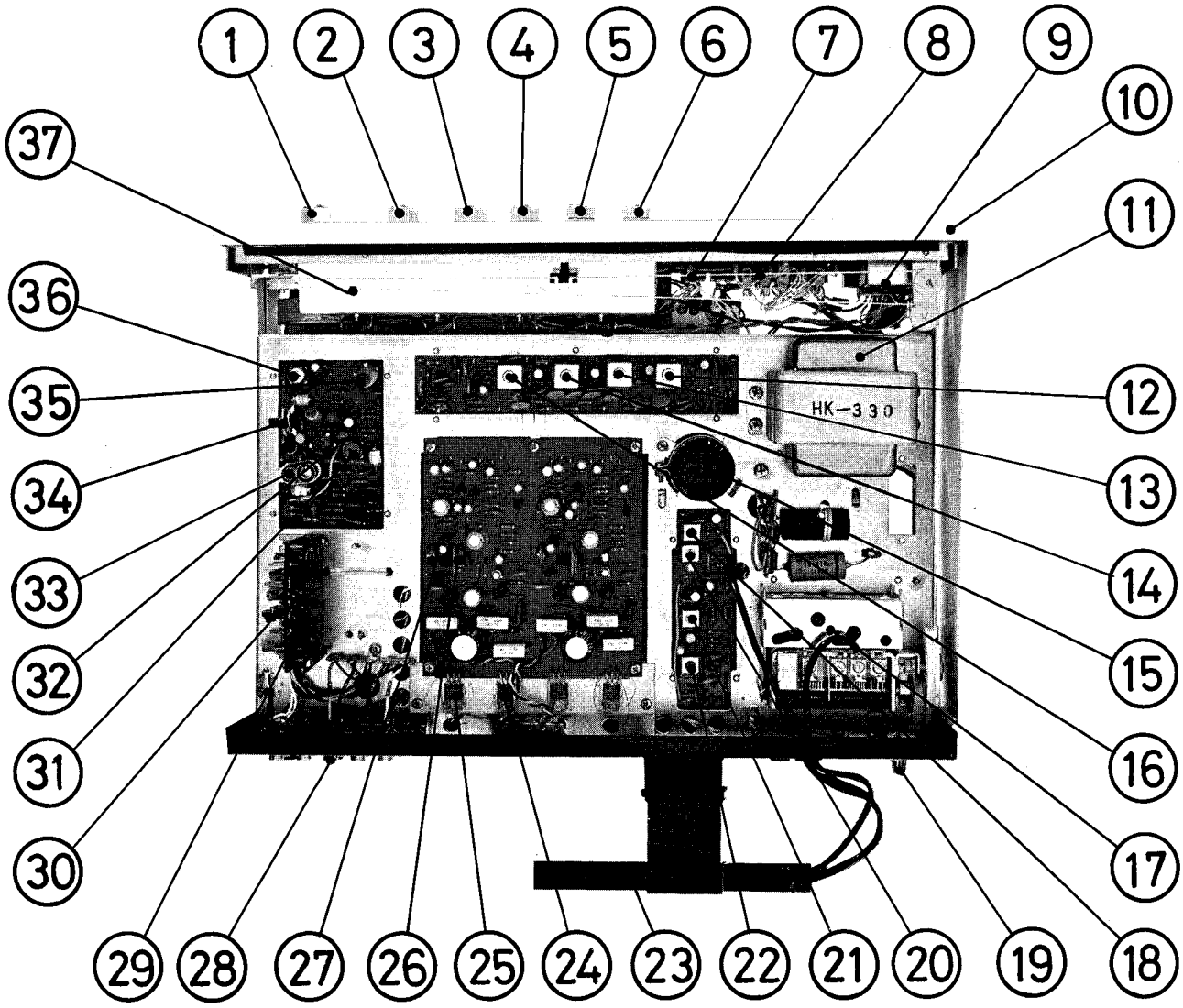
Input Signal must be kept as low as possible to avoid A.V.C. action

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

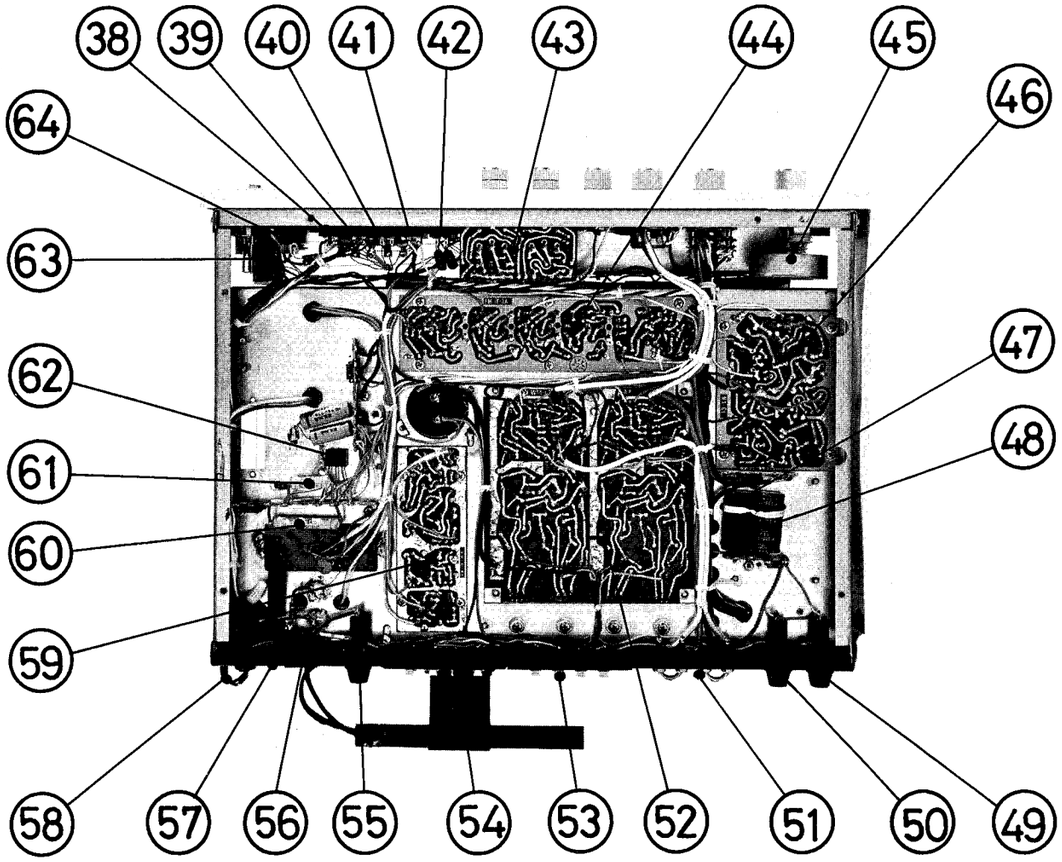
- Set Balance, Bass and Treble controls to their center position.
- Set Mode switch to "STEREO" Speaker switches to "ON" and Selector switch to "AUX".
- Connect 8 ohm (50W) resistor across L speaker terminals in parallel with the load resistor, connect the vertical input leads of the oscilloscope.
- 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



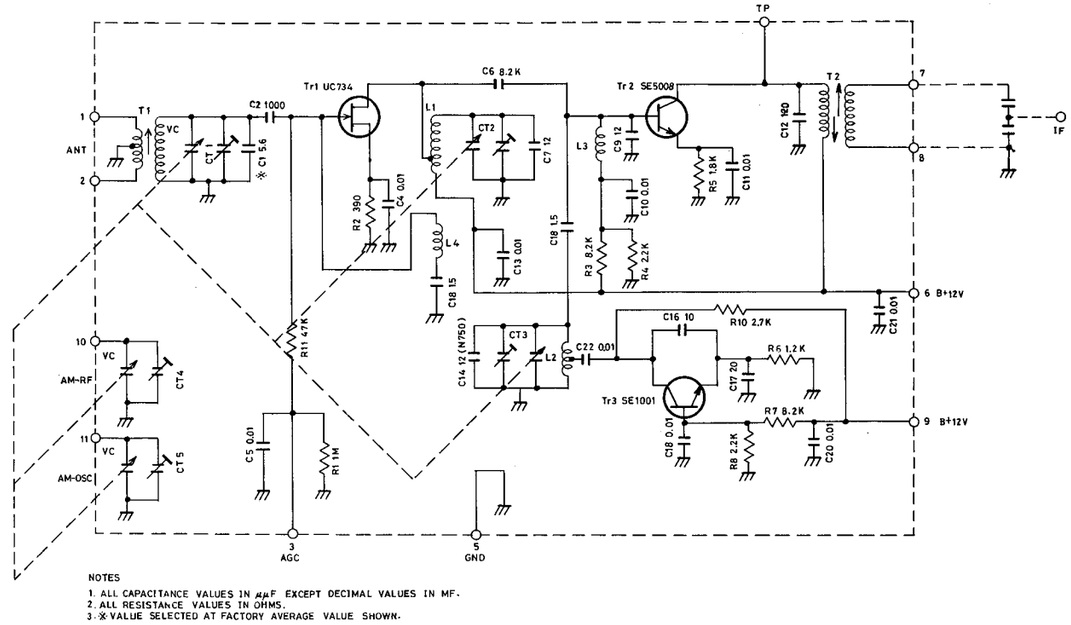
(1) TUNING
(2) FUNCTION SWITCH
(3) VOLUME CONTROL
(4) BALANCE CONTROL
(5) TREBLE CONTROL
(6) BASS CONTROL
(7) STEREO INDICATOR LAMP
(8) FUNCTION LAMP
(9) METER LAMP
(10) FRONT PANEL
(11) POWER TRANSFORMER
(12) FM I.F.T. (T101)
(13) FM I.F.T. (T102)
(14) FM IFT (T103)
(15) RIPPLE FILTER (C915)
(16) FM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

BOTTOM VIEW



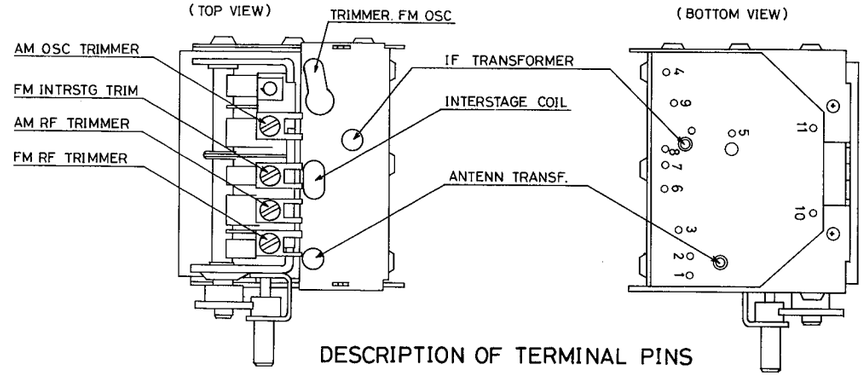
38 SPEAKER-1 SWITCH
39 SPEAKER-2 SWITCH
40 STEREO SWITCH
41 SOURCE SWITCH
42 CONTOUR SWITCH
43 TONE CONTROL P.C.B.
44 FM IF P.C.B.
45 FLY WHEEL
46 M.P.X. P.C.B.
47 35 V 1000μ
48 35 V 1000μ
(C914) 35V2200μ
49 SPEAKER FUSE (L-CHAN)
50 SPEAKER FUSE (R-CHAN)
51 PRE OUT MAIN IN PINJACK
52 AF P.C.B.
53 SPEAKER 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 μμF EXCEPT DECIMAL VALUES IN MF.
2. ALL RESISTANCE VALUES IN OHMS.
3. ※ VALUE SELECTED AT FACTORY AVERAGE VALUE SHOWN.

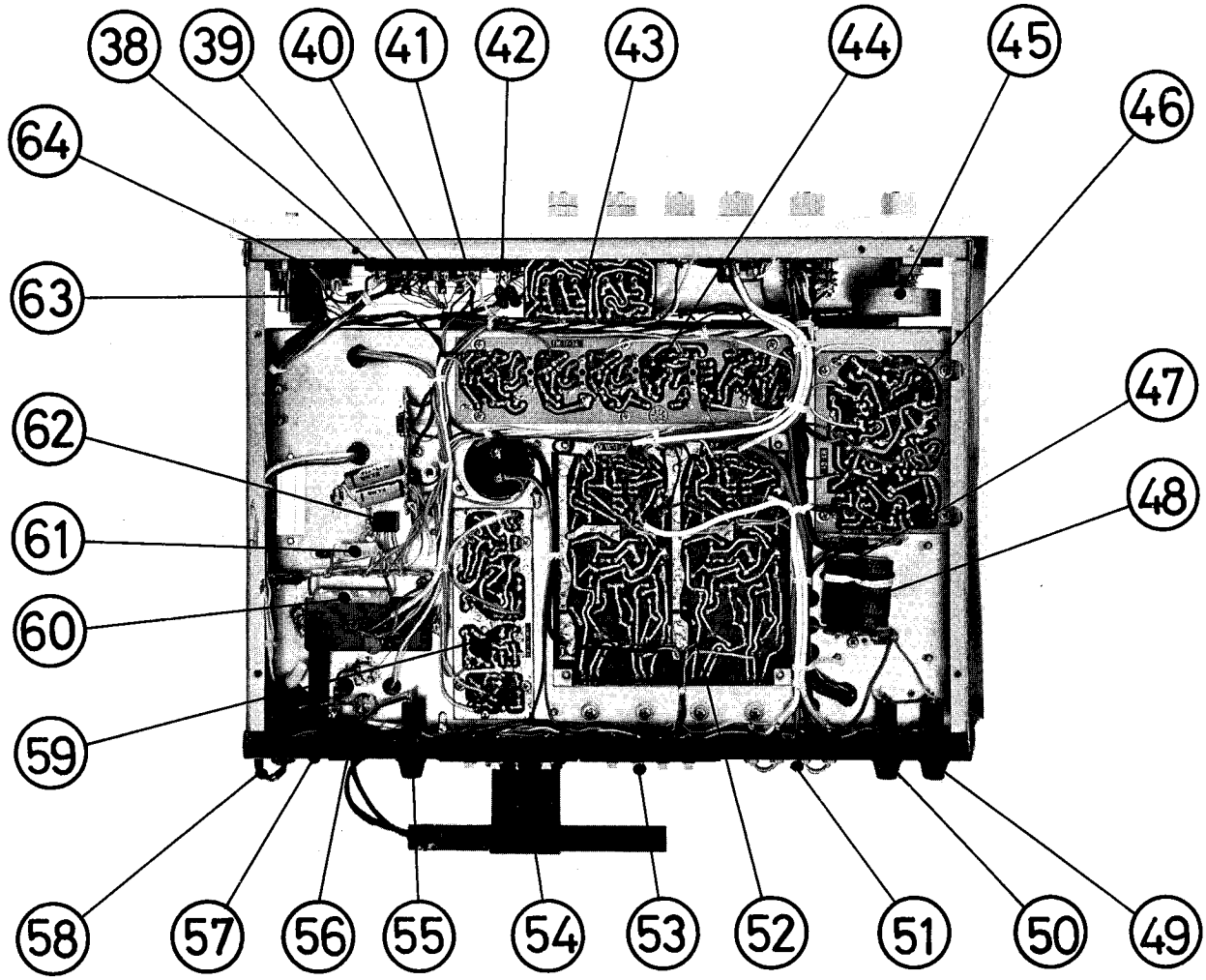
AM/FM FRONT END (32SN2F1-351)



DESCRIPTION OF TERMINAL PINS

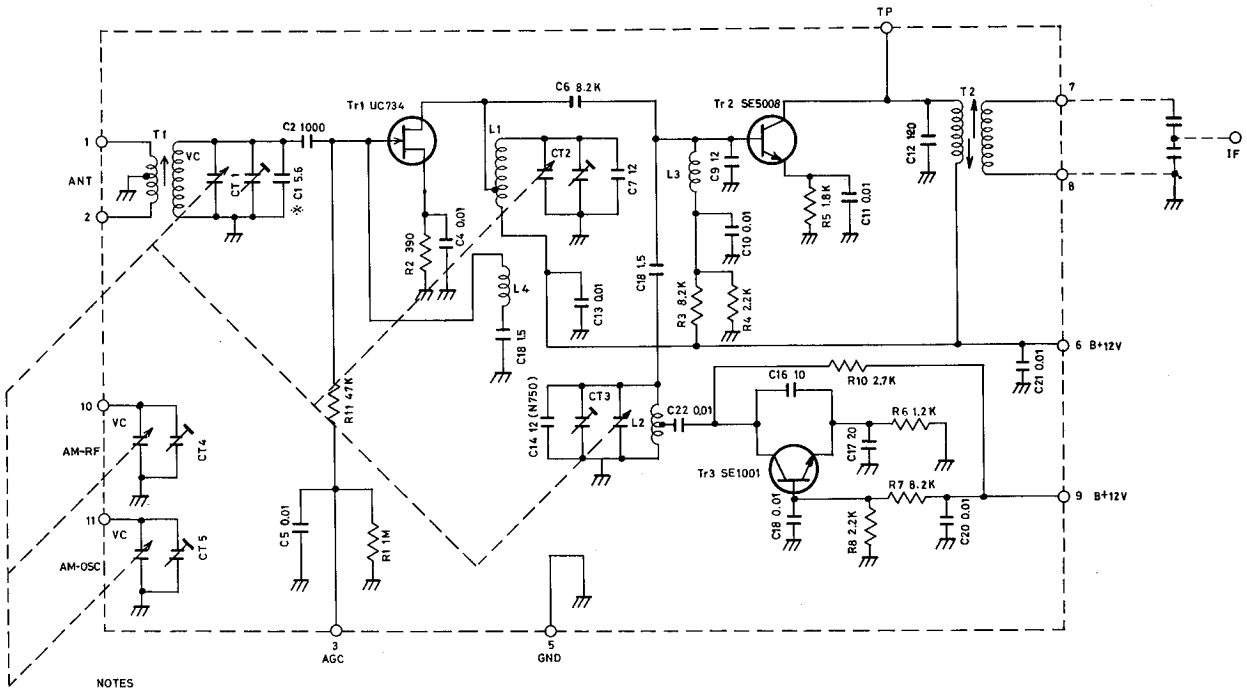
NO. 1.2	ANTENNA	NO. 7	IF "COLD"
3	AGC	8	IF "HOT"
4	AFC	9	B+ OSC
5	PW GND	10	AM RF
6	B+ RF-MIX	11	AM OSC

BOTTOM VIEW



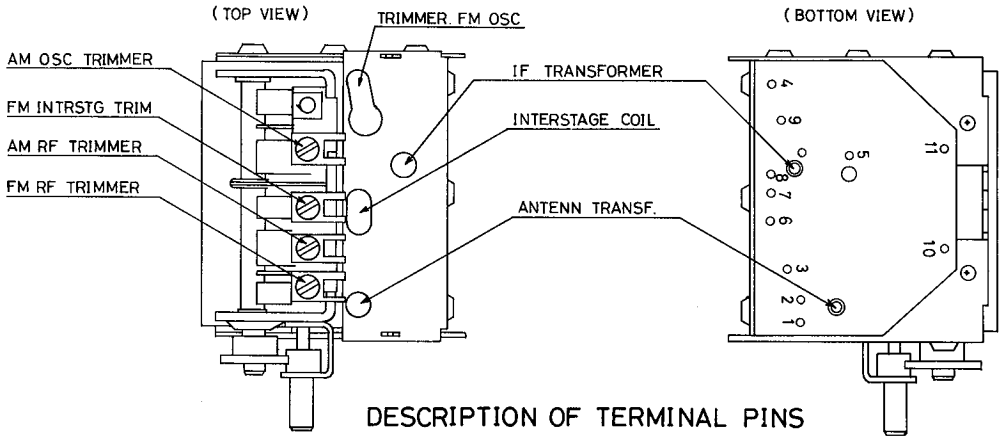
(38) SPEAKER-1 SWITCH
(39) SPEAKER-2 SWITCH
(40) STEREO SWITCH
(41) SOURCE SWITCH
(42) CONTOUR SWITCH
(43) TONE CONTROL P.C.B.
(44) FM IF P.C.B.
(45) FLY WHEEL
(46) M.P.X. P.C.B.
(47) 35V 1000μ
(48) 35V 1000μ } (C914) 35V2200μ
(49) SPEAKER FUSE (L-CHAN)
(50) SPEAKER FUSE (R-CHAN)
(51) PRE OUT MAIN IN 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 μμF EXCEPT DECIMAL VALUES IN MF.
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. 1.2	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

HARMAN KARDON
MODEL 330A

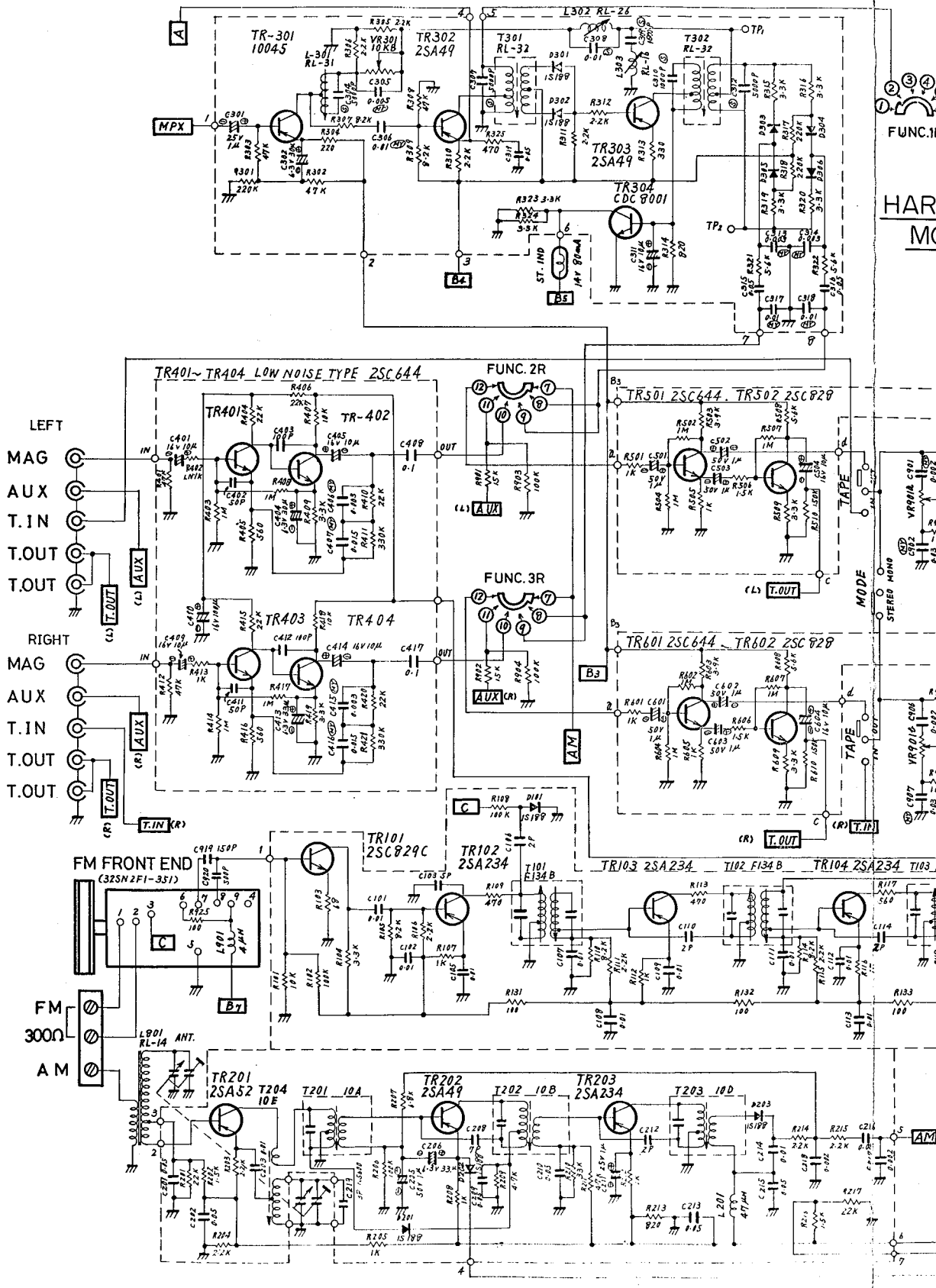
FUNCTION
(1) AM
(2) FM
(3) FM STEREO (AUTO)
(4) PHONO
(5) AUX

CONTROLS
VR301 SEPARATION CONTROL
VR901 TREBLE CONTROL 50 KA
VR902 BASS CONTROL 50 KA
VR903 BALANCE CONTROL 100 KW
VR904 VOLUME CONTROL 50 KB
VR501 VR601, BALANCE CONTROL
VR502 VR602, BIAS CONTROL

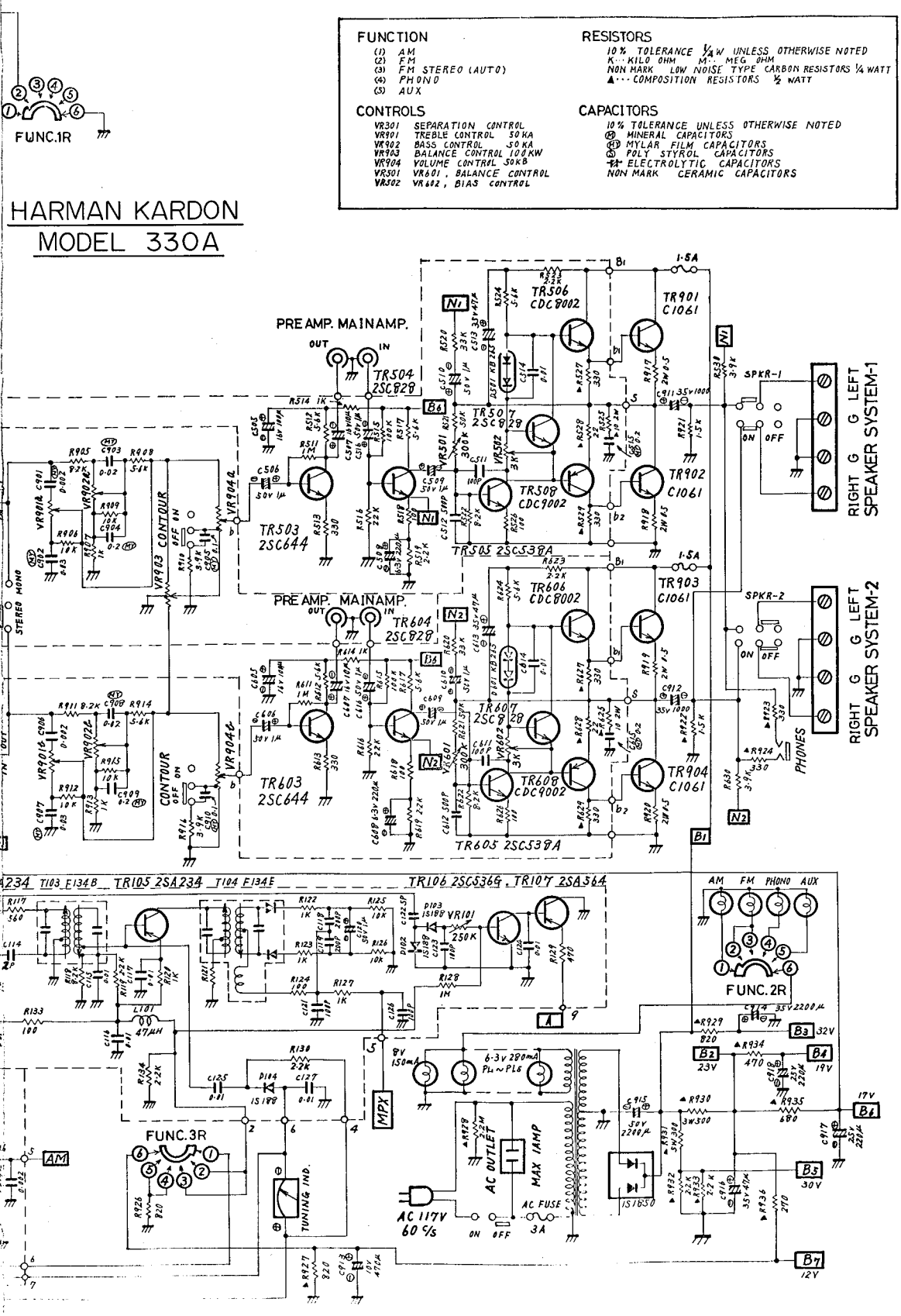
RESISTORS
10 % TOLERANCE ¼ W UNLESS OTHERWISE NOTED
K··· KILO OHM M··· MEG OHM
NON MARK LOW NOISE TYPE CARBON RESISTORS ¼ WATT
▲··· COMPOSITION RESISTORS ½ WATT

CAPACITORS
10 % TOLERANCE UNLESS OTHERWISE NOTED
NON MARK CERAMIC CAPACITORS
(M) MINERAL CAPACITORS
(MY) MYLAR FILM CAPACITORS
(S) POLY STYROL CAPACITORS
ELECTROLYTIC CAPACITORS

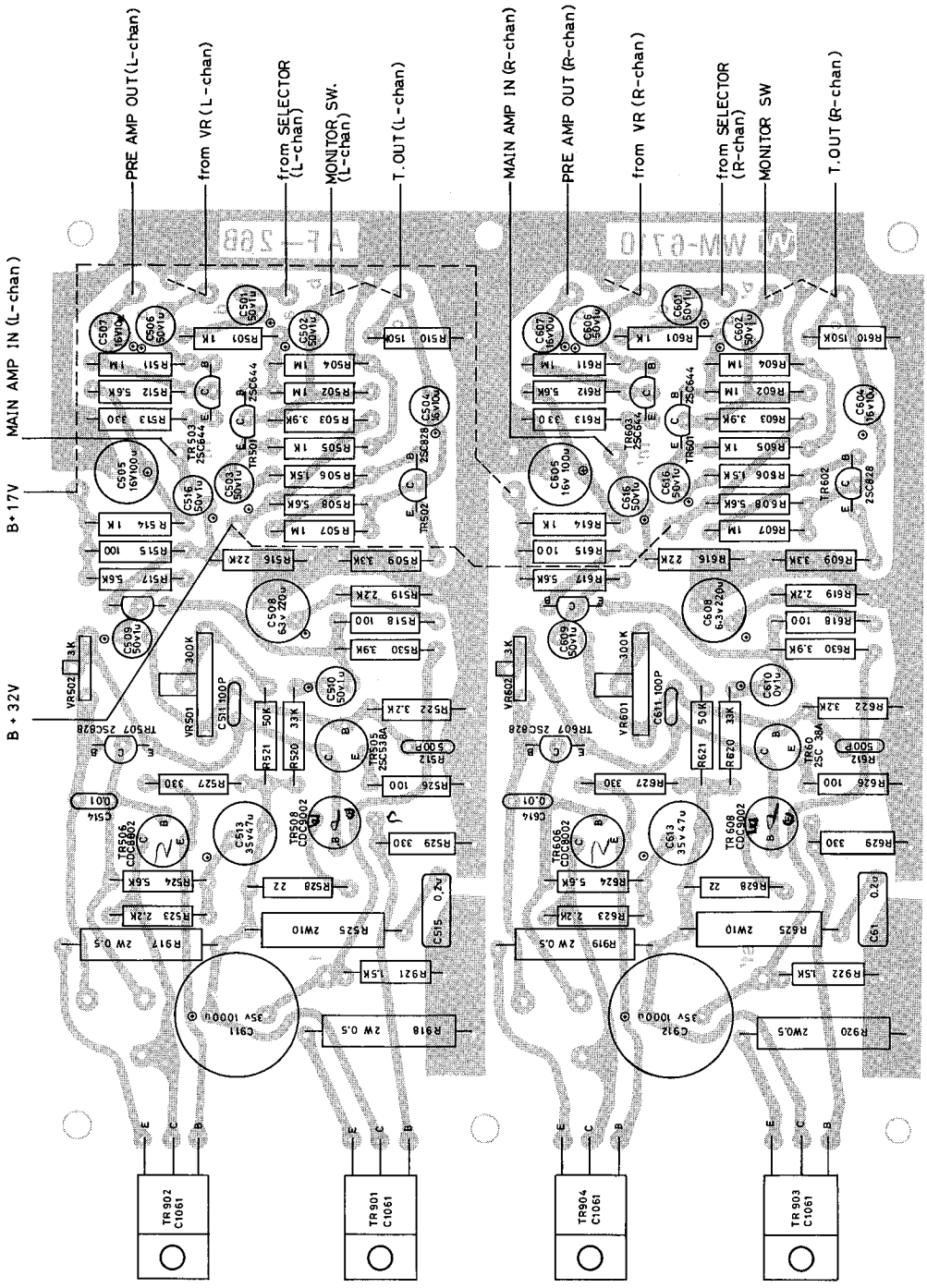
SCHEMATIC DIAGRAM — MODEL 330A



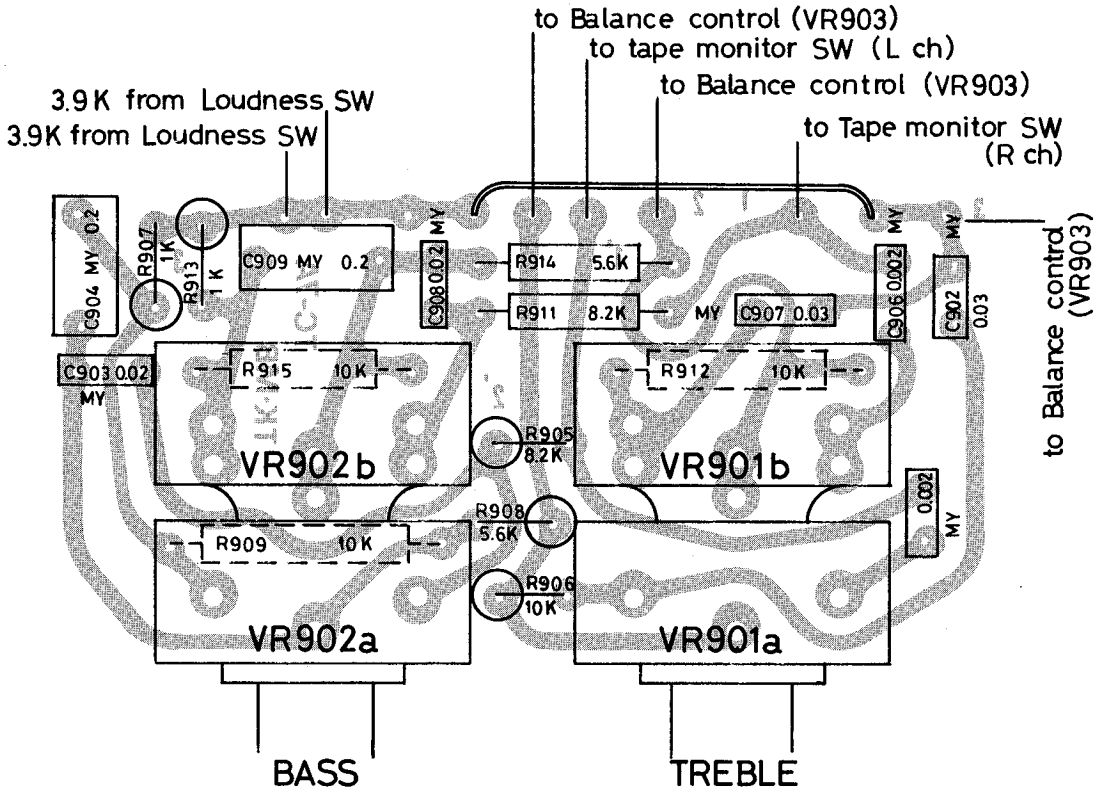
HARMAN KARDON
MODEL 330A



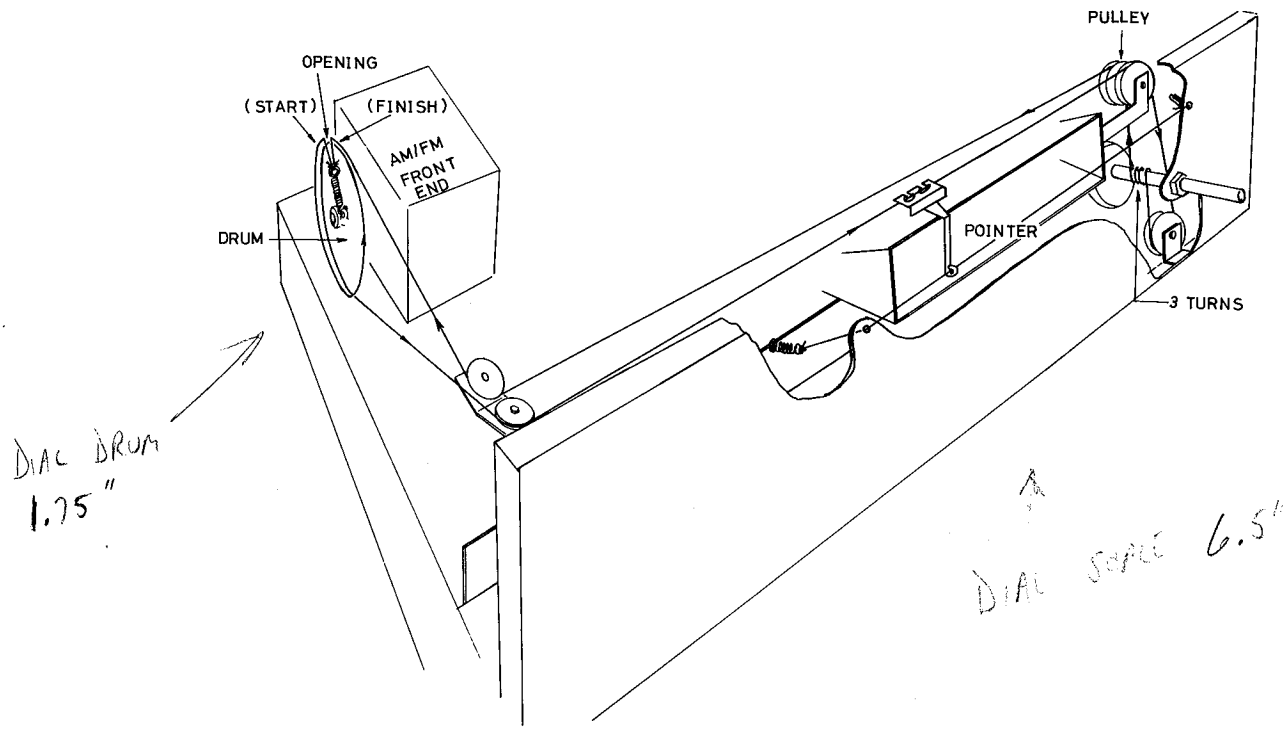
PREDRIVER BOARD



TONE CONTROL BOARD

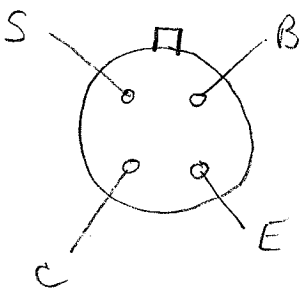


STRINGING DIAGRAM



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 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
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

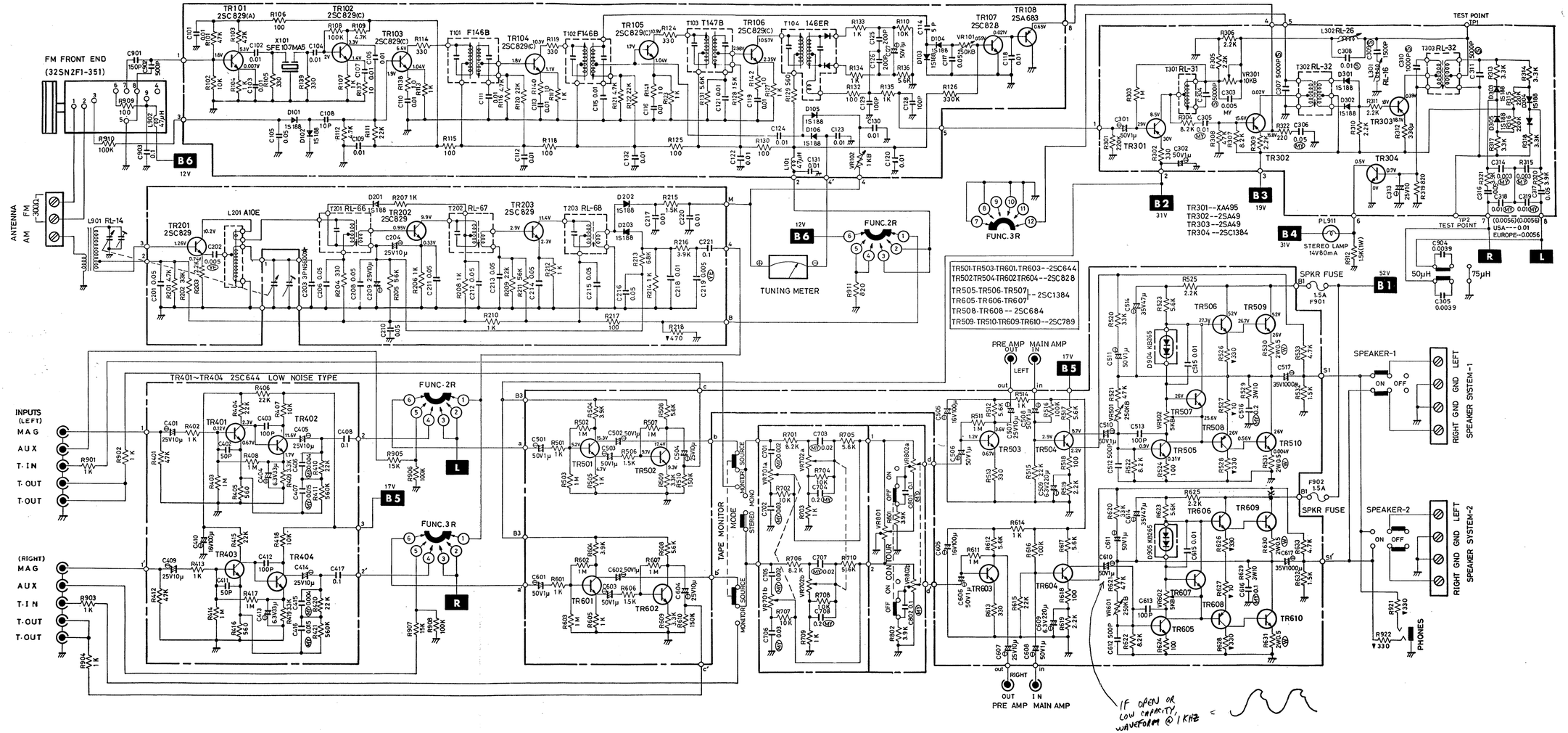


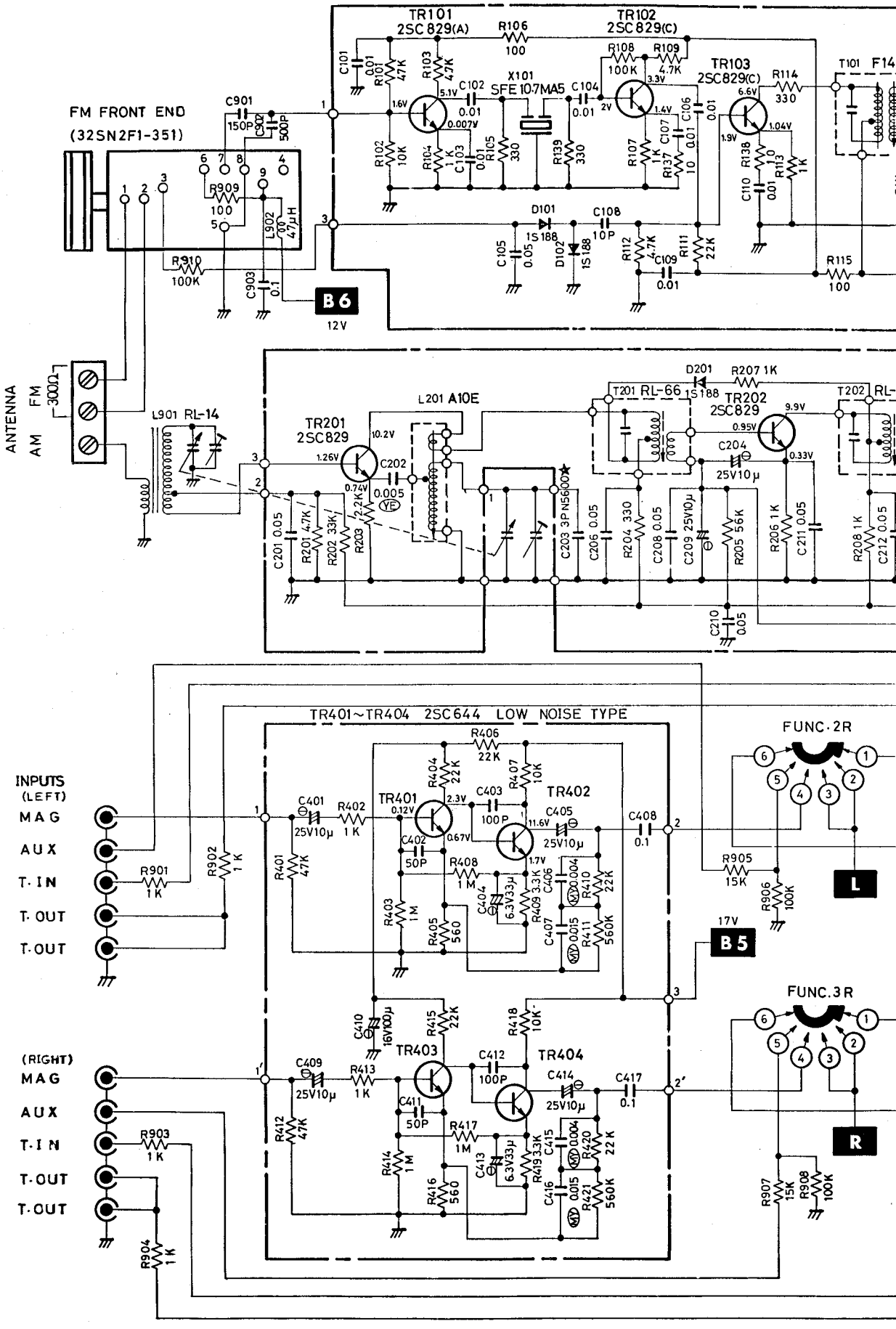
The Harman-Kardon Model 330B (SERIES B-2)

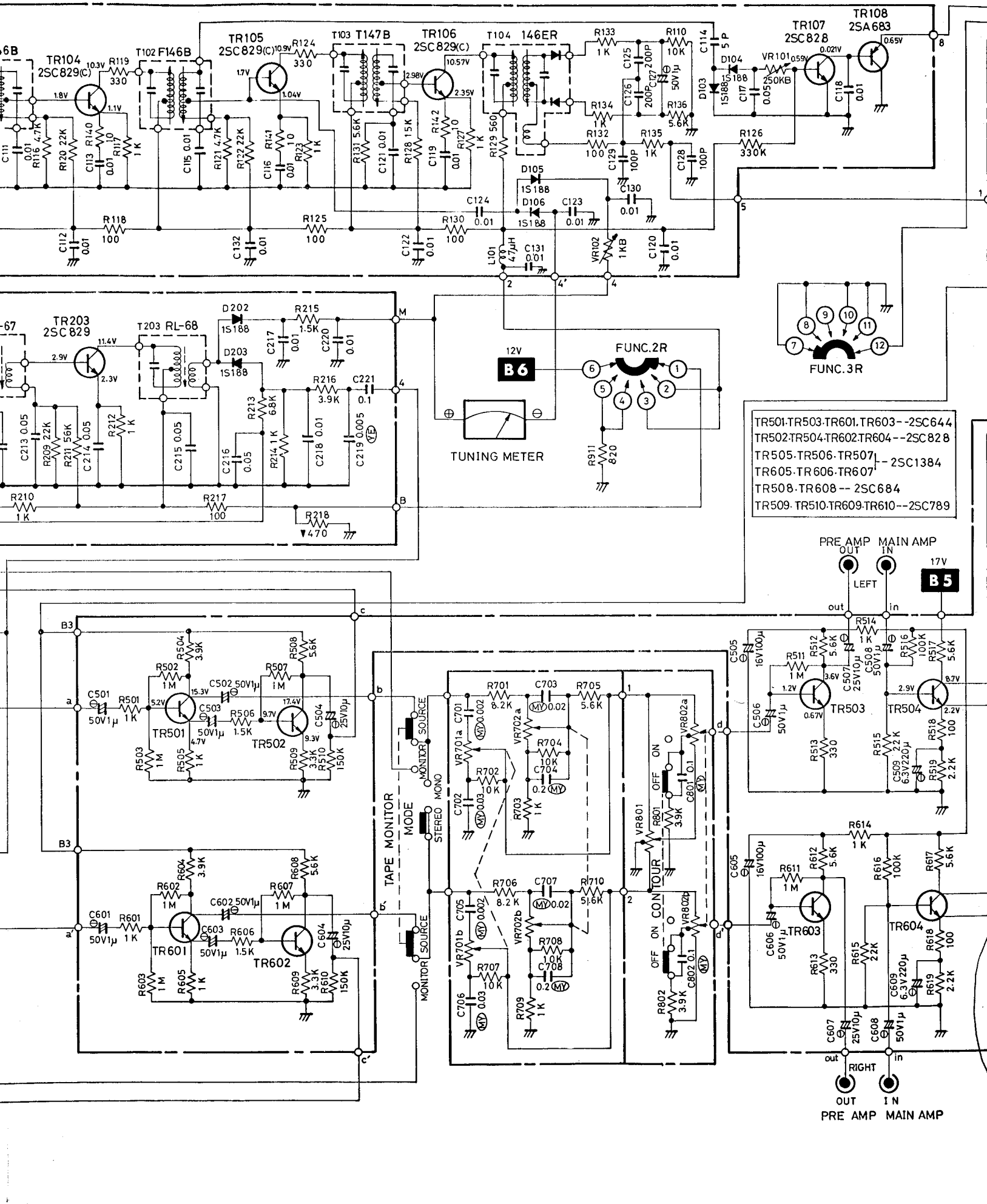
AM/FM Stereo FM Solid State Receiver

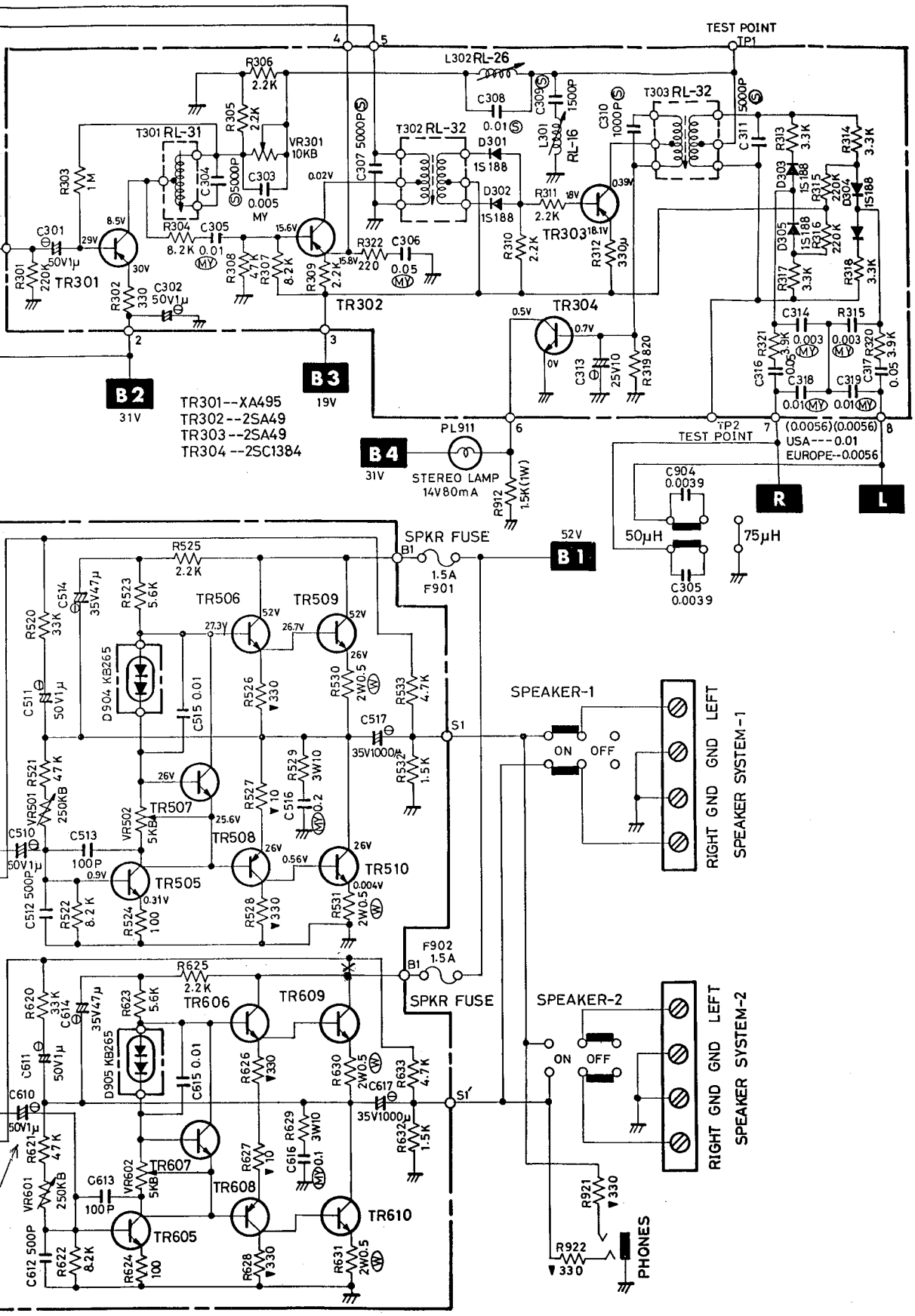
Technical Manual Addendum Serial Number 7322984 to 7327986

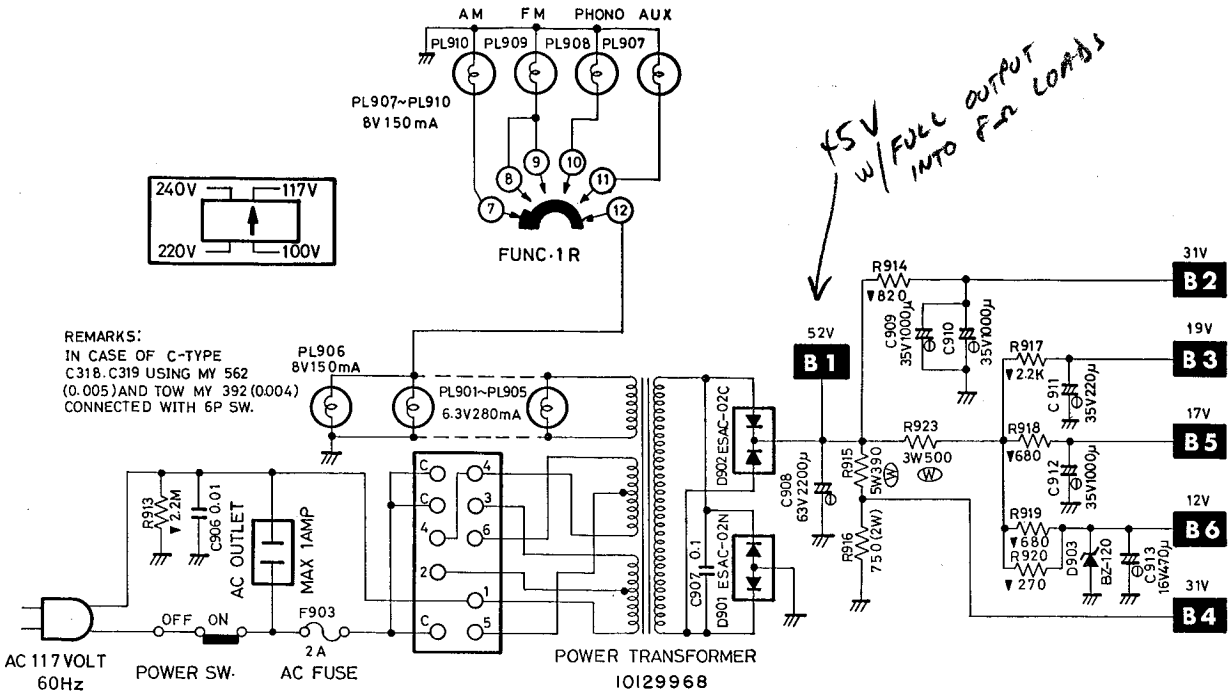
harman/kardon


FM FRONT END
(32SN2F1-351)
ANTENNA
FM 300Ω
AM
L901 RL-14
TR101 2SC829(A)
TR102 2SC829(C)
TR103 2SC829(C)
TR104 2SC829(C)
TR105 2SC829(C)
TR106 2SC829(C)
TR107 2SC828
TR108 2SA683
X101 SFE 10.7MA5
T101 F146B
T102 F146B
T103 T147B
T104 146ER
TR201 2SC829
TR202 2SC829
TR203 2SC829
L201 A10E
T201 RL-66
T202 RL-67
T203 RL-68
TR401~TR404 2SC644 LOW NOISE TYPE
TR501 TR502 TR503 TR504
TR601 TR602 TR603 TR604
TR301 RL-31
TR302 RL-32
TR303 RL-16
TR304
L302 RL-26
TEST POINT
TP1
TP2
TR301--XA495
TR302--2SA49
TR303--2SA49
TR304--2SC1384
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
FUNC.2R
FUNC.3R
TUNING METER
STEREO LAMP
14V80mA
PL911
SPKR FUSE
1.5A
F901
F902
1.5A
SPEAKER-1
SPEAKER-2
SPEAKER SYSTEM-1
SPEAKER SYSTEM-2
RIGHT GND GND LEFT
PHONES
PRE AMP MAIN AMP
OUT IN
LEFT
RIGHT
TAPE MONITOR MODE
MONITOR SOURCE
STEREO
MONO
ON CONTOUR
INPUTS
(LEFT)
MAG
AUX
T-IN
T-OUT
T-OUT
(RIGHT)
MAG
AUX
T-IN
T-OUT
T-OUT
50μH
75μH
USA---0.01
EUROPE--0.0056
B1 52V
B2 31V
B3 19V
B4 31V
B5 17V
B6 12V
IF OPEN OR LOW CAPACITY, WAVEFORM @ 1KHZ =


TR101
2SC829(A)
R106
100
TR102
2SC829(C)
TR103
2SC829(C)
X101
SFE 10.7MA5
FM FRONT END
(32SN2F1-351)
C901
150P
C902
500P
R909
100
L902
47μH
R910
100K
C903
0.1
B6
12V
D101
1S188
D102
1S188
C108
10P
R111
22K
R112
4.7K
C109
0.01
R115
100
R114
330
T101
F14
ANTENNA
FM
300Ω
AM
L901 RL-14
TR201
2SC829
L201 A10E
C202
0.005
T201 RL-66
D201
1S188
R207 1K
TR202
2SC829
C204
25V10μ
T202
RL-
C203 3P N5600
C210
0.05
TR401~TR404 2SC644 LOW NOISE TYPE
INPUTS
(LEFT)
MAG
AUX
T·IN
T·OUT
T·OUT
R901
1K
R902
1K
C401
25V10μ
R402
1K
TR401
TR402
C403
100P
C405
25V10μ
C408
0.1
R406
22K
R408
1M
R409
3.3K
R410
22K
R411
560K
R403
1M
R405
560
C404
6.3V33μ
C406
0.004
C407
0.015
FUNC·2R
R905
15K
R906
100K
L
17V
B5
(RIGHT)
MAG
AUX
T·IN
T·OUT
T·OUT
R903
1K
R904
1K
C409
25V10μ
R413
1K
TR403
TR404
C412
100P
C414
25V10μ
C417
0.1
C410
16V100μ
R415
22K
R418
10K
R417
1M
R419
3.3K
R420
22K
R421
560K
C411
50P
C413
6.3V33μ
C415
0.004
C416
0.015
FUNC.3R
R907
15K
R908
100K
R
R412
47K
R414
1M
R416
560
R401
47K


TR104 2SC829(C)
TR105 2SC829(C)
TR106 2SC829(C)
TR107 2SC828
TR108 2SA683
T102 F146B
T103 T147B
T104 146ER
TR203 2SC829
T203 RL-68
D105 1S188
D106 1S188
D202 1S188
D203 1S188
D104 1S188
D103 1S188
VR101 250KB
VR102 1KB
L101 47μH
TUNING METER
FUNC.2R
FUNC.3R
B6
TR501·TR503·TR601·TR603--2SC644
TR502·TR504·TR602·TR604--2SC828
TR505·TR506·TR507·TR605·TR606·TR607--2SC1384
TR508·TR608--2SC684
TR509·TR510·TR609·TR610--2SC789
PRE AMP MAIN AMP
LEFT
RIGHT
B5
TAPE MONITOR
MODE
SOURCE
MONITOR
STEREO
MONO
CONTOUR
ON
OFF
TR501
TR502
TR503
TR504
TR601
TR602
TR603
TR604


TEST POINT
TP1
TR301--XA495
TR302--2SA49
TR303--2SA49
TR304--2SC1384
B1
B2
B3
B4
31V
19V
STEREO LAMP
14V80mA
PL911
TP2
TEST POINT
USA---0.01
EUROPE--0.0056
R
L
SPKR FUSE
1.5A
F901
F902
SPEAKER-1
SPEAKER-2
ON
OFF
RIGHT GND GND LEFT
SPEAKER SYSTEM-1
SPEAKER SYSTEM-2
PHONES
50μH
75μH
IF OPEN OR
LOW CAPACITY,
WAVEFORM @ 1 KHZ



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)

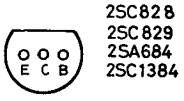
VR301 SEPARATION CONTROL
VR701a.VR701b TREBLE CONTROL 50KA
VR702a.VR702b BASS CONTROL 50KA
VR801 BALANCE CONTROL 250KW
VR802a VR802b VOLUME CONTROL 50KB
VR501. VR601. BALANCE CONTROL
VR502. VR602. BIAS CONTROL

(RESISTORS)

10% TORERANCE UNLESS OTHERWISE NOTED
K---KILO OHM
M---MEGA OHM
▼--- COMPOSION 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 SHEMATIC ALL CAPACITORS
VALUES ARE EXPRSSED 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 X 1 25W X 2
Ⓢ--- POLY STYROL CAPACITORS
ⓎⒺ---CERAMIC CAPACITORS YE TYPE



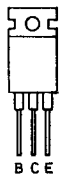
2SC644
2SC828
2SC829
2SA684
2SC1384

(BOTTOM VIEW)



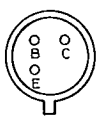
XA495

(BOTTOM VIEW)



2SC789
2SC1107

(TOP VIEW)



2SC538A

(BOTTOM VIEW)



CDC8002
TSC8002

(BOTTOM VIEW)

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.

harman/kardon 55 AMES COURT, PLAINVIEW, N.Y. 11803

90730548

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