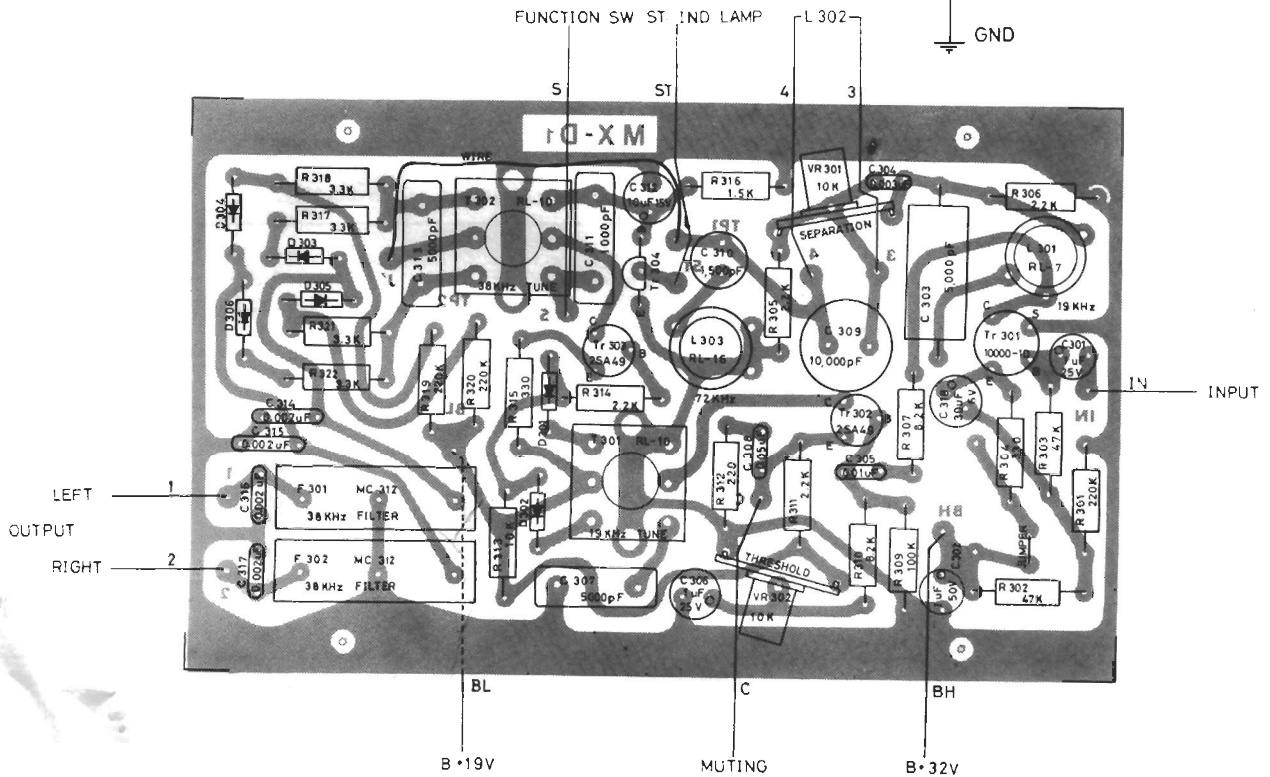
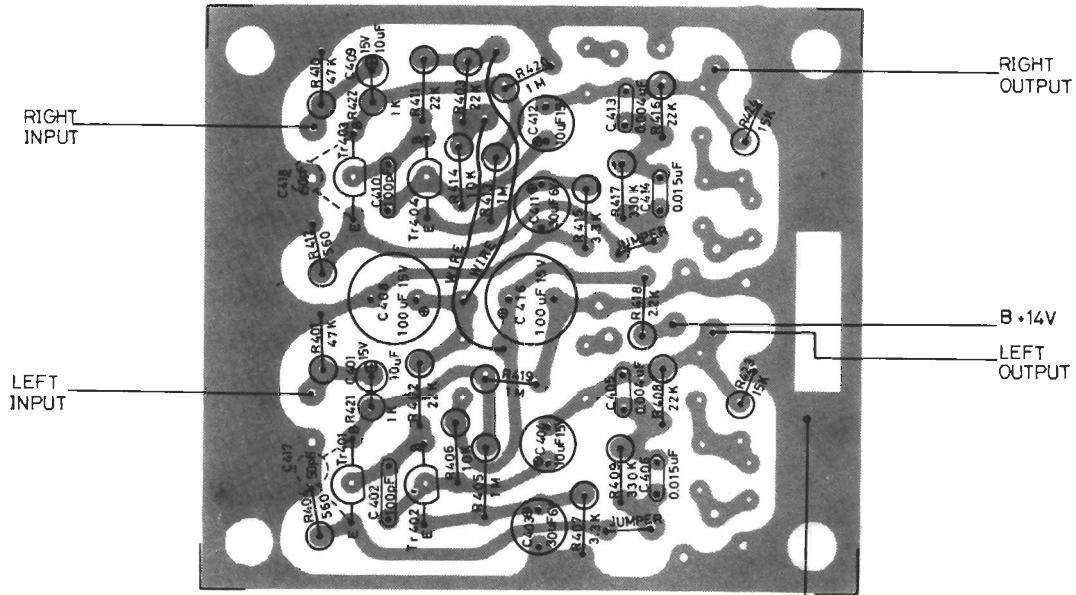


SERVICE MANUAL

MODEL *Three Thirty*

PRE AMP BOARD



MULTIPLEX BOARD

harman kardon

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 C815, C816	10.7 MHz (unmodulated)	Quiet point on band	V.T.V.M. across R122	T 104 Bottom (Pri)	Maximum
2				(Set to Center Zero) Junction of R120, C120	T 104 Top (Sec)	Zero Voltage
3	Repeat steps 1 and 2 as necessary to obtain a balanced "S" curve					
4	One FM Antenna terminal -	98 MHz (400Hz 100% MOD)	Tune for maximum output point	Oscilloscope	T103, T102, T101 & T2 (32SN2F1) Top & Bottom	Maximum
5				Tape out		
6		88 MHz	88 MHz	V.T.V.M.	L2, L1, & T1 (32SN2F1)	Maximum
7		106 MHz	106 MHz	Tape out		
8	Repeat steps 6 & 7 until no further improvement is possible.					

MPX ALIGNMENT

INSTRUMENTS: AUDIO GENERATOR, FM STEREO GENERATOR & OSCILLOSCOPE
SET SELECTOR SWITCH TO "FM STEREO"
SET VR 301, VR 302 TO THEIR CENTER POSITION

STEP	19 KHz Level Set	Signal Generator		Output Indicator	Adjust	Adjust for
		Freq.	Set to	Connected to		
1	/	Audio Generator	67 KHz	Oscilloscope TP-1	L 302	Minimum
2		72 KHz				
3	1~2%	Stereo Generator	19 KHz	TP-2	L 301 T 301, T 302	Maximum
4	8%	1,000 Hz Composite	Lor R chan.	TP-1	L 301,	Maximum and cleanest wave on scope
5	Detuning the dial; set to no signal point on band				VR 302	Stereo Beacon Lamp just extinguish
6	5%	1,000 Hz Composite	Lor R chan.	Detuning the dial, check the stereo beacon lamp just comes on		
7	10%	Composite 1,000 Hz L chan	L chan	Output (1) L chan	T 302	Maximum
8				Output (2) R chan	VR 301	Minimum
9		Composite 1,000 Hz R chan	Output (1) L chan			
10	Repeat steps 8 and 9 until no further improvement is possible.					

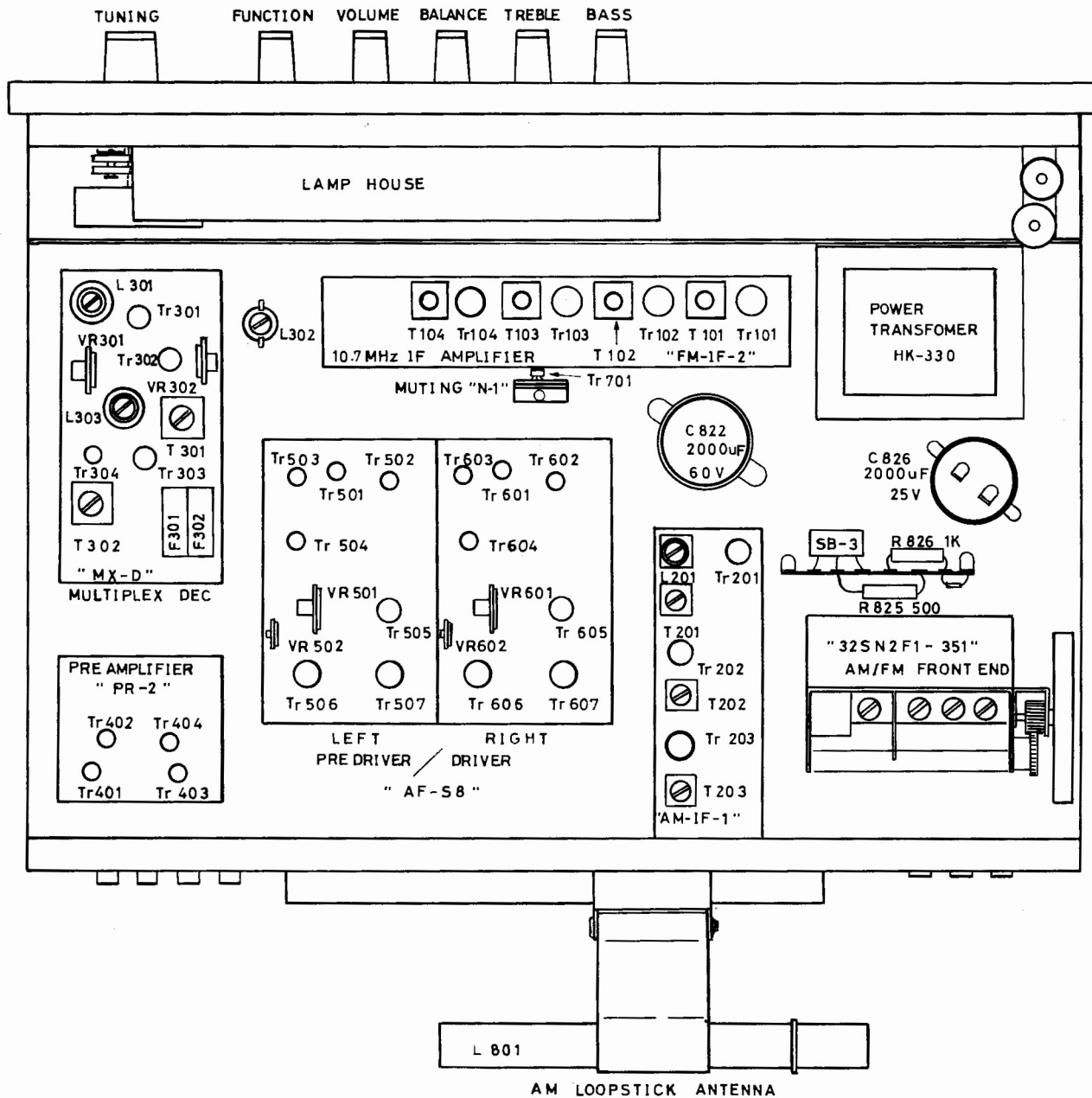
AM ALIGNMENTINSTRUMENTS: AM Signal Generator VTVM
Set Selector Switch to "AM"Input Signal must be kept as low as possible
to avoid A. V. C. action

STEP	Signal Generator		Tuning Dial Setting	OUTPUT INDICATOR	Adjust	Adjust for
	Connected to	Freq.		Connected to		
1	Tr201 Base through a 0.01 μ F Capacitor	455 KHz (400Hz 30% MOD)	Quieting point on band	V.T.V.M. Tape out	T203, T202 & T201	Moximum
2	Short loop of Wire radiate Signal into ferrite loop stick ANT	600 KHz (400Hz 30% MOD)	600 KHz		L201 & Ring of loop stick ANT	
3		1,400 KHz (400Hz 30% MOD)	1,400 KHz		TR5, TR4 (325N2F1)	
4	Repeat steps 2 and 3 until no further improvement is possible.					

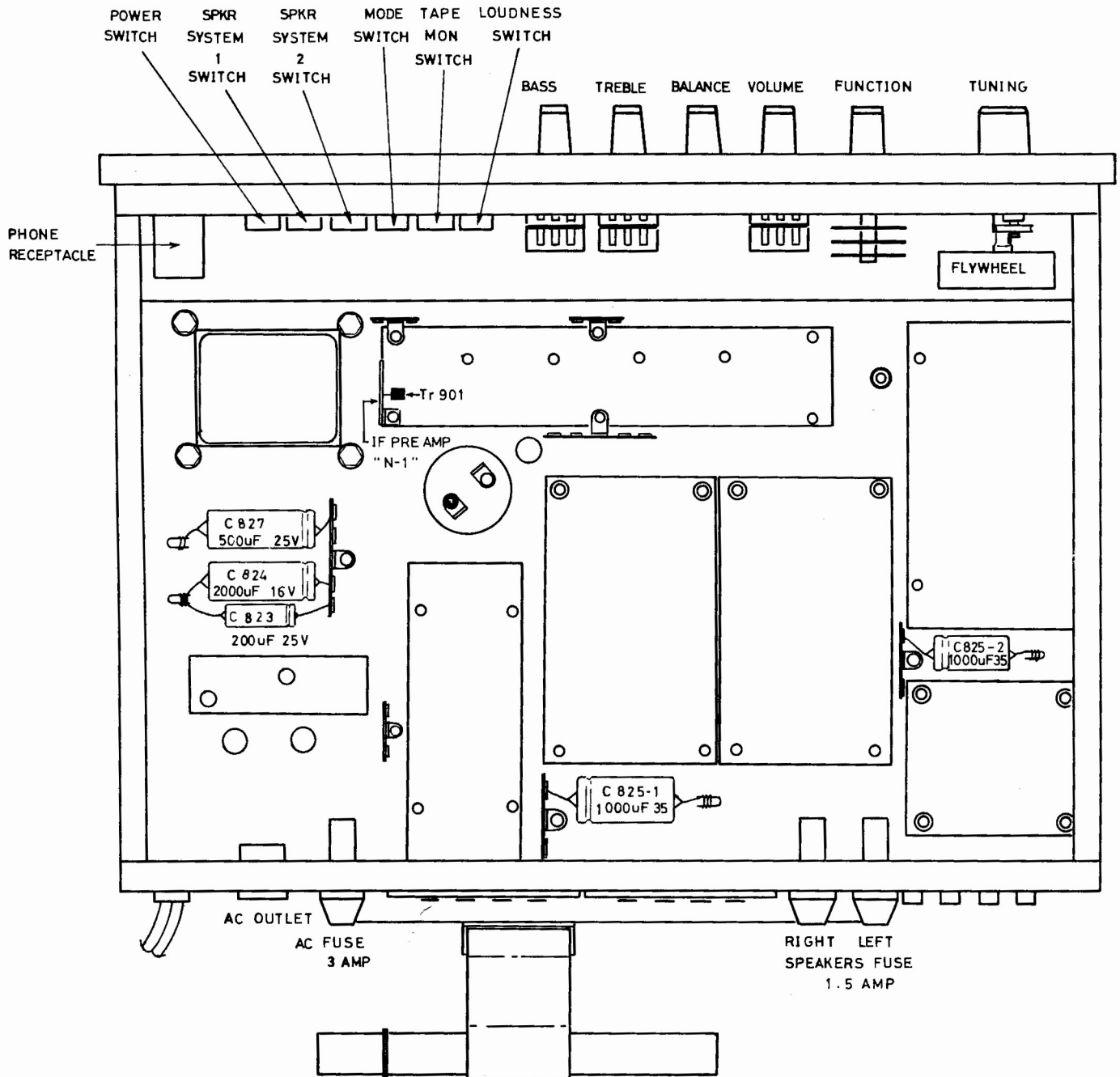
Predriver / Driver Adjustment

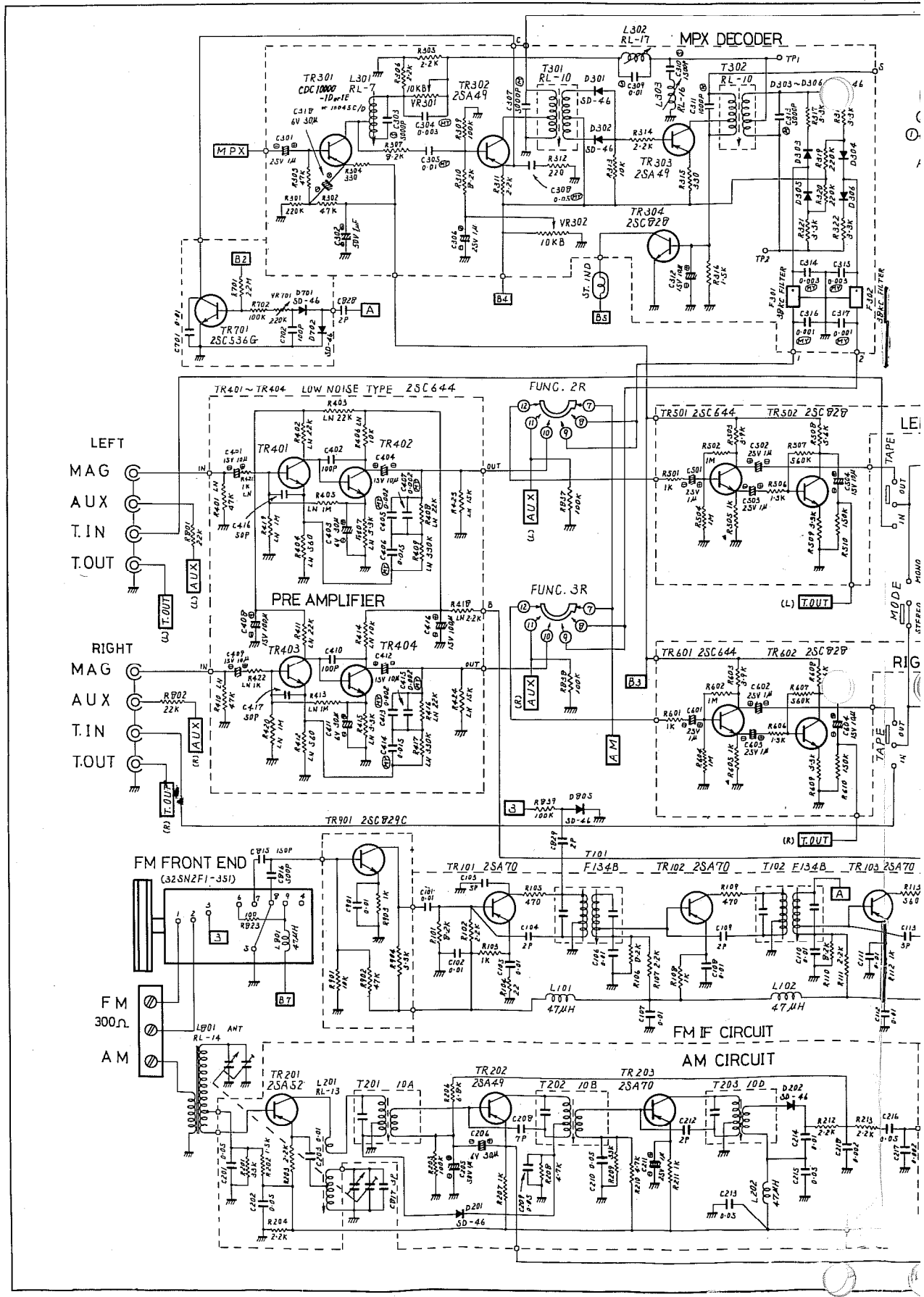
- Set Balance, Bass and Treble controls to their center position.
- Set Mode switch to "STEREO", Speaker switches to "ON" and Selector switch to "AUX".
- Connect 8 ohm (50W) resistor across L. speaker terminals. In parallel with the load resistor, connect the vertical input leads of the oscilloscope.
- Connect an audio generator, set for 1,000 Hz (sine wave) to the left channel "AUX" input.
- Connect AC power cord and rotate volume control to clockwise position — full volume. Increase generator output until sine wave on scope just starts clipping. Adjust DC balance VR 501 for equal clipping on the positive and negative half cycles on the signal.
- Adjust crossover distortion adjust VR 502 until the crossover is extinguished (rotate volume control to counter clockwise position to get 0.1 watt (0.9 V RMS) output) Or adjust idling current, using a DC mA meter, rotate VR 502 to obtain a 12 mA reading on DC mA meter. (no signal input)
- Repeat preceding steps for right channel.

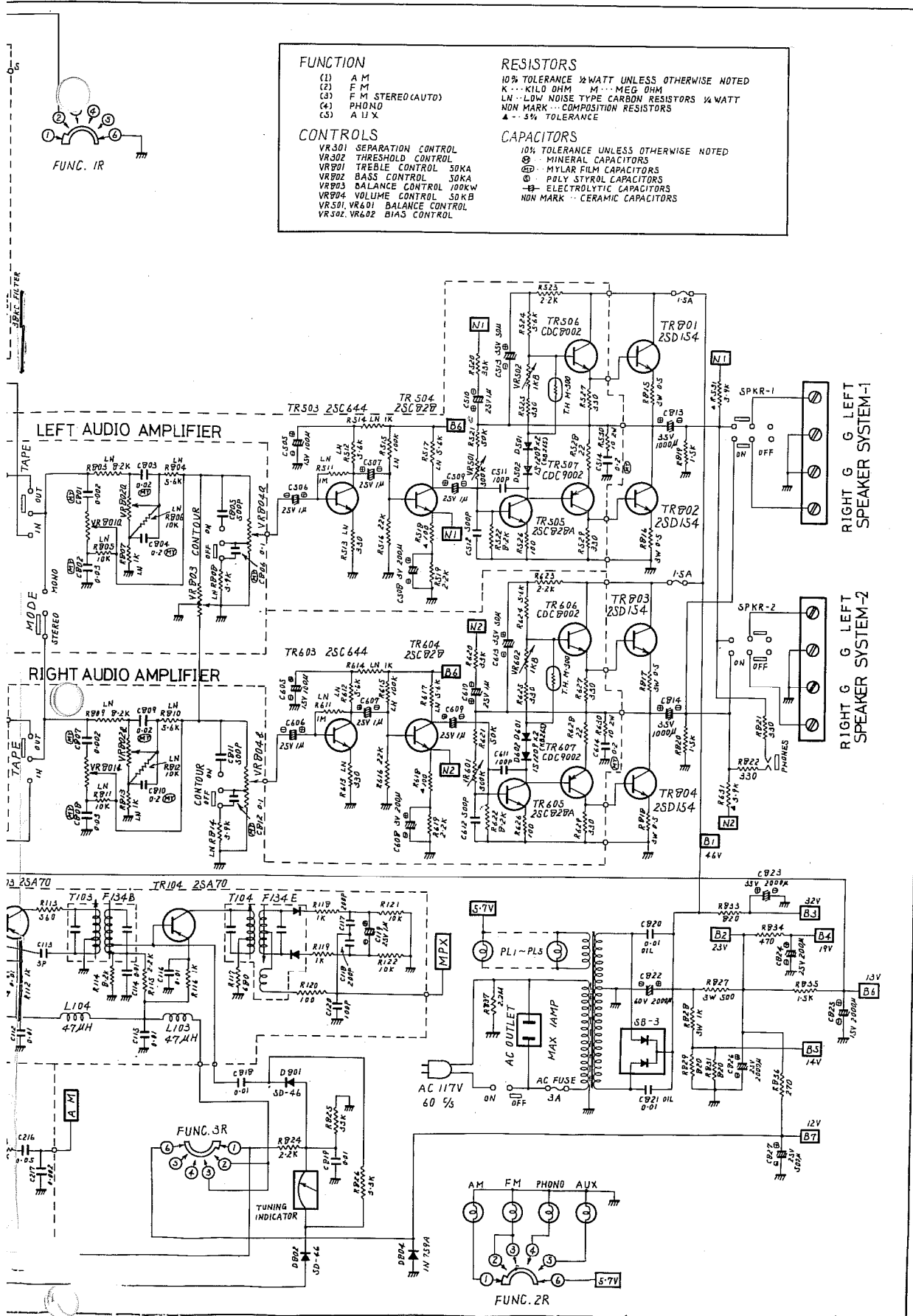
TOP VIEW



BOTTOM VIEW







FUNCTION

- (1) A M
- (2) F M
- (3) F M STEREO (AUTO)
- (4) PHONO
- (5) A U X

CONTROLS

- VR301 SEPARATION CONTROL
- VR302 THRESHOLD CONTROL
- VR501 TREBLE CONTROL 50KA
- VR502 BASS CONTROL 50KA
- VR603 BALANCE CONTROL 100KW
- VR704 VOLUME CONTROL 50KB
- VR501, VR601 BALANCE CONTROL
- VR502, VR602 BIAS CONTROL

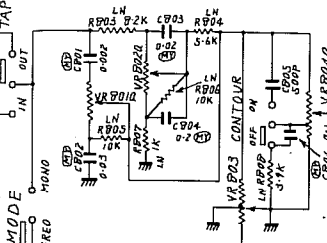
RESISTORS

- 10% TOLERANCE 1/2 WATT UNLESS OTHERWISE NOTED
- K... KILO OHM M... MEG OHM
- LN... LOW NOISE TYPE CARBON RESISTORS 1/2 WATT
- NON MARK... COMPOSITION RESISTORS
- ▲... 5% TOLERANCE

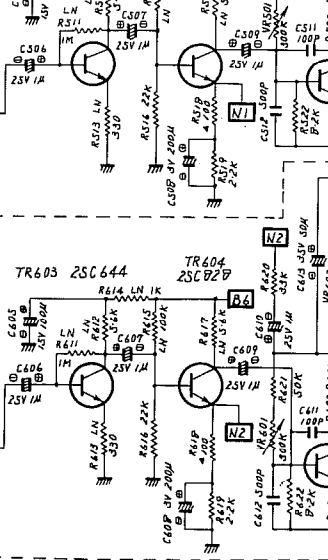
CAPACITORS

- 10% TOLERANCE UNLESS OTHERWISE NOTED
- ⊖... MINERAL CAPACITORS
- ⊕... MYLAR FILM CAPACITORS
- ⊙... POLY STYROL CAPACITORS
- ⊖... ELECTROLYTIC CAPACITORS
- NON MARK... CERAMIC CAPACITORS

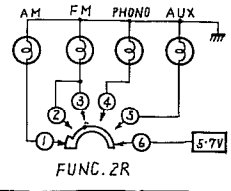
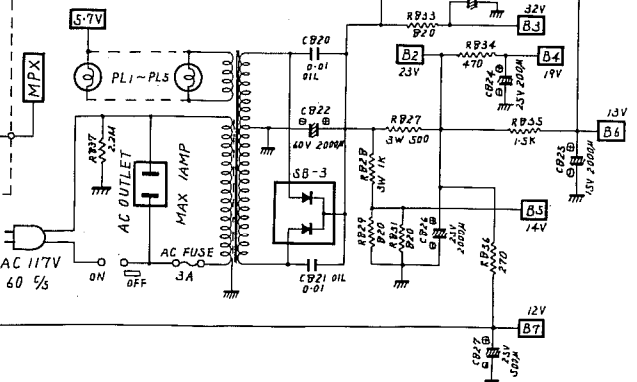
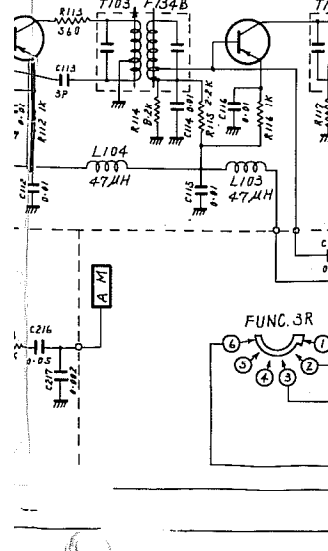
LEFT AUDIO AMPLIFIER



RIGHT AUDIO AMPLIFIER



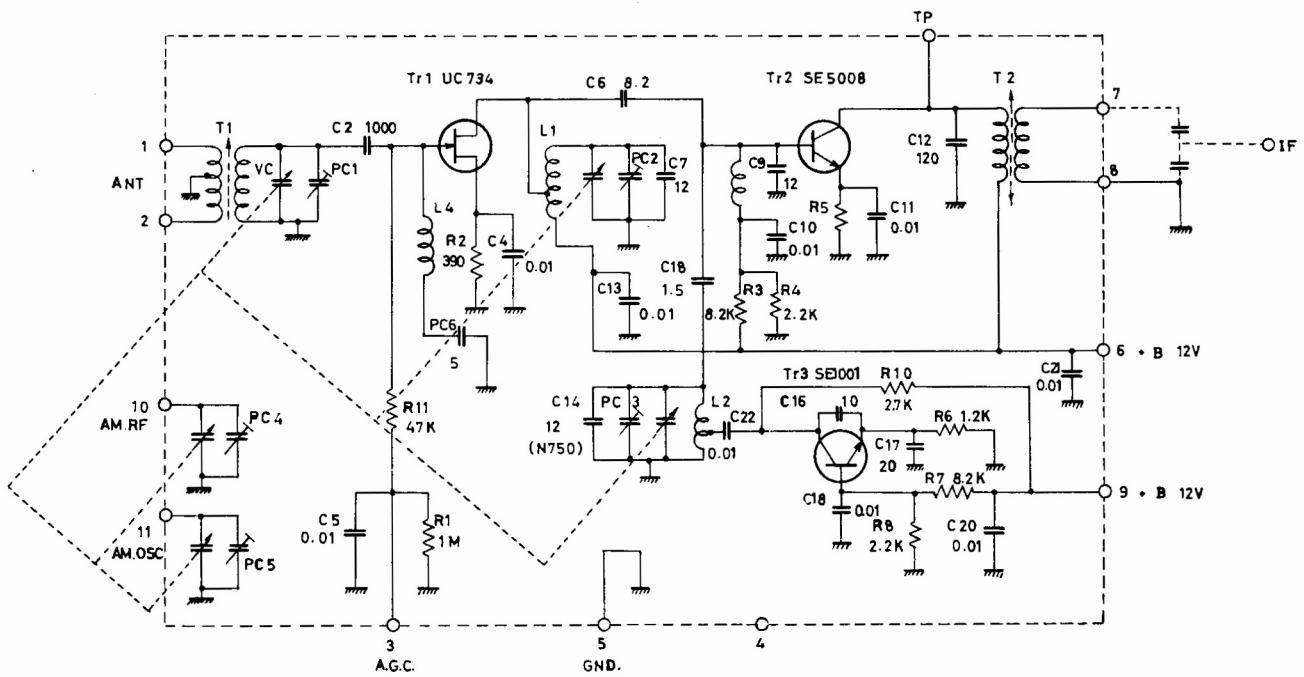
TUNING INDICATOR



RIGHT G G LEFT
SPEAKER SYSTEM-1

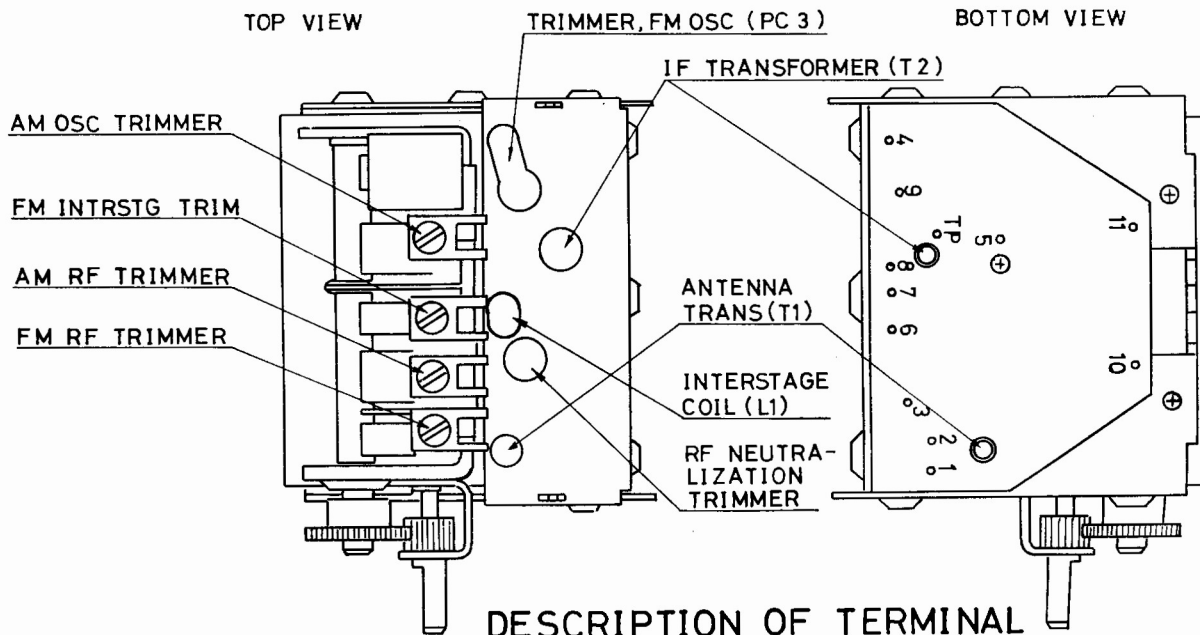
RIGHT G G LEFT
SPEAKER SYSTEM-2

AM / FM FRONT END (32SN2F1 - 351) SCHEMATIC DIAGRAM



1. ALL CAPACITY VALUES IN μpF , EXCEPT DECIMAL VALUES IN μF .
2. ALL RESISTANCE VALUES IN OHMS

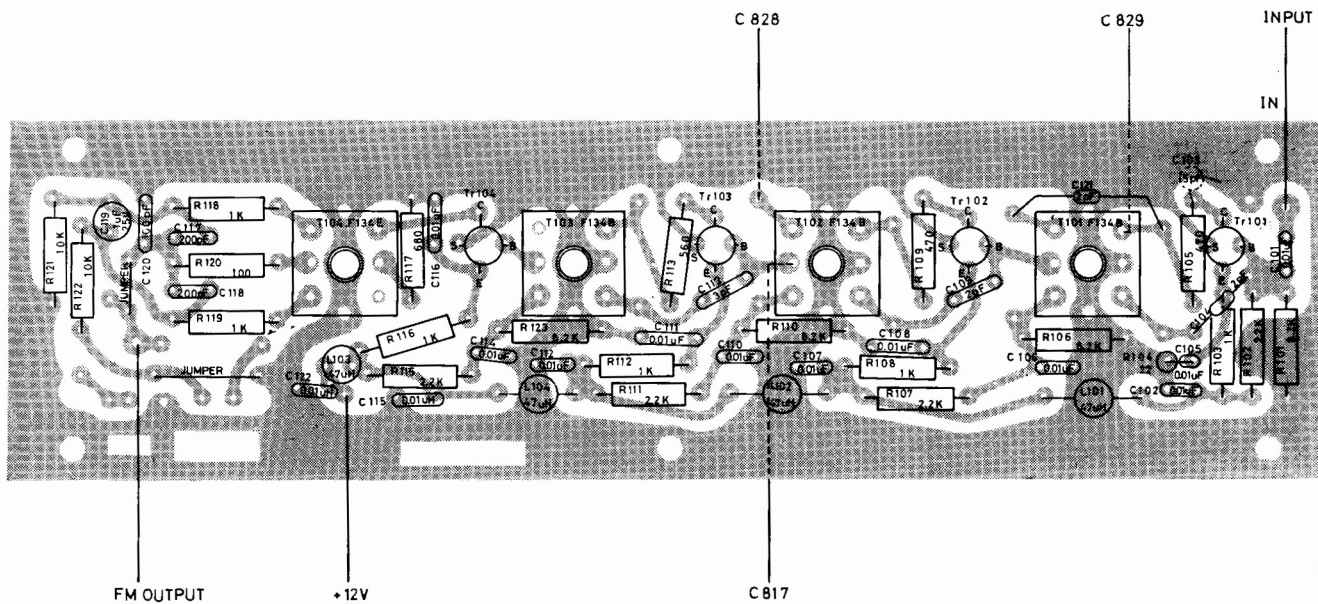
AM FM FRONT END (32SN2F1-351)



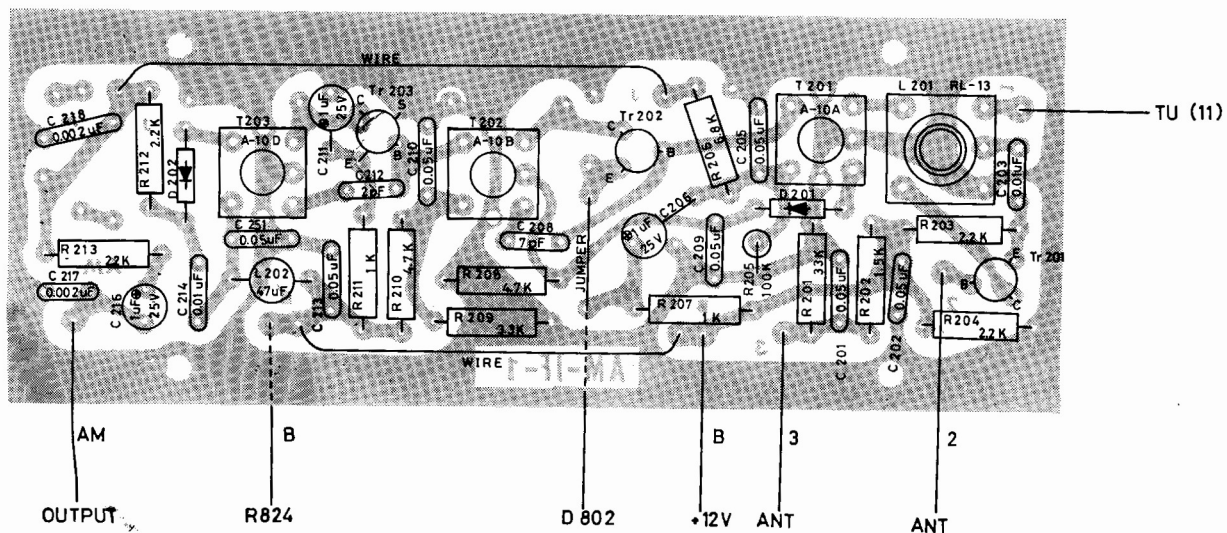
DESCRIPTION OF TERMINAL

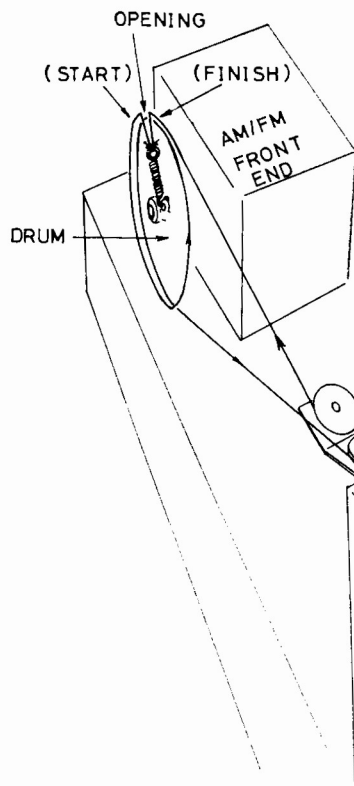
NO 1, 2	ANTENNA	NO 7	IF HOT
3	A G C	8	IF COLD
4	NC	9	B+ OSC
5	PW GND	10	AM RF
6	B+ RF MIX	11	AM OSC

FM IF BOARD



AM BOARD





STRINGING DIAGRAM

REPLACEMENT PARTS LIST 330 RECEIVER

HARMAN KARDON PART #	REF. #	DESCRIPTION	HARMAN KARDON PART #	REF. #	DESCRIPTION
TRANSFORMERS & COILS					
10124889	L40-1082	Power Transformer	22025122	R31-1060	Bass & Treble 50K
11024829	L03-0010	Transformer, IFT-AM 10A	22025123	R31-8070	Balance Control 100K
11024830	L03-0011	Transformer, IFT-AM 10B	TRANSISTORS		
11024831	L03-0013	Transformer, IFT-AM 10D	43024833	2SA52	Transistor, AM Circuit
11024846	L04-0010	Transformer, IFT-FM F134B	43024834	2SA49	Transistor, AM Circuit
11024847	L04-0011	Transformer, IFT-FM F134E	43024835	2SA70(2SA234)	Transistor, AM & FM Circuit
12024832	L02-003	Coil, OSC	CDC10000-1D/E Transistor, MPX Circuit		
12024854	L05-0007	Coil, MPX, RL-7	43024859	2SC536 / 2SC828	Transistor, MPX
12024855	L05-0009	Coil, MPX, RL-10	43024870	2SC536F	Transistor, MPX
12024856	L05-0010	Coil, SCA Filter, RL-16	43024873	2SC644	Transistor, Audio Amp.
12024857	L05-0011	Coil, SCA Filter, RL-17	43024878	2SC538A	Transistor, Audio Amp.
12024858	Z20-001	Coil, 38 KC Filter, MC-3102	43024879	CDC8002	Transistor, Driver, NPN
12024844	L10-001	Coil, 47 μ H	43024880	CDC9002	Transistor, Driver, PNP
DIODES					
41624836		Diode, SD-46	43024923	2SD154	Transistor, Output
41624881		Diode, 1S1209	MISCELLANEOUS		
42024925		Diode, Zener, 1N759A	00224887	UA-0003	AM/FM Front End
41024926		Diode, Rectifier, SB-3	65424895	S-2032	Fuse Holder
CAPACITORS					
31524884		Capacitor, Electrolytic 200 μ F @ 3V.	65424896	S-2041	AC Outlet
31524885		Capacitor, Electrolytic 50 μ F @ 35V.	45024897	M-5011	Fuse, 1.5A
31524936		Capacitor, Electrolytic 200 μ F @ 25V.	45024898	M-5013	Fuse, 3A
31524937		Capacitor, Electrolytic	66024899	S-2013	Socket, Power Transistor
31524938		Capacitor, Electrolytic 200 μ F @ 25V., ST	61024908	D-27	Dial Glass
31524939		Capacitor, Electrolytic 2000 μ F @ 15V., ST	63024909	4BS-9A-2	Escutcheon
31524940		Capacitor, Electrolytic 2000 μ F @ 25V., L	60424911	4B6-12A	Tuning Shaft
31524941		Capacitor, Electrolytic 2000 μ F @ 60V., L	60424912	M-2101	Fly Wheel
31524942		Capacitor, Electrolytic	12524913	I-1015	Tuning Meter
CONTROLS					
25025118	R10-206	MX Trim Pot 10K	24024914	S-1022	Selector Switch
22025121	R31-5061	Volume Control 50K	25524915	S-1004	Rocker Switch
			25524916	S-1002	Rocker Switch
			65424917	E-4001	Headphone Jack
			60724954	3BM-4	Dial Pointer
			46524955	M-5001	Pilot Lamp 6.3V., 250 MA
			46524956	M-5002	Pilot Lamp 6.3V., 280 MA
			46524957	M-5003	Pilot Lamp
			46524958	M-5004	Stereo Beacon 10V., 20 MA
			63224963	M-7117	Knob, Tuning
			63224964	M-7118	Knob, Selector, Volume, Balance & Tone

NOTE: To speed handling of your order be sure to include both the model and serial numbers which appear at the back of the chassis, in addition to the quantity, part number and part description of the items ordered. Orders from independent dealers, independent servicemen, and retail customers will be shipped on a C.O.D. basis. Harman-Kardon reserves the right to substitute equivalent parts for those originally installed in this chassis. All parts should be ordered from Harman-Kardon, Plainview, L.I., N.Y., Att: Parts Department. All prices are subject to change without notice.