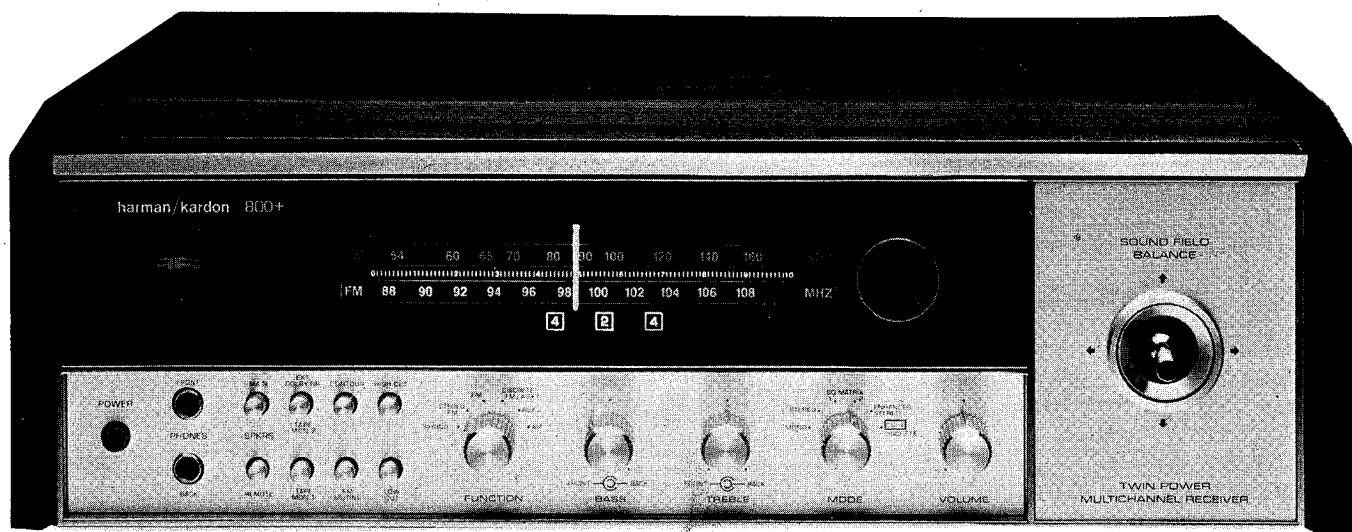


The Harman-Kardon Model 800+

AM/Stereo FM Multichannel Receiver

Technical Manual



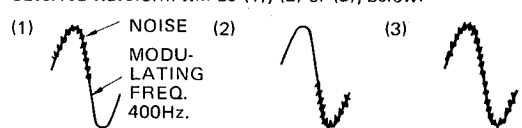
harman/kardon

ALIGNMENT PROCEDURES

FM IF & RF ALIGNMENT

INSTRUMENTS: FM S.S.G., modulator with 400Hz at 100%, V.T.V.M., Oscilloscope, and Distortion Meter.

NOTE: Set TONE control to flat response (or mechanical center of both of BASS control and TREBLE control)
Set FUNCTION selector to FM.

Step	SIGNAL SOURCE	OUTPUT METER	ADJUST	ADJUST FOR
1	Check mechanical zero center of TUNING indicator, M101 at POWER switch OFF. Adjust it if necessary.			
2	None (FM ANTENNA terminals opened). Tuning control at no signal.	TUNING indicator, connect oscilloscope and V.T.V.M. to TAPE OUT.	TOP adjuster of T101 (or RAT CAN)	Zero or center indication ON TUNING indicator M101 observing noise output with output meter.
3	Same as above.	Same as above.	Bottom adjuster of T101.	Maximum noise output on V.T.V.M.
4	Same as above.	Same as above.	TOP and bottom adjusters of 'IF' in FRONT-END	Same as above.
5	Connect SSG to FM ANT terminal, with no signal (or SSG OFF). Tuning control at no signal.	Same as above.	Readjust TOP adjuster of T101.	Zero or center indication ON TUNING indicator, M101.
6	Set SSG output to 88MHz, Tune radio to 88MHz of SSG.	Same as above.	LO, LR and LA in FRONT-END.	Maximum noise output on V.T.V.M.
7	Set SSG output to 106MHz, and tune radio to 106MHz.	Same as above.	TCO, TCR and TCA in FRONT-END.	Same as above.
8	Repeat step 6 and 7 for best sensitivity.			
9	Use very weak signals of 88MHz. Tune radio to 88MHz.	Same as above.	LA and LR.	Zero or center indication of TUNING indicator M101.
10	Use very weak signals of 106MHz. Tune radio to 106MHz.	Same as above.	TCA and TOR.	Same as above.
11	Repeat step 3 through 5 for best setting under SSG connected but no signal.			
12	Use 98MHz, 1mV signals from SSG modulated with 400Hz at 100%. Tune radio to 98MHz. (Note: If another signal exists, shift to quiet point)	Connect distortion meter, V.T.V.M. and oscilloscope to SPEAKER out.	Bottom adjuster of T101.	Minimum harmonic distortion on distortion meter keeping noise output to 3V on V.T.V.M. (adjust VOLUME CONTROL VR301 through VR601, if necessary).
13	Same as above.	Same as above.	<p>Observe output waveform with oscilloscope at S/N = 20 to 30dB. Observed waveform will be (1), (2) or (3), below:</p>  <p>UNACCEPTABLE UNACCEPTABLE ACCEPTABLE</p> <p>Wave form (1) and (2) will result from misalignment.</p> <p>(1) To correct, carefully adjust two adjusters of IF on the FRONT-END and bottom adjuster of T101.</p> <p>(2) Check TUNING meter zero center again under no signals of SSG. If necessary, adjust the zero point with TOP adjuster of T101.</p> <p>(3) For ANTENNA input of 1mV from SSG, distortion shall be adjusted with bottom adjuster of T101, if, necessary.</p>	

AM ALIGNMENT PROCEDURE

INSTRUMENTS: SSG, modulated with 400Hz at 30%, V.T.V.M., AM IF Sweep Generator, and Oscilloscope.

NOTE: Set FUNCTION selector to AM.

Connect signal source to a loop placed to radiate signals into AM ANT LOOP STICK.

Step	SIGNAL SOURCE OUTPUT	CONNECT OUTPUT METER TO	DIAL SETTING	ADJUST	ADJUST FOR
1	455kHz of sweep generator	V.T.V.M. & oscilloscope to TAPE OUT	Quiet point near 1600kHz	T162 (Black)	Maximum and symmetrical pattern on SCOPE
2				T161, input side	
3				T161, output side	
4	Repeat step 1 through 3 for best sensitivity and symmetrical pattern on oscilloscope.				
5	525kHz of S.S.G.	V.T.V.M. to TAPE OUT 1 and distortion meter together with oscilloscope to speaker out	Gang fully closed	L162 (Black)	Maximum output
6	1700kHz of S.S.G.		Gang fully opened	AM oscillator trimmer	
7	Repeat step 5 and 6 for best sensitivity				
8	600kHz of S.S.G.	Same as above	600kHz	AM ANT LOOP STICK	Same as above
9	1400kHz of S.S.G.		1400kHz	AM ANT trimmer	
10	Repeat step 8 and 9 for best sensitivity.				

SIDE CHAIN ALIGNMENT FOR MUTING & STEREO THRESHOLD

Step	SIGNAL SOURCE	OUTPUT METER 11	ADJUST	ADJUST FOR
14	Repeat 1, 2 and 3 for optimum setting.			
15	Connect SSG to FM ANT terminal. Quiet point near 98MHz. SSG set on CW	D.C. Voltmeter from ground to R141.	STEREO THRESHOLD VR012.	1.50V on DC voltmeter
16			L101 and SSG output.	Maximum on DC voltmeter; keep DC voltage to 1.50V by adjusting SSG output. TUNING indicator, M101 must indicate zero center all times.
17			MUTING ADJUSTER, VR 101.	Finally, audio output must drop by 3dB with FM MUTING switch ON.
18	Check again zero center on TUNING INDICATOR, M101 with no signal.			

MPX ALIGNMENT PROCEDURE

INSTRUMENTS: S.S.G., Stereo Generator, V.T.V.M., Oscilloscope, Oscilloscope of low input capacitance, and Distortion Meter
L + R = 90%, PILOT = 9%, modulation

NOTE: Set TONE control to flat response (or mechanical center of both of BASS control and TREBLE control).
Set FUNCTION selector to FM STEREO.

Step	SIGNAL SOURCE	OUTPUT METER	ADJUST	ADJUST FOR
1	Connect SSG modulated with MPX Generator to FM ANT terminals. Output level: 1mV Pilot level: 6%	Connect low input capacitance oscilloscope to TEST POINT TP. Connect oscilloscope to TAPE OUT of both channels.	L102	For maximum on scope connected to T.P. at minimum resistance (or extreme counter clockwise) of VR101 and maximum resistance (or extreme clockwise of VR102.
2			L103	
3			L104	
4			VR101	
5	Same as above, but PILOT LEVEL: 9%, only RIGHT channel is modulated with main signal of 1kHz.		L102	For maximum stereo separation.
6	Change main signal modulation to LEFT channel.		L102	For maximum stereo separation.
7	Repeat step 5 and 6, and if unbalance of stereo separation between LEFT and RIGHT exists, correct it with VR102.			
8	Check PILOT level that STEREO INDICATION lights at 5.5% to 6.5% of PILOT LEVEL and that the INDICATION does not light at 1% of P.L.			
9	Return PILOT LEVEL to 9% and check stereo separation at 100Hz and 10kHz.			
10	At 32dB (40 μ V) of SSG output, adjust STEREO THRESHOLD, VR012 for STEREO INDICATION ON.			
11	Remove oscilloscope from test point, TP and adjust again L104 for best stereo separation.			

POWER AMP. UNIT (Alignment of Idle current of output transistors).

INSTRUMENTS: High sensitivity D.C. voltmeter or synchroscope.

NOTE: Set VOLUME control to minimum output.
No signal.

Step	CONNECT M.S. VOLTMETER TO	ADJUST	ADJUST FOR
1	Across emitter of Q347 and collector of Q348.	VR341	5.5mV on voltmeter.
2	Across emitter of Q447 and collector of Q448.	VR441	Same as above.
3	Across emitter of Q547 and collector of Q548.	VR541	Same as above.
4	Across emitter of Q647 and collector of Q648.	VR641	Same as above.

CD-4 ALIGNMENT PROCEDURE

If a frequency counter is available:

1. Set the function switch to the "Phono" position and put shorting plugs in the phono inputs and connect the counter to the test point near IC 102 and Ground.
2. Connect power and turn the unit on. Allow a 5 minute warm-up time.
3. Adjust VR 105 to obtain a free running frequency of 30.0 kHz.
4. Repeat using the test point near IC 202 and VR 205.
5. Disconnect power and remove measuring equipment.

In the absence of a counter, an accurate source of 30kHz signal at a level of 1–2mV is required, or a CD-4 record may be used, according to the following procedure:

The following adjustment sets the center frequency of the demodulation phase locked loop to 30kHz:

1. Connect a clip lead from the cathode of CR 302 to Ground. (This disables the muting circuit).
2. Connect a 100 μ f capacitor from Pin 2 of IC 102 to ground (the foil on the perimeter of the board). If a polarized capacitor is used, the positive lead is connected to the IC. DO NOT SOLDER DIRECTLY TO THE IC.
3. Turn the "CD-4 Separation" controls fully counterclockwise.
4. Set the Function switch to "Phono" position, and the Mode switch to "Mono."
5. Connect the signal generator or a turntable with a CD-4 cartridge and record to the input.
6. Connect a speaker to the left front speaker terminals and turn on the speaker switches on the front panel. Or, connect a set of headphones to the front headphone jack.
7. Connect power and turn it on. Allow it to warm-up for 5 minutes.
8. Set the signal generator to 30kHz at 1mV. If a signal generator is not available, a Harman/Kardon test record or other CD-4 record may be used as a source of 30kHz signal. It is essential that an UNMODULATED signal be used. The test record is ideal in this regard, since long passages of unmodulated carrier are available for channel balancing. On a commercial disc, the grooves between selections may be used.
9. Adjust the volume so that a beat note can be heard.

NOTE: A beat may not be heard if VR 105 is already adjusted for zero beat or if the beat is out of the audible range.

If a beat is not heard when rocking VR 105 through its extremes, there is a problem with the unit.

10. Adjust VR 105 for zero beat.

NOTE: Within a small range of this adjustment the beat will disappear. This is due to the phase locked loop locking to the input. Set VR 105 to the approximate center of this range.

11. Disconnect power and remove the 100 μ f capacitor and jumpers.
12. Repeat this procedure, substituting: VR 205 for 105, IC 202 for 102.

NOTE: L101 and 201 are factory set and need not be adjusted. If they are misadjusted by mistake, they can be set approximately 1 turn above the top of the form.

CD-4 ANRS ALIGNMENT PROCEDURE

This procedure must be performed if any components in the ANRS are replaced.

1. Unsolder the jumper on the bottom of the board that connects to the negative lead of C 139.
2. Connect an audio oscillator through an attenuator and a 10 μ f, 25 volt capacitor to the test point at the jumper in Step 1. The positive lead of the capacitor connects to the CD-4 board.
3. Connect a clip lead from the cathode of CR 302 to Ground. (This disables the muting circuit.)
4. Place the function switch in the "Phono" position.
5. Connect power to the unit and turn it on. Allow it to warm-up at least 1 minute.
6. Set the ANRS controls as follows: VR 101, 102 at center, VR 103 fully clockwise, VR 104 fully counterclockwise.
7. Set the frequency of the oscillator to 30Hz and the level to 140mV (-15dBm) and observe the output level at left front tape output. It should be 200mV (-12dBm) \pm 2dB.

This level is a reference to which the following readings are compared:

Step No.	Set Frequency To	Set Level To	Adjust	To Obtain at Tape Output
8	4kHz	125mV (-1db)	VR 102	-1 +2dB -1dB
9	4kHz	31mV (-13dB)	VR 104	-21 \pm 1dB
10	Repeat 8 & 9 until no further improvement is noticed.			
11	4kHz	55mV (-8dB)	Check	-11 \pm 1dB
12	4kHz	14mV (-20dB)	Check	-32 \pm 2dB
13	If 11 and 12 are not within limits, return to Step 8.			
14	630Hz	31mV (-13dB)	VR 103	-20 \pm 1dB
15	630Hz	140mV (0dB)	VR 101	0 \pm 1dB
16	Repeat 14 & 15 until no further improvement is noticed.			
17	630Hz	63mV (-7dB)	Check	-10 \pm 1dB
18	630Hz	14mV (-20dB)	Check	-30 \pm 2dB
19	Repeat Steps 8 thru 18 until no further improvement is noticed.			
20	Disconnect power and oscillator			
21	Remove the clip lead from CR 302 to Ground			
22	Reconnect the jumper that connects to C139.			
23	Repeat, substituting: C239 for 139, VR 201 for 101, VR 202 for 102, VR 203 for 103, VR 204 for 104, Right for Left.			

NOTE: L102 and 202 are factory set and do not require adjustment.

If they are misadjusted by mistake, set them about 1/3 of the way from the top.

SQ ALIGNMENT PROCEDURE

INSTRUMENTS: AF Oscillator, 2-V.T.V.M., and Oscilloscope

NOTE: Set MODE selector to ENHANCE STEREO.

Keep AF oscillator output to 1.0V at 1000Hz during alignment.

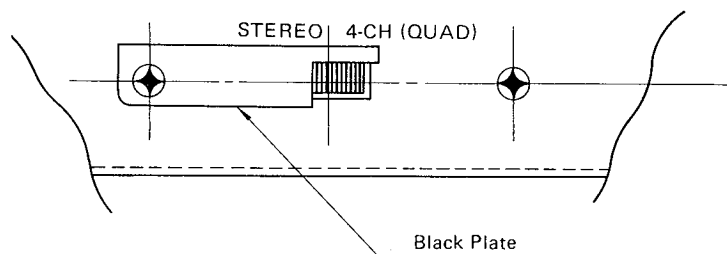
Step	SIGNAL SOURCE	OUTPUT METER	ADJUST	ADJUST FOR
1	Connect AFO to LT.	Connect scope and V.T.V.M. to LF	VR201	1.0V on V.T.V.M.
2	Same as above.	Connect scope and V.T.V.M. to LB	VR202	1.0V on V.T.V.M.
3	Connect AFO to RT	Connect scope and V.T.V.M. to RF	VR203	1.0V on V.T.V.M.
4	Same as above.	Connect scope and V.T.V.M. to RB	VR204	1.0V on V.T.V.M.

CHANGING THE STEREO/QUAD (4-CH) SWITCH

The receiver operates 22W x 4-CH when the switch is set QUAD (4-CH) side and 44W x 2-CH when the switch is set STEREO side at rated power.

The switch is set at QUAD (4-CH) side. If you want more output with stereo signal, please change the switch setting from QUAD (4-CH) side to STEREO side. To change the switch setting, remove the black screw at left side of the switch and remove a black plate for fitting the switch knob.

When the unit operates in STEREO mode, signal output comes only to LEFT FRONT and RIGHT FRONT speaker terminals (No signal at LEFT BACK and RIGHT BACK terminals).

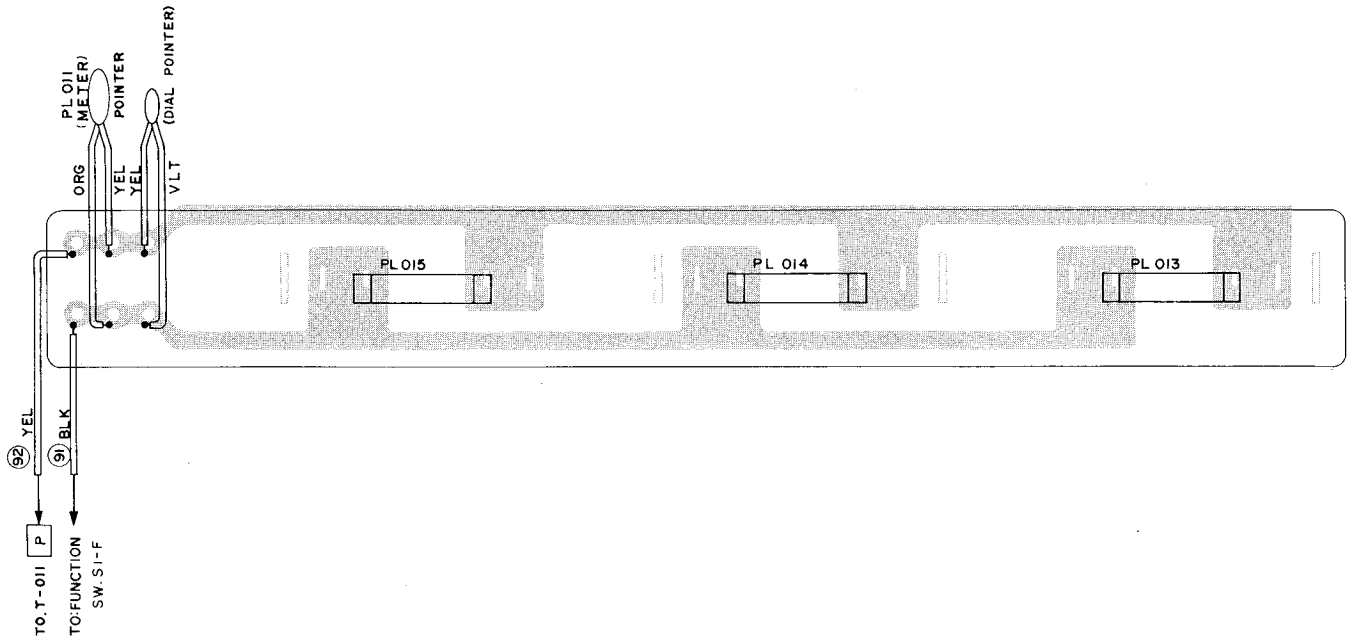


CAUTION: WHEN IN STEREO OUTPUT MODE (2-CH) SPEAKERS CANNOT UTILIZE A COMMON GROUND.

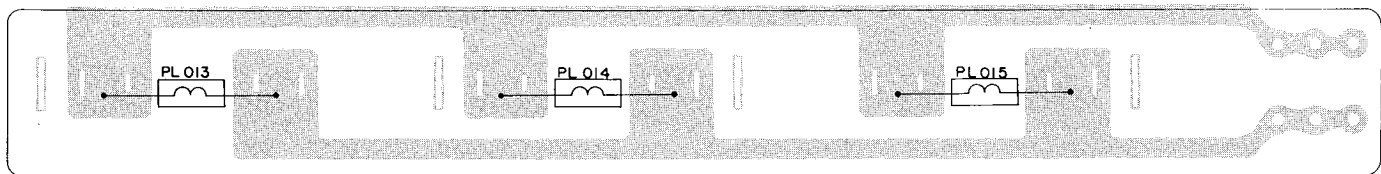
SWITCH LEGEND

S1	FUNCTION	S7	HIGH CUT
S2	MODE	S8	CONTOUR
S3	LOW CUT	S9	DOLBY
S4	FM MUTING	S10	SPEAKERS MAIN
S5	TAPE MONITOR	S11	STEREO QUAD
S6	SPEAKERS REMOTE	S01	POWER

DIAL LAMP BOARD — TOP

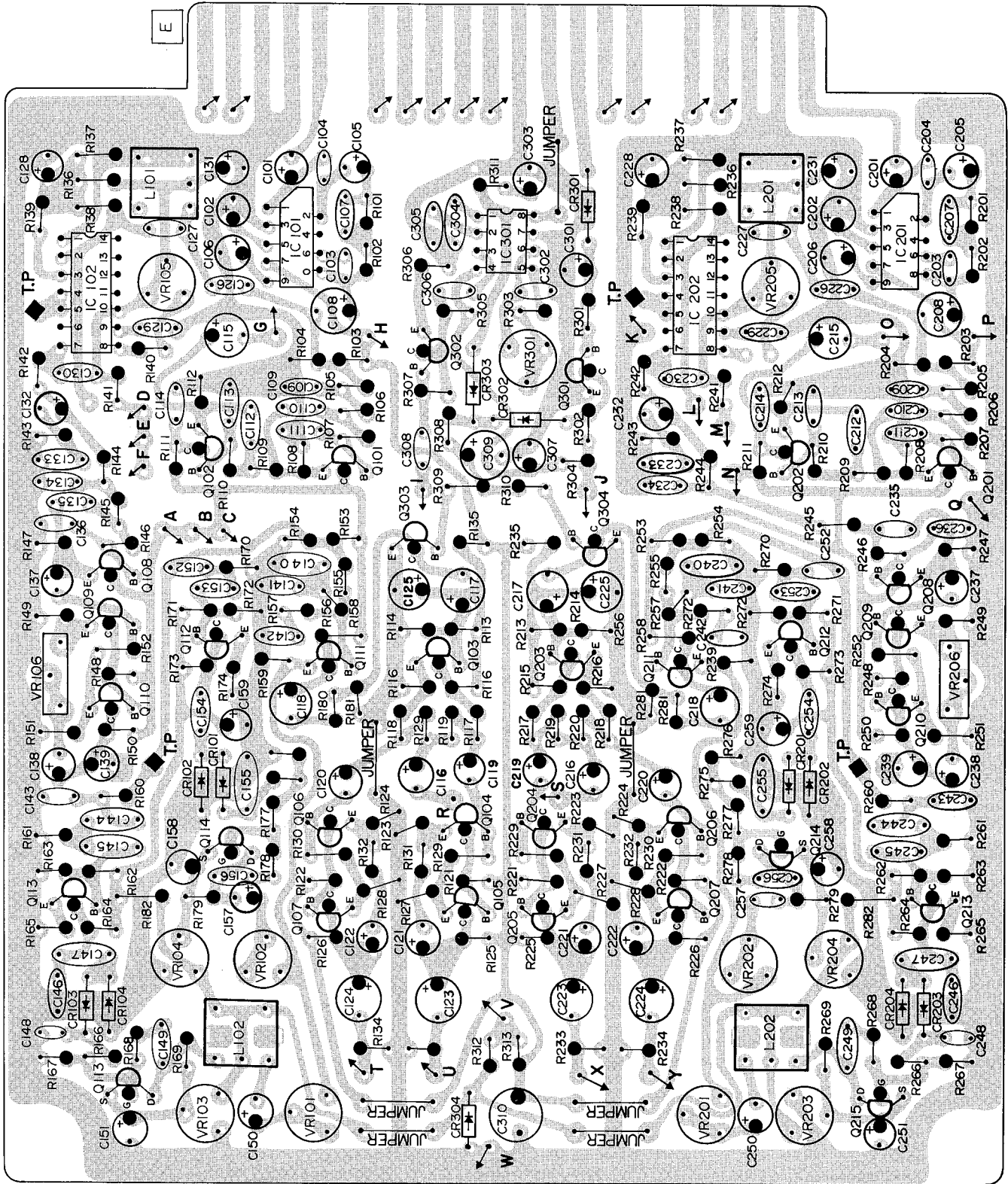


DIAL LAMP BOARD — BOTTOM



CD-4 BOARD

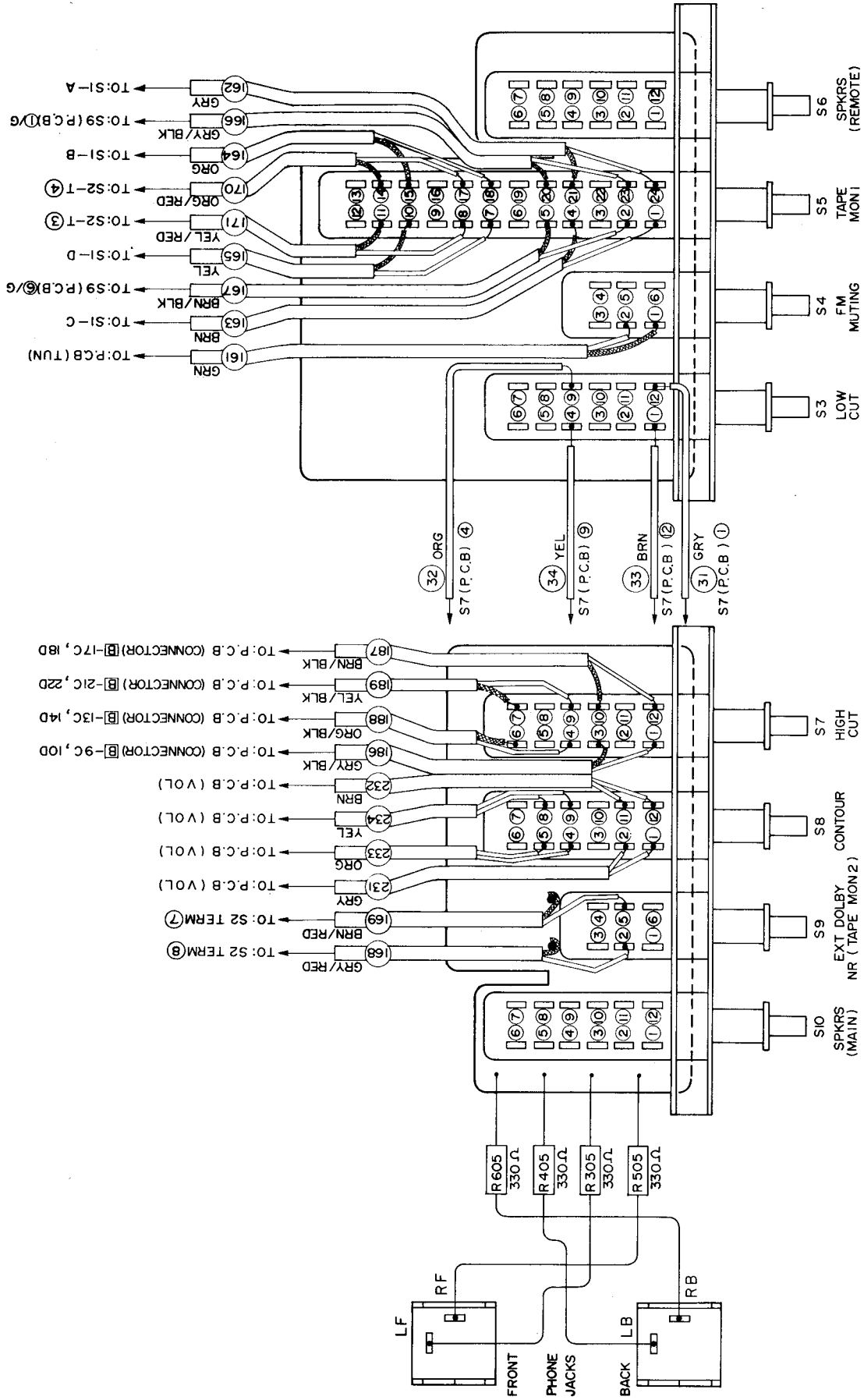
22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1



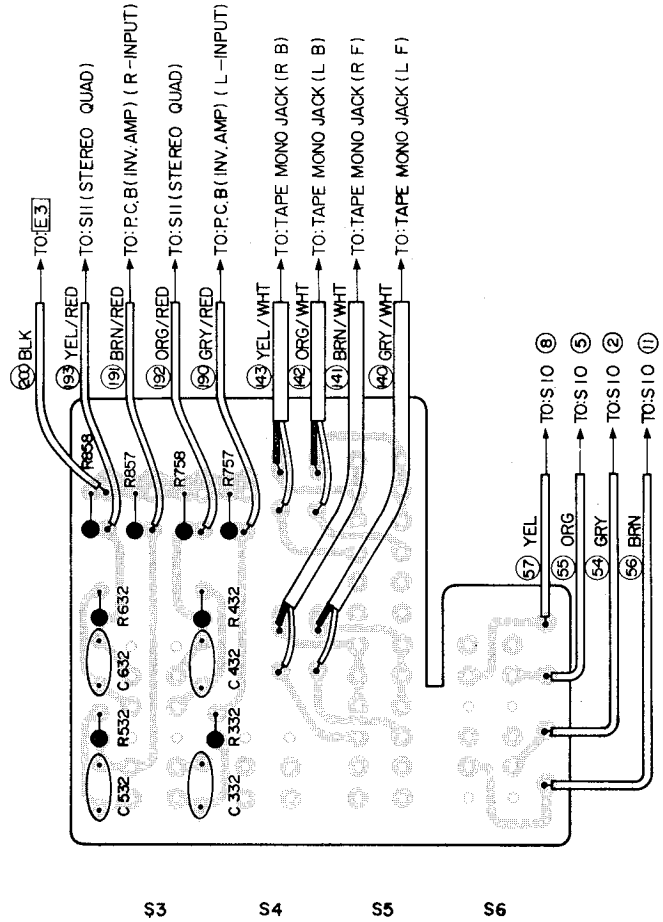
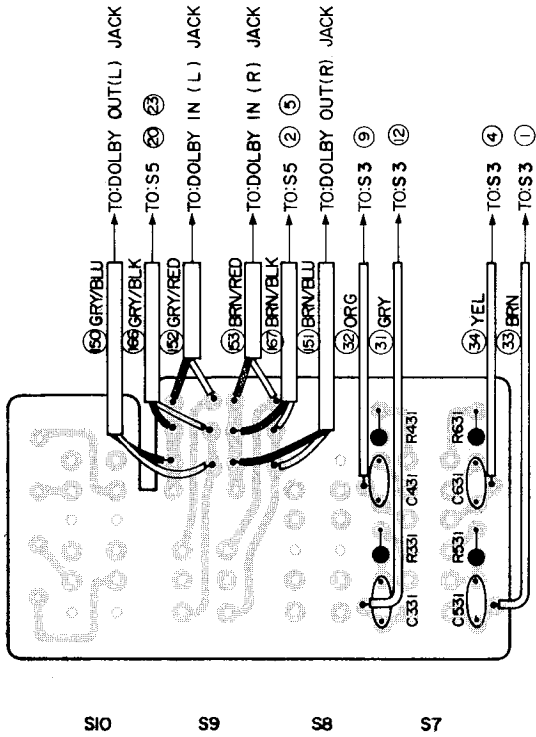
WIRE CONNECTION

FROM	TO	WIRE NO. COLOR
S	E-4	301 BLU
O	E-5	302 GRN
Y	E-7	304 BRN
X	E-8	306 YEL
W	E-12	308 BLK
D	E-13	309 WHT
A	E-14	310 RED
T	E-15	303 GRY
U	E-16	305 ORG
R	E-21	300 BLU
G	E-22	307 GRN
B	N	310 RED
C	V	311 RED
E	J	312 WHT
F	M	309 WHT
H	P	313 VLT
I	L	314 PNK
K	Q	315 BLK

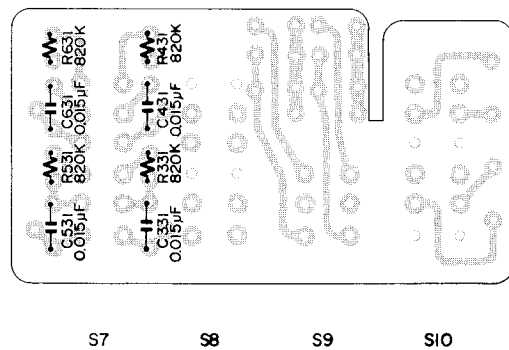
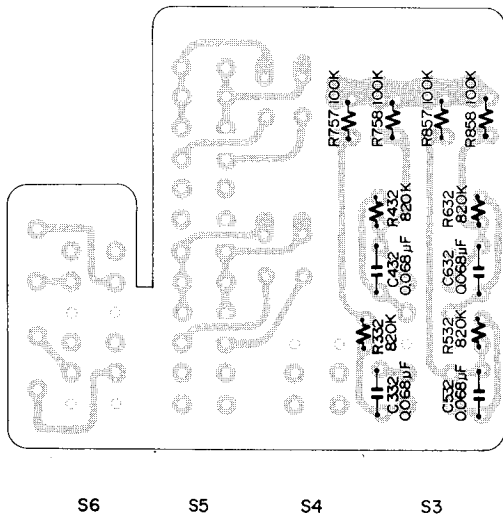
PUSH SWITCH BOARD DIAGRAM — 1



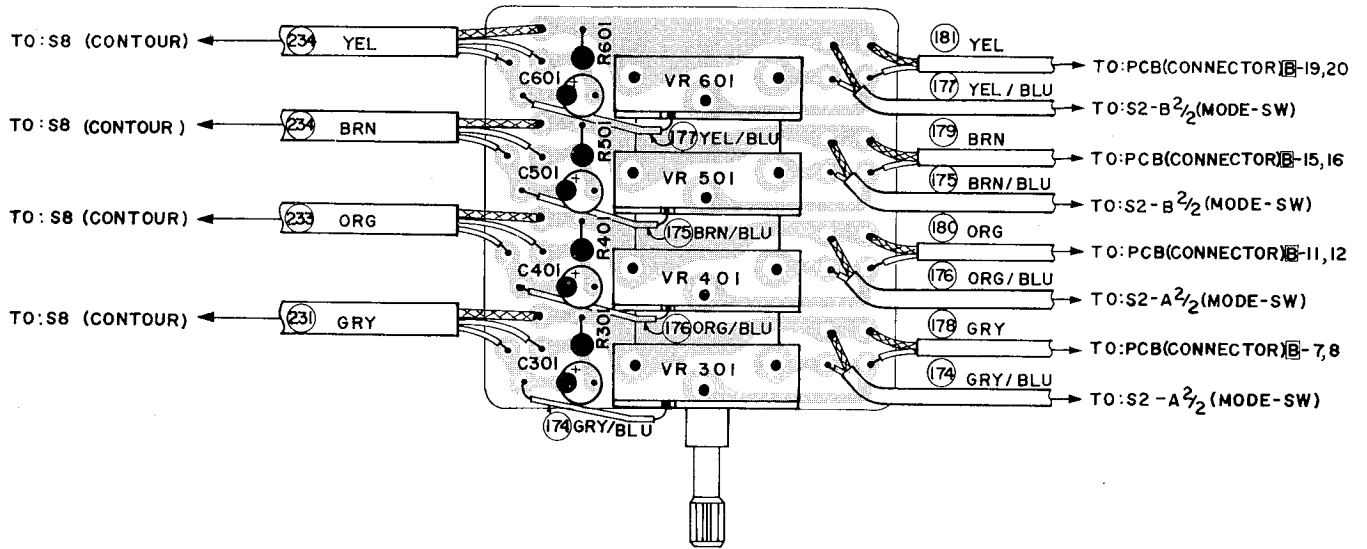
PUSH SWITCH BOARD DIAGRAM — 2



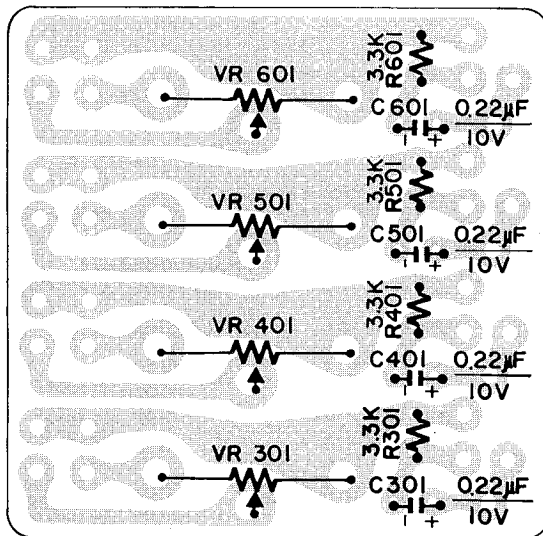
PUSH SWITCH BOARD DIAGRAM — 3



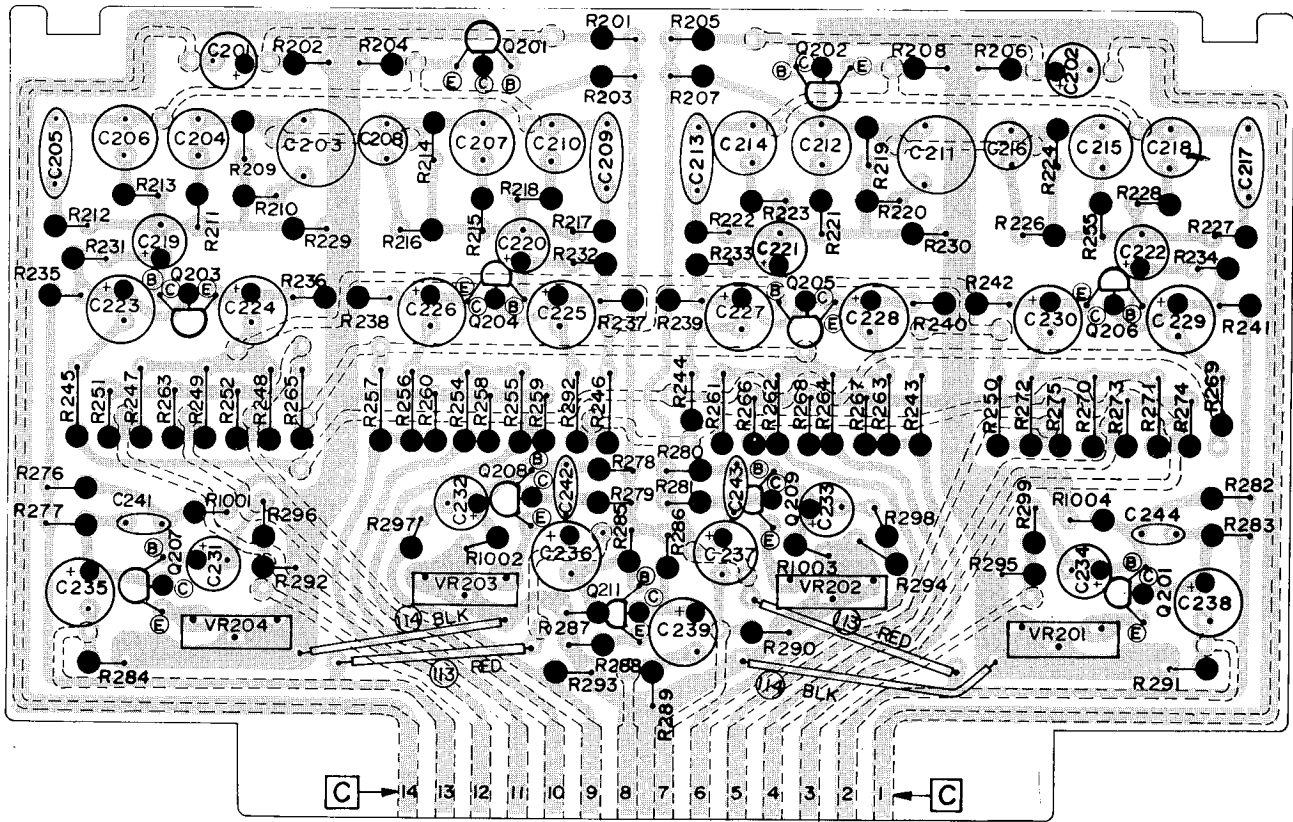
VOLUME CONTROL BOARD — TOP



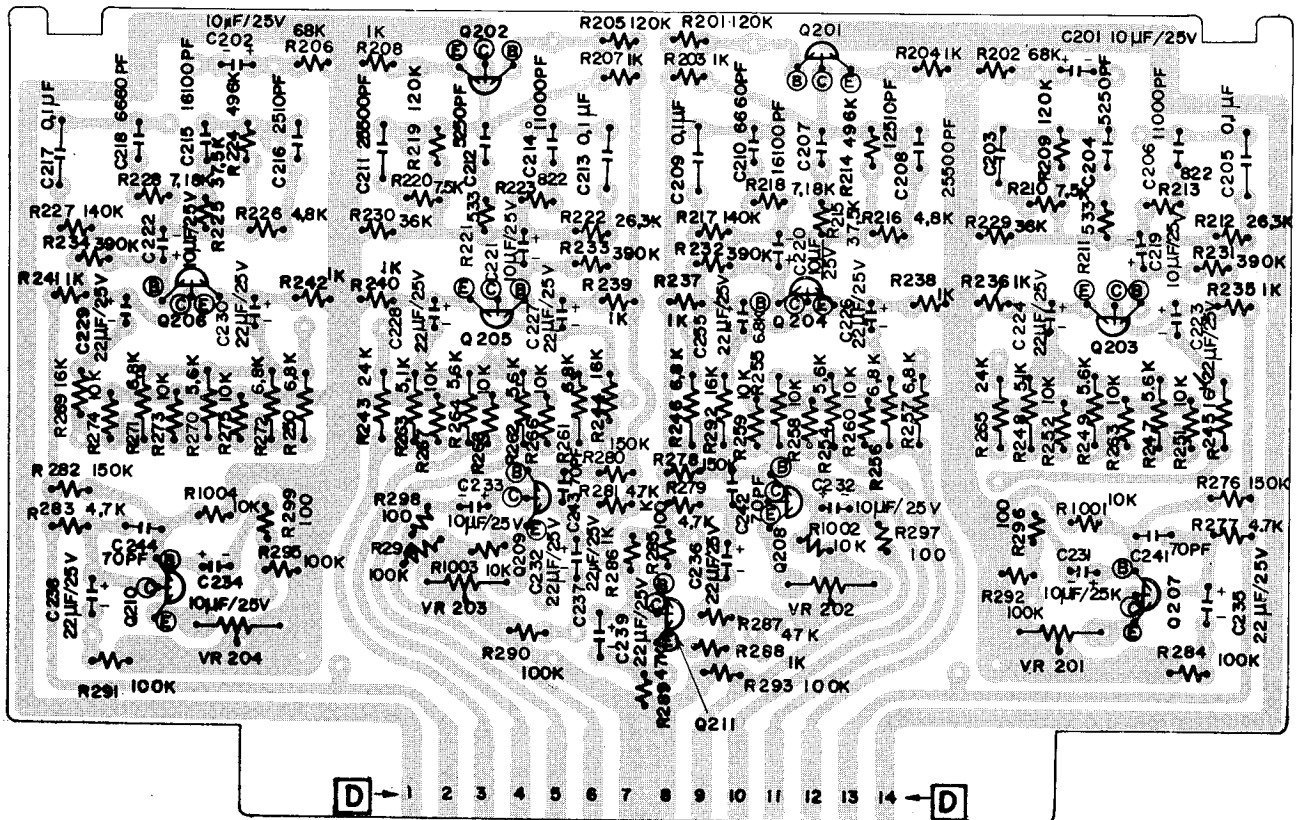
VOLUME CONTROL BOARD — BOTTOM



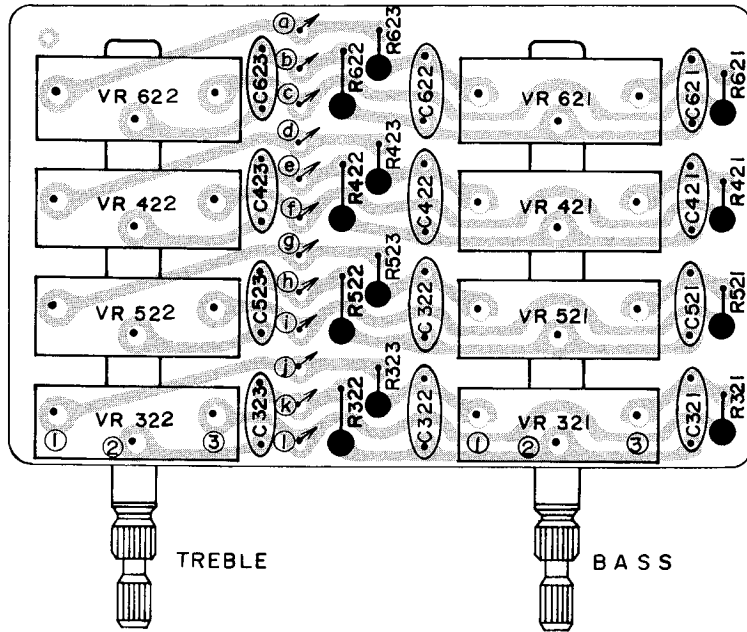
S.Q. BOARD — TOP



S.Q. BOARD — BOTTOM

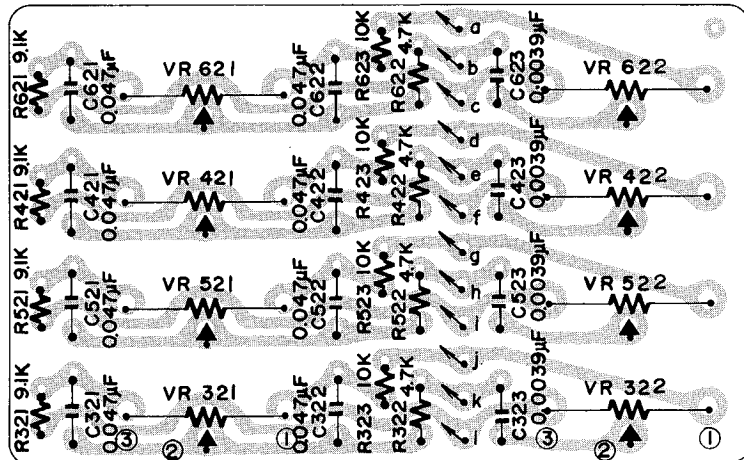


TONE CONTROL BOARD — TOP

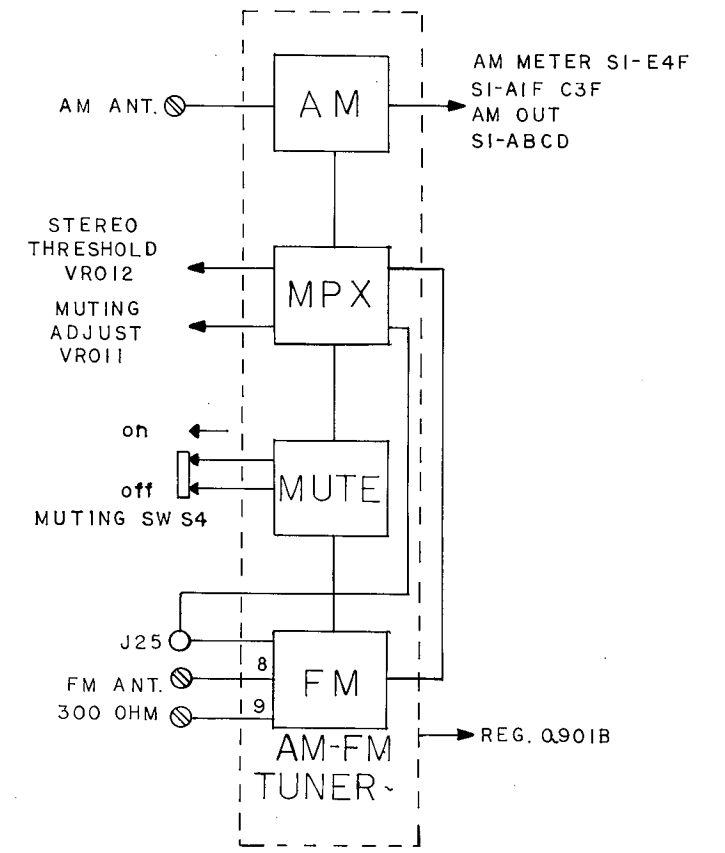
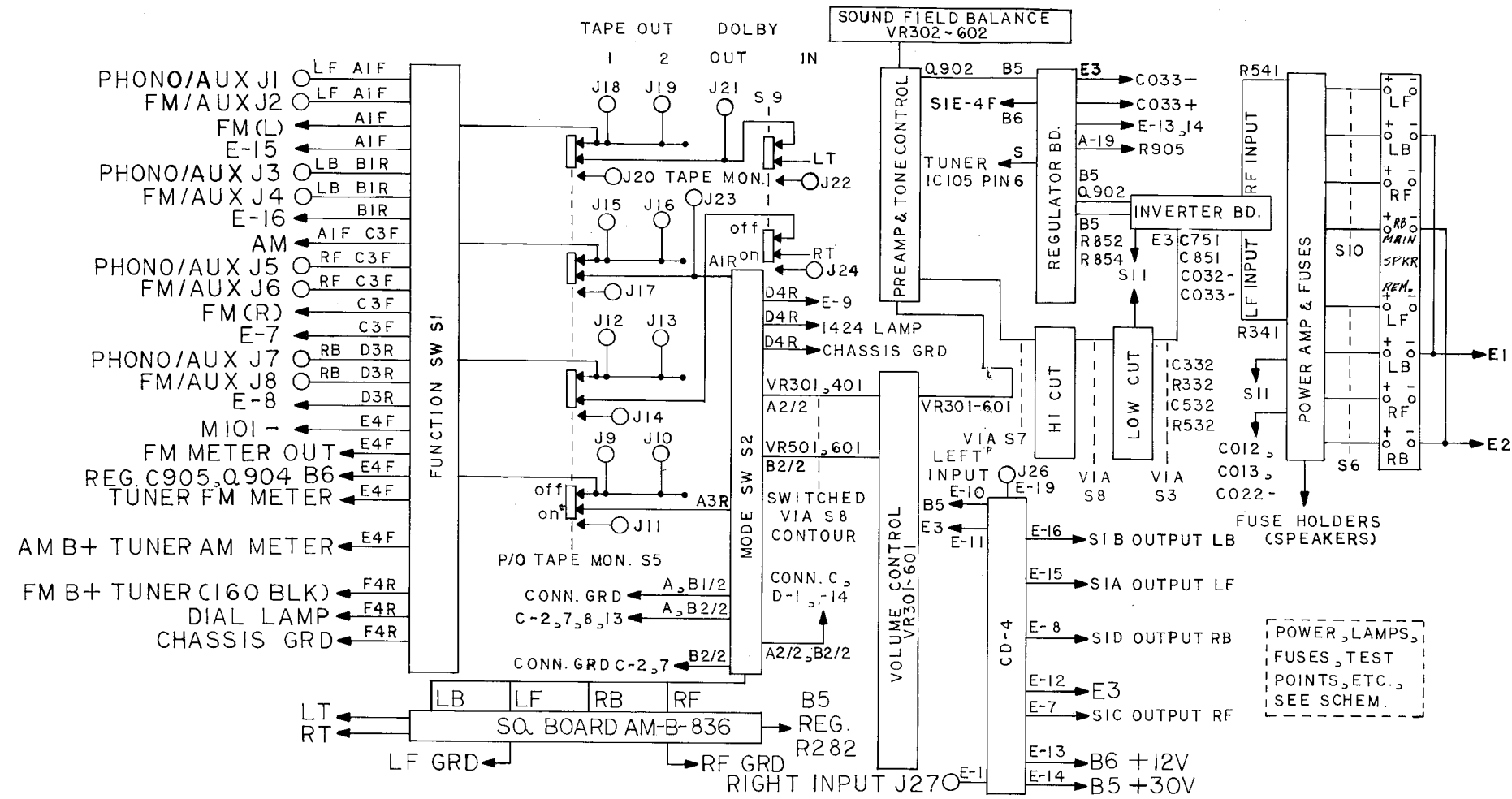


FROM	WIRE NO., COLOR	TO
TONE CONTROL PCB ①	② YEL / WHT	PCB (CONCTR) [A]-22
" ②	③ YEL / GRN	" [A]-21
" ③	④ YEL / BLK	" [A]-20
" ④	⑤ ORG / WHT	" [A]-14
" ⑤	⑥ ORG / GRN	" [A]-13
" ⑥	⑦ ORG / BLK	" [A]-12
" ⑦	⑧ BRN / WHT	" [A]-18
" ⑧	⑨ BRN / GRN	" [A]-17
" ⑨	⑩ BRN / BLK	" [A]-16
" ⑩	⑪ GRN / WHT	" [A]-10
" ⑪	⑫ GRN / GRN	" [A]-9
" ⑫	⑬ GRN / BLK	" [A]-8

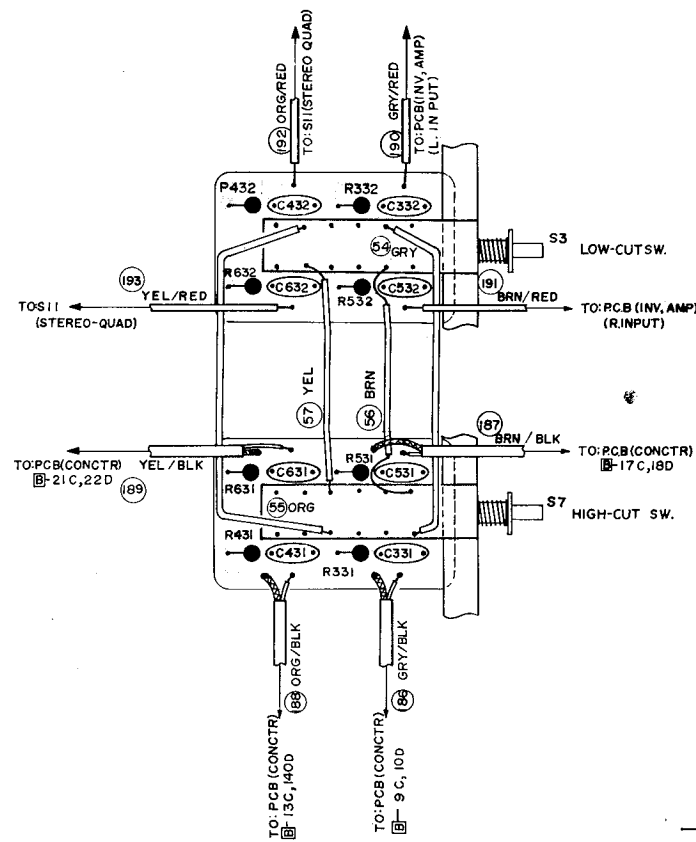
TONE CONTROL BOARD — BOTTOM



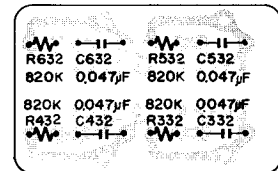
BLOCK DIAGRAM



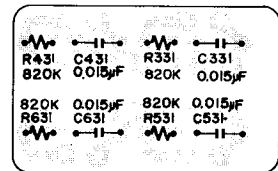
LOW CUT BOARD/HIGH CUT BOARD—TOP



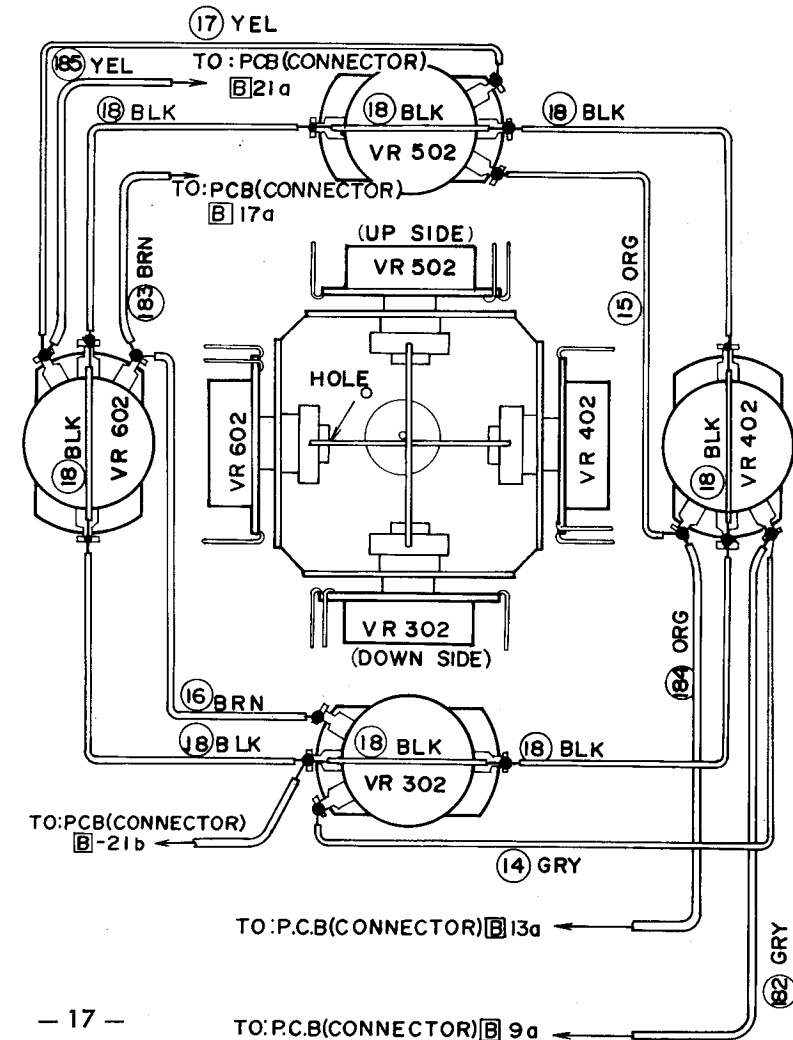
LOW CUT BOARD — BOTTOM



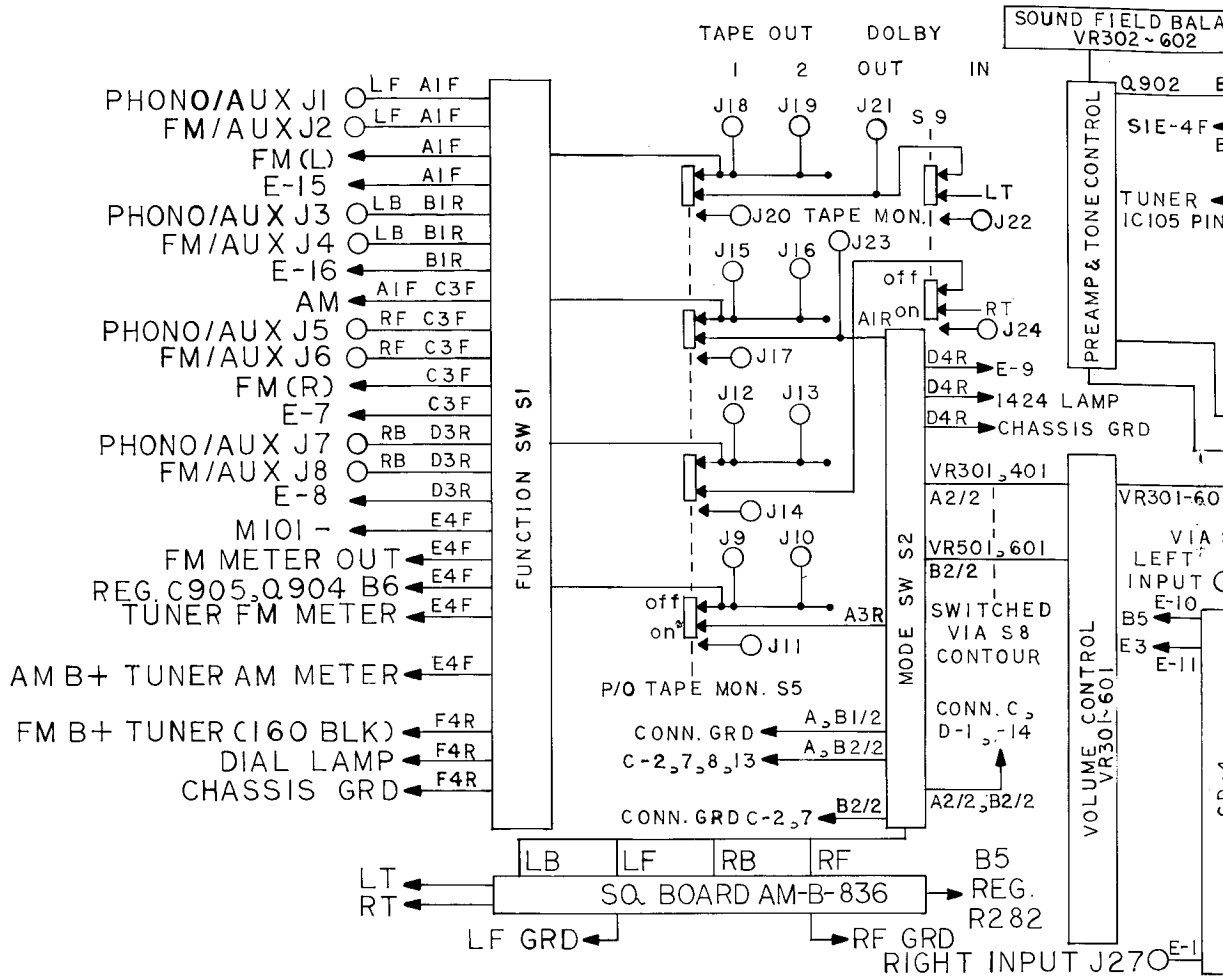
HIGH CUT BOARD — BOTTOM



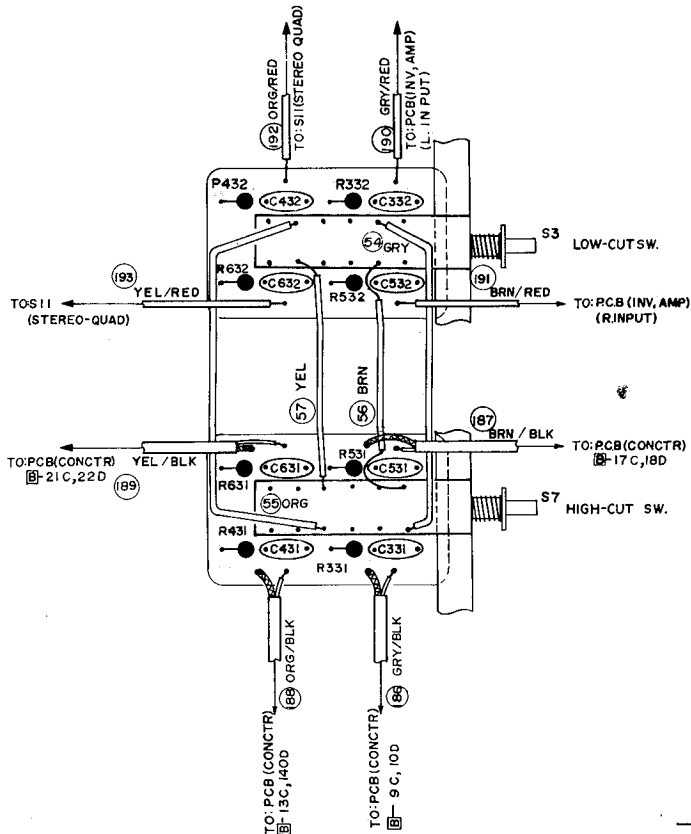
SOUND FIELD BALANCE



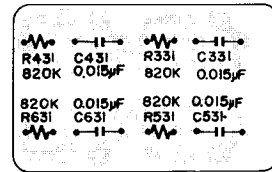
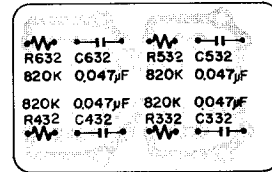
BLOCK DIAGRAM



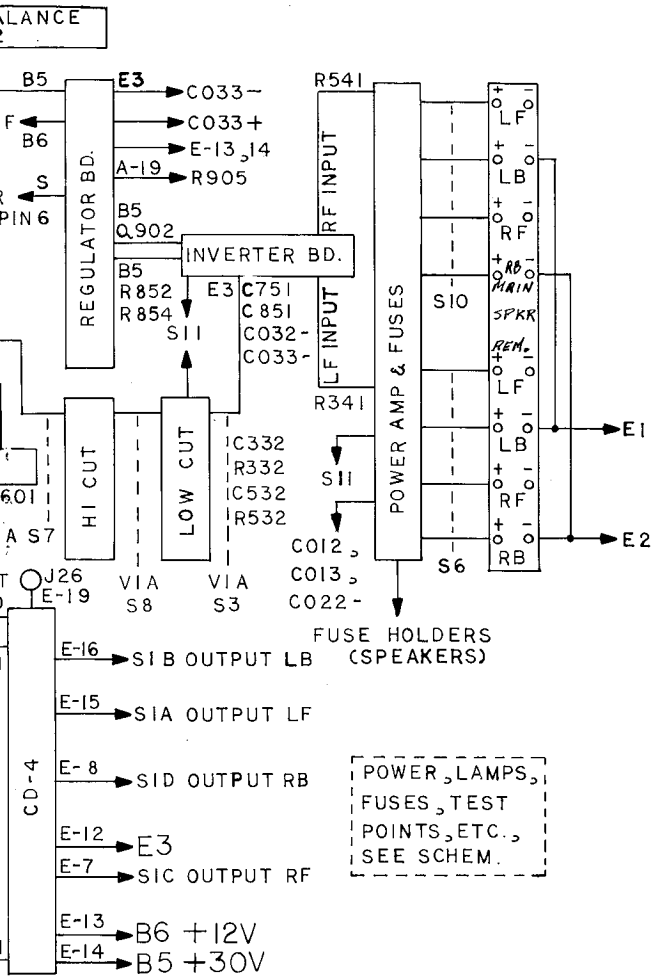
LOW CUT BOARD/HIGH CUT BOARD—TOP



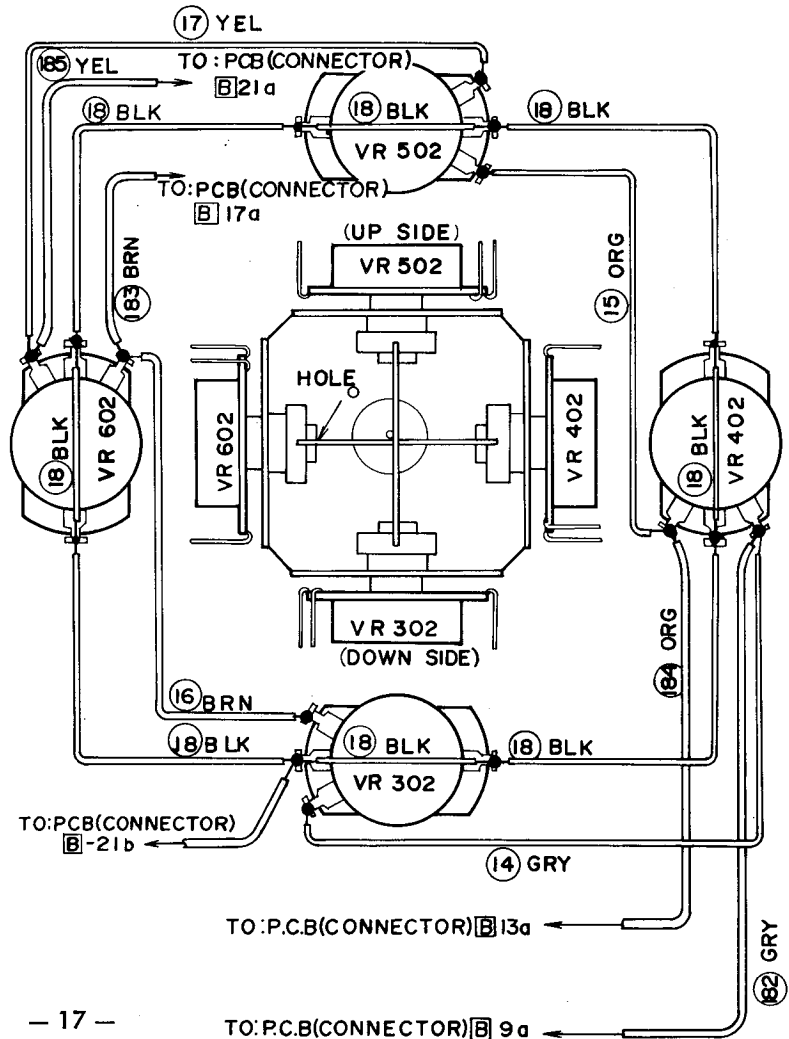
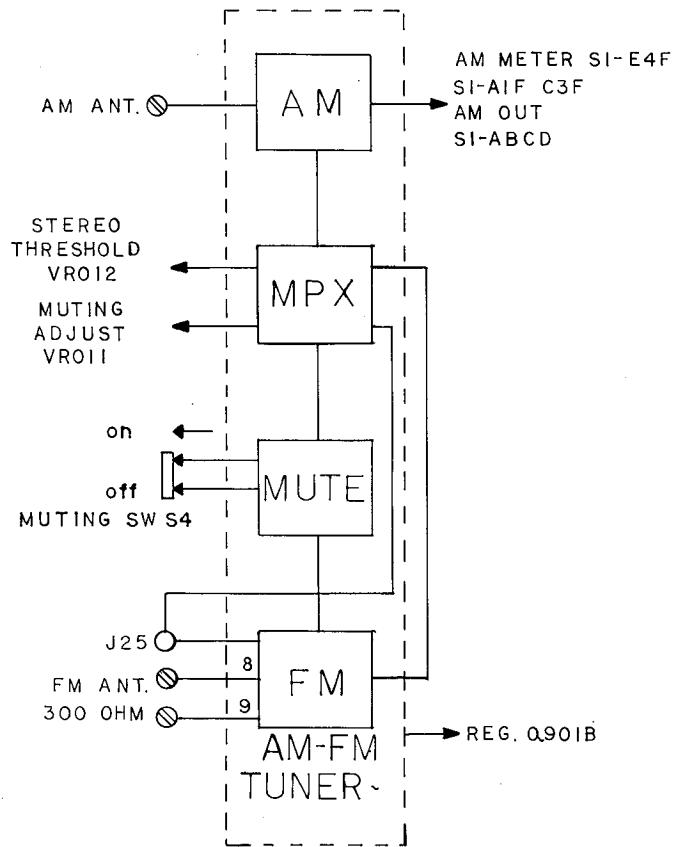
LOW CUT BOARD — BOTTOM



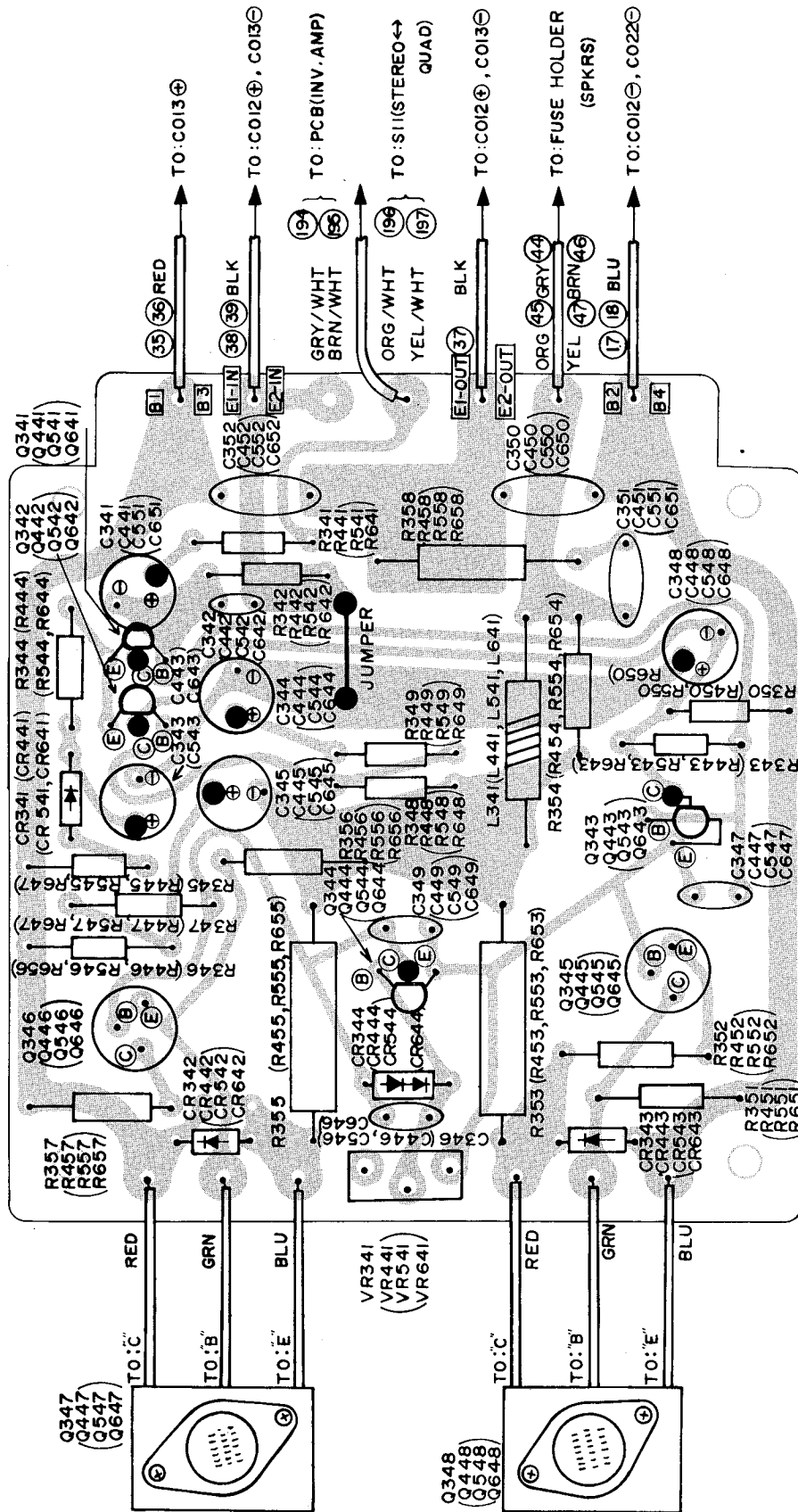
HIGH CUT BOARD — BOTTOM



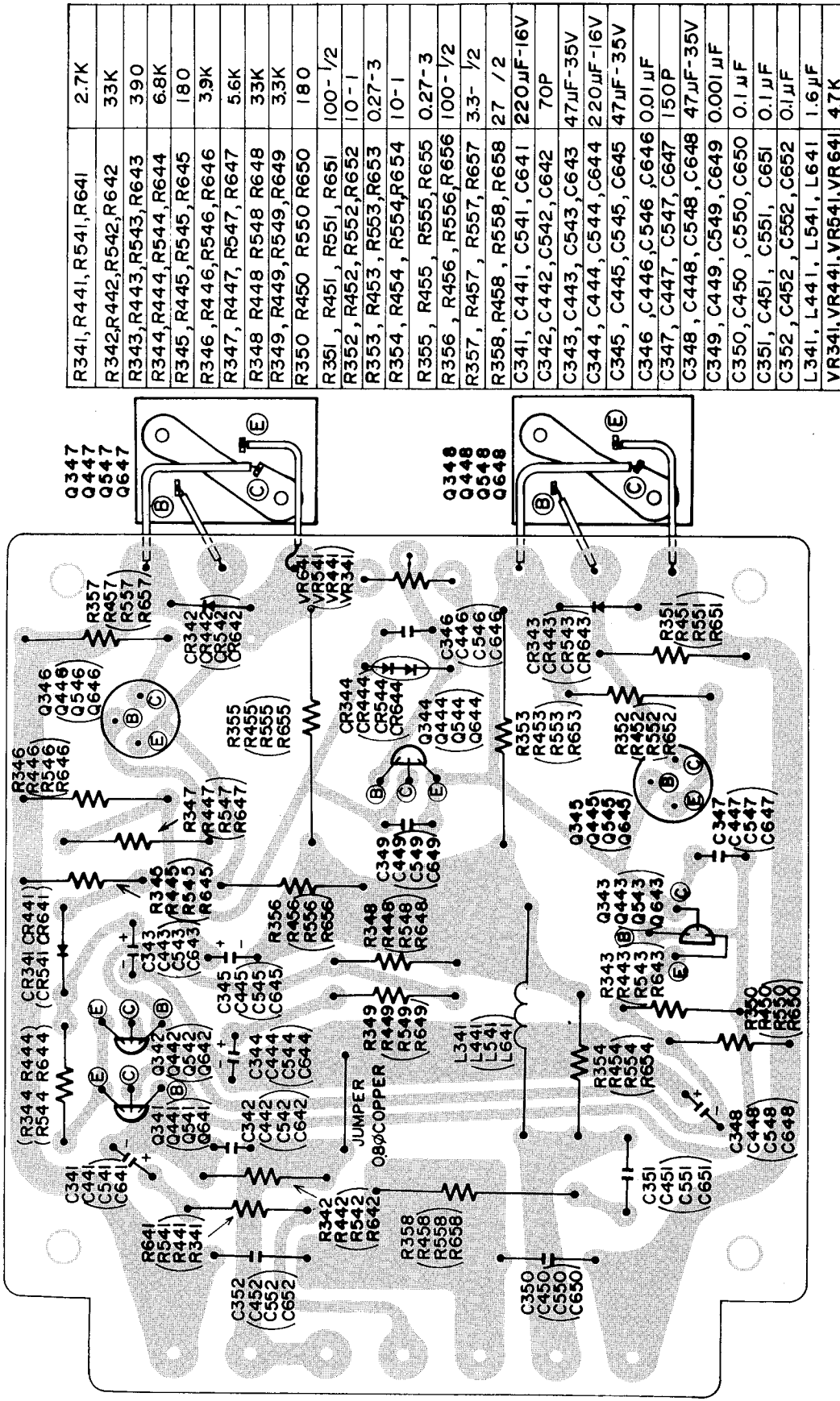
SOUND FIELD BALANCE



POWER AMP BOARD — TOP



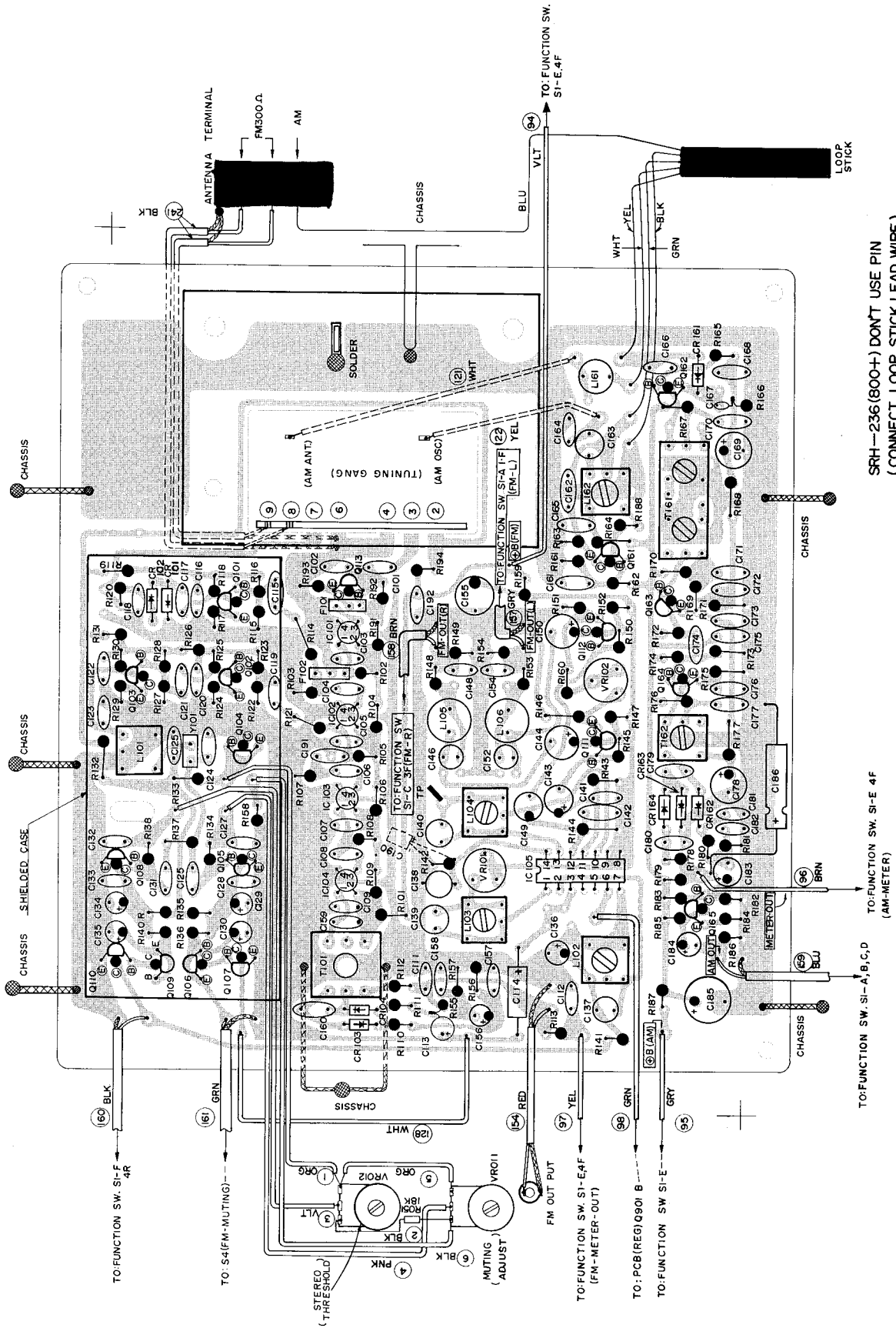
POWER AMP BOARD - BOTTOM



R341, R441, R541, R641	2.7K
R342, R442, R542, R642	33K
R343, R443, R543, R643	390
R344, R444, R544, R644	6.8K
R345, R445, R545, R645	180
R346, R446, R546, R646	3.9K
R347, R447, R547, R647	5.6K
R348, R448, R548, R648	33K
R349, R449, R549, R649	33K
R350, R450, R550, R650	180
R351, R451, R551, R651	100 - 1/2
R352, R452, R552, R652	10 - 1
R353, R453, R553, R653	0.27 - 3
R354, R454, R554, R654	10 - 1
R355, R455, R555, R655	0.27 - 3
R356, R456, R556, R656	100 - 1/2
R357, R457, R557, R657	3.3 - 1/2
R358, R458, R558, R658	27 / 2
C341, C441, C541, C641	220µF-16V
C342, C442, C542, C642	70P
C343, C443, C543, C643	47µF-35V
C344, C444, C544, C644	220µF-16V
C345, C445, C545, C645	47µF-35V
C346, C446, C546, C646	0.01µF
C347, C447, C547, C647	150P
C348, C448, C548, C648	47µF-35V
C349, C449, C549, C649	0.001µF
C350, C450, C550, C650	0.1µF
C351, C451, C551, C651	0.1µF
C352, C452, C552, C652	0.1µF
L341, L441, L541, L641	1.6µF
VR341, VR441, VR541, VR641	4.7K

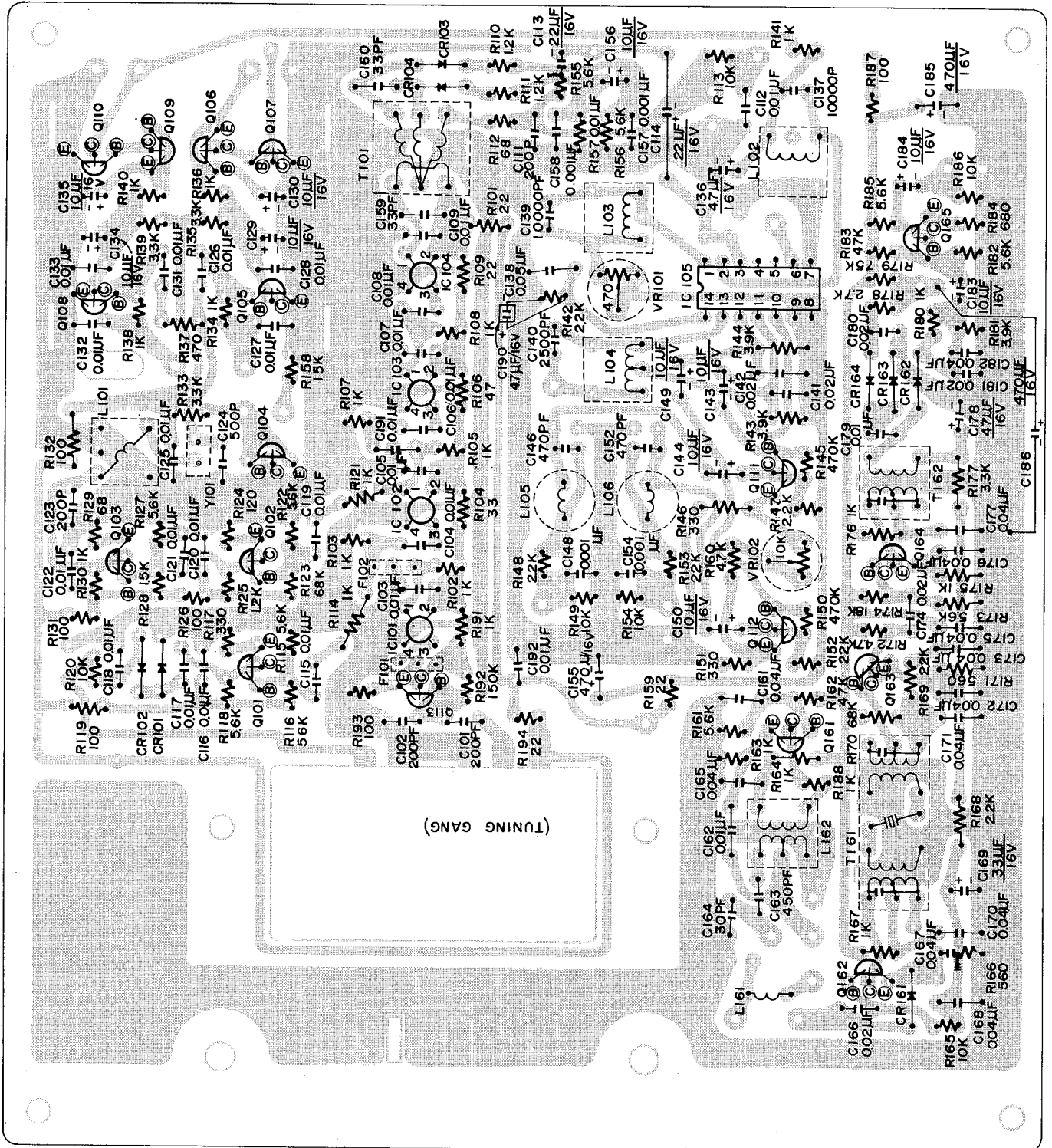
Q341-Q348	CR341-CR343	C341-C352	R341-R357	L341, VR341, LF(LEFT FRONT)
Q441-Q448	CR441-CR443	C441-C452	R441-R457	L441, VR441, LB(LEFT BACK)
Q541-Q548	CR541-CR543	C541-C552	R541-R557	L541, VR541, RF(RIGHT FRONT)
Q641-Q648	CR641-CR643	C641-C652	R641-R657	L641, VR641, RB(RIGHT BACK)

AM-FM TUNER BOARD — TOP

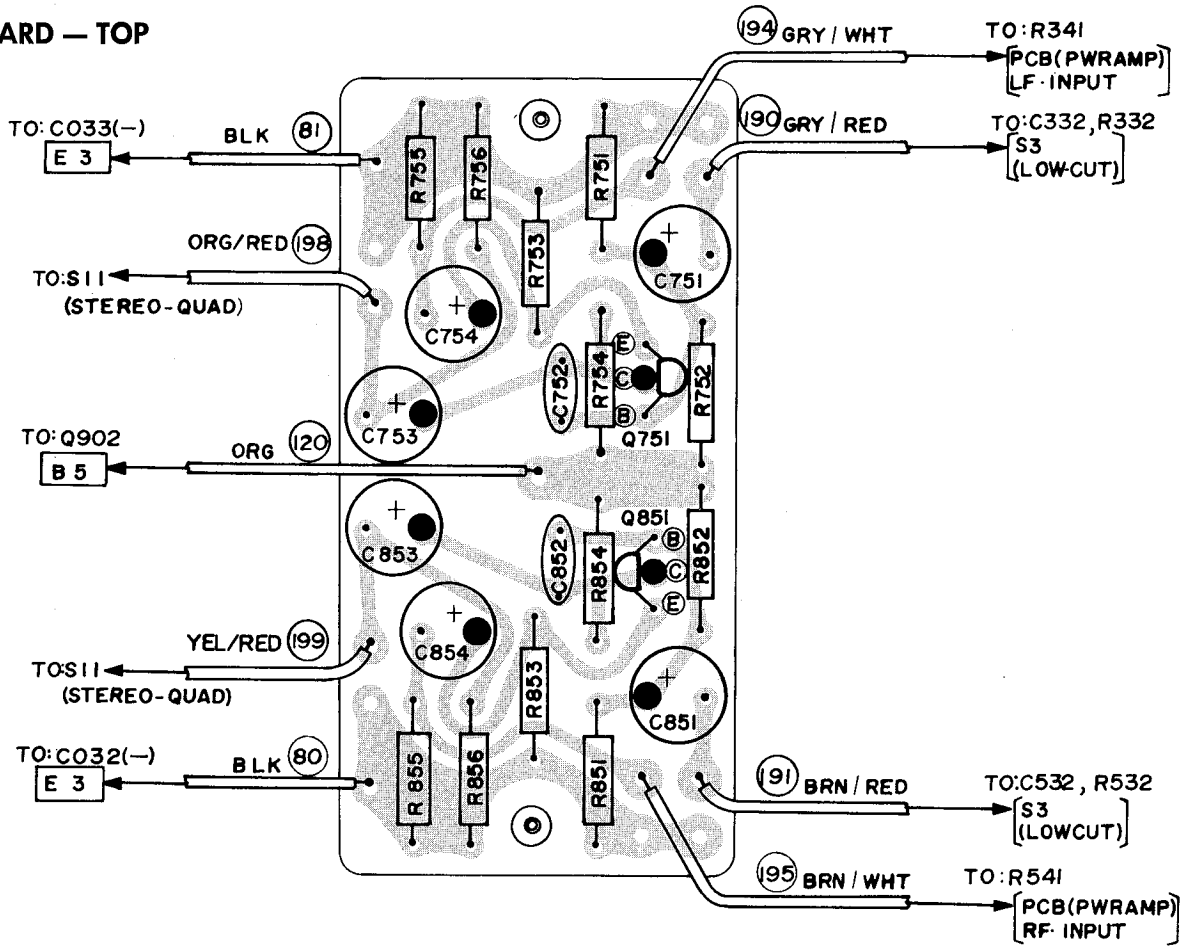


SRH-236 (800+) DON'T USE PIN
(CONNECT LOOP STICK LEAD WIRE).

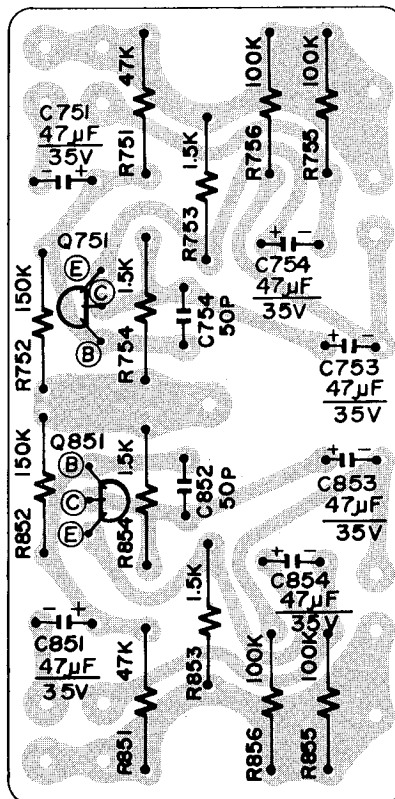
AM-FM TUNER BOARD — BOTTOM



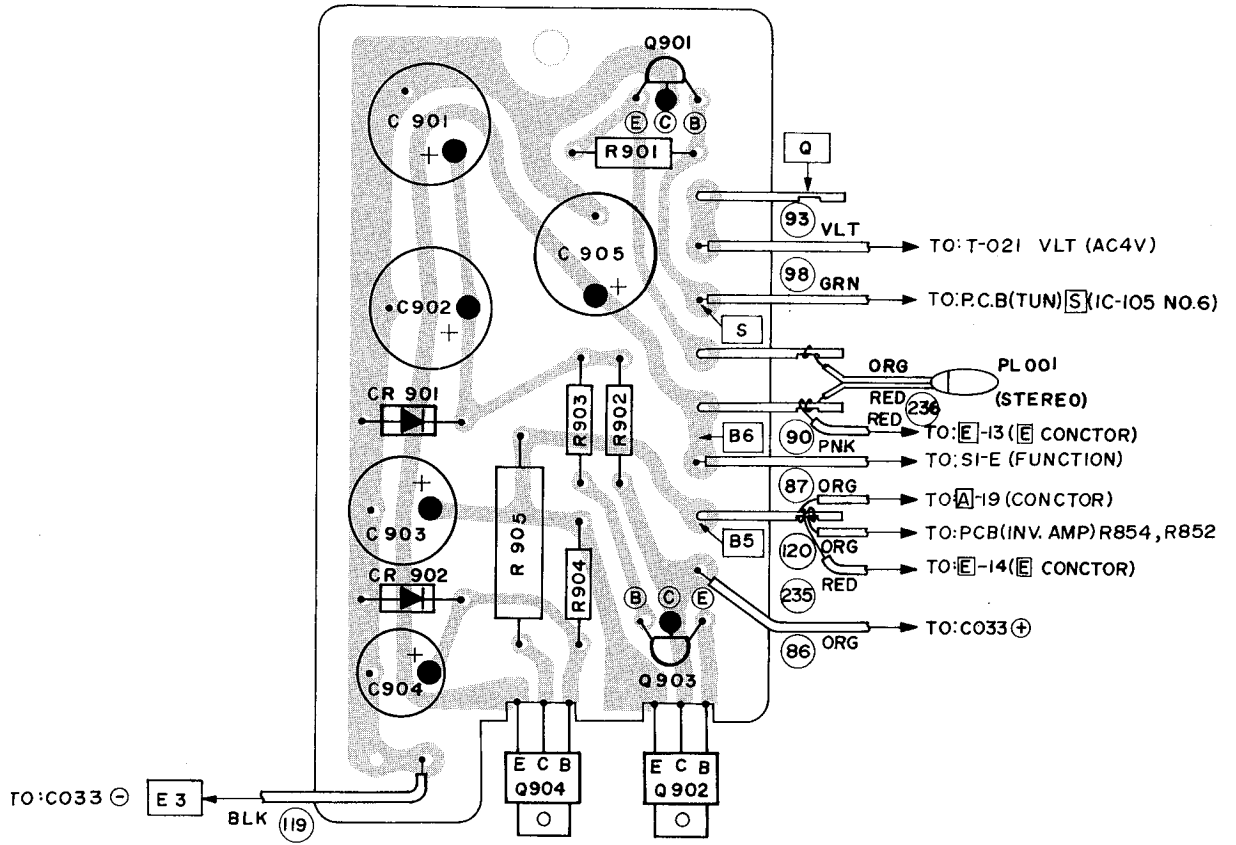
INVERTER BOARD — TOP



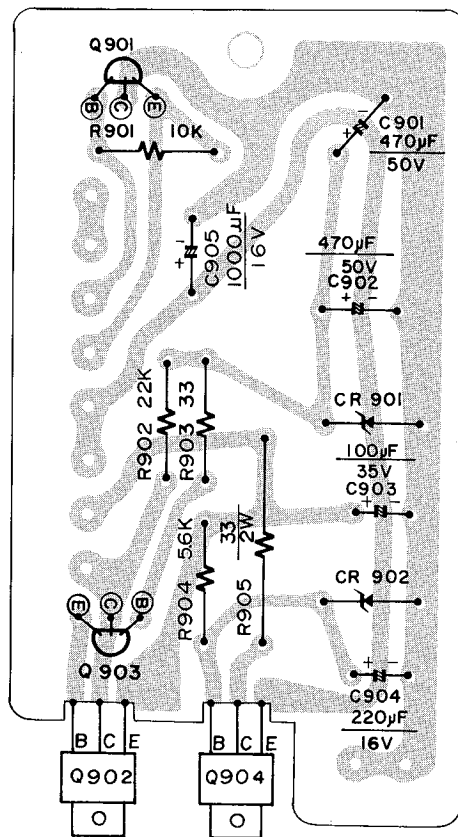
INVERTER BOARD — BOTTOM



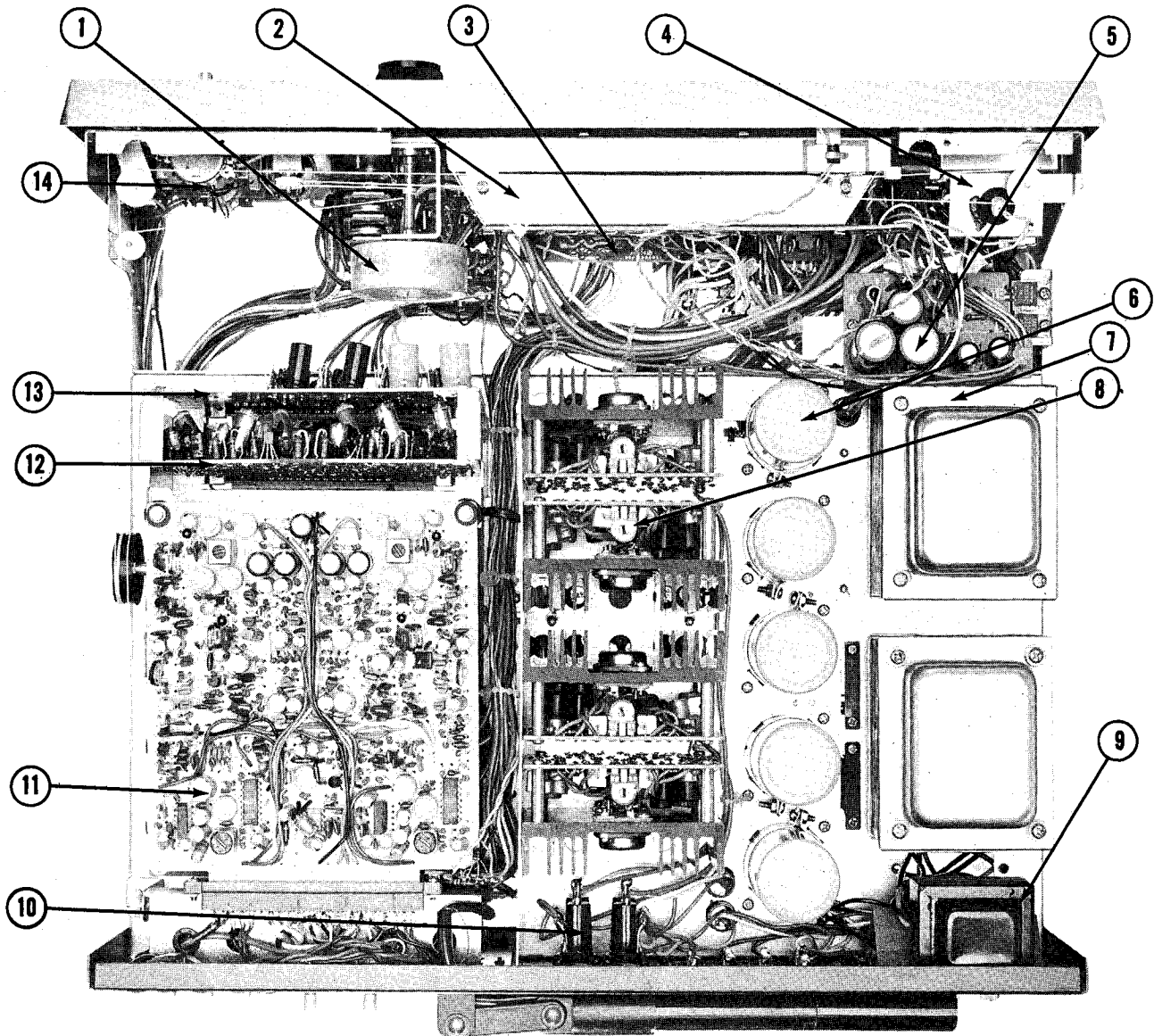
REGULATOR BOARD — TOP



REGULATOR BOARD — BOTTOM

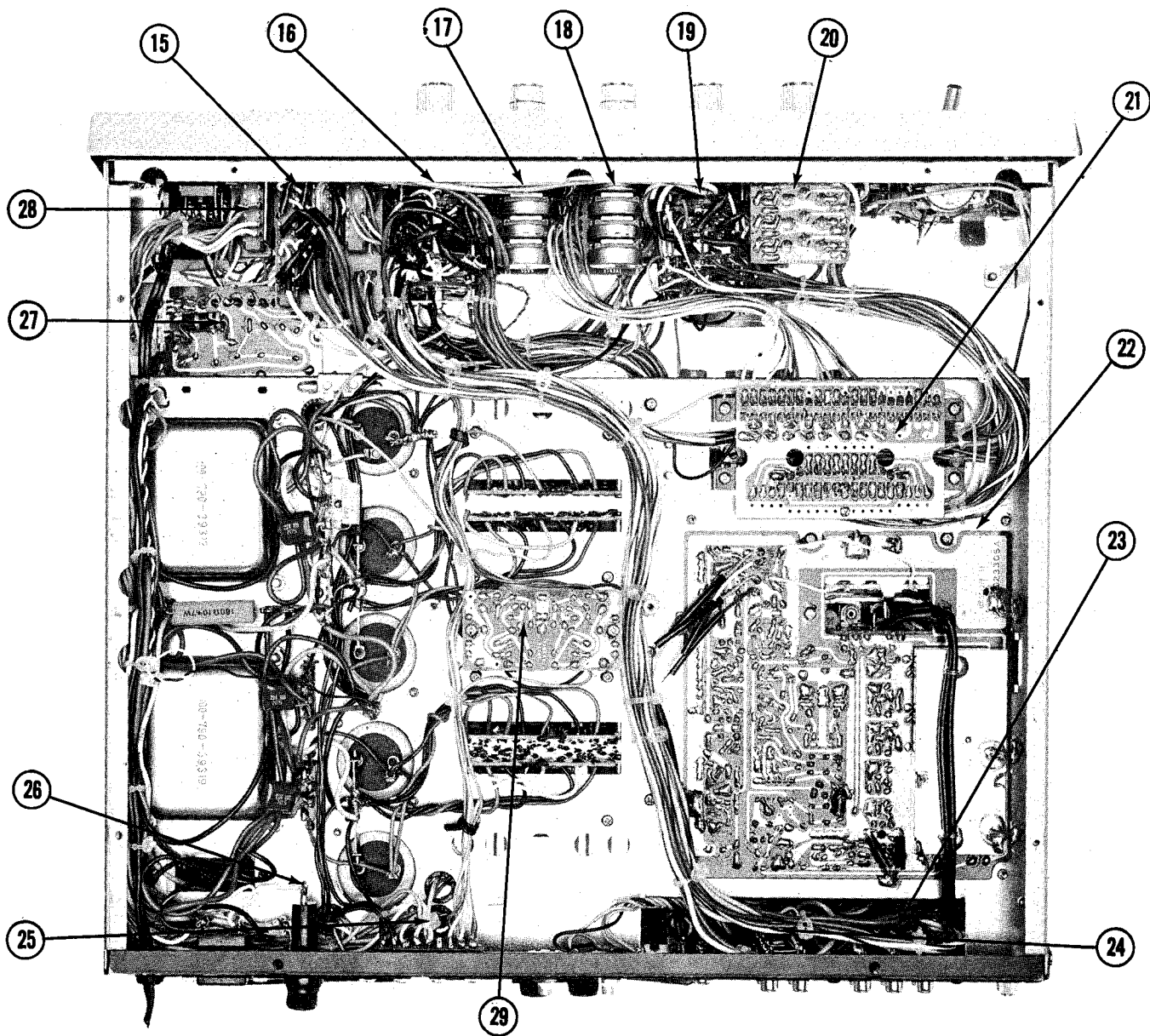


TOP VIEW



- | | |
|--|------------------------------|
| ① FLYWHEEL | ⑧ POWER AMPLIFIER P.C.B. (4) |
| ② DIAL LAMP HOUSING | ⑨ FILAMENT TRANSFORMER |
| ③ TONE CONTROL P.C.B. | ⑩ SPEAKER FUSES |
| ④ FM-AM TUNING METER & PL011 | ⑪ CD-4 P.C.B. |
| ⑤ REGULATOR P.C.B. | ⑫ SQ P.C.B. |
| ⑥ ELECTROLYTIC CAPACITORS
C12, 13, 22, 23 6800 μ F 35V;
C32, 33 2200 μ F 50V | ⑬ TONE AMPLIFIER P.C.B. |
| ⑦ TRANSFORMERS, POWER T011, 021;
OR T1, T2 MULTIVOLTAGE | ⑭ SOUND FIELD BALANCE |

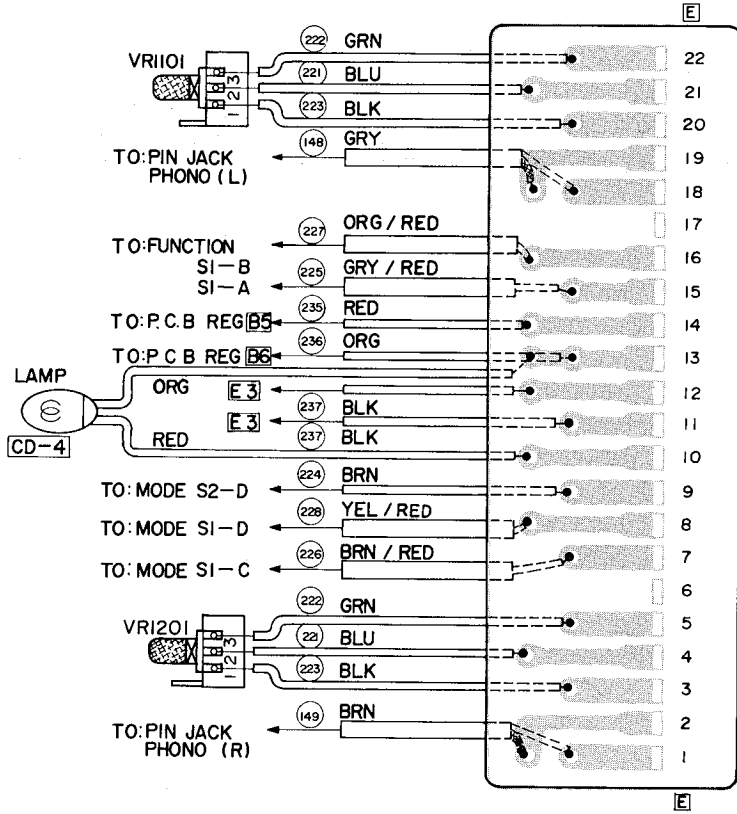
BOTTOM VIEW



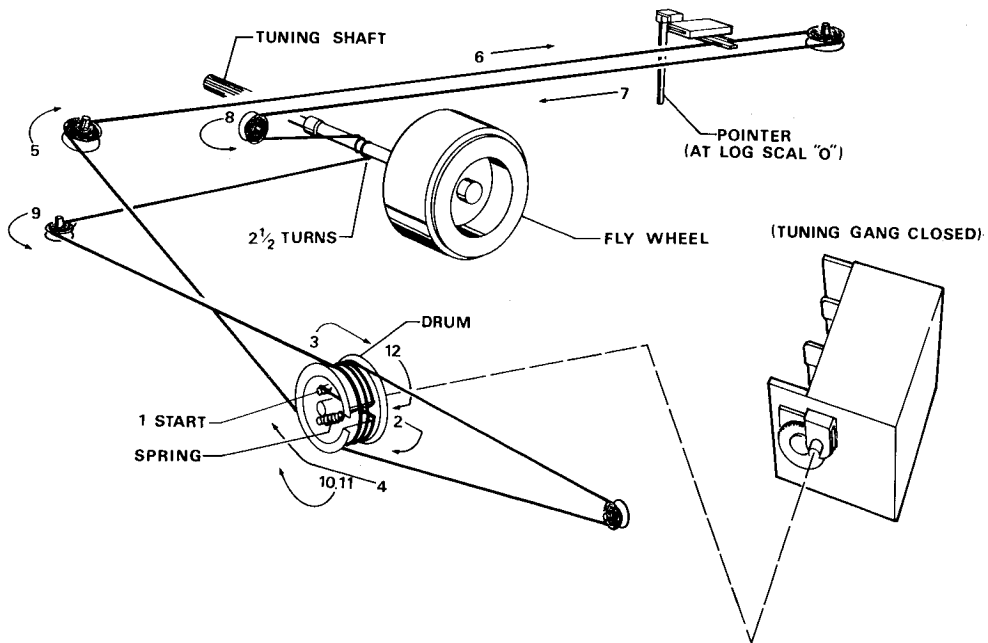
- ⑮ PUSH SWITCH P.C.B. (S3-S5, S7-S9)
- ⑯ FUNCTION SWITCH S1
- ⑰ BASS CONTROL
- ⑱ TREBLE CONTROL
- ⑲ MODE SWITCH S2
- ⑳ VOLUME CONTROL P.C.B.
- ㉑ CONNECTOR P.C.B.
- ㉒ AM-FM TUNER P.C.B.

- ㉓ INPUT TERMINAL JACKS
- ㉔ OUTPUT TERMINAL JACKS
- ㉕ STEREO QUAD SWITCH S11
- ㉖ POWER FUSE 3A 3AG
- ㉗ REGULATOR P.C.B.
- ㉘ PUSH SWITCH P.C.B.
(SPKRS. MAIN S10, REMOTE S6)
- ㉙ INVERTER P.C.B.

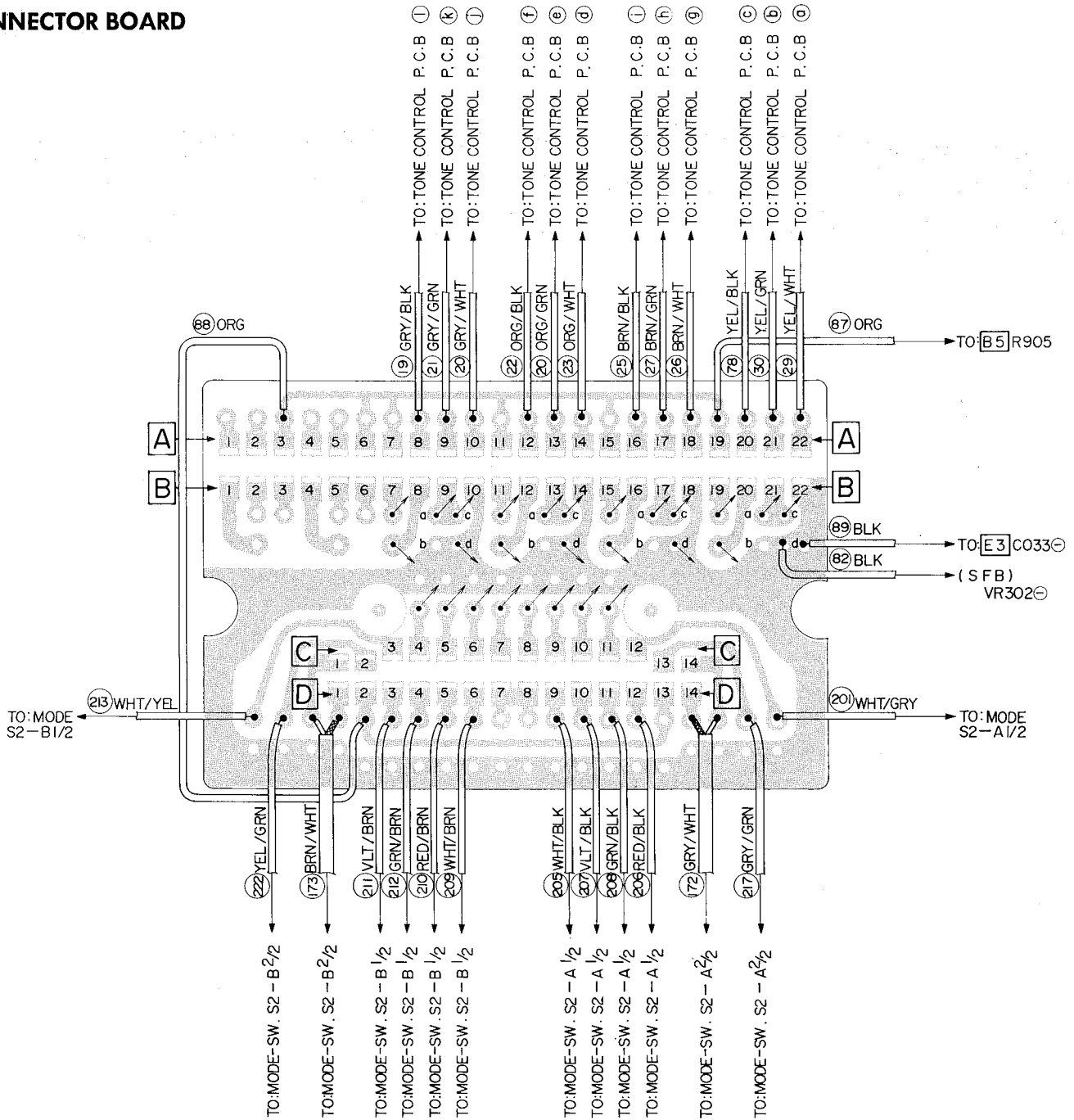
E-CONNECTOR BOARD



STRINGING DIAGRAM



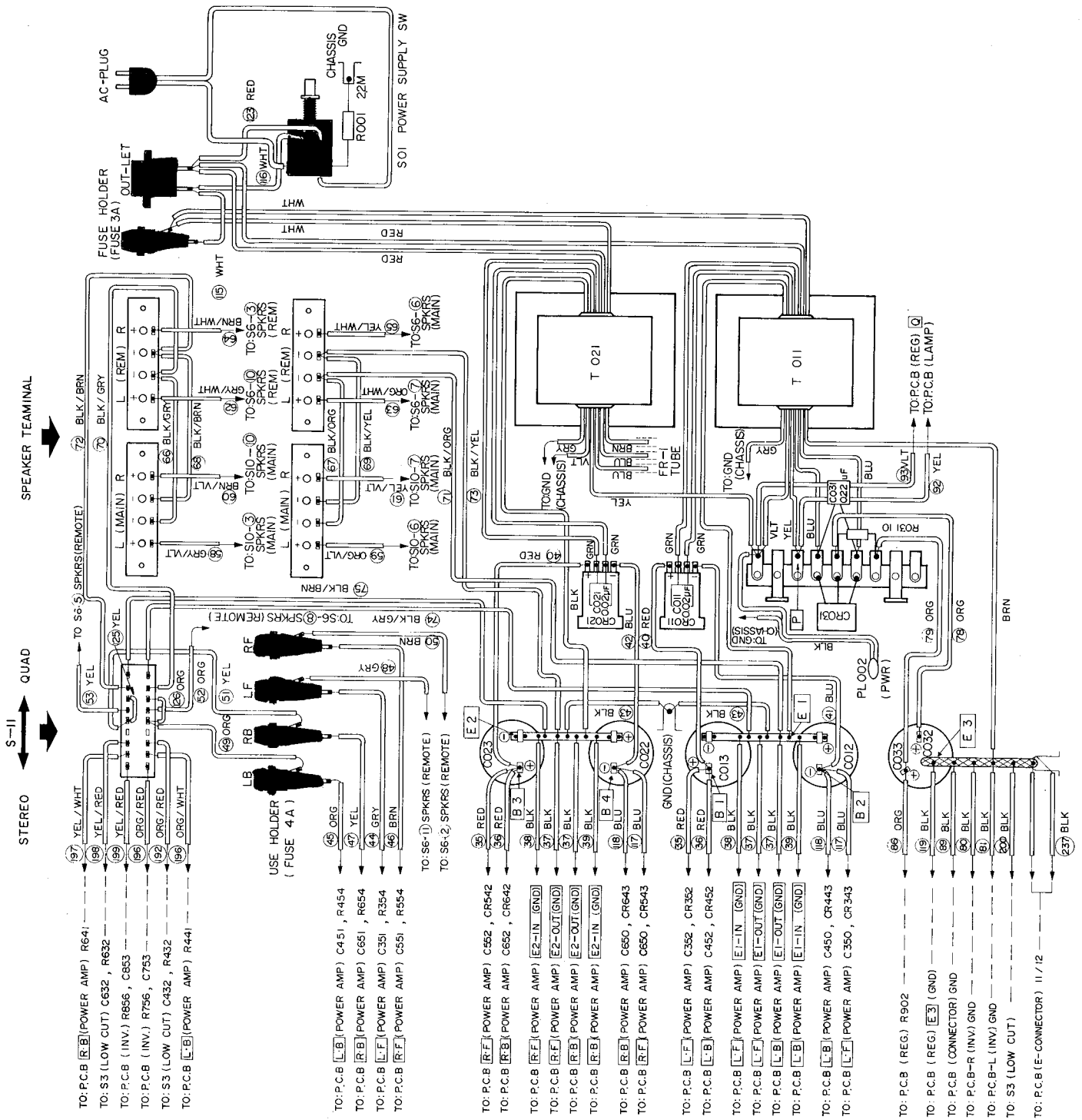
CONNECTOR BOARD



FROM	WIRE COLOR	TO
C-4	215 VLT / YEL	S2 - B 1/2 (MODE-SW)
C-5	216 GRN / YEL	S2 - B 1/2 (MODE-SW)
C-6	214 RED / YEL	S2 - B 1/2 (MODE-SW)
C-7	218 BRN / GRN	S2 - B 2/2 (MODE-SW)
C-8	219 ORG / GRN	S2 - B 2/2 (MODE-SW)
C-9	208 VLT / GRY	S2 - B 1/2 (MODE-SW)
C-10	204 GRN / GRY	S2 - B 1/2 (MODE-SW)
C-11	202 RED / GRY	S2 - B 2/2 (MODE-SW)

B-7 / 8 GND	178 GRY	P.C.B (VOLUME)
B-9a	182 GRY	SFB
B-9c/10d	186 GRY / BLK	S7 (HIGH CUT)
B-11/12 GND	180 ORG	P.C.B (VOLUME)
B-13a	184 ORG	SFB
B-13c/14d	188 ORG / BLK	S7 (HIGH CUT)
B-15 / 16 GND	179 BRN	P.C.B (VOLUME)
B-17a	183 BRN	SFB
B-17c/18d	187 BRN / BLK	S7 (HIGH CUT)
B-19 / 20 GND	181 YEL	P.C.B (VOLUME)
B-21a	185 YEL	SFB
B-21c / 22d	189 YEL / BLK	S7 (HIGH CUT)

WIRING DIAGRAM — A

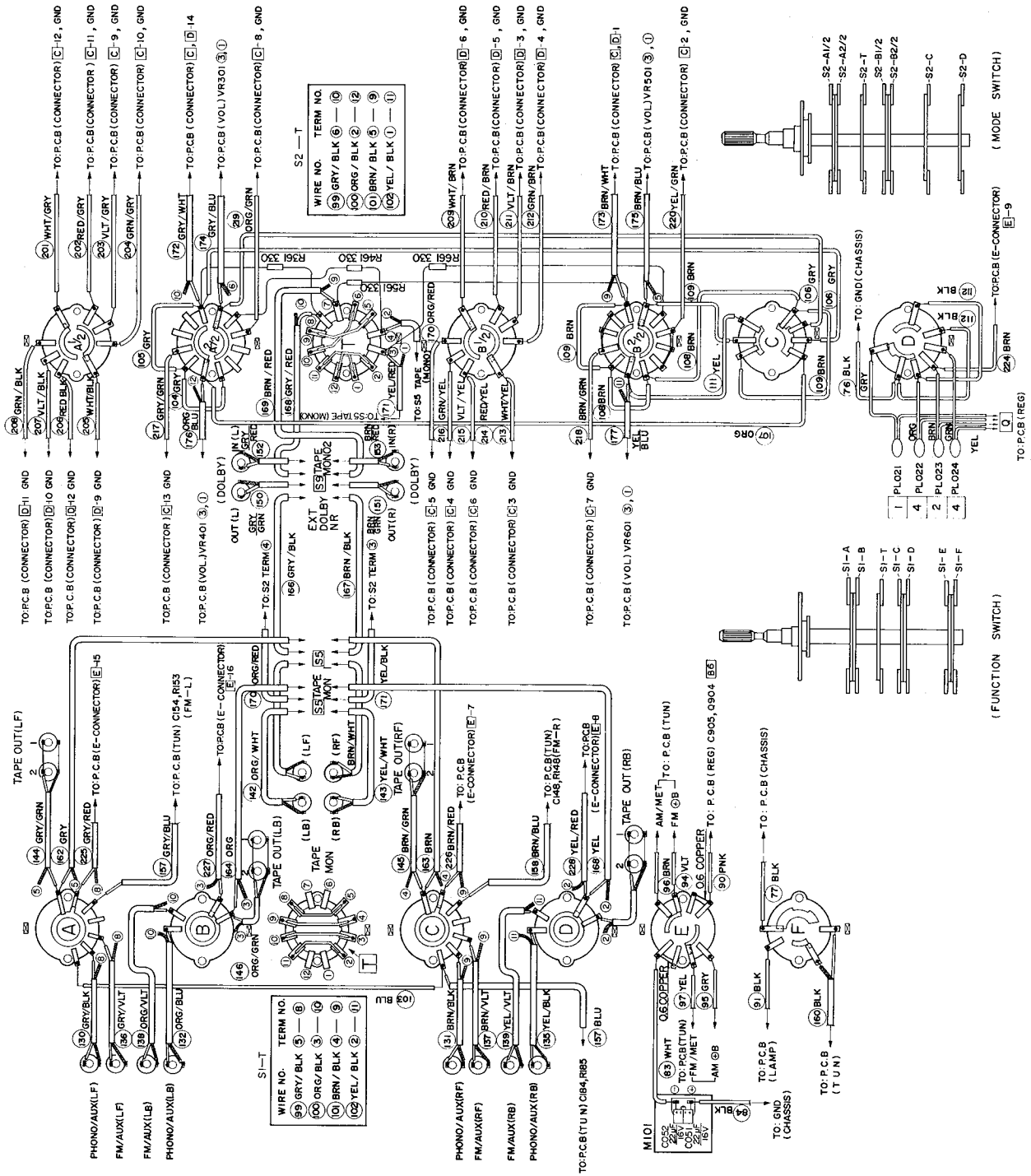


- TO: P.C.B [R] [B] (POWER AMP) R641
- TO: S3 (LOW CUT) C632, R632
- TO: P.C.B (INV.) R656, C653
- TO: P.C.B (INV.) R756, C753
- TO: S3 (LOW CUT) C432, R432
- TO: P.C.B [L] [B] (POWER AMP) R441
- TO: P.C.B [L] [B] (POWER AMP) C451, R454
- TO: P.C.B [R] [B] (POWER AMP) C651, R654
- TO: P.C.B [L] [E] (POWER AMP) C351, R354
- TO: P.C.B [R] [E] (POWER AMP) C551, R554
- TO: P.C.B [R] [E] (POWER AMP) C552, R554
- TO: P.C.B [R] [B] (POWER AMP) C652, R642
- TO: P.C.B [R] [E] (POWER AMP) [E2-IN] (GND)
- TO: P.C.B [R] [E] (POWER AMP) [E2-OUT] (GND)
- TO: P.C.B [R] [B] (POWER AMP) [E2-OUT] (GND)
- TO: P.C.B [R] [B] (POWER AMP) [E2-IN] (GND)
- TO: P.C.B [R] [B] (POWER AMP) C650, R643
- TO: P.C.B [R] [E] (POWER AMP) C650, R643
- TO: P.C.B [L] [E] (POWER AMP) C352, R352
- TO: P.C.B [L] [B] (POWER AMP) C452, R452
- TO: P.C.B [L] [E] (POWER AMP) [E1-IN] (GND)
- TO: P.C.B [L] [E] (POWER AMP) [E1-OUT] (GND)
- TO: P.C.B [L] [B] (POWER AMP) [E1-OUT] (GND)
- TO: P.C.B [L] [B] (POWER AMP) [E1-IN] (GND)
- TO: P.C.B [L] [B] (POWER AMP) C450, R443
- TO: P.C.B [L] [E] (POWER AMP) C350, R343
- TO: P.C.B (REG) R902
- TO: P.C.B (REG) [E3] (GND)
- TO: P.C.B (CONNECTOR) GND
- TO: P.C.B-R (INV) GND
- TO: P.C.B-L (INV) GND
- TO: S3 (LOW CUT)
- TO: P.C.B (E-CONNECTOR) 11 / 12

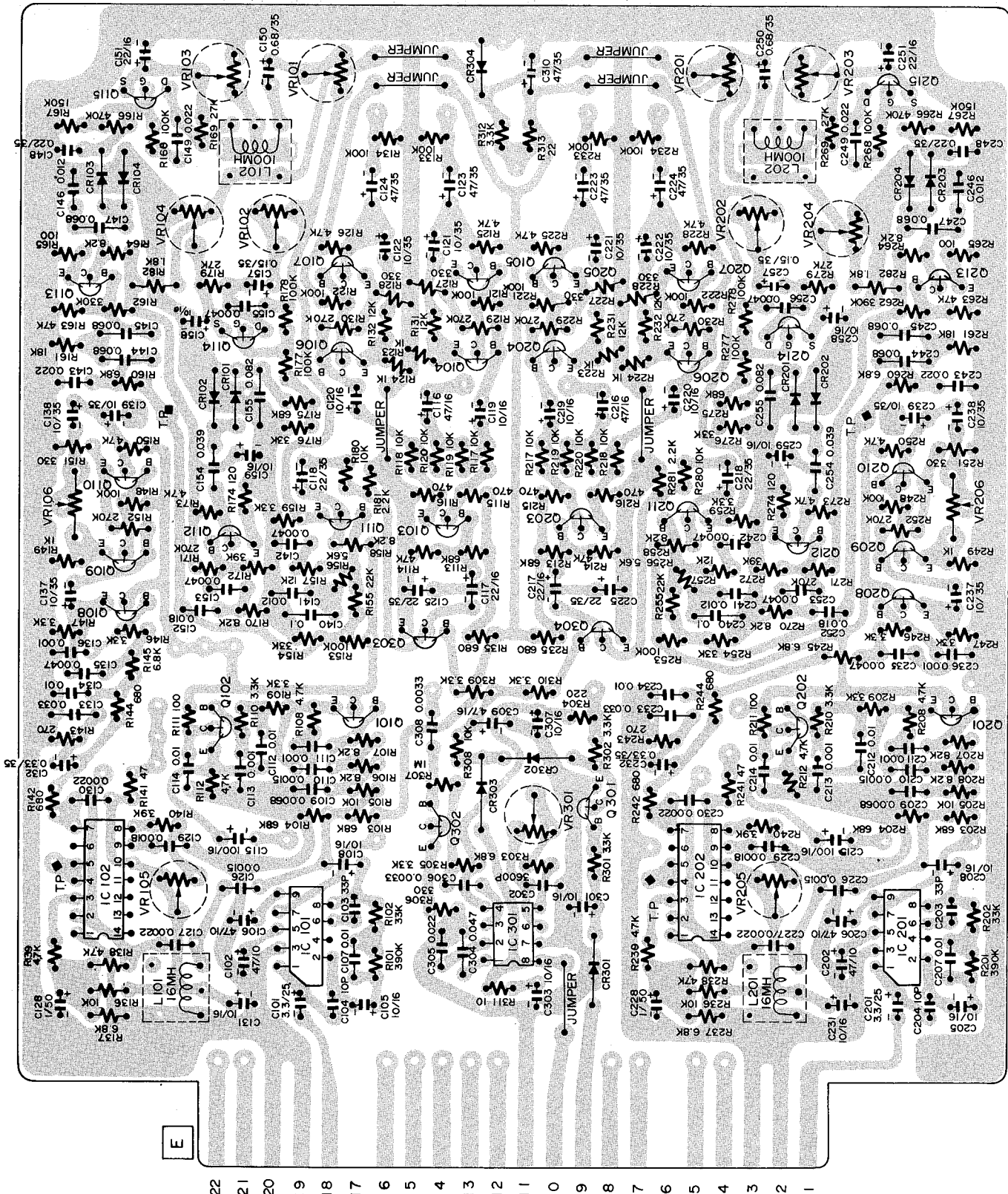
WIRING DIAGRAM — B

FUNCTION SWITCH (S1)

MODE SWITCH (S2)



CD-4 BOARD WITH VALUES



WIRE CONNECTION	
FROM	TO
S	E-4
O	E-5
Y	E-7
X	E-8
W	E-12
D	E-13
A	E-14
T	E-15
U	E-16
G	E-21
B	E-22
C	V
E	J
F	M
H	P
I	L
K	Q

REPLACEMENT PARTS LIST

HK PART NO.	REF. NO.	DESCRIPTION	HK PART NO.	REF. NO.	DESCRIPTION
TRANSFORMERS & COILS			CONTROLS (continued)		
10129436	T011,021	Transformer, Multivoltage, Export	23529398	VR341,441, 541,641	Fixed VR Control
10129388*	T011,021	Power Transformer, Domestic (Serial No.'s -02001 thru -03100)	23529392	VR1101,1201	Vol. Cont. (CD-4 Separation)
12028753	L162	Coil, MW Osc.	23028769	VR321,322,421 422,521,522, 621,622	Vol. Cont. 4 Gang, Dual Shaft (Tone P.C.B.)
12028754	T161	IFT, AM, 455	23529399	VR101,102, 201,202	Semi-Fixed Volume ANRS, Gain 1K (B) (CD-4)
12028755	T162	IFT, AM DET, 455	23529400	VR105,205	Semi-Fixed Volume 2.2K (B) (CD-4)
12028756	T101	IFT, 10.7	23529401	VR301	Semi-Fixed Volume 4.7K (B) (CD-4)
12028763	L101	Inductor (FM Mute)	23529402	VR103,104 203,204	Semi-Fixed Volume ANRS, BIAS 10K (B) (CD-4)
12029396	L102	Coil, MPX, 19 (Yel)	23529403	VR106,206	Semi-Fixed Volume Gain 10K (B) (CD-4)
12028757	L103	Coil, MPX, 19 (Blk)	TRANSISTORS & IC'S		
12028758	L104	Coil, MPX, 38 (Wht)	43128741	IC 101-104	IC LA1221 (FM-IF)
12028759	L105,106	Inductor (40mH)	43128742	IC 105	IC MC1307 (MPX)
12028760	F101,102	Ceramic Filter, 10.7 (FM-IF)	43025972	Q113	2SC839H (FM-IF)
12028761	Y101	Ceramic Filter (FM Mute)	43025972	Q101-103	2SC930D (FM AGC,Mute)
12028762	L161	Coil, VHF AM Ant.	43025972	Q104,106-108	2SC536F (FM Mute)
10129638	T011,021	Power Transformer (Serial No.'s -03101 thru Open)	43025972	Q105,109-112, 165	2SC436G (FM Mute, MPX, AM)
10429528*	If used	Filament Transformer (Serial No.'s -02001 thru -03100)	43025972	Q161	2SC929C
12028779	L341,441 541,641	Inductor	43025972	Q162-164	2SC929D
12029412	L101,201	Inductor, SUB CH 16mH (CD-4)	43025972	Q201-206	2SC945P
12029413	L102,202	Inductor, ANRS 100mH (CD-4)	43025972	Q311-313, 411-413, 511-513, 611-613, 751,851	2SC693G
12029414	C104,204	Ceramic Filter 10 PF (CD-4)	43025972	Q344,444,544, 644,207-211	2SC945Q
12029415	C103,203	Ceramic Filter 33PF (CD-4)	43028772	Q343,443,543, 643	2SC853M,L
12029416	C114,214	Ceramic Filter .01UF (CD-4)	43025972	Q903	2SC536F (30V)
20528752		AM Loopstick Antenna	43025972	Q201-206	2SC945P
DIODES & CAPACITORS			Above Transistors indicated by HK Part No. 43025972 can be replaced by 2N3417		
31129393	C12,13,22,23	Capacitor, 6800 μ F 35V	43025972	Q341,342,441, 442,541,542, 641,642	2SC640L
31129394	C32,33	Capacitor, 2200 μ F 50V	43029783	Q901	2SA545L (Stereo)
41028714	CR011,021	Rectifier 1R5B2	Above Transistors indicated by HK Part No. 43027722 can be replaced by 2N5807		
41028715	CR031	Diode, DS131A(5B2)	43027213	Q902	2SD330C
30729404	C157,257	Capacitor, Tant. 0.15 μ F, 35V	43028781	Q904	2SD325C
30729405	C148,248	Capacitor, Tant. 0.22 μ F, 35V	43026284	Q346,446,546, 646	2SC959M
41628728	CR341,342,343, 441,442,443, 541,542,543, 641,642,643	Diode 10D1	43028774	Q345,445,545, 645	2SA606M
42028785	CR902	Zener Diode RD 13E (BS)			
42048786	CR901	Zener Diode RD 35A (L)			
42049411	CR304	Zener Diode RD 91EB (CD-4)			
30729406	C132,232	Capacitor, Tant. 0.33 μ F, 35V			
30729407	C150,250	Capacitor, Tant. 0.68 μ F, 35V			
CONTROLS					
23529397	VR201-204	Semi-Fixed Variable Resistor 1K(B)			
23528731	VR011	Muting Adj. (Control Vol.)			
23528732	VR012	Stereo Thres. (Control Vol.)			
00228733	VR302,402, 502,602	Joystick Control Assy.			
23028766	VR301,401, 501,601	Volume Control, 4 Gang, P.C.B.			

HK PART NO.	REF. NO.	DESCRIPTION
TRANSISTORS & IC'S (continued)		
43029426	Q347,447	2SD388M,L
<u>43028775</u>	547,647,348 448,548,648	
43029424	Q903	2SC1175F
43029424	Q101-113, 201-213, 301-304	2SC1222E
43029423	Q114,115,214, 215	2SK44D FET (CD-4)
43128917	EC102,202	IC NE565 (CD-4)
43128918	IC301	IC NE567 (CD-4)
43128767	IC101,201	IC LD3130 (CD-4)
43029423	Q114,115,214, 215	2SK44D FET
43029425	Q101-113, 201-213, 301-304	2SC1222E

MISCELLANEOUS

63028686	Escutcheon
63629427	Cabinet Base
61029417	Dial Scale (Plexiglas)
61129428	Rear Plate
63029431	Decoration Plate
60129432	Reflector Dial Cover
60129433	Protection Cover/Dial Light
61429422	Rubber Feet
00328740	Front End (FL131U12)
61628696	Bushing for Mode Indicator Lamp
60129430	Reflector for Stereo Lamp
63228698	Knob (Volume)
63228699	Knob (Tuning)
63228700	Pushbutton
63228701	Knob (Tone) Front
63228702	Knob (Tone) Back
00228703	Pushbutton Ass'y
63228704	Knob (Joystick)
63028705	Dress Ring for Joystick
00228733	Joystick Ass'y (VR302-602)
61628706	Holder for Stereo Indicator
60128707	Lamp Housing Cover (Dial)
60729712	Dial Pointer Ass'y
00228709	Tuning Shaft Ass'y
84928710	Felt for Knob (1X)
84928711	Felt for Knob (2X)
00228712	Antenna Holder Ass'y

HK PART NO.	REF. NO.	DESCRIPTION
MISCELLANEOUS (continued)		
65428716		Fuse Holder
45028717		Fuse 3AG-4A
45028718		Fuse 3AG-3A Slo-Blow
65428719		AC Outlet
53028720		Power Cord
65428721		3P Terminal Board (ANT Terminal)
65428722		4P Terminal Board (Speaker Terminal)
00229434		Tuning Knob Ass'y
00229435		Joystick Knob Ass'y
00229420		Cabinet Ass'y (Wood)
00229421		Front Chassis Ass'y
35529408	R358,458,558, 658	Metal Film Resistor 2W 27 Ohm
35529409	R352,354,452, 454,552,554, 652,654	Metal Film Resistor 1W 10 Ohm
65428723		27P Pin Jack
65428724		Ground Terminal
24528725	S11	Slide Switch (Stereo 4-CH Sw.)
25028726	S01	Pushbutton Switch (On/Off Power)
25029389	S3,4,5,6	Pushbutton Switch (Remote,Tape Mon,FM Muting,Lowcut)
25028728	S7,8,9,10	Pushbutton Switch (Main, Dolby, Coutour, High Cut)
24029390	S1	Rotary Switch (Function)
24029391	S2	Rotary Switch (Mode)
65428734		Headphone Jack
12528735	M101	Meter, Tuning
46528736	PL013,014,015	Pilot Lamp (Dial)
46528737	PL011	Lamp (Meter)
46528738	PL001	Lamp (Stereo)
46528739	PL021,PL022, PL023,PL024	Lamp (Mode Indicator)
46528787	PL002	Lamp (Power)
46529396		Lamp (CD-4)
00328740		Front End
38129410	CR344,444,544, 644	Varistor VD1211
66028777		Socket for Transistor
90729631		Schematic
90729011		Owner Manual
90729603		Tech Manual

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 cash in advance 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, 55 Ames Court, Plainview, L.I., N.Y. 11803, Att: Parts Department.