ALIGNMENT PROCEDURE

Do not attempt alignment unless the following equipment is available.

1. AM Signal Generator
2. Oscilloscope
3. AC Voltmeter
4. FM Signal Generator
5. Stereo Modulator
6. Distortion meter
7. DC Voltmeter

AM IF & RF ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading.
Set SELECTOR switch SW1 to AM.

STEP	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	INDICATOR	ADJUSTMENT Refer Fig. 4	REMARKS
1	Refer Fig. 1	455 kHz (400 Hz Mod.)	Point of non-interference. (on/about 600 kHz)	AC Voltmeter connected to TAPE OUT jack.	CF 204 T202 (1st IFT) T204 (2nd IFT)	Adjust for maximum reading.
2	Same as Step 1	600 kHz (400 Hz Mod.)	600 kHz	Same as Step 1	L201(OSC coil) L151(ANT coil)	Adjust for maximum reading.
3	Same as Step 1	1400 kHz (400 Hz Mod.)	1400 kHz	Same as Step 1	TC104 (OSC Trimmer) TC102 (ANT Trimmer)	Adjust for maximum reading. Repeat steps 2 and 3.
4	Same as Step 1	1000 kHz (400 Hz Mod.) Output level: 5 mV/m	1000 kHz	Same as Step 1	VR201	Adjust for 220 mV reading on AC Voltmeter

Note: Remove line cord antenna from FM external antenna terminal when aligning.

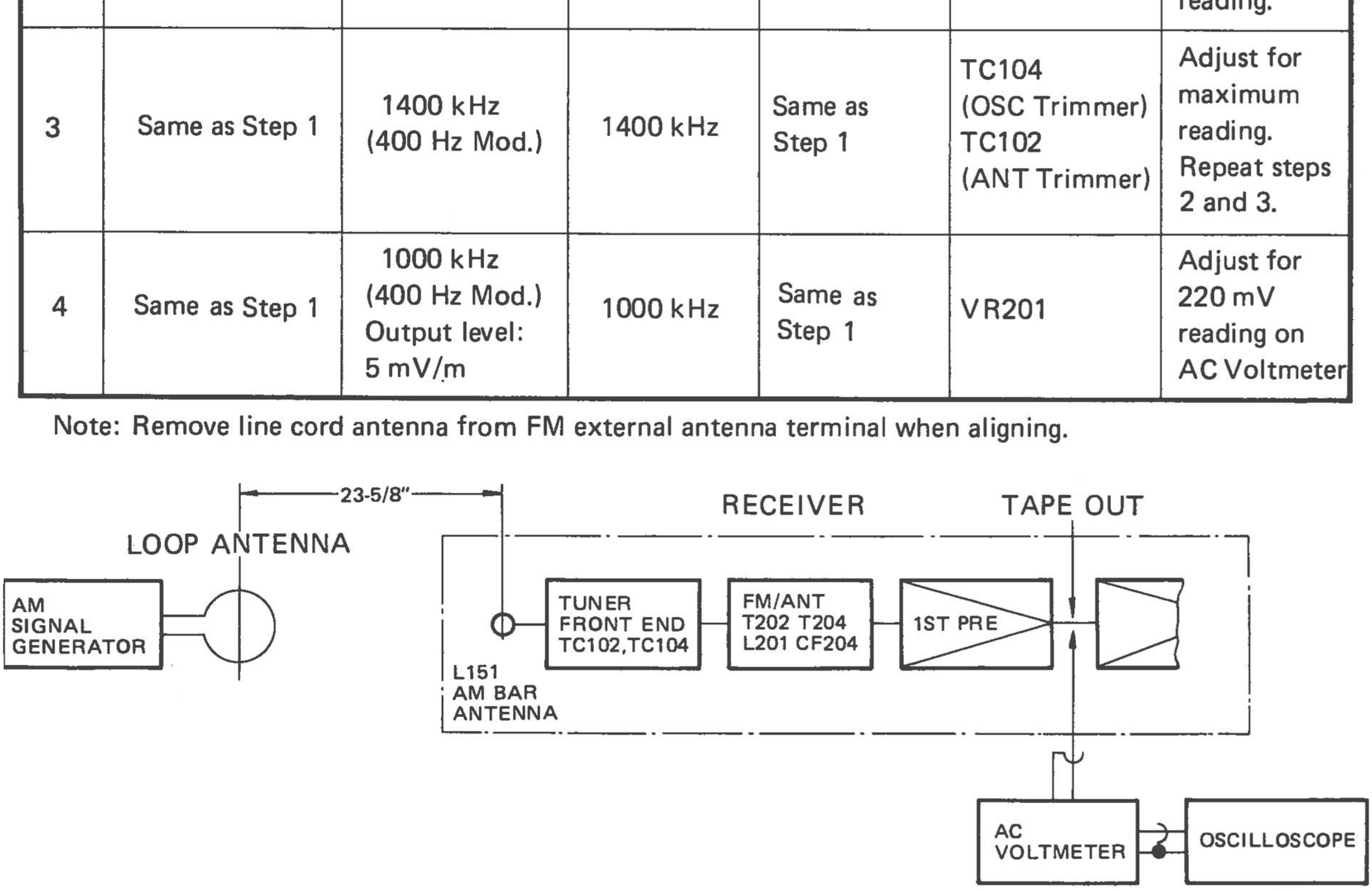
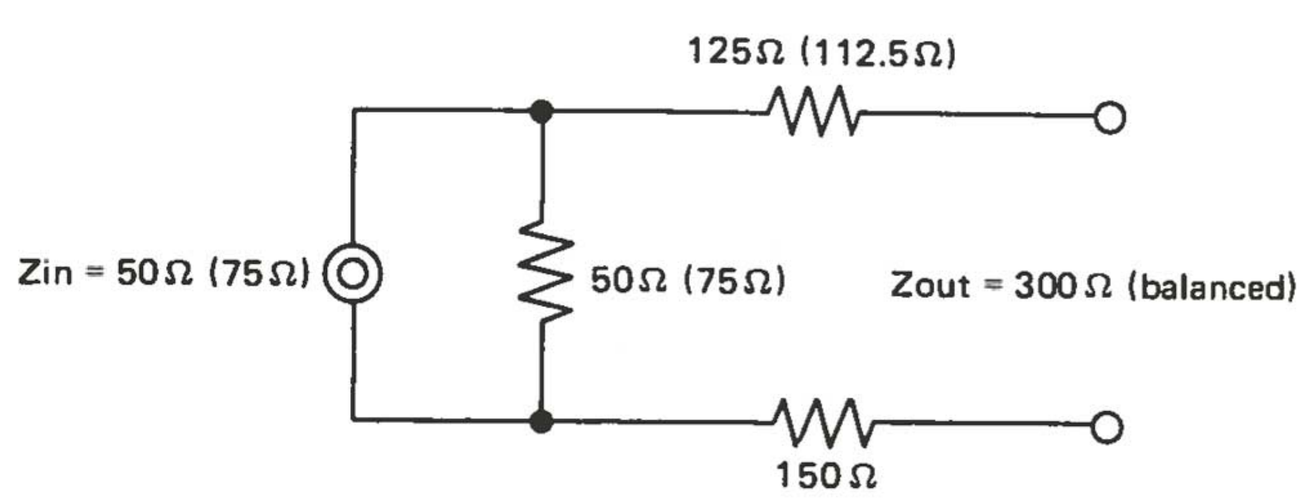


Fig. 1 AM ALIGNMENT CONNECTION

FM RF & IF ALIGNMENT

Signal generator output should be no higher than necessary to obtain an output reading.
Set Selector switch to FM.
Signal Generator deviation: 75 kHz

STEP	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	INDICATOR	ADJUSTMENT Refer Fig. 4	REMARKS
1	Connect to FM Antenna Terminal through FM Dummy Antenna (300 Ω) Fig. 2	90 MHz (400 Hz, Mod.)	90 MHz	AC Voltmeter connected to TAPE OUT jack	L104 (FM OSC Coil) L101 (FM ANT Coil) L102 (FM RF Coil)	Adjust for maximum reading on AC Voltmeter
2	Same as Step 1	106 MHz (400 Hz, Mod.)	106 MHz	Same as Step 1	TC105 (FM OSC Trimmer) TC101 (FM ANT Trimmer) TC103 (FM RF Trimmer)	Adjust for maximum reading
Repeat step 1 & 2 until no further improvement is possible.						
3	Same as Step 1	90 MHz (400 Hz, Mod.)	90 MHz	Same as Step 1	T101 (FM IFT) T201 (FM IFT)	Adjust for maximum reading
4	Same as Step 1	Same as Step 3	Same as Step 3	Same as Step 1	T203 Top (DISCRIMINATOR)	Adjust for OV on DC voltmeter (connect between J6 on Tuner Board 0015 and ground)
5	Same as Step 1	Same as Step 3	Same as Step 3	Distortion Meter connected to TAPE OUT jack	T203 Bottom	Adjust for minimum distortion
6	Same as Step 1	98 MHz (400 Hz, Mod.)	98 MHz	DC Voltmeter connected to TR301 COLLECTOR (STEREO-MONO Automatic switching)	VR302	Adjust so TR301 turns ON, with SG output level of 8~16 μV



FM Dummy Antenna to 300Ω antenna terminal of Receiver.

Fig. 2 FM DUMMY ANTENNA

MPX ALIGNMENT

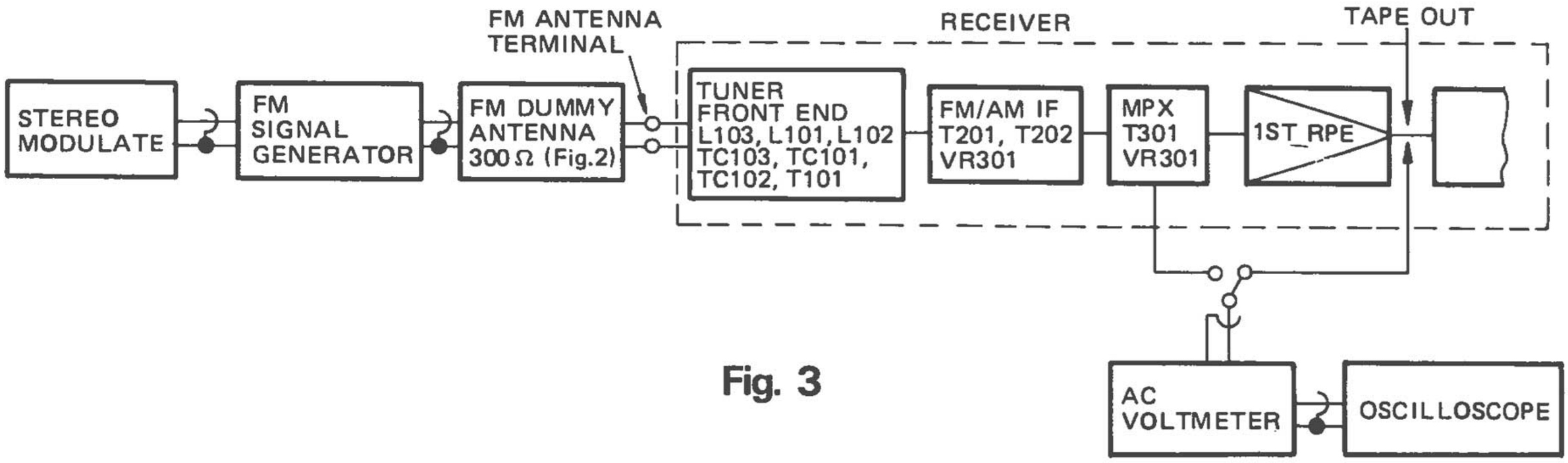


Fig. 3

Set SELECTOR Switch to FM.
Tune for 98 MHz on band.
Signal Generator output level: 1000 μV Deviation: 75 kHz at 100 % modulation of composite signal.
Connect FM Signal Generator to FM Antenna Terminal through FM Dummy Antenna (300 Ω).

STEP	19 kHz (PILOT SIGNAL) MODULATION Level	SIGNAL GENERATOR Freq. Set to	OUTPUT INDICATOR Connected to	ADJUST Refer Fig. 4	ADJUST for	NOTE
1	1~2 %	Stereo Modulartor (Sub Signal)	AC Voltmeter to PIN 1 of IC301	T301 (Yellow core)	Maximum	
2	8 %	Composite 1 kHz L (R) channel	Distortion Meter to TAPE OUT jack of L (R) channel	T301	Minimum Distortion	
3	8 %	Composite 1 kHz R channel	AC Voltmeter to TAPE OUT jack of L channel	VR301	Minimum	AC Voltmeter reading should be at least 30 dB below output level reading in Step 2.
4	8 %	Composite 1 kHz L channel	AC Voltmeter to TAPE OUT jack of R channel	VR301	Minimum	Same as Step 3 (See Note)

NOTE: If you did not obtain 30 dB below reading in Step 4, readjust VR301 until you obtain 30 dB reading for both Steps 3 and 4.

MAIN AMPLIFIER ALIGNMENT

INDICATOR	ADJUSTMENT	REMARKS
DC Voltmeter	VR601a, b	Adjust for 0.01V – 0.012 V across R621a, b with NO SIGNAL

TROUBLE SHOOTING

Symptom	Cause and Remedy
1) Receiver not operative; pilot lamp does not light.	A) Faulty AC power cord. Replace the cord. B) Defect in the power switch SW8 or thermal switch SW9. Replace the switch. C) Open winding in the power transformer. Replace the transformer T851. D) Open power fuse. Replace the fuse.
2) Fuse blows when power is turned ON.	A) Power Transformer T851 defective. Replace the transformer. B) Short in the primary or secondary of the transformer circuitry. Remove the short. C) Damaged rectifier D801—D804. Replace the damaged rectifier(s). D) Short-circuit in the rectifier circuit. Remove the short. E) Short-circuit in the power transistor TR609 a,b or TR610 a, b circuitry. Replace the defective transistor and check circuit.
3) Pilot lamp does not light.	A) Defective lamp. Replace the lamp. B) Open in transformer T851 tertiary winding. Replace the transformer.
4) Pilot lamp lights but no sound from either channel.	A) Resistor R613, R614, R514 or R515 defective. Replace the defective resistor. B) Capacitor C508, C509, C603, C651, C851, C852 or C902 defective. Replace the defective capacitor. C) Diode D801—D804 defective. Replace the defective diode. D) Open in secondary winding of the power transformer T851. Replace the transformer.
5) A Speakers do not work.	A) Speaker switch SW7 defective. Replace the switch.
6) B Speakers do not work.	A) Speaker switch SW7 defective. Replace the switch.

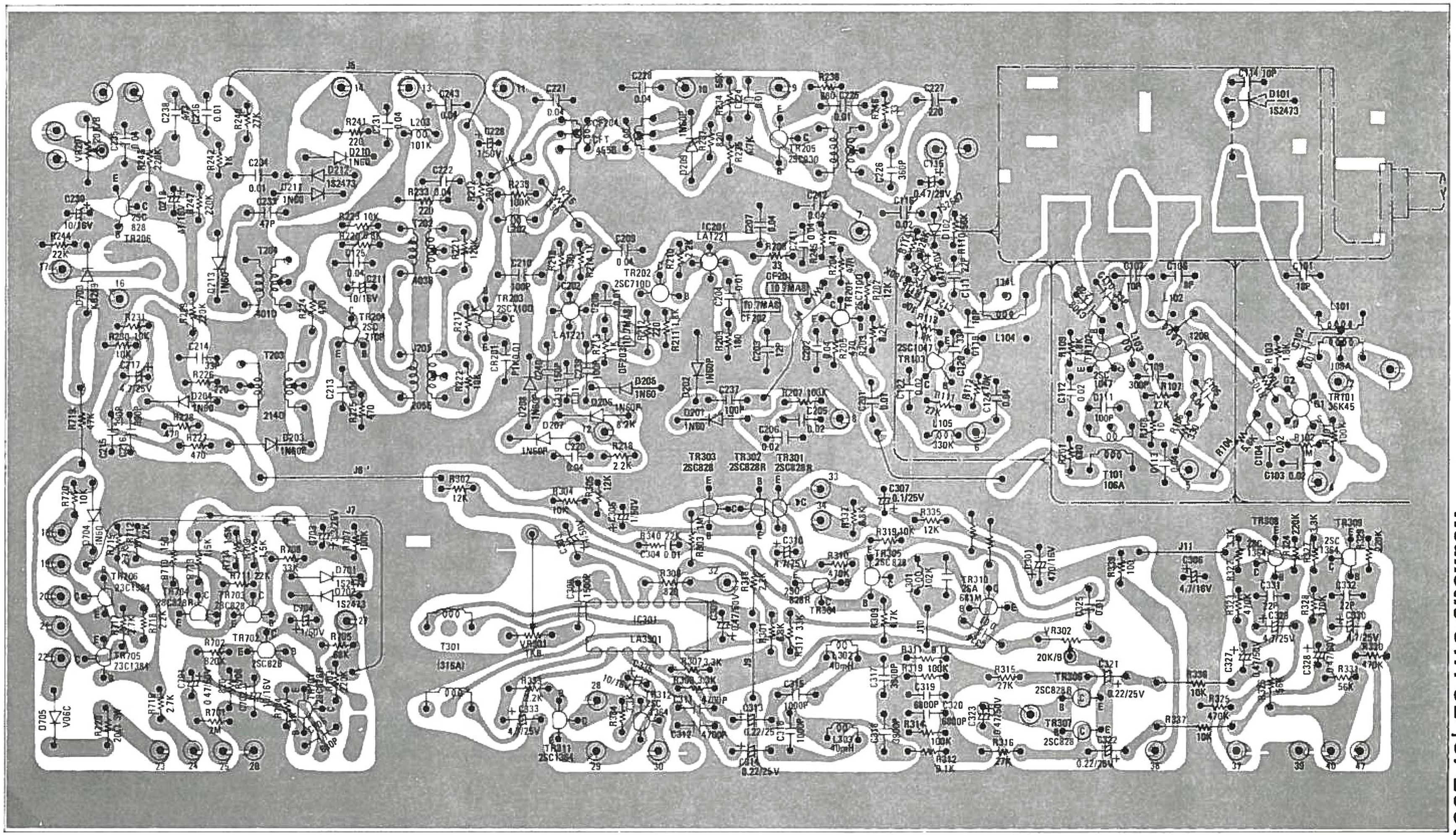
Symptom	Cause and Remedy
7-1) One channel does not work with VOLUME at maximum and BALANCE at center with a test signal applied to the center terminal of VOLUME control VR551 of the dead channel.	A) Defect in transistor TR901 circuitry of TONE AMP section. Locate and correct the defect. B) Defect in Transistor TR601, TR602, TR603, TR604, TR607, TR608, TR609 or TR610 circuitry of MAIN AMP and PROTECTION section. Locate and correct the defect. C) Open in copper foil of printed circuit board 0016. Repair or replace circuit board. D) Short at speaker output terminal. Repair the short. E) Volume VR552 defective. Replace the volume. F) Defective resistor R901, R903, R904, R603, R604, R605, R606, R607, R608, R611 or R612. Replace the defective resistor.
7-2) Same as 7-1 above but channel operates when test signal is applied as in 7-1.	A) Defective Transistor TR501 or TR502. Replace the defective transistor. B) Defective resistor R502, R503, R504, R505, R507, R508, R512 or R516. Replace the defective resistor. C) Defective capacitor C501, C503, C506 or C507. Replace the defective capacitor. D) Defective selector switch SW1. Repair or replace switch.
8) Speaker works normally but headphones do not work.	A) Headphone plug does not mate with jack. Replace the plug or jack. B) Defective resistor R651. Replace resistor.
9) All the inputs works normally except AUX input.	A) Poor contact in AUX input jack. Repair or replace jack. B) Poor contact in selector switch SW1. Repair or replace the switch.
10) PHONO input not operative.	A) Poor contact in PHONO input jack. Repair or replace jack. B) Faulty selector switch SW1. Repair or replace the switch.
11) TAPE OUT not operative.	A) Defective contact in TAPE OUT output jack. Repair or replace the jack. B) Defective resistor R513. Replace the resistor.

Symptom	Cause and Remedy
12) FM does not operate.	A) Defective resistor R801. Replace the resistor. B) Diode D214 defective. Replace the diode. C) Faulty Inductor L203. Replace the Inductor. D) Short-circuit in TUNER B+ circuit. Remove the short. E) Poor contact in selector switch SW1. Repair or replace switch. F) Resistor R339 on Tuner Board 0015 defective. Replace the resistor. G) Capacitor C853 on Tuner Board 0015 defective. Replace capacitor. H) Defective transistor TR201, TR202, TR203 TR204 or IC201, IC202. Replace transistor or IC. I) Defective IFT T201, T203. Replace IFT. J) Defective resistor R204, R210, R212, R214, R216, R217, R224, R226, R248 or R302. Replace defective resistor. K) Defective capacitor C201, C210. Replace capacitor. L) Defective transistor TR101, TR102, TR103 or coil L101, L102, L104 of Tuner Board 0015. Replace the defective component. M) Faulty lead in. Repair or replace the lead in.
13) Multiplex separation not sufficient.	A) Deviation in adjustment. Readjust T301 and VR301 per Alignment Procedure. B) TR301, TR302, TR304, TR305, TR310 or IC301 of Tuner Board 0015 defective. Replace the defective transistor or IC. C) Variable resistor VR301 defective. Replace variable resistor. D) Variable resistor VR302 defective. Replace variable resistor.
14) Stereo indicator lamp does not light.	A) Defective indicator lamp PL7. Replace the lamp. B) Deviation in adjustment of T301 on Tuner Board 0015. Make readjustment. (Refer MPX ALIGNMENT on page 11). C) Defective transistor TR311 or resistor R852 on Tuner Board 0015. Replace the defective transistor or resistor.

Symptom	Cause and Remedy
15) FM Volume not sufficient.	A) If volume of both L and R channels not enough: Front End circuit defective, or faulty transistor TR204, IFT T201, T203 or diode D203, D204 or capacitor C303 or IC IC301 on Tuner Board 0015. Locate and replace the defective component. B) If sound of one channel not enough: Defect L303 in case of R channel or defective L302 in case of L channel. Replace the defective inductor.
16) AM does not operate.	A) Defective transistor either TR203, TR204 or TR205 on Tuner Board 0015. Replace the defective transistor. B) Defective L201, CF204, T202 or T204 on Tuner Board 0015. Replace the defective component. C) Defective D209, D210, D211 or D213 on Tuner Board 0015. Replace the defective diode. D) Resistor R234, R235, R236, R246 R232 or R240 defective. Replace the defective resistor. E) Capacitor C224, C225, C226 or C233 defective. Replace the defective capacitor. F) SELECTOR switch defective. Repair or replace the switch. G) Break in the bar-antenna. Replace the bar-antenna.
17) LOUDNESS gives no effect.	A) Defective LOUDNESS switch SW4. Replace the switch. B) Defective C510 or R517. Replace the defective one. C) Defective VR552. Replace the variable resistor.
18) STEREO-MONO not effective.	A) Defective STEREO-MONO switch SW3. Replace the switch.
19) TAPE MON not effective.	A) Defective TAPE MONITOR switch SW2. Replace the switch. B) Poor contact in TAPE IN input jack. Repair or replace jack.
20) BASS control has no effect.	A) VR901 defective. Replace variable resistor. B) Defective C907, C908 or R907, R909 R911 on AMP Board 0016. Replace the defective component.

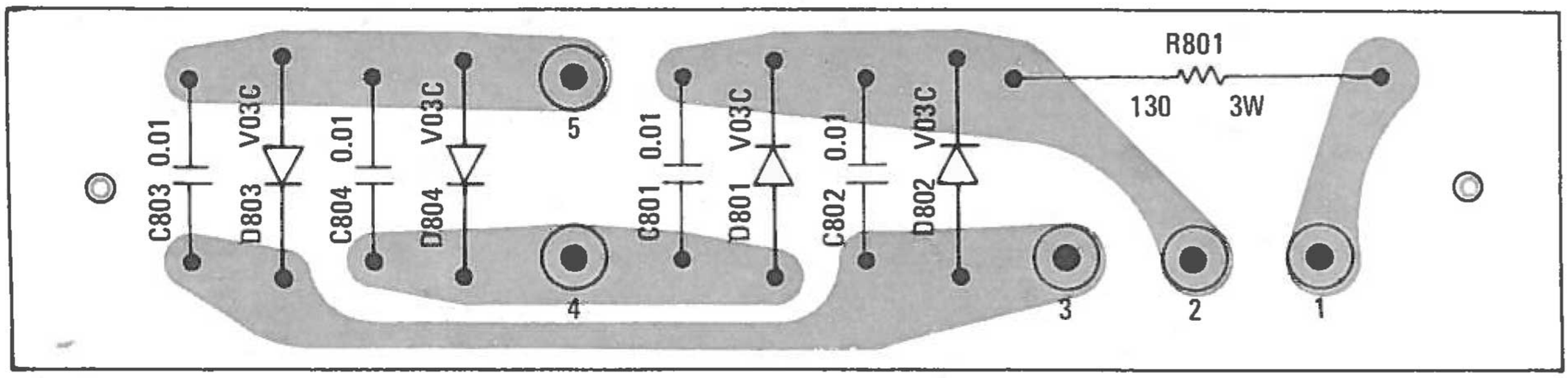
Symptom	Cause and Remedy
21) TREBLE control has no effect.	A) Faulty VR902. Replace the variable resistor. B) Defective C906 or R905, R908, R910 on AMP Board 0016. Replace the defective component.
22) Excessive noise with PHONO (MAG) input.	A) Faulty TR501 or TR502 or associated capacitors. Replace the defective component. B) Faulty R501, R502, R503, R505 or C501. Replace the defective component.
23) MUTING gives no effect.	A) Defective MUTING switch SW1. Replace the switch. B) Defective transistor either TR306 or TR307 on Tuner Board 0015. Replace the defective transistor.
24) Noisy VOLUME control.	A) Defective VR551 or VR552. Clean or replace the defective one. B) Defective C507 or C901. Replace the defective capacitor.
25) SIGNAL STRENGTH meter not functioning.	A) Defective switch SW1 or meter. Replace defective component. B) In case of AM reception, resistor R241 or capacitor C233 defective. Replace the defective resistor or capacitor. C) In case of FM reception, resistor R218 or capacitor C239, C240 defective. Replace the defective resistor or capacitor.
26) AUTO MAGIC AFC has no effect when AUTO-M switch ON.	A) Transistor TR701, TR702, TR703, TR704, TR705, TR706 or TR206 defective. Replace the defective transistor. B) Resistor R703, R705, R709, R713, R719 or R229 defective. Replace the defective resistor. C) Diode D701, D702, D703 or D102 defective. Replace the defective diode. D) Capacitor C701 or C704 defective. Replace the defective capacitor. E) Defective switch SW1 or SW6 (AUTO-M). Replace the switch.
27) Same as above 26 but meter lamp will not turn to blue.	A) Defective transistor TR703 (short), TR705 (open) or TR706 (short). Replace the defective transistor.

0015 TUNER BOARD (BOTTOM VIEW)

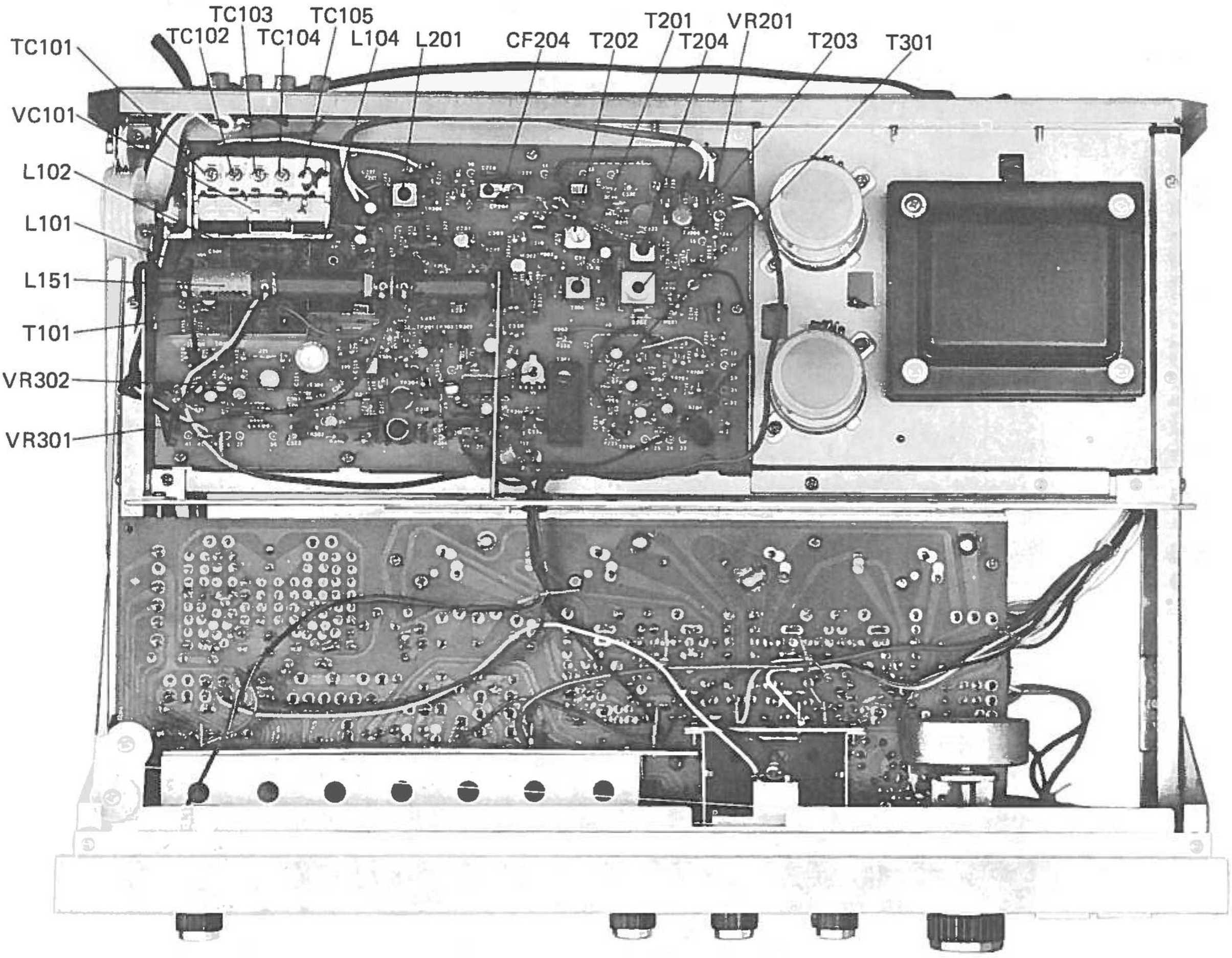


Realistic STA-82 (31-2056)

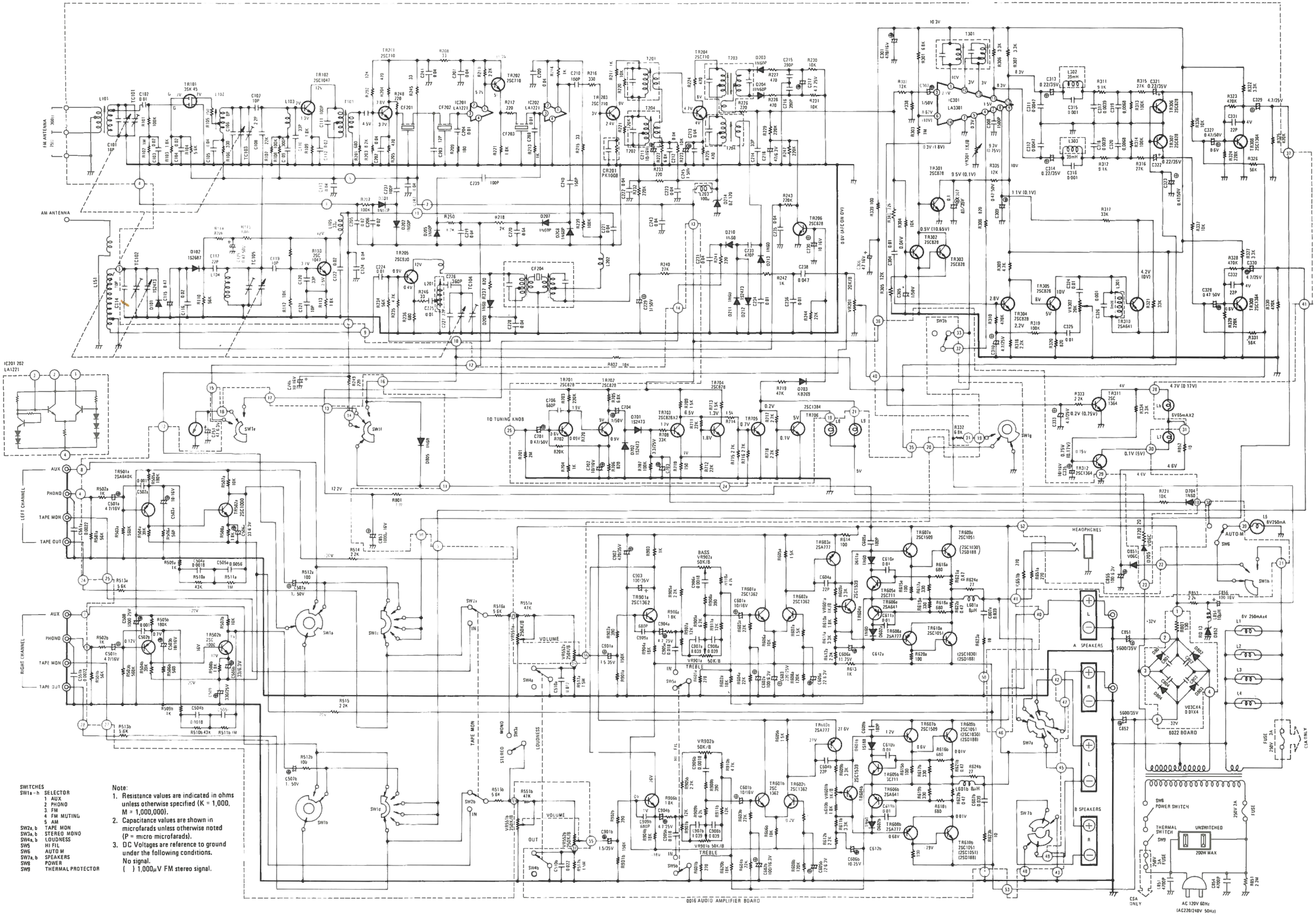
8022 POWER SUPPLY BOARD (BOTTOM VIEW)



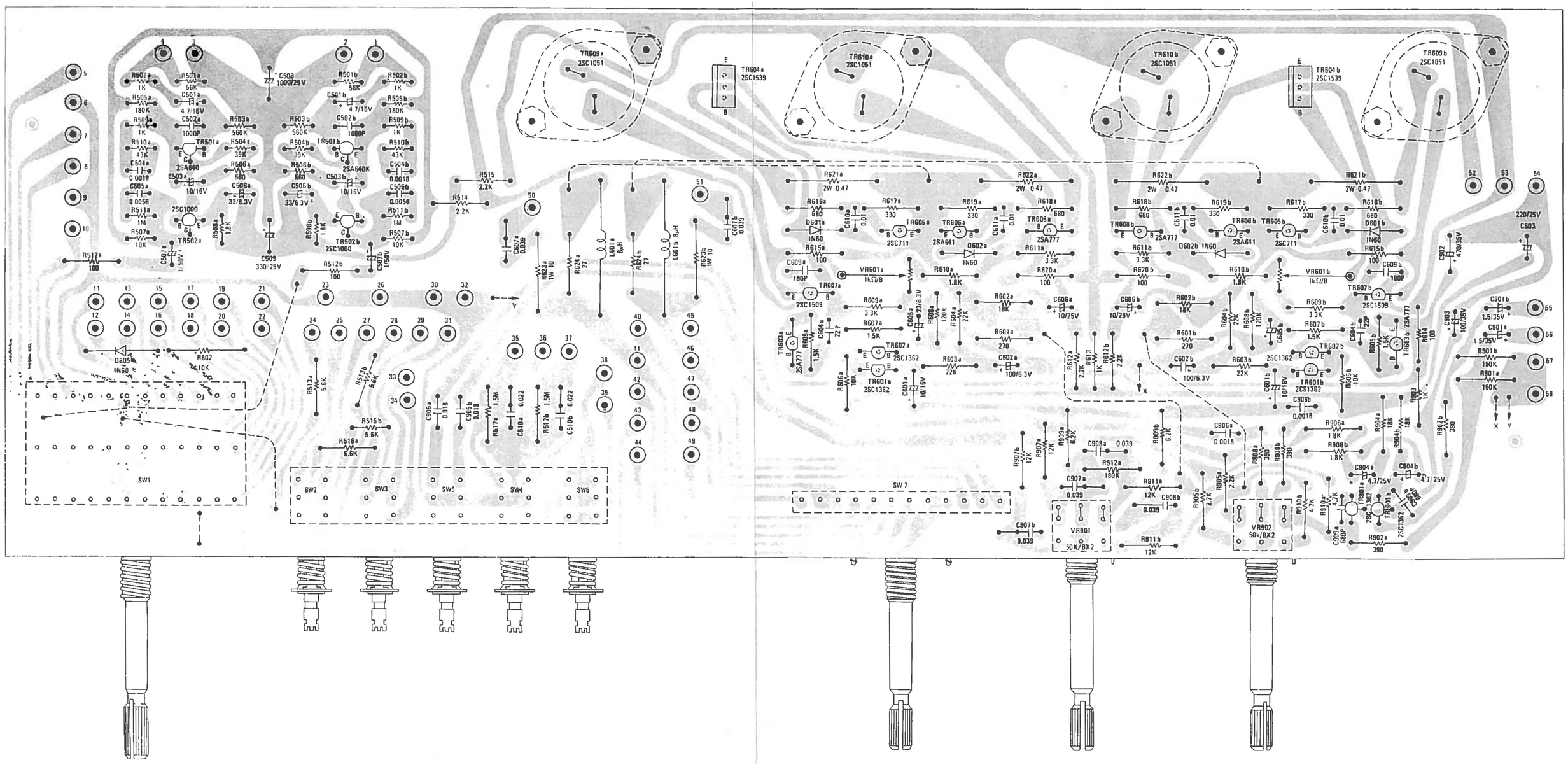
ALIGNMENT POINTS



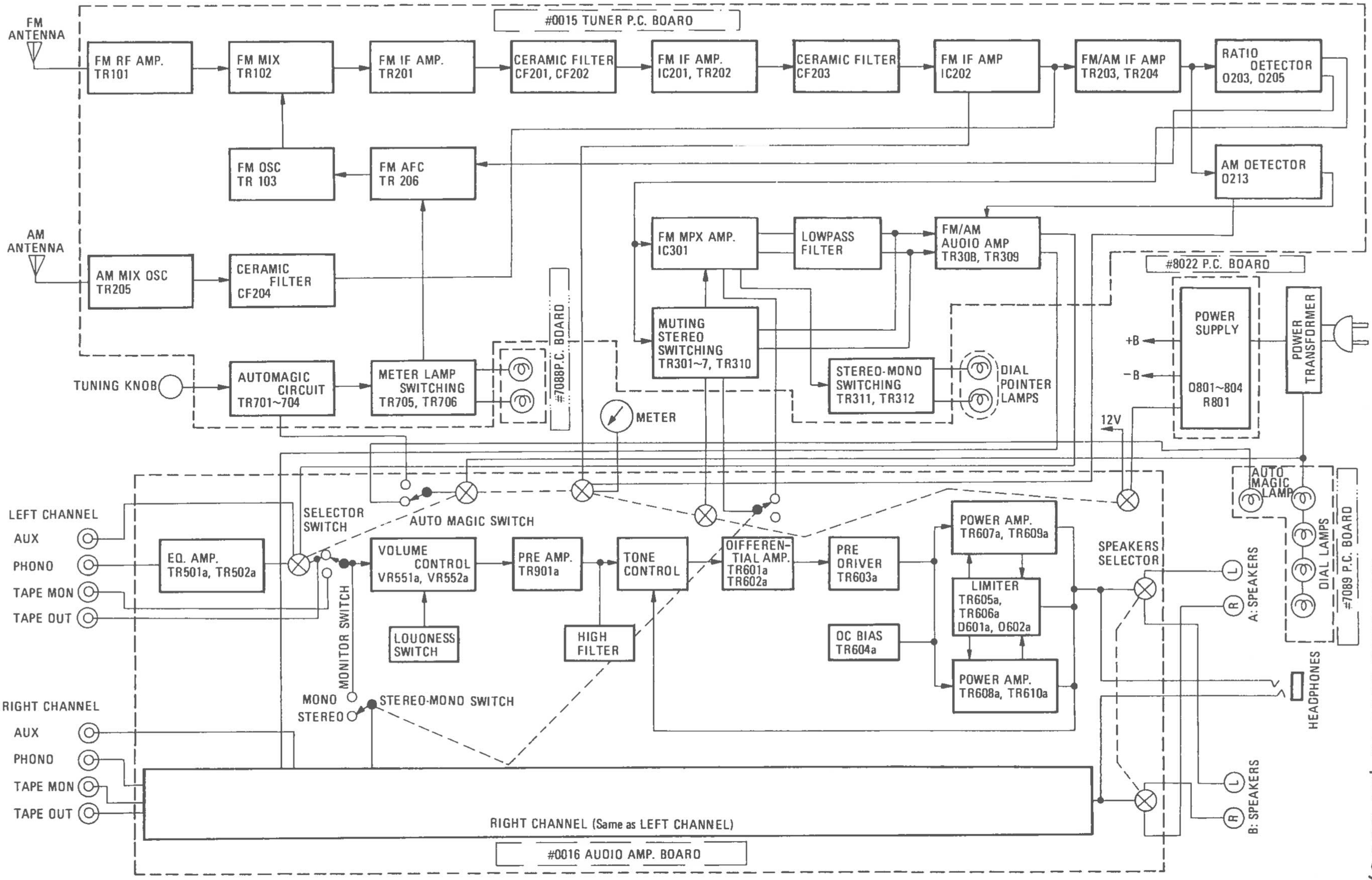
(TOP VIEW)


FM ANTENNA
AM ANTENNA
IC201 202 LA1221
LEFT CHANNEL
RIGHT CHANNEL
AUX
PHONO
TAPE MON
TAPE OUT
TO TUNING KNOB
VOLUME
TREBLE
BASS
LOUDNESS
STEREO MONO
TAPE MON
SW1a-h SELECTOR
1 AUX
2 PHONO
3 FM
4 FM MUTING
5 AM
SW2a, b TAPE MON
SW3a, b STEREO MONO
SW4a, b LOUDNESS
SW5 HI FIL
SW6 AUTO M
SW7a, b SPEAKERS
SW9 POWER
SW9 THERMAL PROTECTOR
Note:
1. Resistance values are indicated in ohms unless otherwise specified (K = 1,000, M = 1,000,000).
2. Capacitance values are shown in microfarads unless otherwise noted (P = micro-microfarads).
3. DC Voltages are reference to ground under the following conditions. No signal. ( ) 1,000μV FM stereo signal.
8016 AUDIO AMPLIFIER BOARD
HEADPHONES
A SPEAKERS
B SPEAKERS
8022 BOARD
POWER SWITCH
THERMAL SWITCH
UNSWITCHED
200W MAX
AC 120V 60Hz
(AC220/240V 50Hz)
CSA ONLY

0016 AUDIO AMP BOARD (BOTTOM VIEW)

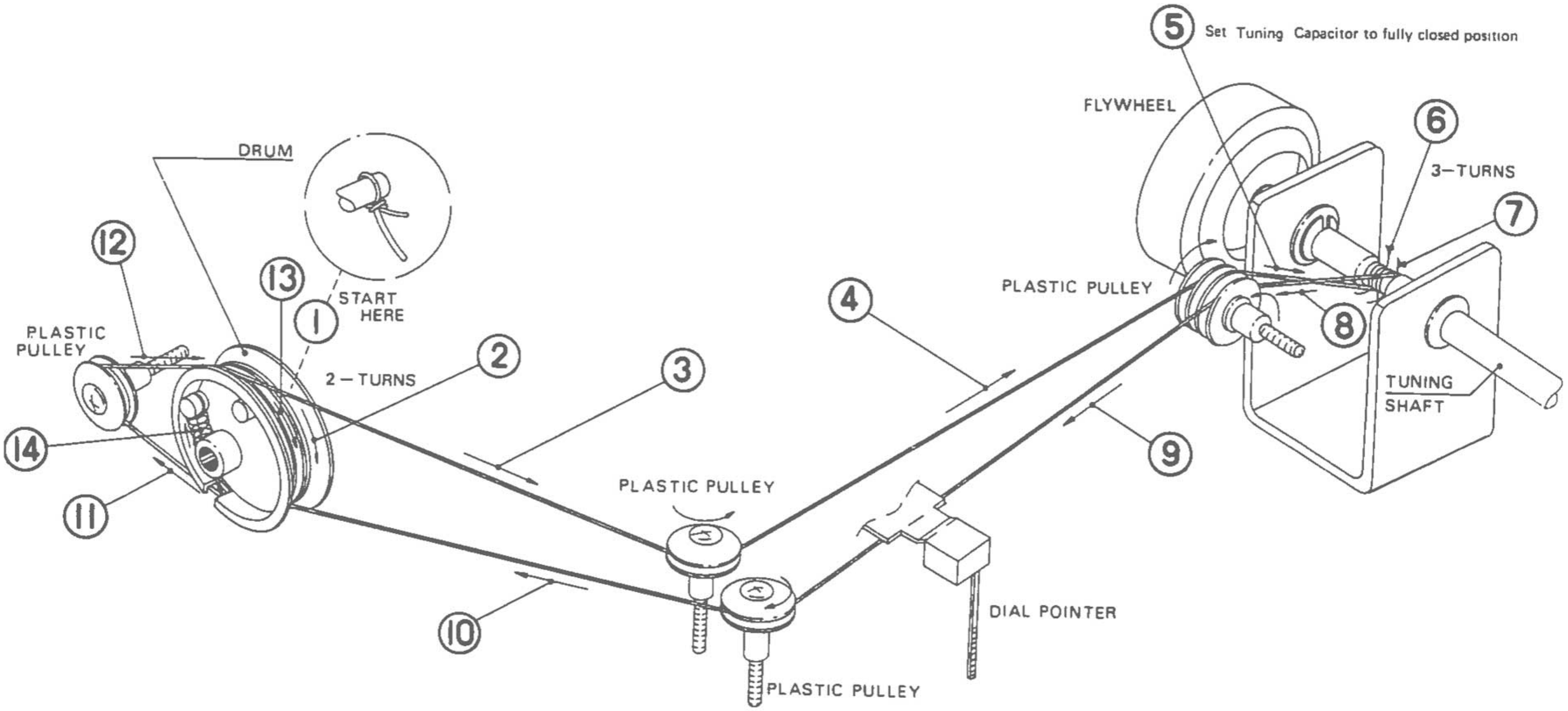


BLOCK DIAGRAM



Realistic STA-82 (31-2056)

DIAL STRINGING DIAGRAM



SEMICONDUCTOR LEAD IDENTIFICATION

2SA640
2SA641
2SA777
2SC828
2SC1047
2SC1384
2SC1509

2SC710
2SC711

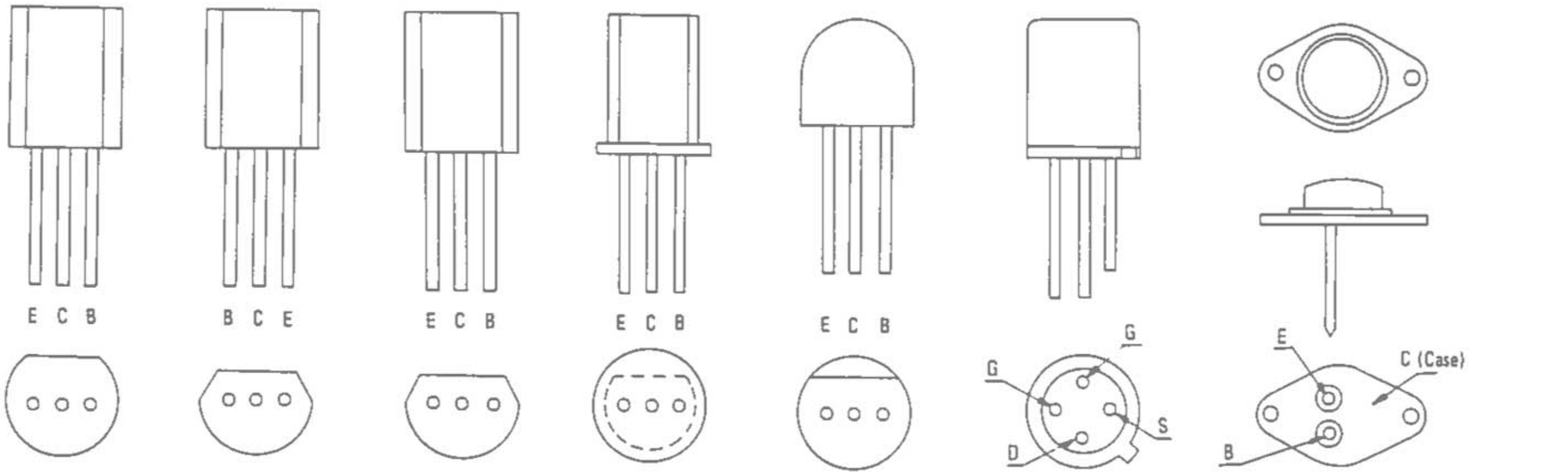
2SC1362
2SC1364

2SC1000

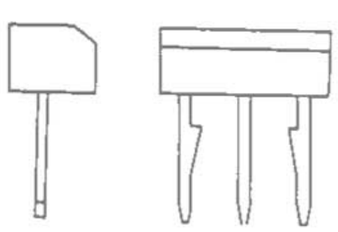
2SC930

3SK45

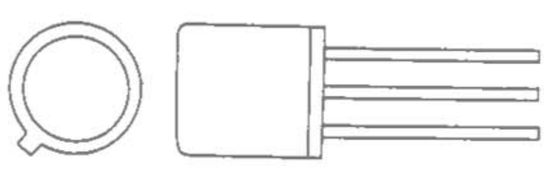
2SC1051

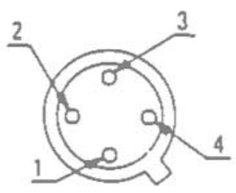


2SC1539

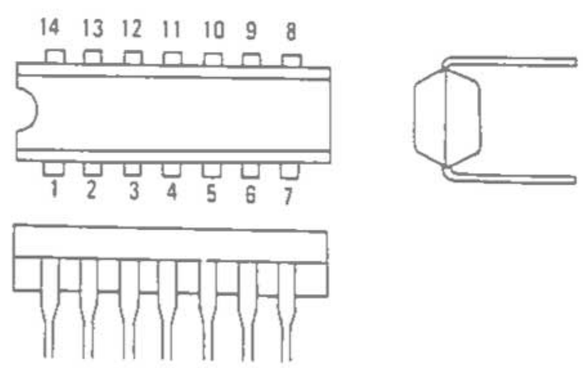


LA1221





LA3301



Realistic STA-82 (31-2056)

SEMICONOUCTORS

ITEM	PART NO.
D101	1S2473
D102	1S2687
D103	KB-269
0201	1N60P
0202	1N60P
0203	1N60
D204	1N60
0205	1N60P
D206	1N60P
D207	1N60P
0208	1N60P
D209	1N60P
0210	1N60P
D211	1N60P
0212	1S2473
0213	1N60P
D214	BZ-120
0601a,b	1N60
D602a,b	1N60
0701	1S2473
D702	1S2473
D703	KB-269
0704	1N60P
0705	V06C
0801	V06C
D802	V06C
0803	V06C
0804	V06C
D805	1N60
0851	V06C
D852	RO-13
IC201	LA1221
IC202	LA1221
IC301	LA3301
TR101	3SK45
TR102	2SC1047
TR103	2SC1047
TR201	2SC710
TR202	2SC710
TR203	2SC710
TR204	2SC710
TR205	2SC930
TR206	2SC828
TR301	2SC828
TR302	2SC828
TR303	2SC828
TR304	2SC828
TR305	2SC828
TR306	2SC828
TR307	2SC823
TR308	2SC1364
TR309	2SC1364
TR310	2SA641
TR311	2SC1364
TR312	2SC1364
TR501a,b	2SA640
TR502a,b	2SC1000
TR601a,b	2SC1362
TR602a,b	2SC1362
TR603a,b	2SA777
TR604a,b	2SC1539
TR605a,b	2SC711
TR606a,b	2SA641
TR607a,b	2SC1509
TR608a,b	2SA777
TR609a,b	2SC1051
TR610a,b	2SC1051
TR701	2SC828
TR702	2SC828
TR703	2SC828
TR704	2SC828
TR705	2SC1384
TR706	2SC1384
TR901a,b	2SC1362

ELECTROLYTICS/VARIABLE CAPS

ITEM	VALUE	PART NO.
C115	0.47uF 50V	
C125	0.047uF 50V	
C211	10uF 16V	
C217	4.7uF 25V	
C218	47uF 6.3V	
C229	1uF 50V	
C230	10uF 16V	
C245	1uF 50V	
C246	10uF 16V	
C301	470uF 16V	
C303	1uF 50V	
C305	1uF 50V	
C306	47uF 16V	
C307	0.1uF 35V	
C309	0.47uF 25V	
C310	4.7uF 25V	
C313	0.22uF 35V	
C314	0.22uF 35V	
C321	0.22uF 35V	
C322	0.22uF 35V	
C323	0.47uF 50V	
C327	0.47uF 50V	
C328	0.47uF 50V	
C329	4.7uF 25V	
C330	4.7uF 25V	
C333	4.7uF 25V	
C334	Not used	
C335	10uF 16V	
C501a,b	4.7uF 16V	
C503a,b	10uF 16V	
C506a,b	37uF 6.3V	
C507a,b	1uF 50V	
C508	1000uF 25V	
C509	330uF 25V	
C601a,b	10uF 16V	
C602a,b	100uF 6.3V	
C603	220uF 25V	
C605a,b	22uF 6.3V	
C606a,b	10uF 25V	
C702	10uF 16V	
C703	3.3uF 25V	
C704	1uF 50V	
C751	47uF 6.3V	
C851	5600uF 35V	
C852	5600uF 35V	
C853	1000uF 16V	
C855	100uF 6.3V	
C856	100uF 16V	
C901a,b	1.5uF 35V	
C902	470uF 35V	
C903	100uF 35V	
C904a,b	4.7uF 25V	
TC101	Trimmer	C-0578
TC102	Trimmer	C-0578
TC103	Trimmer	C-0578
TC104	Trimmer	C-0578
TC105	Trimmer	C-0578
VC101	Variable	C-4307

CONTROLS/SPECIAL RESISTORS

ITEM	OESCRIPTION	PART NO.
VR201	Semi-Variable,20K	C-4308
VR301	Semi-Variable,1K	C-4309
VR302	Semi-Varialbe,20K	C-4308
VR551	Volume,250K	
VR552	Volume 250K	
VR601a,b	Semi-Variable,1K	P-6239
VR901a,b	Treble,50K	P-1473
VR902a,b	Bass,50K	P-1473

COILS/TRANSFORMERS

ITEM	PART NO.
L101	CA-3188
L102	
L103	CB-2222
L104	CA-4531
L105	CA-3185
L151	CA-0217
L201	CA-4533
L202	CB-2222
L203	
L301	CA-3184
L302	CA-3187
L303	CA-3187
L601a,b	CB-2223
L851	
T101	CA-7383
T201	CA-7384
T202	CA-7387
T203	CA-7385
T204	CA-7386
T301	CB-0131
T851	TA-0453

MISCELLANEOUS

ITEM	NAME	PART NO.
	PC Board, Tuner	C-4306
	PC Board, Audio Amp	X-2118
	PC Board, Meter Lamp	X-4803
	PC Board, Dial Lamp	X-4804
	PC Board, Power Supply	X-4802
	AC Cord	W-1748
	Fuse, 2A	HF-0017
CR201	.01, 1K	(1)
M1	Meter, 250uA Tuning	(2)
SW1	Switch,Selector	S-1152
SW2-6	Switch,Push	S-7189
SW7	Switch,Speaker	S-1153
SW8	Switch,Power	(3)
SW9	Switch,Thermal	S-0627

(1) 43000011
(2) 60250003
(3) 27200039

CA8INET PARTS

NAME	PART NO.
Front Panel	Z-2107
Cabinet	Z-2108
Knob,Tuning	K-1681
Knob,Small	K-1680
Knob,Power	K-1682
Knob,Volume	K-1683
Knob,Push	K-1684