

NAD SERVICE MANUAL

MONITOR SERIES

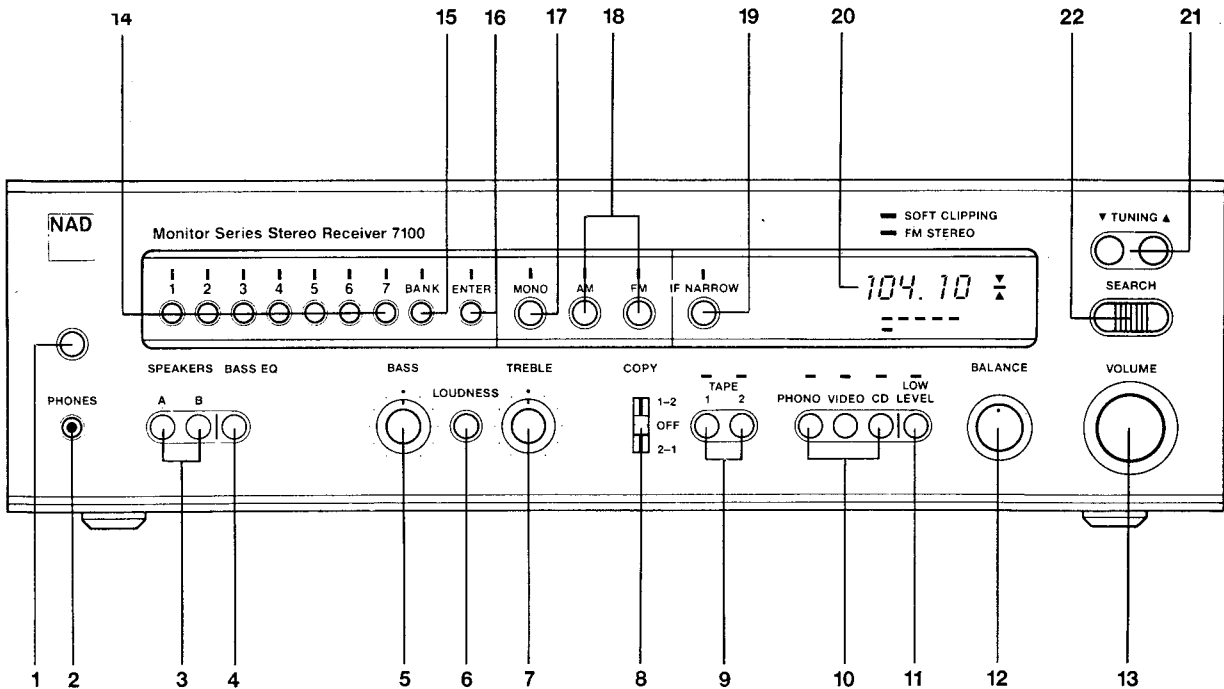
7100

RECEIVER

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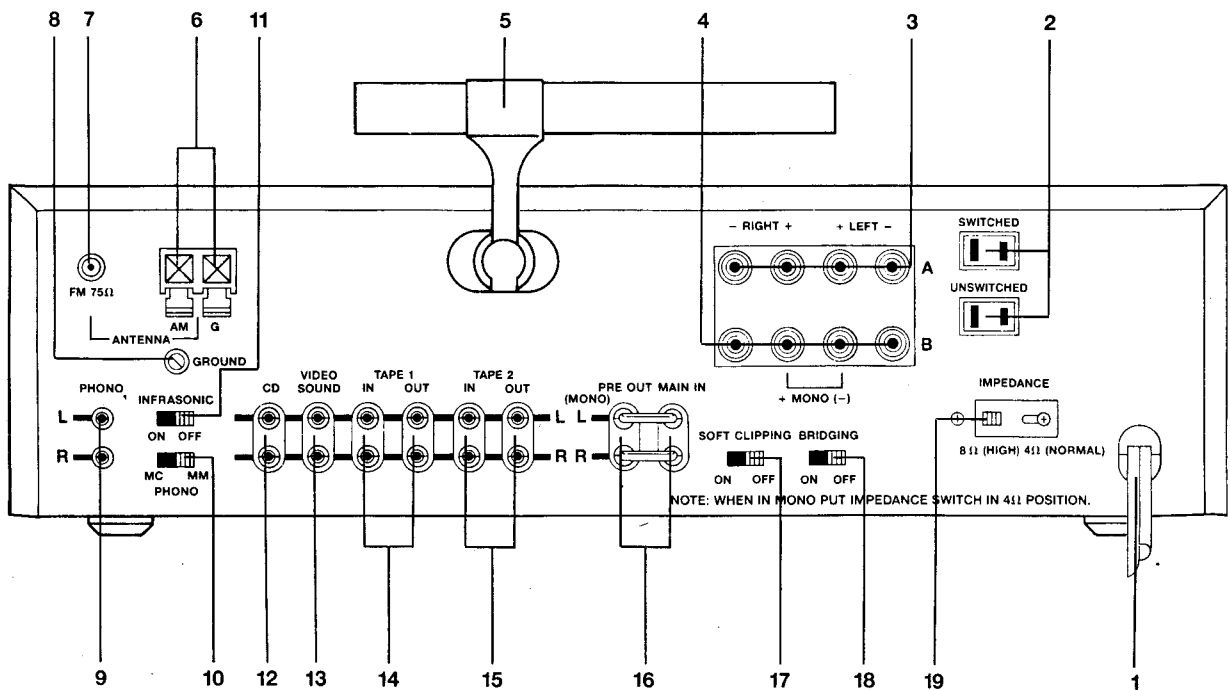
FRONT PANEL

- | | | |
|---------------------------|----------------------------------------|---------------------|
| 1. Power. | 9. Tape 1, Tape 2 (Monitor). | 17. Mono. |
| 2. Phones. | 10. Input Selector (Phono, Video, CD). | 18. AM/FM. |
| 3. Speaker Selector. | 11. Low Level. | 19. Narrow I.F. |
| 4. Bass Eq. | 12. Balance. | 20. Tuning Display. |
| 5. Bass. | 13. Volume. | 21. Tuning Up/Down. |
| 6. Loudness Compensation. | 14. Pre-sets. | 22. Search mode. |
| 7. Treble. | 15. Bank Selector. | |
| 8. Tape Copy. | 16. Memory Enter. | |



REAR PANEL

- | | | |
|--------------------------|--------------------------|---------------------------|
| 1. AC Line Cord. | 8. Phono Ground. | 15. Tape 2 Input/Output. |
| 2. AC Outlets. | 9. Phono Input. | 16. Preamp Out, Main In. |
| 3. Speakers A. | 10. MM/MC Selector. | 17. Soft Clipping On/Off. |
| 4. Speakers B. | 11. Infrasonic Filter. | 18. Bridging. |
| 5. AM Rod Antenna. | 12. CD Input. | 19. Speaker Impedance. |
| 6. AM Antenna Terminals. | 13. Video Sound Input. | |
| 7. FM Antenna Input. | 14. Tape 1 Input/Output. | |



Specifications

NAD 7100 Stereo Receiver

Note: Specifications are measured in accordance with EIA Standard RS-490 (IHF A-202) for amplifiers and ANSI-IEEE Standard 185 (1975), i.e. IHF T-200, for tuners. Tuner sensitivity is measured via 75-ohm coaxial input. Amplifier measurements referred to 8 ohm are taken with the Speaker Impedance selector set to 8 ohm (High). Measurements for 4 and 2 ohm are taken with Impedance selector at 4 ohm (Normal).

Power Amplifier Section

CONTINUOUS AVERAGE POWER

OUTPUT AT 8 OHM (minimum RMS 50 W(17 dBW)

power per channel, both channels driven,
with no more than the rated distortion)

Rated distortion (THD), 20 Hz - 20 kHz 0.03%

Clipping power, 1 kHz (maximum 70 W

continuous power per channel)

Dynamic Headroom at 8 ohm +6 dB

Dynamic power (maximum 8 ohm 200 W

short-term power per channel) 4 ohm 250 W

2 ohm 330 W

Damping factor 100

Slew factor >50

Slew rate 35V/usec

T.H.D. and SMPTE I.M. distortion from <0.03%

250 mW to rated output

IHF I.M. (CCIF IM) and T.I.M. distortion <0.03%

at rated output

Input impedance 10 kohm/600pF

Input sensitivity for 1 Watt/50 Watts out 120 mV/850mV

Power amp gain 27 dB

Preamplifier Section

Phono Input

Input Impedance MM + MC R=47 kohm, C=100 pF

Input Sensitivity (1 kHz) MM/MC .35/.025mV for 1W out

MM/MC 2.5/.18mV for 50W out

Signal-to-Noise Ratio with MM 75 dB re 5 mV

cartridge connected, A-weighted MC 75 dB re 0.5mV

Input Overload at 20 Hz/1kHz/20kHz MM 20/180/1500 mV

MC 1.4/13/100 mV

RIAA Accuracy ±0.5 dB

High-Level Inputs (CD, Video, Tape)

Input Impedance R=50 kohm, C=500 pF

Input Sensitivity 20 mV for 1W out

150 mV for 50W out

Signal-to-Noise ratio, A-weighted 94 dB re 1 W out

111 dB re 50 W out

Input Overload >10V

Frequency Response 20Hz-20kHz ± 0.5dB

Outputs

Preamp output impedance 600 ohm

Tape output impedance 100 ohm

Controls

Treble ±9 dB at 10kHz

Bass ±10 dB at 50 Hz

Bass Equalization ±3 dB at 55 Hz

+6 dB at 36 Hz

Infrasonic Filter -3 dB at 12 HZ

12 dB/octave

Low Level (audio muting) -20 dB

FM Tuner Section

Input sensitivity

Mono, -30 dB THD+N 11 dBf(1.0uV into 75 ohm)

Mono, 50 dB S/N 14 dBf(1.4uV into 75 ohm)

Stereo, 50 dB S/N 26 dBf (5.5 uV)

Stereo, 60 dB S/N 37 dBf (20 uV)

Capture ratio (at 45 and 85 dBf) <1.6 dB

AM rejection (at 45 and 85 dBf) >60 dB

Selectivity, alternate channel 70 dB, IF normal

80 dB, IF narrow

Image rejection >80 dB

R.F. intermodulation >60 dB

I.F. rejection >120 dB

SCA rejection 70 dB

Subcarrier suppression(19, 38 kHz) 65 dB

THD at 100% modulation Mono, 1 kHz 0.1%

Narrow IF 0.5%

100Hz-6kHz 0.2%

Stereo, 1 kHz 0.1%

Narrow IF 0.5%

100Hz-6kHz 0.3%

Signal-to-noise ratio Mono 83 dB

IHF weighted, 65 dBf Stereo 77 dB

Frequency response, 30Hz-15 kHz ±0.5 dB

Stereo separation 1 kHz 50 dB

30Hz-10kHz 35 dB

AM Tuner Section

Usable sensitivity 300 uV/meter

THD 0.5%

Selectivity 35 dB

Image rejection 50 dB

I.F. rejection 35 dB

S/N ratio(30% mod., 50mV input) 45 dB

Physical Specifications

Width x Height x Depth 43.5 x 11 x 40 cm.

17.1 x 4.25 x 15.5 in.

Net Weight 11 kg (24.4 lbs)

Shipping Weight 12.7 kg (28.2 lbs)

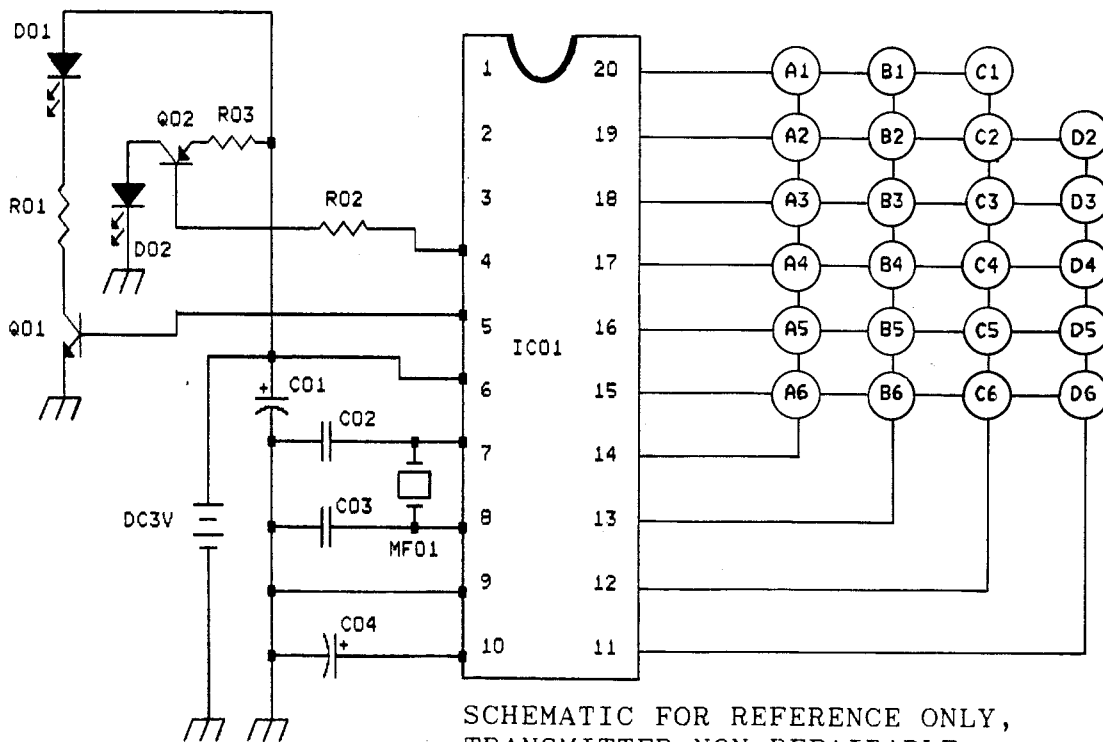
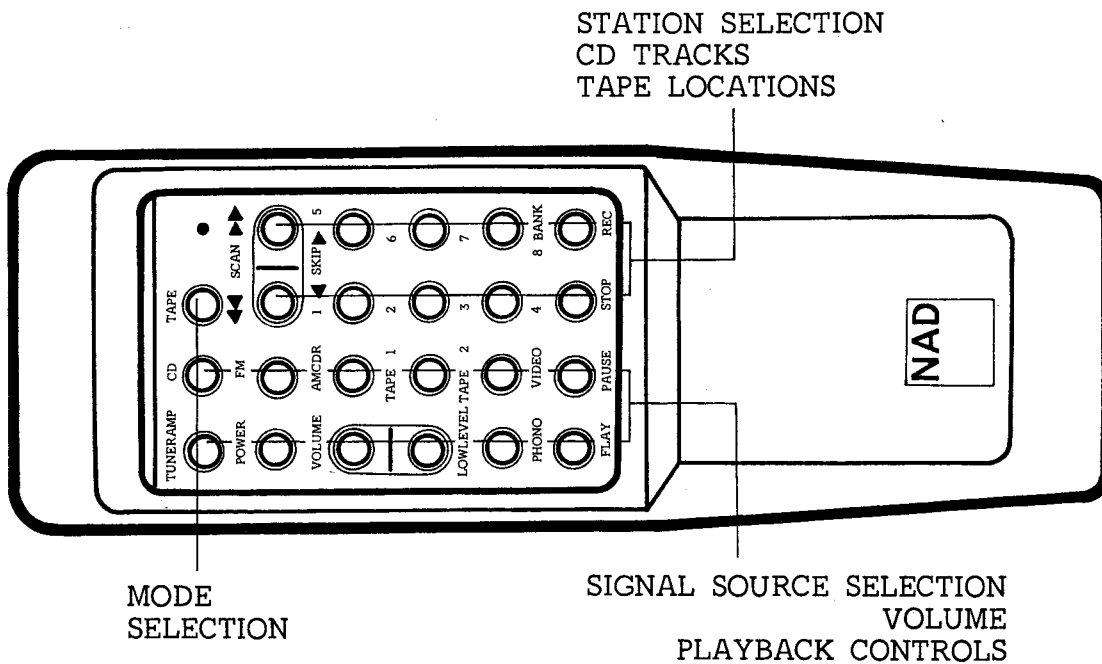
Power Consumption 50/60 Hz at 110,120,

220, or 240 VAC

220 VA

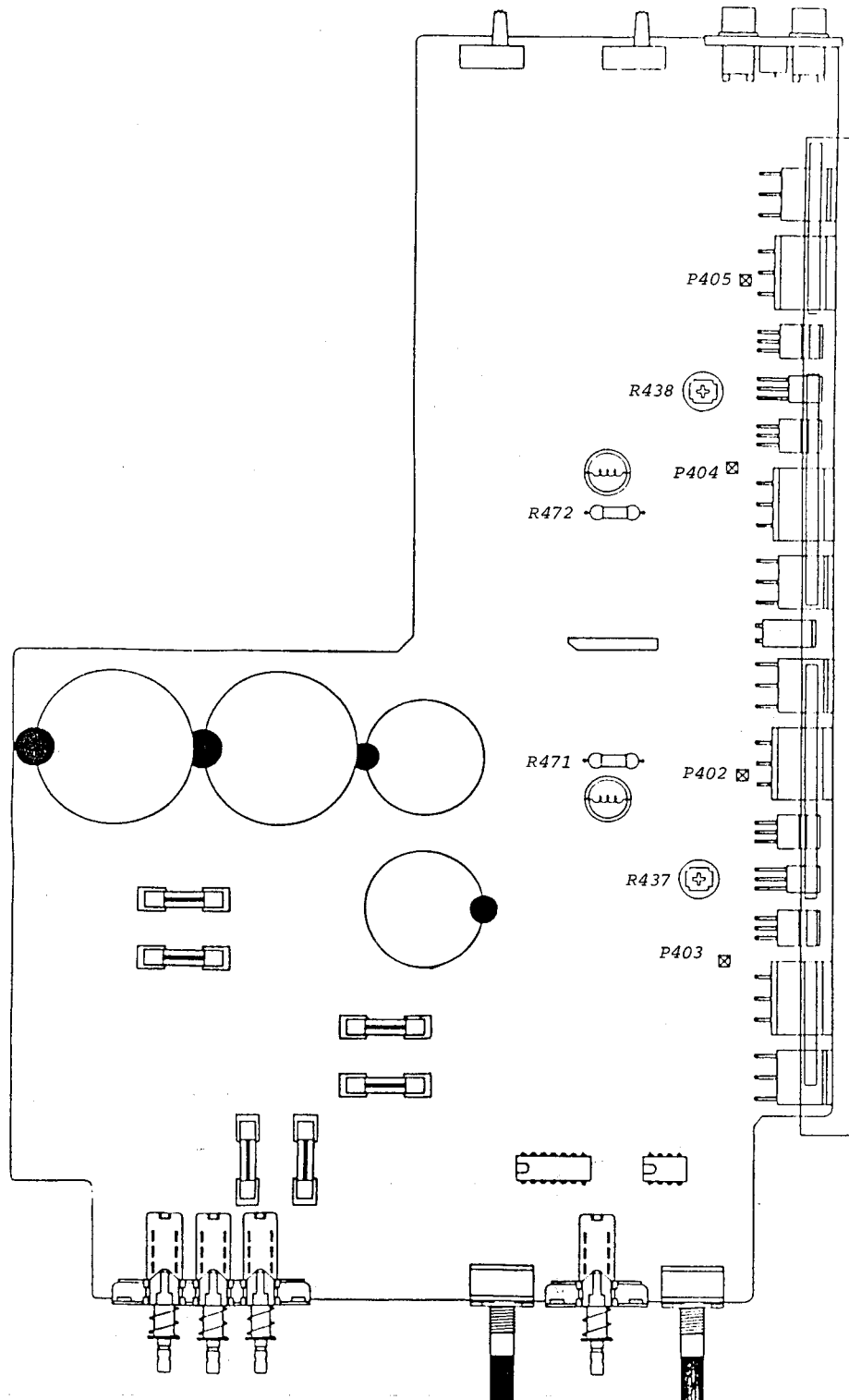
All specifications for A, A1 model (US-type, 75 uSec)
; others may vary.

REMOTE CONTROL TRANSMITTER



SCHEMATIC FOR REFERENCE ONLY,
TRANSMITTER NON-REPAIRABLE.

MAIN AMPLIFIER ADJUSTMENT POINTS



MAIN AMPLIFIER ADJUSTMENT

IMPORTANT NOTES:

- 1) Before adjusting, remove input signal and load, and set Speaker impedance switch to 8 ohms (reset to 4 ohms when finished).
- 2) These adjustments are always necessary after repair to main amplifier.
- 3) After repair, it is recommended to use current limiter (70-100W lightbulb) in mains line, for initial turn-on.

A. CENTER VOLTAGE CHECK

1. Connect DMM between Ground and R-471 (L channel)(R-472, R channel)(amplifier output).
2. Turn on, and read voltage. Specification $0V \pm 100mVDC$.

B. IDLE CURRENT ADJUSTMENT

1. Connect DMM across P-402(+) and P-403(-), and adjust R-437 for reading of $15mV \pm 2.5mVDC$.
2. Repeat, using P-404(+) and P-405(-), adjust R-438.

C. FINAL ADJUSTMENT

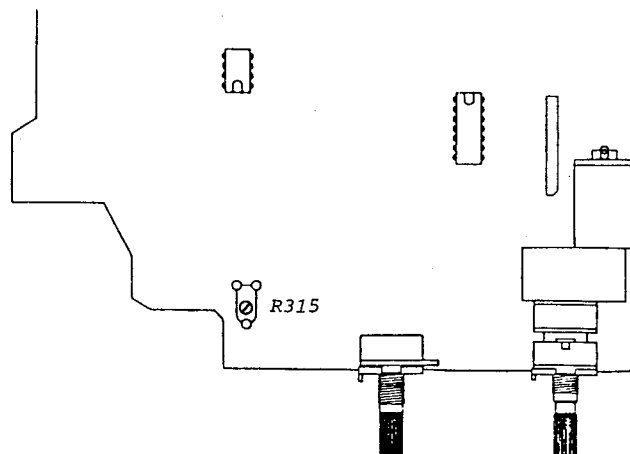
1. Leave power on minimum 5 minutes.
2. Repeat center voltage check and idle current adjustments.

PREAMPLIFIER ADJUSTMENT

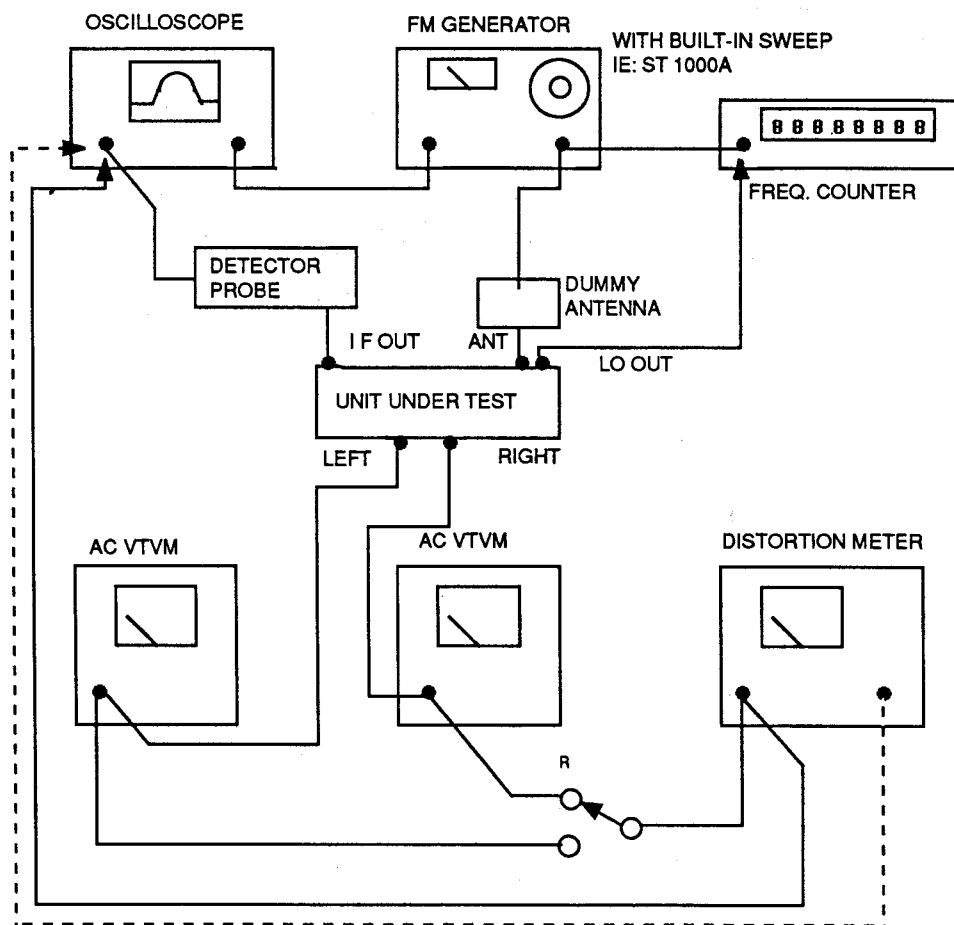
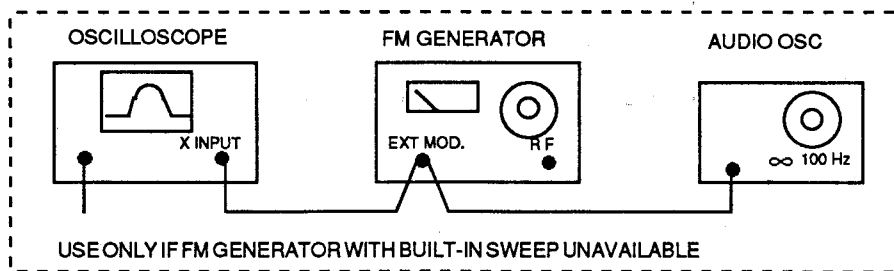
A. CHANNEL BALANCE

1. Feed 1kHz, 100mV to CD input; connect AC VTVM's to preamp output.
2. Set volume to maximum, balance to center, low level off.
3. Adjust R-315 so that both channels have same output level $\pm 0.25dB$.

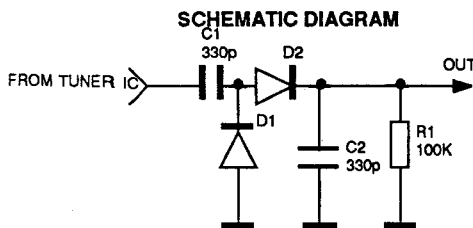
PREAMPLIFIER ADJUSTMENT POINTS



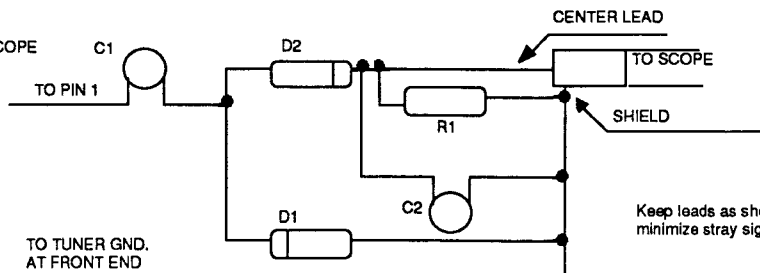
SUGGESTED INSTRUMENTATION HOOKUP- FM ALIGNMENT



DETECTOR PROBE



PICTORIAL DIAGRAM



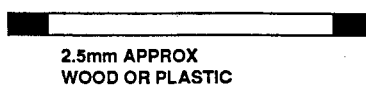
Keep leads as short as possible, to minimize stray signal pickup.

Diodes should be point-contact germanium: some types commonly available are:

- OA80
- OA81
- AA119
- 1N60
- 1N34
- 1N22

INDUCTOR TEST PROBE

THIN BRASS,
2x10 mm approx



FERRITE
2-3 mm DIA

BRASS, FERRITE
FROM RF COIL.
FASTEN WITH
GLUE.

FM ALIGNMENT

NECESSARY INSTRUMENTATION:

- * Stereo Modulator (less than 0.05% THD, more than 50dB Sep.)
- * FM Generator (less than 0.05% THD)
- * 75 ohm Dummy Antenna (if needed by generator)
- * Audio Oscillator (not necessary if FM generator has built-in sweep, e.g., SOUND TECHNOLOGY ST 1000A or ST 1020A)
- * 2 AC VTVM's (or one with a Left/Right switch)
- * THD Analyzer (resolution less than 0.1%)
- * Oscilloscope (5mV or better sensitivity, X-Y capability)
- * Frequency Counter
- * Diode Detector Probe
- * Ferrite/Brass inductor test probe

IMPORTANT NOTES

- 1) RF levels are at antenna input.
- 2) Before aligning, select FM, switch off IF NARROW and MONO.
- 3) If FM Generator is not synthesizer-type, be sure to check its frequency with Frequency Counter When adjusting detector and stereo decoder circuits.
- 4) Hum in measurements may be caused by ground loop via antenna cable; if so, use isolation balun, or isolate cable shield and hot with small capacitors (470 ~ 1000pf).
- 5) To adjust front-end coils, bend gently with wooden or plastic tool (non-interactive).
- 6) ENTER the following frequencies: 90.00, 105.00, 87.50, 108.00, 98.00

A. LOCAL OSCILLATOR FREQUENCY

1. Connect Frequency Counter between front-end pin 8 (front-most) and Ground.
2. Tune to 90 MHz (No RF input needed).
3. Adjust C-934 so that reading is $100.700\text{MHz} \pm 2\text{KHz}$.
4. Remove counter.

B. TUNING VOLTAGE

1. Connect DMM between P-936 and Ground.
2. Tune to 108.00MHz, and adjust L-7 if reading is not $20.0\text{V} \pm 0.5\text{V}$
3. Tune to 88.00MHz, and check that reading is $3.0\text{V} \pm 0.5\text{V}$
4. Repeat until within tolerance.

C. TRACKING

1. Connect FM Generator to 75 ohm antenna input (modulate $\pm 150\text{kHz}$ sweep) and Detector Probe to Pin 1 of Q106 (ground to tuners shield).
2. Adjust vertical sensitivity of Oscilloscope to maximum, and set to X-Y mode. (X input is sweep signal, Y is detector probe).
3. Tune to 105MHz and adjust generator so that curve appears on Oscilloscope, and covers approximately 1/2 of display.
4. Check L2, L3, L4 with ferrite/brass probe, adjust only if probe causes curve height to increase more than 10%. If necessary, reduce generator output to keep entire curve on display.

5. Tune to 90MHz and adjust Generator so that curve appears on Oscilloscope.
6. Check L2, L3, L4 again; if necessary, distribute any error between both frequencies.

Note: 105MHz curve is typically slightly higher than 90MHz.

D. IF ADJUSTMENTS

1. Tune to approximately 98MHz (must be an unoccupied frequency), and adjust FM Generator to display curve on the oscilloscope.
2. Adjust I-1 and I-101 for maximum and symmetrical curve using as little RF input signal as possible.
3. Remove detector probe.

E. DETECTOR ADJUSTMENT

1. Remove Detector Probe, and connect Tape Output to Distortion Analyzer and Oscilloscope.
2. Connect DMM between P-703 (-) and P-704 (+).
3. Tune to 98MHz and feed 1000uV from FM Generator (Modulate 1kHz 100%, Mono).
4. Adjust I-102 Secondary (front) for lowest THD. Specification: less than 0.1%
5. Adjust L-102 Primary (rear) for 0V \pm 50mV reading on DMM.
6. Repeat until no further improvement.

F. STEREO DISTORTION & SEPARATION

1. Tune to 98MHz and feed 1000uV from FM Generator. Modulate 1kHz, 100% left (or right) only.
2. Adjust I-1 and I-101 just slightly so that distortion on left (or right) channel becomes minimum.
3. Check stereo distortion, wide IF; Specification: less than 0.1% , L + R, L only, R only, L - R.
4. Next, select IF NARROW, and check distortion; Specification: less than 2%, L only, R only, L - R.
5. Set IF to wide and modulate L only. Adjust R-176 for minimum output on right channel.
Next, modulate R only and adjust R-176 for minimum output on left channel.
If necessary, readjust R-176 so that readings become same on both channels. Specification: less than -45dB.
6. Select IF NARROW, and modulate left (or right) channel only. Adjust R-177 for minimum output on right (or left) channel VTVM and oscilloscope.
If necessary, readjust R-177 so that readings become same on both channels. Specification: less than -40dB.

G. AUTO SEARCH LEVEL

1. Set IF to wide. Connect DMM between P-935 and Ground.
2. Set FM Generator output to 10uV and adjust R-144 so that reading just goes from 0 V to 4.4V. Tolerance: \pm 2uV.

H. STEREO SWITCHING LEVEL

1. Set FM Generator output to 5uV, 1kHz 100% L + R.
2. Adjust R-148 so that the stereo light just turns on. Tolerance: ± 1 uV.

NOTE: The tuner will switch into mono at a lower level, typically 4uV.

I. SIGNAL METER LEVEL

1. Set FM Generator output to 500 uV
2. Adjust R-141 so that fifth LED just lights.

J. FM NR CIRCUIT, MULTIPLEX FILTERS

1. Adjust R-025 full cw.
2. Set FM Generator output to 1000uV, 1kHz 100% L + R, and set reference for S/N measurement. Cancel the stereo modulation and leave pilot tone.
3. Adjust Z-111 (Z-112)(rear slug) for minimum subcarrier output on left (right) channel; Specification: less than -60dB.
4. Reduce FM Generator output so that S/N ratio reads 50dB.(Approx 18uV)
5. Adjust R-025 so that S/N is improved by 8dB.

AM ALIGNMENTS

A. TUNING VOLTAGE

1. Connect DMM between P-936 and Ground.
2. Tune to 1600(1602)KHz. Enter into Preset 2. Adjust C-137 for reading of $8.1V \pm 0.5V$.
3. Tune to 520(522)kHz. Enter into Preset 1. Adjust L-102 for reading of $1.0V \pm 0.1V$.
4. Repeat until within tolerance.

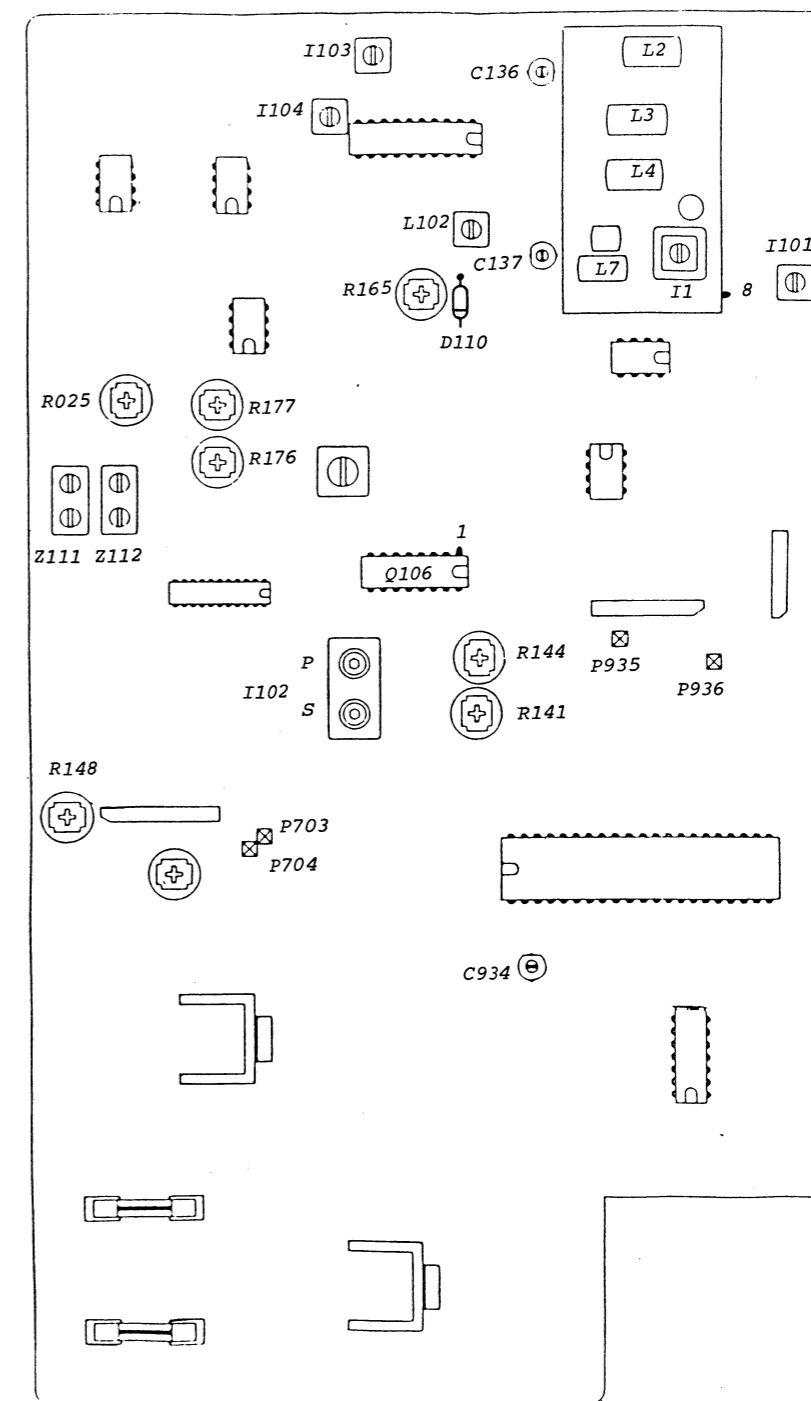
B. ANTENNA, IF

1. Swing antenna away from chassis.
2. Connect DC voltmeter to Anode, D110 (rear) and Ground.
3. Tune to a station of moderate strength near 1400kHz. Enter into Preset 4. Adjust C-136 for maximum reading on meter.
4. Adjust I-103 and I-104 for maximum reading on meter.
5. Tune to a station of moderate strength near 600kHz. Enter into Preset 3. Adjust L-101(AM Antenna) for maximum reading on meter (use non-interactive tool, such as plastic or wooden stick).
6. Repeat until no further improvement.

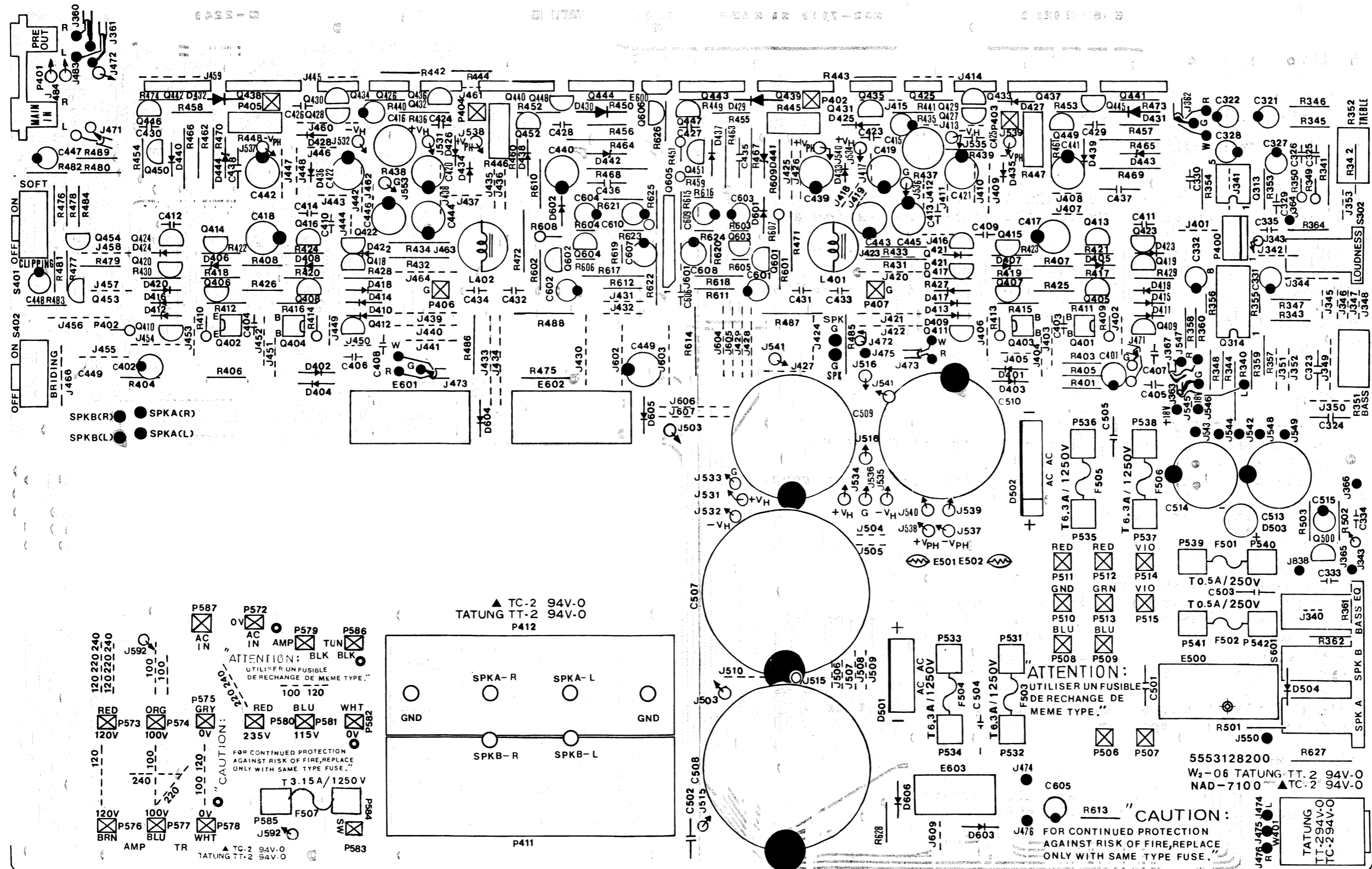
C. SCAN STOP/SIGNAL METER LEVEL

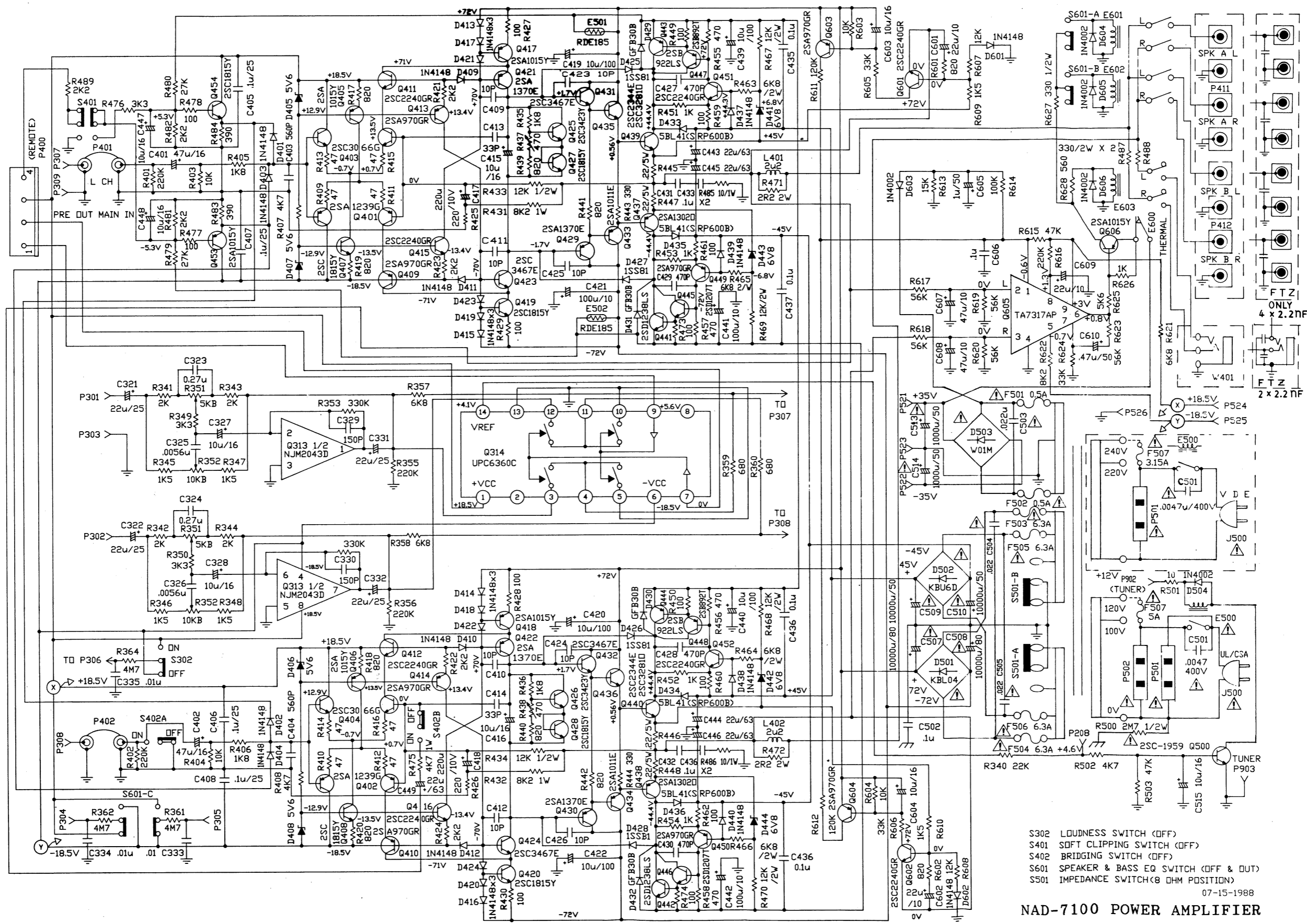
1. Tune to 1000kHz and feed 200uV to antenna terminals.
2. Adjust R-165 so that fifth LED just lights fully.

TUNER ADJUSTMENT POINTS



MAIN AMPLIFIER PCB LAYOUT
COMPONENT SIDE



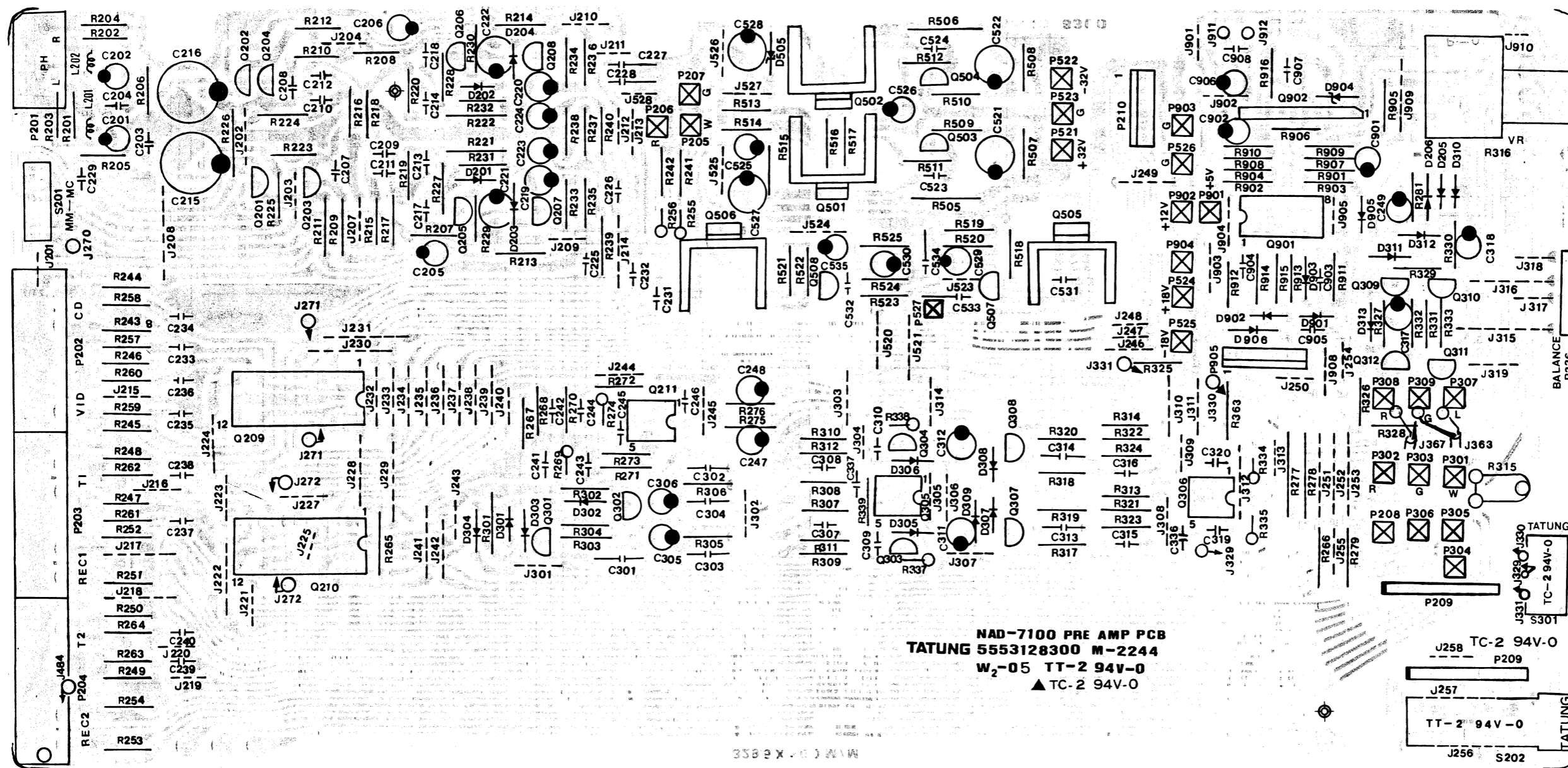


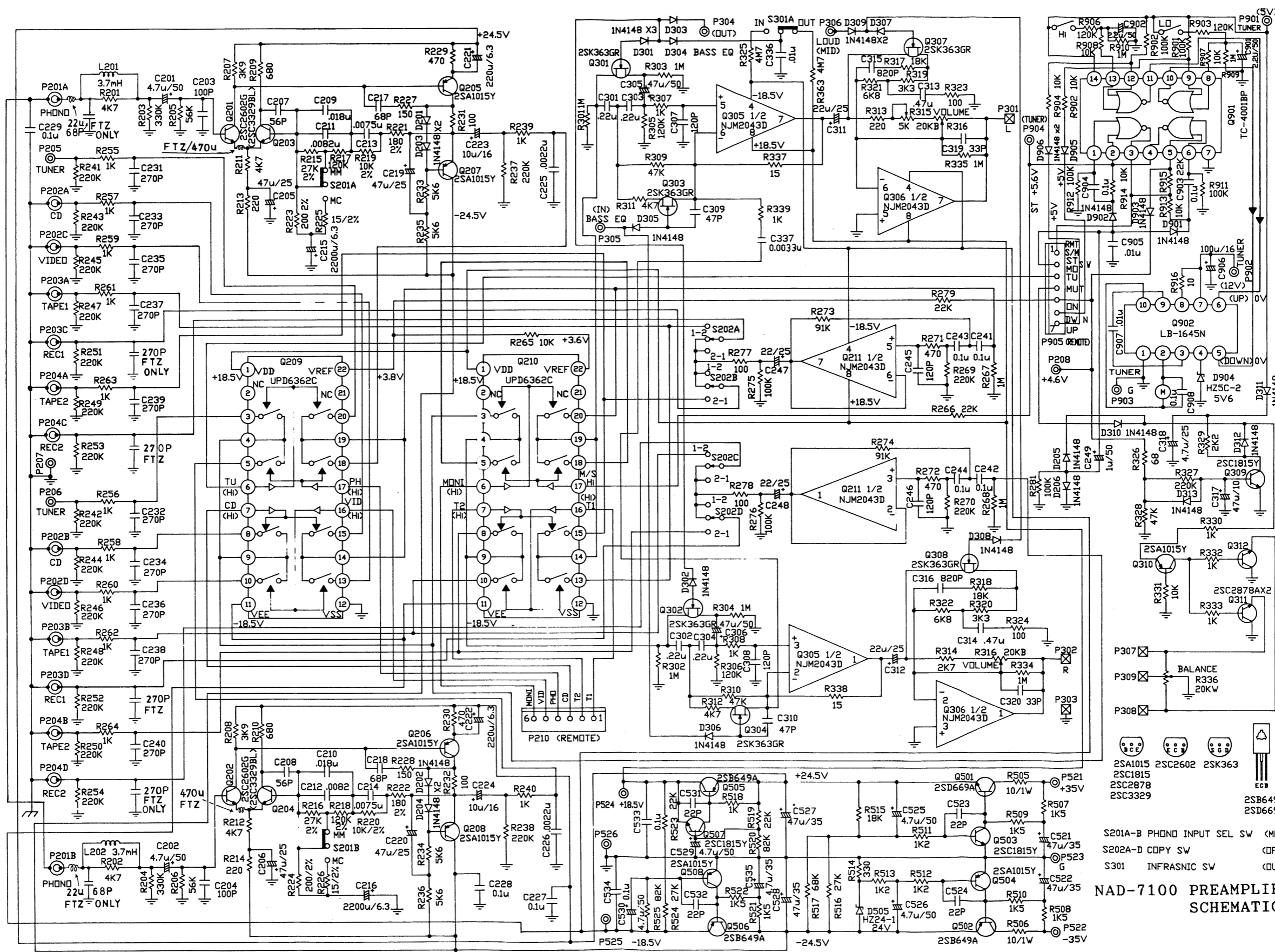
- S302 LOUDNESS SWITCH (OFF)
- S401 SOFT CLIPPING SWITCH (OFF)
- S402 BRIDGING SWITCH (OFF)
- S601 SPEAKER & BASS EQ SWITCH (OFF & OUT)
- S501 IMPEDANCE SWITCH (8 OHM POSITION)

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NAD-7100 POWER AMPLIFIER

PREAMPLIFIER PCB LAYOUT COMPONENT SIDE

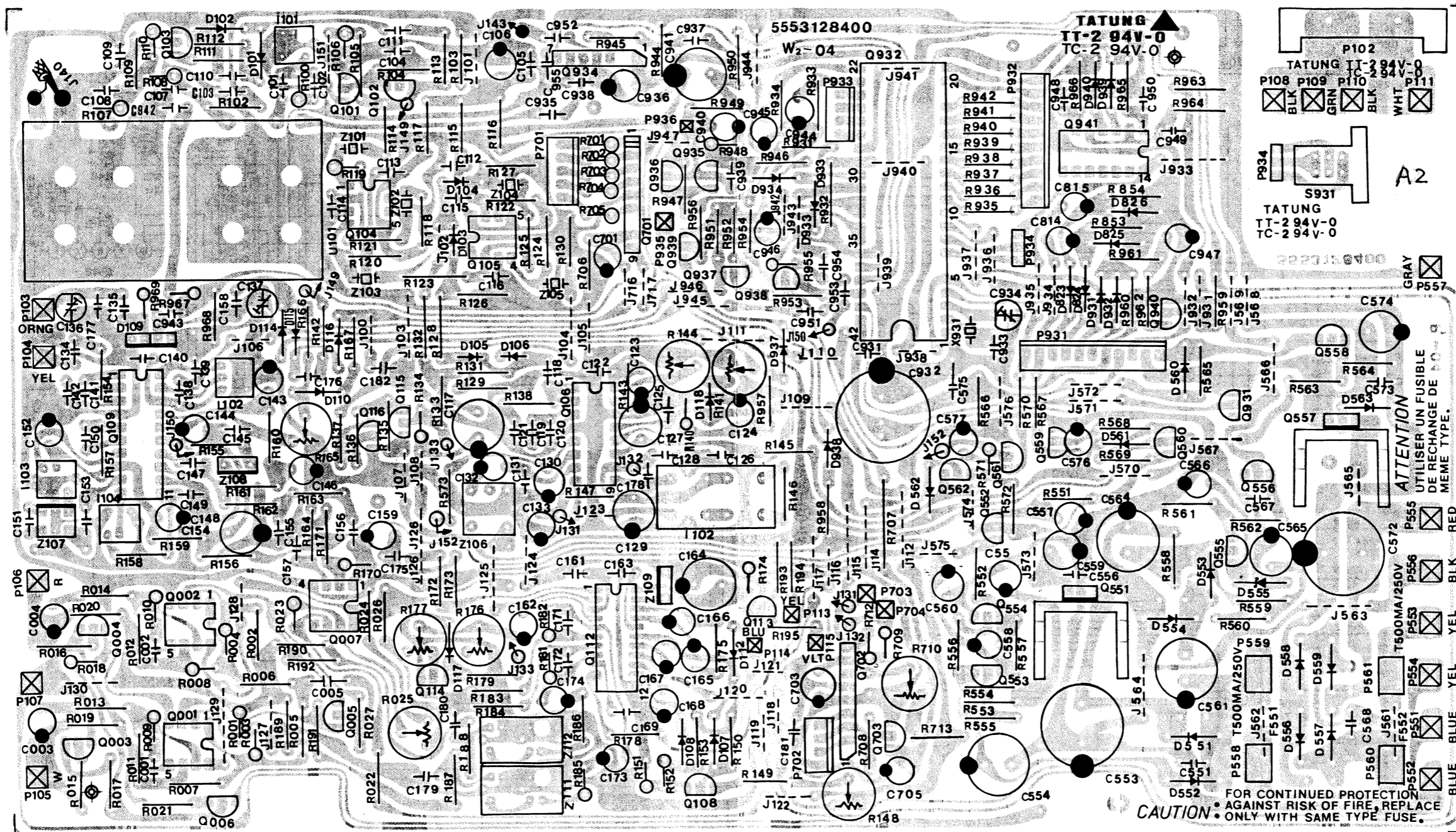




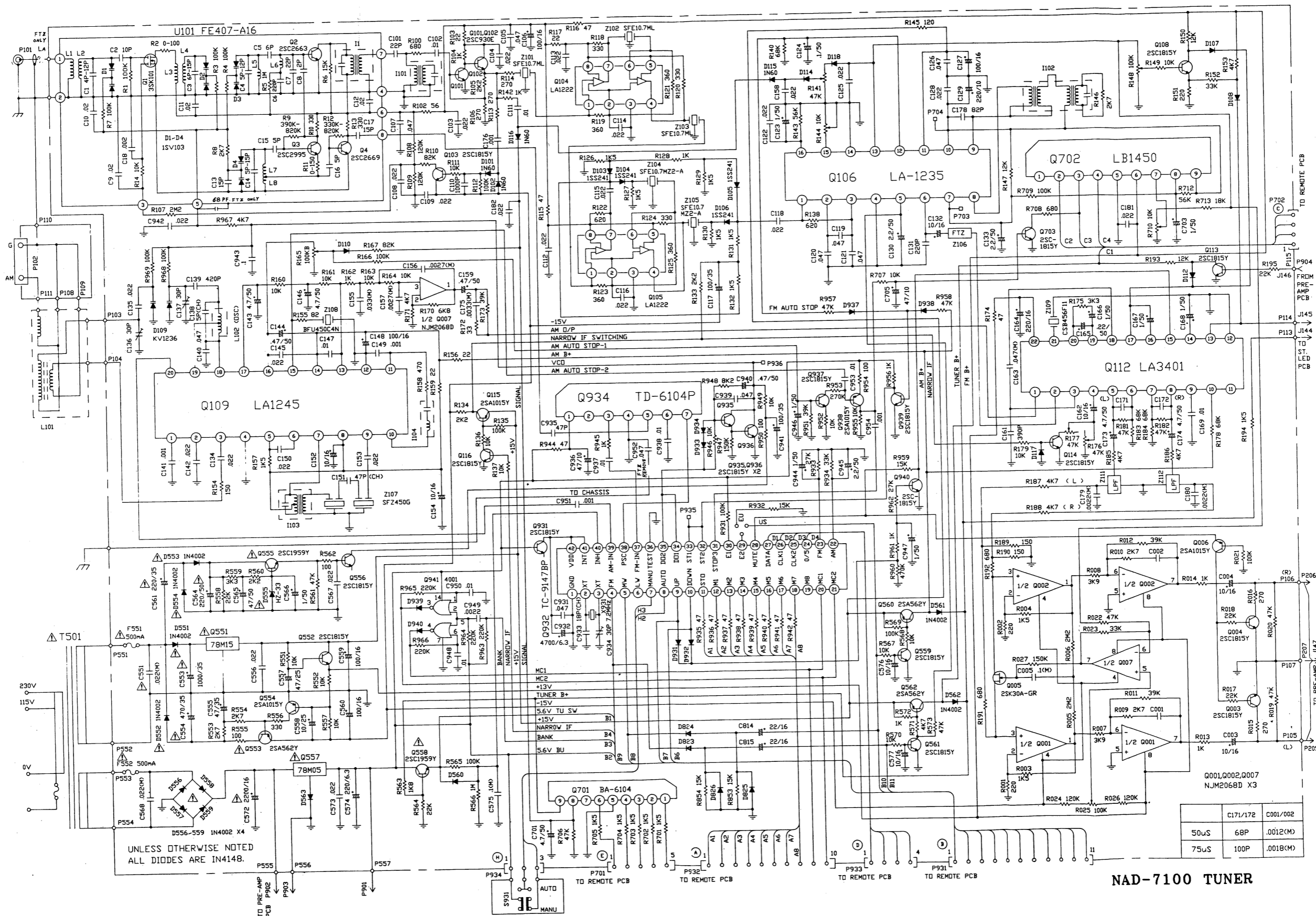
- 2SA1015
 - 2SC1815
 - 2SC2878
 - 2SC3329
 - 2SB649
 - 2SD669
- S201A-B PHONO INPUT SEL SW (MM)
 S202A-D COPY SW (OFF)
 S301 INFRASNIC SW (OUT)

NAD-7100 PREAMPLIFIER SCHEMATIC

TUNER PCB LAYOUT
COMPONENT SIDE



TUNER

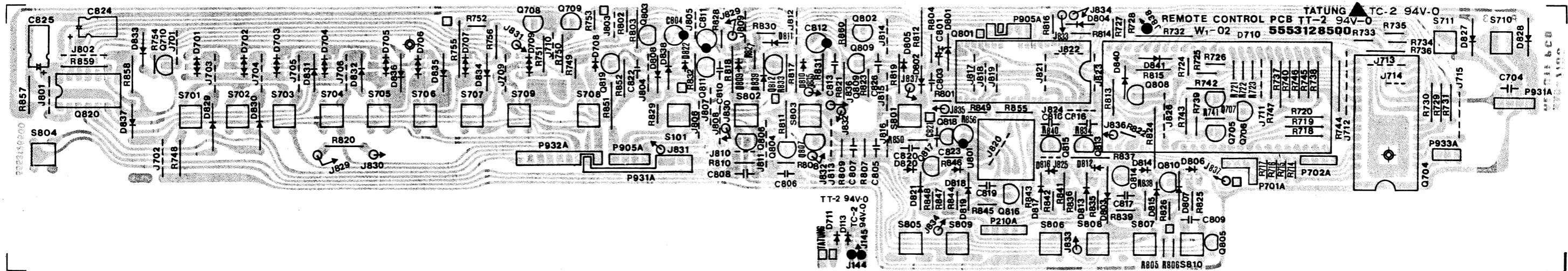


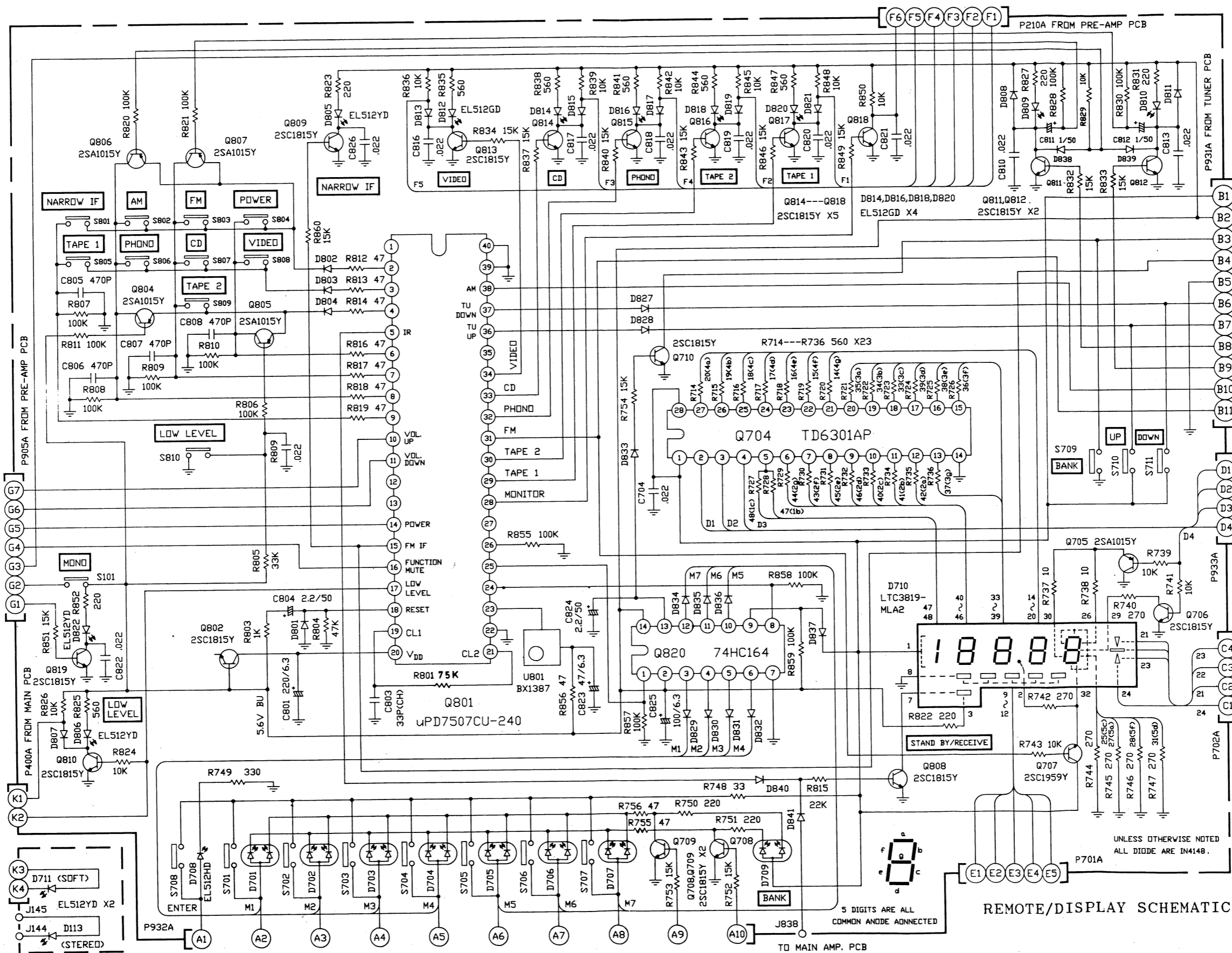
UNLESS OTHERWISE NOTED ALL DIODES ARE IN4148.

C171/172	C001/002
50µS	68P
75µS	100P
	.0012(M)
	.0018(M)

NAD-7100 TUNER

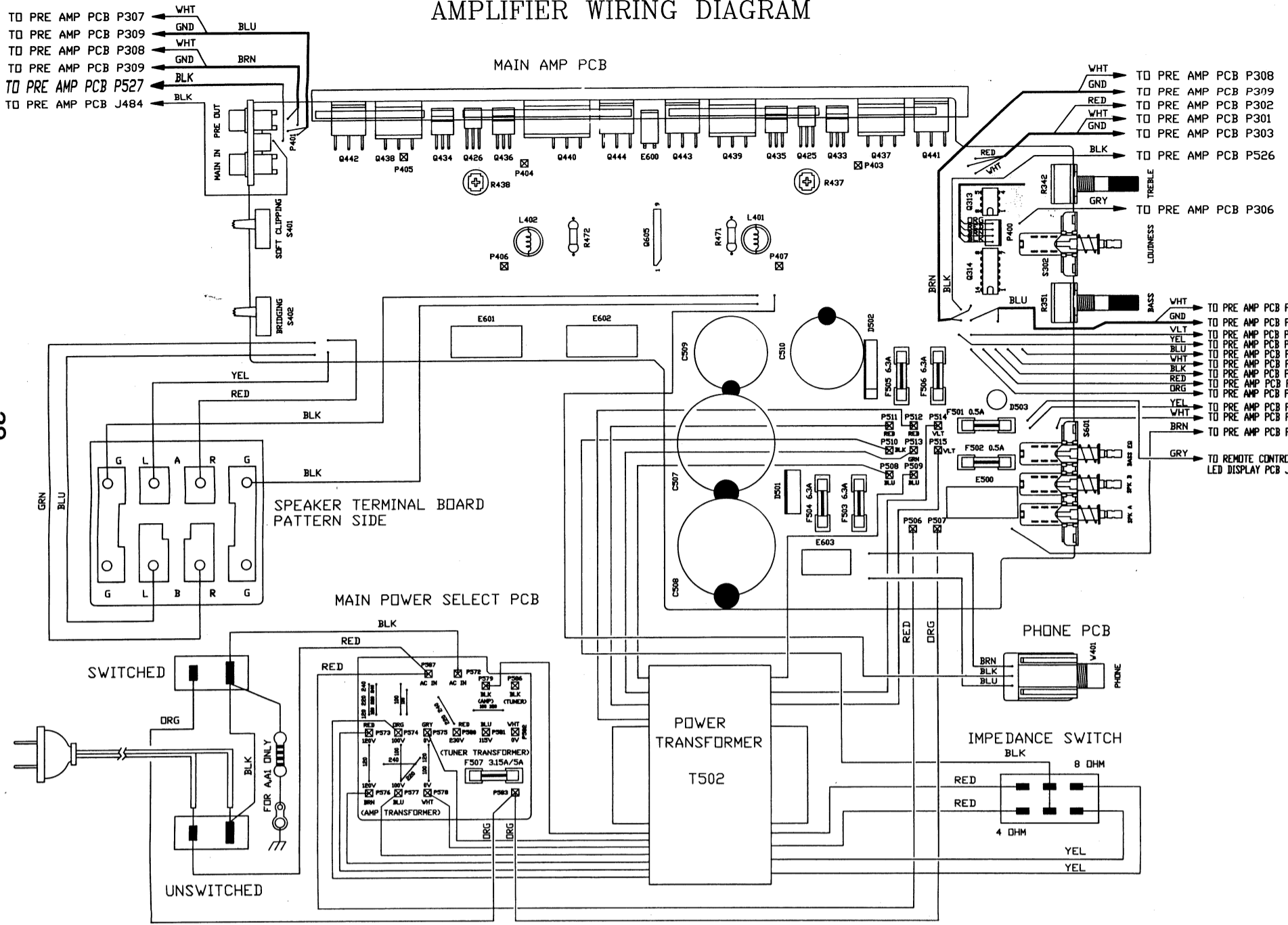
REMOTE/DISPLAY PCB LAYOUT COMPONENT SIDE



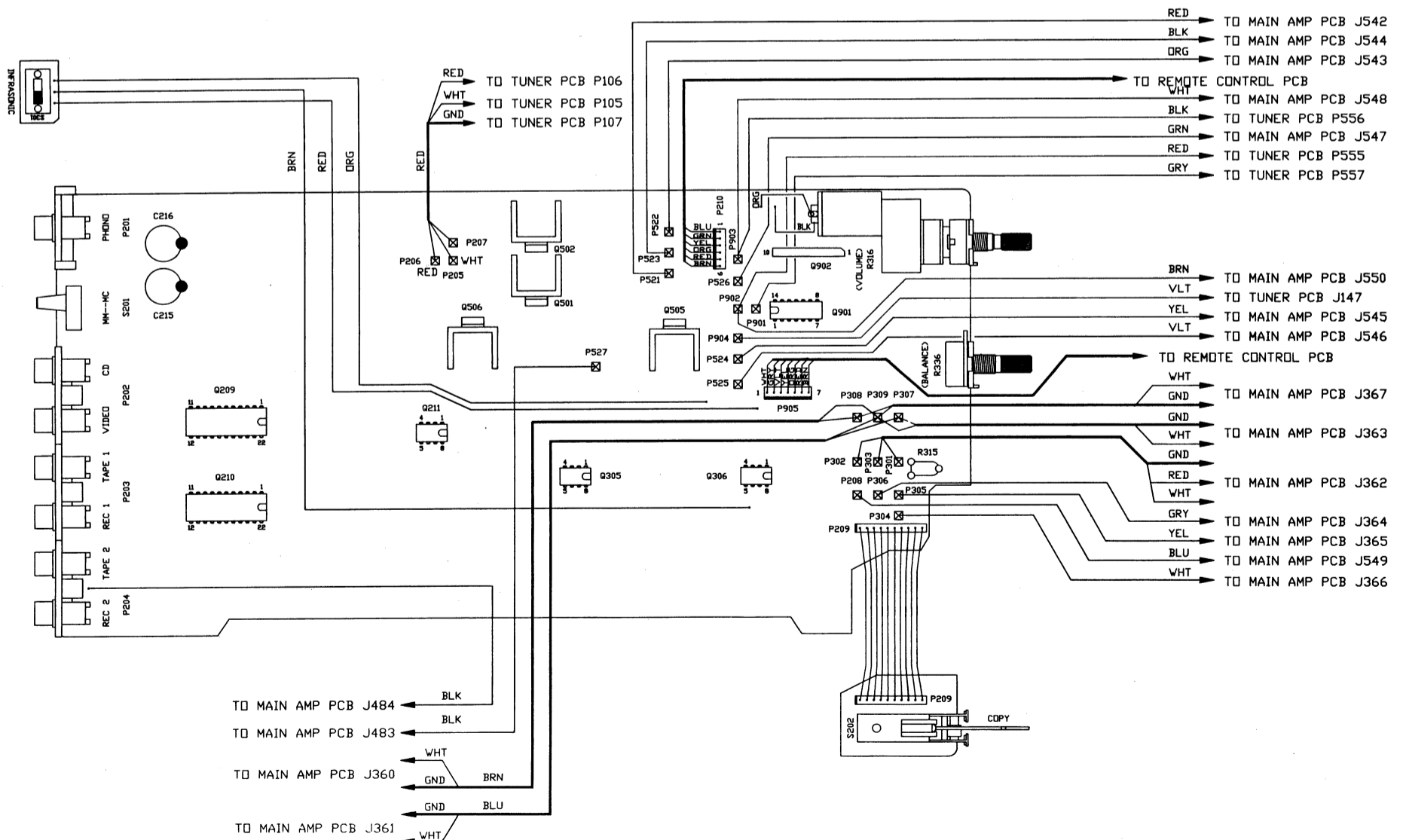


REMOTE/DISPLAY SCHEMATIC

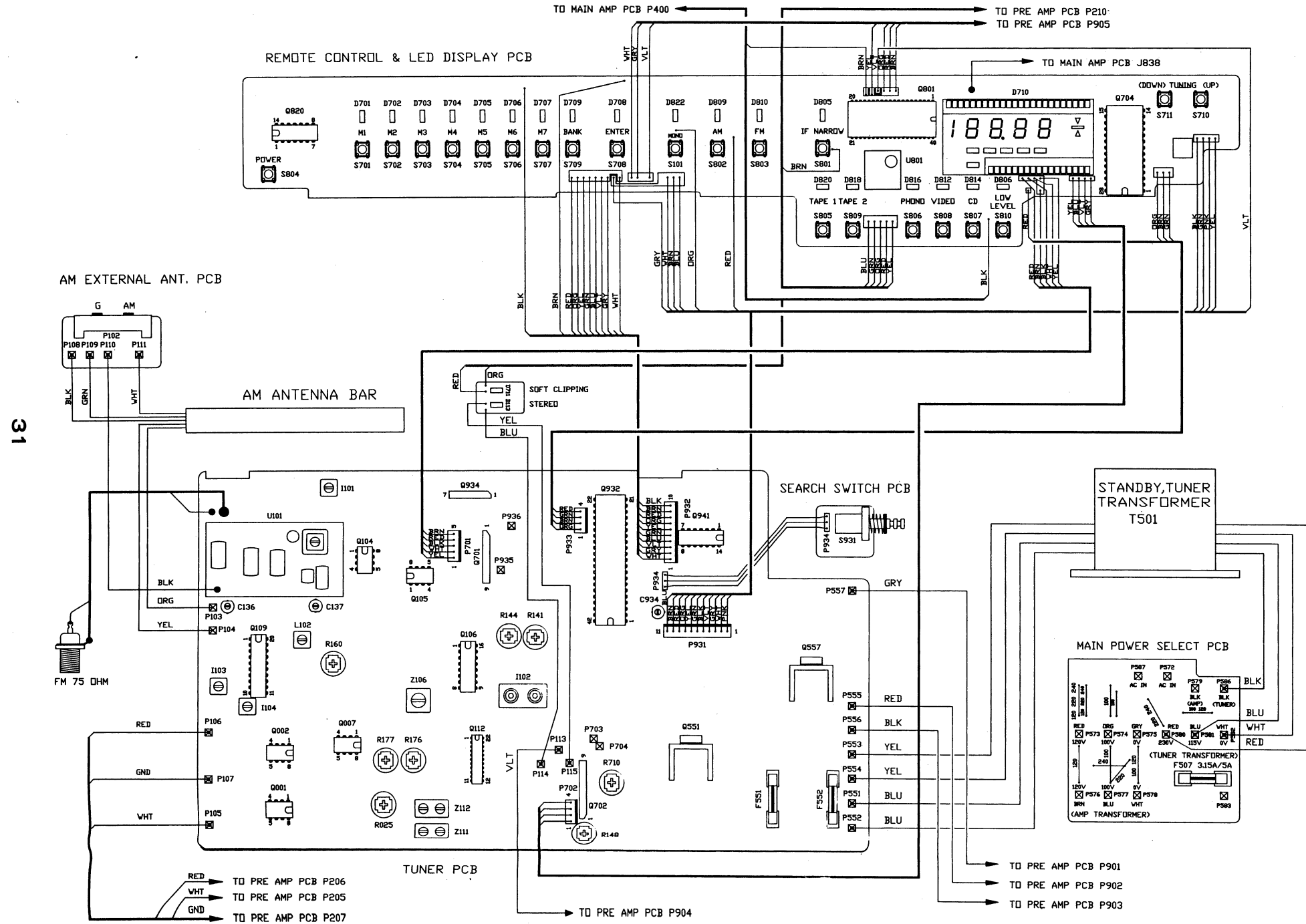
AMPLIFIER WIRING DIAGRAM



PRE AMP WIRING DIAGRAM

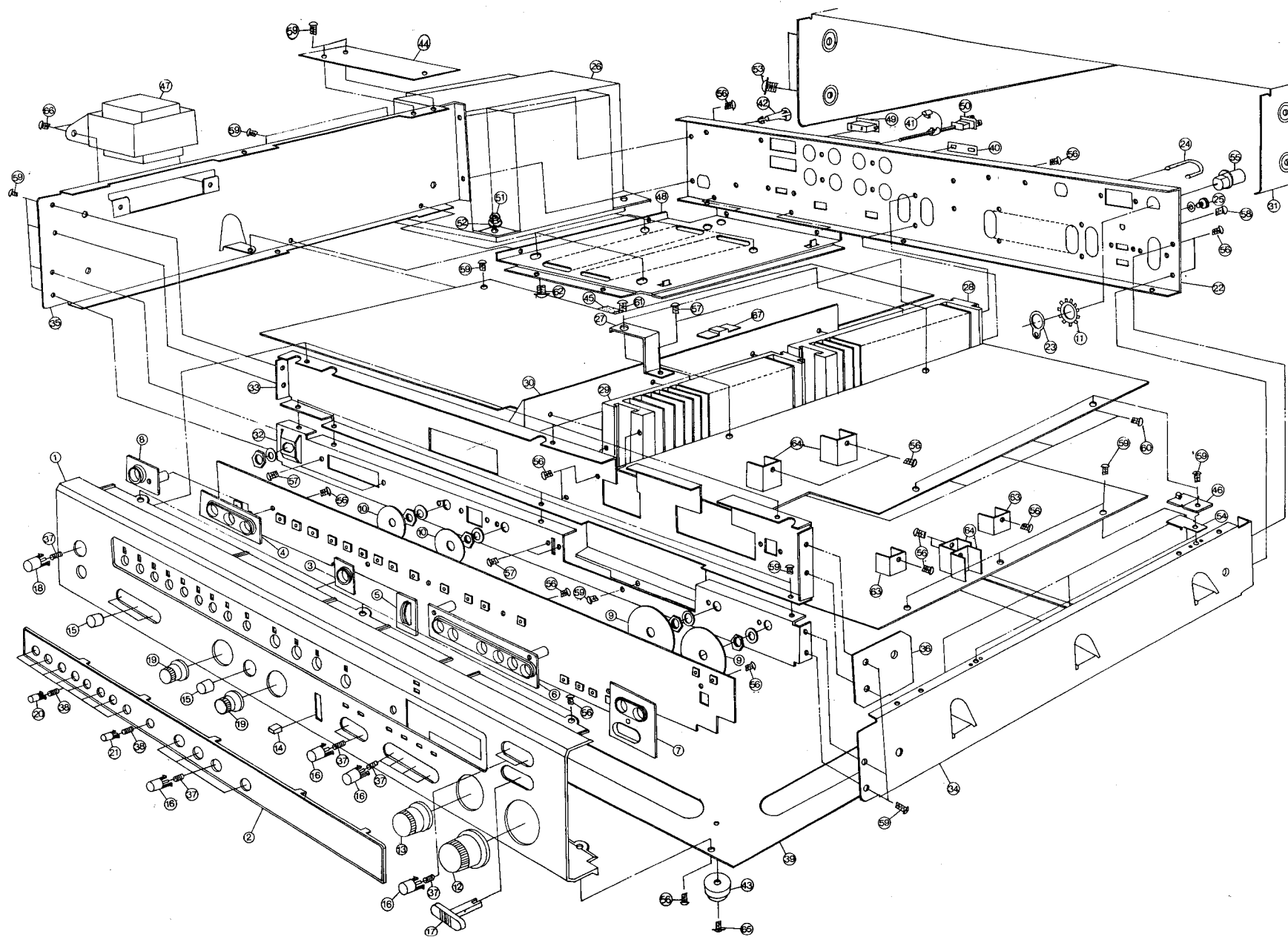


TUNER AND REMOTE/DISPLAY WIRING



31

EXPLODED VIEW

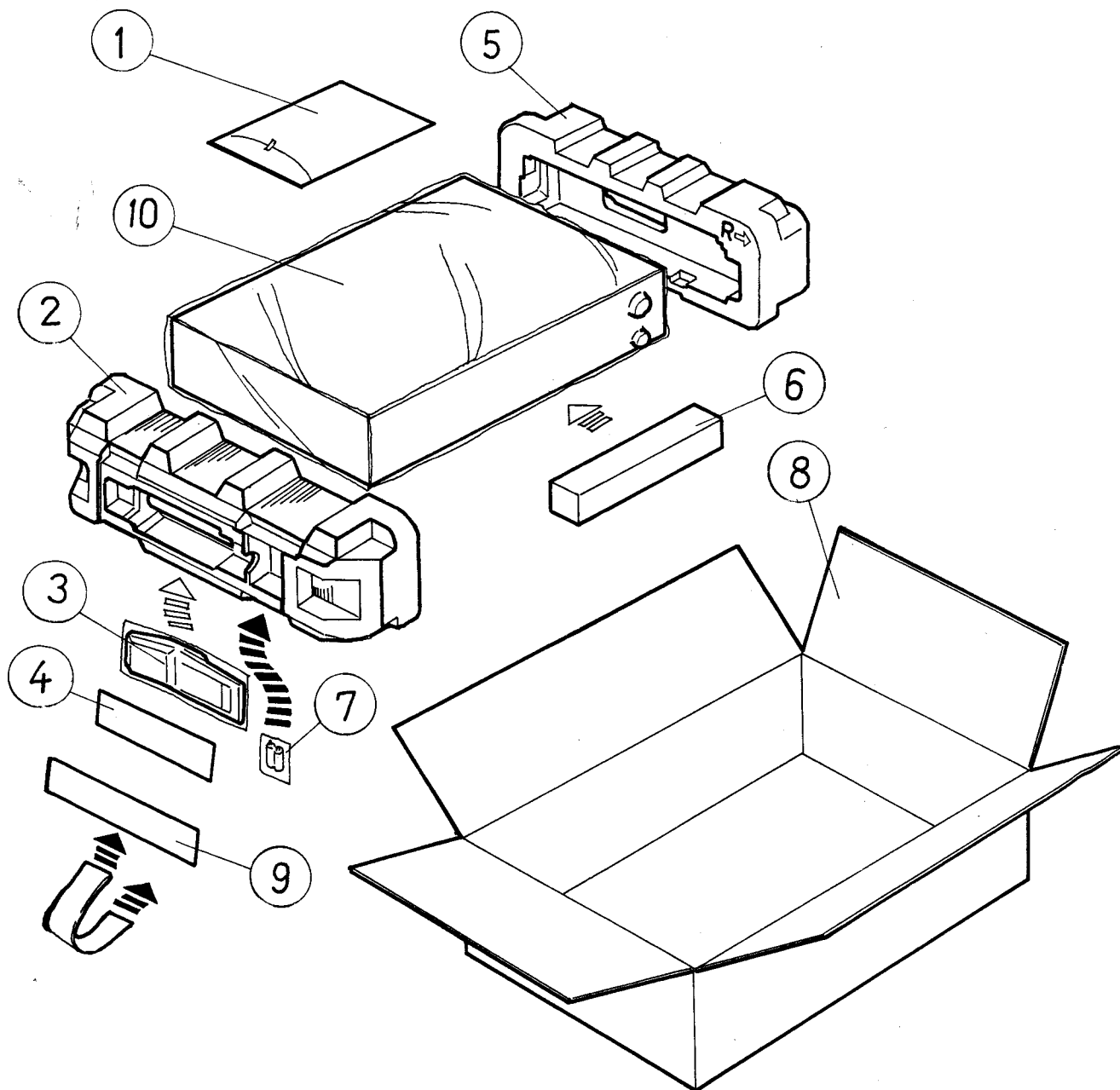


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NAD-7100 EXPLODED PARTS LIST :

ITEM	PARTS NO.	PARTS NAME	Q'TY
1	5541213100	FRONT PANEL	1
2	5542909400	RECEIVER WINDOW	1
3	5542225000	BEZEL (A)	1
4	5542225100	BEZEL (B)	1
5	5542225200	BEZEL (C)	1
6	5542225300	BEZEL (D)	1
7	5542225800	DOUBLE BEZEL	1
8	5542225400	POWER BEZEL	1
9	5542006110	HEMELON (L)	2
10	5542006100	HEMELON (S)	2
11	7101201202	LOCK WASHER	1
12	5541537900	VOL. KNOB	1
13	5541538000	VOL. KNOB (S)	1
14	5541537800	TOGGLE CAP	1
15	5541537700	PUSH BUTTON	4
16	5541537300	BAND KNOB	12
17	5541537600	PLAY BUTTON	1
18	5541537200	POWER KNOB	1
19	5541537500	CONTROL KNOB	2
20	5541537100	PUSH KNOB (S)	8
21	5541537110	PUSH KNOB (S)	1
22	5547131900	BACK PLATE	1
23	5547033900	LUG	1
24	5547033600	TERMINAL CONNECTOR	2
25	5546121400	TERMINAL	1
26	5561317000	TRANSFORMER (L)	1
27	5547033700	TUNER HOLDER	2
28	5545307800	HEAT SINK (A)	1
29	5545307810	HEAT SINK (B)	1
30	5545307700	TRANSISTOR HOLDER	1
31	5541002300	TOP COVER	1
32	5547131500	FRONT BRACKET (A)	1
33	5547132000	FRONT BRACKET (B)	1
34	5547131700	RIGHT PLATE	1
35	5547131600	LEFT PLATE	1
36	5547033800	RIGHT BRACKET PLATE	1
37	5546323000	PLAY SPRING	13
38	5546322900	PUSH SPRING	9
39	5547131800	CHASSIS	1
40	5547528400	PLATE, SWITCH LOCK (PVC)	1
41	5547501200	BUSHING, POWER CORD	2
42	5547530400	HOLDER-PCB	3
43	5547802120	FOOT	4
44	5545403700	SHIELD COVER	1
45	5532410700	SPACER	2
46	5419700191	HINGE	2
47	5561317020	TRANSFORMER (S)	1
48	5547131100	TRS. PLATE	1
49	5556308320	AC OUTLET	2
50	5556702130	POWER PLUG	1
51	7076260012	NUT 4	4
52	7098250002	WASHER	4
53	7190550003	M4x6 MS	6
54	5547035800	AUX. PLATE	2
55	5556205300	TERMINAL	1
56	7033161156	RUD M3x8 TS	47
57	7001171116	PAN M3x8 MS	6
58	7001120216	PAN M2.5x4 MS	2
59	7033160652	RUD M3x6 TS	35
60	7031161452	PAN M3x10 MS	4
61	7033251452	RUD M4x10 TS	2
62	7000311142	RUD M4x14 TS	4
63	5545306900	HEAT SINK	2
64	5545306910	HEAT SINK (S)	4
65	7000305022	M3x10 TS	4
66	7000305012	M3x8 TS	2
67	5547034000	THERMAL PROTECTOR HOLDE	2

PACKING DIAGRAM



PACKING LIST FOR NAD-7100

ITEM	PARTS NO.	NAME	QTY
1	5535122011	OWNERS MANUAL	1
2	9520680155	POLYLON L.	1
3	5552000200	REMOTE CONTROL TRANSMITTER	1
4	- - - - -	R/C TRANSMITTER MANUAL	1
5	9520680255	POLYLON R.	1
6	9520685155	POLYLON BAR	1
7	6910151403	BATTER, DRY	1
8	9510680155	CARTON	1
9	9510685155	PAPER PLATE	1
10	9530680155	EPE BAG	1