

# **NAD** SERVICE MANUAL

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**3225PE**  
**3020i**  
**INTEGRATED AMPLIFIERS**

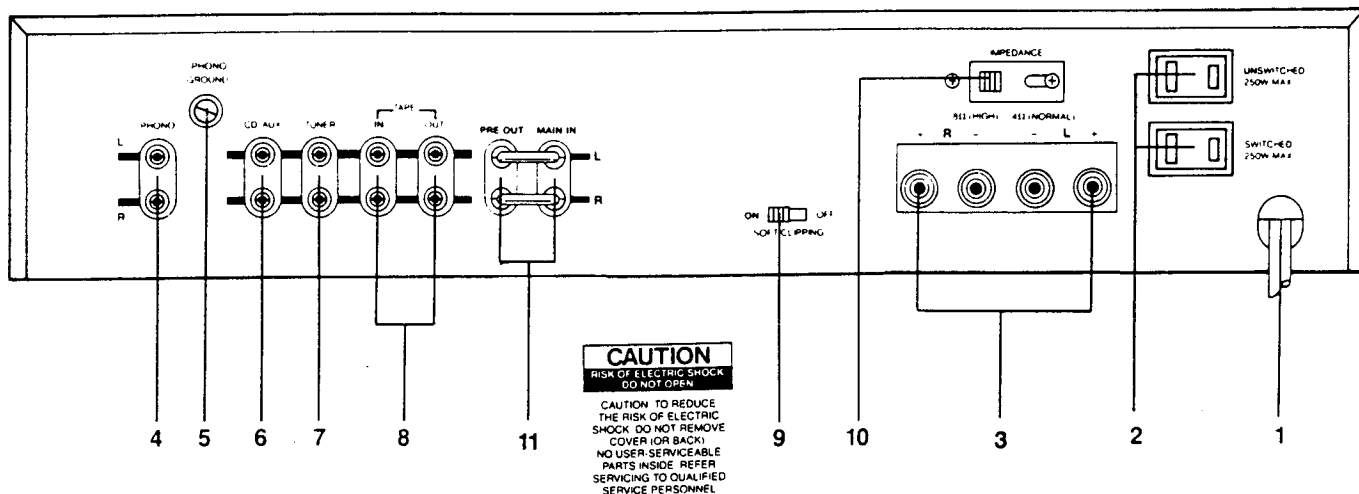
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**REAR PANEL**

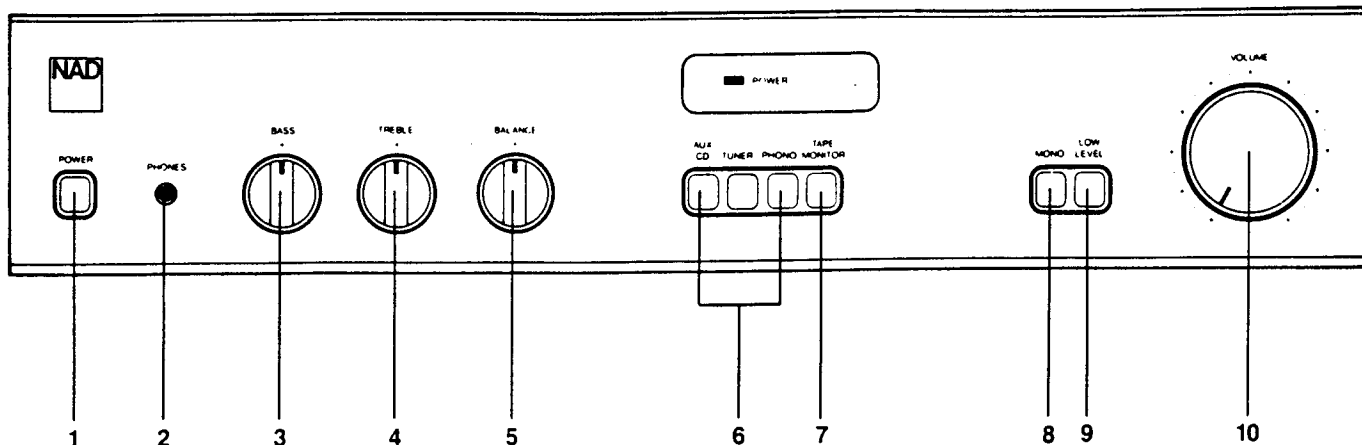
1. AC Line Cord.
2. AC Outlets (not in U.K. version).
3. Speakers.
4. Phono Input.
5. Phono Ground.
6. CD/Aux Input.
7. Tuner Input.
8. Tape Input-Output.
9. Soft Clipping.
10. Speaker Impedance.
11. Preamp Out/Main In



**FRONT PANEL**

1. Power.
2. Phones.
3. Bass.
4. Treble.
5. Balance.
6. Input Selector.
7. Tape Monitor.
8. Mono.
9. Low Level.
10. Volume.

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# INTEGRATED AMPLIFIER SPECIFICATION NAD 3020i/3225PE

## Power Amplifier Section

### Stereo Mode

	<b>3020i</b>	<b>3225PE</b>
<b>CONTINUOUS AVERAGE POWER</b>	20W (13dbW)	25W (14dbW)
<b>OUTPUT INTO 8 OHMS</b>		
(Min. Power per channel, 20Hz-20KHz, both channels driven, with no more than rated distortion)		
<b>Rated Distortion</b>	0.03 %	0.03 %
(THD 20Hz-20KHz)		
<b>Clipping Power</b>	30W	40W
(Maximum continuous power per channel)		
<b>IHF Dynamic Headroom at 8 ohms</b>	+3db	+4db
<b>IHF Dynamic Power (Maximum short term power per channel)</b>		
8 ohms:	40W(16dbW)	60W(18dbW)
4 ohms:	40W(16dbW)	85W(19dbW)
2 ohms:	50W(17dbW)	90W(19.5dbW)
	> 50	> 50
<b>Slew Factor</b>	15V/uSec	15V/uSec
<b>Slew Rate</b>	> 40	> 40
<b>Damping Factor</b>		
(ref. 8 ohms 50 Hz)		
<b>Input Impedance</b>	R=20Kohm C=470pf	R=20Kohm C=820pf
<b>Input Sensitivity</b>		
at 8 ohms	1W 20W 25W	200mV 900mV
<b>Voltage Gain</b>	X14 (23db)	X14 (23db)
<b>Frequency Response</b>	6Hz to 80KHz +0,-3db	6Hz to 60KHz +0,-3db
<b>Signal/Noise ratio, A Weighted</b>		
Ref. 1W	100db	100db
Ref. Rated power	113db	114db
<b>THD</b>	< 0.03 %	< 0.03 %
(Total Harmonic Distortion 20Hz-20KHz, from 250mW to rated output)		
<b>SMPTE I.M.</b>	< 0.03 %	< 0.03 %
(Intermodulation Distortion, 60Hz+7KHz, 4:1 From 250mW to rated output)		
<b>IHF I.M.</b>	< 0.03 %	< 0.03 %
(CCIF IM Distortion, 19+20KHz at rated output)		
<b>Preamplifier Section</b>		
<b>Phono Input</b>		
<b>Input Impedance (R and C)</b>	MM: 47Kohm + 300pf	47Kohm + 300pf
<b>Input Sensitivity ref. 1W/20W</b>	MM: 0.55mV/2.4mV	
1W/25W 1KHz	MM: 0.52mV/2.5mV	
<b>Input Overload at 20Hz</b>	MM: 20mV	20mV
1KHz	200mV	200mV
20KHz	1.7V	1.7V
<b>RIAA Accuracy</b>	+/-0.5db	+/-0.5db
<b>Signal/Noise ratio (A-Weighted with cartridge connected)</b>		
ref. 5mV in.	MM: 75db	75db
<b>Line Level Inputs (CD, Video, Tape)</b>		
<b>Input Impedance (R and C)</b>	40Kohm + 440pf	40Kohm + 440pf
<b>Input Sensitivity ref. 1W/20W</b>	33mV/150mV	
1W/25W		34mV/160mV
<b>Maximum Input Signal</b>	> 10V	> 10V
<b>Signal/Noise ratio (ref. 1W)</b>	87db	87db
(A Weighted) (ref. rated power)	100db	101db
<b>Frequency Response, 20Hz-20KHz</b>	+0.5db, -1db -3db at 12Hz	+0.5db, -1db -3db at 12Hz
<b>Infrasonic Filter</b>	18db/Octave	18db/Octave
<b>THD (20Hz-20KHz at 5V RMS Out)</b>	0.01 %	0.01 %
<b>Line Level Outputs</b>		
<b>Preamp Output Impedance</b>	600 ohms	600 ohms
<b>Maximum Output Level</b>	14V	12V
<b>Tape output Impedance</b>	Source Z + 2K ohms	Source Z + 2K ohms
<b>Controls</b>		
<b>Treble</b>	10KHz +/- 7db	+/- 7db
<b>Bass</b>	50Hz +/- 10db	+/- 10db
<b>Audio Muting (Low Level)</b>	-20db	-20db
<b>Power Consumption</b>		
<b>Net Weight</b>	140W	150W
<b>Dimension (Width x Height x Depth)</b>	5Kg 420x80x250mm	5Kg 420x80x250mm

## ALIGNMENT METHOD

### AUDIO SECTION 3225PE/3020i

#### IMPORTANT

Speaker impedance switch should be in 8 ohm position while adjust center voltage and idling current.

#### INITIAL ADJUSTMENT (No load connected)

##### A. CENTER VOLTAGE

1. Connector DC millivoltmeter to L channel output terminal.
2. Turn on and adjust to 0 V +/- 30mV with R411 (470 ohm). Connect DC millivoltmeter to R channel output terminal and adjust R412 to 0 V +/- 30mV.

##### B. IDLING CURRENT

1. Remove solder short across R455 and R456.
2. Connect DC millivoltmeter across R455 (1 ohm) (output transistor's collector resistor) and adjust R443 for 26-30mV reading on meter. Repeat adjustment with R444, connecting meter across R456 (1 ohm).
3. Leave power on for minimum 5 minutes.

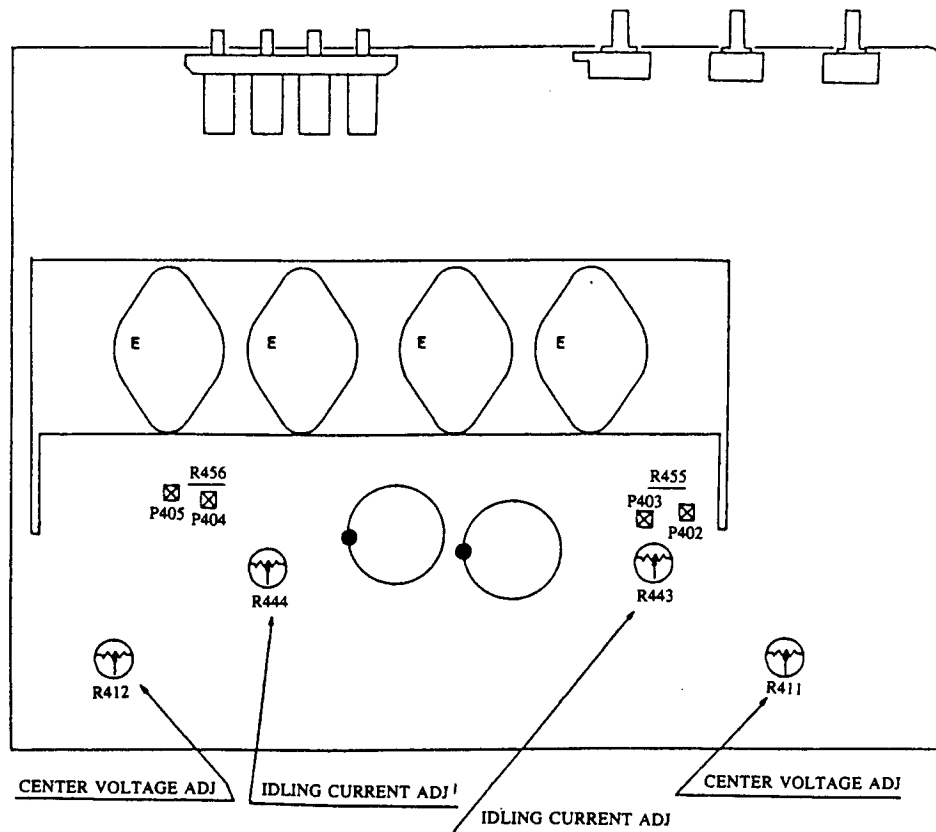
#### FINAL ADJUSTMENT

##### C. CENTER VOLTAGE

1. Repeat step A about.

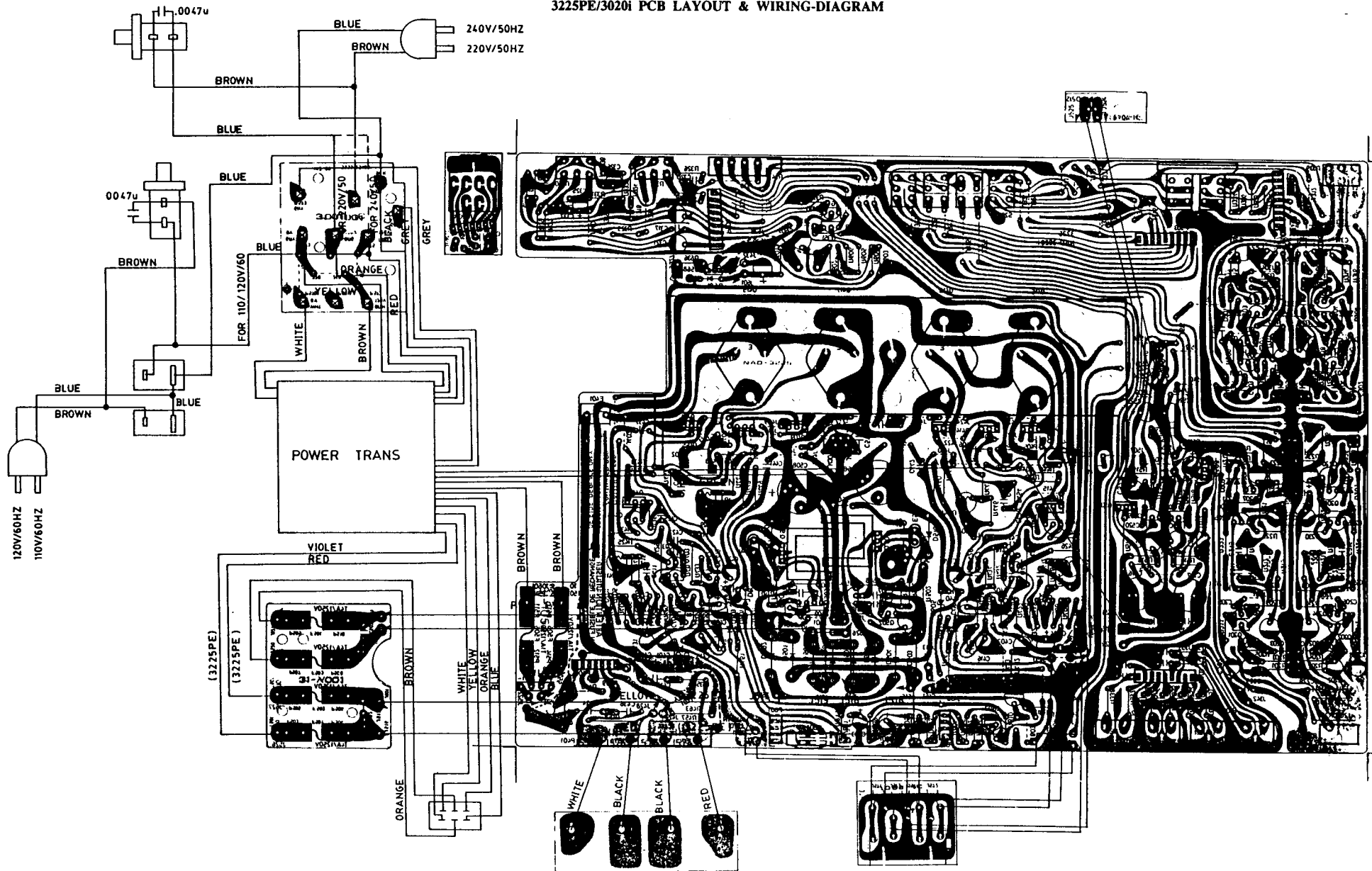
##### D. IDLING CURRENT

1. Repeat step B and adjust with R443, R444 for 30mV reading on meter.
2. After the alignment is finished, 1 ohm resistor R455, R456 is shorted by solder short.

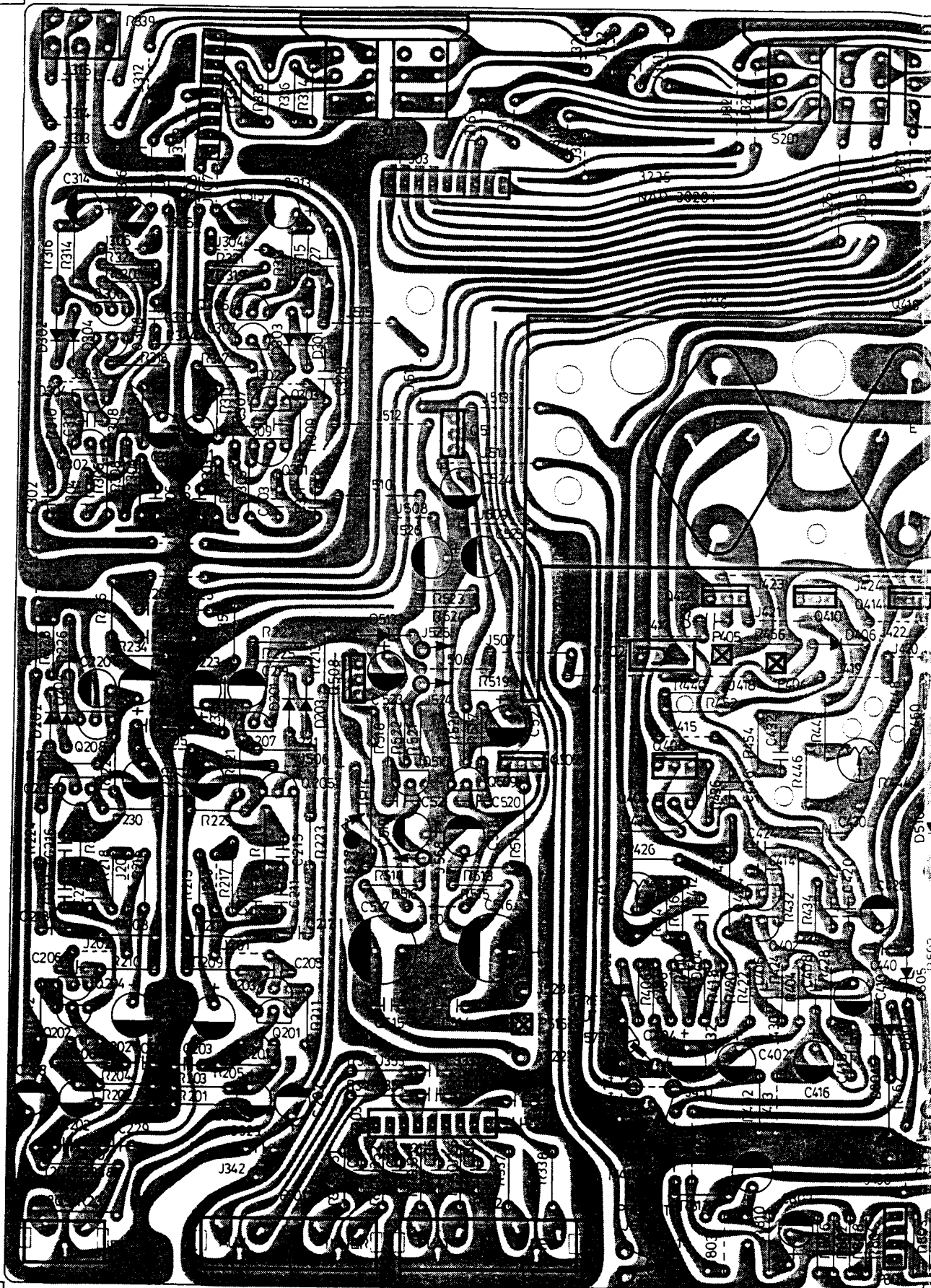


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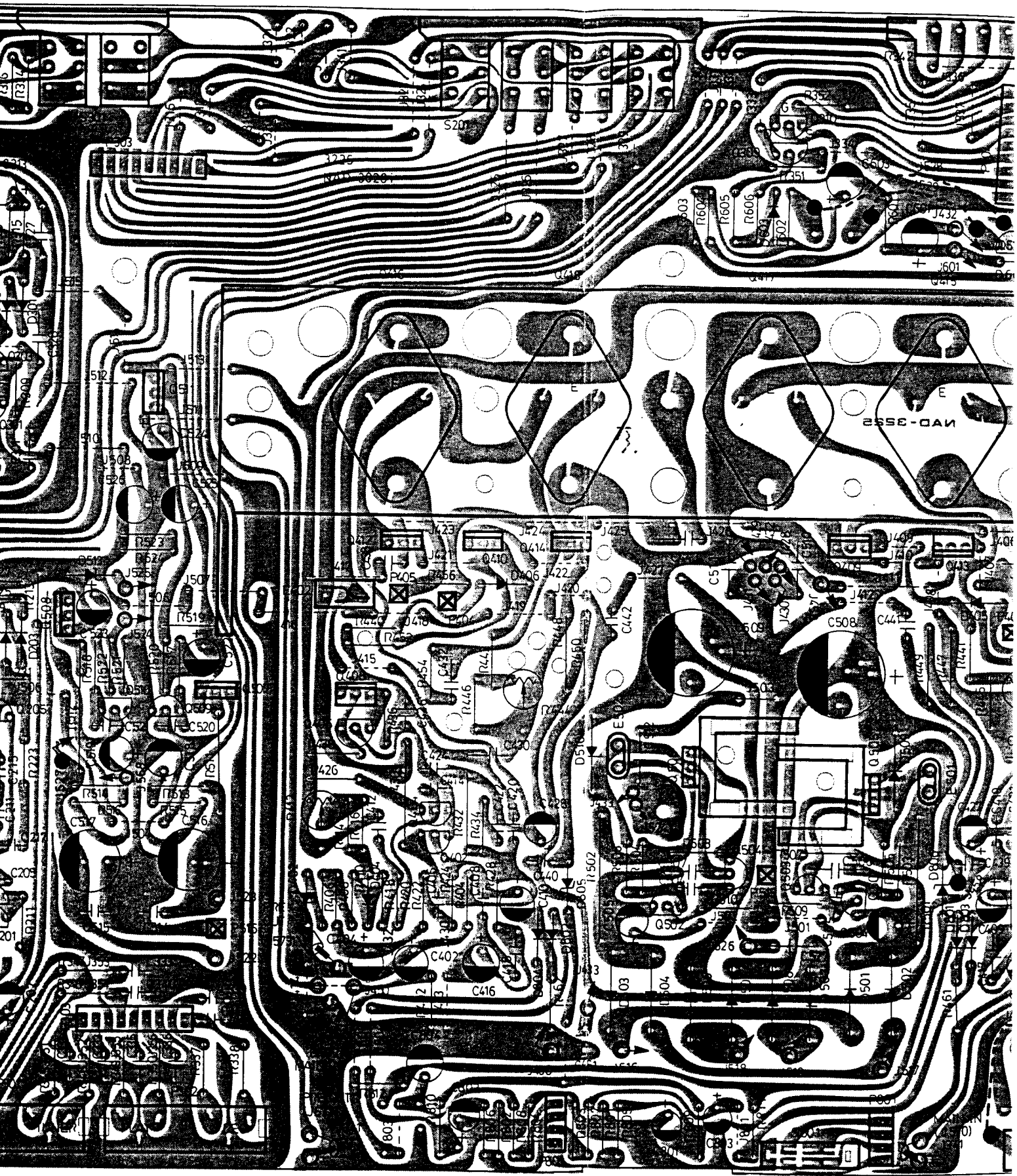
3225PE/3020I PCB LAYOUT & WIRING-DIAGRAM



# NAD3225PE AMPLIFIER PCB LAYOUT

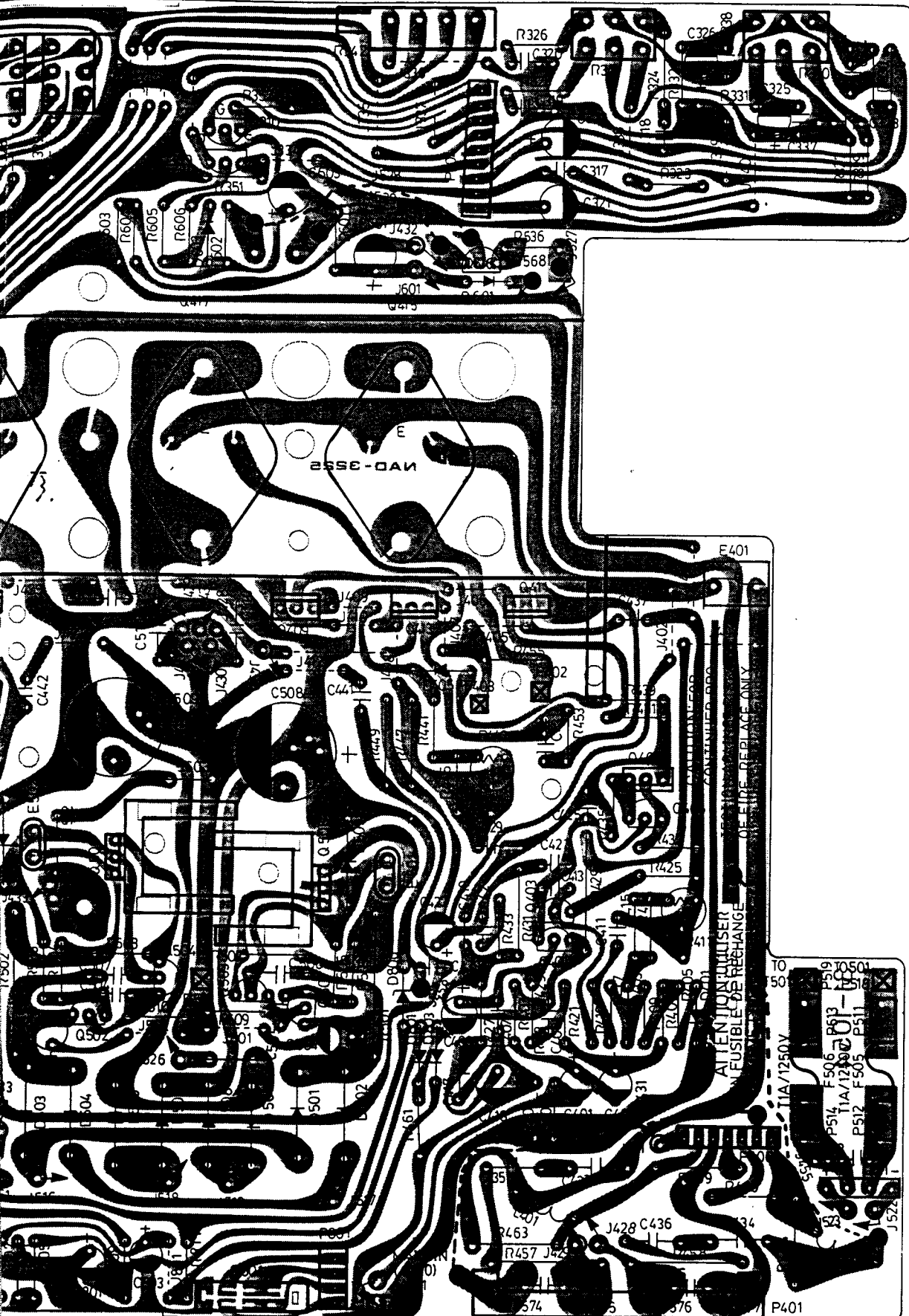


# 25PE AMPLIFIER PCB LAYOUT

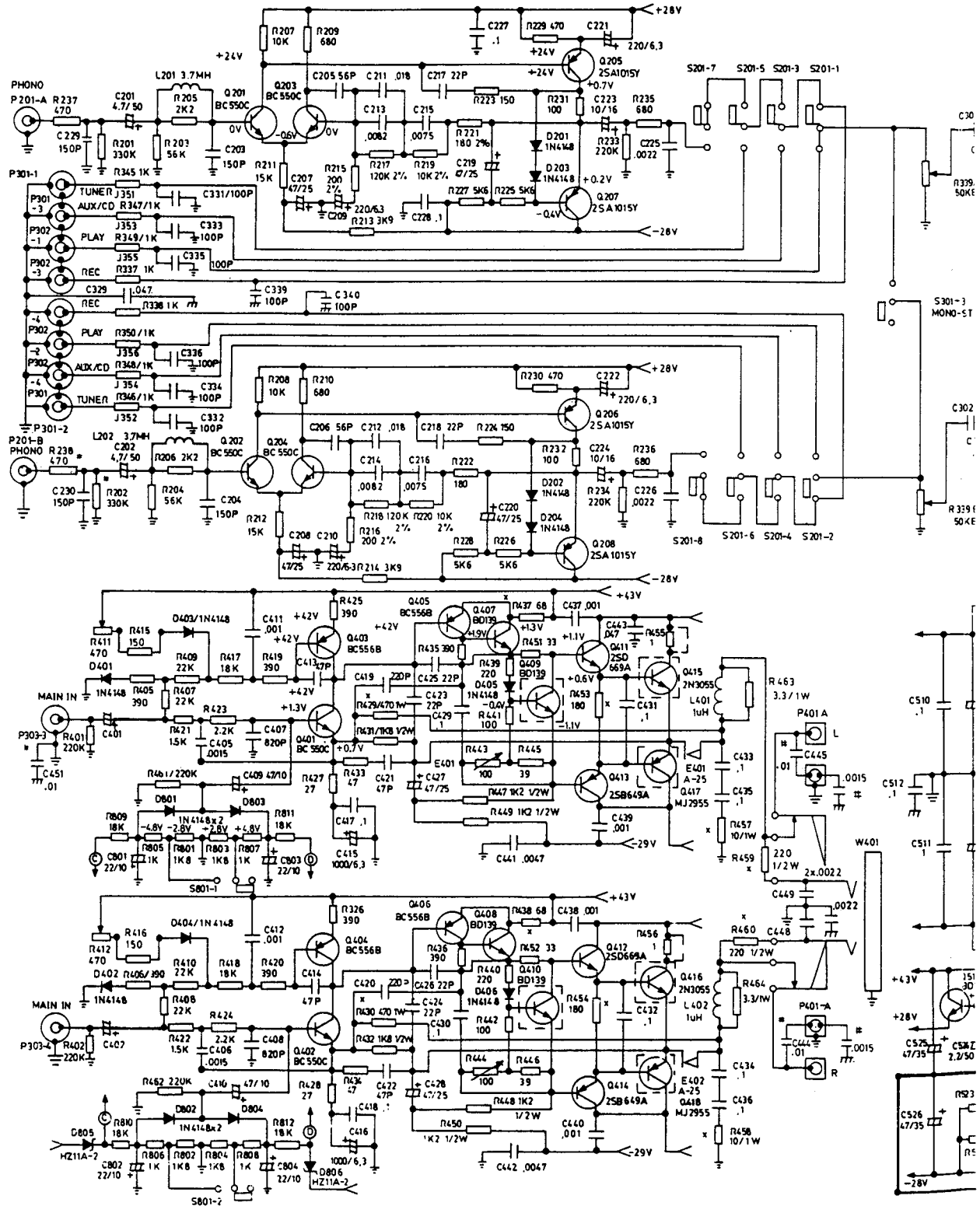


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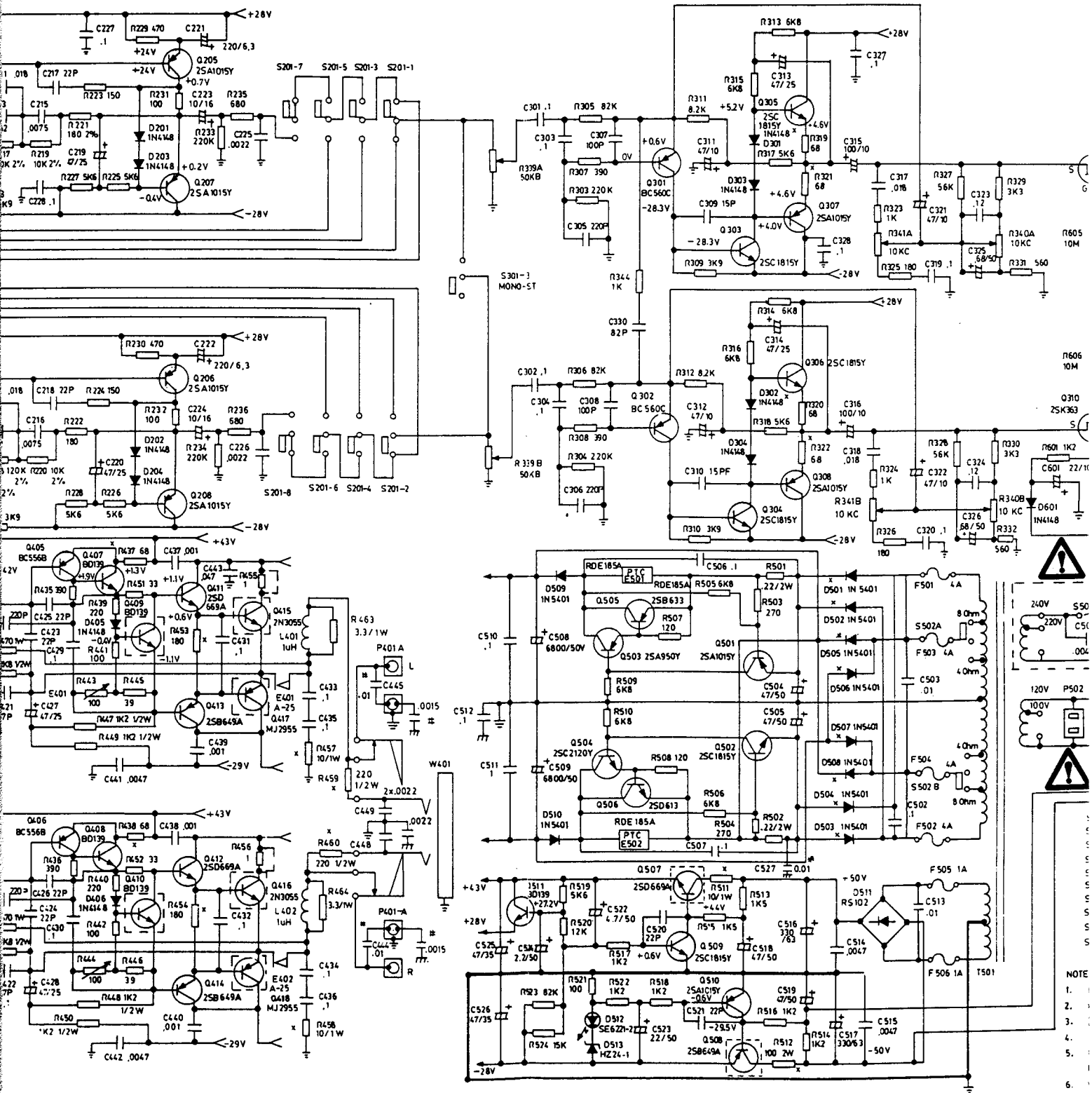


# SCHEMATIC DIAGRAM NAD3225PE AMI



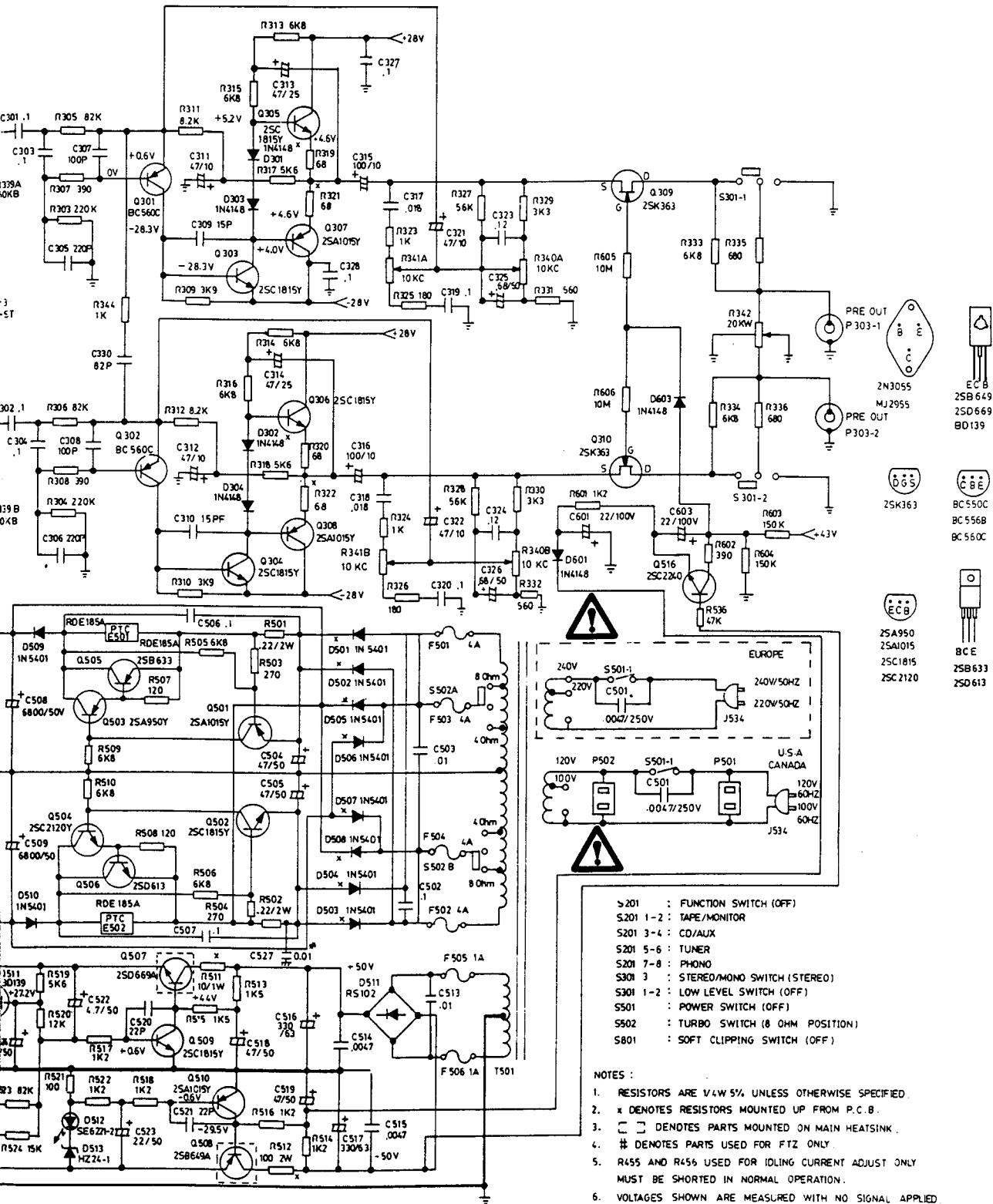
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# SCHEMATIC DIAGRAM NAD3225PE AMPLIFIER



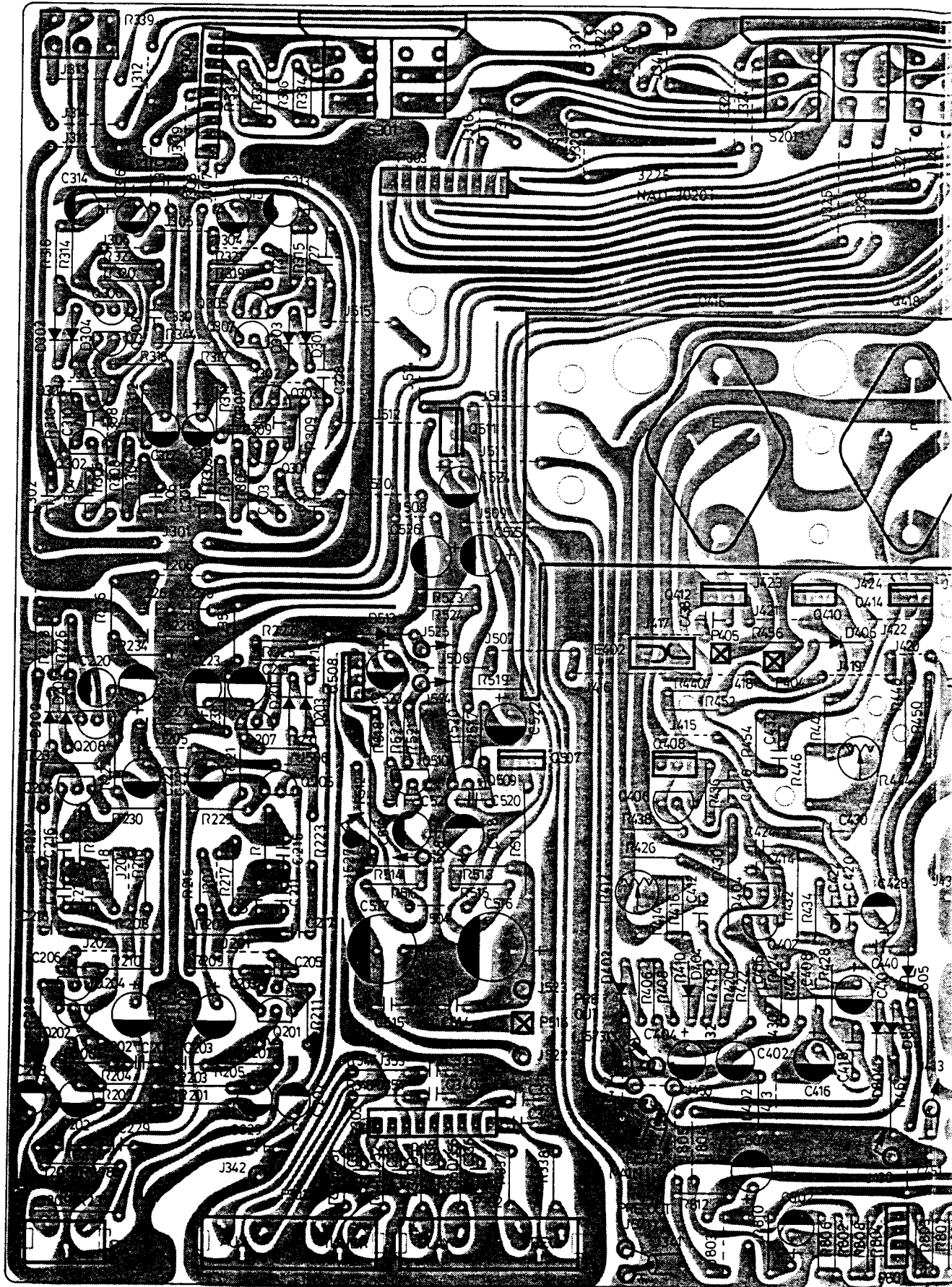
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# AMPLIFIER



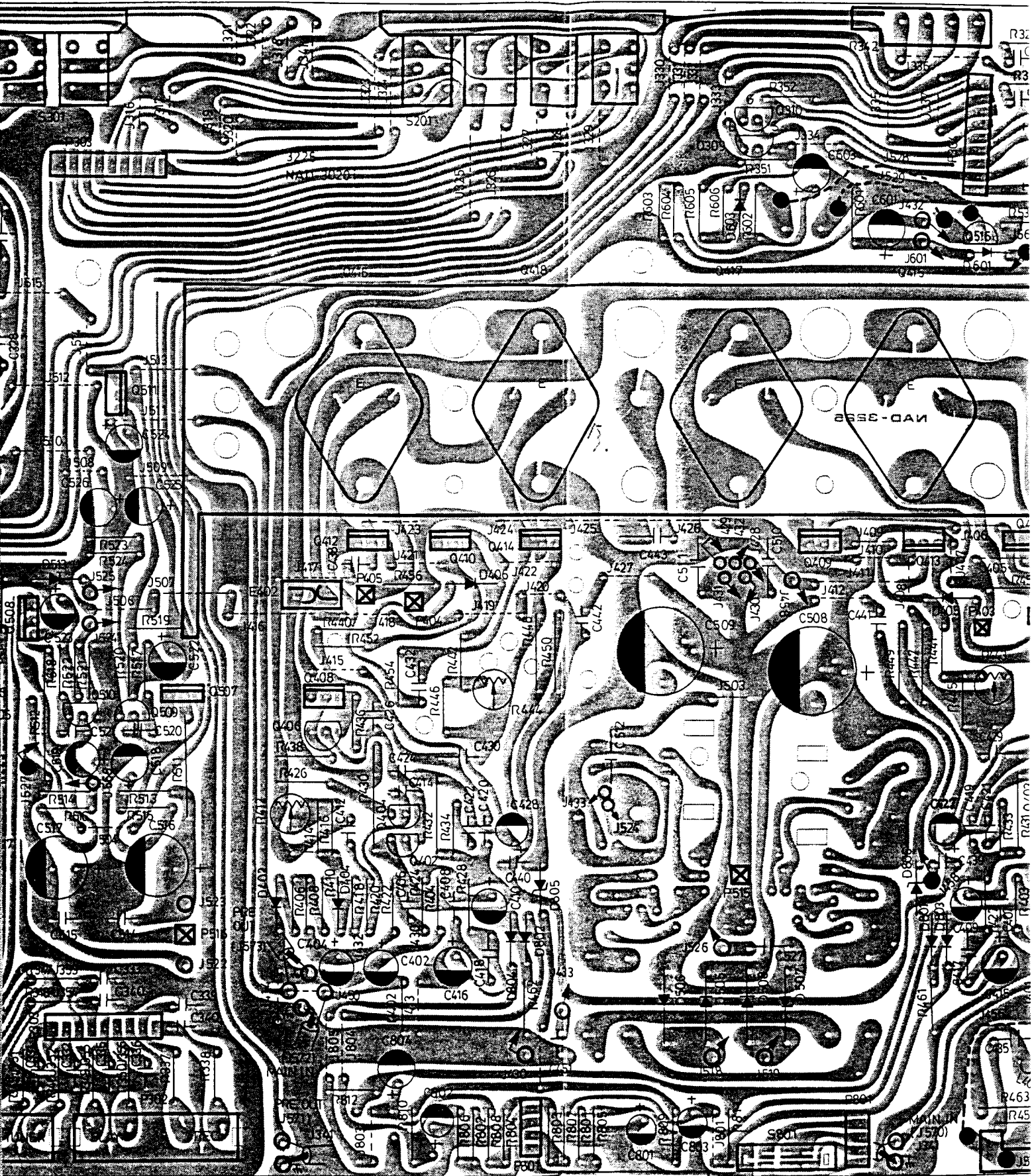
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# NAD3020i AMPLIFIER PCB LAYOUT



MC-Service

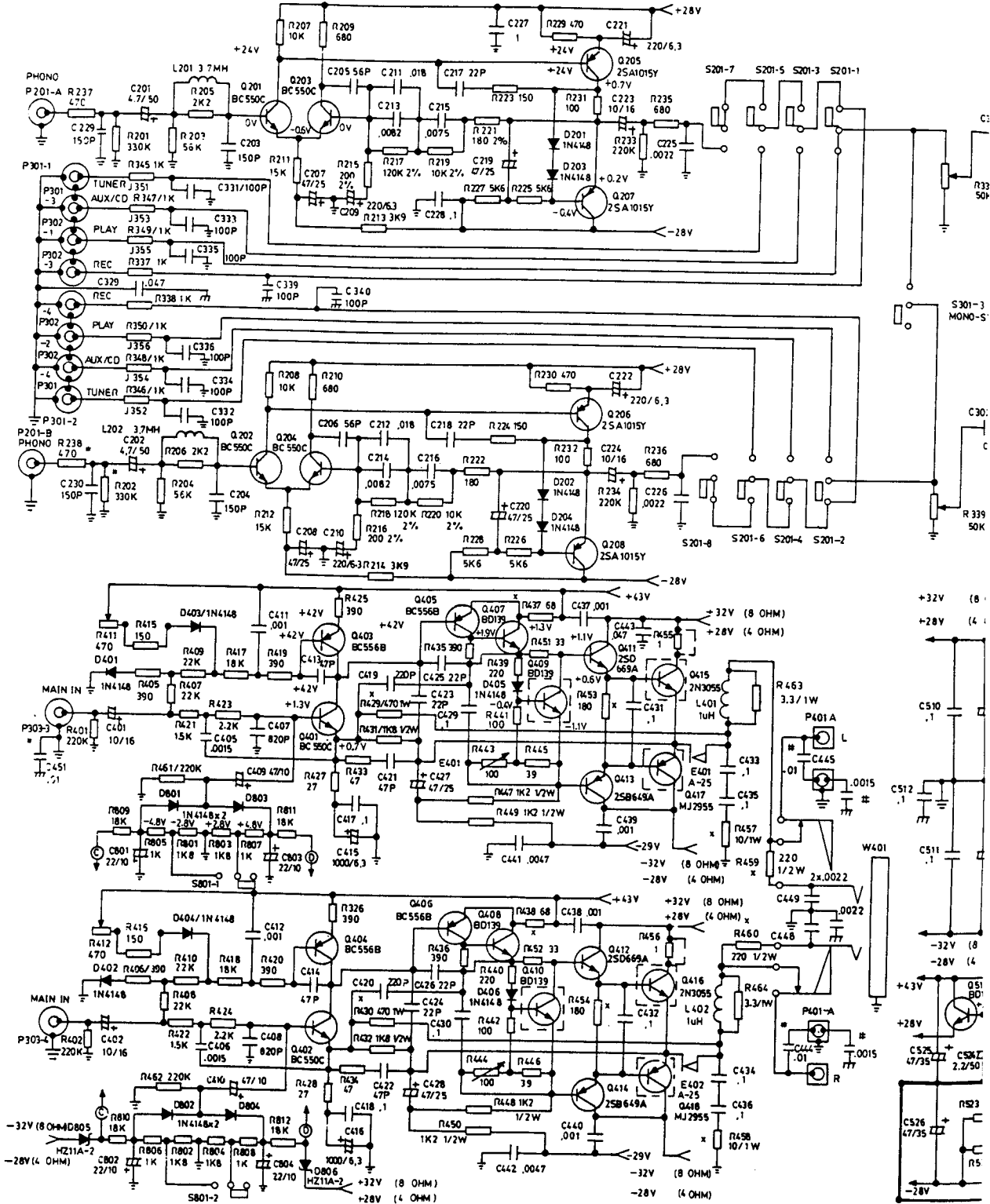
# AMPLIFIER PCB LAYOUT







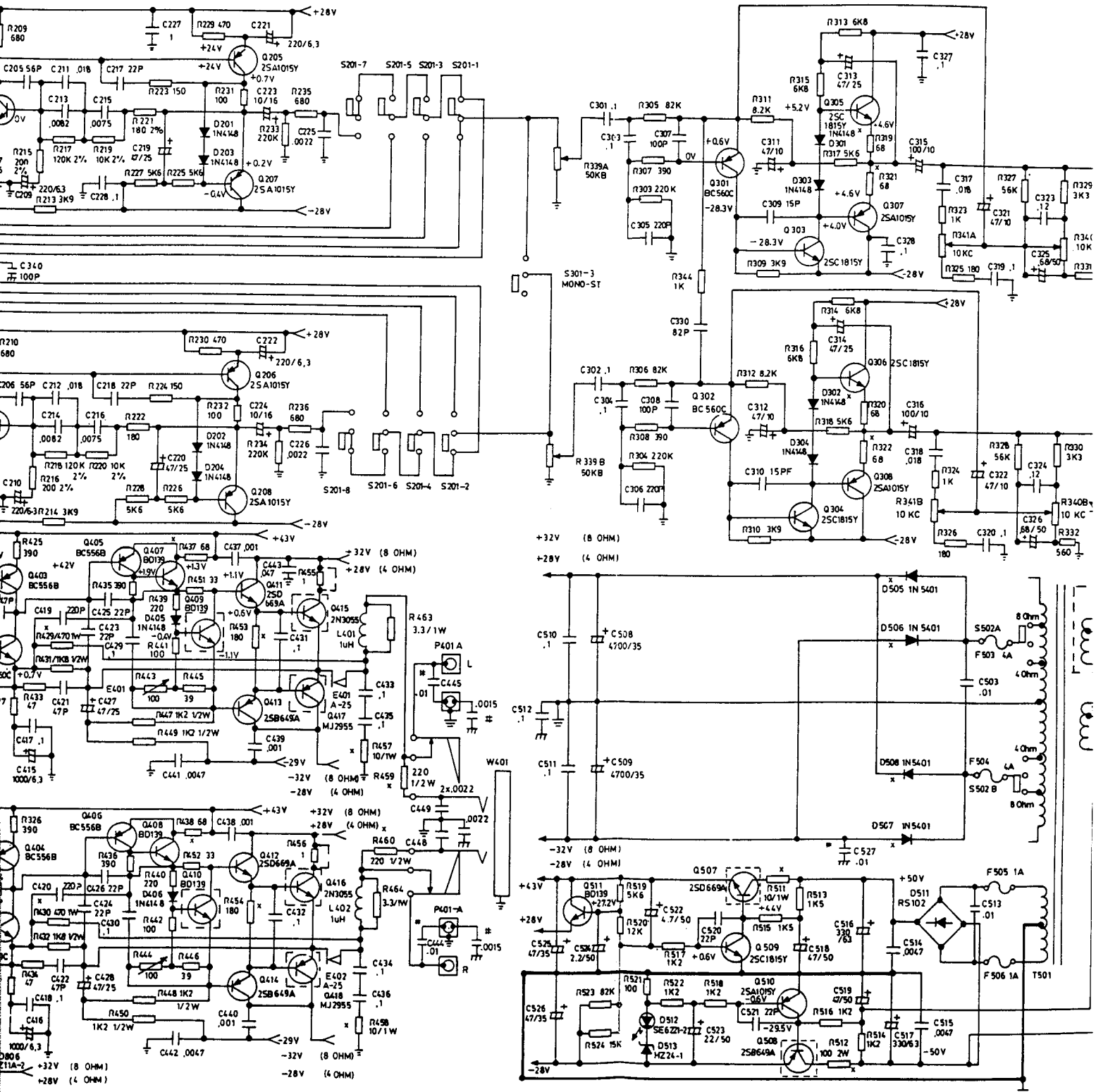
# SCHEMATIC DIAGRAM NAD3020i AMPLIFIER



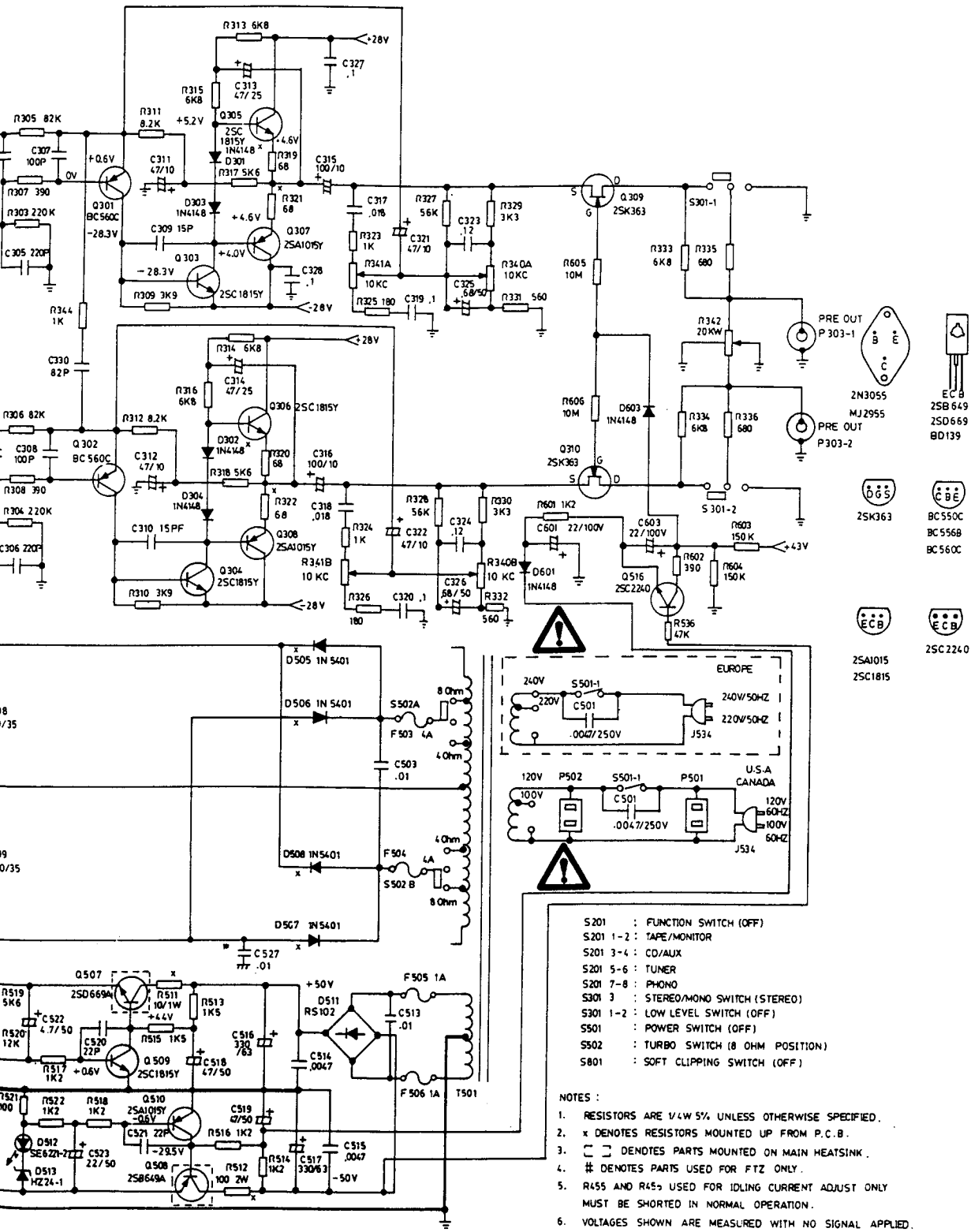
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# SCHEMATIC DIAGRAM NAD3020i AMPLIFIER



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- S201 : FUNCTION SWITCH (OFF)
- S201 1-2 : TAPE/MONITOR
- S201 3-4 : CD/AUX
- S201 5-6 : TUNER
- S201 7-8 : PHONO
- S301 3 : STEREO/MONO SWITCH (STEREO)
- S301 1-2 : LOW LEVEL SWITCH (OFF)
- S501 : POWER SWITCH (OFF)
- S502 : TURBO SWITCH (8 OHM POSITION)
- S801 : SOFT CLIPPING SWITCH (OFF)

- NOTES :
1. RESISTORS ARE 1/4W 5% UNLESS OTHERWISE SPECIFIED.
  2. x DENOTES RESISTORS MOUNTED UP FROM P.C.B.
  3. C DENOTES PARTS MOUNTED ON MAIN HEATSINK.
  4. # DENOTES PARTS USED FOR FTZ ONLY.
  5. R455 AND R456 USED FOR IDLING CURRENT ADJUST ONLY MUST BE SHORTED IN NORMAL OPERATION.
  6. VOLTAGES SHOWN ARE MEASURED WITH NO SIGNAL APPLIED.

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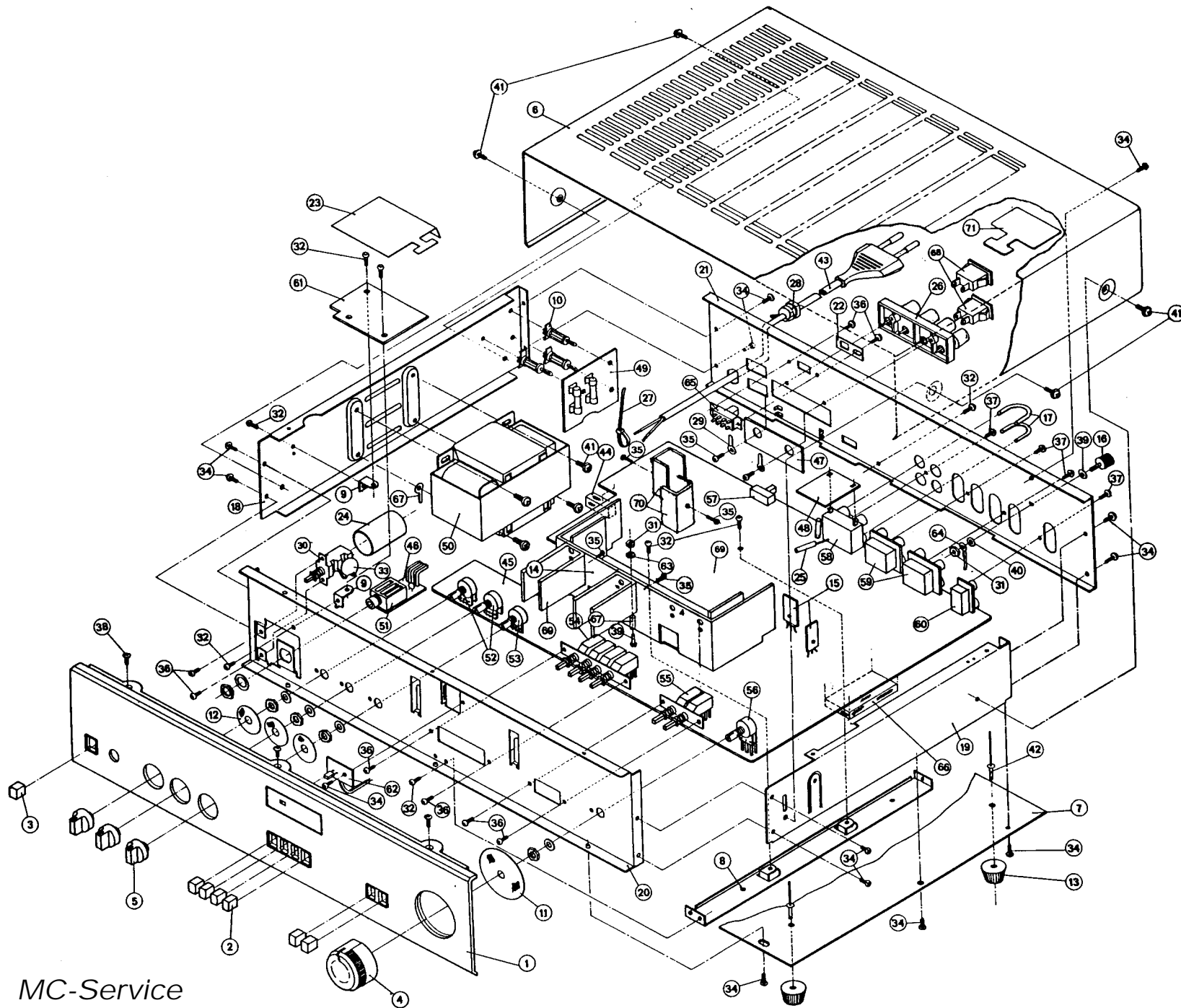


### 3225PE/3020i EXPLODED VIEW PARTS

ITEM	PARTS NO.	DESCRIPTION	QTY
1.	055-131A	Panel — Front	1
2.	073-1620	Button — Push	6
3.	073-1625	Button — Push (Power)	1
4.	081-1100	Knob — Volume	1
5.	081-1110	Knob — Control	3
6.	049-069A	Cover — Top	1
7.	049-0700	Cover — Bottom	1
8.	078-8120	Bracket — Middle	1
9.	078-8130	Bracket — Tuner PCB	2
10.	080-2090	Supporter — Circuit Board	3
11.	082-4490	Felt — Volume Knob	1
12.	082-4500	Felt — Control Knob	3
13.	082-4510	Rubber — Foot	4
14.	083-0710	Heat Sink	1
15.	083-0720	Heat Sink (S)	2
16.	085-1350	Thumb Screw Stud	1
17.	085-1360	Bar — Shorting	2
18.	095-7070	Plate — Left	1
19.	095-7080	Plate — Right	1
20.	095-7090	Plate — Front	1
21.	095-710E	Plate — Back (220V 50Hz 140W)	1
22.	095-7110	Plate — Switch	1
23.	095-7130	Plate — Terminal Board Cover	1
24.	099-0760	UL Heat Shrinkable Tube	0.03
25.	099-0770	UL Heat Shrinkable Tube	0.11
26.	099-0850	Loudspeaker Terminal Block	1
27.	527-060	Cable Tie 4"	8
28.	527-6002	Micro Bushing 4N40	1
29.	027-5000	Soldering Tag	2
30.	526-3110-1	Push Bottom Switch	1
31.	048-0620	Nut — 3.5mm	1
32.	093-3008BTBB(H)	Self-Tapping Screw 3 x 8 BTBB	
33.	571-0ME2470	Ceramic Capacitor	1
34.	093-3006BTBB(H)	Self-Tapping Screw 3 x 6 BTBB	1
35.	093-3006BTB	Self-Tapping Screw 3 x 6 BTB	8
36.	093-3008BH	Machine Screw M 3 x 0.5P x 8 BH	6
37.	093-3008BTBB	Self-Tapping Screw 3 x 8 BTBB	4
38.	093-3008KTB(H)	Self-Tapping Screw 3 x 8 KTB	3
39.	094-0740	Washer — Metal	1
40.	094-0760	Washer — External Tooth	1
41.	093-4006WHB(H)	Machine Screw M 4 x 0.7P x 6 WHB	2
42.	099-1100	Rivet	4
43.	529-51A01	AC Cord uL/CSA	1
	529-53B01	AC Cord BS	1
	529-53M01	AC Cord VDE/EMKO	1
	529-53S01	AC Cord SAA	1
44.	082-4020	Cushion	
45.	531-1054	Main Board	1
46.	531-9016	Headphone Board	1
47.	531-9015	Ext. Speaker Board	1
48.	531-2201	Ext. Pre-Amp Board	1
49.	531-V001	Fuse Board	1
50.	521-167AMV501	Power Transformer EI 67 x 55 mm	1
51.	527-4020	Headphone Jack 6.5mm	1
52.	507-3103C21	Volume 10K C (D) W/O Switch	2
53.	507-3203W11-T	Volume 20K W (S) W/O Switch	1
54.	526-3102	Push Switch 2I2I2S (SPUF41) Alps	1
55.	526-3103	Push Switch 2S2S (SPUF21) Alps	1
56.	507-3503B21	Volume 50K B (D) W/O Switch	1
57.	526-52205	Slide Switch 2P2T	1
58.	527-441101	RCA Jack 4 Pos	1
59.	527-441101	RCA Jack 4 Pos	2
60.	527-421201	RCA Jack 2 Pos	1
61.	531-U001	Terminal Board	1
62.	531-7049	Power LED Board	1
63.	094-0190	Washer — Ext. Tooth	16
64.	027-6003	Soldering Tag	1
65.	526-3105	Slide Switch 2P2T RG 10mm	1
66.	082-4530	Foam — Sheet	1
67.	027-6004	Soldering Tag	1
68.	527-3125U	AC Outlet (for UL/CSA only)	2
69.	083-0780	Heat Sink Fin (3225PE only)	4
70.	083-0790	Heat Sink Power Envelope (3225PE only)	2
71.	095-7120	Plate AC Socket Cover (UL/CSA, A/A1 only)	1

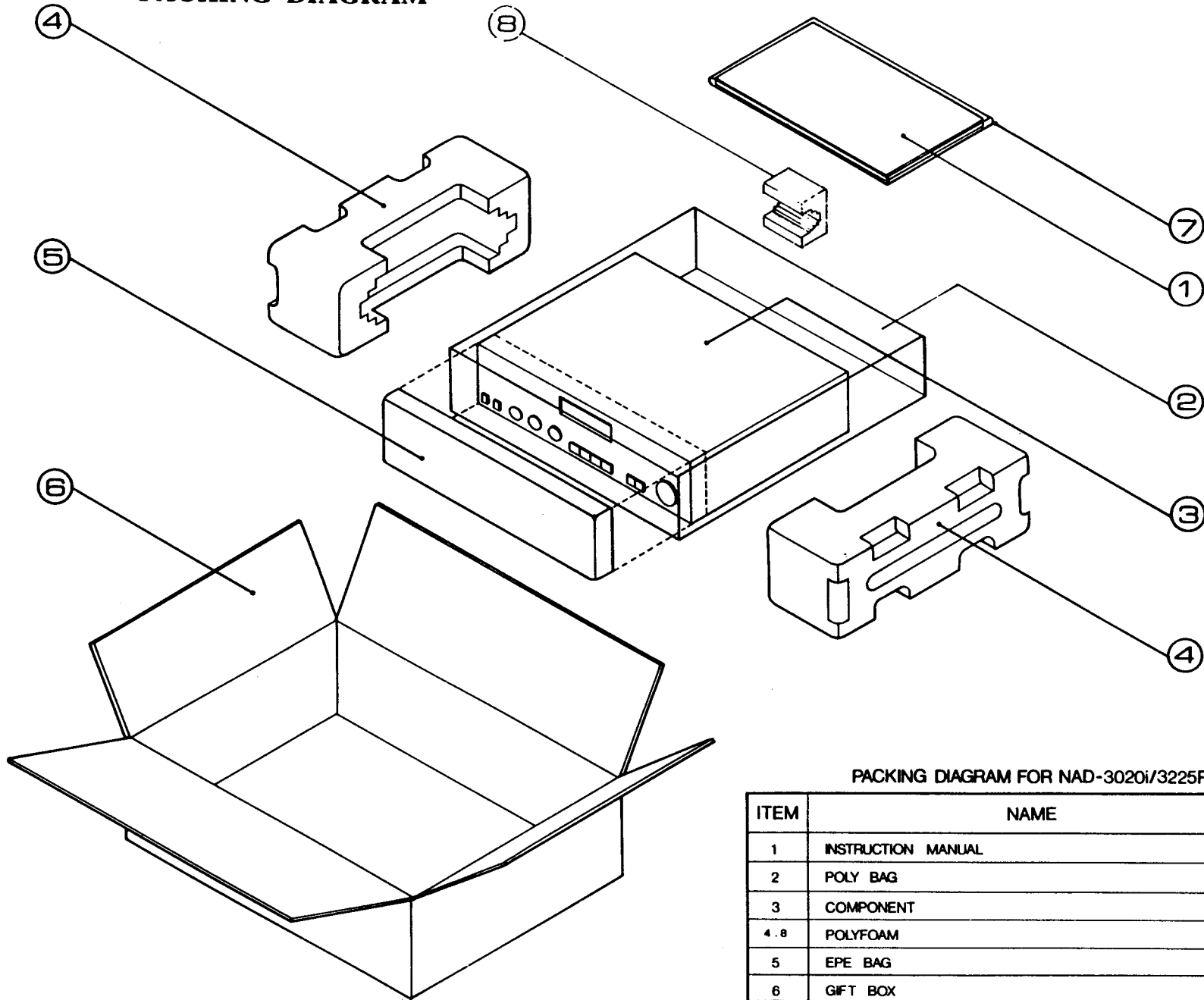
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**EXPLODED VIEW**



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# PACKING DIAGRAM



PACKING DIAGRAM FOR NAD-3020i/3225PE

ITEM	NAME	QTY
1	INSTRUCTION MANUAL	1
2	POLY BAG	1
3	COMPONENT	1
4, 8	POLYFOAM	2 1
5	EPE BAG	1
6	GIFT BOX	1
7	POLY BAG	1

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