

**NAD**

# **SERVICE MANUAL**

**3155**

**STEREO AMPLIFIER**

# NAD 3155 SERVICE MANUAL

NOTE: This manual covers all versions.

A: U.S.A.

A1: Canada

B: U.K.

B1: Australia

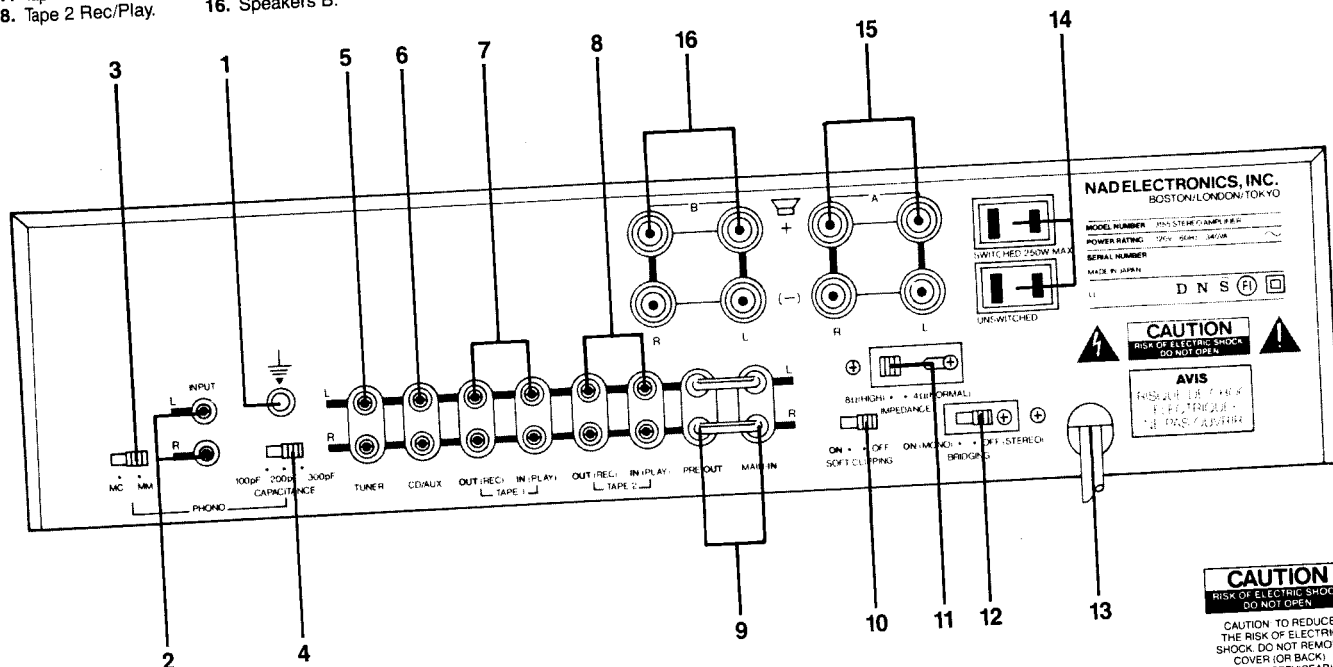
C: Europe and others

C1: W-Germany

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## REAR PANEL

1. Phono Ground.
2. Phono Input.
3. MM/MC.
4. Phono Capacitance.
5. Tuner Input.
6. CD/Aux Input.
7. Tape 1 Rec/Play.
8. Tape 2 Rec/Play.
9. Preamp Out, Main In.
10. Soft Clipping.
11. Speaker Impedance.
12. Bridging.
13. AC Line Cord.
14. AC Convenience Outlets. (Not in European models)
15. Speakers A.
16. Speakers B.

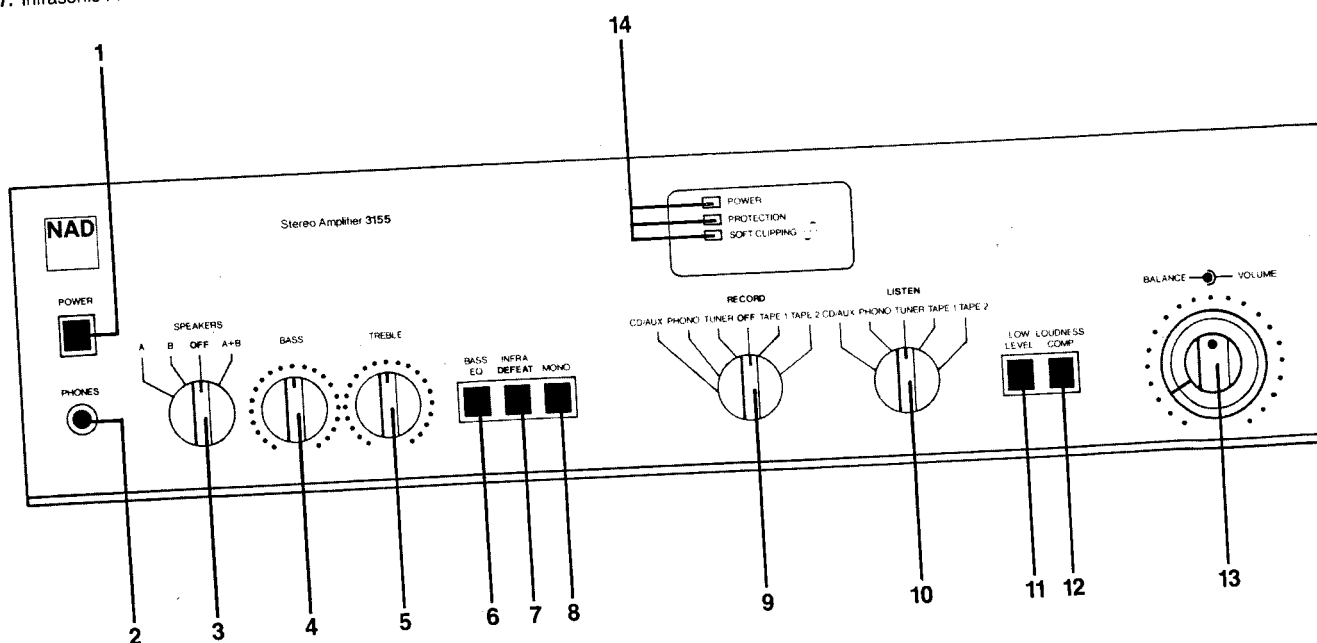


**CAUTION**  
RISK OF ELECTRIC SHOCK  
DO NOT OPEN

CAUTION TO REDUCE  
THE RISK OF ELECTRIC  
SHOCK, DO NOT REMOVE  
COVER (OR BACK).  
NO USER-SERVICEABLE  
PARTS INSIDE. REFER  
SERVICING TO QUALIFIED  
SERVICE PERSONNEL.

## FRONT PANEL

1. Power.
2. Phones.
3. Speaker selector.
4. Bass.
5. Treble.
6. Bass EQ.
7. Infrasonic Filter Defeat.
8. Mono.
9. Recording Input Selector.
10. Listen Input Selector.
11. Low Level.
12. Loudness Compensation.
13. Volume/Balance.
14. Status Indicators.



# SPECIFICATIONS

NOTE: Measurements referenced to 8 ohms are taken with the Speaker Impedance Selector set to "8 ohm (High)". Measurements for 4 and 2 ohms are taken with the impedance selector at "4 ohm (Normal)". Specifications are measured in accordance with EIA Standard RS-490 (IHF A-202).

## Power Amplifier Section, Stereo Mode

CONTINUOUS AVERAGE POWER OUTPUT INTO 8 OHMS (min. RMS power per channel into 8 ohms, 20 Hz - 20 kHz, both channels driven, with no more than the rated distortion).		All versions except USA.	USA version only.
Rated distortion (THD), 20 Hz - 20 kHz.		55 W (17.4 dBW)	55 W (17.4 dBW)
Clipping power (max. continuous power per channel).		0.03 %	0.03 %
IHF dynamic headroom at 8 ohms.	8 ohms:	65 W	75 W
	4 ohms:	75 W	90 W
IHF dynamic power (max. short-term power per channel).		+ 2.6 dB	+ 3 dB
	8 ohms:	100 W	110 W
	4 ohms:	100 W	130 W
	2 ohms:	130 W	150 W
Slew factor.		> 50	
Slew rate.		20 V/ $\mu$ sec.	
Damping factor (ref. 8 ohms, at 50 Hz).		> 50	
Input impedance.		22 k ohms.	
Input sensitivity for 1 W/55 W out.		0.13 V/0.95 V	
Power amp. gain.		26.8 dB.	
THD (Total Harmonic Distortion, 20 Hz - 20 kHz, from 250 mW to rated output).		< 0.03 %	
SMPTE I.M. (Intermodulation Distortion 60 Hz : 7 kHz, 4 : 1, from 250 mW to rated output).		< 0.03 %	
IHF I.M. (CCIR IM Distortion, 19 to 20 kHz at rated output).		< 0.03 %	

## Bridged (Monophonic) Mode

CONTINUOUS AVERAGE POWER OUTPUT INTO 8 OHMS (min. RMS power into 8 ohms, 20 Hz - 20 kHz, with no more than the rated distortion).		125 W (21 dBW)	150 W (22 dBW)
IHF Dynamic Headroom at 8 ohms.		+ 2.5 dB	
Dynamic power (max. short-term output, 8 ohms).		250 W	

## Preamplifier Section

### Phono Input

Input impedance,	MM:	R 47 k ohms
		C 100/200/320 pF
	MC:	R 100 ohms
		C 1000 pF

Input sensitivity (1 kHz),	MM:	0.33 mV for 1 W out. 2.5 mV for 55 W out.
	MC:	0.02 mV for 1 W out. 0.15 mV for 55 W out.
Input overload at 20 Hz/1 kHz/20 kHz.	MM:	27 mV/230 mV/2 V.
	MC:	1.2 mV/12 mV/88 mV.
THD (20 Hz - 20 kHz) and IM Dist. at +30 dB level.		< 0.04 %
R1AA response accuracy.		± 0.5 dB.
S/N ratio, IHF A-weighted, with cartridge connected.	MM:	80 dB re 5 mV.
	MC:	80 dB re 0.5 mV.
<u>Line Level Inputs (Aux., Tape)</u>		
Input Impedance.		R 10 k ohms; C 220 pF.
Input sensitivity.		20 mV for 1 W out. 150 mV for 55 W out.
Maximum input signal.		> 10 V
Signal to noise ratio, A-weighted.		88 dB re 1 W. 103 dB re 55 W.
Frequency response, 20 Hz - 20 kHz.		± 0.5 dB.
<u>Outputs</u>		
Preamp output impedance.		800 ohms.
Maximum output level.		10 V.
Tape output impedance.		1000 ohms (buffered).
Tape output infrasonic filter.		– 3 dB at 15 Hz, 12 dB/octave.
<u>Controls</u>		
Treble.		± 7 dB at 10 kHz.
Bass.		± 7 dB at 100 Hz.
Speaker equalization.		+ 3 dB at 70 Hz. + 6 dB at 32 Hz.
Infrasonic filter.		– 3 dB at 15 Hz, 12 dB/octave.
Audio muting (low level).		– 20 dB.
<u>Physical Specifications</u>		
Dimensions (width x height x depth).		42 x 10.8 x 38 cm. 16.5 x 4.25 x 15 in.
Net weight.		8.4 Kg./18 lb. 8 oz.
Shipping weight.		9.8 Kg./21 lb. 10 oz.
Power consumption.		50/60 Hz at 110, 120, 220 or 240 VAC. 340 W.

# ALIGNMENTS

## A IDLE (QUIESCENT) CURRENT

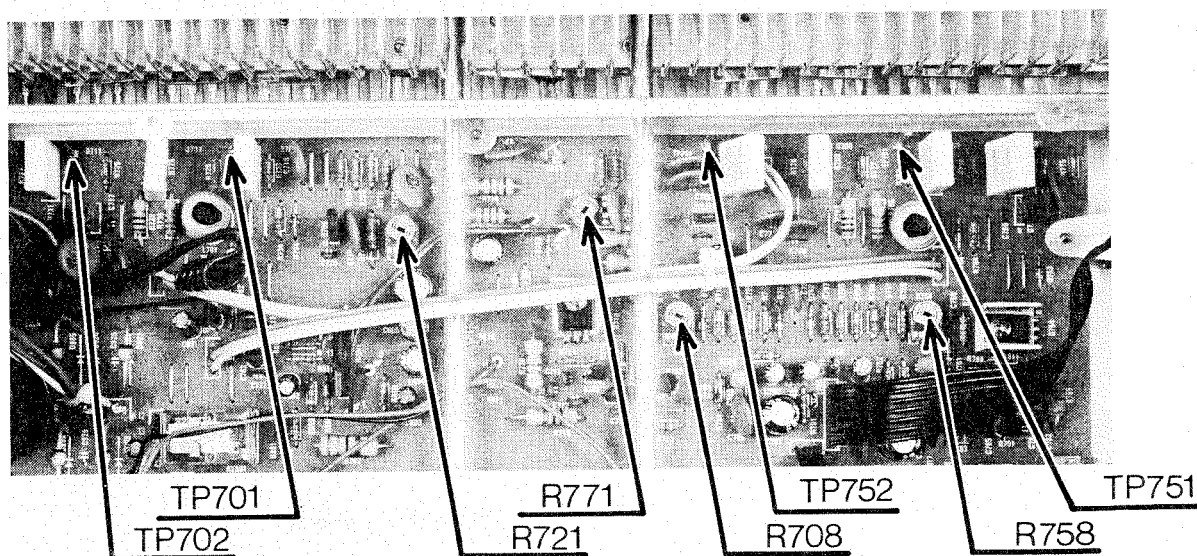
- 1 Connect mV meter (DVM) from TP 701 to TP 702, left chan. (from TP 751 to TP 752, right chan.)
- 2 Adjust R 721, left chan. (R 771, right chan.) so that meter reading is 20 - 25 mVDC.

NOTE: Reading may take a few minutes to stabilize; re-check after offset adjustment (next step.)

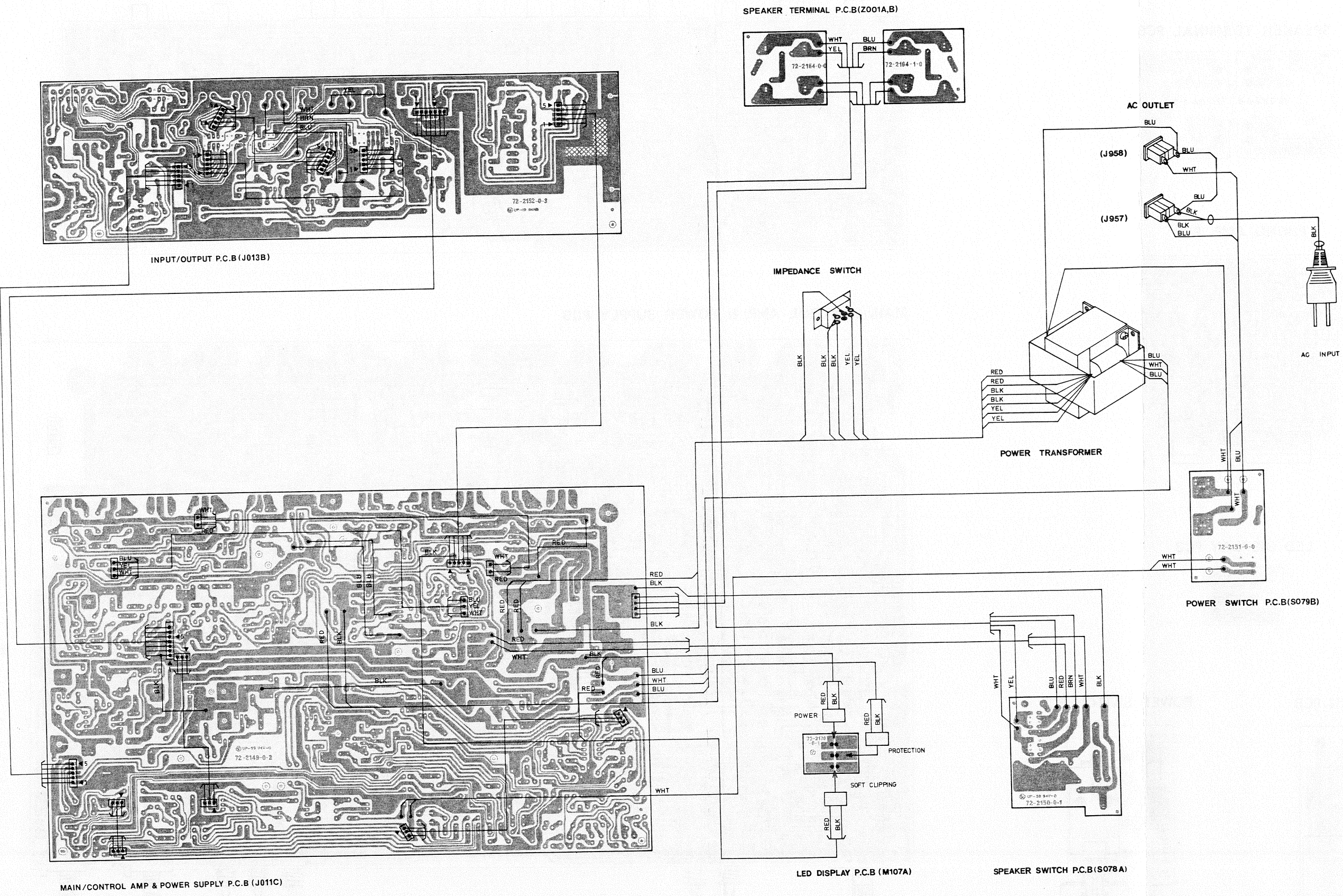
## B OFFSET (CENTERING) VOLTAGE:

Adjust R 708, left (R 758, right) so that voltage at spkr. terminals is  $0 \pm 50$  mVDC.

NOTE: Perform these adjustments with no load, volume minimum.



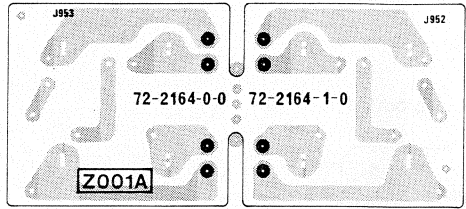
WIRING DIAGRAM



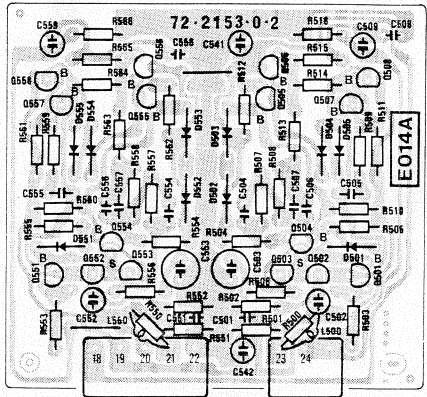


P.C.B. LAYOUT DIAGRAM

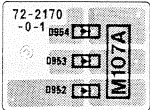
SPEAKER TERMINAL PCB



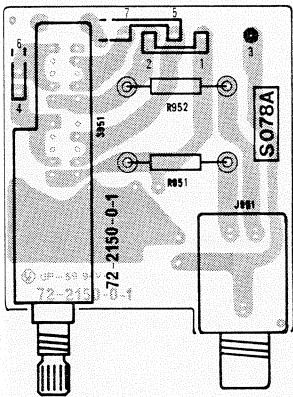
PHONO AMP. PCB



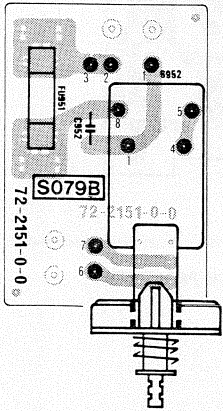
LED DISPLAY PCB



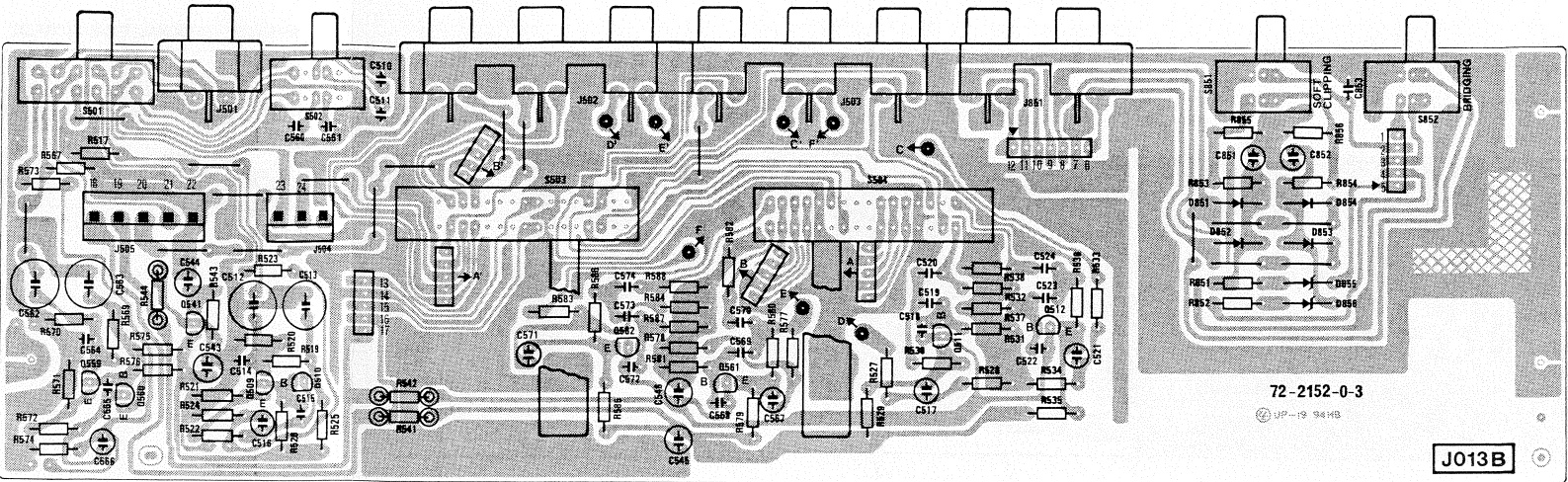
SPEAKER SWITCH PCB



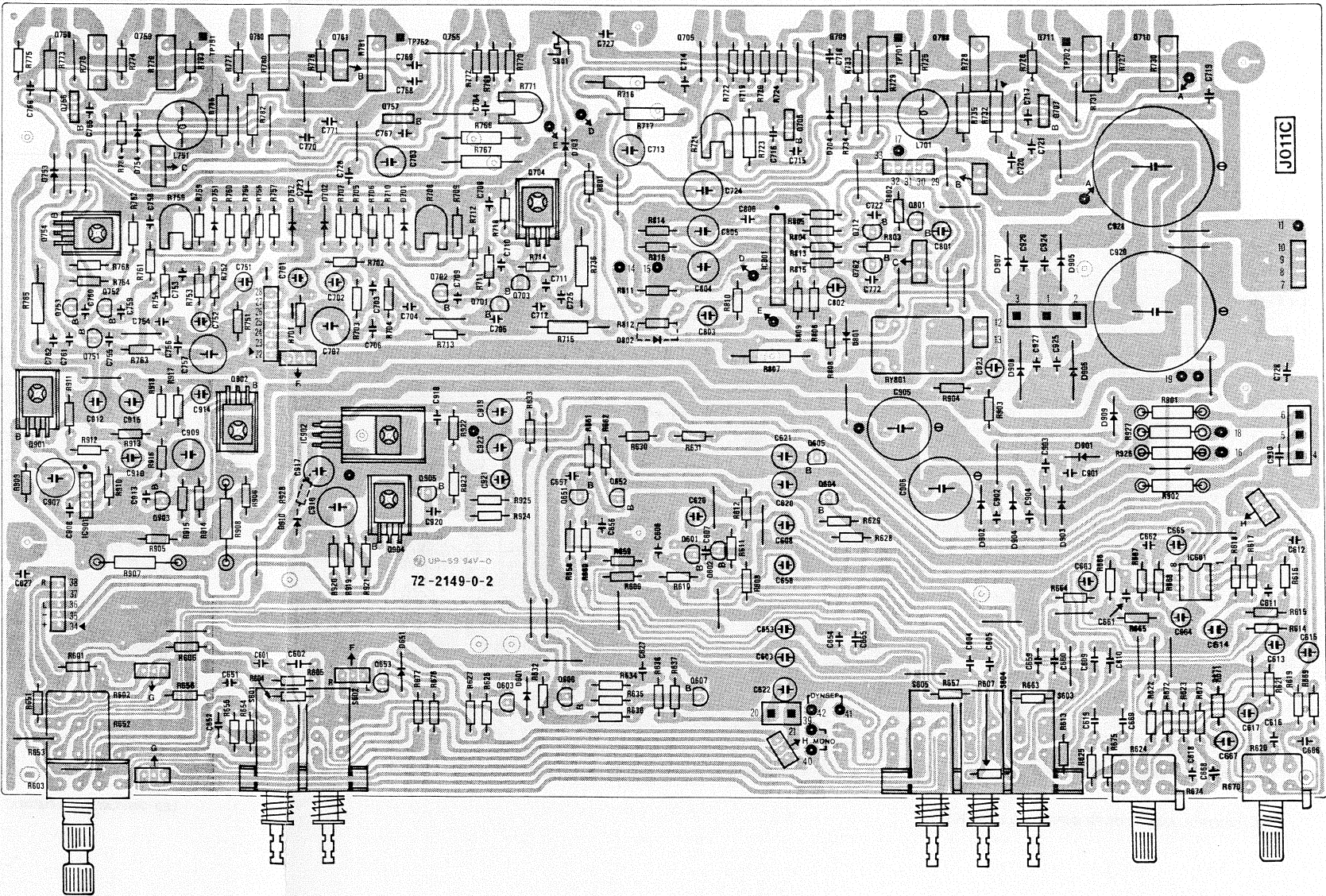
POWER SWITCH PCB



INPUT/OUTPUT PCB



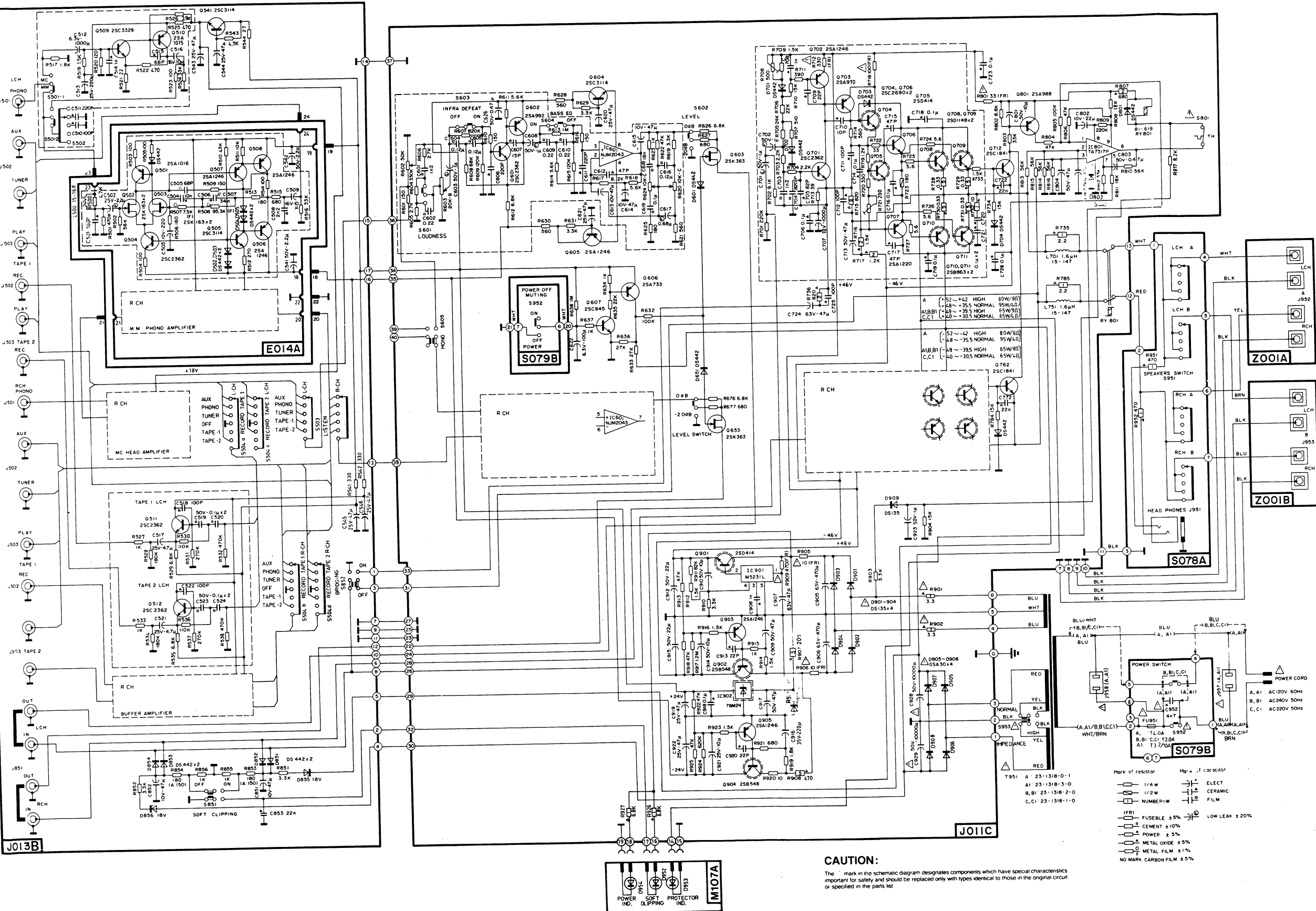
MAIN/CONTROL AMP. & POWER SUPPLY PCB





## SCHEMATIC DIAGRAM

### NAD 3155 PRE/MAIN AMPLIFIER



**CAUTION:**

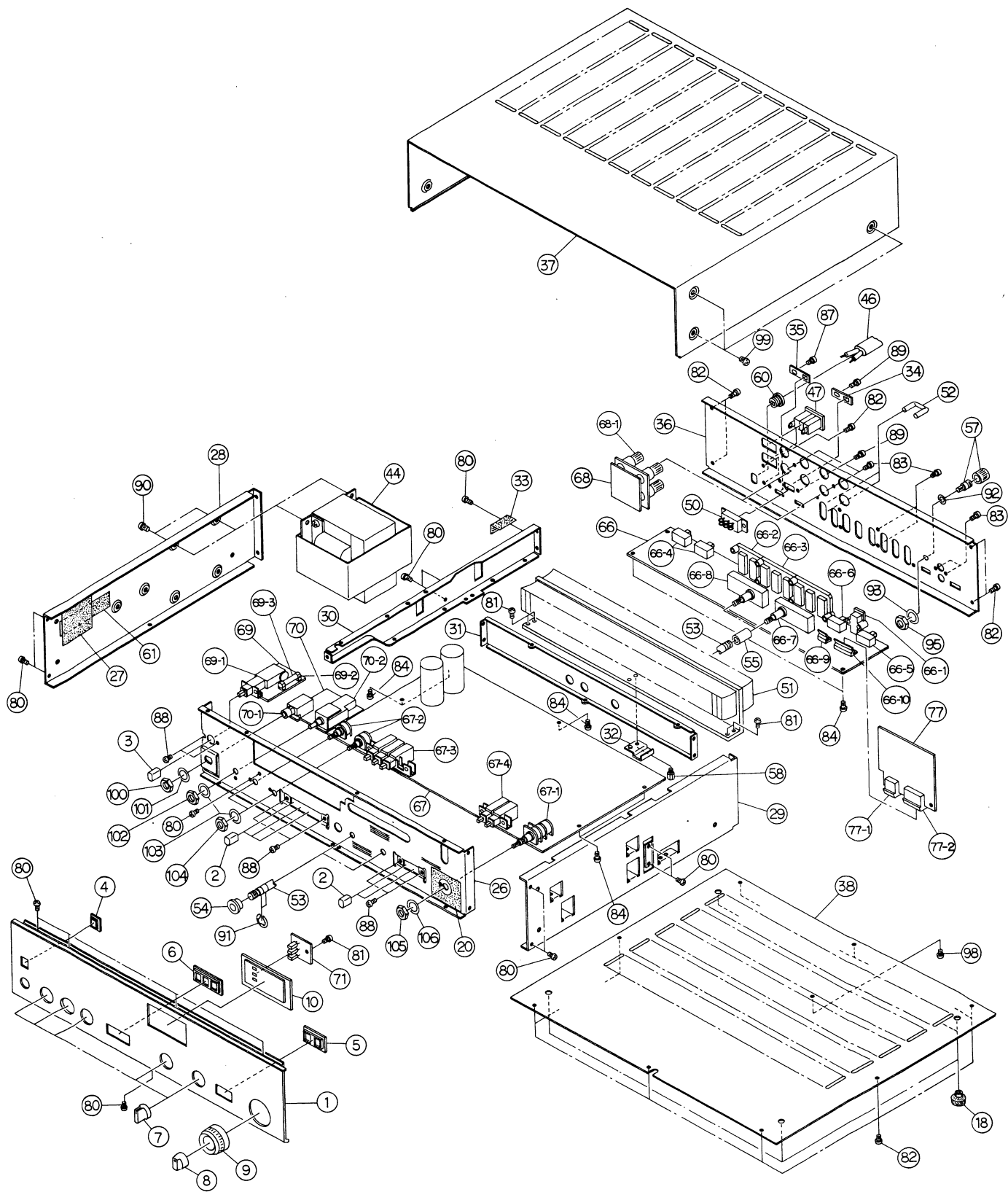
The mark in the schematic diagram designates components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list

EXPLODED VIEW PARTS LIST

Ref. No.	Parts No.	Descriptions
1	63-6275-0-0	FRONT PANEL
2	62-1105-0-0	PUSH BUTTON - SELECTORS
3	62-1105-1-0	PUSH BUTTON - ON/OFF
4	62-3465-0-0	PUSH BUTTON FRAME - SINGLE HOLE
5	62-3466-0-0	PUSH BUTTON FRAME - TWO HOLES
6	62-3467-0-0	PUSH BUTTON FRAME - THREE HOLES
7	62-2317-0-0	ROTARY KNOB - TONE CONTROL/SELECTORS
8	62-2318-0-0	ROTARY KNOB - BALANCE
9	62-2319-0-0	ROTARY KNOB - VOLUME
10	62-3470-0-0	DISPLAY PANEL
18	92-2102-0-0	FOOT - SNAP ON TYPE
	92-2103-0-0	FOOT - PLASTIC RIVET TYPE
20	63-1845-0-0	PLATE (PLOYESTER)
26	71-2584-0-0	FRONT SUBCHASSIS
27	92-1175-0-0	INSULATOR (PVC) (B B1 C C1)
28	71-2586-0-0	SIDE CHASSIS (L)
29	71-2587-0-0	SIDE CHASSIS (R)
30	71-2588-0-0	SUBCHASSIS (FRONT TO REAR SUPPORT)
31	71-2589-0-0	SUBCHASSIS (LEFT TO RIGHT SUPPORT)
32	71-1891-0-0	THERMAL SWITCH CLAMP
33	92-1225-0-0	INSULATOR (PVC) (A A1 AC RECEPTACLE)
34	92-1223-0-1	LOCKING PLATE - INPEDANCE SWITCH
35	92-1224-0-0	LOCKING PLATE - BRIDGING SWITCH
36	71-2597-0-0	REAR PANEL (A A1)
	71-2602-0-0	REAR PANEL (C C1)
	71-2602-1-0	REAR PANEL (B B1)
37	71-3107-0-0	CABINET
38	71-3104-0-0	BOTTOM COVER
44	23-1318-0-1	POWER TRANSFORMER (A)
	23-1318-1-0	POWER TRANSFORMER (C C1)
	23-1318-2-0	POWER TRANSFORMER (B B1)
	23-1318-3-0	POWER TRANSFORMER (A1)
46	85- 258-0-0	POWER CORD (A)
	85- 235-0-0	POWER CORD (C C1)
	85- 240-0-0	POWER CORD (B)
	85- 259-0-0	POWER CORD (B1)
	85- 260-0-0	POWER CORD (A1)
47	82-2161-0-0	RECEPTACLE (A A1)
50	81- 450-0-0	SLIDE SWITCH - IMPEDANCE SELECTOR (A B B1 C C1)
	81- 452-0-0	SLIDE SWITCH - IMPEDANCE SELECTOR (A1)
51	74-3104-0-0	HEAT SINK
52	82- 118-0-0	JUMPER CONNECTOR
53	65- 128-0-0	SHAFT - SELECTOR
54	62-3472-0-0	BUSHING FOR SHAFT SELECTOR
55	62-3474-0-0	JOINT FOR SHAFT SELECTOR
57	87-3242-0-0	GROUND TERMINAL
58	87-3243-0-0	STUD BOTTOM COVER SUPPORT
60	62-3332-0-0	BUSHING - AC POWER CORD
61	63-1843-0-0	LABEL (CAUTION FOR FUSE) (A A1)
66	J013B	INPUT/OUTPUT PCB

Ref. No.	Parts No.	Descriptions
66 - 1	82-2130-0-0	RCA CONNECTORS - SINGLE
66 - 2	82-2157-0-0	RCA CONNECTORS - DOUBLE
66 - 3	82-2159-0-0	RCA CONNECTORS - TRIPLE
66 - 4	81- 447-0-0	SLIDE SWITCH - SOFT CLIPPING & BRIDGING
66 - 5	81- 448-0-0	SLIDE SWITCH - PHONO CAPACITANCE SELECTOR
66 - 6	81- 449-0-0	SLIDE SWITCH - PHONO MM/MC SELECTOR
66 - 7	81- 184-0-0	ROTARY SWITCH - LISTEN SELECTOR
66 - 8	81- 185-0-0	ROTARY SWITCH - RECORD SELECTOR
66 - 9	84-3184-0-0	PCB CONNECTORS (MALE) - 3 POSITIONS
66 - 10	84-3201-0-0	PCB CONNECTORS (MALE) - 5 POSITIONS
67	J011C	MAIN/CONTROL AMP & POWER SUPPLY PCB
67 - 1	41- 686-0-0	ROTARY POTENTIOMETER - VOLUME
67 - 2	41- 685-0-0	ROTARY POTENTIOMETER - BASS & TREBLE
67 - 3	81-2322-0-0	FUNCTION SWITCH BANK (3 SWITCHES)
67 - 4	81-2323-0-0	FUNCTION SWITCH BANK (2 SWITCHES)
68	Z001A/Z001B	SPEAKER TERMINAL PCB
68 - 1	82-2164-0-0	BINDINGPOST - LOUDSPEAKERS
69	S079B	POWER SWITCH PCB
69 - 1	81-2227-0-0	POWER SWITCH (A A1)
	81-2245-0-0	POWER SWITCH (B B1 C C1)
69 - 2	71-1894-0-0	FUSE HOLDER (A A1)
	71-1246-0-0	FUSE HOLDER (B B1 C C1)
69 - 3		FUSE (A) - MDX-4 OR MSL-4
		FUSE (A1) - MDX-3*2/10 125V
		FUSE (B B1 C C1) - T2.0A 250V
70	S078A	SPEAKER SWITCH PCB
70 - 1	82-2158-0-0	HEADPHONE JACK
70 - 2	81- 183-0-0	ROTARY SWITCH - LOUDSPEAKER SELECTOR
71	M107A	LED DISPLAY PCB
77	E014A	PHONO AMP PCB
77 - 1	84-3202-0-0	CONNECTORS (FEMALE) - 3 POSITIONS
77 - 2	84-3203-0-0	CONNECTORS (FEMALE) - 5 POSITIONS
80		TAPPING SCREW (PHILLIP'S HEAD 3 x 6 Cr)
81		TAPPING SCREW (PHILLIP'S HEAD 3 x 8 Cr)
82		TAPPING SCREW (PHILLIP'S HEAD 3 x 6 BLK)
83		TAPPING SCREW (PHILLIP'S HEAD 3 x 8 BLK)
84		TAPPING SCREW (WASHER HEAD 3 x 6 Cr)
87		MACHINE SCREW S (PHILLIP'S HEAD 3 x 8 BLK)
88		MACHINE SCREW (PAN 3 x 6 Cr)
89		MACHINE SCREW (PHILLIP'S HEAD 3 x 8 BLK)
90		MACHINE SCREW S (PHILLIP'S HEAD 4 x 6 Cr)
91		RETAINING RING (E TYPE 5mm)
92		WASHER (PLAIN 4-10-0.8 Ni)
93		WASHER (TOOTHED LOCK B 4 Ni)
95		NUT (HEXAGON M4-7-3.2 Cr)
98		MACHINE SCREW (PHILLIP'S HEAD 3 x 6 Cr)
99		CABINET SCREW WITH WASHER (4 x 6 BLK)
100		HEAD PHONE JACK NUT (HEXAGON 12-14-2)
101		WASHER (PLAIN 12-18-0.5)
102		SPEAKER SWITCH NUT (HEXAGON 7-10-2)
103		WASHER (PLAIN 7-12-0.5)
104		TONE CONTROLS NUT (HEXAGON 7-11-2)
105		VOLUME CONTROL NUT (HEXAGON 9-11-2)
106		WASHER (PLAIN 9-14-0.5)

EXPLODED VIEW



# ELECTRICAL PARTS LIST

NOTE: This is not a complete electrical parts list.

## INPUT/OUTPUT P.C.B.: J013B (EXPLODED VIEW REF. NO. 66)

SYMBOL NO.	PARTS NO.	DESCRIPTIONS
Q509, Q559	2SC3329	TRANSISTOR
Q510, Q560	2SA1015	"
Q511, Q561, Q512	2SC2362	"
Q562	2SC2362	"
Q541	2SC3114	"
D851 - D854	DS442BT	DIODE
D855, D856	GZA18Y	ZENER DIODE
R519, R569	1.5K $\Omega$ , GorF, 1/4W	OXIDE METAL RESISTOR
R520, R570	120 $\Omega$ , GorF, 1/4W	"
R521, R571	22 $\Omega$ , GorF, 1/4W	"
R522, R525, R572, R575	470 $\Omega$ , GorF, 1/4W	"
R526, R576	3.9K $\Omega$ , GorF, 1/4W	"

## PHONO AMP P.C.B.: E014A (EXPLODED VIEW REF. NO. 77)

SYMBOL NO.	PARTS NO.	DESCRIPTIONS
Q501, Q551	2SA1016	TRANSISTOR
Q502, Q552	2SK163	F.E.T.
Q503, Q553	2SK163	F.E.T.
Q504, Q554	2SC2362	TRANSISTOR
Q505, Q555	2SC3114	"
Q506, Q556, Q507	2SA1246	"
Q557, Q508, Q558	2SA1246	"
D501, D502, D503	DS442	DIODE
D504, D505, D551	"	"
D552, D553, D554	"	"
D555	"	"
L500, L550	15-168	CHOKE COIL, 3.7 $\mu$ H
C502, C552	25V, 2.2 $\mu$ F	ELECTROLYTIC CAPACITOR, LOW LEAKAGE
R507, R557	7.5K $\Omega$ , F, 1/4W	METAL FILM RESISTOR, SN14K2E
R508, R558	95.3K $\Omega$ , F, 1/4W	" , "

## MAIN/CONTROL AMP & POWER SUPPLY P.C.B.: J011C (EXPLODED VIEW REF. NO. 67)

SYMBOL NO.	PARTS NO.	DESCRIPTIONS
IC601	NJM2043D	INTEGRATED CIRCUIT
IC801	TA7317P	"
IC901	M5231L	"
IC902	L78M24	"
Q601, Q651	2SC2362	TRANSISTOR
Q701, Q751	2SC2362	"
Q602, Q652	2SA992	"



SYMBOL NO.	PARTS NO.	DESCRIPTIONS
Q603, Q653	2SK363	F.E.T.
Q604	2SC3114	TRANSISTOR
Q605, Q702, Q752	2SA1246	"
Q903, Q905	2SA1246	"
Q606	2SA733A	"
Q607	2SC945A	"
Q703, Q753	2SA970	"
Q704, Q706, Q754	2SC2690	"
Q756	2SC2690	"
Q707, Q757	2SA1220	"
Q712, Q762	2SC1841	"
Q801	2SA988	"
Q901	2SD414	"
Q902, Q904	2SB548	"
D601, D651, D701	DS442BT	DIODE
D702, D703, D704	"	"
D751, D752, D753	"	"
D754, D801,	"	"
D901-D904, D909	DS135E	"
D905-D908	GSA30C	"
D910	BZ350	"
L701, L751	15-147	COIL
C603, C608, C653	50V, 1 $\mu$ F, HL	ELECTROLYTIC CAPACITOR, LOW LEAKAGE
C658, C701, C702	"	"
C751, C752	"	"
C617, C667	50V, 0.68 $\mu$ F, HL	"
C928, C929	50V, 10000 $\mu$ F	"
R708, R758	41-783, RVF8P	VARIABLE RESISTOR, 500 $\Omega$
R712, R762	330 $\Omega$ , J, 1/4W	FUSIBLE RESISTOR
R715, R765, R736	820 $\Omega$ , J, 2W	POWER RESISTOR
R716, R766	1.5K $\Omega$ , J, 2W	"
R717, R767	1.2K $\Omega$ , J, 2W	"
R718, R768	100 $\Omega$ , J, 1/4W	FUSIBLE RESISTOR
R721, R771	41-781, RVF8P	VARIABLE RESISTOR, 200 $\Omega$
R728, R729, R730	0.33 $\Omega$ , K, 5W	CEMENTED WIREWOUND RESISTOR
R731, R778, R779	"	"
R780, R781	"	"
R732, R782	10 $\Omega$ , J, 1W	POWER RESISTOR
R735, R785	2.2 $\Omega$ , J, 1W	"
R801	33 $\Omega$ , J, 1/4W	FUSIBLE RESISTOR
R807	680 $\Omega$ , J, 2W	OXIDE METAL RESISTOR, RSF2B
R901, R902	3.3 $\Omega$ , J, 1W	" , RSF1B
R905, R906	10 $\Omega$ , J, 1/4W	FUSIBLE RESISTOR
R907	220 $\Omega$ , J, 5W	POWER RESISTOR
R908	470 $\Omega$ , J, 5W	"
R909	470 $\Omega$ , J, 1/4W	FUSIBLE RESISTOR
R926, R927	6.8K $\Omega$ , J, 1W	POWER RESISTOR
RY801	81-619	RELAY

SYMBOL NO.	PARTS NO.	DESCRIPTIONS
Q705, Q755	2SD414	TRANSISTOR
Q708, Q709, Q758	2SD1148	POWER TRANSISTOR
Q759	2SD1148	"
Q710, Q711, Q760	2SB863	"
Q761	2SB863	"
S801	81-7002	THERMOSTAT

SPEAKER SWITCH P.C.B.: S078A (EXPLODED VIEW REF. NO. 70)

SYMBOL NO.	PARTS NO.	DESCRIPTIONS
R951, R952	470 $\Omega$ , 1W	OXIDE METAL RESISTOR, RSF1B

POWER SWITCH P.C.B.: S079B (EXPLODED VIEW REF. NO. 69)

SYMBOL NO.	PARTS NO.	DESCRIPTIONS
C952	DE7100FZ	CERAMIC CAPACITOR
FU951	MDX-4/MSL-4	FUSE, 125V, 4A (A VERSION)
	MDX-3.2/10	FUSE, 125V, 3.2/10A (A1 VERSION)
	T, 2A	FUSE, 250V, 2A (B, C VERSION)

LED DISPLAY P.C.B.: M107A (EXPLODED VIEW REF. NO. 71)

SYMBOL NO.	PARTS NO.	DESCRIPTIONS
D952	SG240D	L.E.D., SOFT CLIP
D953	SR540D	L.E.D., PROTECTOR
D954	SR540D	L.E.D., POWER