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McIntosh

C 27

PREAMPLIFIER



SERVICE INFORMATION

STARTING WITH SERIAL NO. BV1001

McINTOSH LABORATORY INC. BINGHAMTON, NEW YORK 13903

039-032

PERFORMANCE LIMITS

FREQUENCY RESPONSE

+0 -0.5 dB 20Hz to 20,000 Hz

DISTORTION

Will not exceed 0.05% at rated output level, 20 Hz to 20,000 Hz.

INPUT SENSITIVITY AND IMPEDANCE

AUXILIARY 1 and 2, TUNER,,TAPE 1 and 2: 250 millivolts at 100 000 ohms

PHONO 1 and 2: 2 millivolts at 47K ohms and 100pF

HUM AND NOISE

AUXILIARY 1 and 2, TUNER, TAPE 1 and 2: 85 dB unweighted; 90 dB IHF "A" weighted.

PHONO 1 and 2: 80 dB below 10 mV input, unweighted; 85 dB IHF "A" weighted.

OUTPUT LEVEL AND IMPEDANCE

MAIN OUTPUT 2.5 volts with rated input, less than 1K ohms source impedance, to operate into 22K ohms load or higher. Maximum output is greater than 10 volts.

TAPE OUTPUT 0.25 volts with rated input, less than 1.5K ohms source impedance, to operate into 22K ohms load or higher. Maximum output is greater than 10 volts.

CENTER CHANNEL OUTPUT (L+R) 2.5 volts with rated input to both channels, less than 1.2K ohms source impedance, to operate into 22K ohms load or higher.

VOLTAGE AMPLIFICATION IN DECIBELS

AUXILIARLY 1 and 2, TUNER, TAPE 1 and 2 to MAIN OUTPUT 20 dB, to TAPE OUTPUT 0 dB

PHONO 1 and 2 to MAIN OUTPUT 62 dB, to TAPE OUTPUT 42 dB

POWER REQUIREMENT

120 volts, 50/60 Hz, 15 watts

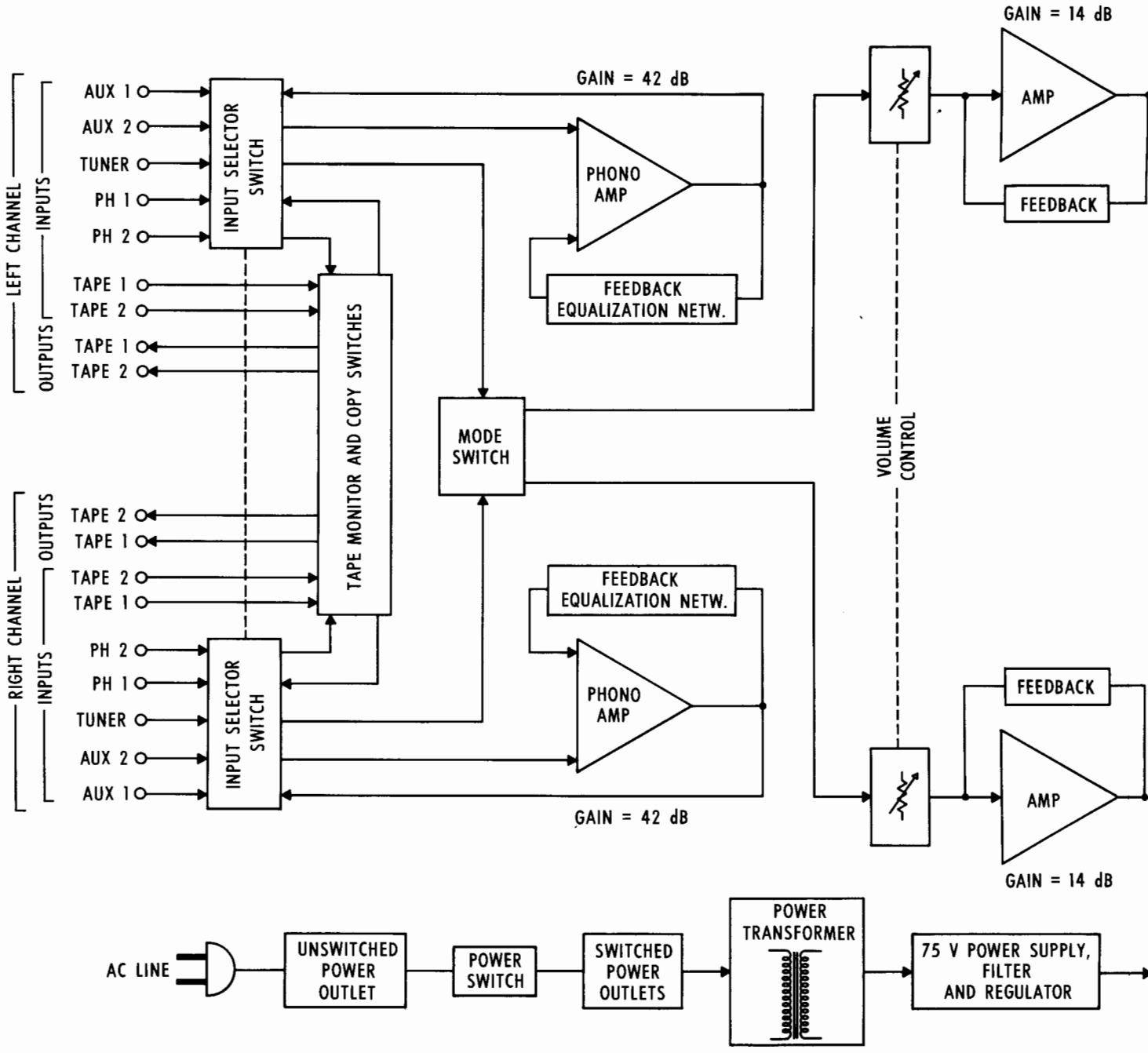
MECHANICAL INFORMATION

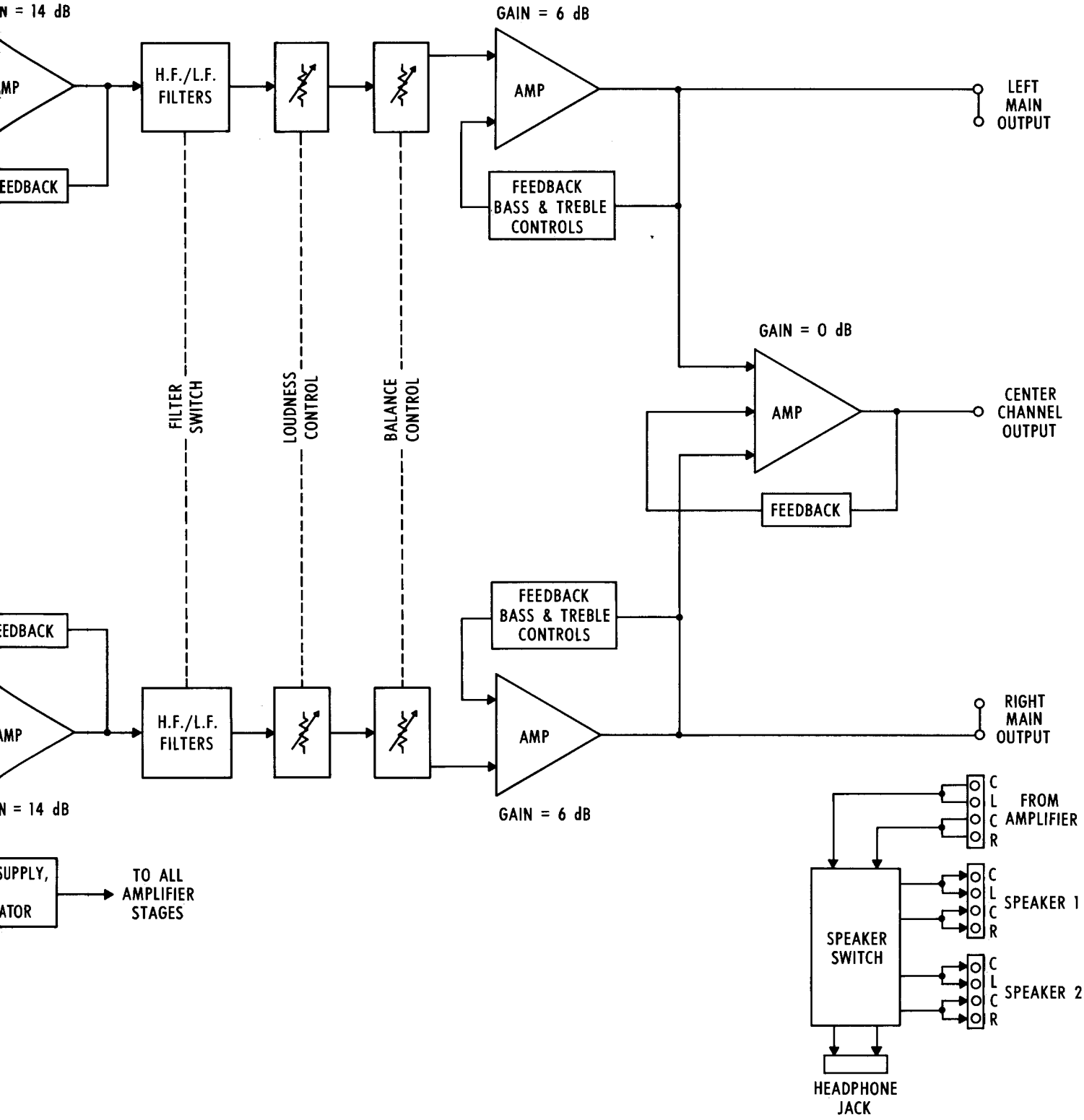
SIZE: Front panel measures 16 inches wide (40.64 cm) by 5-7/16 inches high (13.81 cm). Chassis measures 15 inches wide (38.1 cm) by 5 inches high (12.7 cm) by 13 inches deep (33.02 cm), including PANLOC shelf and back panel connectors. Knob clearance required is 1-1/2 inches (3.81 cm) in front of the mounting panel.

FINISH: Front panel is anodized gold and black with special McIntosh gold/teal panel nomenclature illumination. Chassis is black

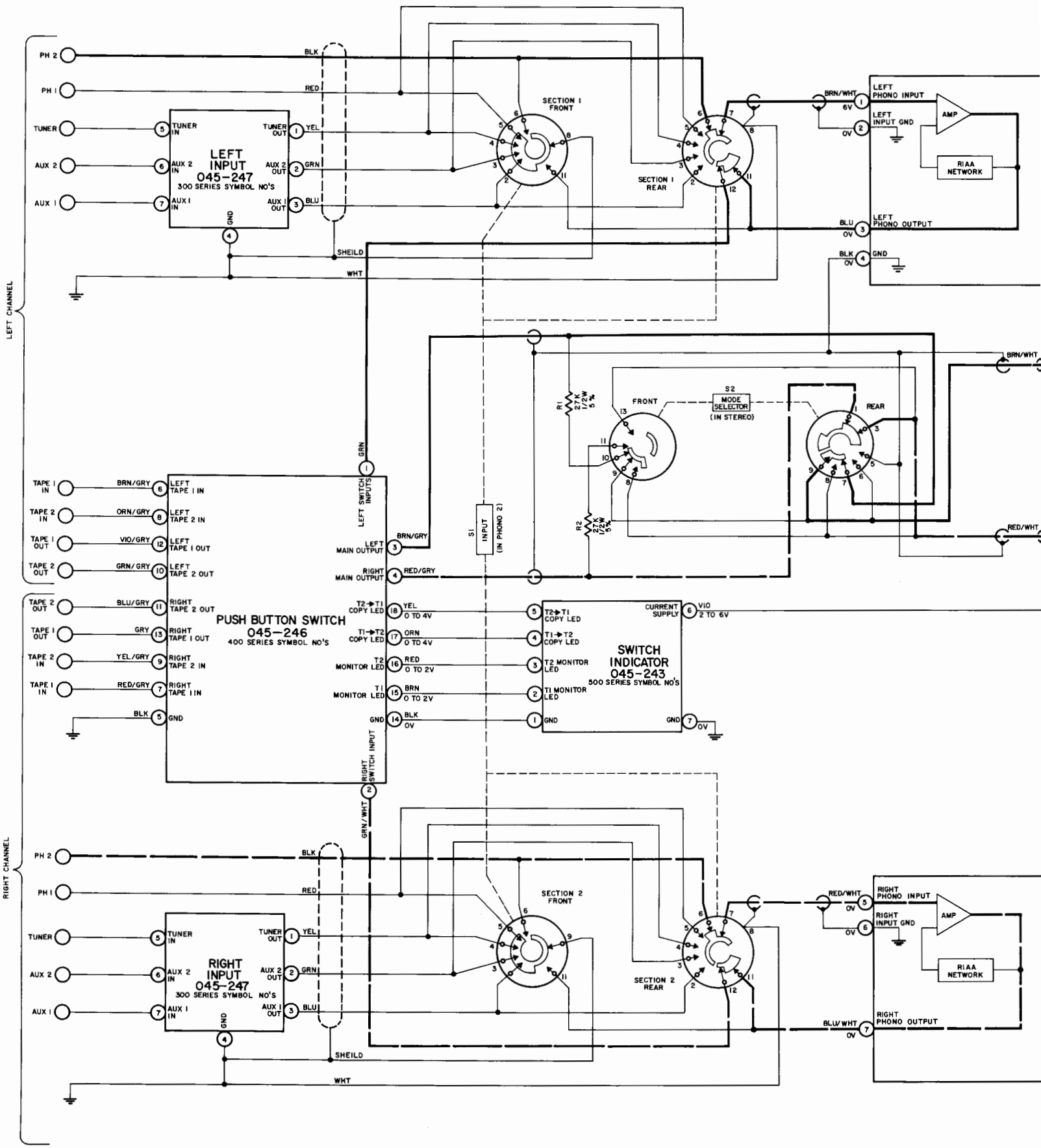
MOUNTING: Exclusive McIntosh developed professional PANLOC.

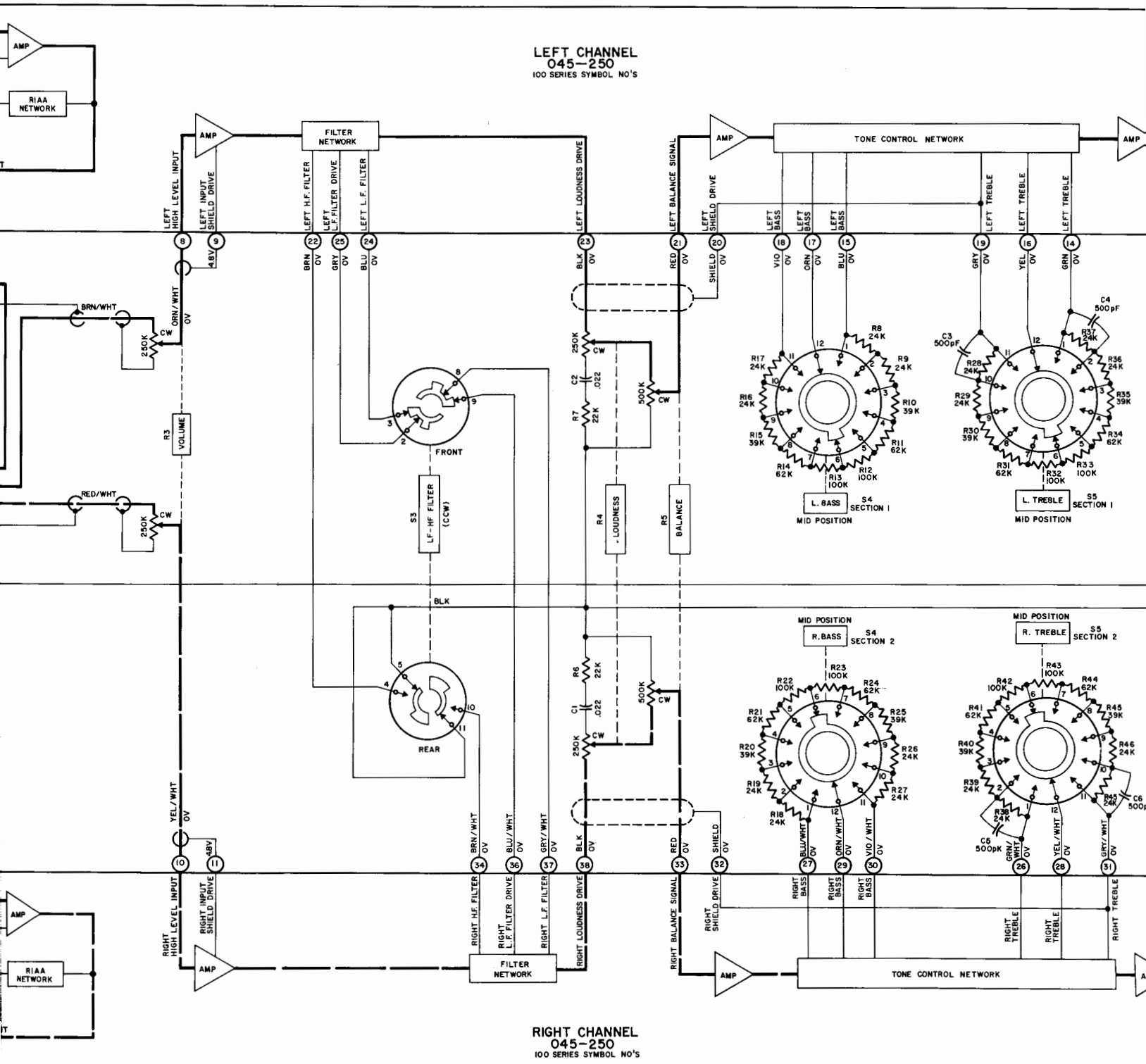
WEIGHT: 18 pounds (8.2 kg) net, 33 pounds (15.0 kg) in shipping carton

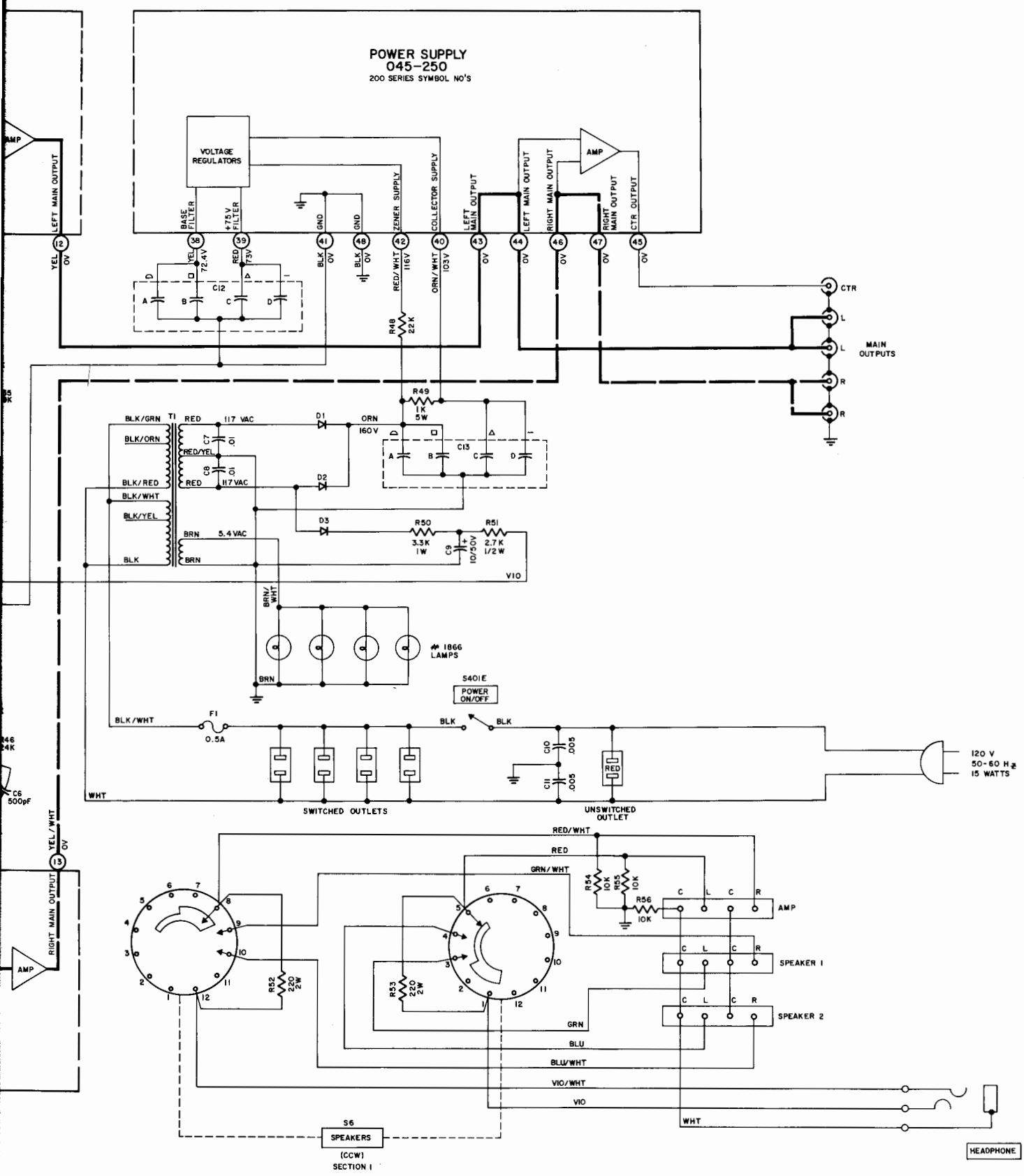

GAIN = 14 dB
GAIN = 42 dB
LEFT CHANNEL
INPUTS
OUTPUTS
AUX 1
AUX 2
TUNER
PH 1
PH 2
TAPE 1
TAPE 2
TAPE 1
TAPE 2
INPUT SELECTOR SWITCH
TAPE MONITOR AND COPY SWITCHES
PHONO AMP
FEEDBACK EQUALIZATION NETW.
MODE SWITCH
VOLUME CONTROL
AMP
FEEDBACK
RIGHT CHANNEL
OUTPUTS
INPUTS
TAPE 2
TAPE 1
TAPE 2
TAPE 1
PH 2
PH 1
TUNER
AUX 2
AUX 1
INPUT SELECTOR SWITCH
TAPE MONITOR AND COPY SWITCHES
FEEDBACK EQUALIZATION NETW.
PHONO AMP
FEEDBACK
AMP
GAIN = 42 dB
GAIN = 14 dB
AC LINE
UNSWITCHED POWER OUTLET
POWER SWITCH
SWITCHED POWER OUTLETS
POWER TRANSFORMER
75 V POWER SUPPLY, FILTER AND REGULATOR



BLOCK DIAGRAM


LEFT CHANNEL
RIGHT CHANNEL
PH 2
PH 1
TUNER
AUX 2
AUX 1
BLK
RED
LEFT INPUT 045-247
300 SERIES SYMBOL NO'S
TUNER IN
TUNER OUT
AUX 2 IN
AUX 2 OUT
AUX 1 IN
AUX 1 OUT
GND
YEL
GRN
BLU
SHEILD
WHT
SECTION 1 FRONT
SECTION 1 REAR
BRN/WHT
6V
LEFT PHONO INPUT
LEFT INPUT GND
0V
AMP
RIAA NETWORK
LEFT PHONO OUTPUT
BLK
GND
GRN
R1 27K 1/2W 5%
R2 27K 1/2W 5%
FRONT
S2
MODE SELECTOR
(IN STEREO)
REAR
BRN/WHT
RED/WHT
S1
INPUT
(IN PHONO 2)
TAPE 1 IN
TAPE 2 IN
TAPE 1 OUT
TAPE 2 OUT
BRN/GRY
ORN/GRY
VIO/GRY
GRN/GRY
LEFT TAPE 1 IN
LEFT TAPE 2 IN
LEFT TAPE 1 OUT
LEFT TAPE 2 OUT
LEFT SWITCH INPUTS
LEFT MAIN OUTPUT
RIGHT MAIN OUTPUT
RED/GRY
BLU/GRY
GRY
YEL/GRY
RED/GRY
RIGHT TAPE 2 OUT
RIGHT TAPE 1 OUT
RIGHT TAPE 2 IN
RIGHT TAPE 1 IN
PUSH BUTTON SWITCH
045-246
400 SERIES SYMBOL NO'S
T2→T1 COPY LED
T1→T2 COPY LED
T2 MONITOR LED
T1 MONITOR LED
YEL
ORN
RED
BRN
0 TO 4V
0 TO 2V
SWITCH INDICATOR
045-243
500 SERIES SYMBOL NO'S
CURRENT SUPPLY
VIO
2 TO 6V
RIGHT SWITCH INPUT
GRN/WHT
SECTION 2 FRONT
SECTION 2 REAR
RED/WHT
RIGHT PHONO INPUT
RIGHT INPUT GND
RIGHT PHONO OUTPUT
BLU/WHT
RIGHT INPUT 045-247
300 SERIES SYMBOL NO'S


LEFT CHANNEL
045-250
100 SERIES SYMBOL NO'S
AMP
RIAA NETWORK
FILTER NETWORK
TONE CONTROL NETWORK
LEFT HIGH LEVEL INPUT
LEFT INPUT SHIELD DRIVE
LEFT H.F. FILTER
LEFT L.F. FILTER DRIVE
LEFT L.F. FILTER
LEFT LOUDNESS DRIVE
LEFT BALANCE SIGNAL
LEFT SHIELD DRIVE
LEFT BASS
LEFT TREBLE
BRN/WHT
ORN/WHT
RED/WHT
YEL/WHT
R3 VOLUME
250K CW
500K CW
FRONT
REAR
S3 LF-HF FILTER (CCW)
R4 - LOUDNESS
R5 BALANCE
C1 .022
C2 .022
R7 22K
R6 22K
C3 500pF
C4 500pF
C5 500pF
C6 500pF
L. BASS
L. TREBLE
S4 SECTION 1
S5 SECTION 1
MID POSITION
R. BASS
R. TREBLE
S4 SECTION 2
S5 SECTION 2
RIGHT HIGH LEVEL INPUT
RIGHT INPUT SHIELD DRIVE
RIGHT H.F. FILTER
RIGHT L.F. FILTER DRIVE
RIGHT L.F. FILTER
RIGHT LOUDNESS DRIVE
RIGHT BALANCE SIGNAL
RIGHT SHIELD DRIVE
RIGHT BASS
RIGHT TREBLE
RIGHT CHANNEL
045-250
100 SERIES SYMBOL NO'S


POWER SUPPLY
045-250
200 SERIES SYMBOL NO'S
VOLTAGE REGULATORS
BASE FILTER
+75V FILTER
GND
GND
ZENER SUPPLY
COLLECTOR SUPPLY
LEFT MAIN OUTPUT
LEFT MAIN OUTPUT
RIGHT MAIN OUTPUT
RIGHT MAIN OUTPUT
CTR OUTPUT
AMP
AMP
LEFT MAIN OUTPUT
RIGHT MAIN OUTPUT
YEL 0V
(12)
(38) YEL 72.4V
(39) RED 73V
(41) BLK 0V
(48) BLK 0V
(42) RED/WHT 116V
(40) ORN/WHT 103V
(43) 0V
(44) 0V
(46) 0V
(47) 0V
(45) 0V
C12
R48 22K
CTR
L
L
R
R
MAIN OUTPUTS
R49 1K 5W
C13
BLK/GRN
BLK/ORN
BLK/RED
BLK/WHT
BLK/YEL
BRN
BLK
T1
RED
117 VAC
C7 .01
RED/YEL
C8 .01
RED
117 VAC
BRN 5.4 VAC
BRN
D1
D2
D3
ORN 160V
R50 3.3K 1W
R51 2.7K 1/2W
C9 10/50V
V10
BRN/WHT
#1866 LAMPS
BRN
S401E
POWER ON/OFF
BLK/WHT
F1 0.5A
BLK
BLK
C10 .005
C11 .005
RED
WHT
120 V 50-60 Hz 15 WATTS
SWITCHED OUTLETS
UNSWITCHED OUTLET
YEL/WHT 0V
(13)
RIGHT MAIN OUTPUT
AMP
C6 500pF
RED/WHT
RED
GRN/WHT
R54 10K
R55 10K
R56 10K
C L C R
AMP
SPEAKER 1
SPEAKER 2
R52 220 2W
R53 220 2W
GRN
BLU
BLU/WHT
VIO/WHT
VIO
WHT
S6
SPEAKERS
(CCW) SECTION 1
HEADPHONE

SCHEMATIC NOTES

1. Unless otherwise specified: Resistance values are in ohms, 1/4 watt, and 5% tolerance; capacitance values smaller than 1 are in microfarads (μF); capacitance values greater than 1 are in picofarads (pF): inductors are in microhenries (μH).

2. Printed circuit board components are outlined on the schematics by dotted lines. The circled numbers around the dotted lines correspond to the numbers on the PC Board layouts.

3. The heavy lines on the schematics denote the left channel primary signal path. The heavy dash lines on the schematics denote the right channel primary signal path.

4. The terminal numbering of rotary switches is for reference only.

5. All voltages indicated on the schematics are measured under the following conditions:

   a. Use of an 11 megohm input impedance VTVM.

   b. All voltages ±10% with respect to chassis ground.

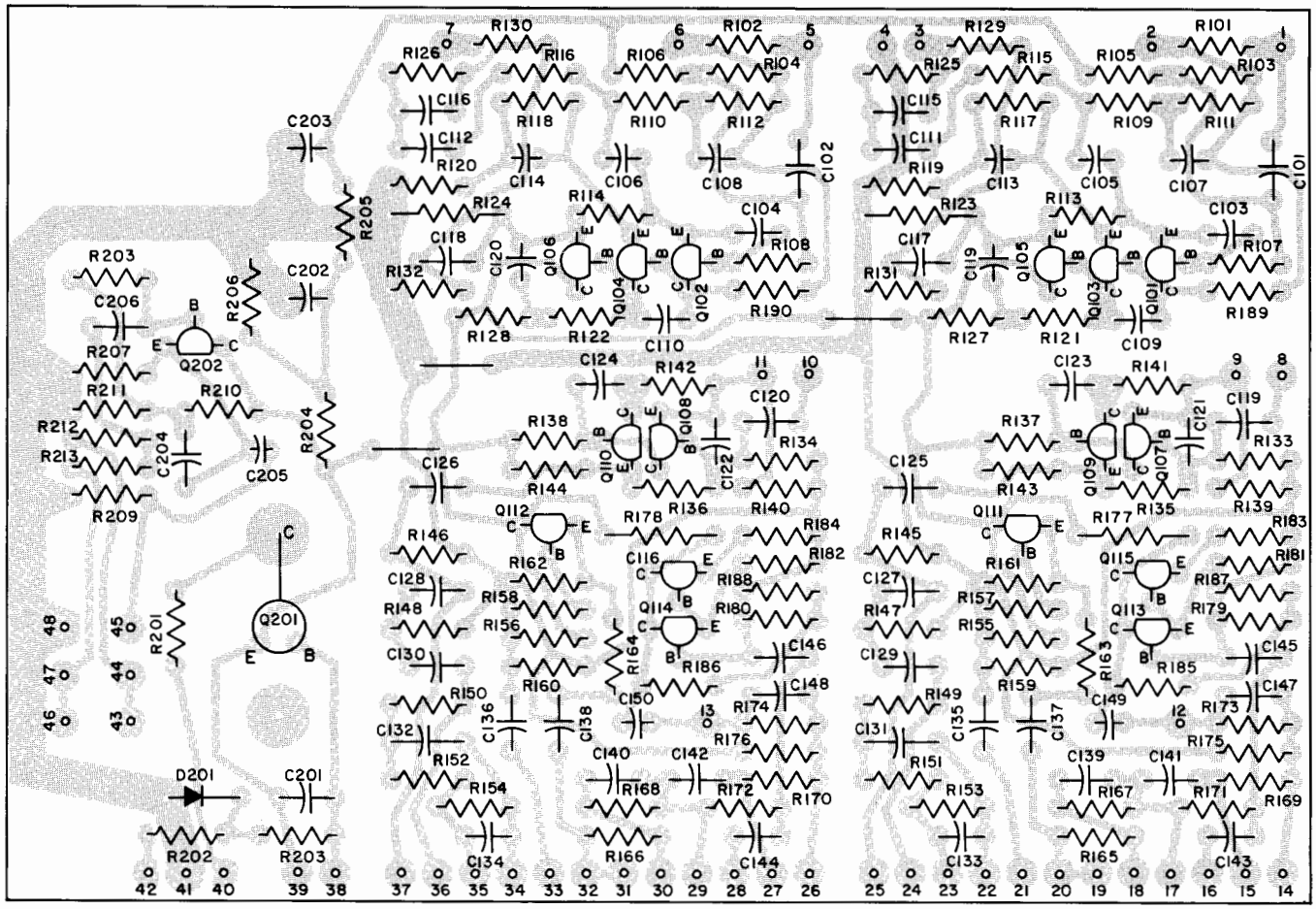
   c. No signal at input terminals.

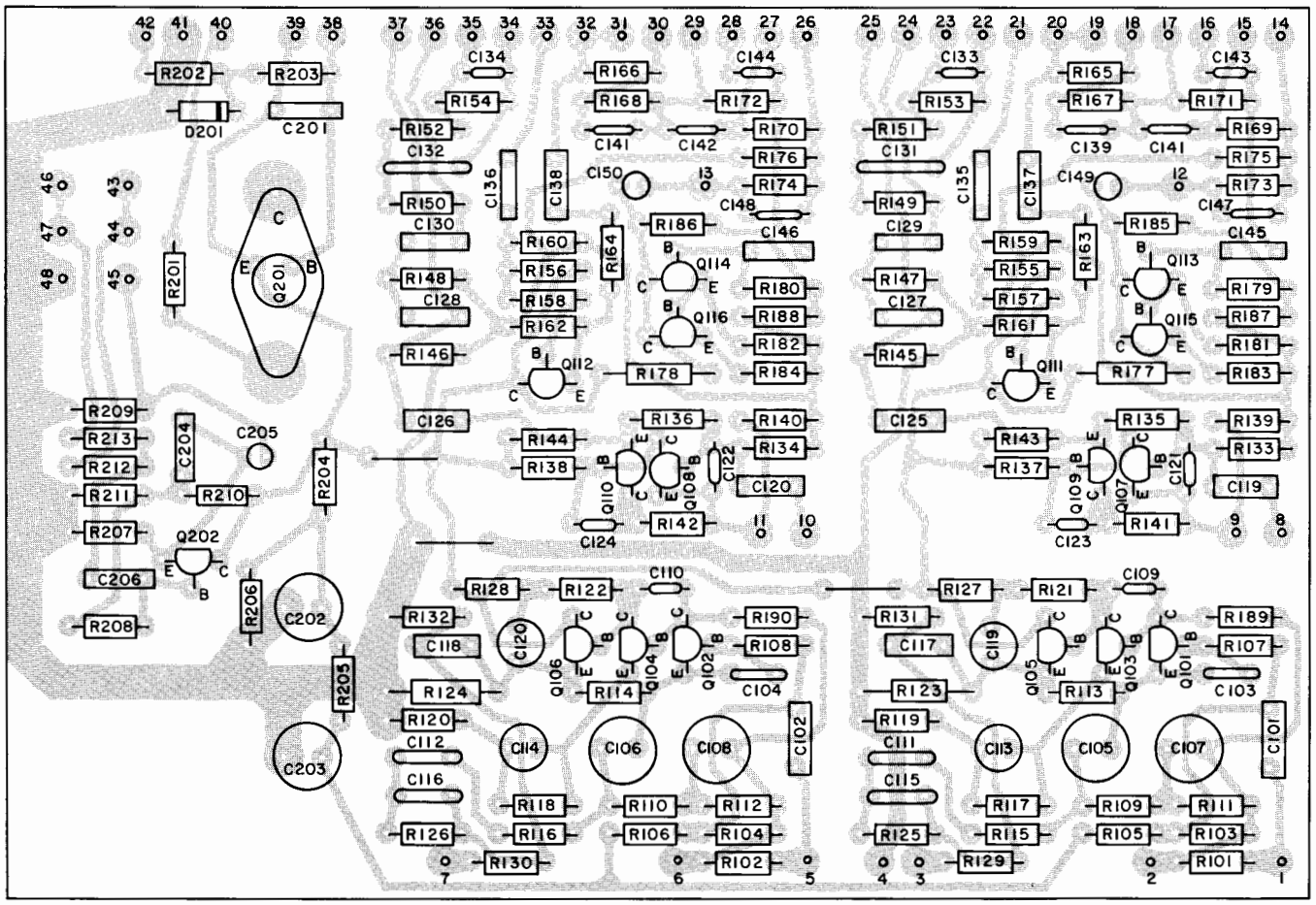
   d. AC input at 120 volts, 50/60 Hz.

   e. Front panel controls at:

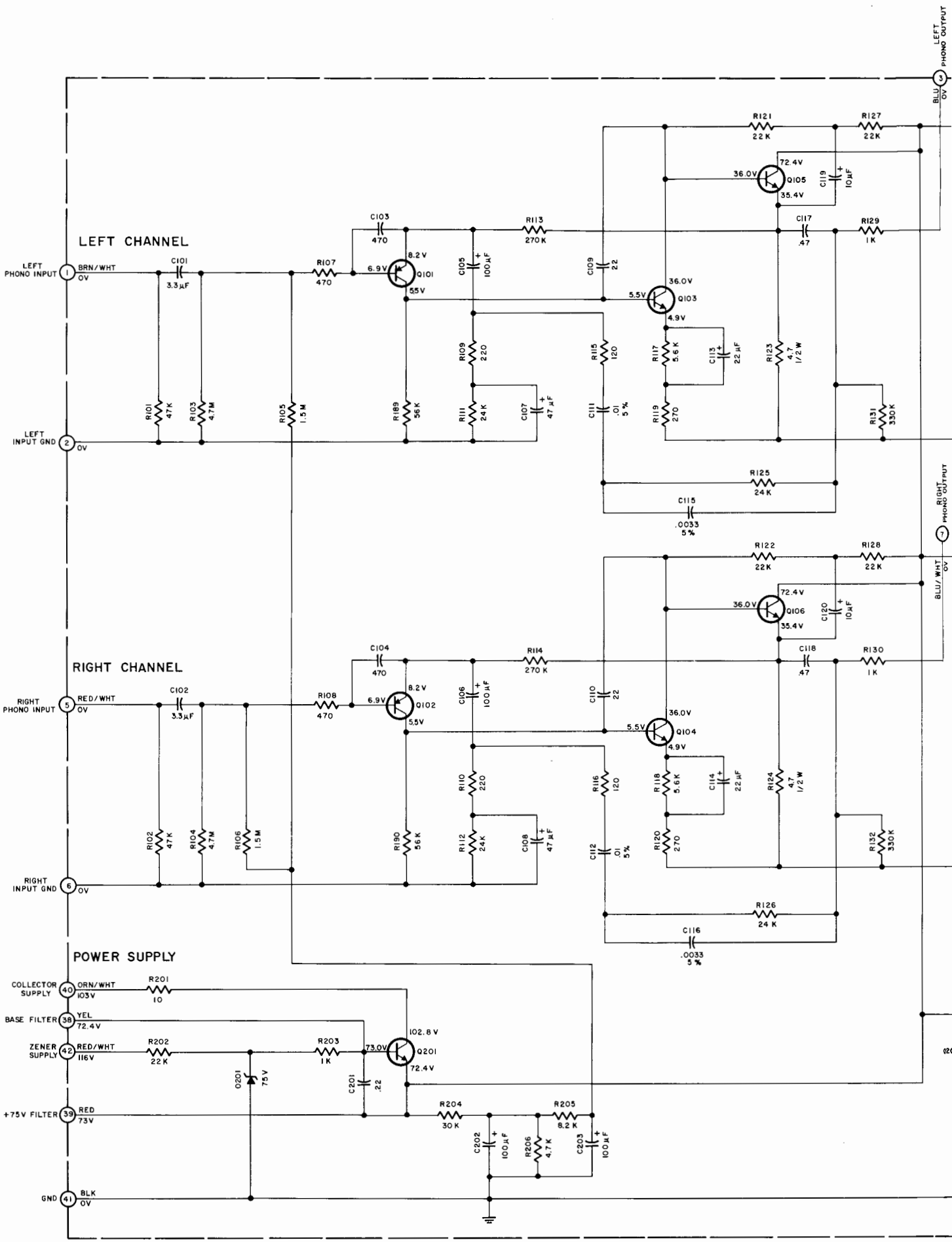
Speaker	Off
Filter	Out
Input Selector	Phono 1
Mode Selector	Stereo
Treble	Flat
Bass	Flat
Volume	ccw
Balance	Center Detent
Loudness	Flat
Push Switches	Out
Power Switch	On

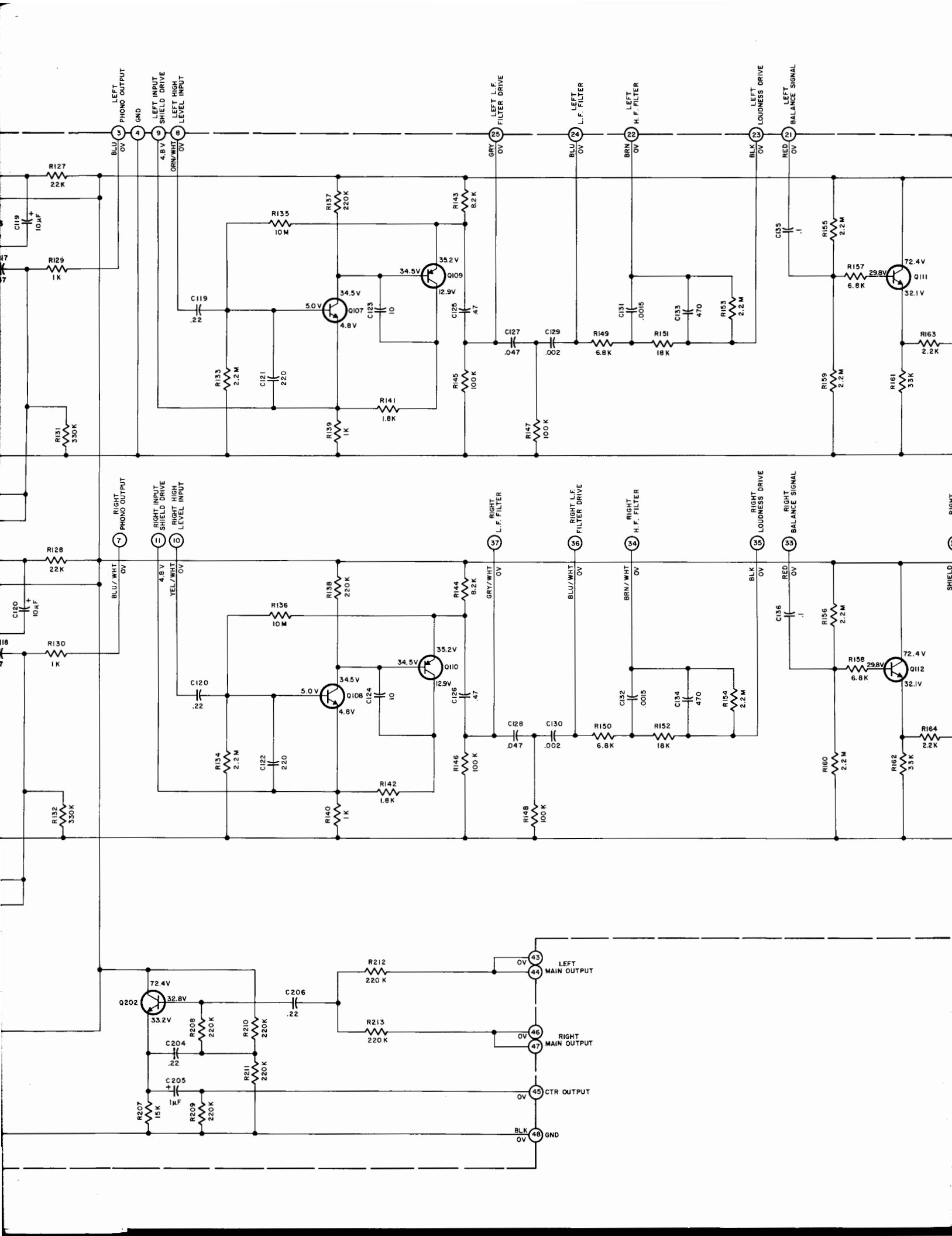
All other controls at normal positions

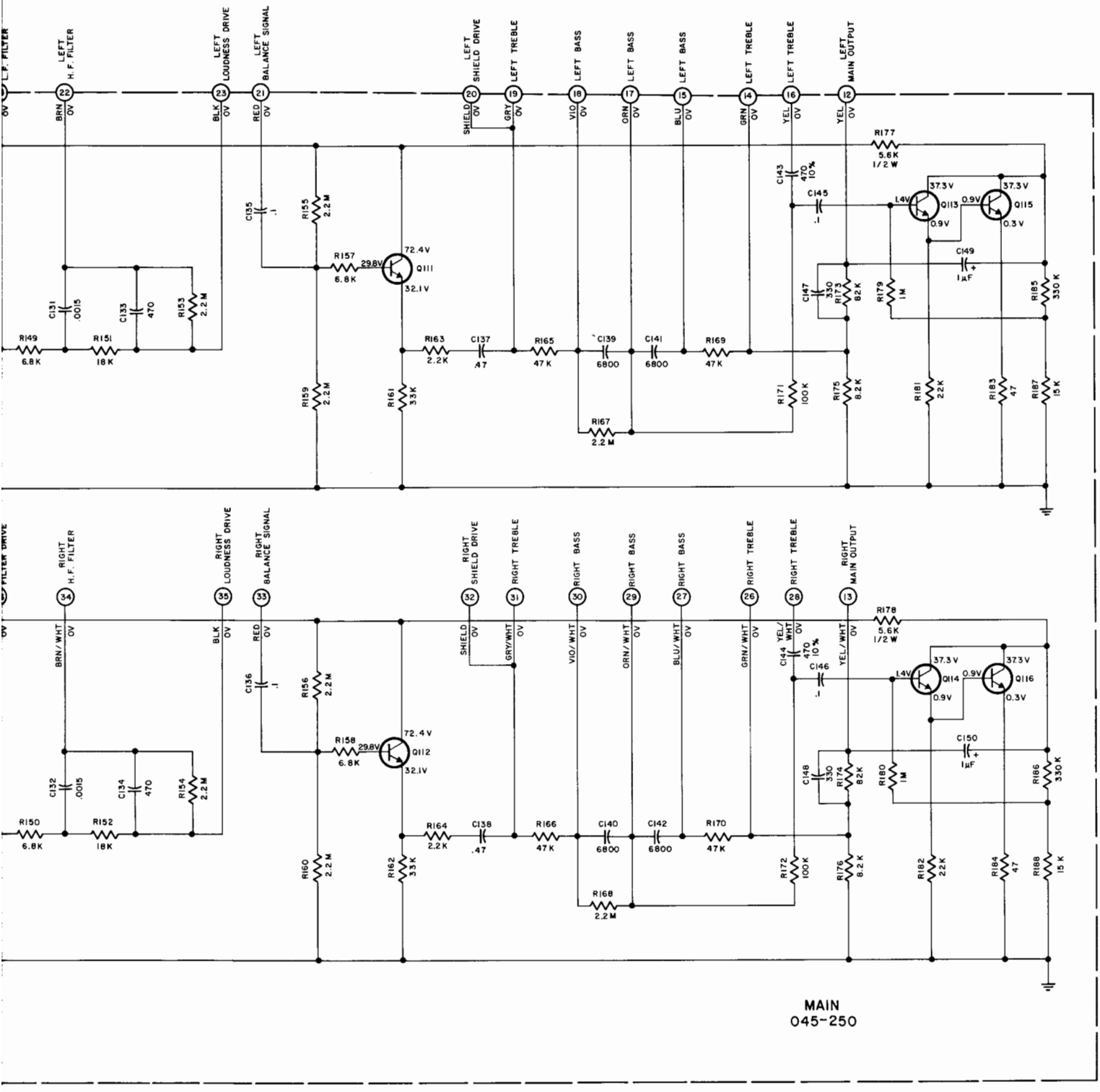




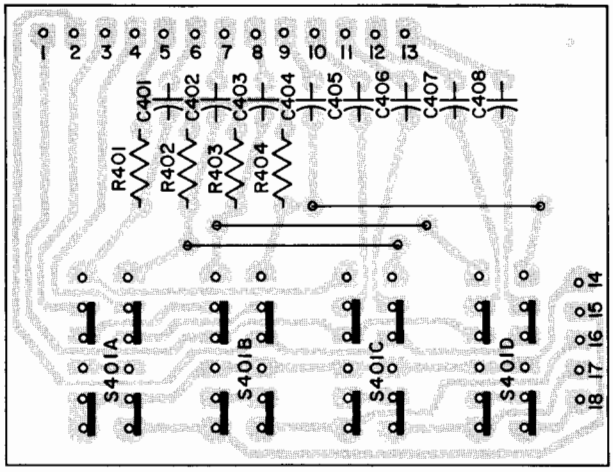
MAIN PC BOARD 045250

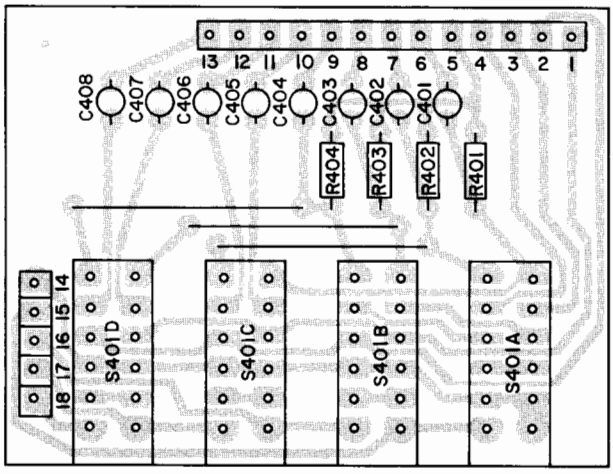

LEFT CHANNEL
RIGHT CHANNEL
POWER SUPPLY
LEFT PHONO INPUT
BRN/WHT
0V
LEFT INPUT GND
RIGHT PHONO INPUT
RED/WHT
RIGHT INPUT GND
COLLECTOR SUPPLY
ORN/WHT
103V
BASE FILTER
YEL
72.4V
ZENER SUPPLY
RED/WHT
116V
+75V FILTER
RED
73V
GND
BLK
0V
LEFT PHONO OUTPUT
BLU/WHT
RIGHT PHONO OUTPUT
BLU/WHT
C101 3.3µF
C102 3.3µF
C103 470
C104 470
C105 100µF
C106 100µF
C107 47µF
C108 47µF
C109 22
C110 22
C111 .01 5%
C112 .01 5%
C113 22µF
C114 22µF
C115 .0033 5%
C116 .0033 5%
C117 .47
C118 .47
C119 10µF
C120 10µF
C201 .22
C202 100µF
C203 100µF
R101 47K
R102 47K
R103 4.7M
R104 4.7M
R105 1.5M
R106 1.5M
R107 470
R108 470
R109 220
R110 220
R111 24K
R112 24K
R113 270K
R114 270K
R115 120
R116 120
R117 5.6K
R118 5.6K
R119 270
R120 270
R121 22K
R122 22K
R123 4.7 1/2W
R124 4.7 1/2W
R125 24K
R126 24K
R127 22K
R128 22K
R129 1K
R130 1K
R131 330K
R132 330K
R189 56K
R190 56K
R201 10
R202 22K
R203 1K
R204 30K
R205 8.2K
R206 4.7K
Q101 8.2V 6.9V 5.5V
Q102 8.2V 6.9V 5.5V
Q103 36.0V 5.5V 4.9V
Q104 36.0V 5.5V 4.9V
Q105 72.4V 36.0V 35.4V
Q106 72.4V 36.0V 35.4V
Q201 102.8V 73.0V 72.4V
D201 75V


LEFT PHONO OUTPUT
GND
LEFT INPUT SHIELD DRIVE
LEFT HIGH LEVEL INPUT
LEFT L.F. FILTER DRIVE
LEFT L.F. FILTER
LEFT H.F. FILTER
LEFT LOUDNESS DRIVE
LEFT BALANCE SIGNAL
RIGHT PHONO OUTPUT
RIGHT INPUT SHIELD DRIVE
RIGHT HIGH LEVEL INPUT
RIGHT L.F. FILTER
RIGHT L.F. FILTER DRIVE
RIGHT H.F. FILTER
RIGHT LOUDNESS DRIVE
RIGHT BALANCE SIGNAL
LEFT MAIN OUTPUT
RIGHT MAIN OUTPUT
CTR OUTPUT
GND
Q107
Q108
Q109
Q110
Q111
Q112
Q202

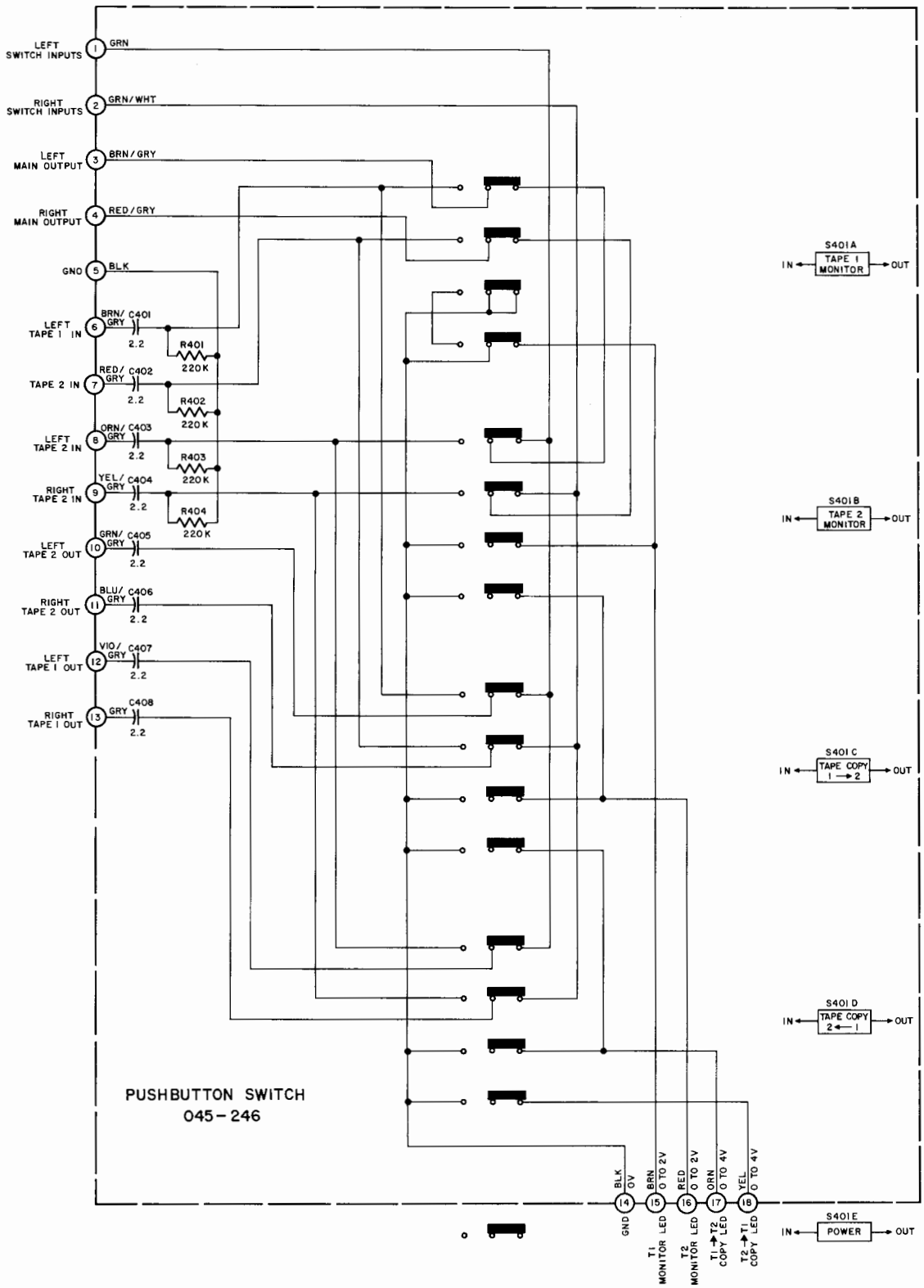

L.F. FILTER
LEFT H.F. FILTER
LEFT LOUDNESS DRIVE
LEFT BALANCE SIGNAL
LEFT SHIELD DRIVE
LEFT TREBLE
LEFT BASS
LEFT BASS
LEFT BASS
LEFT TREBLE
LEFT TREBLE
LEFT MAIN OUTPUT
22
23
21
20
19
18
17
15
14
16
12
BRN 0V
BLK 0V
RED 0V
SHIELD 0V
GRY 0V
VIO 0V
ORN 0V
BLU 0V
GRN 0V
YEL 0V
YEL 0V
R177 5.6K 1/2W
C143 470 10%
C145 .1
37.3V
L4V
Q113
0.9V
0.9V
37.3V
Q115
0.3V
C149 1µF
C147 330
R173 82K
R179 1M
R185 330K
C135 .1
R155 2.2M
R157 6.8K
29.8V
72.4V
Q111
32.1V
C131 .0015
C133 470
R153 2.2M
R149 6.8K
R151 18K
R163 2.2K
C137 .47
R165 47K
C139 6800
C141 6800
R169 47K
R159 2.2M
R161 3.3K
R167 2.2M
R171 100K
R175 8.2K
R181 2.2K
R183 47
R187 15K
RIGHT H.F. FILTER
RIGHT LOUDNESS DRIVE
RIGHT BALANCE SIGNAL
RIGHT SHIELD DRIVE
RIGHT TREBLE
RIGHT BASS
RIGHT BASS
RIGHT BASS
RIGHT TREBLE
RIGHT TREBLE
RIGHT MAIN OUTPUT
34
35
33
32
31
30
29
27
26
28
13
BRN/WHT 0V
BLK 0V
RED 0V
SHIELD 0V
GRY/WHT 0V
VIO/WHT 0V
ORN/WHT 0V
BLU/WHT 0V
GRN/WHT 0V
YEL/WHT 0V
YEL/WHT 0V
R178 5.6K 1/2W
C144 470 10%
C146 .1
37.3V
L4V
Q114
0.9V
0.9V
37.3V
Q116
0.3V
C150 1µF
C148 330
R174 82K
R180 1M
R186 330K
C136 .1
R156 2.2M
R158 6.8K
29.8V
72.4V
Q112
32.1V
C132 .0015
C134 470
R154 2.2M
R150 6.8K
R152 18K
R164 2.2K
C138 .47
R166 47K
C140 6800
C142 6800
R170 47K
R160 2.2M
R162 3.3K
R168 2.2M
R172 100K
R176 8.2K
R182 2.2K
R184 47
R188 15K

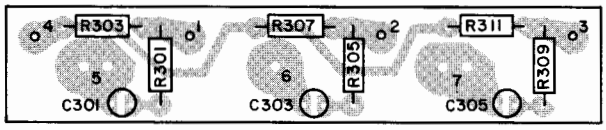
MAIN
045-250

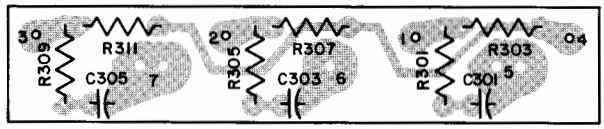




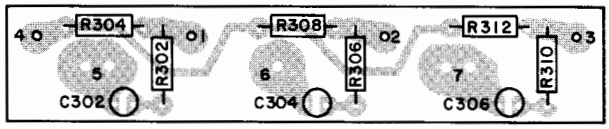
PUSHBUTTON SWITCH PC BOARD
045-246

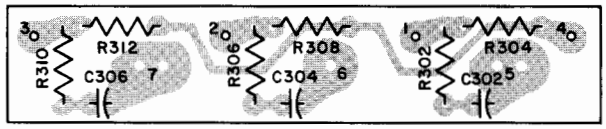

LEFT SWITCH INPUTS
1 GRN
RIGHT SWITCH INPUTS
2 GRN/WHT
LEFT MAIN OUTPUT
3 BRN/GRY
RIGHT MAIN OUTPUT
4 RED/GRY
GND
5 BLK
LEFT TAPE 1 IN
6 BRN/GRY C401 2.2
R401 220K
TAPE 2 IN
7 RED/GRY C402 2.2
R402 220K
LEFT TAPE 2 IN
8 ORN/GRY C403 2.2
R403 220K
RIGHT TAPE 2 IN
9 YEL/GRY C404 2.2
R404 220K
LEFT TAPE 2 OUT
10 GRN/GRY C405 2.2
RIGHT TAPE 2 OUT
11 BLU/GRY C406 2.2
LEFT TAPE 1 OUT
12 VIO/GRY C407 2.2
RIGHT TAPE 1 OUT
13 GRY C408 2.2
S401A
IN
TAPE 1 MONITOR
OUT
S401B
IN
TAPE 2 MONITOR
OUT
S401C
IN
TAPE COPY 1 → 2
OUT
S401D
IN
TAPE COPY 2 ← 1
OUT
S401E
IN
POWER
OUT
PUSHBUTTON SWITCH
045-246
14 GND BLK 0V
15 T1 MONITOR LED BRN 0 TO 2V
16 T2 MONITOR LED RED 0 TO 2V
17 T1→T2 COPY LED ORN 0 TO 4V
18 T2→T1 COPY LED YEL 0 TO 4V



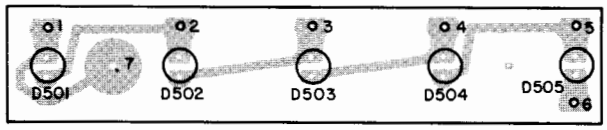


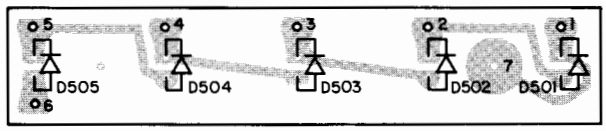
LEFT INPUT TERMINAL PC BOARD
045-247



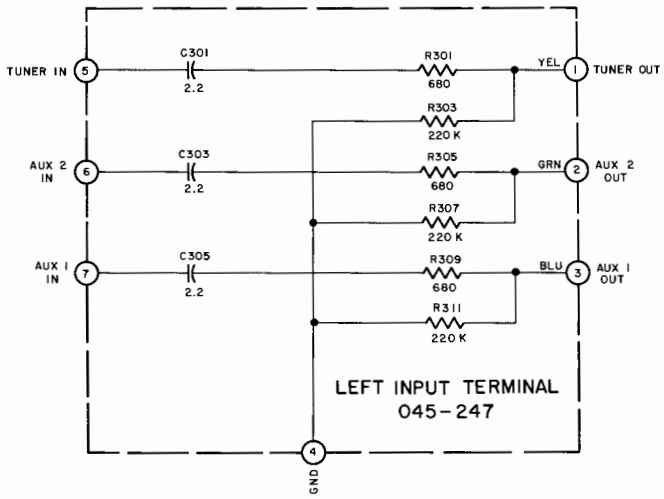


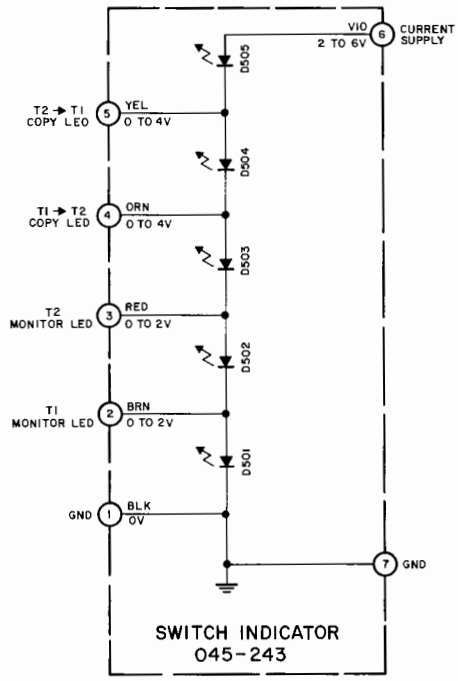
RIGHT INPUT TERMINAL PC BOARD
045-247

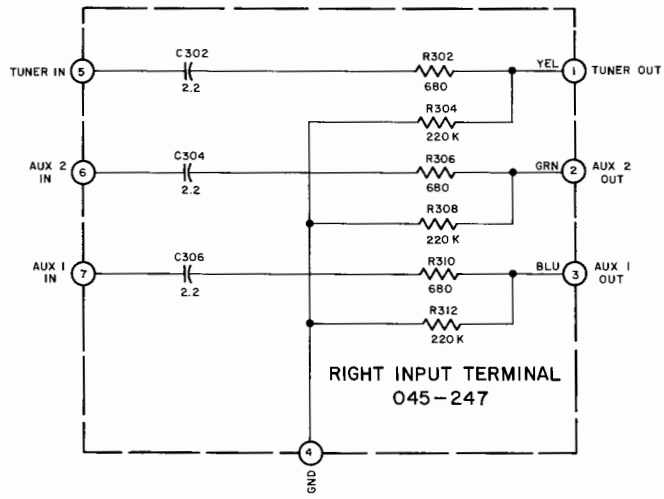




SWITCH INDICATOR PC BOARD
045-243


TUNER IN
5
C301
2.2
R301
680
YEL
1
TUNER OUT
R303
220 K
AUX 2 IN
6
C303
2.2
R305
680
GRN
2
AUX 2 OUT
R307
220 K
AUX 1 IN
7
C305
2.2
R309
680
BLU
3
AUX 1 OUT
R311
220 K
LEFT INPUT TERMINAL
045-247
4
GND


VIO
2 TO 6V
6
CURRENT SUPPLY
D505
T2 → T1 COPY LED
5
YEL
0 TO 4V
D504
T1 → T2 COPY LED
4
ORN
0 TO 4V
D503
T2 MONITOR LED
3
RED
0 TO 2V
D502
T1 MONITOR LED
2
BRN
0 TO 2V
D501
GND
1
BLK
0V
7
GND
SWITCH INDICATOR
045-243


TUNER IN
5
C302
2.2
R302
680
YEL
1
TUNER OUT
R304
220 K
AUX 2 IN
6
C304
2.2
R306
680
GRN
2
AUX 2 OUT
R308
220 K
AUX 1 IN
7
C306
2.2
R310
680
BLU
3
AUX 1 OUT
R312
220 K
RIGHT INPUT TERMINAL
045-247
4
GND

All parts not listed are common items obtainable from radio parts jobbers.

Replacement parts may be obtained when ordered by PART NUMBER from:

McIntosh Laboratory, Inc.
Customer Service Department
2 Chambers Street
Binghamton, New York 13903
(telephone 607-723-3512)

CAPACITORS

Symbol Number	Description	Part Number
C9	Elect. 10µF 50V	066-221
C13	Elect. 80/80/150/150µF	066-095

DIODES

D1,2	Si. Signal diode	070-031
D3	Si. Signal Diode	070-031
D201	Zener 75V	070-025
D501,502	LED Lamp	070-093
D503,504	LED Lamp	070-093
D505	LED Lamp	070-093

FUSES

F1	Fuse 0.5A Norm Blo	089-009

TRANSISTORS

Q101,102	Si. PNP Transistor	132-176
Q103,104	Si. NPN Transistor	132-175
Q105,106	Si. NPN Transistor	132-175
Q107,108	Si. NPN Transistor	132-175
Q109,110	Si. PNP Transistor	132-176
Q111,112	Si. NPN Transistor	132-175
Q113,114	Si. NPN Transistor	132-175
Q115,116	Si. NPN Transistor	132-175
Q201	NPN Power Transistor	132-028
Q202	Si NPN Transistor	132-175

POTENTIOMETERS

R3	Volume Control	134-319
R4,5	Bal./Loudness Control	134-320

SWITCHES

S1	Input Selector	146-193
S2	Mode Selector	146-196
S3	LF-HF Filter	146-194
S4	Bass Switch	146-195
S5	Treble Switch	146-195
S6	Speaker Filter Switch	146-194
S401	Pushbutton Switch	150-026

TRANSFORMERS

T1	Power Transformer	045-217

FRONT PANEL & TRIM

Front Panle Glass	016-165
End Caps	018-160
Knob - Volume	090-017
Knob - Mode	090-156
Knob - Input	090-156
Knob - Filters	090-200
Knob - Speakers	090-201
Knob - Loudness	090-186
Knob - Balance	090-187
Knob - Bass Right	090-200
Knob - Bass Left	090-201
Knob - Treble Right	090-200
Knob - Treble Left	090-201

MISCELLANEOUS

Shipping Carton	045-338
Mounting Temp #100	038-178
Hardware Package	045-142
Fuseholder	178-099
Line Cord	170-019
Audio Cable	170-015
Owners Manual	039-033
Shorting Phono Plug	127-021

McIntosh **SERVICE BULLETIN**

REDUCE RFI & ELIMINATE OSCILLATION

MODEL: C 27 Preamplifier

PURPOSE OF MODIFICATION: To reduce sensitivity to RF interference and to eliminate oscillation when using a moving coil phono cartridge.

WHEN MODIFICATION SHOULD BE MADE: Whenever customer is complaining of:

A. Undersired reception of CB, ham apparatus and man made noise in the phono mode.

B. Oscillations, when a moving coil cartridge is used.

PARTS REQUIRED:

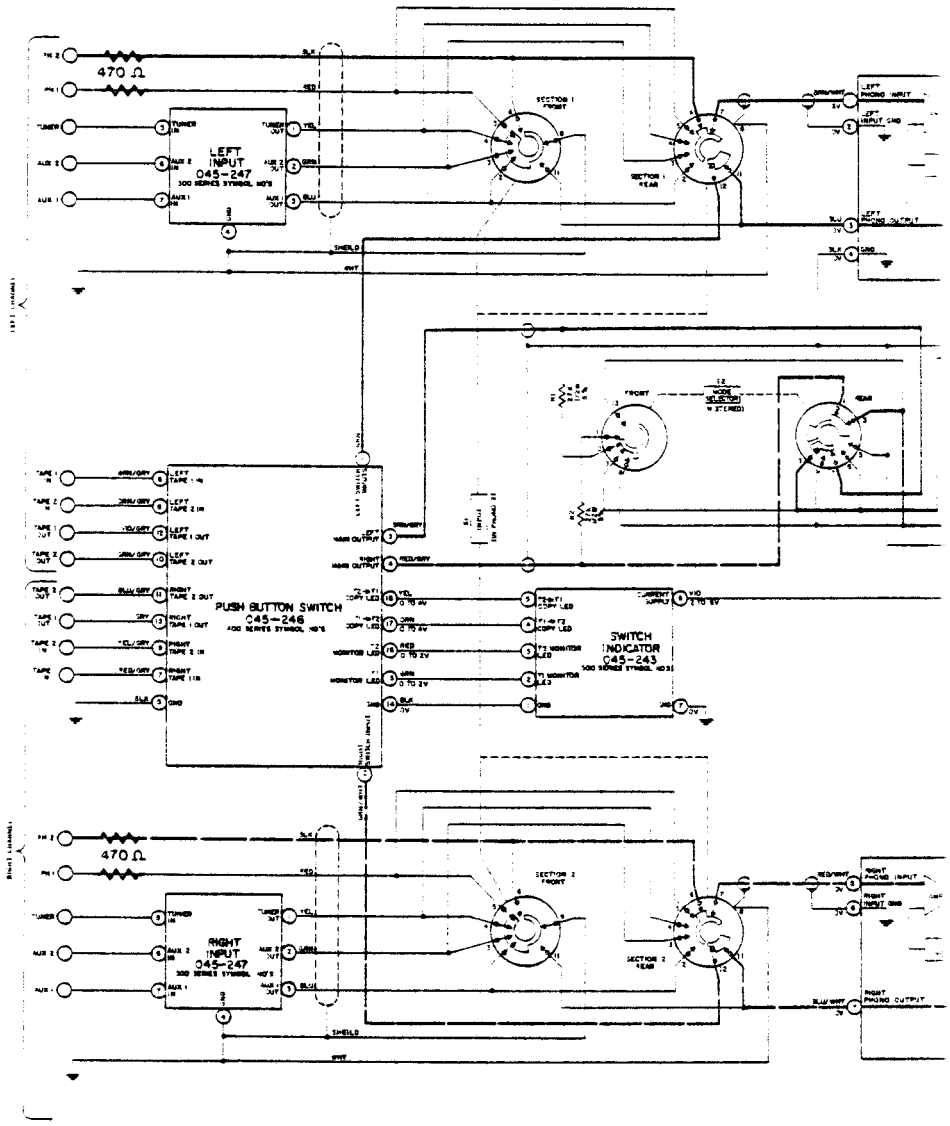
QUANTITY	PART NUMBER	DESCRIPTION
2	061039	Disc. cap. .003µF, 20% C103, 104
2	141090	Film res. 56K, 5%, 1/4W
4	141041	Film res. 470Ω, 5%, 1/4W

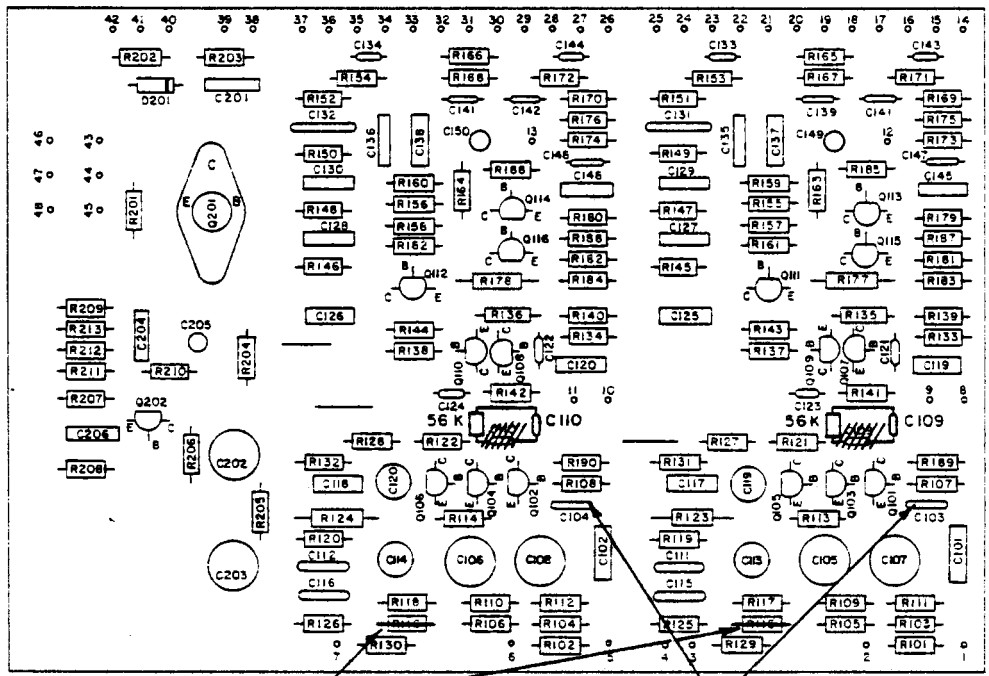
PROCEDURE: All changes are on the main PC board (045250), except step 4.

1. Change C103 and C104 from 470pF 10% to .003µF 20%
2. Remove and replace R115 and R116, 120Ω, 5%, 1/4W with wire jumpers.
3. Locate capacitor C109, Disconnect the lead on C109 that connects to R121. Connect a 56K, 5%, 1/4W resistor in series with the disconnected C109 lead and the circuit board where the C109 lead formerly connected. Do likewise for capacitor C110.
4. Connect right at the phono jacks a film resistor = 470Ω, 5%, 1/4W in series with the leads connected to these phono jacks.

(OVER)

C 27
S.B. No. 1





REPLACE WITH JUMPERS

MAIN PC BOARD 045250

REPLACE WITH .003 µf, 20%, DISCAPS