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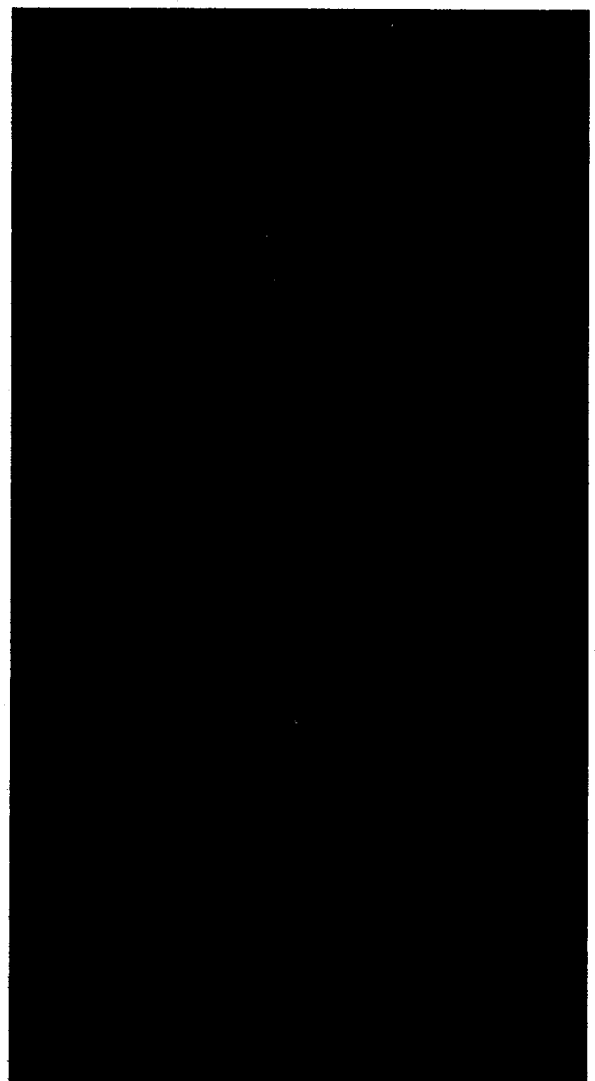
price \$6.00

# SERVICE MANUAL

## stereo components

**ALPHA 1**

**ALPHA 6**



 **SCOTT**®  
**The Name to listen to.**

H. H. SCOTT, INC., 20 Commerce Way, Woburn, Mass. 01801, Tel. 617 933-8800

-----NOTICE-----

The following safety precautions must be followed to assure continued reliability and safety against fire and shock hazard:

- 1.) Replacement parts used during servicing of this appliance must have identical characteristics as those offered and recommended by H. H. Scott, Inc.
- 2.) Satisfactory and approved service procedures dictate that ALL PARTS, no matter how apparently unimportant, be replaced exactly as in the original design.

EXAMPLES:

- a) Braided glass tubing over resistors.
  - b) Heatsinks on transistors.
  - c) Ceramic tube spacers.
  - d) All mechanical parts, i.e. covers, brackets, screws etc.
- 3.) A dielectric test is to be performed on each appliance following the re-assembly and before returning the unit to the customer.
  - 4.) The dielectric test, to be performed on H. H. Scott, Inc. electronic components serviced in the U. S. and Canada for use in these countries, shall consist of not less than the following:\*
    - 1.) A dielectric tester designed to supply not less than 1100 volts at 60 Hz and employing leakage current indicator/s is to be used.
    - 2.) The tester is to be connected per the instructions enclosed with the instrument, or as follows:
      - a) The tester is connected to the power line receptacle, and the power switch is turned ON.
      - b) Sufficient time is allowed for the tester supply to stabilize and then the output voltage is adjusted for 1080 volts.
      - c) Leads of the tester, usually marked GND and HV, are connected between chassis GND and both blades of the male plug of the power cord.
      - d) Switch tester to "test" and observe leakage indicator.

LEAKAGE CURRENT MUST NOT EXCEED 0.5 mA.

\* Dielectric tests made by service personnel in countries other than United States and Canada must use test equipment and procedures specified by the safety agency serving that country.

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## ALPHA 1 PREAMPLIFIER SPECIFICATIONS

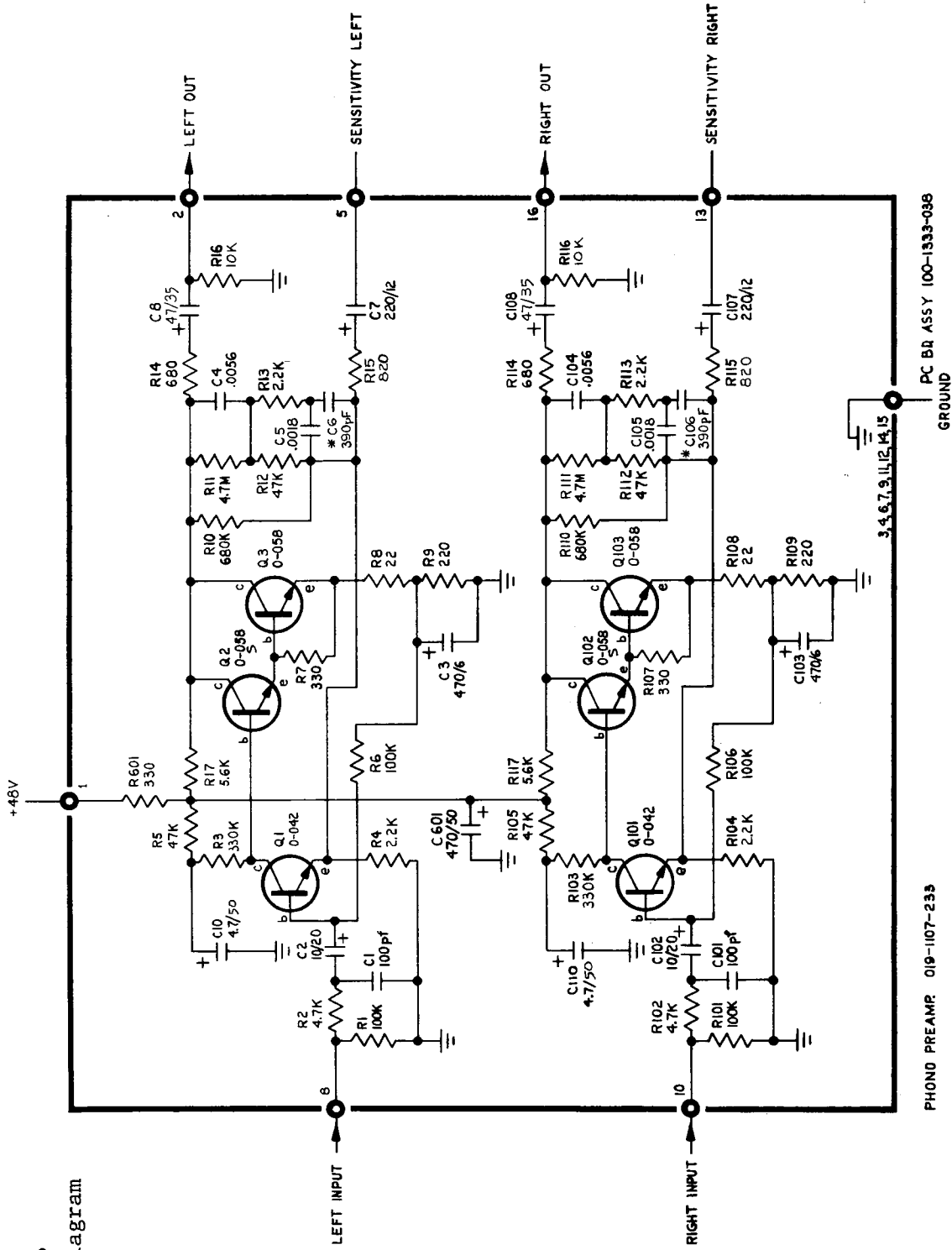
Distortion at rated output (THD)	0.05%
IM distortion (SMPTE)	0.08%
Rated output level	2.5V
Maximum output level	10V
Sensitivity	
-phono (switchable)	2.5mV/9mV
-phono 2	2.5mV
-mic (variable)	to 750µV
-tuner, aux, tape	250mV
S/N ratio "A" weighted	
-phono	75dB
-tuner, aux, tape	90dB
Frequency response (+0.5dB)	
-phono/mic	20Hz - 20kHz
-tuner, aux, tape	15Hz - 35kHz
Phono overload	125mV/450mV
Input impedance	
-low level inputs	47K ohms
-high level inputs	50K ohms
Output impedance	
-preamp out/access out	600 ohms
-tape out	10K ohms
Tone control range (+1dB)	
-bass (300Hz position)	+11dB at 100Hz
(100Hz position)	+7dB at 50Hz
-midrange	+7dB at 1kHz
-treble (3kHz position)	+11dB at 10kHz
(8kHz position)	+7dB at 20kHz
Filters (12dB/octave)	
-low	-3dB at 40 and 80Hz
-high	-3dB at 8 and 12kHz
Volume compensation	+7dB at 100Hz +3dB at 10kHz
Mute switch attenuation	-20dB
Power requirements	120/220VAC 50/60Hz
Power consumption	15 Watts
Weight	15 lbs., 6.8 kg
Dimensions - H/W/D	5 1/8"/19"/12 1/2"

## ALPHA 6 POWER AMPLIFIER SPECIFICATIONS

*Power output	60 Watts
Maximum THD at rated output	0.1%
Maximum IMD	0.1%
Input sensitivity	1.0V
Input impedance	25K ohm
S/N ratio "A" weighted	100dB
Frequency response	10Hz - 50kHz
Damping factor (1000Hz)	50
Slewing rate	12V/µS
Power requirements	120/220VAC 50/60Hz
Power consumption	
-idle	40 Watts
-max	450 Watts
Net weight	40 lbs., 18.4 kg
Dimensions - H/W/D	5 1/4"/19"/12 1/2"

\*Per H. H. Scott, Inc. output power statement as required by the Federal Trade Commission.

ALPHA 1  
PHONO PREAMP  
Schematic Diagram

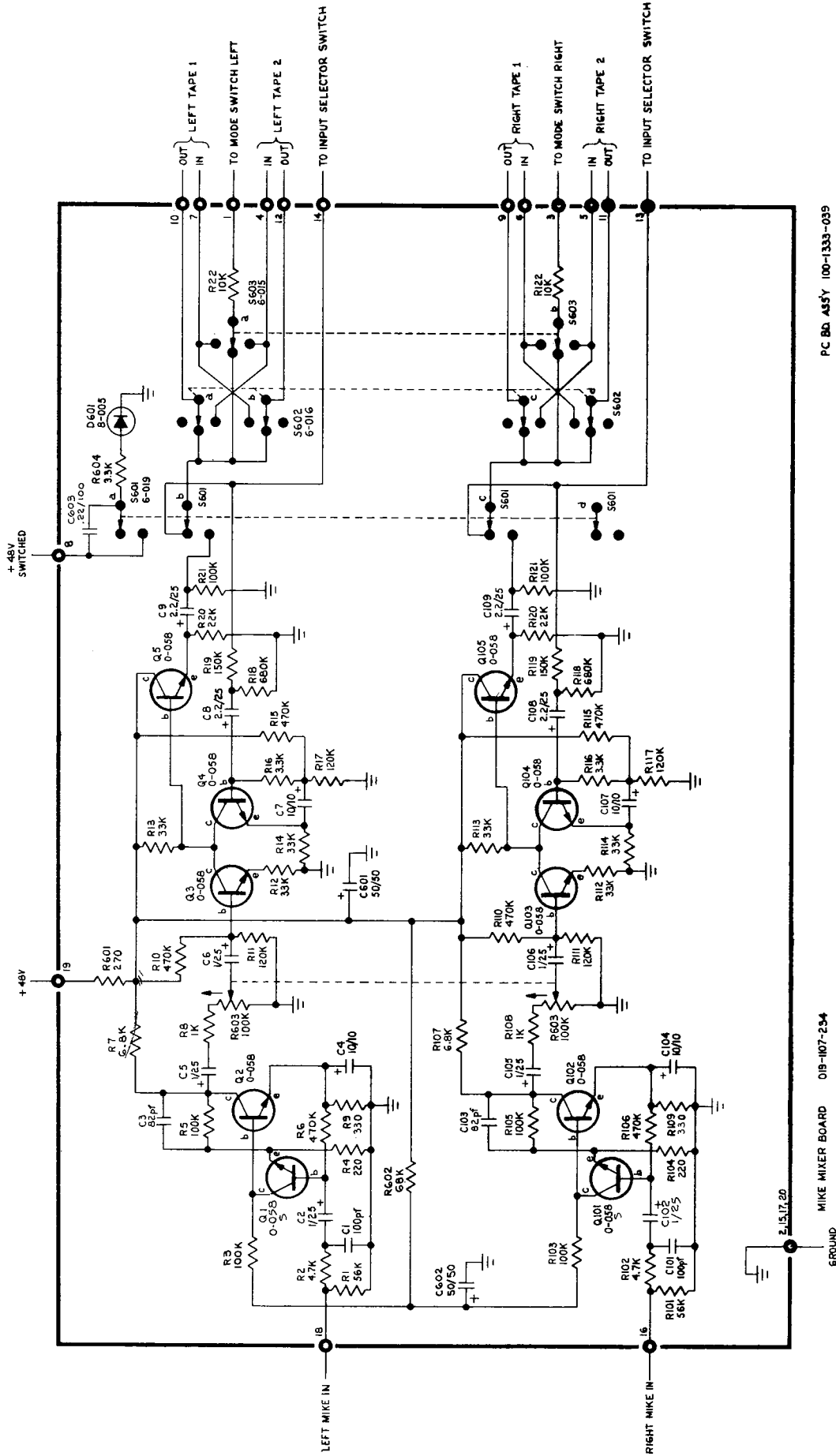


PHONO PREAMP 019-1107-235

NOTES:

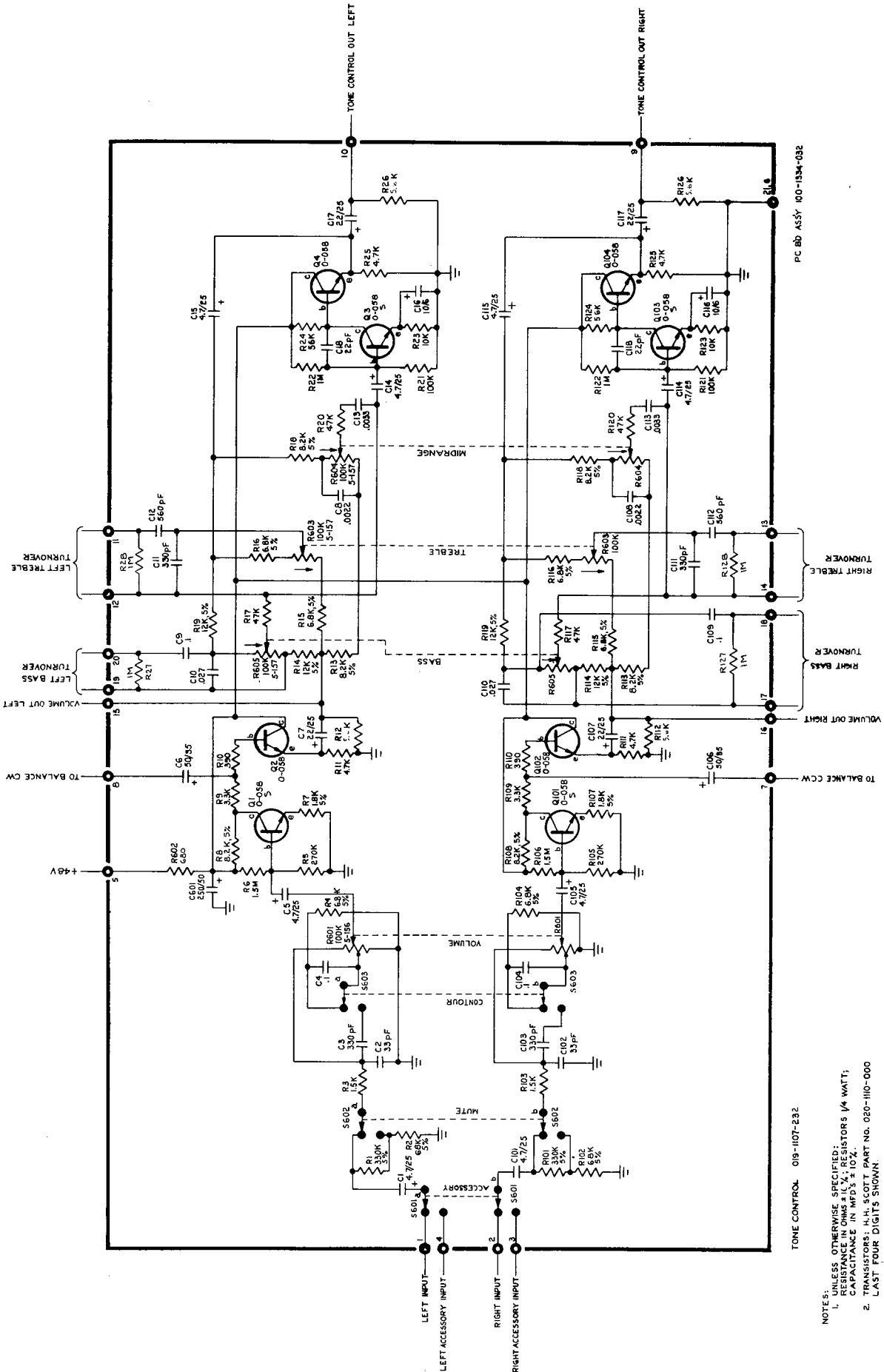
1. UNLESS OTHERWISE SPECIFIED:  
RESISTANCE IN OHMS  $\pm 10\%$ ; RESISTORS 1/4 WATT;  
CAPACITANCE IN MFD  $\pm 10\%$
2. TRANSISTORS: H.H. SCOTT PART NO. 020-1110-000  
LAST FOUR DIGITS SHOWN
3. ALL VOLTAGES ARE D.C.  $\pm 15\%$  MEASURED WITH 20K $\Omega$ /V.O.M.
4. \* CAPACITORS C6 & C106 ARE USED TO CORRECT  
FREQUENCY RESPONSE WITHIN 1dB. MAY NOT BE USED IN  
ALL UNITS.

ALPHA 1  
MIC MIXER  
Schematic Diagram



- NOTES:
1. UNLESS OTHERWISE SPECIFIED:  
RESISTANCE IN OHMS  $\pm 10\%$ , RESISTORS  $\frac{1}{4}$  WATT,  
CAPACITANCE IN MFD'S  $\pm 10\%$
  2. TRANSISTORS: H.H. SCOTT PART NO. 020-1110-000  
LAST FOUR DIGITS SHOWN
  3. SWITCHES: H.H. SCOTT PART NO. 023-1136-000  
LAST FOUR DIGITS SHOWN.
  4. ALL VOLTAGES ARE D.C.  $\pm 15\%$  MEASURED WITH 20K $\Omega$ /V.O.M.
  5. "S" INDICATES SELECTED FOR LOW NOISE.

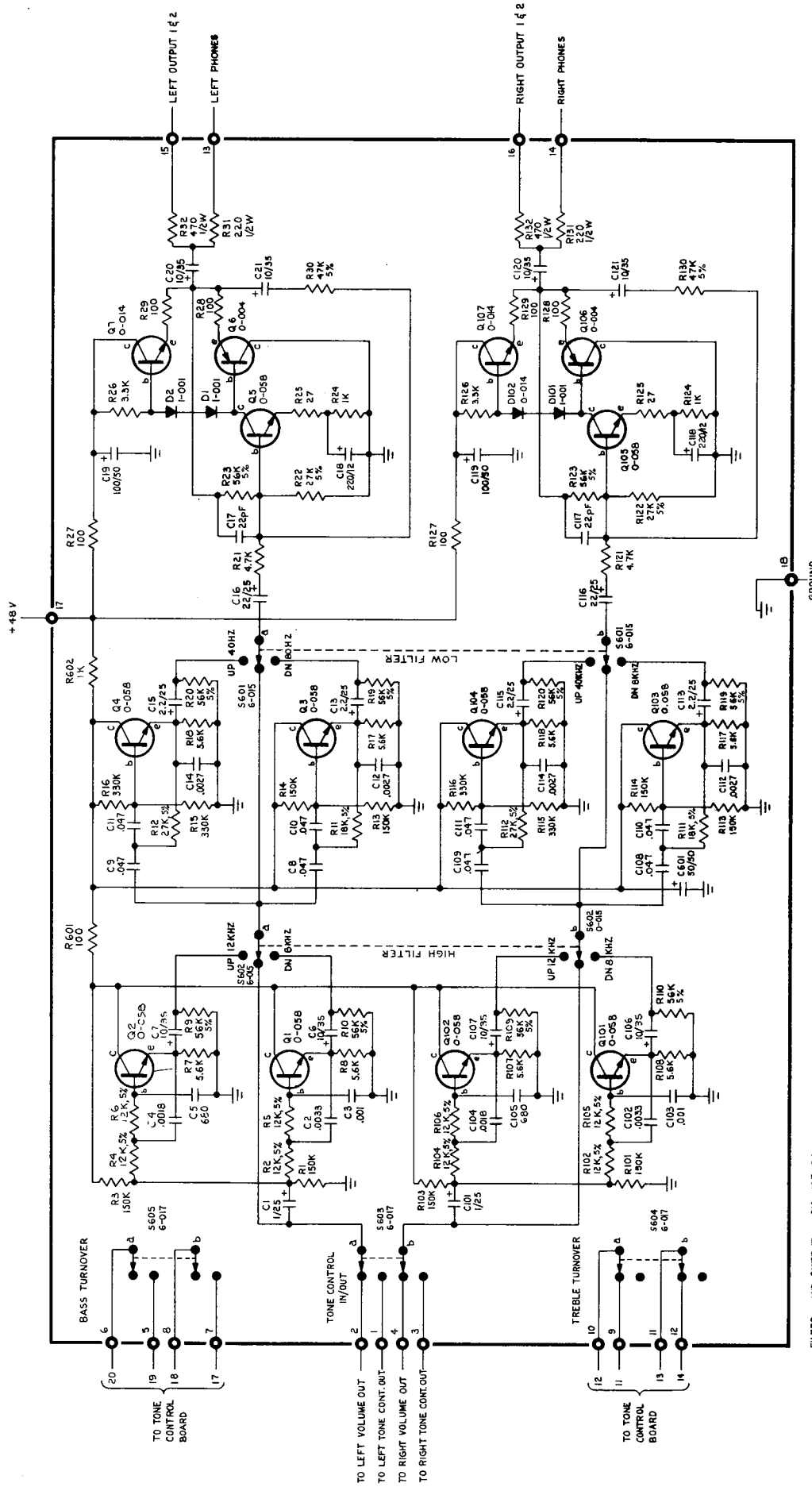
# ALPHA 1 TONE CONTROL Schematic Diagram



TONE CONTROL 019-1107-232

- NOTES:
- UNLESS OTHERWISE SPECIFIED: RESISTANCE IN OHMS = (%), RESISTORS (4 WATT); CAPACITANCE IN MPF'S = (%).
  - TRANSISTORS: I.H. SCOTT PART NO. 020-1110-000 LAST FOUR DIGITS SIGNIFY.
  - ALL VOLTAGES ARE D.C. ±15% MEASURED WITH 20KΩ/V.V.O.M.
  - 'S' INDICATES SELECTED FOR LOW NOISE.

ALPHA 1  
 FILTER & OUTPUT  
 Schematic Diagram

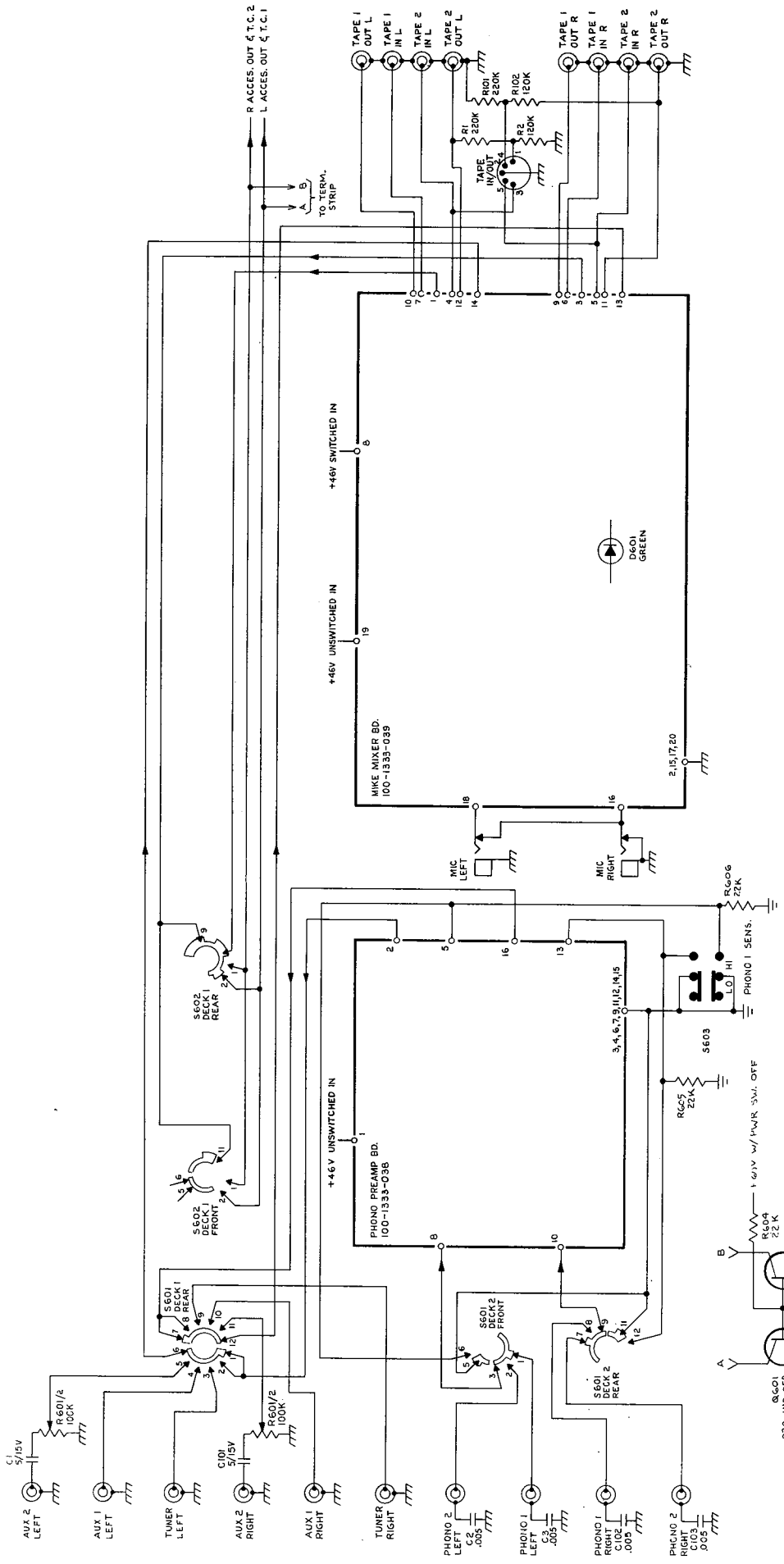


FILTER AND OUTPUT 019-1107-235

PC BD ASSY 100-1346-006

- NOTES: UNLESS OTHERWISE SPECIFIED:  
 1. RESISTORS ARE 1% TOLERANCE, RESISTORS 1/4 WATT;  
 CAPACITANCE IN MFD'S ±10%  
 2. TRANSISTORS: H. H. SCOTT PART NO. 020-1110-000  
 LAST FOUR DIGITS SHOWN  
 3. DIODES: H. H. SCOTT PART NO. 012-1012-000  
 LAST FOUR DIGITS SHOWN  
 4. SWITCHES: H. H. SCOTT PART NO. 023-1136-000  
 5. ALL VOLTAGES ARE D.C. ±15% MEASURED WITH 20 KΩ/V.V.O.M.

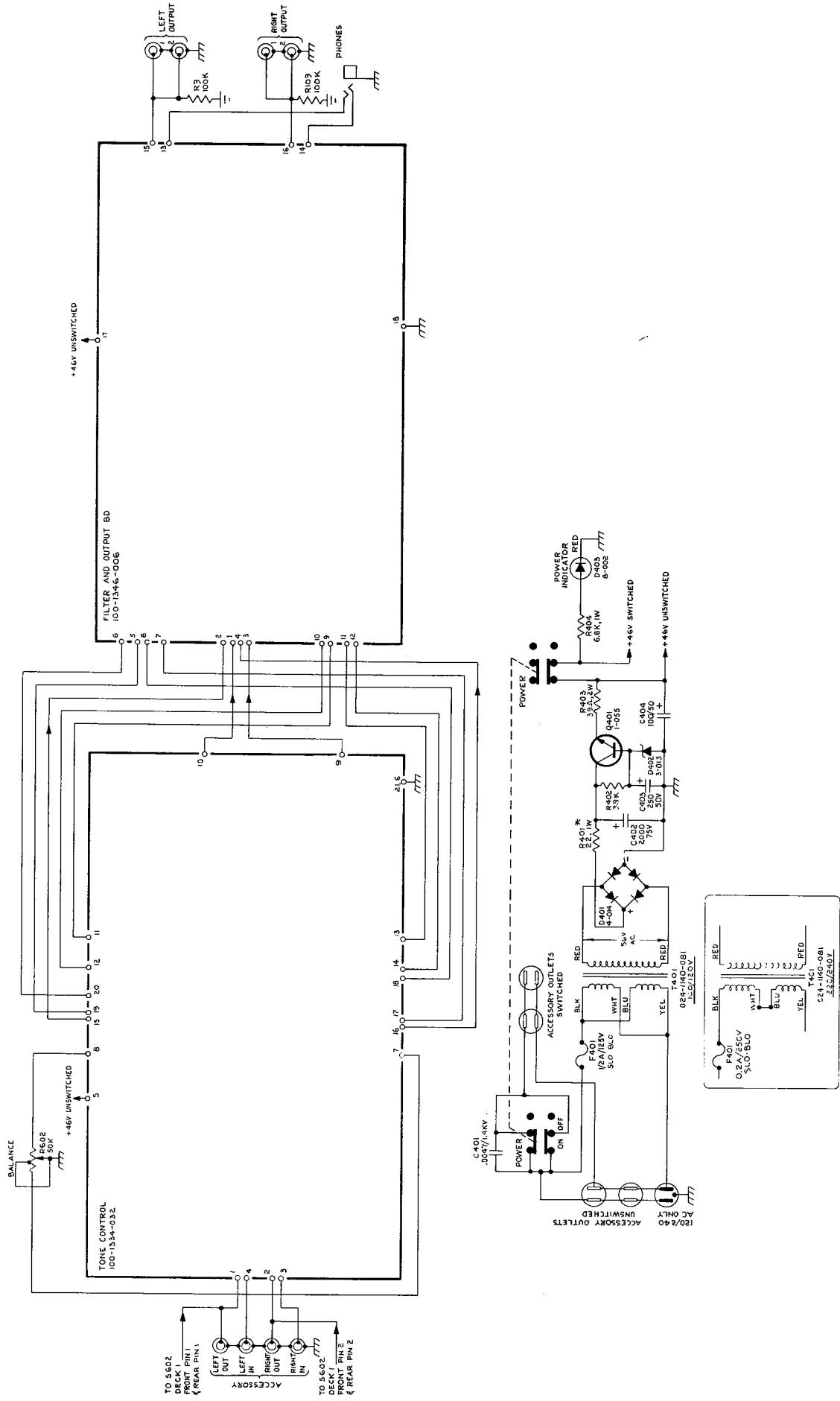
# ALPHA 1 Wiring Diagram A



- NOTES:
- RESISTANCE IN OHMS  $\pm 10\%$ ,  $1/4$  WATT, CAPACITANCE IN MICROFARADS, UNLESS OTHERWISE SPECIFIED.
  - ARROW HEADS INDICATE MAIN SIGNAL PATH.
  - VOLTAGES ALSO SHOWN ON SUBASSEMBLY DIAGRAMS UNLESS OTHERWISE SPECIFIED ALL D.C. VOLTAGES  $\pm 15\%$  MEASURED WITH RESPECT TO CHASSIS GROUND, USING 20K $\Omega$ /V VOM AT 120 VAC LINE.
  - ROTARY SWITCHES SHOWN IN MAX COUNTER CLOCKWISE POSITION (POS. 1). DECKS SHOWN FROM KNOB END. POSITIONS ARE:
- S601 - INPUT SELECTOR
- POSITIONS
- PHONO 1
  - PHONO 2
  - PHONO
  - TUNER
  - AUX 1
  - AUX 2
- S602 - MODE
- POSITIONS
- PHONO 1
  - PHONO 2
  - MONO
  - STEREO
  - REV. STEREO
  - LEFT INPUT
  - RIGHT INPUT
- HIGHEST SERIES NUMBERS ARE: R6, R105, R404, R604, C3, C103, C404, F401, F403, S603, S602.
7. \* USE 39 $\Omega$ , 2W RESISTOR (021-1122-064) IF 2000/43V CAPACITOR IS USED. (C402)



# ALPHA 1 Wiring Diagram B



ALPHA 1 PREAMP VOLTAGES

Mic Mixer Board

Device Location	DC Voltages		
	E	B	C
Q1,Q101 . . . . .	0.1	0.7	1.6
Q2,Q102 . . . . .	1.0	1.6	23.5
Q3,Q103 . . . . .	8.6	9.1	28.0
Q4,Q104 . . . . .	8.5	9.0	28.0
Q5,Q105 . . . . .	27.6	28.1	45.3

Filter/Output Board

Device Location	DC Voltages		
	E	B	C
Q1,Q101 . . . . .	12.6	13.2	28.6
Q2,Q102 . . . . .	12.7	13.2	28.6
Q3,Q103 . . . . .	13.7	14.2	29.6
Q4,Q104 . . . . .	13.2	13.6	29.5
Q5,Q105 . . . . .	7.0	7.7	23.5
Q6,Q106 . . . . .	24.1	23.5	0
Q7,Q107 . . . . .	24.2	24.8	47.4

Tone Control Board

Device Location	DC Voltages		
	E	B	C
Q1,Q101 . . . . .	2.9	3.5	20.8
Q2,Q102 . . . . .	20.1	20.7	34.2
Q3,Q103 . . . . .	2.4	3.0	20.5
Q4,Q104 . . . . .	20.1	20.5	34.2

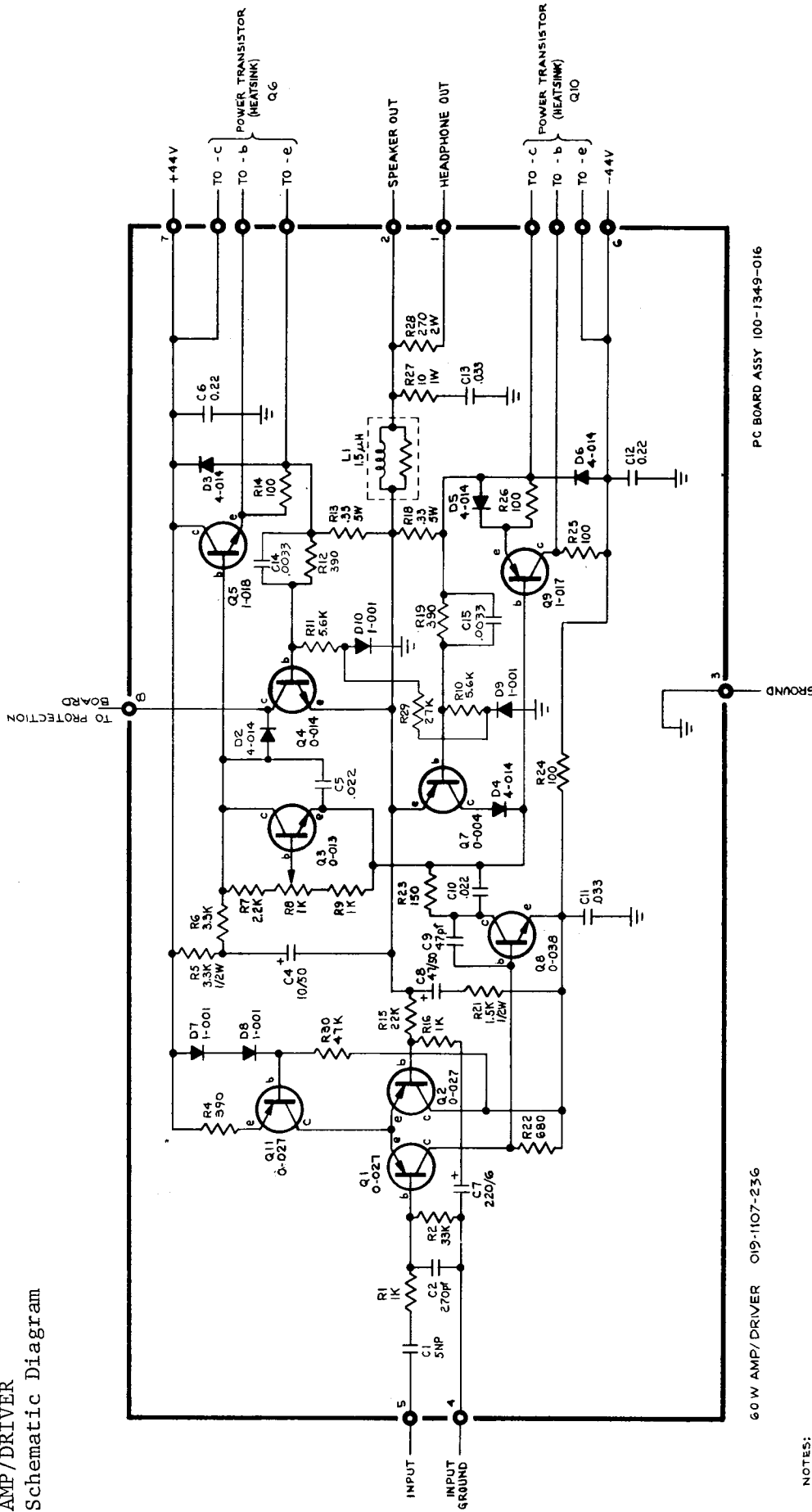
Phono Preamp Board

Device Location	DC Voltages		
	E	B	C
Q1,Q101 . . . . .	0.3	0.9	2.2
Q2,Q102 . . . . .	1.7	2.2	21.9
Q3,Q103 . . . . .	1.0	1.7	21.9

Power Supply

Device Location	DC Voltage		
	E	B	C
Q401 . . . . .	51	51.5	57

ALPHA 6  
AMP/DRIVER  
Schematic Diagram

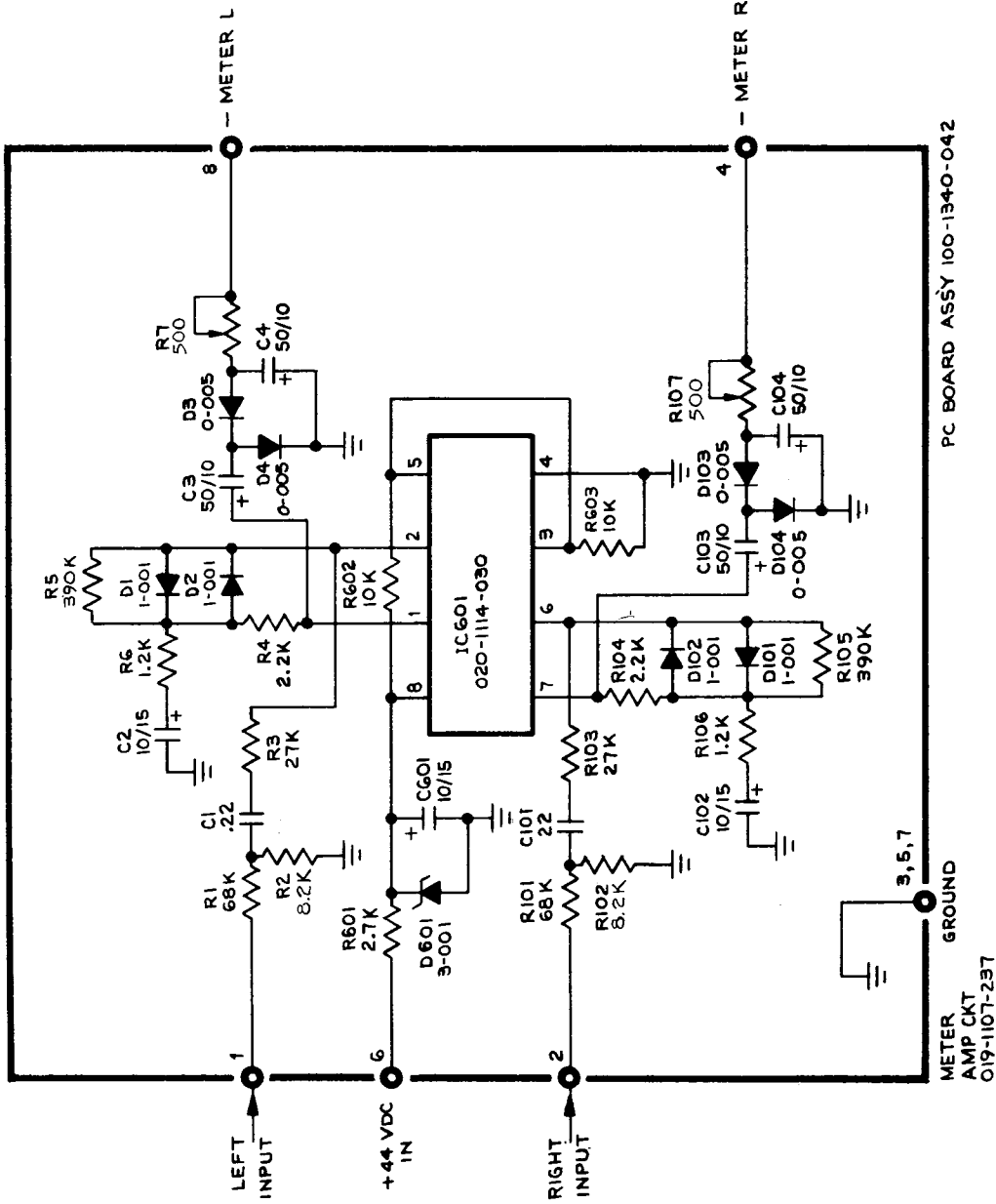


PC BOARD ASSY 100-1349-016

60 W AMP/DRIVER 019-1107-236

- NOTES:
- UNLESS OTHERWISE SPECIFIED:  
1. RESISTANCE IN OHMS  $\pm 10\%$ ; RESISTORS 1/4 WATT;  
CAPACITANCE IN MFD'S  $\pm 10\%$
  - TRANSISTORS: H.-H. SCOTT PART NO'S:  
020-1110-000  
020-1111-000  
LAST FOUR DIGITS SHOWN
  - DIODES: H.-H. SCOTT PART NO. 012-1024-000,  
012-1021-000. LAST FOUR DIGITS SHOWN
  - ALL VOLTAGES ARE D.C.  $\pm 15\%$ , MEASURED WITH  
20X  $\Omega/V$  V.O.M.
  - DC OFFSET VOLTAGE - WITH NO SIGNAL APPLIED MEASURE  
0  $\pm$  50mV AT SPEAKER TERMINALS.
  - BIAS ADJUSTMENT - PLACE POSITIVE LEAD OF MILLIVOLT METER  
TO EMITTER OF Q6 AND NEGATIVE LEAD TO COLLECTOR OF Q10  
AFTER 5 MINUTE WARMUP, ADJUST R3 FOR 25mV.
  - OMITTED REFERENCE DESIGNATIONS: C3, D1, R3, R17, R20

ALPHA 6  
METER AMP.  
Schematic Diagram

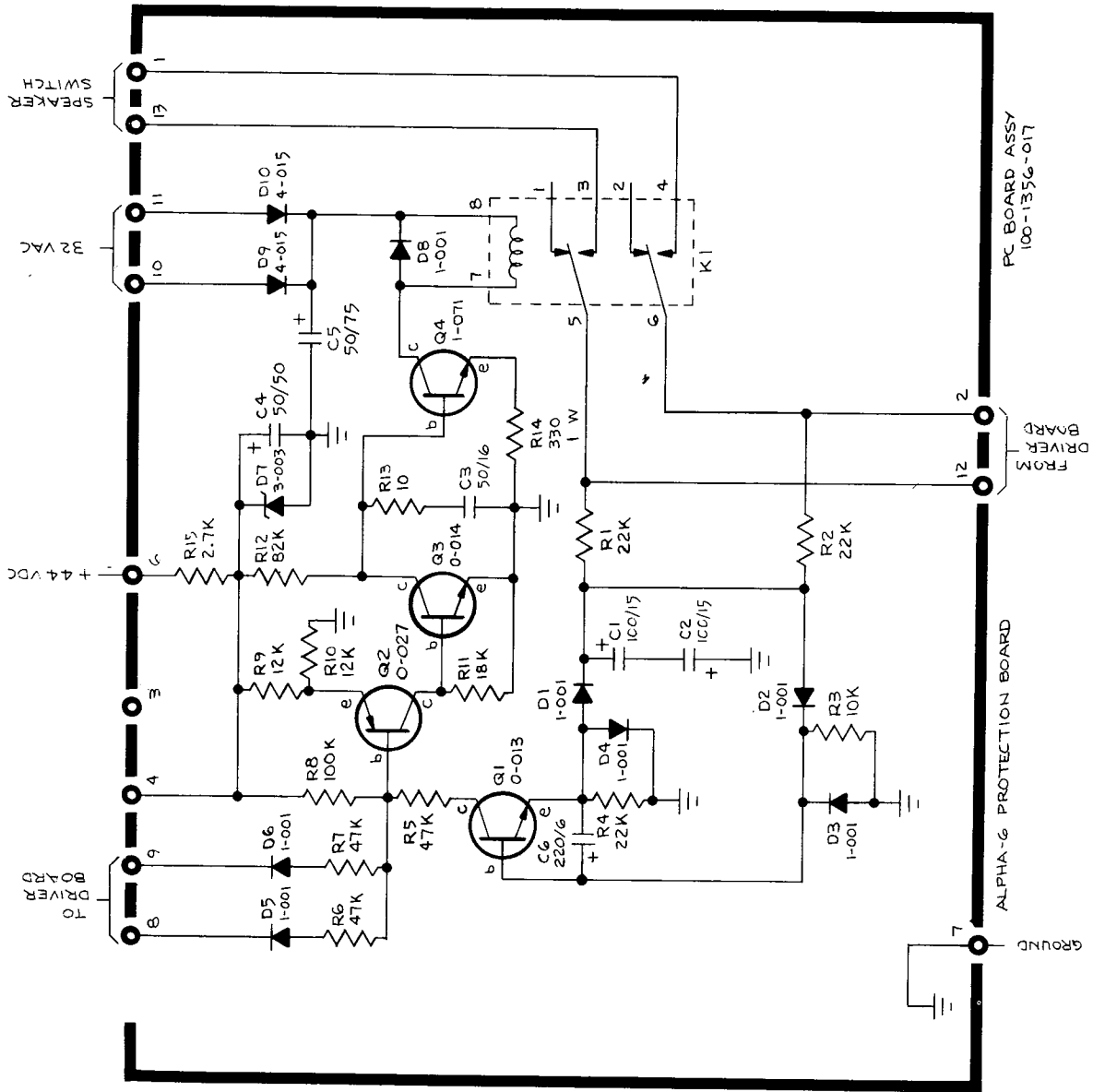


PC BOARD ASSY 100-1340-042

METER AMP CKT  
019-1107-237

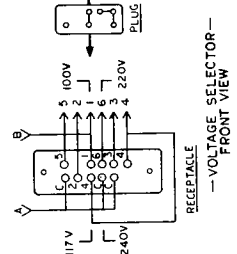
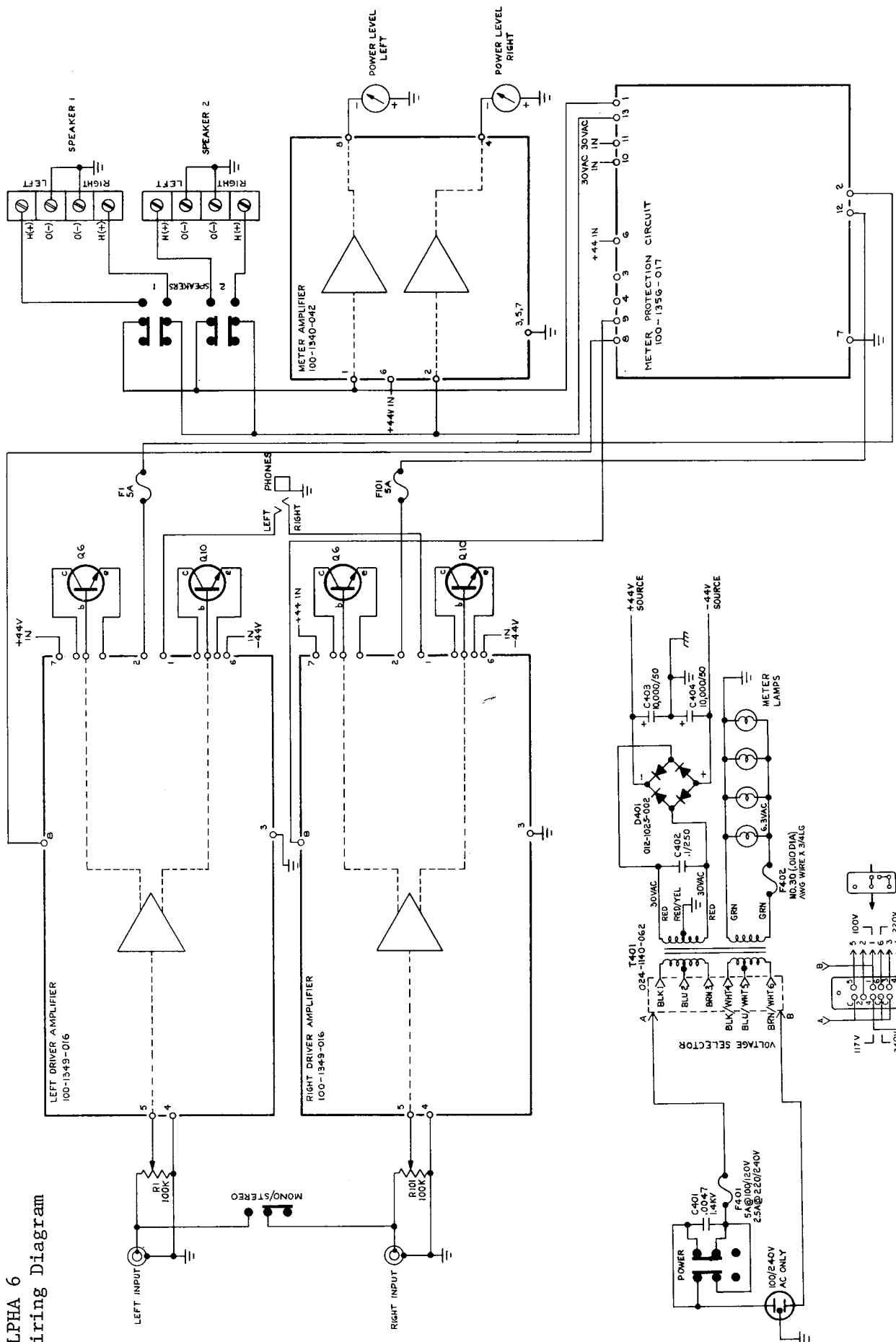
- NOTES:
1. UNLESS OTHERWISE SPECIFIED:  
RESISTANCE IN OHMS  $\pm 10\%$ ; RESISTORS 1/4 WATT;  
CAPACITANCE IN MFD'S  $\pm 10\%$
  2. TRANSISTORS: H.H. SCOTT PART NO. 020-1110-000,  
LAST FOUR DIGITS SHOWN
  3. DIODES: H.H. SCOTT PART NO'S.  
012-1020-000  
012-1021-000  
012-1023-000  
LAST FOUR DIGITS SHOWN
  4. ALL VOLTAGES ARE D.C.  $\pm 15\%$  MEASURED WITH  
20 K. $\Omega$ /V.V.O.M.

ALPHA 6  
PROTECTION  
Schematic Diagram



- NOTES:
1. UNLESS OTHERWISE SPECIFIED:  
RESISTANCE IN OHMS  $\pm 10\%$ ; RESISTORS 1/4 WATT;  
CAPACITANCE IN MFD'S  $\pm 10\%$
  2. ALL VOLTAGES ARE D.C.  $\pm 15\%$  MEASURED WITH  
20 K $\Omega$ /V.V.O.M.
  3. TRANSISTORS: H. H. SCOTT PART NO.  
020-1110-000, LAST FOUR DIGITS SHOWN.
  4. DIODES: H. H. SCOTT PART NO'S.  
012-1021-000;  
012-1023-000;  
012-1024-000  
LAST FOUR DIGITS SHOWN.

# ALPHA 6 Wiring Diagram



ALPHA 6 AMPLIFIER VOLTAGES

Amp Driver Board

Device Location	E	DC Voltages	
		B	C
Q1 . . . . .	0.6	0.1	-43.2
Q2 . . . . .	0.6	0.1	-43.2
Q3 . . . . .	-1.1	-0.4	1.1
Q4 . . . . .	0	0	21.5
Q5 . . . . .	0	1.1	44.2
Q6 . . . . .	0.6	0	44.6
Q7 . . . . .	0	0	-1.3
Q8 . . . . .	-43.1	-43.2	-2.0
Q9 . . . . .	-0.5	-1.1	-43.8
Q10 . . . . .	-44.6	-44.0	0
Q11 . . . . .	43.6	43.0	0.1

Protection Board

Device Location	E	DC Voltages	
		B	C
Q1 . . . . .	0	0	21.9
Q2 . . . . .	14.0	22.0	0
Q3 . . . . .	0	0	12.3
Q4 . . . . .	11.0	12.3	13.2

Meter Amp Board

IC601

Pin #	Volts	Pin #	Volts
1	6.0	5	6.0
2	6.0	6	6.0
3	6.0	7	6.0
4	0	8	12.0

The following modifications were made to product during production. Some or all may already be in the unit being serviced.

#### Alpha 6 Modifications .....

To desensitize relay action to input signal transients, a capacitor has been added to the protection board (100-1356-017 assembly). One electrolytic capacitor, 220 microfarad at 6 volts (011-1005-012) between the base and emitter of Q1, the plus side of the capacitor going to the base of Q1.

To prevent false triggering of protection circuit by low frequency signals, C1 and C2 of the protection board were changed from 50 microfarad, 15 volt capacitors to 100 microfarad, 15 volt capacitors (011-1005-010).

#### Alpha 1 Modifications .....

The following modifications were made in the Alpha 1 to reduce transient noise in the control mentioned in each change.

Across the mic mixer On/Off control, add a .22 microfarad capacitor at 100 volts (011-1008-008), on the foil side of the board (100-1333-039).

To the turnover switch, add 4 each 1 megohm,  $\frac{1}{4}$  watt, 5% resistors (021-1131-145) between pins 11 and 12, 13 and 14, 17 and 18, and between pins 19 and 20 of the tone control board (100-1334-032).

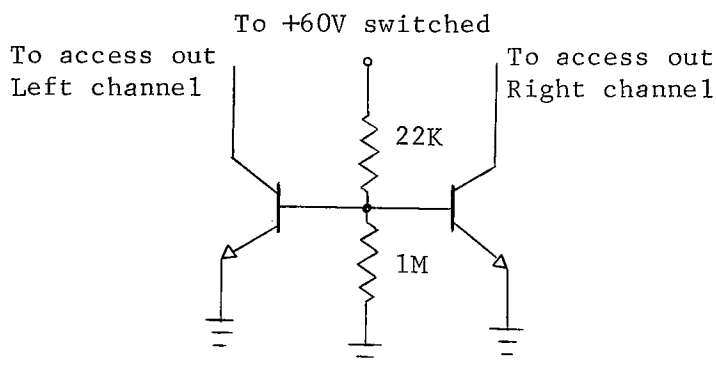
To reduce transient noise of input selector, change C8 and C108 of the phono preamp board (100-1333-038) from 22 microfarad at 30 volts electrolytic capacitor to 4.7 microfarad at 35 volt tantalum capacitor (011-1017-006). Change resistor R16 and R116 from 330Kohm to 10Kohm (021-1131-097).

Add to each side of the phono sensitivity switch (across lead from preamp), one 22Kohm,  $\frac{1}{4}$  watt resistor (021-1131-105).

To improve power supply stability, change resistor R402 from 5.6Kohm to 3.9Kohm,  $\frac{1}{4}$  watt (021-1131-027).

Add two 100Kohm,  $\frac{1}{4}$  watt resistors across the left and right output jacks to ground or from pins 15 and 16 to ground on the filter output board to remove DC from output jacks which may cause problems on some brands of amplifiers.

The circuit shown below was added to stop signal from passing through the unit with the power switch in the Off position.



Transistors are NPN small signal BC 549, BC 409C, TI S98 or 2SC 1000.

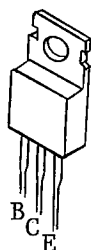


## PARTS LIST

H.H.S. Part No.	Description	Usage
012-1018-002	Diode, Light Emitting Red	Alpha 1
012-1018-005	Diode, Light Emitting Green	Alpha 1
012-1020-005	Diode, Germanium G1210	Alpha 6
012-1021-001	Diode, Silicon 1N 4148	Alpha 1 & 6
012-1023-001	Diode, Zener, 12V 1N 4742	Alpha 6
012-1023-003	Diode, Zener, 27V 1N 4750	Alpha 6
012-1023-013	Diode, Zener, 51V 1N 5262	Alpha 1
012-1024-014	Diode, Rectifier 1N 4002	Alpha 1 & 6
012-1024-015	Diode, Rectifier 1N 4003	Alpha 6
012-1025-002	Bridge, Rectifier, 200 PIV 10 Amp	Alpha 6
015-1061-008	Jack, Mic	Alpha 1
015-1061-014	Jack, Phone	Alpha 1 & 6
017-1095-040	Meter, VU	Alpha 6
018-1100-180	Knob, Push	Alpha 1 & 6
018-1100-181	Knob, Lever	Alpha 1
018-1100-186	Knob, Mic Mix/Level	Alpha 1 & 6
018-1100-189	Knob, Volume	Alpha 1
018-1100-190	Knob, Control	Alpha 1
018-1102-166	Panel	Alpha 6
018-1102-167	Panel	Alpha 1
020-1110-004	Transistor, PNP, 2N 3644, 2SA 817	Alpha 1 & 6
020-1110-013	Transistor, NPN, 2N 5089	Alpha 6
020-1110-014	Transistor, NPN, 2N 3567, 2SC 1627	Alpha 1 & 6
020-1110-027	Transistor, PNP, 2N 5087	Alpha 6
020-1110-038	Transistor, NPN, RCA 40408	Alpha 6
020-1110-042	Transistor, NPN, BC 109C, 2SC 732	Alpha 1
020-1110-058	Transistor, NPN, 2SC 1000, TI S98	Alpha 1 & 6
020-1110-086	Transistor, NPN, BC 549	Alpha 1
020-1111-017	Transistor, PNP, 2N 5322, 2SA 814	Alpha 6
020-1111-018	Transistor, NPN, 2N 5320, 2SC 1624	Alpha 6
020-1111-023	Transistor, NPN, 2N 5629	Alpha 6
020-1111-055	Transistor, NPN, TIP 29A, 2SD 234	Alpha 1
020-1111-071	Transistor, NPN, TIP 111	Alpha 6
021-1125-150	Potentiometer, Balance	Alpha 1
021-1125-153	Potentiometer, Level	Alpha 6
021-1125-155	Potentiometer, Level	Alpha 1
023-1135-040	Switch, slide	Alpha 1 & 6
023-1136-015	Switch, Lever, 2 pole 3 position	Alpha 1
023-1136-016	Switch, Lever, 4 pole 3 position	Alpha 1
023-1136-017	Switch, Lever, 2 pole 2 position	Alpha 1
023-1136-019	Switch, Lever, 4 pole 2 position	Alpha 1
023-1137-089	Switch, rotary, selector	Alpha 1
023-1137-090	Switch, rotary, mode	Alpha 1
023-1138-059	Switch, power	Alpha 6
023-1138-063	Switch, power	Alpha 1
023-1138-060	Switch, speaker	Alpha 6
023-1139-009	Relay	Alpha 6
024-1140-062	Transformer	Alpha 6
024-1140-081	Transformer	Alpha 1
030-1187-032	Terminal, speaker	Alpha 6
030-1189-034	Lamp, meter	Alpha 6
030-1194-002	Receptacle, AC outlet	Alpha 1
030-1194-007	Receptacle, AC input	Alpha 1 & 6
031-1200-006	Feet	Alpha 1 & 6

H.H.S. Part No.	Description	Usage
032-1251-202	Cover, Top	Alpha 6
032-1251-207	Cover, Top	Alpha 1
036-1280-005	Handle	Alpha 1 & 6
100-1333-038	Assy., Phono Preamp Board	Alpha 1
100-1333-039	Assy., Mic/Mixer Preamp Board	Alpha 1
100-1334-032	Assy., Tone Control Board	Alpha 1
100-1340-042	Assy., Meter Amp Board	Alpha 6
100-1346-006	Assy., Filter Board	Alpha 1
100-1349-016	Assy., Driver Board	Alpha 6
100-1356-017	Assy., Protection/Relay Board	Alpha 6

TRANSISTOR OUTLINE DRAWINGS



TIP 29A  
TIP 111  
2SA 814  
2SC 1624  
2SD 234



2N 3567



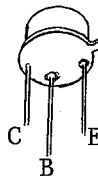
2SC 1000  
2SC 732  
2SA 817  
2SC 1627



2N 3644  
2N 5087  
2N 5089



BC 549  
TI S98



BC 109C  
2N 5320  
2N 5322  
RCA 40408

---NOTES---



**Corporate Headquarters: H. H. SCOTT, INC., 20 Commerce Way, Woburn, Mass. 01801, Tel: 617-933-8800.**

**CANADA: Paco Electronics Ltd., 45 Stinson Street, Montreal Quebec H4N 2E1, Tel: 514-748-6787.**

**EUROPE: Head Office SYMA INTERNATIONAL S.A., Avenue Louise 415, 1050 Brussels Belgium. Tel: 649.95.10**