

TO: ALL ACOUSTIC PROTECTION CENTERS
SUBJECT: MODEL 320 UNDER BIAS

Concerning the Model 320 Amplifiers, Serial Numbers 1001-1121, there may be a problem with low frequency distortion due to under bias. To cure the problem, simply tack a 1K ohm 1/2 watt resistor in parallel with the 680 ohm resistor, which is located across the base and emitter of the bias transistor (Q6), inserted into the heatsink from the power amp board (170079)

UNITS AFFECTED BEFORE SERIAL #	MODELS AFFECTED	BULLETIN #	APPROVED	DATE
320001122	320	1011	<i>[Signature]</i>	12-19

*CENTER VOLTAGE-measurement taken at positive side of output cap, should approximately half of supply voltage as indicated on sche

- **BIAS ADJUSTMENT-
1. turn bias control(R19) counter clockwise all the way
 2. connect to a 2 ohm load and 120 volts ac line.
 3. in the combined input (preamp) connect a 1khz 10 mil RMS sine wave. output from power amp should be approx 1 volt RMS with a crossover notch present on scope display.
 4. slowly turn bias control (R19) clockwise until crossover notch just disappears. IDLE CURRENT SHOULD BE 45-50 WATTS.
(caution: if misadjusted unit can overheat and fail.)

The following specification and trouble shooting guides are for Acoustic Models 320, 330. Used in conjunction with schematic # 1603, it should help you locate and make the repairs necessary to the above power amps.

SPECIFICATIONS

MODEL-320

POWER OUTPUT. a) 160 watts RMS @ 4 ohms
b) 300 watts RMS @ 2 ohms

INPUT..... a) 20mv into 0db jack to achieve max output
b) 80mv into -10db jack to achieve max output
c) 230mv into power amp input jack for max output

PREAMP OUT... a) 400mv out @ 1K ohms

MODEL-330

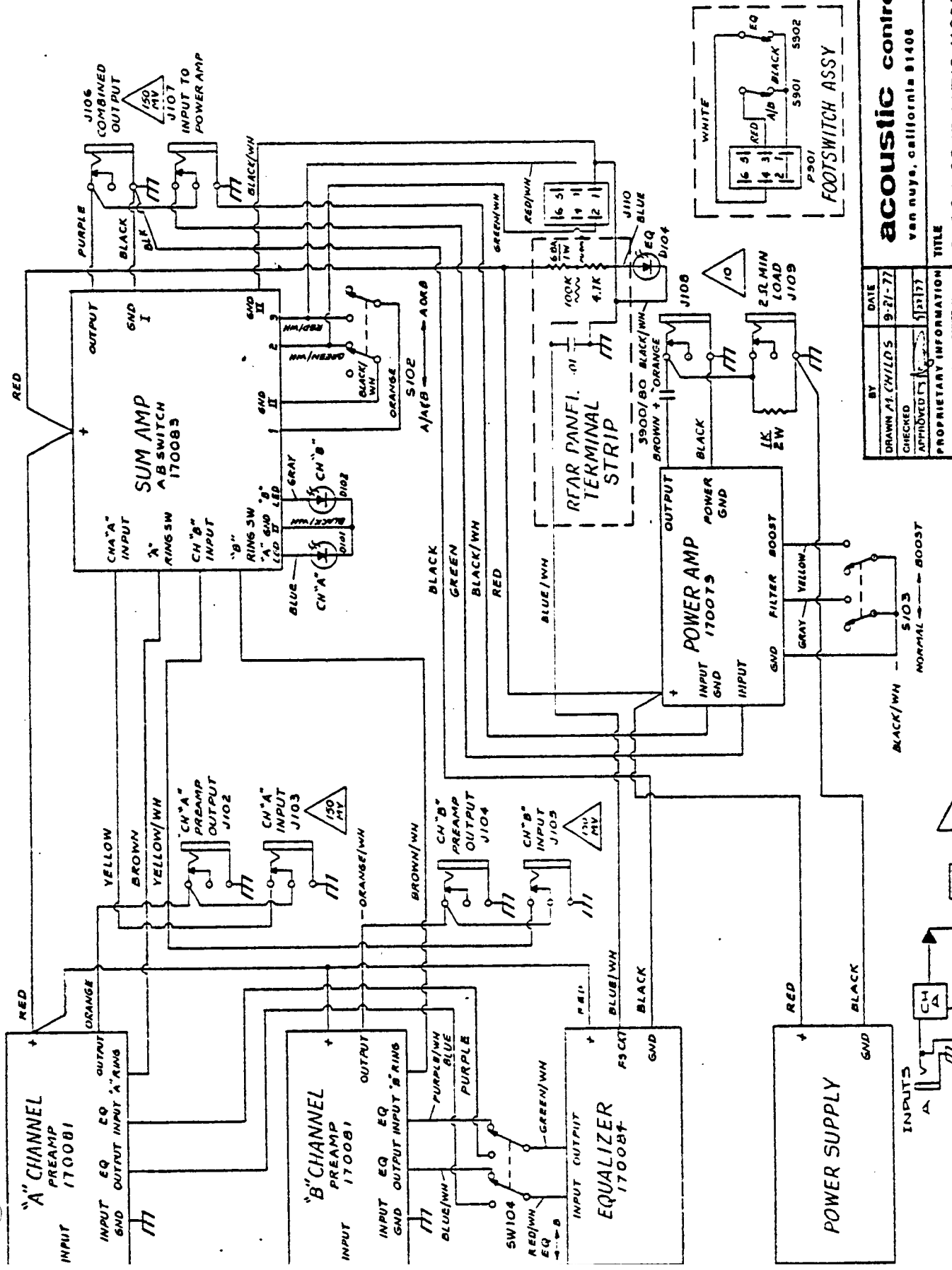
POWER OUTPUT. a) 160 watts RMS @ 4 ohms
b) 300 watts RMS @ 2 ohms

INPUT..... a) 20mv into 0db jack to achieve max output
b) 80mv into -10db jack to achieve max output
c) 230mv into power amp input jack for max output

PREAMP OUT... a) 400mv out @ 1K ohms

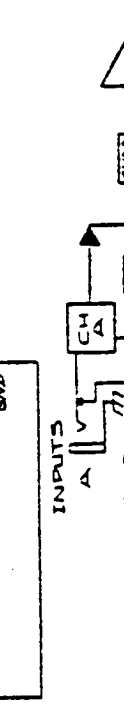
TROUBLE SHOOTING GUIDES

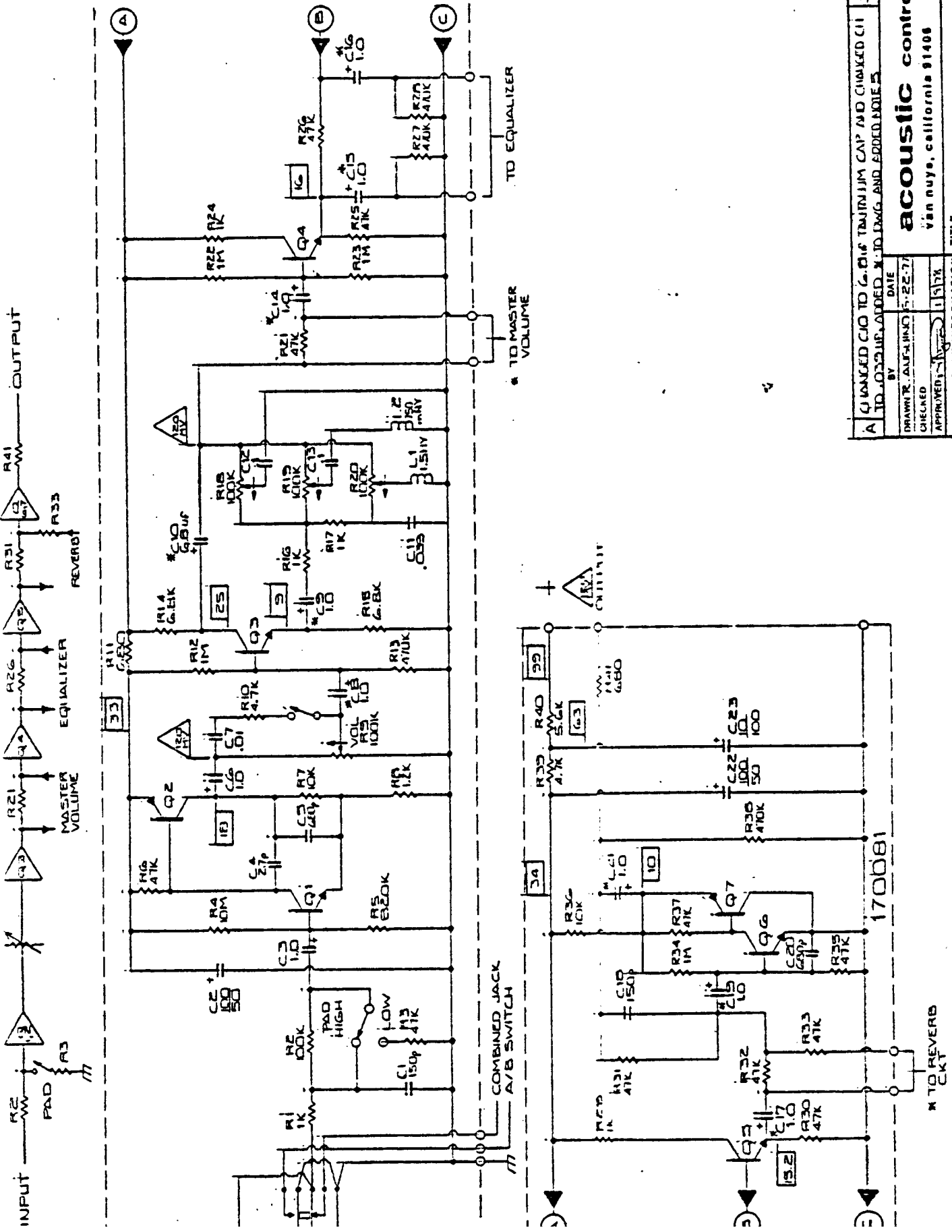
PROBLEM	SYMPTOM	CHECK POINTS
NO OUTPUT	FUSE BLOWN	SHORTED POWER TRANSISTORS Q12-19. SHORTED
	DRAWS EXCESS CURRENT	Q6 DEFECTIVE, R19 MISADJUSTED** Q8-10 LEAK
	LOW CENTER VOLTAGE*	Q5,7,10, DEFECTIVE.
	CENTER VOLTAGE* NEAR NORMAL	Q8 or 10 DEFECTIVE, D3 SHORTED
	HIGH CENTER VOLTAGE*	Q5,10 DEFECTIVE, Q3 OPEN.
LOW OUTPUT	EARLY NEGITIVE CLIPPING	Q9 DEFECTIVE, D5 LEAKY, R35 INCREASED IN
	EARLY POSITIVE CLIPPING	Q7 DEFECTIVE C8, D6 LEAKY, R29 INCREASED
	DECREASE OF INPUT SIGNAL BETWEEN R1 AND BASE OF Q3	Q1,2,11 DEFECTIVE, R36 INCREASED IN VALUE
	AGC CLAMPING SIGNAL EARLY	D8 LEAKY, R36 INCREASED IN VALUE.
	LOW VOLTAGE SUPPLY	CHECK 120-240 VOLTAGE SWITCH.
	SIGNAL SLOWLY DECREASES	USE OF SHIELDED SPEAKER CABLE
DISTORTED OUTPUT AT LOW LEVELS	CROSSOVER DISTORTION, LOW IDLE CURRENT	CHECK LINE VOLTAGE SWITCH. Q6 LEAKY, R19 MISADJUSTED**
RUNS HOT	HIGH IDLE CURRENT	Q6 DEFECTIVE, R19(BIAS) MISADJUSTED**.



BY		DATE
DRAWN AT: CHILDS		9-21-77
CHECKED		
APPROVED		10/1/77
PROPRIETARY INFORMATION		

acoustic control corp
 van nuys, california 91406





A CHANGED C10 TO 6.0UF TANTANUM CAP AND CHANGED C11 TO 0.033UF, ADDED R10, DIMG, AND ADDED NOTE 5		3-16-78 JIC
BY	DATE	
DRAWN: ALF-JHND	5-22-77	
CHECKED		
APPROVED: [Signature]		

ACOUSTIC control corp
 Van Nuys, California 91406

170081

* TO REVERB CKT

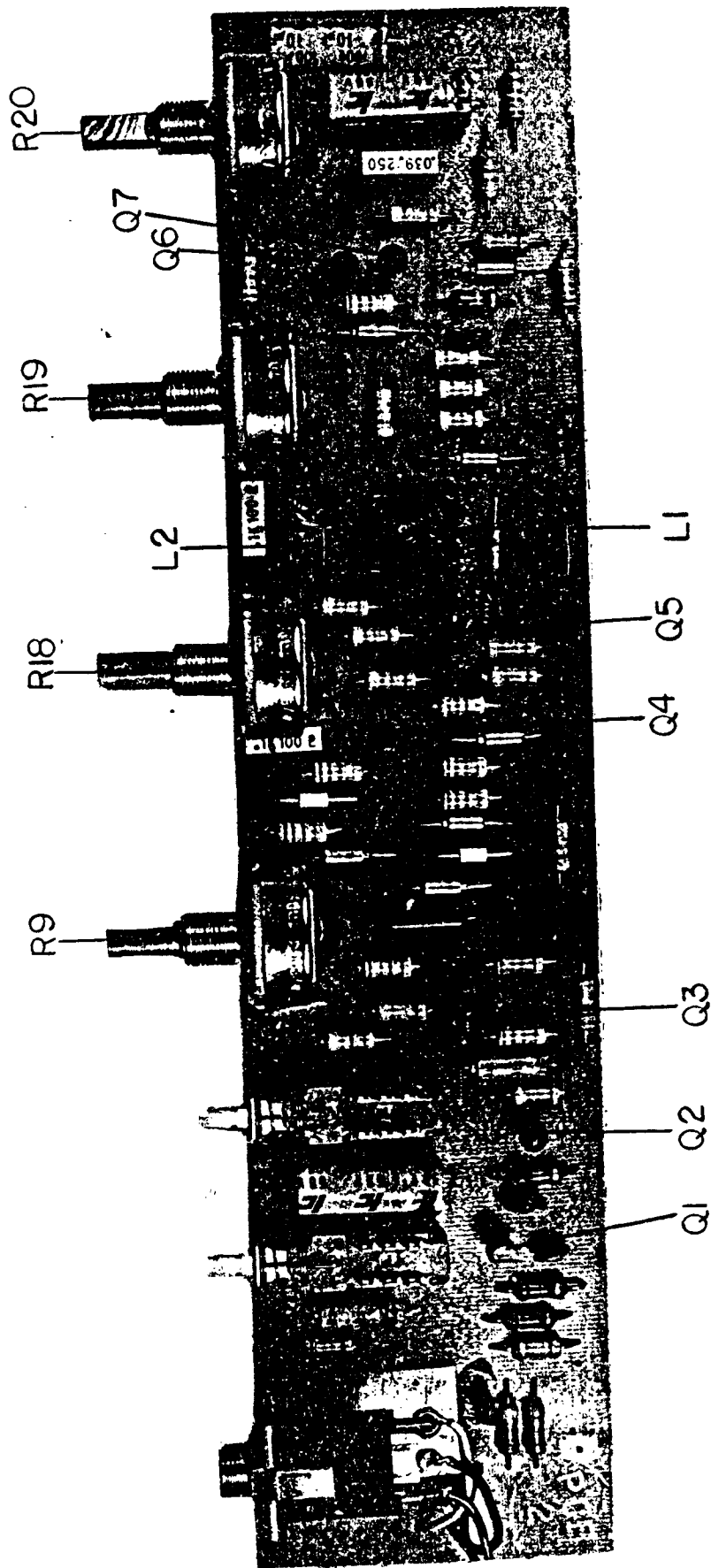
TO EQUALIZER

* TO MASTER VOLUME

COMBINED JACK A/B SWITCH

* TO REVERB CKT

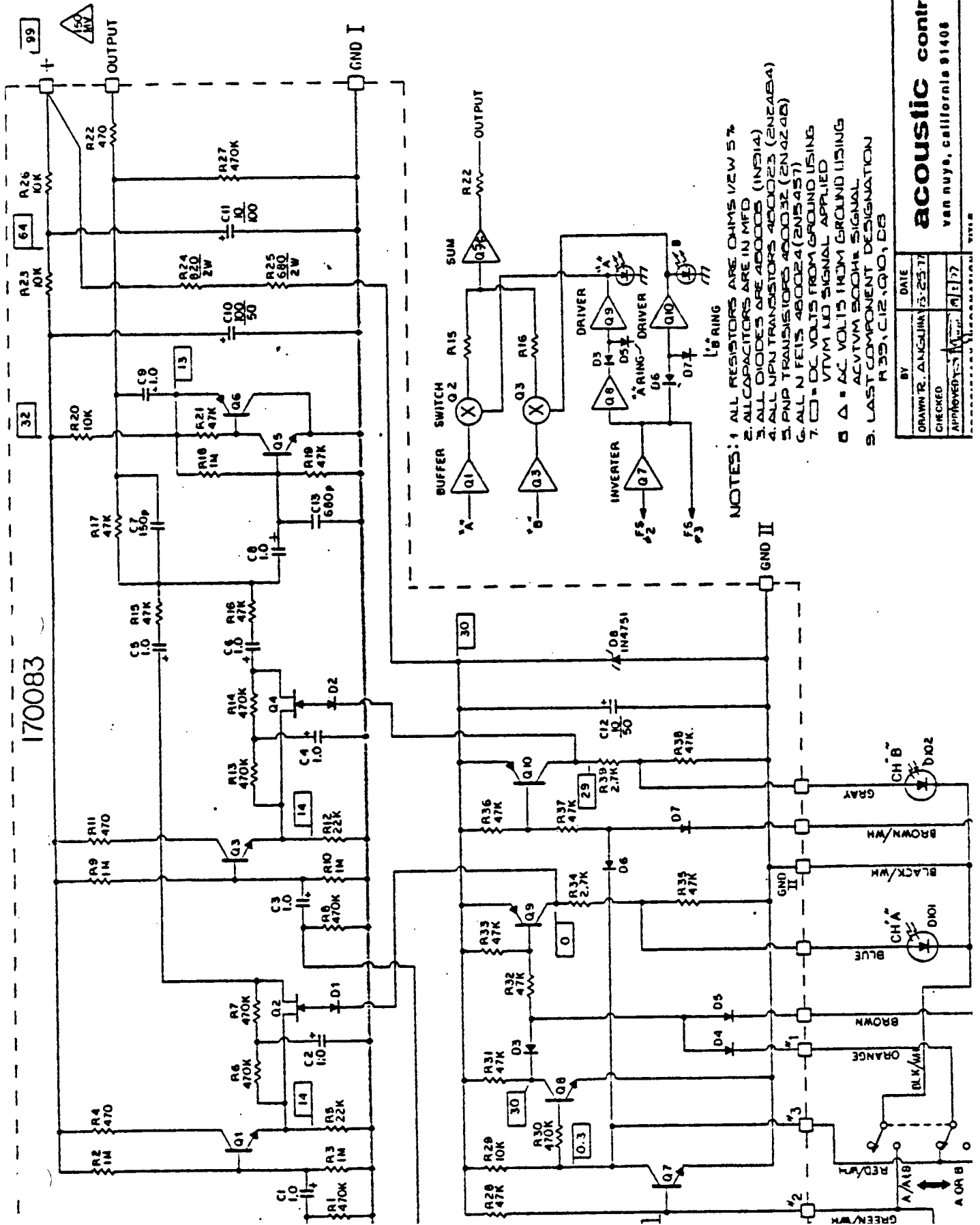
PICTORIAL
MODEL 320 - PRE-AMP ASSEMBLY 830058
SCHEMATIC CI611



PARTS LIST
 MODEL 320 PRE-AMP ASSEMBLY 830058
 SCHEMATIC CI611

Schematic Reference	DESCRIPTION	Acoustic Part No.
R 27	Printed Circuit Board, Pre-Amp	170081
R 28	Capacitor, Discs, 150pf	157007
R 29	Capacitor, Electrolytic, 100uf 50V	159007
R 30	Capacitor, Electrolytic, 1uf 50V	159001
R 31	Capacitor, Disc, 27pf	157003
R 32	Capacitor, 680pf	157010
R 33	Capacitor, Electrolytic, 1uf 50V	159001
R 34	Capacitor, Disc, .01	157016
R 35	Capacitor, 1uf 35V	154004
R 36	Capacitor, 1uf 35V	154004
R 37	Capacitor, 6.7uf 35V	154006
R 38	Capacitor, MM .039	158003
R 39	Capacitor, MM .1uf	158005
R 40	Capacitor, MM .1uf	158005
R 41	Capacitor, 1uf 35V	154004
Q 1	Capacitor, 1uf 35V	154004
Q 2	Capacitor, 1uf 35V	154004
Q 3	Capacitor, Disc, 150pf	157007
Q 4	Capacitor, 1uf 35V	154004
Q 5	Capacitor, Disc, 680pf	157010
Q 6	Capacitor, 1uf 35V	154004
Q 7	Capacitor, 1uf 35V	159007
	Capacitor, Electrolytic, 100uf 50V	159008
	Capacitor, Electrolytic, 10uf 100V	140134
L 1	Input Jack Bracket	180002
L 2	Inductor 1.5Hy	180005
R 1	Inductor, 750MHY	476210
R 2	Resistor, 1K 1/2W	476410
R 3	Resistor, 100K 1/2W	476347
R 4	Resistor, 47K 1/2W	476610
R 5	Resistor, 10M 1/2W	476482
R 6	Resistor, 820K 1/2W	476347
R 7	Resistor, 47K 1/2W	476310
R 8	Resistor, 10K 1/2W	476212
R 9	Resistor, 1.2K 1/2W	475056
R 10	Rotary Pot 100K ohm	476247
R 11	Resistor, 4.7K 1/2W	476168
R 12	Resistor, 680 1/2W	476510
R 13	Resistor, 1M 1/2W	476447
R 14	Resistor, 470K 1/2W	476268
R 15	Resistor, 6.8K 1/2W	476268
R 16	Resistor, 6.8 K 1/2W	476210
R 17	Resistor, 1K	476210
R 18	Resistor, 1K	475056
R 19	Rotary Pot 100K ohm	475056
R 20	Rotary Pot 100K ohm	475056
R 21	Resistor, 47K 1/2W	476347
R 22	Resistor, 1M 1/2W	476510
	Resistor, 470K 1/2W	476447
	Resistor, 470K 1/2W	476210
	Resistor, 1K 1/2W	476347
	Resistor, 47K 1/2W	476347
	Resistor, 47K 1/2W	476347
	Resistor, 1M 1/2W	476510
	Resistor, 47K 1/2W	476347
	Resistor, 10K 1/2W	476310
	Resistor, 47K 1/2W	476447
	Resistor, 5.6K 1/2W	476256
	Resistor, 680 1/2W	476168
	Transistor, NPN	480023
	Transistor, PNP 2N4248	480032
	Transistor, NPN	480023
	Transistor, NPN	480023
	Transistor, NPN	480023
	Transistor, NPN	480023
	Transistor, PNP 2N4248	480032

170083

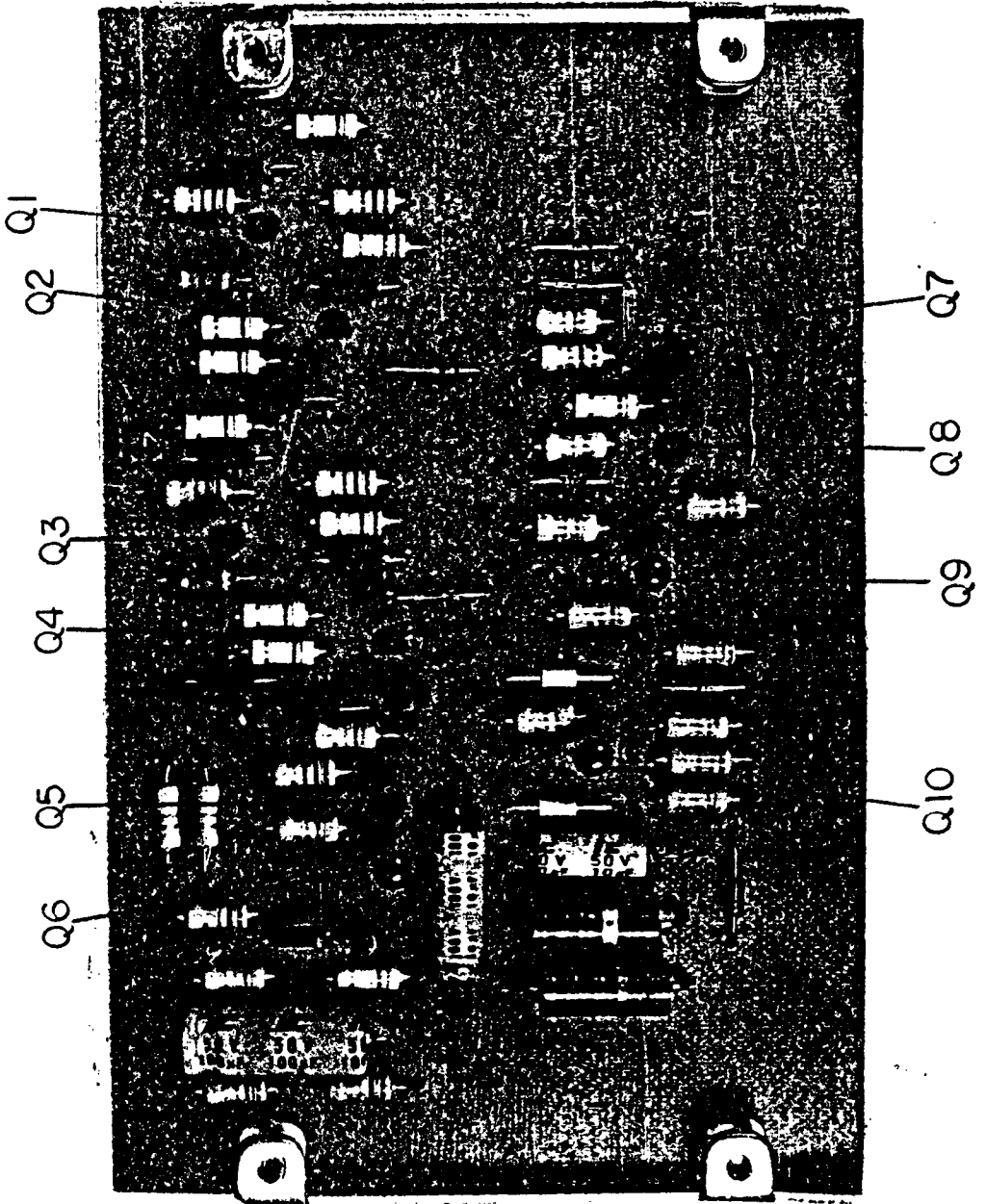


- NOTES: 1 ALL RESISTORS ARE OHMS UNLESS OTHERWISE SPECIFIED
 2 ALL CAPACITORS ARE IN MFD
 3 ALL DIODES ARE 1N914
 4 ALL JPN TRANSISTORS 400023 (2N2484)
 5 PNP TRANSISTORS 400032 (2N4248)
 6 ALL N FEETS 480024 (2N5457)
 7 □ = DC VOLTS FROM GROUND USING VTVM 1.0 SIGNAL APPLIED
 □ Δ = AC VOLTS 1.0M GROUND USING ACVTVM 500Hz SIGNAL
 8. LAST COMPONENT DESIGNATION R 33, C 12, Q 10, D 8

BY	DATE
DRAWN R. ALKELINA	5-25-71
CHECKED	
APPROVED	10/2/77

ACOUSLIC control corp
 van nuys, california 91406

PICTORIAL
MODEL 320, - SUM-AMP ASSEMBLY 830059
SCHEMATIC C1624



MODEL 320 SUM AM ASSEMBLY 830059
SCHEMATIC C1624

Schematic Reference	DESCRIPTION	Acoustic Part No.
R 38	Printed Circuit Board, Sum-Amp A/B Switch	170083
R 39	Capacitor, 1uf 35V	154004
D 1	Capacitor, 1uf 35V	154004
D 2	Capacitor, 1uf 35V	154004
D 3	Capacitor, 1uf 35V	154004
D 4	Capacitor, 1uf 35V	154004
D 5	Capacitor, 1uf 35V	154004
D 6	Capacitor, Disc, 150pf	154007
D 7	Capacitor, 1uf 35V	154004
D 8	Capacitor, 1uf 35V	154004
Q 1	Capacitor, Electrolytic, 100uf 50V	159007
Q 2	Capacitor, Electrolytic, 10uf 100V	159008
Q 3	Capacitor, Electrolytic, 10uf 50V	159004
Q 4	Capacitor, Disc, 680pf	151010
Q 5	Resistor, 470K ohm, 5%, 1/2W	476447
Q 6	Resistor, 1M ohm, 5%, 1/2W	476510
Q 7	Resistor, 1M ohm, 5%, 1/2W	476510
Q 8	Resistor, 470 ohm, 5%, 1/2W	476147
Q 9	Resistor, 22K ohm, 5%, 1/2W	476322
Q 10	Resistor, 470K ohm, 5%, 1/2W	476447
	Resistor, 470K ohm, 5%, 1/2W	476447
	Resistor, 1M ohm, 5%, 1/2W	476510
	Resistor, 1M ohm, 5%, 1/2W	476510
	Resistor, 470 ohm, 5%, 1/2W	476147
	Resistor, 22K ohm, 5%, 1/2W	476322
	Resistor, 470K ohm, 5%, 1/2W	476447
	Resistor, 470K ohm, 5%, 1/2W	476447
	Resistor, 47K ohm, 5%, 1/2W	476347
	Resistor, 47K ohm, 5%, 1/2W	476347
	Resistor, 47K ohm, 5%, 1/2W	476347
	Resistor, 1M ohm, 5%, 1/2W	476510
	Resistor, 47K ohm, 5%, 1/2W	476347
	Resistor, 10K ohm, 5%, 1/2W	476310
	Resistor, 47K ohm, 5%, 1/2W	476347
	Resistor, 470 ohm, 5%, 1/2W	476147
	Resistor, 10K ohm, 5%, 1/2W	476310
	Resistor, 820 ohm, 5%, 2W	472182
	Resistor, 680 ohm, 5%, 2W	472168
	Resistor, 10K ohm, 5%, 1/2W	476310
	Resistor, 470K ohm, 5%, 1/2W	476447
	Resistor, 47K ohm, 5%, 1/2W	476347
	Resistor, 10K ohm, 5%, 1/2W	476310
	Resistor, 470K ohm, 5%, 1/2W	476447
	Resistor, 47K ohm, 5%, 1/2W	476347
	Resistor, 47K ohm, 5%, 1/2W	476347
	Resistor, 2.7K ohm, 5%, 1/2W	476227
	Resistor, 47K ohm, 5%, 1/2W	476347

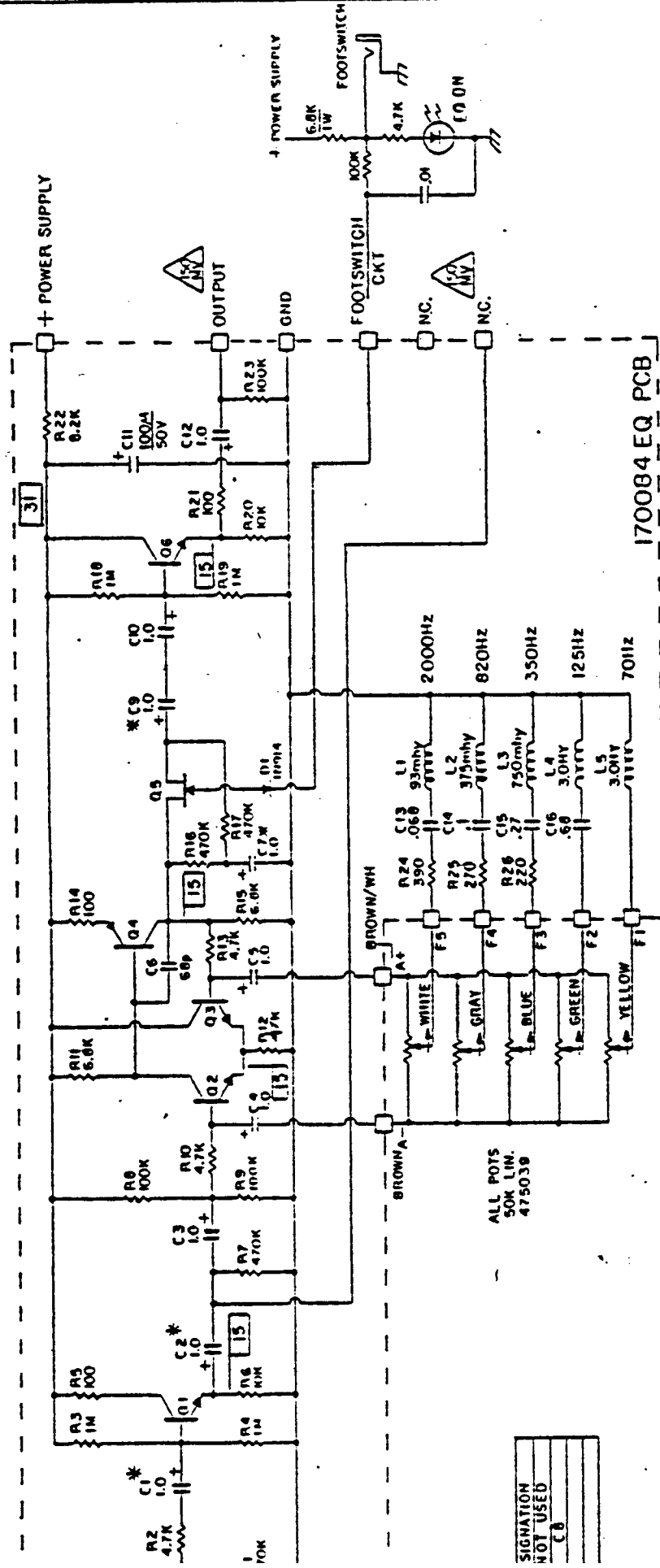
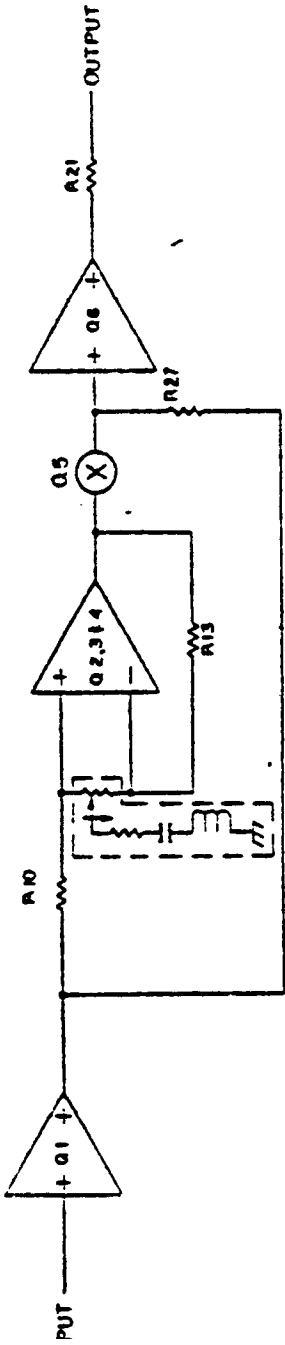
Schematic Reference	DESCRIPTION	Acoustic Part No.
R 38	Resistor, 47K ohm, 5%, 1/2W	476347
R 39	Resistor, 2.7K ohm, 5%, 1/2W	476227
D 1	Diode, IN914	480005
D 2	Diode, IN914	480005
D 3	Diode, IN914	480005
D 4	Diode, IN914	480005
D 5	Diode, IN914	480005
D 6	Diode, IN914	480005
D 7	Diode, IN914	480005
D 8	Diode Zener, IN4751	480027
Q 1	Transistor, NPN	480023
Q 2	Transistor, 2N5457 N FET	480024
Q 3	Transistor, NPN	480023
Q 4	Transistor, NPN	480024
Q 5	Transistor, NPN	480023
Q 6	Transistor, PNP 2N4248	480032
Q 7	Transistor, NPN	480023
Q 8	Transistor, NPN	480023
Q 9	Transistor, PNP 2N4248	480032
Q 10	Transistor, PNP 2N4248	480032

INPUT BUFFER

EQ AMP

SWITCH

OUTPUT BUFFER



SIGNATURE
NOT USED
CB

ALL POTS
50K LIN.
475039

B REVISED PER ECN 1644
A CANGED NUMBER OF R27 AND WIRE GAUGES IN FOOTSWITCH

BY	DATE
DRAWN R. A. KESLING	1-25-77
CHECKED	
APPROVED	3-25-77
PROPRIETARY INFORMATION	
TITLE	

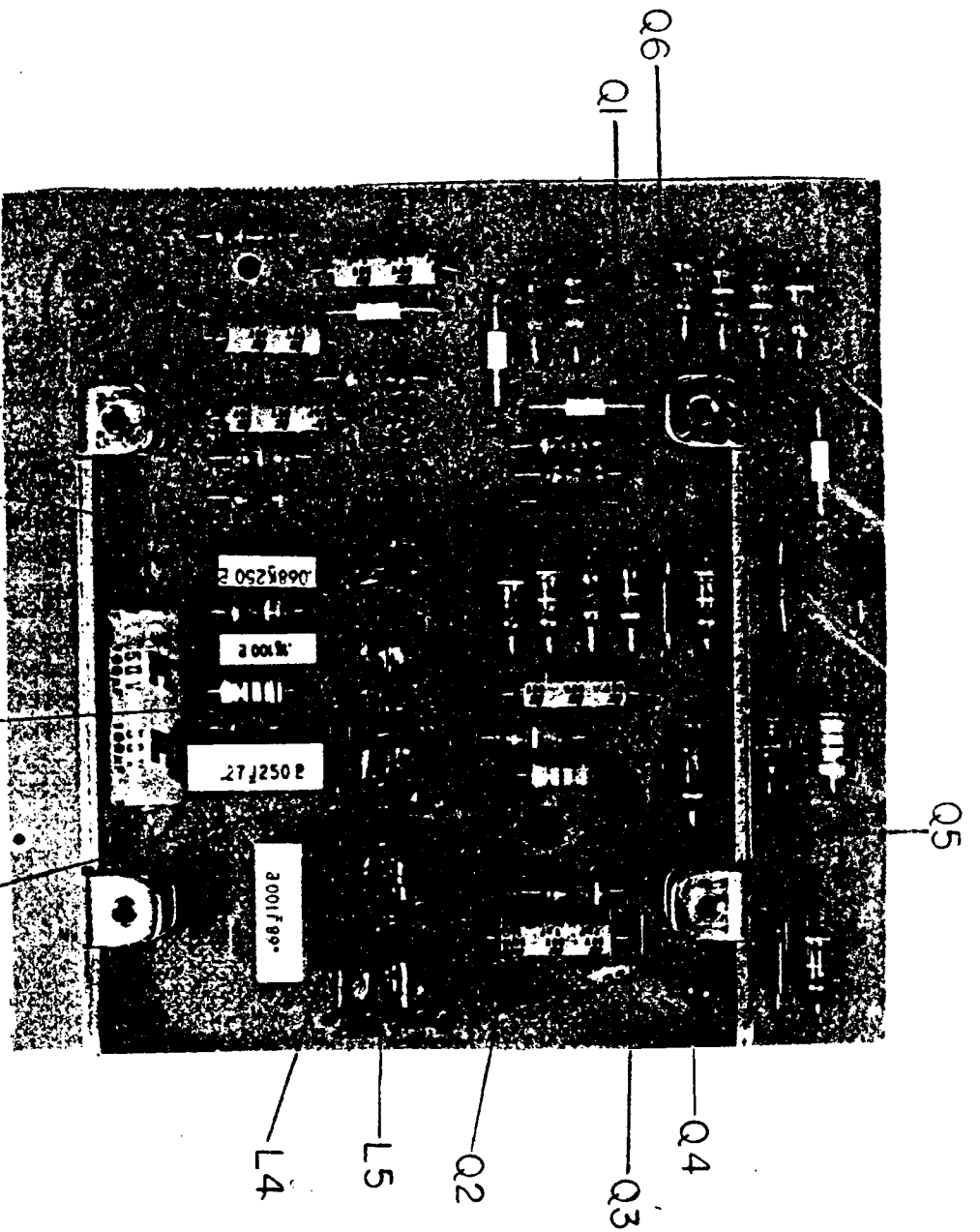
TORS ARE IN OHMS 1/2W 5%
:ITORS ARE IN MFD
6 - 480023 - 2N2404
2032 - 2N4248
2024 - 2N5457

acoustic control corp
van nuys, california 91406

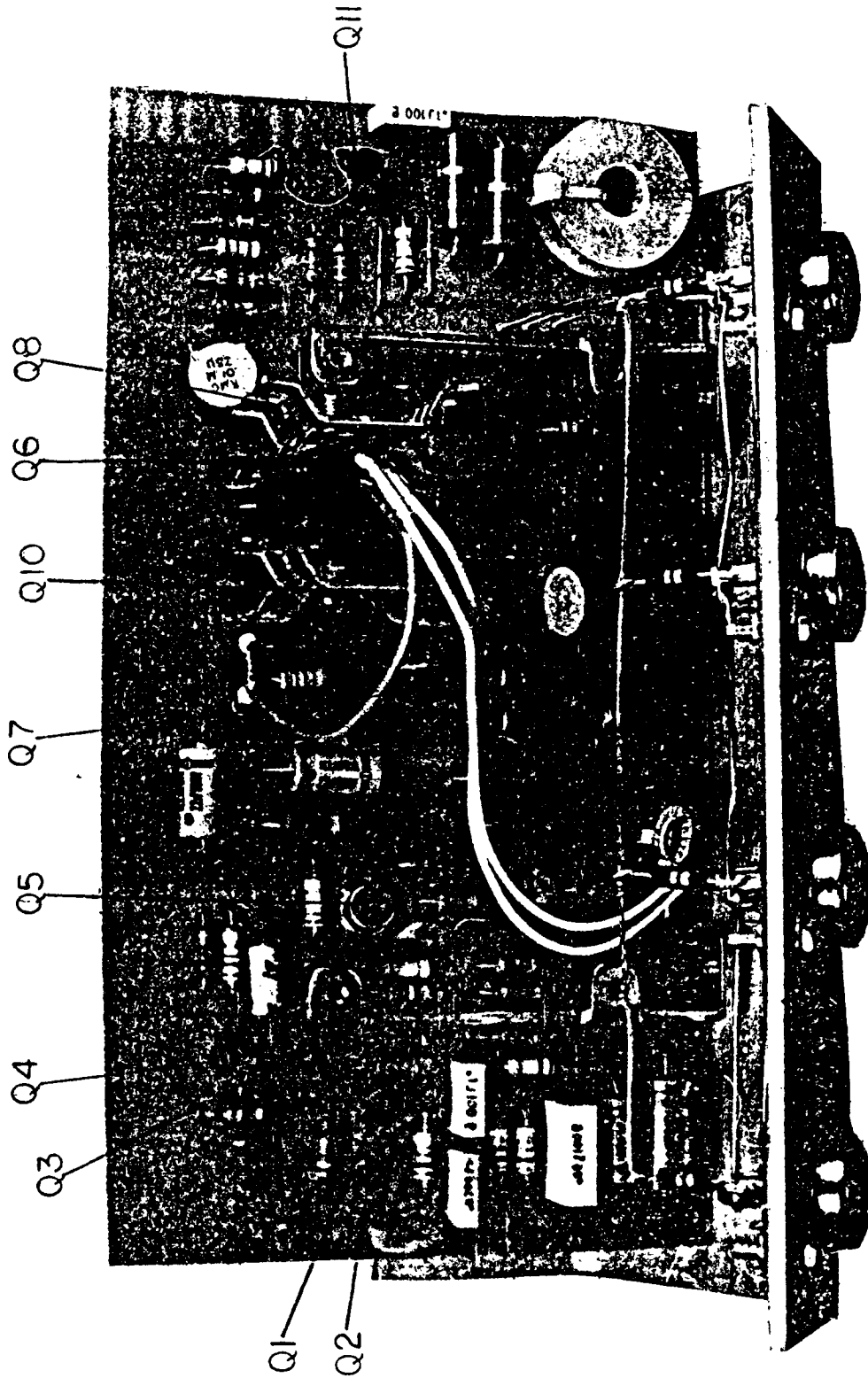
2-15-78/10

PARTS LIST
MODEL 320 EQUALIZER ASSEMBLY 830060
SCHEMATIC C1623

Schematic Reference	DESCRIPTION	Acoustic Part No.	Schematic Reference	DESCRIPTION	Acoustic Part No.
PCB	Printed Circuit Board	170084	D 1	Diode IN914	480005
C 1	Capacitor, Electrolytic, 1uf, 50V	159001	Q 1	Transistor, NPN, 2N2484	480023
C 2	Capacitor, Electrolytic, 1uf, 50V	159001	Q 2	Transistor, NPN, 2N2484	480023
C 3	Capacitor, Electrolytic, 1uf, 50V	159001	Q 3	Transistor, NPN, 2N2484	480023
C 4	Capacitor, Electrolytic, 1uf, 50V	159001	Q 4	Transistor, PNP, 2N4248	480032
C 5	Capacitor, Electrolytic, 1uf, 50V	159001	Q 5	Transistor, N FET, 2N5457	480024
C 6	Capacitor, Disc, 68pf	157005	Q 6	Transistor, NPN, 2N2484	480023
C 7	Capacitor, Tantulum, 1uf, 35V	154004			
C 8	Capacitor, Disc, 27pf	157003			
C 9	Capacitor, Tantulum, 1uf, 35V	154004			
C 10	Capacitor, Electrolytic, 1uf, 50V	159001			
C 11	Capacitor, Electrolytic, 100uf, 50V	159007			
C 12	Capacitor, Electrolytic, 1uf, 50V	159001			
C 13	Capacitor, MM, .068uf	158004			
C 14	Capacitor, MM, .1uf	158005			
C 15	Capacitor, MM, .27	158007			
C 16	Capacitor, MM, .68	158009			
L 1	Inductor, 93MHY	180012			
L 2	Inductor, 375MHY	180004			
L 3	Inductor, 750MHY	180005			
L 4	Inductor, 3.00HY	180006			
L 5	Inductor, 3.00HY	180006			
R 1	Resistor, 470K ohm, 5%, 1/2watt	476447			
R 2	Resistor, 4.7K ohm, 5%, 1/2watt	476247			
R 3	Resistor, 1M ohm, 5%, 1/2watt	476510			
R 4	Resistor, 1M ohm, 5%, 1/2watt	476510			
R 5	Resistor, 100 ohm, 5%, 1/2watt	476110			
R 6	Resistor, 10K ohm, 5%, 1/2watt	476310			
R 7	Resistor, 470K ohm, 5%, 1/2watt	476447			
R 8	Resistor, 100K ohm, 5%, 1/2watt	476410			
R 9	Resistor, 270K ohm, 5%, 1/2watt	476427			
R 10	Resistor, 4.7K ohm, 5%, 1/2watt	476247			
R 11	Resistor, 6.8K ohm, 5%, 1/2watt	476268			
R 12	Resistor, 100K ohm, 5%, 1/2watt	476410			
R 13	Resistor, 4.7K ohm, 5%, 1/2watt	476247			
R 14	Resistor, 100 ohm, 5%, 1/2watt	476110			
R 15	Resistor, 6.8 ohm, 5%, 1/2watt	476268			
R 16	Resistor, 470K ohm, 5%, 1/2watt	476447			
R 17	Resistor, 470K ohm, 5%, 1/2watt	476447			
R 18	Resistor, 1M ohm, 5%, 1/2watt	476510			
R 19	Resistor, 1M ohm, 5%, 1/2watt	476510			
R 20	Resistor, 10K ohm, 5%, 1/2watt	476310			
R 21	Resistor, 100 ohm, 5%, 1/2watt	476110			
R 22	Resistor, 8.2K ohm, 5%, 1/2watt	476282			
R 23	Resistor, 100K ohm, 5%, 1/2watt	476410			
R 24	Resistor, 390 ohm, 5%, 1/2watt	476139			



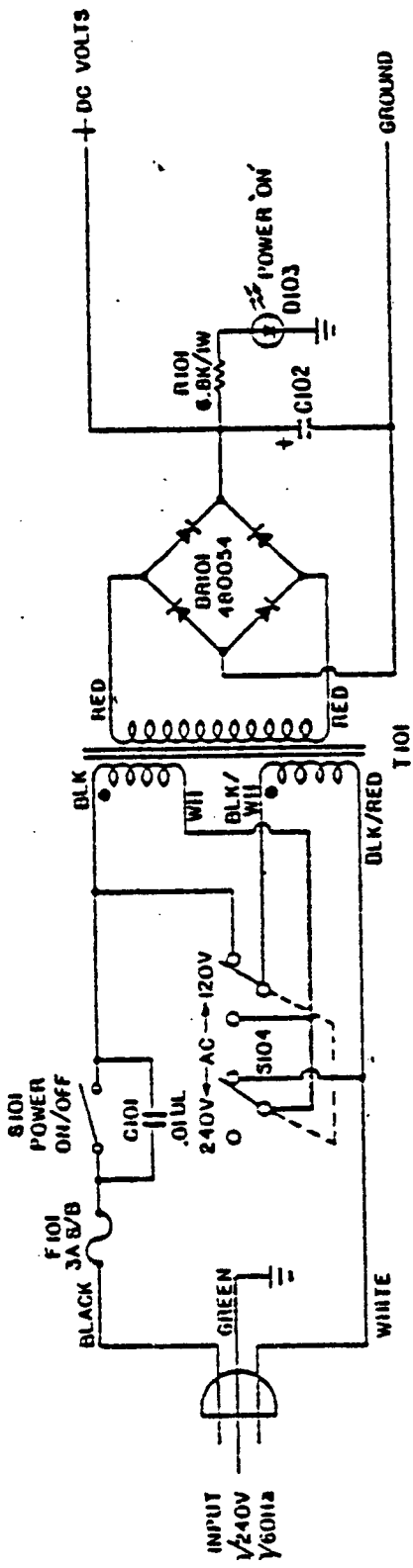
PICTORIAL
 MODEL 320 EQUALIZER ASSEMBLY 830060
 SCHEMATIC C 1623



PICTORIAL
MODEL 320 POWER AMP ASSEMBLY 830057
SCHEMATIC D 1603

PARTS LIST
 MODEL 320 POWER AMP ASSEMBLY 830057
 SCHEMATIC DI603

Schematic Reference	DESCRIPTION	Acoustic Part No.
C 1	PC Board	170079
C 2	Capacitor Disc 680 PF	157010
C 3	Capacitor Disc .01 UF	157016
C 4	Capacitor MM .039	158003
C 5	Capacitor MM .68 UF	158009
C 6	Capacitor Disc 680 PF	157010
C 7	Capacitor MM .1 UF	158005
C 8	Capacitor Electrolytic 22 UF 50 V	159003
C 9	Capacitor Electrolytic 4.7 UF 50 V	159008
C 10	Capacitor Electrolytic 10 UF 100 V	157003
C 11	Capacitor Disc 27 PF	157011
C 12	Capacitor Electrolytic 22 UF 50 V	159005
C 13	Capacitor Disc .01 UF	157016
C 14	Capacitor Disc 680 PF	159005
C 15	Capacitor Electrolytic 22 UF 50 V	157016
C 16	Capacitor Disc .01 UF	157010
C 17	Capacitor Disc 680 PF	157010
C 18	Capacitor Disc .01 UF	158005
C 19	Capacitor MM .1 UF	476239
R 1	Resistor 3.9 K 1/2 Watt	476239
R 2	Resistor 3.9 K 1/2 Watt	476510
R 3	Resistor 1 M 1/2 Watt	476510
R 4	Resistor 1 M 1/2 Watt	476510
R 5	Resistor 1 M 1/2 Watt	476368
R 6	Resistor 68 K 1/2 Watt	476368
R 7	Resistor 68 K 1/2 Watt	476000
R 8	Resistor Factory Select	476327
R 9	Resistor 27 K 1/2 Watt	476227
R 10	Resistor 2.7 K 1/2 Watt	476268
R 11	Resistor 6.8 K 1/2 Watt	476368
R 12	Resistor 68 K 1/2 Watt	476427
R 13	Resistor 270 K 1/2 Watt	476227
R 14	Resistor 2.7 K 1/2 Watt	476210
R 15	Resistor 1 K 1/2 Watt	476427
R 16	Resistor 270 K 1/2 Watt	476227
R 17	Resistor 2.7 K 1/2 Watt	476168
R 18	Resistor 680 1/2 Watt	475058
R 19	POT Trim 500 Ohm	474168
R 20	Resistor 680 CC 1 W	474168
R 21	Resistor 680 CC 1 W	474212
R 22	Resistor 1.2 K CC 1 W	474212
R 23	Resistor 1.2 K CC 1 W	476210
R 27	Resistor 1 K 1/2 Watt	478002
R 28	Resistor 33 1/2 Watt CC	468810
R 29	Resistor 1.1 1/2 Watt	476210
R 39	Resistor 220 K 1/2 Watt	476422
R 40	Resistor 68 K 1/2 Watt	476368
R 41	Resistor 68 K 1/2 Watt	476118
R 42	Resistor 180 1/2 Watt	476568
R 43	Resistor 6.8 M 1/2 Watt	476315
R 44	Resistor 15 K 1/2 Watt	476000
R 45	Resistor Factory Select	472022
R 46	Resistor 22 2 Watt	476139
R 47	Resistor 390 1/2 Watt	476139
R 48	Resistor 390 1/2 Watt	472022
R 49	Resistor 22 2 Watt	476027
R 50	Resistor 27 1/2 Watt	476027
R 51	Resistor 27 1/2 Watt	478005
R 52	Resistor 2.7 1/2 Watt CC	478005
R 53	Resistor 2.7 1/2 Watt CC	478005
R 54	Resistor 2.7 1/2 Watt CC	478005
R 55	Resistor 2.7 1/2 Watt CC	478005
R 56	Resistor 2.7 1/2 Watt CC	478005
R 57	Resistor 2.7 1/2 Watt CC	476018
R 58	Resistor 18 1/2 Watt	480005
D 1	Diode In 914	480005
D 2	Diode In 914	480005
D 3	Diode In 914	480005
D 4	Diode In 914	480005
D 5	Diode In 914	480005
D 6	Diode In 914	480005
D 7	Diode In 914	480005
D 8	Diode In 914	480033
Q 1	Transistor 2N4360 Pfet	480033
Q 2	Transistor 2N4360 Pfet	480032
Q 3	Transistor PNP 2N4248	480032
Q 4	Transistor PNP 2N4248	480059
Q 5	Transistor TO-39 105 V NPN	480056
Q 6	Transistor 2N6474 120 V NPN	480023
Q 7	Transistor NPN 2N2484	480056
Q 8	Transistor 2N6474 120 V NPN	480032
Q 9	Transistor PNP 2N4248	480057
Q 10	Transistor 2N6476 120 V PNP	480023
Q 11	Transistor NPN 2N2484	480060
Q 12	Transistor NPN TO3 110 Volts	480060
Q 13	Transistor NPN TO3 110 Volts	480060
Q 14	Transistor NPN TO3 110 Volts	480060
Q 15	Transistor NPN TO3 110 Volts	480060
Q 16	Transistor NPN TO3 110 Volts	480060
Q 17	Transistor NPN TO3 110 Volts	480060
Q 18	Transistor NPN TO3 110 Volts	480060



	T101	C102	DC VOLTS	F101 @ 120V 125V FUSE	F101 @ 240V 250V FUSE
3	560013 OR 560026	3900 80	76	3ASD	1.5ASD
25	560013 OR 560026	7800 100	76	3ASB	1.5ASD
D	560014	7800 100	87	5ASB	2.5ASD
0	560027	7800 100	88	6.25ASB	3ASB

BY DRAWN H. ALGAMMO CHECKED APPROVED BY	DATE 7-2-71	TITLE AC POWERED SLIDDIY GUITAR
ACOUSLIC control corp van nuys, california 91406		
ALL INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY		

PARTS LIST
 MODEL 320 POWER SUPPLY
 SCHEMATIC C1613

Schematic Reference	DESCRIPTION	Acoustic Part No.
F 101	6.25 Amp Slow Blow Fuse @ 125 Volts	510053
C 101	Capacitor, .01 UL AC Line	151015
C 102	Capacitor, 7800 UF, 100 Volts	153013
R 101	Resistor, 6.8 K ohm, 1 watt	474269
S 101	On/Off Power Switch	510055
S 104	AC 120-240 Voltage Switch	510032
BR 101	Bridge Rectifier	480054
D 103	LED Power Indicator	610012
T 101	Power Transformer	560027