ADVENT POWERED LOUDSPEAKER
PRELIMINARY SERVICE MANUAL

Beginning with serial number ZO 00100

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Required Test Equipment

The following list of test equipment is required to properly service the Advent Powered Loudspeaker.

1. Audio Oscillator, Hewlett Packard 204C or equivalent.
2. Precision ACVM, Hewlett Packard 400 GL or equivalent.
3. Oscilloscope, Tektronix T922 or equivalent.
4. Volt, Ohm Meter, Hewlett Packard Model 427A or equivalent.
5. Distortion Analyzer, Hewlett Packard Model 333A or equivalent.
6. One (1) Three Ohm Load Resistor 1%, 100 Watt Minimum Rating.
7. One (1) Six Ohm Load Resistor 1%, 100 Watt Minimum Rating.
8. AC Line Variac. General Radio W5MT3A or equivalent.

SPECIFICATIONS
(All specs are with 120 VAC line)

Control Panel

Maximum input signal level: 10 volts RMS

Hum and noise, (sensitivity control at 1v, input shorted, EQ. controls at zero):
Woofer less than 0.1mv
Tweeter less than 0.1mv

Total harmonic distortion, (EQ. controls at zero): Woofer (1v RMS out at 1 khz): Less than 0.05% THD. Tweeter (1v RMS out at 10 khz): Less than 0.05% THD.

Input impedence: 100k ohms

EQ. gain and frequency response (sensitivity control at 0.3v, EQ. controls at zero):
Woofer +7db at 20 hz
+7db at 400 hz
0db at 7 khz

Tweeter 0db at 400 hz
+2.5db at 3 khz
+6db at 10 khz

EQ. control cut & boost, (relative to mid position):
Bass, 0db/+6db at 30 hz ± 2 hz
Treble, -4db +4db at 10 khz

Power supply requirement: ± 14 VDC, approx. 7ma.

Power Amps

Hum and noise, (inputs shorted) less than 0.5mv either amplifier.

Power output, woofer amplifier: 80 watts (22v RMS into 6 ohms load at 1 khz). Tweeter amplifier: 80 watts (15.5 VRMS minimum into 3 ohm load at 10 khz). Note: The tweeter protection circuit must be disabled for this test.

Distortion: Less than 0.1% THD, either amplifier up to 80 watts either 3 or 6 ohms load.

VI limiting: Activates at 7.5v RMS into 2 ohms either amp.
Tweeter protection limit: Tweeter amp, activates at 9.5v RMS at 1 khz, 11v RMS at 10 khz, no load.

DC/Excursion limit: Woofer amp. activates at 30v RMS at 20 hz output, no load, or +13v DC out, either amplifier, no load.
Backplate thermal limit: Activates at 75°c backplate temperature: reset time approximately 30 seconds after shutoff in 25°c ambient.

Complete System Electronics

Hum and noise, (sensitivity control at 1v, input shorted, EQ

controls at zero): Less than 2.0mv either amplifier.

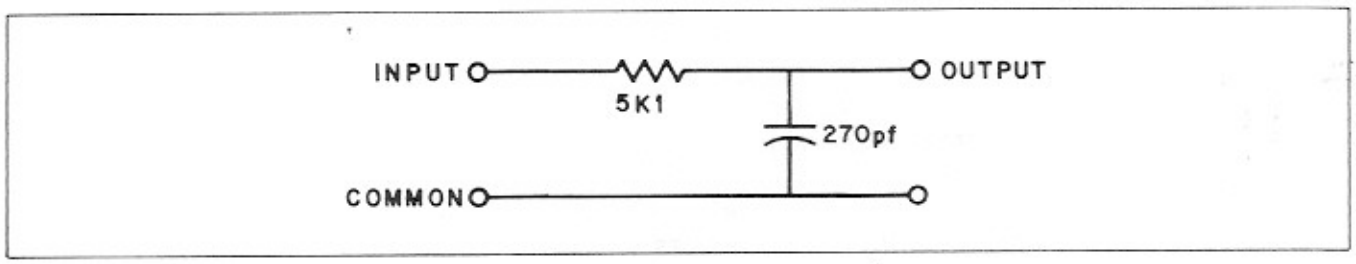
Power output: Same as amp only

Distortion: Same as amp only

Gain and frequency response: (sensitivity control at 0.3v, EQ controls at zero, infrasonic filter engaged.)

Woofer Amplifier	Tweeter Amplifier
+34db at 20 hz	+26db at 900 hz
+37db at 400 hz	+32.5db at 3 khz
+30db at 7 khz	+36 db at 10 khz

NOTE: All noise measurements were made using a Hewlett Packard Model 400 GL ACVM which has a 100 khz low pass filter. If using an ACVM not equipped with this provision, insert the following 100 khz low pass filter before the input.



APLS CIRCUIT DESCRIPTION

CONTROL PANEL CIRCUITS

The input jack located on the backplate feeds the INPUT SENSITIVITY control, which in turn feeds the control panel circuitry. A quad operational amplifier, IC-1, includes the active circuitry in the control panel. The first amplifier in IC-1 amplifies signal from the INPUT SENSITIVITY control and provides the tweeter equalization; a frequency-shaping network in its feedback loop produces the necessary contour. This amplifier feeds the second amplifier, which performs the variable equalization function. The BELOW 100 hz control feeds a bandpass filter consisting of the third amplifier and associated components, while the ABOVE 3 khz control feeds a high-frequency shaping network; the second amplifier sums the outputs of these two circuits to produce the desired equalization. The fourth amplifier acts as a low-pass filter to provide woofer frequency contouring and crossover, and drives the woofer amplifier. The tweeter amplifier is driven by the second amplifier in IC-1 through a resistive divider network that compensates for the unequal efficiencies of the woofer and the tweeter.

POWER AMPLIFIER CIRCUITS

Each power amplifier incorporates a high-pass filter at its input, the tweeter amplifier for tweeter crossover and the woofer amplifier for infrasonic filter. The infrasonic filter may be defeated with the INFRASONIC FILTER DEFEAT SWITCH. A differential amplifier fed by a current source forms the input stage for each amplifier. This stage drives a current-source-loaded gain stage which feeds Darlington output devices and incorporates a two-transistor bias circuit to control quiescent current in the output devices. The two-transistor bias circuit scales the operating current of its first transistor to achieve a temperature coefficient similar to that of the output devices. Feedback is taken from the output to the inverting input of the differential input stage to set the gain of the amplifier. The amplifiers feed their respective drivers through load-isolation networks and a relay which provides turn-on/turn-off silencing and various protection functions. The circuitry which drives the relay will be described in the next section. Finally, each amplifier incorporates VI limiting circuits which monitor both current and voltage in the output devices, compute the energy they dissipate, predict destructive internal temperature rises, and remove the loads at the danger point by disengaging the above-mentioned relay.

PROTECTION CIRCUITS

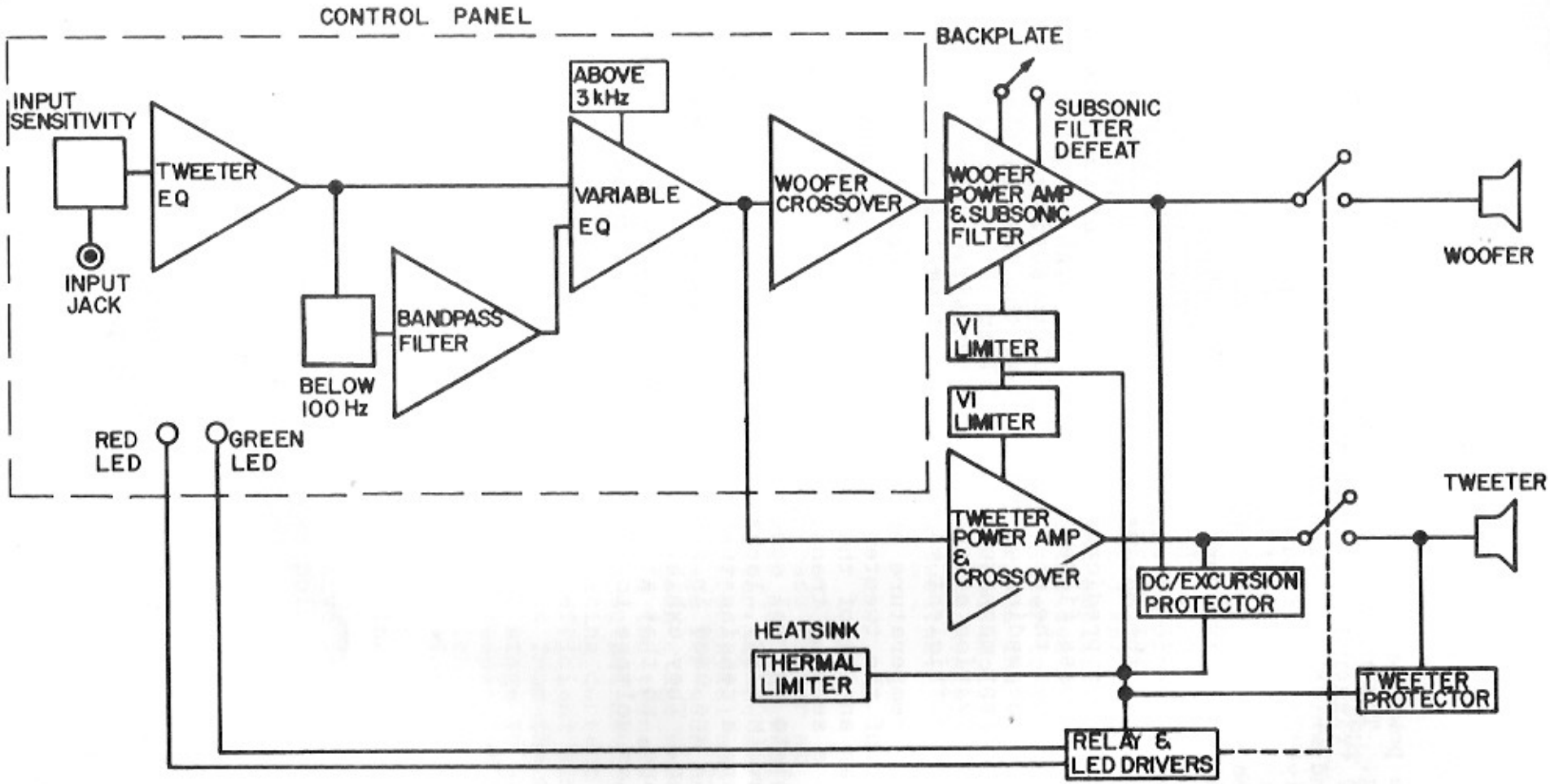
The protection relay is driven by a Darlington arrangement of transistors from a power supply separate from the main power supply. On turn-off, this separate supply collapses faster than the main supply and deactivates the relay to provide turn-off silencing. On turn-on, a time delay circuit prevents activation of the relay

until the power amplifiers have stabilized, thus providing turn-on silencing. The relay may be deactivated for protection purposes by a pair of trigger transistors which turn off the relay drive transistors and which also turn on the OVERLOAD LED slightly in advance of deactivating the relay. These trigger transistors in turn may be activated by any of five protection sensing circuits, all of which feed the input to the trigger transistors through isolating resistors. The five sensing circuits include the two VI limiting circuits described in the section on the power amplifiers, a DC-and-woofer excursion predictor, a tweeter-temperature predictor, and a backplate thermal sensor.

The DC/excursion predictor sums the outputs of the power amplifiers through a low-pass filter which removes high-frequency signal components and uses the resulting signal to activate one of two sensing transistors, depending on polarity of the signal, when the signal is of sufficient magnitude. The filter time constant is chosen to allow activation of the sensing transistors when subsonic frequencies of sufficient magnitude to bottom the woofer are present.

The tweeter temperature predictor scales, rectifies and filters the output of the tweeter power amplifier to produce a voltage which is an analog of the tweeters internal temperature and activates a sensing transistor when a point of danger is reached.

The backplate thermal sensor uses a pair of temperature-dependent resistors, (MOXIES), located on the power amplifier heat sinks to activate a sensing transistor at a predetermined temperature. The MOXIES are used in a bias voltage divider to feed the sensing transistor. They exhibit a decreasing resistance with increasing temperature, so that at the critical temperature the divider passes enough bias voltage to activate the sensing transistor.


CONTROL PANEL
BACKPLATE
INPUT SENSITIVITY
INPUT JACK
TWEETER EQ
ABOVE 3 kHz
VARIABLE EQ
WOOFER CROSSOVER
SUBSONIC FILTER DEFEAT
WOOFER POWER AMP & SUBSONIC FILTER
WOOFER
BELOW 100 Hz
BANDPASS FILTER
VI LIMITER
VI LIMITER
RED LED
GREEN LED
TWEETER POWER AMP & CROSSOVER
TWEETER
DC/EXCURSION PROTECTOR
HEATSINK
THERMAL LIMITER
TWEETER PROTECTOR
RELAY & LED DRIVERS

POWER AMPLIFIER TESTS

1-1 Initial Checks

If unit draws high current (repeatedly blows fuses) check the output devices (Q11, Q12, Q61, Q62) for possible collector-emitter shorts. Typical collector-emitter DC resistance is greater than 400 ohms. If only one of the output devices in the tweeter or woofer amp is shorted, remove both the NPN and PNP devices, even if only one is shorted.

If none of the outputs are shorted, proceed ahead to step 1-4.

1-2 Using a VOM or DVM, check the following resistors for possible drift in value or opens.

R18, R19, R68, R69 should be 0.33 ohms ± 5%
R20, R21, R70, R71 should be 560 ohms ± 5%
R16, R66 should be 33 ohms ± 5%

1-3 Install a 2k2 ohm 10% ½w resistor across the base-emitter junction of both sockets from which the output devices have been removed. These may be soldered or jumpered in place.

1-4 Check respective TP 101 or TP 102 for less than 50mv DC offset. If DC offset is normal, proceed ahead to step 1-6.

1-5 If the DC offset voltage is positive relative to the common connection of the main power supply, check Q8 and/or Q58 for possible opens, also check the differential input amp and current source Q1, Q2, Q3 and/or Q51, Q52, Q53.

If the DC offset voltage is negative, check Q8 and/or Q58 for collector-emitter short. Typical DC resistance is greater than 600 ohms. Also check the differential input amp and current source Q1, Q2, Q3 and/or Q51, Q52, Q53. Next check R14 and/or R64 for a 0.7 VDC ± 10% voltage drop. If the voltage drop is not within this range, check Q4 and/or Q54.

1-6 Output Device Bias Voltage

Check for proper bias voltage across the bases of Q11 and Q12 (woofer amp) and/or Q61 and Q62 (tweeter amp). Typical bias voltage is 1.8 VDC to 2.4 VDC dependent upon positions of pots R10 and R60. If voltages are not normal, check Q5, Q6 and/or Q55 and Q56.

1-7 Output Device Replacement

Remove the 2k2 ohm resistors if installed in step 1-4. Adjust bias pot R10 and/or R60 to minimum setting (fully CCW viewed from the top). Replace output devices using TO-3 type mica insulators and GE #G642 or equivalent heatsink compound. Reapply power slowly using variac. If neither amp draws high current and the DC offset at TP 101 and TP 102 is normal, proceed to next step. If not, return to step 1-1.

1-8 Output Device Bias Adjustment

With the backplate assy. at 25°c ambient, 120 VAC line, no signal in, and no load on outputs, slowly adjust R10 and/or R60 to obtain a 33mv ± 10% drop across R18 and R19 or R68 and R69. Voltage drop across each individual resistor will be 16.5 mv ± 10%. Allow unit to stabilize for 5 minutes, recheck and readjust if required. NOTE: The main board cable plug in may be removed to obtain no signal in and no load.

1-9 Voltage/Current (VI) Limiting Test

With power on, no signal in, carefully jumper a 47k ohm ¼w 10% resistor from V+ to the junction of R20 and C8 of the woofer amp. When the 47k ohm resistor is installed, the red overload led must illuminate and the protection relay must disengage. Remove the resistor, the red led must extinguish and the protection relay must re-engage. Repeat the test for the tweeter amplifier jumpering the 47k ohm resistor between V+ and the junction of R70 and C58.

Next check the VI limiting of the PNP outputs. Now jumper the 47k ohm resistor from V- to the junction of R21 and C9 of the woofer amp. When the 47k ohm resistor is installed, the red overload led must illuminate and the protection relay must disengage. Remove the resistor, the red led must extinguish and the protection relay must re-engage. Repeat the test for the tweeter amplifier jumpering the 47k ohm resistor between V- and the junction of R71 and C59.

Now repeat all the above steps, this time, using a 62k ohm ¼w 10% resistor. When the 62k ohm resistor is installed, the red overload led should not illuminate fully and the protection relay should not disengage. Remove the resistor, the red led must extinguish and protection relay must remain engaged.

PROTECTION CIRCUITS

2-0 Prior to trouble-shooting protection circuits, refer to the amplifier test section to check for the proper operation of the tweeter and woofer amps. If the amplifiers test normally, but the red overload led illuminates and the protection relay will not engage, the following checks must be performed:

2-1 DC/Excursion Limiting

If a voltage drop greater than 100mv DC is present across R109, check for DC offset greater than 50mv at TP 101 and TP 102, if DC voltage is present, see step 1-1 in amplifier test section. If DC voltage is not present, check Q103, Q104 and Q105.

2-2 Tweeter Protection

If a voltage drop greater than 100mv DC is present across R110, check Q106.

2-3 Thermal Limiting

If a voltage drop greater than 100mv DC is present across R117 and the backplate temperature is below 75^{0}c, check Q107. If Q107 checks normally, the moxies must be checked as follows: With POWER OFF remove the wire leading from the moxies which is soldered on the main amp PCB to the base of Q107. Now make a DC resistance reading across the moxies with the wire still isolated from the PCB. The DC resistance must be greater than 35k ohms (50k ohms typical) with the backplate temperature at 25^{o}c. Replace moxies if reading is not normal. Resolder moxie connection to the main PCB.

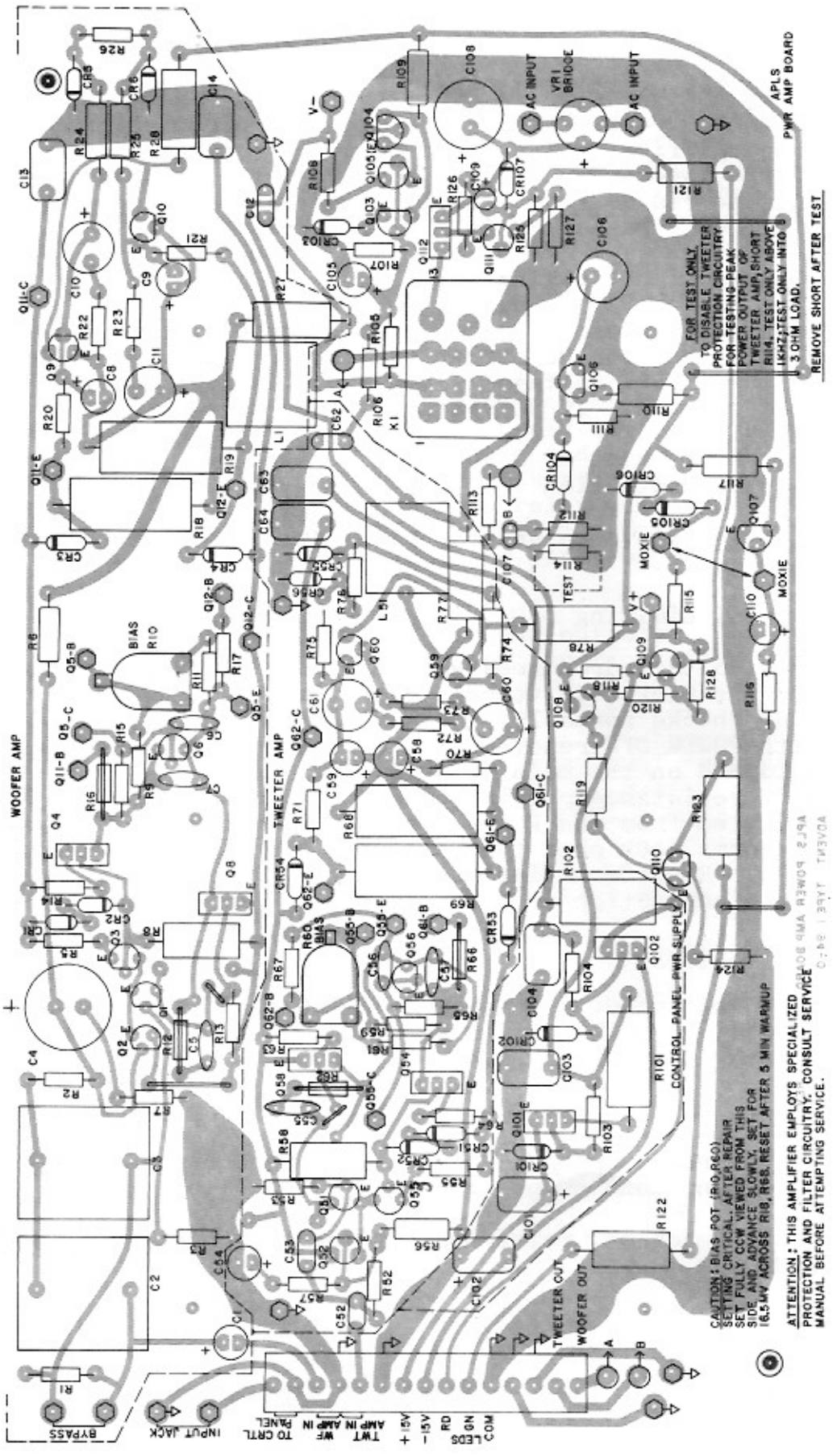
2-4 Voltage/Current (VI) Limiting

If a voltage drop greater than 100mv DC is present across R28, check Q9 and Q10. If a voltage drop greater than 100mv DC is present across R78, check Q59 and Q60.

2-5 Other Symptoms and Possible Causes

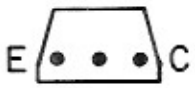
If the red overload LED is illuminated but the speaker otherwise functions properly, check Q108, Q110.

Red LED not on, relay doesn't engage, check Q108, Q109, Q111, and Q112.

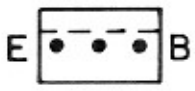

WOOFER AMP
TWEETER AMP
CONTROL PANEL PWR SUPPLY
APLS PWR AMP BOARD
AC INPUT
AC INPUT
VR1 BRIDGE
MOXIE
MOXIE
TEST
BIAS
BIAS
BYPASS
INPUT JACK
TO CRTL PANEL
TWT AMP IN
WF AMP IN
+15V
-15V
RD
GN
COM
LEDS
TWEETER OUT
WOOFER OUT
A
B
FOR TEST ONLY
TO DISABLE TWEETER PROTECTION CIRCUITRY FOR TESTING PEAK POWER OUTPUT OF TWEETER AMP, SHORT R114. TEST ONLY ABOVE 1KHZ. TEST ONLY INTO 3 OHM LOAD.
REMOVE SHORT AFTER TEST
CAUTION: BIAS POT (R10,R60) SETTING CRITICAL, AFTER REPAIR SET FULLY CCW VIEWED FROM THIS SIDE AND ADVANCE SLOWLY, SET FOR 16.5MV ACROSS R18, R68. RESET AFTER 5 MIN WARMUP
ATTENTION: THIS AMPLIFIER EMPLOYS SPECIALIZED PROTECTION AND FILTER CIRCUITRY. CONSULT SERVICE MANUAL BEFORE ATTEMPTING SERVICE.

BOTTOM VIEWS

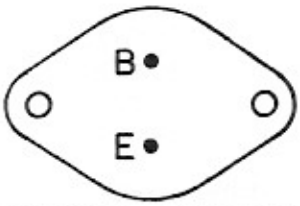
MPSA13 MPS4355
MPSL01 2N5087
NPN PNP



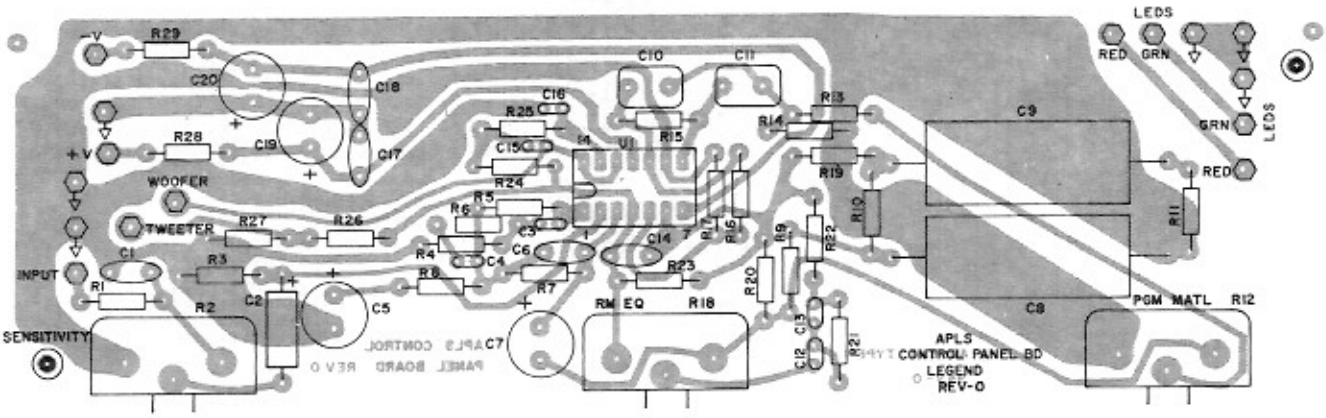
MPSU02 MPSU52
MPSU07 MPSU57
NPN MPSU60
PNP



2SC1345
NPN



2N6284 2N6287
NPN PNP



PARTS LIST

AMPLIFIER PC BOARD

Symbol	Part #	Description
BR1	60-663-042	Rectifier PF10
C1,C8,C9,C54	60-613-005	Cap. 10 uf/16V. P.C.
C58,C59,C110	"	"
C2,C3	60-632-077	Cap. 1.5 uf/100V. 10%
C4	60-613-086	Cap. 470 uf/16V. P.C.
C5	60-632-199	Cap. 220 pf/50V. cer.
C6,C7,C56,C57	60-632-234	Cap. .01 uf/100V. 20%
C10,C11,C60,C61	60-613-006	Cap. 100 uf/16V. P.C.
C12,C62	60-632-089	Cap. .05 uf/100V. 10%
C13,C14,C63	60-632-002	Cap. .1 uf/100V. 10%
C64,C103,C104	"	"
C52,C53	60-632-011	Cap. .033 uf/100V.
C55	60-632-057	Cap. 100 pf/50V. 5% cer.
C101,C102,C106	60-613-085	Cap. 47 uf/16V. P.C.
C105	60-613-059	Cap. 2.2 uf/50V. P.C.
C107	60-632-017	Cap. .0012 uf 10%
C108	60-613-045	Cap. 100 uf/35V. P.C.
C109	60-613-093	Cap. 4.7 uf/16V. P.C.
CR1,CR2.CR5,CR6,	60-663-003	Diode 1N914 or 1N4148
CR51,CR52,CR55,CR56,	"	"
CR103,CR104,CR105,	"	"
CR106,CR107,CR108	"	"
CR3,CR4,CR53,CR54	60-663-028	Diode 1N4003
CR101,CR102	60-663-044	Diode 1N5245A
K1	50-267-003	Relay, 4PDT
L1,L51	60-623-117	Choke, Output
LED, Red	60-663-059	LED, Red
LED, Green	60-663-077	LED, Green
Moxie	60-656-007	Temp. Var. Res.
Q1,Q2,Q3	60-674-015	Trans. MPS 4355
Q51,Q52,Q53	"	"
Q105,Q108,Q109,Q111	"	"
Q4,Q54	60-674-017	Trans. MPS U57
Q5,Q55	60-673-047	Trans. 2SC1345E
Q6,Q56	60-674-003	Trans. 2N5087
Q7,Q57	NOT USED	
Q8,Q58	60-674-016	Trans. MPS U07
Q9,Q10,Q59,Q60	60-674-018	Trans. MPS L01
Q103,Q104,Q106,Q107	"	"
Q11,Q61	60-674-014	Trans. 2N6284
Q12,Q62	60-674-013	Trans. 2N6287
Q101	60-673-023	Trans. MPS U02
Q102	60-673-028	Trans. MPS U52
Q110	60-674-020	Trans. MPS A13
Q112	60-673-022	Trans. MPS U60

PARTS LIST

Symbol	Part #	Description
R1	60-654-172	Res. 1 Meg. ¼W. 10%
R2,R52	60-654-140	Res. 3K6 ¼W. 5%
R3,R53	60-654-165	Res. 7K5 ¼W. 5%
R4,R54	NOT USED	
R5,R55	60-654-237	Res. 360 ¼W. 5%
R6,R56	60-651-125	Res. 7K5 ½W. 5%
R7,R57	60-654-196	Res. 240 ¼W. 5%
R8,R58	60-652-060	Res. 27K 1W. 10%
R9,R59,R111	60-654-093	Res. 39K ¼W. 5%
R10,R60	50-714-093	Pot. 5K Laydown
R11,R61	60-654-229	Res. 12K ¼W. 5%
R12,R62	NOT USED	
R13,R20,R21,	60-653-176	Res. 560 ¼W. 5%
R63,R70,R71	"	"
R14,R64	60-654-227	Res. 56 ¼W. 5%
R15,R65,R107,R116,	60-654-091	Res. 10K ¼W. 5%
R126,R127,R129	"	"
R16,R66	NOT USED	
R17,R67	60-654-098	Res. 33 ¼W. 10%
R18,R19,R68,R69	60-643-030	Res. .33 5W. 5%
R22,R23,R72,R73	60-654-216	Res. 390 ¼W. 5%
R24,R25,R74,R75	60-651-126	Res. 6K2 ½W. 5%
R26,R76,R105,R106	60-654-223	Res. 47K ¼W. 5%
R27,R77	60-652-025	Res. 10 1W. 10%
R28,R78	60-652-062	Res. 10K 1W. 10%
R101,R102,R115,	60-654-225	Res. 100K ¼W. 5%
R118,R124	"	"
R103,R104	60-652-061	Res. 1K2 2W. 10%
R108	60-654-214	Res. 20K ¼W. 5%
R109,R110,R117,R119	60-651-034	Res. 10K ½W. 10%
R112	60-654-220	Res. 6K8 ¼W. 5%
R113	60-654-125	Res. 56K ¼W. 5%
R114,R120	60-654-219	Res. 4K7 ¼W. 5%
R121	60-651-011	Res. 2K2 ½W. 10%
R122,R123	60-652-028	Res. 1K 1W. 10%
R125	60-654-225	Res. 5M6 ¼W. 5%
R128	60-654-218	Res. 2K2 ¼W. 5%
POWER SUPPLY-BACKPLATE		
BR2	60-663-079	Rect. Bridge 20A
C501,C502	60-632-333	Cap. .01 uf cer/ul
C503,C504	60-613-091	Cap. 11K uf/60V.
F501	60-743-044	Fuse 3AG 5A Slo-Blo
F502	60-743-045	Fuse 3AG 1A
S1	50-265-007	Switch Min Tog SPDT
S501	50-263-047	Switch, Power
T501	80-000-107	Transformer, Power

PARTS LIST

CONTROL PANEL PCB

Symbol	Part #	Description
C1	60-632-188	Cap. 150 pf/50V. 10% Cer.
C2	60-613-020	Cap. 1 uf/16V.
C3	60-633-019	Cap. .0039/100V. 10%
C4,C15	60-632-016	Cap. .0082/100V. 10%
C5,C7,C19,C20	60-613-085	Cap. 47 uf/16V PC
C6	60-632-129	Cap. 330 pf/50V. Cer.
C8,C9	NOT USED	
C10,C11	60-633-033	Cap. .15 uf/100V. 10%
C12,C13	60-632-002	Cap. .001 uf/100V. 10%
C14	60-632-189	Cap. 82 pf/50V. 10% Cer.
C16	60-632-041	Cap. .0056 uf/100V. 10%
C17,C18	60-632-234	Cap. .01 uf/100V. 20%
IC1	60-677-034	IC, RC 4136N
R1	60-654-123	Res. 2K2 ¼W. 5%
R2	50-714-129	Pot. 100K input sens.
R3	60-654-172	Res. 1M ¼W. 10%
R4	60-654-044	Res. 2K7 ¼W. 5%
R5,R8	60-654-142	Res. 3K9 ¼W. 5%
R6	60-654-216	Res. 390 ¼W. 5%
R7	60-654-131	Res. 4K7 ¼W. 5%
R9	NOT USED	
R10	NOT USED	
R11	NOT USED	
R12,R18	50-714-130	Pot. 10K, EQ.
R13,R14	60-654-229	Res. 12K ¼W. 5%
R15	60-654-170	Res. 200K ¼W. 5%
R16,R20,R23	60-654-214	Res. 20K ¼W. 5%
R17	60-654-232	Res. 1K3 ¼W. 5%
R19	NOT USED	
R21,R22	60-654-091	Res. 10K ¼W. 5%
R24,R25	60-654-165	Res. 7K5 ¼W. 5%
R26	60-654-236	Res. 1K1 ¼W. 5%
R27	60-654-231	Res. 910 ¼W. 5%
R28,R29	60-653-164	Res. 33 ¼W. 10%

REPLACEMENT DRIVERS

Tweeter	10-990-604
Woofer	10-990-605
Tweeter Mtg. Screws	60-311-419
Woofer Mtg. Screws	60-311-420

ACCESSORY AND COSMETIC ITEMS

Audio Cable, 30 Ft.	70-692-027
Knob, EQ./Input Sens.	30-533-051
Knob, On/Off	30-533-053
Panel, front control	30-427-052
Panel, Grille assembly	10-990-549

PARTS LIST

MISC. HARDWARE

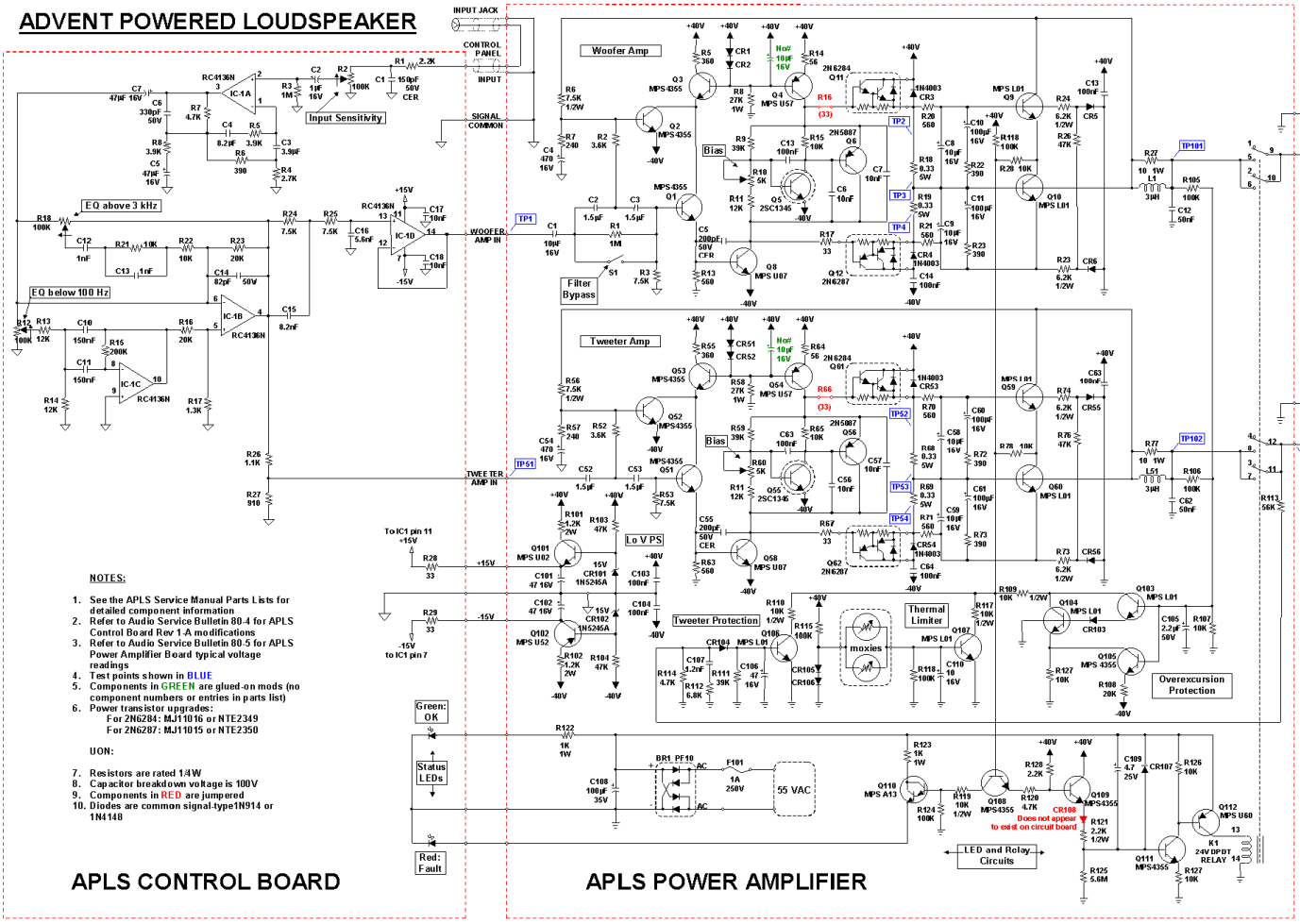
Symbol	Part #	Description
Fuse Holder	60-743-040	
Line Cord	40-693-040	
Lock Washer	60-311-398	#6-int. tooth
Mica Insulator	60-321-027	To-3 Pkg.
Screw, AMP. PCB	60-311-406	#6-32 x 5/8" Lg.
Screw, Backplate	60-311-401	#10-24 x 1" Hex.
Screw, To-3 Trans.	60-311-418	#6 x 5/8" Lg.
Screw, Trans. Shield	60-311-403	#10-24 x 1/2"
Shield, Transistor	30-423-210	

SZZ-8721

ADVENT
195 Albany Street
Cambridge, Massachusetts 02139

Part No. 85-956-004
Printed in USA

ADVENT POWERED LOUDSPEAKER

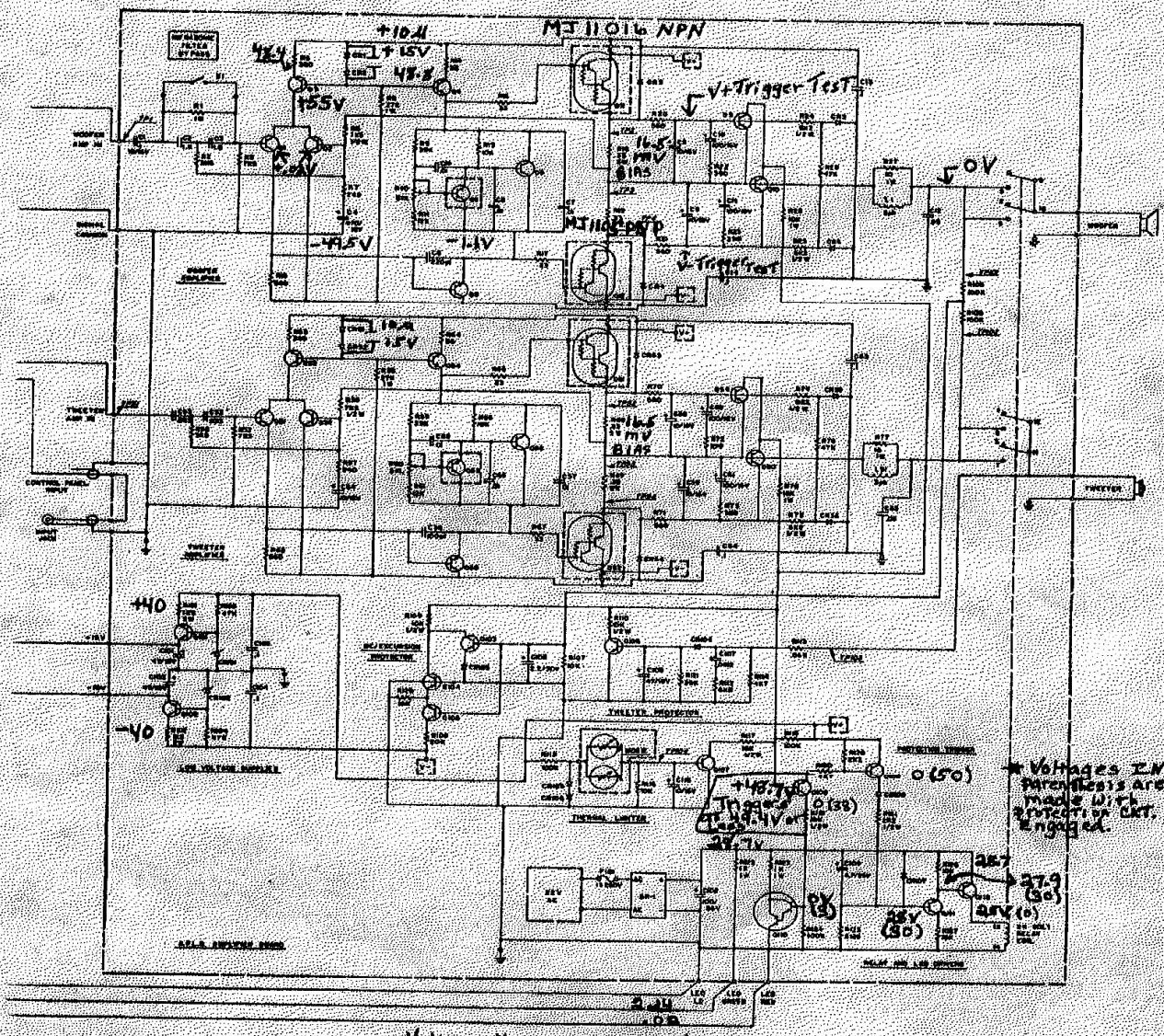


APLS CONTROL BOARD

APLS POWER AMPLIFIER

AUDIO SERVICE BULLETIN 80-5
SUBJ: APLS VOLTAGE READINGS
DATE: 8/80

- TYPICAL VOLTAGE READINGS FOR APLS -

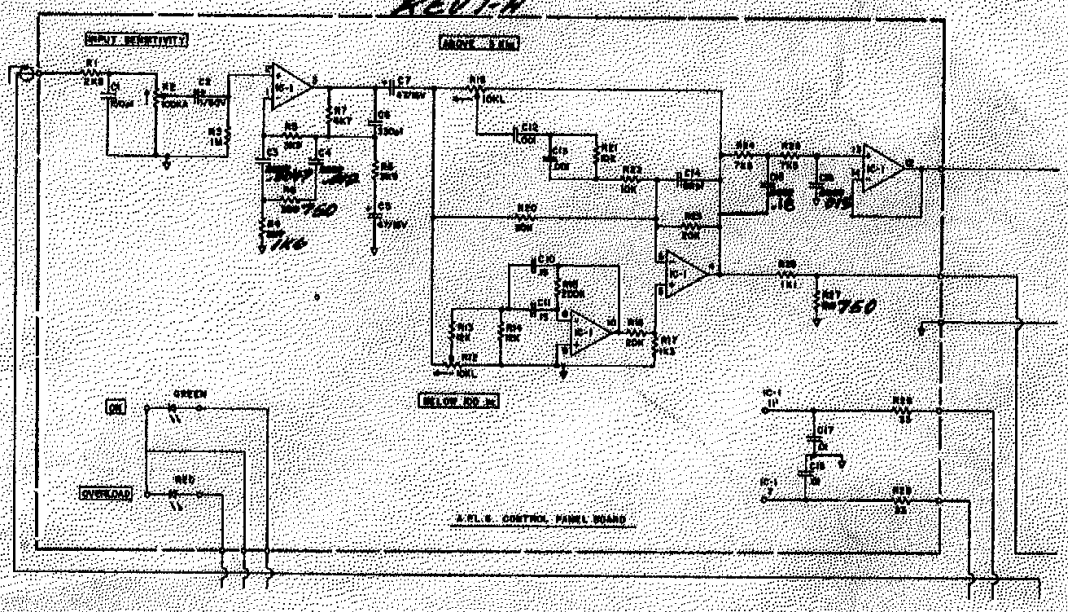


AUDIO SERVICE BULLETIN 80-4
SUBJ: A.P.L.S. SCHEMATIC REVISION
DATE: 8/80

- SCHEMATIC REV. INFORMAITON FOR LATEST APLS CONTROL PANEL -

RC4136N

REV-A



- APLS SERVICE INFORMATION -

When checking bias (16.5mv) across individual emitter resistors (R18, R19, R68, R69), the molex connector should be disconnected.

CAUSES FOR UNSTABLE MEASUREMENTS ARE:

- Outputs are leaky.
- R18, 19, 68 or 69 changed in value. If brown or blue in color, problem very likely to occur and should be be replaced with a white RCD resistor or a Colber resistor. (Advent P/N 60-643-030)
- Connections of above resistors to PCB loose.
- Drivers Q4, 8, 54 or 58 leaky.
- Also check Q1, 2, 3, 51, 52, & 53.

AUDIO SERVICE BULLETIN 80-3
SUBJ: ADVENT POWERED LOUDSPEAKER SERVICE TIPS
DATE: 8/80

- APLS SERVICE TIPS -

PROBLEM: Static or intermittent output.

SOLUTION:

1) Physically heavy components (especially pwr. resistors, relay, caps C2 & C3) pull loose and break solder connections on P.C. Board.

2) Bad solder connection on molex attached to P.C. Board.

3) Check for discolored or pitted contacts on relay.

PROBLEM: Red overload light will not go out, speaker plays o.k.

SOLUTION:

1) Check DC offset at test point 3 for woofer amp and test point 53 for tweeter amp. An offset of more than 50mv will likely cause overload light to trigger.

2) If woofer amp has offset, check Q1, Q2, Q3, for leakage. If tweeter amp check Q51, Q52, Q53 for leakage.

PROBLEM: Red overload light actuates sporadically, amplifiers operating o.k.

SOLUTION: Check K1 relay for discoloration of contacts or burned contacts. Replace if necessary.

PROBLEM: When speakers are switched off, green & red lights extinguish very slowly.

SOLUTION: Check for leakage in Q1, Q2, Q3, Q51, Q53. Also, check for their connection to PCB.

PROBLEM: Hum through speaker -

SOLUTION: Major filter caps ground wire is not making proper connection to backplate. Screw through lug is insulated from backplate due to plating (black in color) scrape away plating to insure good contact.