

NO 1-13
AMPLIFIER
109 B
I-5-39

ELECTRICAL CHARACTERISTICS

GAIN - - - - - 61 DB (MAX) WHEN WORKING BETWEEN A 200-OHM GENERATOR AND A 500 OR 8-OHM LOAD. FIG. 1.

OPERATES FROM - - - - - 0-500 OHMS

INTERNAL INPUT IMPEDANCE - 500 OHMS

OPERATES INTO - - - - - 8 OR 500 OHMS

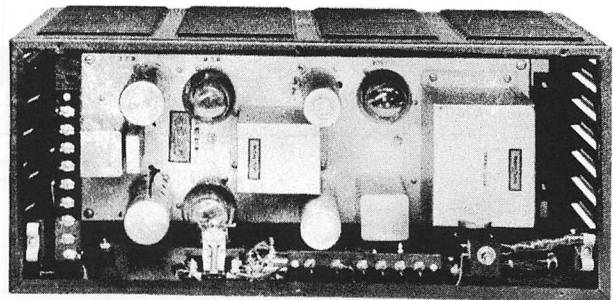
INTERNAL OUTPUT IMPEDANCE- 1/2 OF LOAD IMPEDANCE

OUTPUT POWER - - - - - 12 WATTS OR +33 DB (0 LEVEL = .006 WATTS). 5% TOTAL HARMONIC DISTORTION. FIGS. 2 & 3.

OUTPUT NOISE - - - - - (-) 40 DB UNWEIGHTED (0 LEVEL = .006 WATTS)

POWER SUPPLY - - - - - 105-125 VOLTS, 45-65 CYCLES, 100 WATTS. FUSE FOR 1.25 AMPS.

GAIN CONTROL - - - - - 500-OHM POTENTIOMETER (40 DB CONTINUOUS VARIATION).



109B AMPLIFIER IN METAL CABINET OF 103B AMPLIFIER

EQUIPMENT CHARACTERISTICS

PANEL DIMENSIONS - - - - - 19" X 7"

DEPTH - - - - - 7-1/2"

WEIGHT - - - - - APPROX. 20 LBS.

MOUNTING - - - - - STD. 19" RELAY RACK OR SUITABLE CABINET

NOTE: THE 109B AMPLIFIER MAY BE ORDERED WITH DIFFERENT MAT FINISHES AS FOLLOWS:

CODE NO.	FINISH
109B-3	RUBBER FINISH BLACK JAPAN
109B-15	ALUMINUM GRAY FINISH
109B-24	ALUMINUM LACQUER FINISH

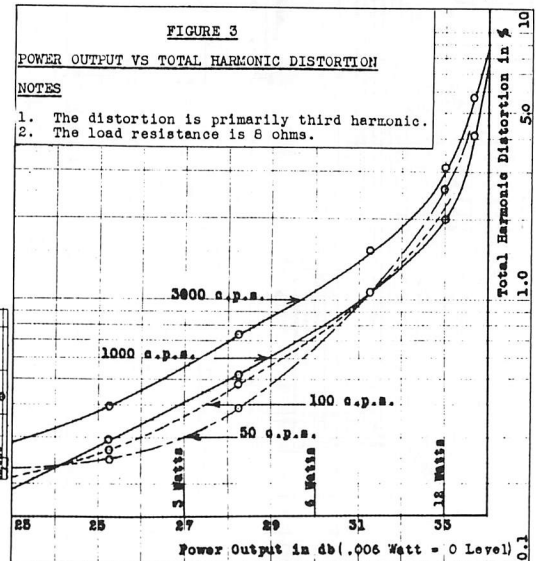
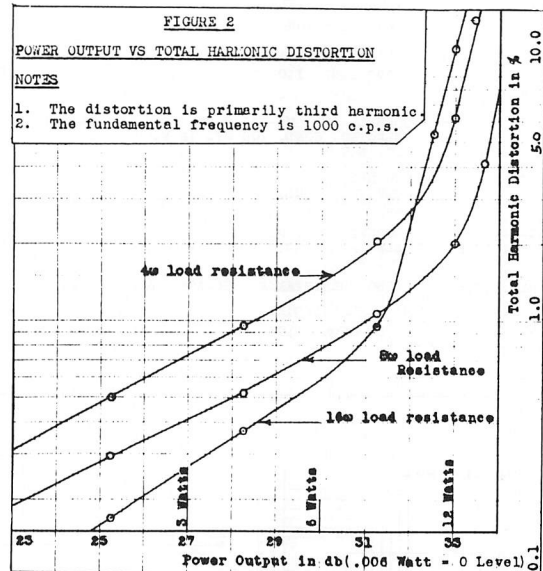
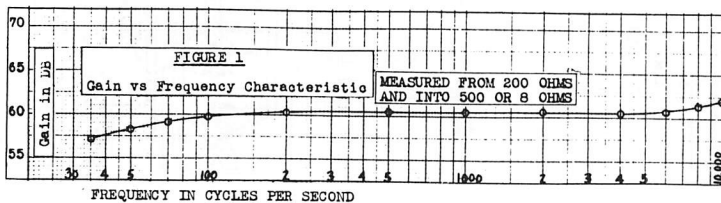
VACUUM TUBES

	METAL	GLASS
FIRST STAGE	TWO - 6J7	OR TWO - 6J7G
SECOND STAGE	TWO - 6L6	OR TWO - 6L6G
RECTIFIER	ONE - 5Z4	OR ONE - 5V4G

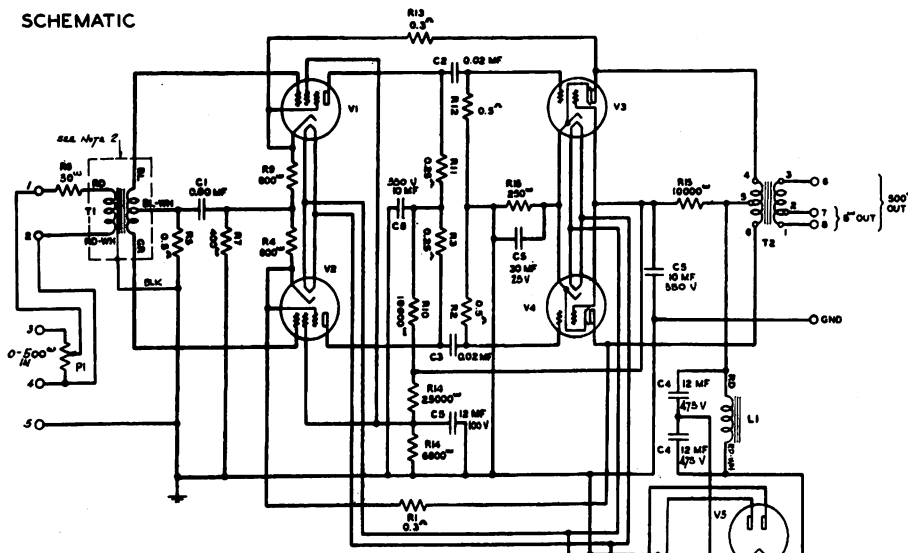
REFERENCES

- ESR-612476 - ASSEMBLY
- ESR-612478 - WIRING DIAGRAM
- ESO-612477 - SCHEMATIC
- ES-743720 - GAIN VS FREQUENCY CHARACTERISTIC
- ES-743672 } - POWER OUTPUT VS TOTAL HARMONIC DISTORTION
- ES-743673 }

NOTE: THE 109B AMPLIFIER IS SIMILAR TO THE 94C AMPLIFIER EXCEPT THAT IT HAS A LOWER INPUT IMPEDANCE, HIGHER GAIN, A POTENTIOMETER FOR CONTROLLING THE GAIN OF THE AMPLIFIER AND A POWER SWITCH. THE CONTROL ELEMENTS EXTEND THROUGH THE MAT FOR OPERATION FROM THE FACE OF THE AMPLIFIER.



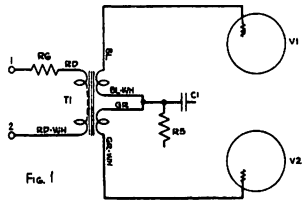
SCHEMATIC



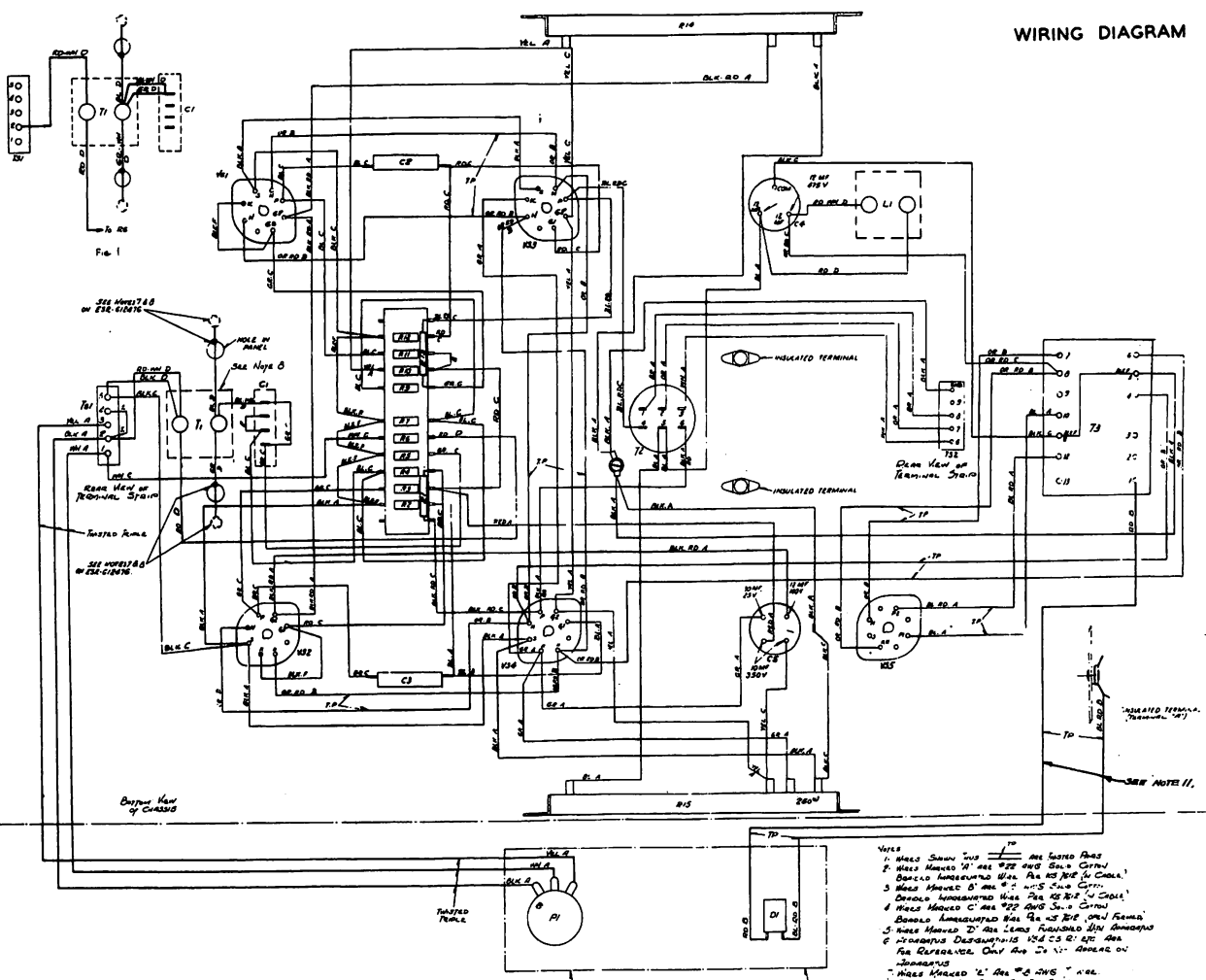
SYMBOL	DESCRIPTION
C1	0.0500 CONDENSE
C2, C3	MINOR CONDENSES FOR USE OF MP
C4	200V ELECTROLYTIC TYPE 50 15-15 1/2" DIA. 1000 MFD. CAPACITOR EQUIPPED WITH ALUMINUM FOLI
C5	MINOR ELECTROLYTIC CONDENSER TYPE 40 10-10W 350 V 1/2" DIA. 1000 MFD. CAPACITOR
L1	270 G. COILWIND CH.
R1, R2, R3	0.5% I.R.C. RESISTANCE TYPE 270 OHM 1/2 WATT
R4, R5	0.5% I.R.C. RESISTANCE TYPE 270 OHM 1/2 WATT
R6, R7	100W I.R.C. RESISTANCE TYPE 100 OHM 1/2 WATT
R8	1000W I.R.C. RESISTANCE TYPE 100 OHM 1/2 WATT
R9	100W I.R.C. RESISTANCE TYPE 100 OHM 1/2 WATT
R10	100W I.R.C. RESISTANCE TYPE 100 OHM 1/2 WATT
T1	250 D OR 255 G LIGHT BULB/POWER
T2	171 B OUTPUT TRANSFORMER
T3	332 GA TRANSFORMER
V1, V2	TYPE 6J7 OR 6J7-G VACUUM TUBE
V3, V4	TYPE 6L6 OR 6L6-G VACUUM TUBE
V5	TYPE 6Y6 OR 6Y6-G VACUUM TUBE
D1	1/4" N.P. 250V SWITCH WITH 1/8" CONTACTS
P1	1/2" I.R.C. RESISTANCE TYPE 100 OHM 1/2 WATT

- NOTES: 1- IF AC LINE WIRE IS CONNECTED BETWEEN 115 & 120 VOLTS, CONNECT TO TERMINAL 'A' ON CHASSIS AND TERMINAL 3 OF T3 & LINE WIRE IS CONNECTED BETWEEN 105 AND 115 VOLTS, CONNECT TO TERMINAL 'A' ON CHASSIS AND TERMINAL 2 OF T3.
- 2- CONNECTIONS ARE SHOWN FOR THE 200 D LIGHT BULB TRANSFORMER. WHEN THE 250 G LIGHT BULB TRANSFORMER IS USED, CONNECTIONS SHALL BE AS FIG. 1.
- 3- EXTERNAL GROUND MAY BE CONNECTED TO THE 'GND' TERMINAL OR TO TERMINAL 3 ONLY ONE GROUND SHOULD BE USED.

TERMINAL 'A' (SEE NOTE 4)
 A TOP. A IS MTD. ON THE METAL BARRIER NEAR THE POWER TRANSFORMER. THE DESIGNATION 'A' DOES NOT ACTUALLY APPEAR ON THE AMP.
 100-100 VOLTS 45-60 CYCLES
 11 HOURS 100 WATTS MAX



WIRING DIAGRAM



- NOTES - CONT'D.
- 1- WIRE SHOWN IN THIS SCHEMATIC ARE GREEN PINS
 - 2- WIRE MARKED 'A' ARE #22 AWG GALV. COATED
 - 3- WIRE MARKED 'B' ARE #22 AWG GALV. COATED
 - 4- WIRE MARKED 'C' ARE #22 AWG GALV. COATED
 - 5- WIRE MARKED 'D' ARE #22 AWG GALV. COATED
 - 6- WIRE MARKED 'E' ARE #22 AWG GALV. COATED
 - 7- WIRE MARKED 'F' ARE #22 AWG GALV. COATED
 - 8- WIRE MARKED 'G' ARE #22 AWG GALV. COATED
 - 9- WIRE MARKED 'H' ARE #22 AWG GALV. COATED
 - 10- WIRE MARKED 'I' ARE #22 AWG GALV. COATED
 - 11- WIRE MARKED 'J' ARE #22 AWG GALV. COATED
 - 12- WIRE MARKED 'K' ARE #22 AWG GALV. COATED
 - 13- WIRE MARKED 'L' ARE #22 AWG GALV. COATED
 - 14- WIRE MARKED 'M' ARE #22 AWG GALV. COATED
 - 15- WIRE MARKED 'N' ARE #22 AWG GALV. COATED
 - 16- WIRE MARKED 'O' ARE #22 AWG GALV. COATED
 - 17- WIRE MARKED 'P' ARE #22 AWG GALV. COATED
 - 18- WIRE MARKED 'Q' ARE #22 AWG GALV. COATED
 - 19- WIRE MARKED 'R' ARE #22 AWG GALV. COATED
 - 20- WIRE MARKED 'S' ARE #22 AWG GALV. COATED
 - 21- WIRE MARKED 'T' ARE #22 AWG GALV. COATED
 - 22- WIRE MARKED 'U' ARE #22 AWG GALV. COATED
 - 23- WIRE MARKED 'V' ARE #22 AWG GALV. COATED
 - 24- WIRE MARKED 'W' ARE #22 AWG GALV. COATED
 - 25- WIRE MARKED 'X' ARE #22 AWG GALV. COATED
 - 26- WIRE MARKED 'Y' ARE #22 AWG GALV. COATED
 - 27- WIRE MARKED 'Z' ARE #22 AWG GALV. COATED
 - 28- WIRE MARKED 'AA' ARE #22 AWG GALV. COATED
 - 29- WIRE MARKED 'AB' ARE #22 AWG GALV. COATED
 - 30- WIRE MARKED 'AC' ARE #22 AWG GALV. COATED
 - 31- WIRE MARKED 'AD' ARE #22 AWG GALV. COATED
 - 32- WIRE MARKED 'AE' ARE #22 AWG GALV. COATED
 - 33- WIRE MARKED 'AF' ARE #22 AWG GALV. COATED
 - 34- WIRE MARKED 'AG' ARE #22 AWG GALV. COATED
 - 35- WIRE MARKED 'AH' ARE #22 AWG GALV. COATED
 - 36- WIRE MARKED 'AI' ARE #22 AWG GALV. COATED
 - 37- WIRE MARKED 'AJ' ARE #22 AWG GALV. COATED
 - 38- WIRE MARKED 'AK' ARE #22 AWG GALV. COATED
 - 39- WIRE MARKED 'AL' ARE #22 AWG GALV. COATED
 - 40- WIRE MARKED 'AM' ARE #22 AWG GALV. COATED
 - 41- WIRE MARKED 'AN' ARE #22 AWG GALV. COATED
 - 42- WIRE MARKED 'AO' ARE #22 AWG GALV. COATED
 - 43- WIRE MARKED 'AP' ARE #22 AWG GALV. COATED
 - 44- WIRE MARKED 'AQ' ARE #22 AWG GALV. COATED
 - 45- WIRE MARKED 'AR' ARE #22 AWG GALV. COATED
 - 46- WIRE MARKED 'AS' ARE #22 AWG GALV. COATED
 - 47- WIRE MARKED 'AT' ARE #22 AWG GALV. COATED
 - 48- WIRE MARKED 'AU' ARE #22 AWG GALV. COATED
 - 49- WIRE MARKED 'AV' ARE #22 AWG GALV. COATED
 - 50- WIRE MARKED 'AW' ARE #22 AWG GALV. COATED
 - 51- WIRE MARKED 'AX' ARE #22 AWG GALV. COATED
 - 52- WIRE MARKED 'AY' ARE #22 AWG GALV. COATED
 - 53- WIRE MARKED 'AZ' ARE #22 AWG GALV. COATED
 - 54- WIRE MARKED 'BA' ARE #22 AWG GALV. COATED
 - 55- WIRE MARKED 'BB' ARE #22 AWG GALV. COATED
 - 56- WIRE MARKED 'BC' ARE #22 AWG GALV. COATED
 - 57- WIRE MARKED 'BD' ARE #22 AWG GALV. COATED
 - 58- WIRE MARKED 'BE' ARE #22 AWG GALV. COATED
 - 59- WIRE MARKED 'BF' ARE #22 AWG GALV. COATED
 - 60- WIRE MARKED 'BG' ARE #22 AWG GALV. COATED
 - 61- WIRE MARKED 'BH' ARE #22 AWG GALV. COATED
 - 62- WIRE MARKED 'BI' ARE #22 AWG GALV. COATED
 - 63- WIRE MARKED 'BJ' ARE #22 AWG GALV. COATED
 - 64- WIRE MARKED 'BK' ARE #22 AWG GALV. COATED
 - 65- WIRE MARKED 'BL' ARE #22 AWG GALV. COATED
 - 66- WIRE MARKED 'BM' ARE #22 AWG GALV. COATED
 - 67- WIRE MARKED 'BN' ARE #22 AWG GALV. COATED
 - 68- WIRE MARKED 'BO' ARE #22 AWG GALV. COATED
 - 69- WIRE MARKED 'BP' ARE #22 AWG GALV. COATED
 - 70- WIRE MARKED 'BQ' ARE #22 AWG GALV. COATED
 - 71- WIRE MARKED 'BR' ARE #22 AWG GALV. COATED
 - 72- WIRE MARKED 'BS' ARE #22 AWG GALV. COATED
 - 73- WIRE MARKED 'BT' ARE #22 AWG GALV. COATED
 - 74- WIRE MARKED 'BU' ARE #22 AWG GALV. COATED
 - 75- WIRE MARKED 'BV' ARE #22 AWG GALV. COATED
 - 76- WIRE MARKED 'BW' ARE #22 AWG GALV. COATED
 - 77- WIRE MARKED 'BX' ARE #22 AWG GALV. COATED
 - 78- WIRE MARKED 'BY' ARE #22 AWG GALV. COATED
 - 79- WIRE MARKED 'BZ' ARE #22 AWG GALV. COATED
 - 80- WIRE MARKED 'CA' ARE #22 AWG GALV. COATED
 - 81- WIRE MARKED 'CB' ARE #22 AWG GALV. COATED
 - 82- WIRE MARKED 'CC' ARE #22 AWG GALV. COATED
 - 83- WIRE MARKED 'CD' ARE #22 AWG GALV. COATED
 - 84- WIRE MARKED 'CE' ARE #22 AWG GALV. COATED
 - 85- WIRE MARKED 'CF' ARE #22 AWG GALV. COATED
 - 86- WIRE MARKED 'CG' ARE #22 AWG GALV. COATED
 - 87- WIRE MARKED 'CH' ARE #22 AWG GALV. COATED
 - 88- WIRE MARKED 'CI' ARE #22 AWG GALV. COATED
 - 89- WIRE MARKED 'CJ' ARE #22 AWG GALV. COATED
 - 90- WIRE MARKED 'CK' ARE #22 AWG GALV. COATED
 - 91- WIRE MARKED 'CL' ARE #22 AWG GALV. COATED
 - 92- WIRE MARKED 'CM' ARE #22 AWG GALV. COATED
 - 93- WIRE MARKED 'CN' ARE #22 AWG GALV. COATED
 - 94- WIRE MARKED 'CO' ARE #22 AWG GALV. COATED
 - 95- WIRE MARKED 'CP' ARE #22 AWG GALV. COATED
 - 96- WIRE MARKED 'CQ' ARE #22 AWG GALV. COATED
 - 97- WIRE MARKED 'CR' ARE #22 AWG GALV. COATED
 - 98- WIRE MARKED 'CS' ARE #22 AWG GALV. COATED
 - 99- WIRE MARKED 'CT' ARE #22 AWG GALV. COATED
 - 100- WIRE MARKED 'CU' ARE #22 AWG GALV. COATED