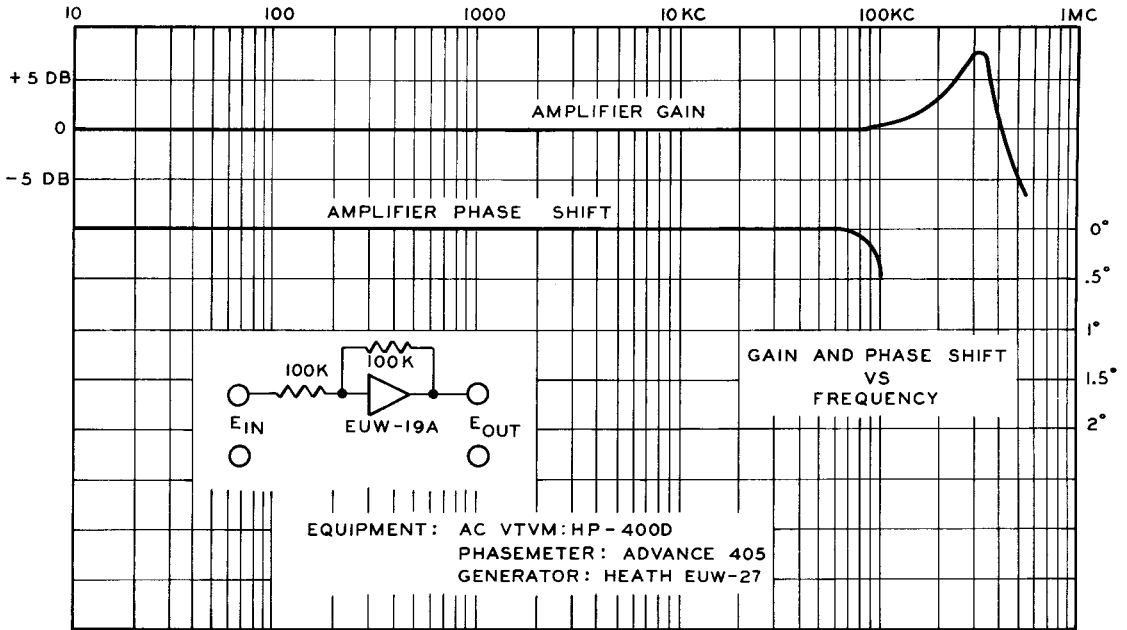


# SPECIFICATIONS

- Contents of System, . . . . . Four Differential Input Operational Amplifiers,  
 One Booster Amplifier,  
 One DC+ Power Supply, regulated,  
 One DC- Power Supply, regulated.



## OPERATIONAL AMPLIFIERS

- DC Gain, Open Loop. . . . . 21,000 (87 db), typical.
- Frequency Response. . . . . See curve.
- Output Voltage Range. . . . . -50 V DC to +50 V DC.
- Output Current Range. . . . . -1 ma to +1 ma with 50 K $\Omega$  load.
- Output Impedance. . . . . Less than 1.5  $\Omega$  with 1:1 feedback as shown.
- Phase Shift. . . . . See curve.
- Rise Time. . . . . 12  $\mu$  sec (with 1:1 feedback as shown).
- Drift. . . . . Less than  $\pm 8$  mv/day referred to the input under normal conditions after 48 hours, or more, aging period.
- Bias Supplies. . . . . 4 - one for each amplifier for DC Zero adjustment, Amplifier 1 bias is switch selected for follower or inverter operation.

**BOOSTER AMPLIFIER**

Maximum Output. . . . .	±20 ma at ±50 V DC.
Gain. . . . .	Approximately 0.8.
Output Impedance. . . . .	Less than 0.2 Ω.

**+300 V AND -300 V REGULATED  
POWER SUPPLIES**

DC+ Output Voltage Range. . . . .	Regulated +275 to +325 volts (approximately).
DC- Output Voltage Range. . . . .	Regulated -275 to -325 volts (approximately).
Voltage Regulation (Each Supply). . . . .	Output variation less than 1% from no load to full load at 300 volts. Output variation less than ±1 volt for a ±10 volt variation in the AC line input.
Ripple Voltage (Each Supply). . . . .	Less than 10 millivolts rms ripple, jitter, and noise.
Output Impedance (Each Supply). . . . .	Less than 10 Ω from 5-100,000 cps.

**POWER REQUIREMENTS**

AC Input. . . . .	105-125 volts, 50/60 cps.
Filament Power Only. . . . .	44 watts.
Total Power Required. . . . .	94 watts at quiescent operating conditions.
Fuses. . . . .	Two 3/4 ampere slow-blow fuses; one for the filament circuits, and one for the DC+ and DC-supplies.

**AUXILIARY POWER CONNECTOR**

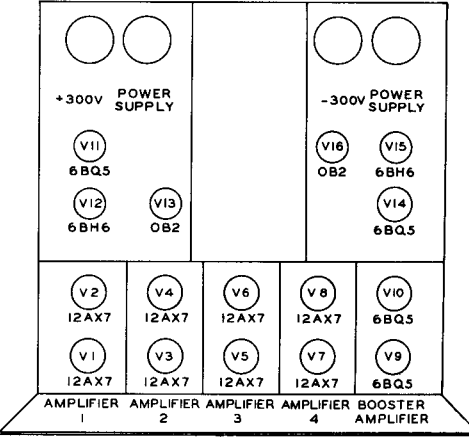
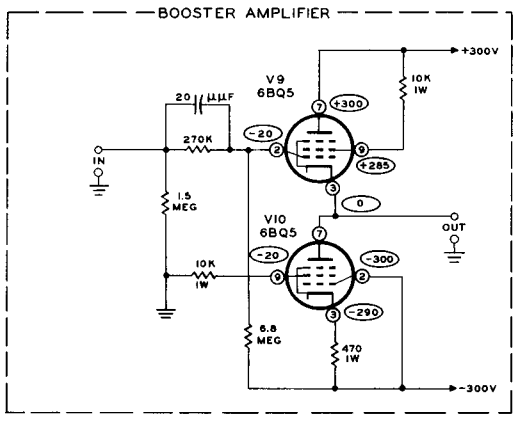
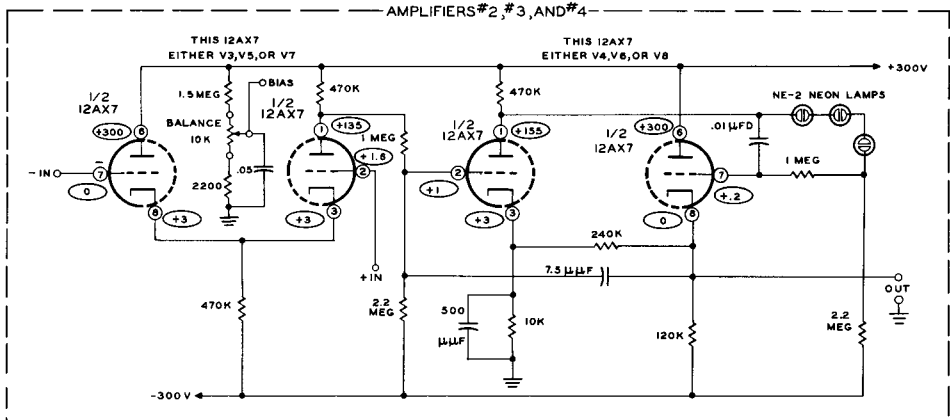
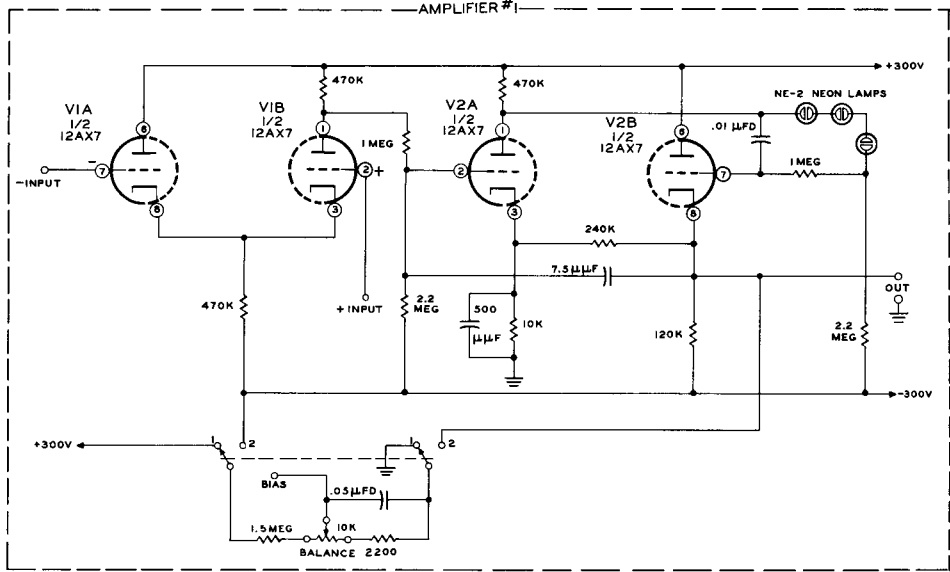
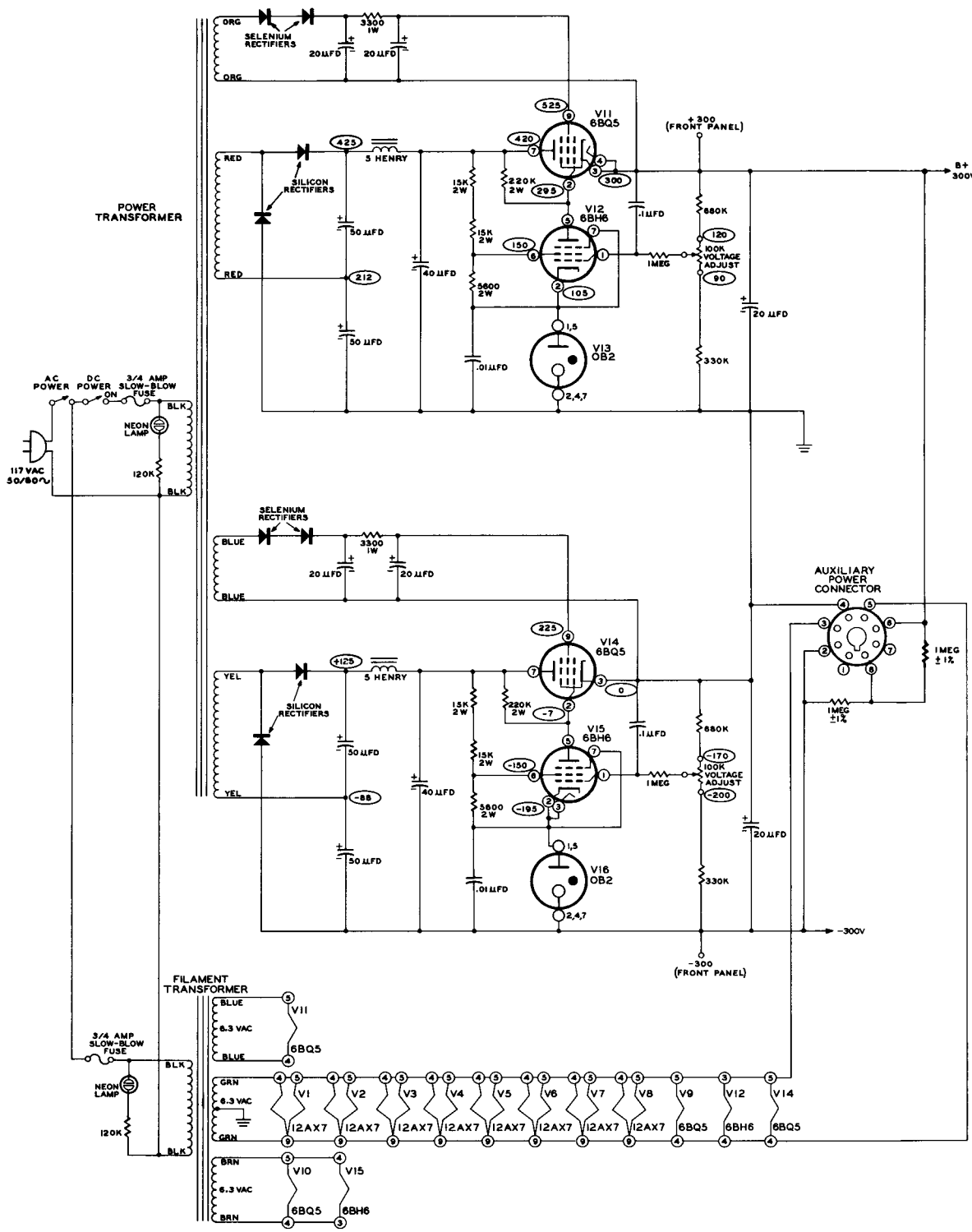
Location. . . . .	Octal socket on rear of unit, and banana jacks on front panel.
Power Available. . . . .	+300 volts at 20 ma and -300 volts at 20 ma with unit in operation, +300 volts at 60 ma and -300 volts at 60 ma when all amplifier tubes are removed. 6.3 volts AC at 50 ma with unit in operation. 6.3 volts AC at 3.2 amperes with all amplifier tubes removed.
Balance Resistors. . . . .	Available at auxiliary connector to balance power supplies.

**GENERAL**

Dimensions. . . . .	11-1/4" wide x 6-3/8" high x 12-7/8" deep.
Net Weight. . . . .	15-3/4 lbs.
Shipping Weight. . . . .	17 lbs.

All prices are subject to change without notice. The Heath Company reserves the right to discontinue instruments and to change specifications at

any time without incurring any obligation to incorporate new features in instruments previously sold.



**SCHEMATIC OF THE HEATH SCIENCE SERIES OPERATIONAL AMPLIFIER SYSTEM MODEL EUW-19A**

NOTES:

ALL RESISTOR VALUES ARE IN Ω. 1 K = 1000 Ω, 1 MEG = 1,000,000 Ω. ALL CAPACITOR VALUES ARE IN µF UNLESS SHOWN OTHERWISE.

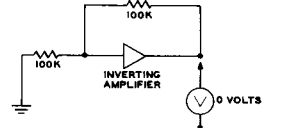
○ INDICATES A VOLTAGE MEASUREMENT FROM THE POINT INDICATED TO CHASSIS GROUND, EXCEPT FOR AC VOLTAGES ON POWER TRANSFORMER WINDINGS. READINGS WERE TAKEN WITH AN 11 MEGOHM INPUT VTVM WITH AMPLIFIERS BALANCED.

SWITCH POSITIONS FOR AMPLIFIER 1 ARE AS FOLLOWS:

POSITION 1 - INVERTING AMPLIFIER

POSITION 2 - FOLLOWER AMPLIFIER

INVERTING AMPLIFIER VOLTAGES TAKEN WITH AMPLIFIER BALANCED WITH 1:1 FEEDBACK AS IN THE FOLLOWING DIAGRAM.



BOOSTER AMPLIFIER VOLTAGES TAKEN WITH BOOSTER AMPLIFIER BALANCED WITH AN INVERTING AMPLIFIER AS IN THE FOLLOWING DIAGRAM.

