

The Booster Amplifier

The *Langevin* Type 116-B Amplifier, Fig. 25-12, is a plug-in, two stage, medium gain, low noise preamplifier or booster amplifier for use in broadcast audio facilities, recording or sound systems.

Metering circuits are designed to measure the cathode current of the individual tubes expressed as a percentage of a normal tube, using a meter having a 200 microampere movement. A series resistor should be added so that the total resistance of the meter and resistor is 1000 ohms. The meter scale should be calibrated so that nominal cathode current (100%) will read at 75% of full scale.

The amplifier is supplied with the metering connections of the individual tubes brought out to pins on the plug for use with an external meter switch. However, provision has been made for push button meter switches in the handle end of the chassis if it is desired to meter the tubes at the amplifier. The recommended switch for this purpose is the *Grayhill* No. 4001 Push Button Switch.

The 116-B Amplifier, as shipped, is connected to work from a source impedance of 30 ohms and into a load impedance of 600 ohms. If other impedances are desired, the amplifier may be re-strapped in accordance with the table on the circuit diagram, Fig. 25-12. Strapping for the input is accomplished on the resistor strip; for the output on the output transformer.

The amplifier is supplied with a gain of 40 db. The gain may be reduced to 34 db. by restrapping the feedback windings on the output transformer, according to the table on the circuit diagram.

Center taps are available on the input of the 116-B amplifier when the unit is strapped for 150 or 600 ohms, and on the output when strapped for 600 ohms. The input center tap can be grounded on the resistor strip. To ground the output center tap, a wire is run to an additional ground point to the output transformer terminals.

Specifications

Gain: 40 db with provision for adjusting to 34 db.

Input Source Impedance: 30/150/250/600 ohms. Center taps are available when strapped for 150 or 600 ohms.

Output Load Impedance: 150 or 600 ohms. Center tap is available when strapped for 600 ohms.

Output Power: + 18 dbm (.063 watts) with less than .5% rms total harmonic distortion over the range 50 to 15,000 cycles, and less than 1% total distortion over the range 30 to 15,000 cycles.

Output Noise: Unweighted, equivalent to an input signal of -120 to -124 dbm, depending upon input tube, over the band 50 to 15,000 cycles.

Frequency Characteristics: ± 1 db over the range 30 to 15,000 cycles.

External Power Requirements: Filament: 6.3 volts ac at 0.6 amperes. Plate: 275 volts dc., 8 milliamperes.

Tube Complement: Two 1620's.

Size: Length, 10 in.; Width, 2 in.; Height, 5 in.

Weight: 4 lbs.

Shipping Weight: 5½ lbs.

Finish: Light grey baked enamel over 16 gauge, bonderized steel.

Plug: Supplied with mating plug receptacle.

The Program Amplifier

The *Collins* 6M, Fig. 25-13, program amplifier will perform in AM, FM and TV applications in present day broad-

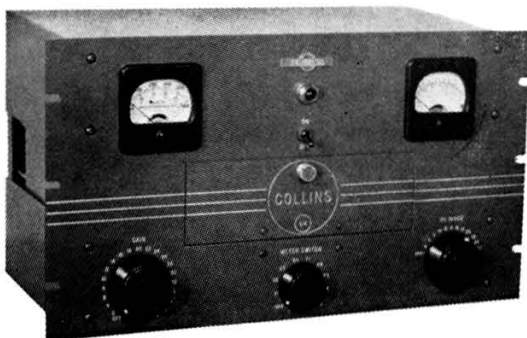
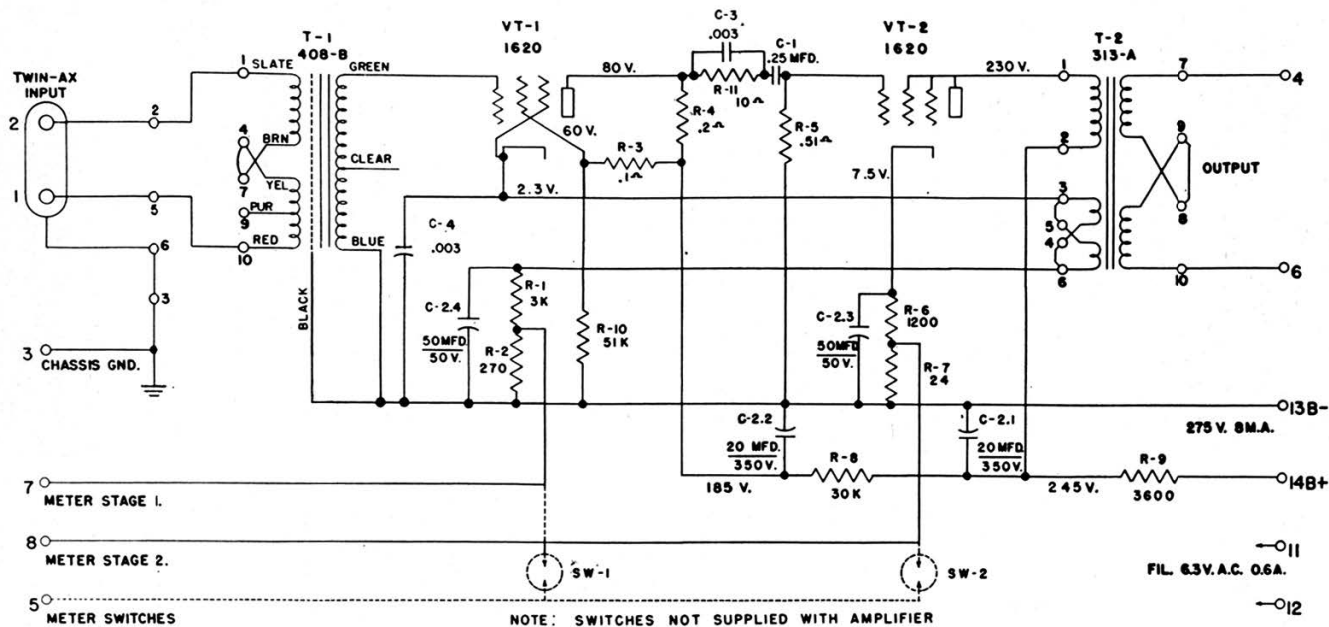


Fig. 25-13. Collins 6M program amplifier. (Courtesy Collins Radio Co.)

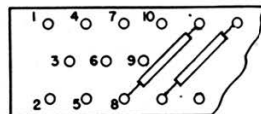
Fig. 25-12. Schematic of the Langevin 116-B booster amplifier.



11
12
FIL. 6.3V. A.C. 0.6A.

INPUT IMPEDANCE	STRAPPING ON RESISTOR STRIP	OUTPUT IMPEDANCE	STRAPPING ON OUTPUT TRANSFORMER	GAIN	STRAPPING ON OUTPUT TRANSFORMER
600 ω	1-2, 4-7, 5-10.	600 ω	8-9.	40DB	3-5, 4-6.
250 ω	1-2, 4-7, 5-9.	150 ω	7-9, 8-10.	34DB	4-5.
150 ω	1-2-4, 5-7-10.				
30 ω	2-9, 5-10.				

NOTE THE VOLTAGES SHOWN ARE TYPICAL AVERAGE VALUES OBTAINED USING A 11 MEGOHM VOLTMETER WITH NO SIGNAL INPUT AND CONNECTED TO POWER SUPPLIES INDICATED. VOLTAGES ARE IN REFERENCE TO B-



RESISTOR STRIP NUMBERING