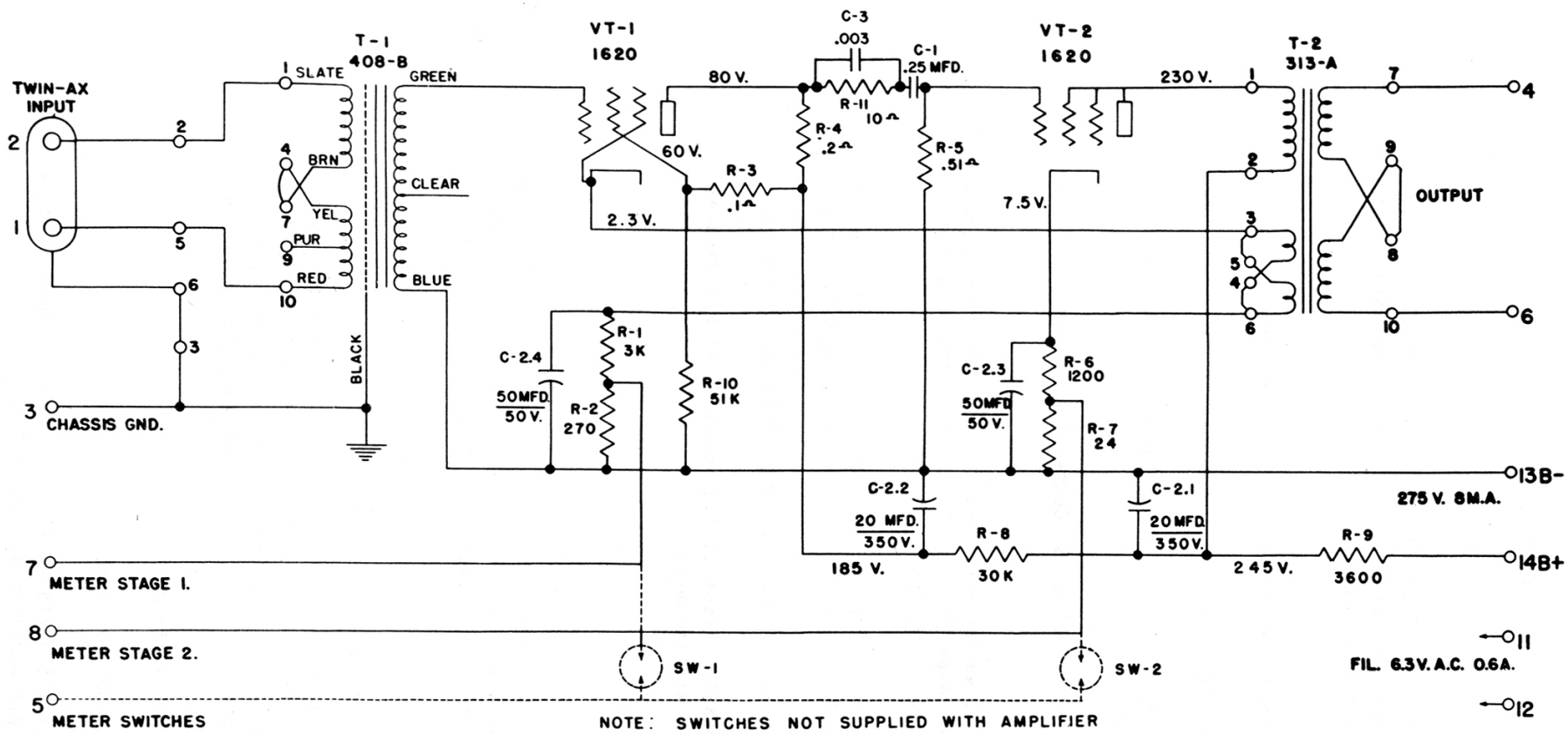
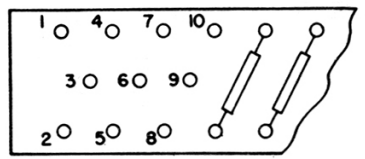


INPUT IMPEDANCE	STRAPPING ON RESISTOR STRIP
600ω	1-2, 4-7, 5-10.
250ω	1-2, 4-7, 5-9.
150ω	1-2-4, 5-7-10.
30ω	2-9, 5-10.

OUTPUT IMPEDANCE	STRAPPING ON OUTPUT TRANSFORMER
600ω	8-9.
150ω	7-9, 8-10.

GAIN	STRAPPING ON OUTPUT TRANSFORMER
40DB	3-5, 4-6.
34DB	4-5.

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

116-A AMPLIFIER SCHEMATIC CIRCUIT

LANGEVIN MFG. CORP. MODEL 116-A

INSTRUCTIONS

DESCRIPTION

The Type 116-A Amplifier is a PLUG-IN two stage, medium gain, low noise pre-amplifier or booster amplifier for use in broadcast audio facilities, recording or sound systems.

Electrical Characteristics

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.

•Tube Substitutions

In an emergency, if the 1620 vacuum tube is not available, a 6J7 tube can be substituted. This substitution may result in a decrease in output power and an increase in output noise level.

Power Supply - Type 205-A

A Selenium Rectifier power supply by Langevin is available to provide plate and filament power for the 116-A & 117-A PLUG-IN amplifiers.

The 205-A Power Supply has a maximum rating of 425 Milliamperes. With the secondary tap set for "high" output voltage, the following is available:

425 Milliamperes at 300 Volts DC
or
275 Milliamperes at 300 Volts DC
and
150 Milliamperes at 275 Volts DC (Through an additional stage of filtering for the pre-amplifiers, Type 116-A.

External Connections

Plug Pin Numbers	External Connections
1-2	Input (Note #1)
3	Chassis Ground
4-6	Output (Note #2)
5	Tube current meter (if metering push buttons used.
7	Tube current meter (positive) VT-1
8	Tube current meter (positive) VT-2
9	Blank
10	Blank
11-12	Filament 6.3 volts AC .6 amps.
13	B- and meter (negative)
14	B+ 275 volts DC

Note #1 - On unbalanced input circuits, the grounded side should be connected to Pin #1.

Note #2 - On unbalanced output circuits, the grounded side should be connected to Pin #6.

Metering Circuits

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 #4001 Push Button Switch. Switches and instructions for installation may be obtained for the 116-A Amplifier by ordering a 19-A Modification Group.

Grounding

Connect the main ground to pin number 3 on the plug receptacle. Ground the negative side of the plate supply in the following manner: When one amplifier is being used, strap pin number 13 to pin number 3. When several amplifiers are used in a system, and obtain plate power from a common source, apply the ground at only one point in the system.

The filament center tap of the power supply should be grounded. In some cases, however, it may be necessary to apply positive bias to the filament center tap with respect to ground, in order to reduce hum caused by filament to cathode leakage. In this event, a resistance can be connected across the plate voltage supply so that a portion of the plate voltage, 6 to 12 volts, can be tapped off and fed to the filament center tap.

Impedance

The 116-A 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. Strapping for the input is accomplished on the resistor strip; for the output on the output transformer.

Gain

This 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

Center taps are available on the input of the 116-A 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. In order to ground the output center tap, run an additional wire from a ground point to the output transformer terminals.