NO 1-54
AMPLIFIER
120A

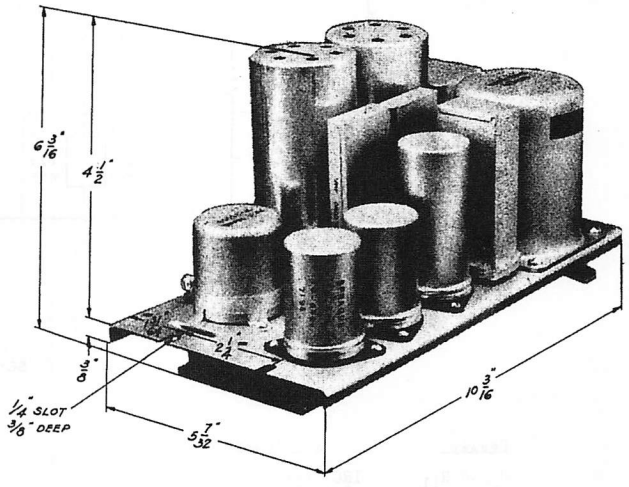
1-4-40

GENERAL

A 2-STAGE, LOW-LEVEL AMPLIFIER INTENDED FOR USE AS A PRE-MIXING OR BOOSTER AMPLIFIER IN SOUND SYSTEMS OR SPEECH INPUT EQUIPMENTS. THE APPARATUS IS MOUNTED ON BOTH SIDES OF A FLANGED PANEL WHICH MAY BE FASTENED TO A RELAY RACK MOUNTING PLATE.

ELECTRICAL CHARACTERISTICS

GAIN	APPROXIMATELY 40 DB.
OPERATES FROM	30, 250 OR 600 OHMS.
INTERNAL INPUT IMPEDANCE	OPEN CIRCUIT.
OPERATES INTO	600 OHM LOAD.
INTERNAL OUTPUT IMPEDANCE	APPROX. 600 OHMS.
OUTPUT POWER	APPROX. .038 WATT (+16 DB)* WITH 1% TOTAL HARMONIC DISTORTION.
OUTPUT NOISE	-82 DB UNWEIGHTED* -87 DB WEIGHTED* *(REF. = .001 WATT)
FREQUENCY CHARACTERISTIC	SEE CURVE.
POWER SUPPLY	FILAMENT - 6.3 V., 1 AMP. PLATE - 275 V., 7 MA. (FILAMENT AND PLATE SUPPLY MAY BE OBTAINED FROM 18A RECTIFIER).



VACUUM TUBES (MUST BE ORDERED SEPARATELY)

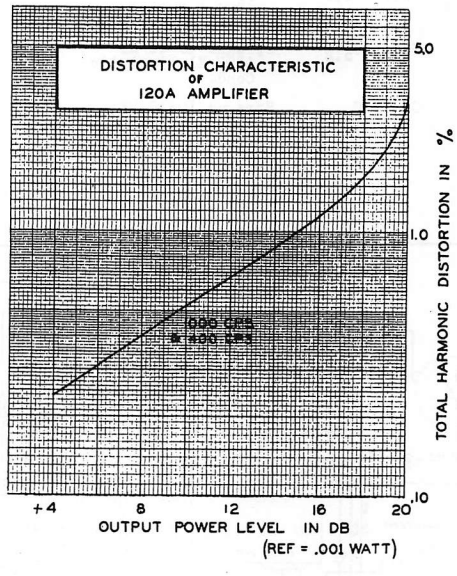
1 - W. E. 347A AND 1 - W. E. 348A VACUUM TUBES OR 2 - TYPE 6J7G VACUUM TUBES

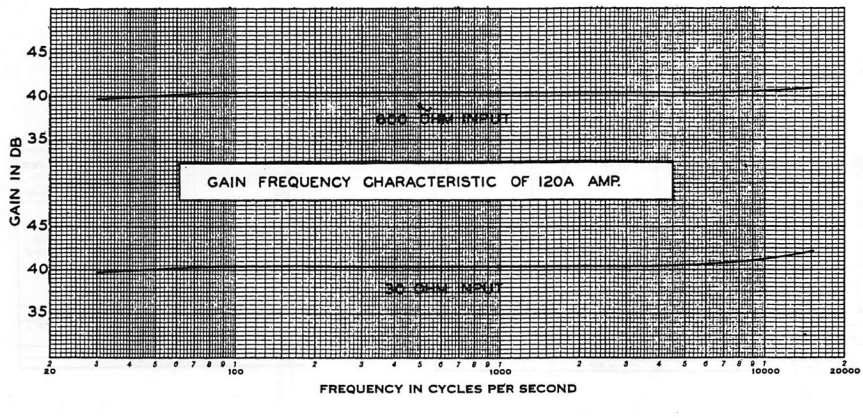
EQUIPMENT CHARACTERISTICS

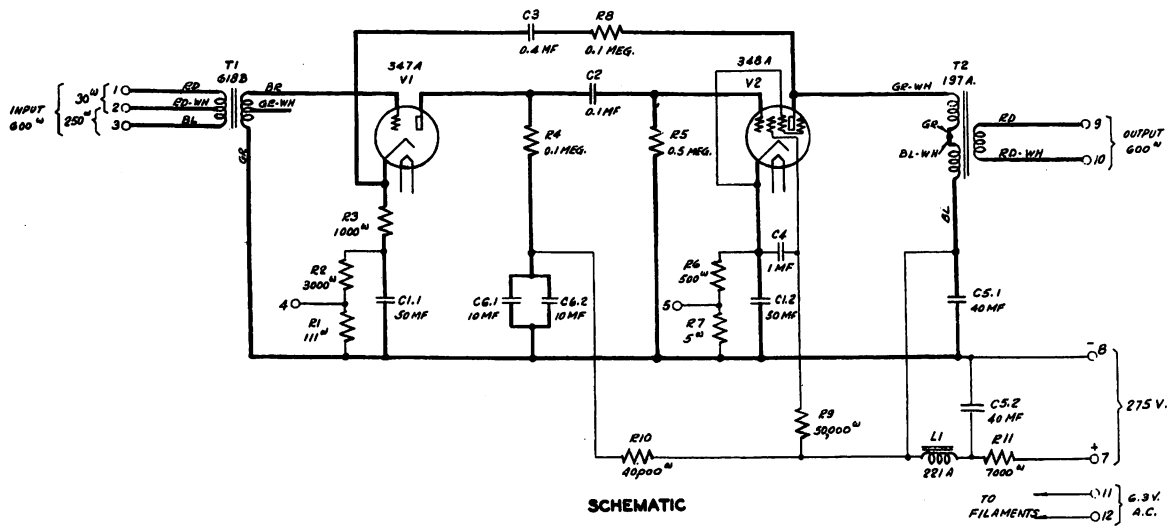
PANEL SIZE	APPROX. 5-1/4" X 10-1/4". THE APPARATUS EXTENDS APPROX. 4-1/2" FROM THE FRONT AND 2" FROM THE REAR OF THE PANEL.
WEIGHT	APPROX. 6-1/2 LBS.
MOUNTING	DESIGNED FOR MOUNTING ON A 177A MOUNTING PLATE. FLEXIBLE RUBBER MOUNTINGS ARE FURNISHED. THREE 120A AMPLIFIERS MAY BE MOUNTED ON ONE PLATE, REQUIRING 10-15/32" OF RELAY RACK SPACE.
FINISH	BRIGHT ALUMINUM LACQUER ON ZINC-PLATED STEEL.

REFERENCES

ESO-675286.....ASSEMBLY AND STOCK LIST
ESO-675287.....SCHEMATIC DIAGRAM
ESO-675288.....WIRING DIAGRAM
ESA-675665.....TESTING INFORMATION

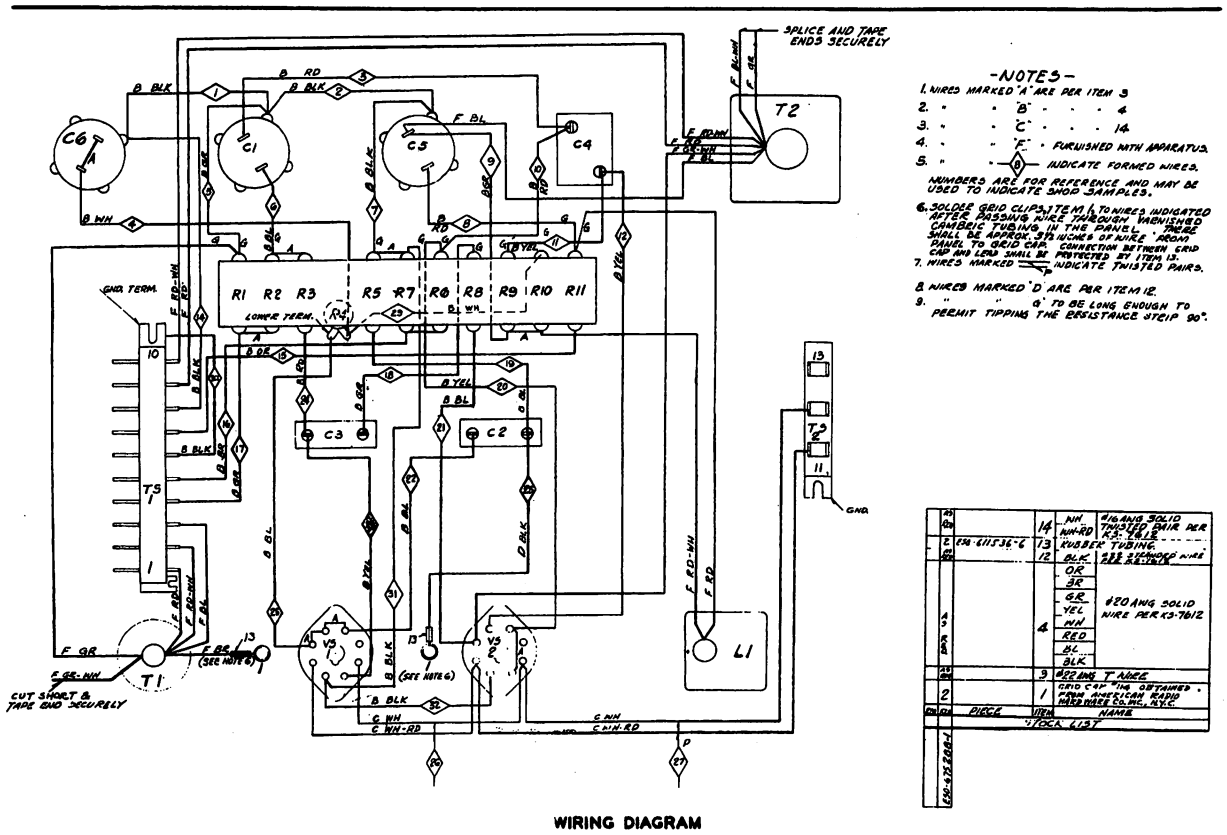




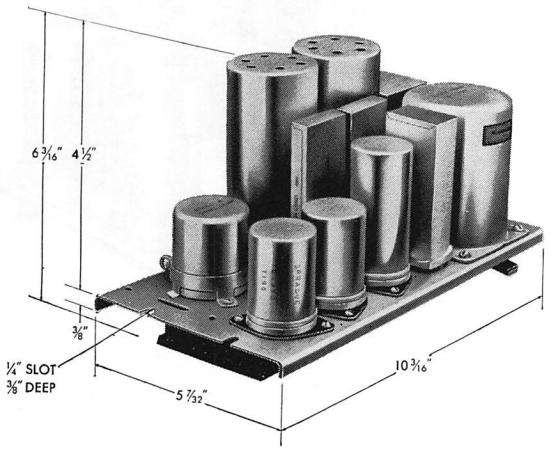


SCHEMATIC

Desig.	Apparatus
R_1 to R_{11} excepting R_3	IRC Type BT 1 Watt Resistors
R_3	IRC Type WW3 100,000Ω Resistor
$C_{1.1}$, $C_{1.2}$	Sprague 50-50 MF - 150V Electrolytic Cond.
$C_{5.1}$, $C_{5.2}$	Sprague 40-40 MF - 450V Electrolytic Cond.
$C_{6.1}$, $C_{6.2}$	Sprague 10-10 MF - 450V Electrolytic Cond.
C_2	234C Condenser
C_3	230A Condenser
C_4	229C Condenser
T_1	618B Input Transformer
T_2	197A Output Transformer
L_1	221A Retard Coil
TS_1	P-250833 Terminal Strip
TS_2	Terminal Strip per RSO-675407- 3 & 8
VS_1, VS_2	Eby Mfg. Co. #39-1-E VT Socket
V_1	347A Vacuum Tube
V_2	348A Vacuum Tube
	1 - Type 80 Vacuum Tube



WIRING DIAGRAM



120B Preliminary Amplifier.

The 120B Preliminary Amplifier is designed for use in sound distribution systems and speech input equipments. It is a compact, high quality two stage pre-mixing or booster amplifier.

Typical Specifications

Frequency Response: ± 1 db 50 to 15,000 cycles, ±0.5 db 50 to 10,000 cycles.

Output Noise: —82 dbm.

Source Impedance: 30, 250 or 600 ohms.

Load Impedance: 600 ohms.

Gain: 41 db.

Single Frequency Output Power for less than 1% Total Harmonics: + 16 dbm at a fundamental frequency of 400 cycles. + 13 dbm at a fundamental frequency of 50 cycles.

Power Required: Filaments, 6.3 volts a-c or d-c, 0.8 ampere; plates, 275 volts d-c, 7 milliamperes.

Power is normally obtained from Western Electric 18 or 20 type Rectifiers which are capable of supplying a number of 120B Amplifiers.

Power for one 120B Amplifier may be obtained from the Western Electric 118A, or 124 type Amplifiers by the use of a simple power supply circuit consisting of two resistances.

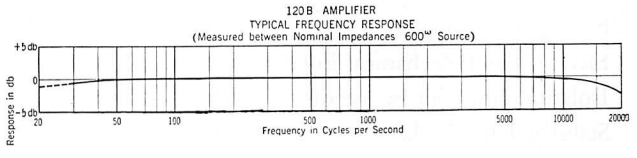
VACUUM TUBES

Quantity Required	*Western Electric*		*Commercial Receiver Type*
1	348A	or	6J7 or 1620
1			1603 or 6J7 or 1620
2			

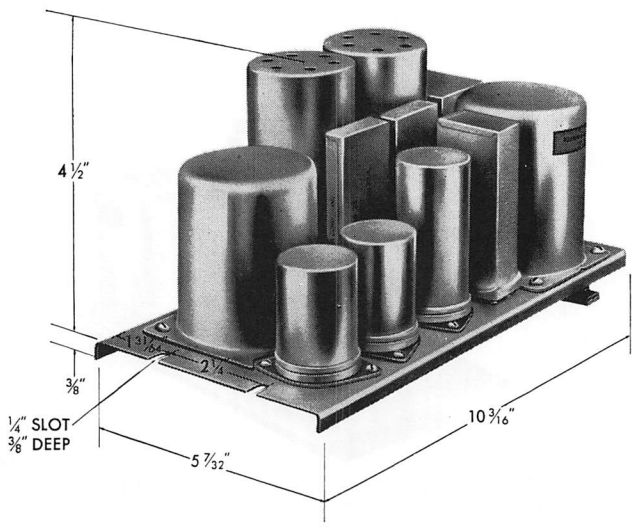
Mounting: New type of basic amplifier unit designed for mounting in desks or other structures and also adaptable for relay rack or bay cabinet mounting through the use of 190 type or 206A Mounting Plates. For panels, see page 95, Components and Accessories. Isolation both electrically and mechanically from the mounting plate is accomplished by using rubber supports furnished with the amplifier.

Weight: Approximately 6½ pounds.

Finish: Baked aluminum lacquer on zinc plated steel.



Frequency Response Curve 120B Amplifier.



120C Preliminary Amplifier.

Use — Designed to fulfill requirements as a pre-mixing or booster amplifier and for use in "no gain" bridging isolation amplifier circuits.

Description — It is a compact two stage 44 db fixed gain amplifier unit having excellent frequency response and low distortion. It has a balanced input transformer with electrostatic and electromagnetic shields. Resistors in cathode circuits are provided to permit checking the tubes through the use of the KS-10003 type Meter or equivalent.

Features

Compact, two stage fixed gain amplifier.
Pre-mixing or booster application.
Ready checking of plate circuits.
Ease of mounting.
Electrical and mechanical isolation.
Isolation amplifier by use of input pad.
Stabilized feedback.

Typical Specifications

Frequency Response: ±1 db 50 to 15,000 cycles. Curve same as for 120B, see figure 8.

Output Noise: —79 dbm.

Source Impedance: 30 or 250 ohms matching. For bridging add proper input pad.

Load Impedance: 600 ohms.
Gain: 44 db.

Output Power: Single frequency output power for less than 1 per cent total harmonics: +16 dbm (38 milliwatts) at fundamental frequency of 400 cycles; +13 dbm (20 milliwatts) at fundamental frequency of 50 cycles.

Power Required: Filaments, 6.3 volts, 0.8 ampere a-c or d-c; plates, 275 volts d-c, 7ma. Power is normally obtained from Western Electric 18 or 20 type Rectifiers which are capable of supplying a number of 120C Amplifiers. Power for one 120C Amplifier may be obtained from the Western Electric 124 type Amplifier by the use of a simple supplementary power supply circuit consisting of two resistances.

VACUUM TUBES

Quantity Required	*Western Electric*		*Commercial Receiver Type*
1	348A	or	1620 (or 6J7)
1			1603
—			
2			

Mounting: Advanced type of basic amplifier unit designed for mounting in desks or other structures and also adaptable for relay rack or bay cabinet mounting through the use of 190 type or 206A Mounting Plates. For panels, see page 95, Components and Accessories. Isolation both electrically and mechanically from the mounting plate is accomplished by using rubber supports furnished with the amplifier.

Weight: 6½ pounds.

Finish: Light gray.