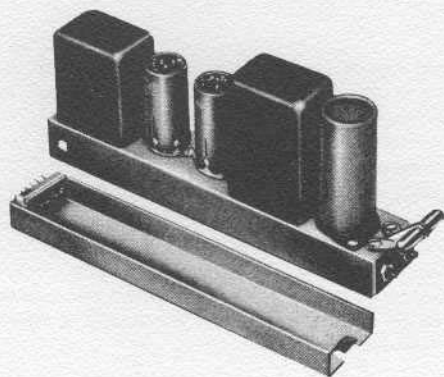




# 458A "PLUG-IN" PREAMPLIFIER

## OPERATING INSTRUCTIONS



**458A** PREAMPLIFIER

### SPECIFICATIONS

Gain:	40 db unterminated input, 34 db terminated.
Power Output:	+20 dbm at less than .5% THD 50 to 15,000 cps. +25 dbm at less than 1% THD at 1 KC.
Frequency Response:	±1 db 20 to 20,000 cps.
Source Impedance:	150 or 600 ohms (centertap available when connected for 600 ohms).
Load Impedance:	150 or 600 ohms (centertap available when connected for 600 ohms).
Output Impedance:	Equal to load impedance.
Noise Level:	Equivalent input noise: -126 dbm (valid for unterminated input operation).
Power Supply:	15ma at 275vdc and .7a at 6.3vdc.
Tubes:	2-6072/12AY7.
Dimensions:	1 3/4" W x 3 15/16" H and 9 11/16" L when mounted in tray. (See Fig. 1.)
Color:	Cad plate, dichromate dip.
Weight:	3 1/2 lbs. (including tray).
Special Features:	Push buttons for individual tube test. 40ma dc can be applied to input or output transformer center taps for simplexing use.
Accessories:	13225 Rack Mounting Assembly (accommodates 9 units). 13401 Mounting Tray Assembly. 5981 Tube Test Meter. 535A Power Supply.

### CIRCUIT DESCRIPTION

The 458A is an extremely simple, highly reliable, low noise pre-amplifier or booster amplifier. It consists of a single stage push-pull cross-neutralized vacuum tube circuit, transformer coupled to source and load. The absence of interstage coupling and feedback networks eliminates a source of noise and reduces the probability of failure by the marked reduction in number of components. This design is made possible through the use of specially designed input and output transformers having very accurate balance and a large ratio of primary inductance to leakage reactance.

### RELIABILITY

Program transmission is not interrupted by failure of a single tube. Gain is merely reduced by approximately 3 db and the band-width narrowed by an octave at each frequency extreme, allowing continued operation and repair at a convenient time. Premium quality tubes are employed which are controlled in characteristic and pre-aged to eliminate early failures. To further enhance tube life, heat reducing tube shields are employed to keep bulb temperatures to the lowest possible degree. This precaution inhibits "getter" migration and cathode evaporation, both of which tend to cause an increase in noise as tubes age.

### RECEPTACLE CONNECTIONS (Mounting Tray)

Input	Connect to 2 and 8	Strap 4 to 6 for 600 ohms (4-6 is center tap). Strap 2 to 4 and 6 to 8 for 150 ohms.
Output	Connect to 1 and 7	Strap 3 to 5 for 600 ohms (3-5 is center tap). Strap 1 to 3 and 5 to 7 for 150 ohms.
B+	Connect to 12	(Requires grounding at single point.) (One side requires grounding at single point.)
B-	Connect to 10	
Heater (6.3vdc)	Connect to 11 and	
Meter+	Connect to 9	
Meter-	Connect to 10	
Chassis Ground	Connect to 13	



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1515 S. Manchester Ave., Anaheim, Calif.  
New York

13402-1

Price \$ .14

Litho in USA C/P

11/65

## IMPEDANCE (Source and Load)

Both 150 and 600 ohm source and load impedances are available at the connector so that socket wiring changes, or strapping within the amplifier is not required. By this means, any amplifier is correctly matched when inserted into any tray properly wired for its particular function.

## INTERNAL OUTPUT IMPEDANCE

The output impedance of the 458A is equal to the load impedance so that building-out resistors are unnecessary when feeding loads, such as equalizers, which may be sensitive or critical to terminating impedances.

## INPUT TERMINATION

The 458A has an unterminated input transformer for use with microphones. When termination is required, a 150 or 600 ohm resistor is to be connected to the receptacle on the mounting tray. In this way all amplifiers are interchangeable in mounting trays regardless of termination. Under no circumstances should termination be attempted at the secondary of the input transformer.

## METERING

Push-button switches are provided on the amplifier and wired to the plug for use with an external meter. Connector pin 9 is multipled to any number of amplifiers and to the meter + terminal. B- (pin 10) is connected to the meter- terminal. Pressing buttons on any amplifier will give an indication of tube space current. Average reading is 67% of full scale on a 0 to 200 microampere meter having an internal resistance of approximately 1000 ohms. The ALTEC 5981 meter is recommended and suitably marked for this use.

## POWER REQUIREMENTS

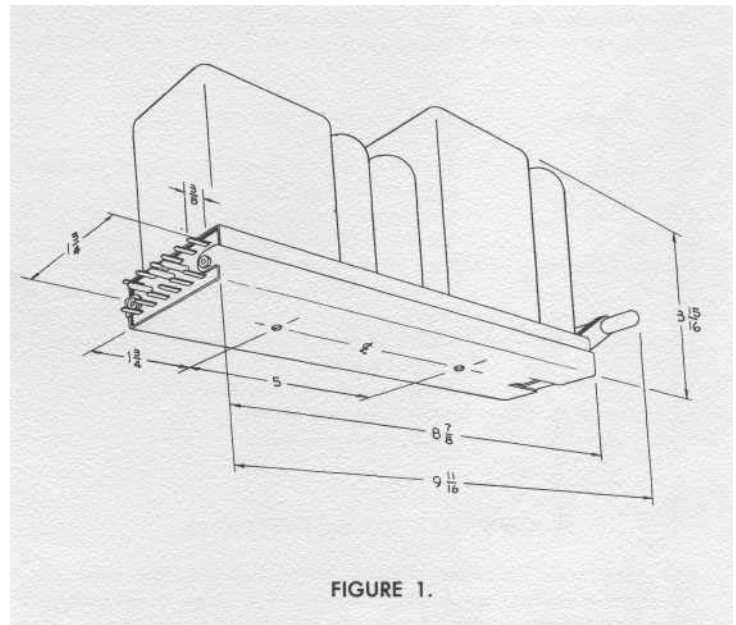
The 458A ratings are based upon a B supply of 275 volts at 15 ma. However, the exact value is not critical. With a 250 volt supply, the unit draws 12.6 ma, has .2 db less gain and at +20 dbm output at 1 KC, develops .44% total harmonic distortion.

The amplifier is designed to operate from 6.3 volt .7 amp dc heater supply. If for any reason an ac supply must be used, it will be necessary to twist and re-route the heater leads within the amplifier as well as exercising extreme care in wiring the receptacles on the mounting trays. Because of push-pull circuitry, 458A's fed from a common power supply may be cascaded without danger of coupling through the power supply.

## SERVICING

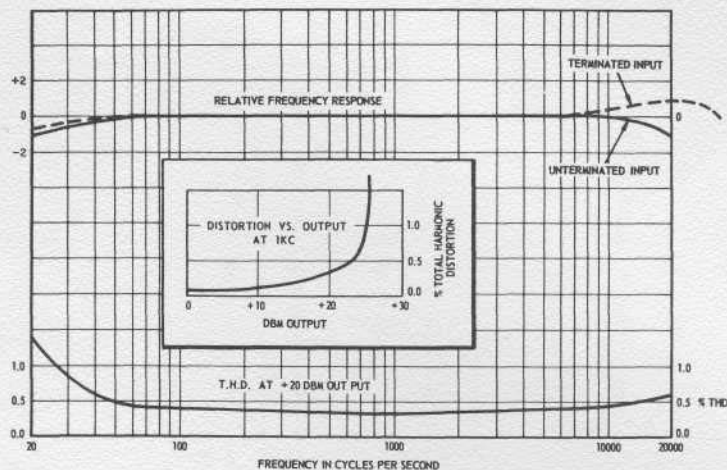
Maintenance should consist solely of replacing tubes when the cathode current shows a significant drop. Severe unbalance between tubes will cause a loss of 20 cycle response. High frequency response is controlled by neutralizing capacitors  $C_1$  and  $C_2$  which under no circumstances should be changed.

Cathode bias resistors  $R_1$  and  $R_4$  are precision wire wound units selected to withstand overload current without resistance change in event of tube failure, etc. The 20 mfd section of  $C_3$  with resistor  $R_5$  form a "hash" filter for the "B" supply line. Because of their tight fit, tube shields must be removed with care to avoid bending the tube pins. Do not relieve the tube shield fit as it will impair its effectiveness in reducing bulb temperature.



# PERFORMANCE

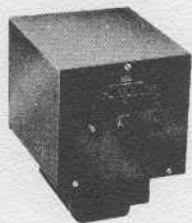
## 458A PREAMPLIFIER



## ACCESSORIES

## SPECIFICATIONS

### 535A POWER SUPPLY



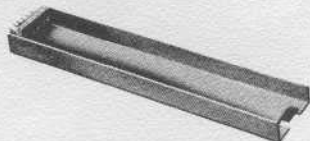
- Power Output:** 275vdc at 275 ma.  
At 275ma ripple is .02v peak to peak max.  
6.3vdc at 13a.  
At 13a ripple is 1.5v peak to peak max.
- Power Input:** 117v 50-60 cps 245 watts at full load.
- Rectifiers:** Silicon.
- Controls:**
1. Power Switch
  2. Circuit Breaker (Push to reset).
  3. 4 Position tap switch (provides adjustment of voltage by autoformer action to accommodate 2 to 1 range of loads).
- Color:** Dark Green.
- Weight:** 16 pounds.
- Size and Mounting:** 73<sup>1</sup>/<sub>16</sub>" W x 9<sup>5</sup>/<sub>8</sub>" H x 7" D overall.

### 13225 RACK MOUNTING

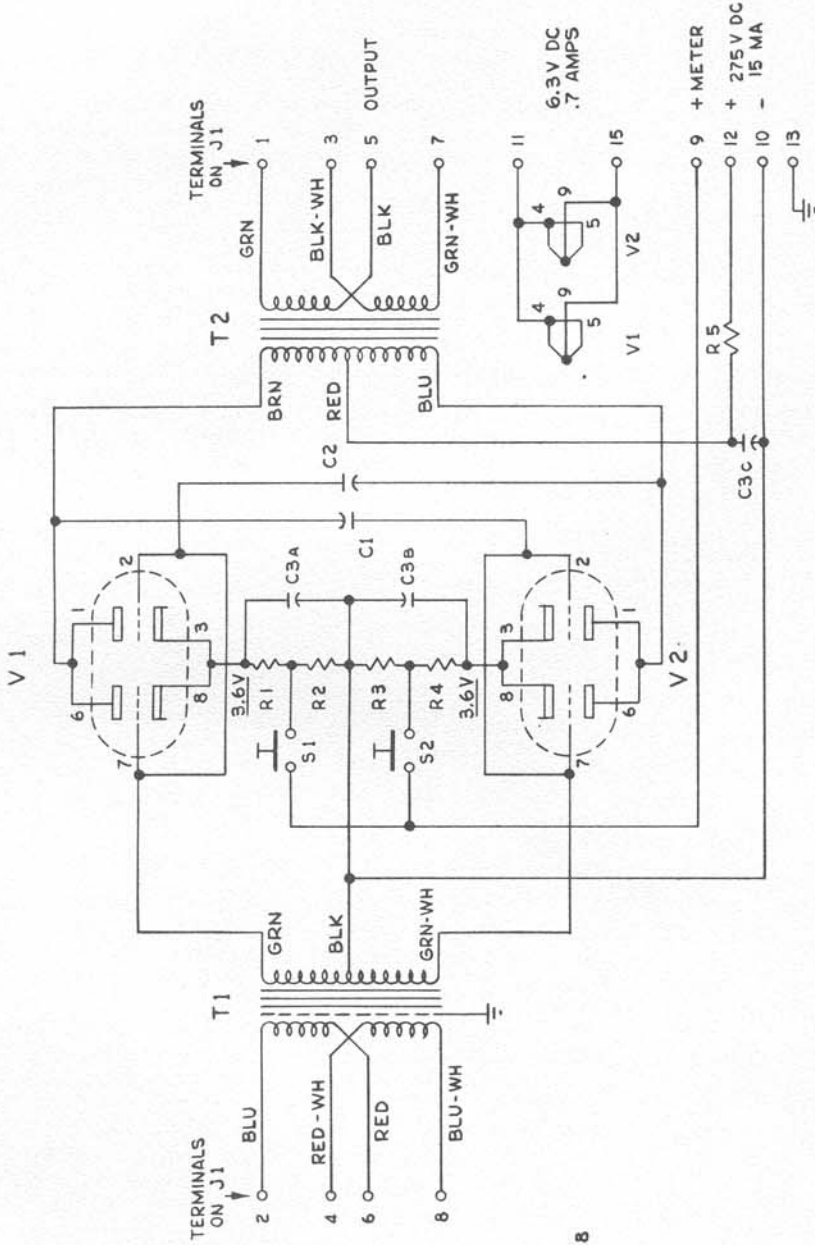


13225 Mounting is available for use in rack mounting of speech input equipment. The rack mounting assembly is drilled to accept nine type 13401 Mounting Tray Assemblies for use with Altec 458A and 459A "Plug-In" Amplifiers and Altec 13387 Utility Input Device. The 13225 assembly is for standard 19" rack or equipment cabinet mounting and occupies only 514" of panel space. The assembly has a "Snap-in" removable front cover for instantaneous access to the units for test or service. The finish of the front cover is Dark Green, and the complete assembly weighs 4 pounds. For rack mounting 535A Power Supply, 10440 10<sup>1</sup>/<sub>2</sub>" Blank Panel may be used or Power Supply may be mounted on wall of equipment cabinet.

### 13401 MOUNTING TRAY



13401 Mounting Tray is furnished as part of the 250 SU Altec Control Console, however, it is available separately to provide mounting and "plug-in" connection facilities for 458A and 459A Altec "Plug-In" Amplifiers or the 13387 Utility Input Device, when mounted in the 13225 Rack Mounting Assembly. The 13401 finish is cadmium plate with dichromate dip. The tray assembly is complete with "mating" female receptacle to accept the 458A, 459A and 13387 units. The tray measures 1<sup>3</sup>/<sub>4</sub>" W x 9<sup>7</sup>/<sub>8</sub>" H x 9" L (over terminals), and weighs 1/2 pound.



ALTEC LANSING  
458A AMPLIFIER

OUTPUT  
CONNECT TO STRAP  
1 TO 3, 5 TO 7  
1 4 7  
1 4 7

INPUT  
CONNECT TO STRAP  
2 TO 4, 6 TO 8  
2 4 8  
2 4 8

- T1 4745 TRANSFORMER
- T2 16526 TRANSFORMER
- V1-V2 6072 / 12AY7
- R1-R4 470 Ω 1% WW
- R2-R3 18 Ω 1% DC
- R5 470 Ω 10% AB
- C1-C2 3 MMF 3-.25MMF
- C3 100-100-20 MFD @ 12-12-350 V
- J1 AMPHENOL 126-151
- S1-S2 GREYHILL 30-1

FIRST MADE FOR  
TOLERANCES EXCEPT AS NOTED: FRACT. ± 1/64" DEC. ± .005" HOLE SIZES 0 TO 1/8" ± .001 OVER 1/8" ± .005 ANGULAR ± 1/2°

ISSUE	APPROVED	DATE	CHANGE
1		12-25-50	

**ALTEC**  
ANALOG DIVISION  
ANAHEIM, CALIFORNIA

458A AMPLIFIER  
SCHEMATIC

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