

## KS-16740 AMPLIFIER SYSTEM — DESCRIPTION

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### 1. GENERAL

1.01 This section provides descriptive information on the KS-16740 Amplifier System. This system is designed for use on 8 and 15 kc local program circuits and is very similar to the Altec S-17 Amplifier System.

1.02 The KS-16740 Amplifier System consists of two completely independent amplifier channels. Each channel includes a plug-in ac operated amplifier, an equalizer, a terminal strip and a jack field.

1.03 The system will have application as a line amplifier and equalizer on studio-to-transmitter loops and temporary pickup loops. It may also be used in other situations where high quality circuits are required.

1.04 The schematic circuit drawing is SD-95284-01 and is not attached to this practice. The drawing includes a parts list and critical operating voltages.

1.05 Figs. 1 through 4 are photographs of the System, cabinet and amplifier.

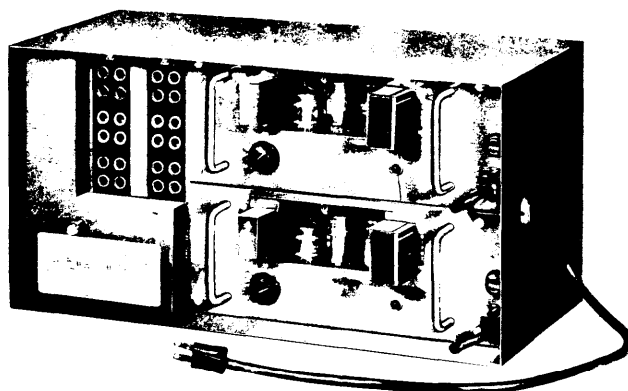


Fig. 1 — Front View of KS-16740 Amplifier System with Cover Removed

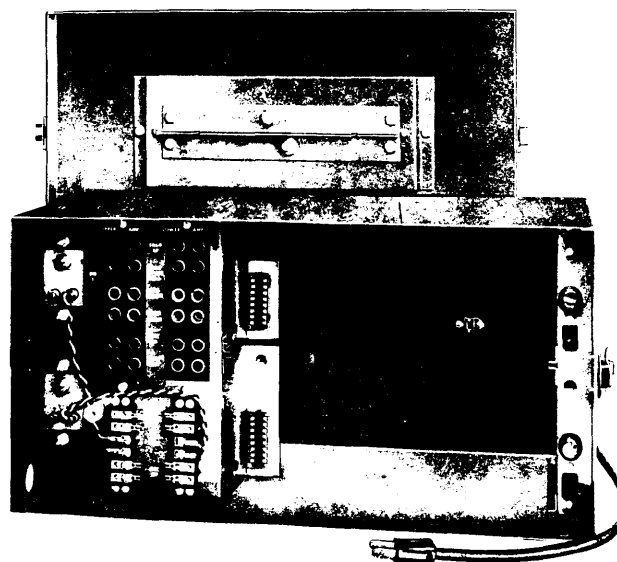


Fig. 2 — Front View of KS-16740, L6 Cabinet and Jack Bay

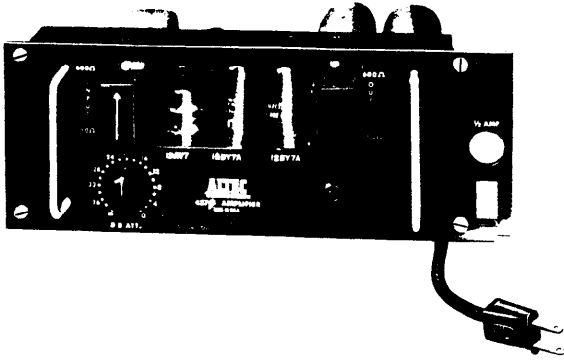


Fig. 3 – Front View of KS-16740, L2 Amplifier

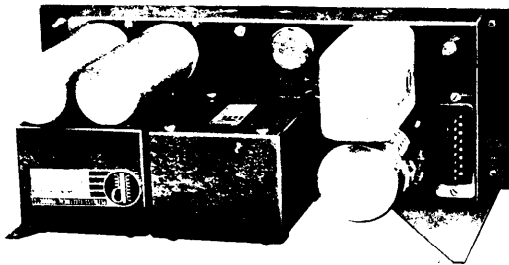


Fig. 4 – Rear View of KS-16740, L2 Amplifier

**2. ELECTRICAL CHARACTERISTICS**

2.01 The following electrical characteristics are typical for the KS-16740, L2 Amplifier:

**Power Supply:**

115 volts, 60 cycles.

**Maximum Gain:**

44 db with either 150- or 600-ohm input and output connections.

**Minimum Gain:**

8 db with either 150- or 600-ohm input and output connections.

**Gain Adjustment:**

Main gain control has nineteen, 2 db steps and an OFF position. Screwdriver operated vernier control is also available with total range of 1.5 db.

**Frequency Response:**

20 to 20,000 cycles,  $\pm 1$  db.

**Power Output:**

+24 dbm.

**Distortion:**

Not over 0.5 per cent from 30 to 15,000 cycles at +24 dbm.

**Input Impedance:**

150 or 600 ohms.

**Output Impedance:**

150 or 600 ohms.

**Output Noise:**

-70 dbm maximum (unweighted) for any attenuator setting.

**3. MECHANICAL CHARACTERISTICS**

3.01 The following mechanical characteristics pertain to the cabinet which houses the KS-16740, L2 Amplifiers, equalizers and other equipment which make up the KS-16740 Amplifier System.

**Mechanical**

**Width:**

18" over-all (brackets provided to mount in 19" bay).

**Height:**

8-7/8".

**Depth:**

9-1/16".

**Projection:**

5" in front of bay.

**Weight:**

43 lbs, fully equipped.

**Finish:**

Gray enamel.

**Electron Tubes**

The electron tube complement (furnished with amplifier) is as follows:

DESIGNATION	TUBE TYPE	FUNCTION
V1	12AY7	Voltage Amplifier and Phase Inverter
V2	12BY7A	Push-Pull Output
V3	12BY7A	Push-Pull Output

#### 4. INSTALLATION AND EXTERNAL CONNECTIONS

**4.01** The amplifier system is designed to operate satisfactorily at room ambient temperature up to 100° F. A 115-volt, 60-cycle ac outlet should be provided within 30 inches of the amplifier system. If possible, the outlet should **NOT** be at the control of a power switch. This will decrease the possibility of accidental service interruptions. The outlet should also be arranged so that it switches automatically to the emergency supply in the event of a power failure.

**4.02** External input and output connections to the amplifier may be made to the terminal strips on the front of the cabinet or to the jack

field. In central office installations, type BF shielded wire, or equivalent, should be used. The input connections should be made to the terminal strip screws marked TRANS LP. The output connections should be made to the terminal strip screws marked REC LP.

**4.03** When the amplifier is patched into a program circuit, the input cord should be plugged into the TRSG LP jack. The output cord should be plugged into the REC LP jack.

**4.04** A satisfactory ground wire should be connected to the cabinet in order to minimize the noise pickup. The ground will also minimize the possibility of electric shock.

#### 5. TRANSMISSION INFORMATION

**5.01** Fig. 5 shows the typical input impedance of the amplifier with frequency for a 600- or 150-ohm connection.

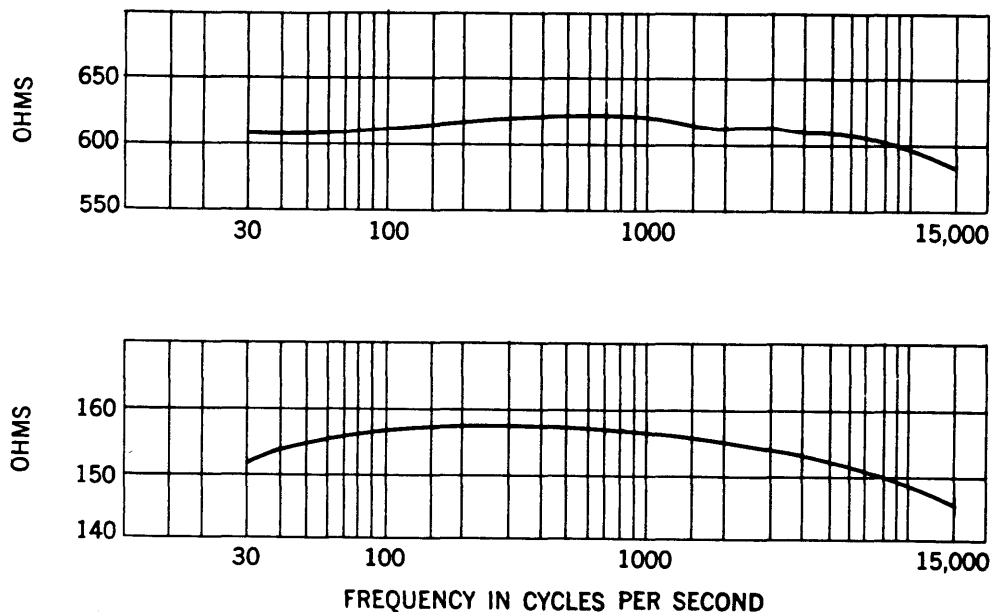


Fig. 5 - Input Impedance vs Frequency

5.02 Fig. 6 shows the typical output impedance of the amplifier with frequency for a 600- or 150-ohm connection.

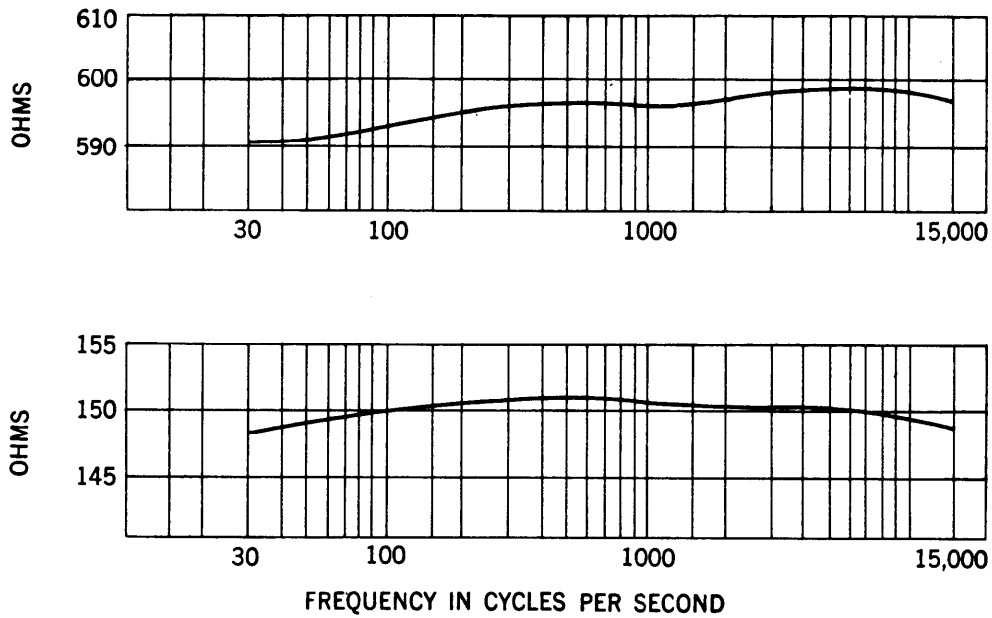


Fig. 6 - Output Impedance vs Frequency

5.03 Fig. 7 shows the typical harmonic distortion characteristics of the amplifier with frequency for output levels of +14 and +24 dbm.

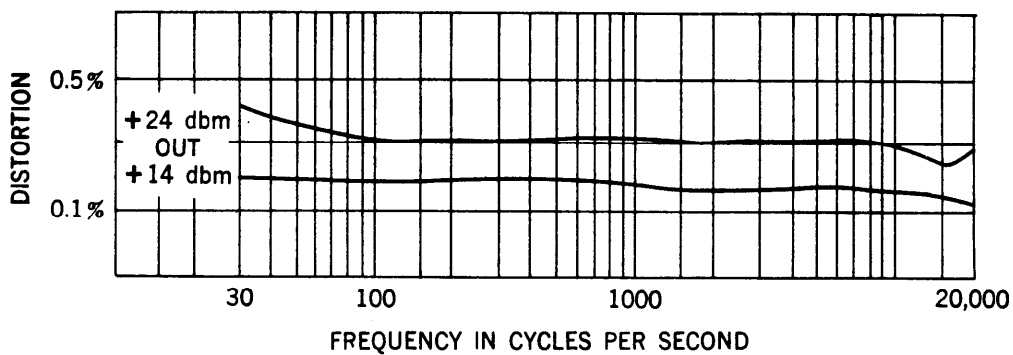


Fig. 7 - Distortion vs Frequency and Output

5.04 Fig. 8 shows the typical gain characteristics of the amplifier with frequency.

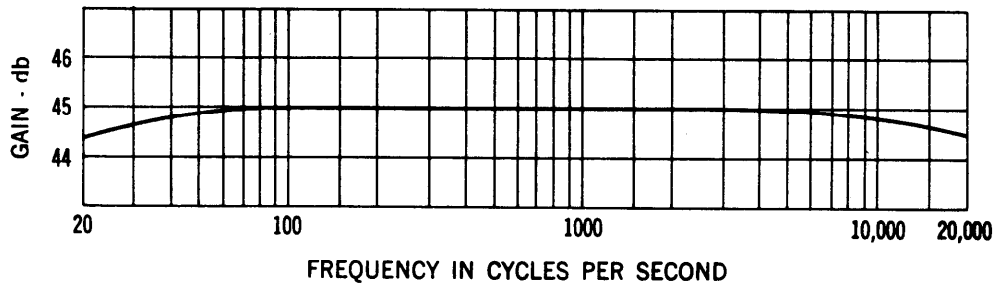


Fig. 8 - Gain-Frequency Characteristics

5.05 Fig. 9 shows the typical delay distortion characteristics of the amplifier with frequency below 2000 cycles.

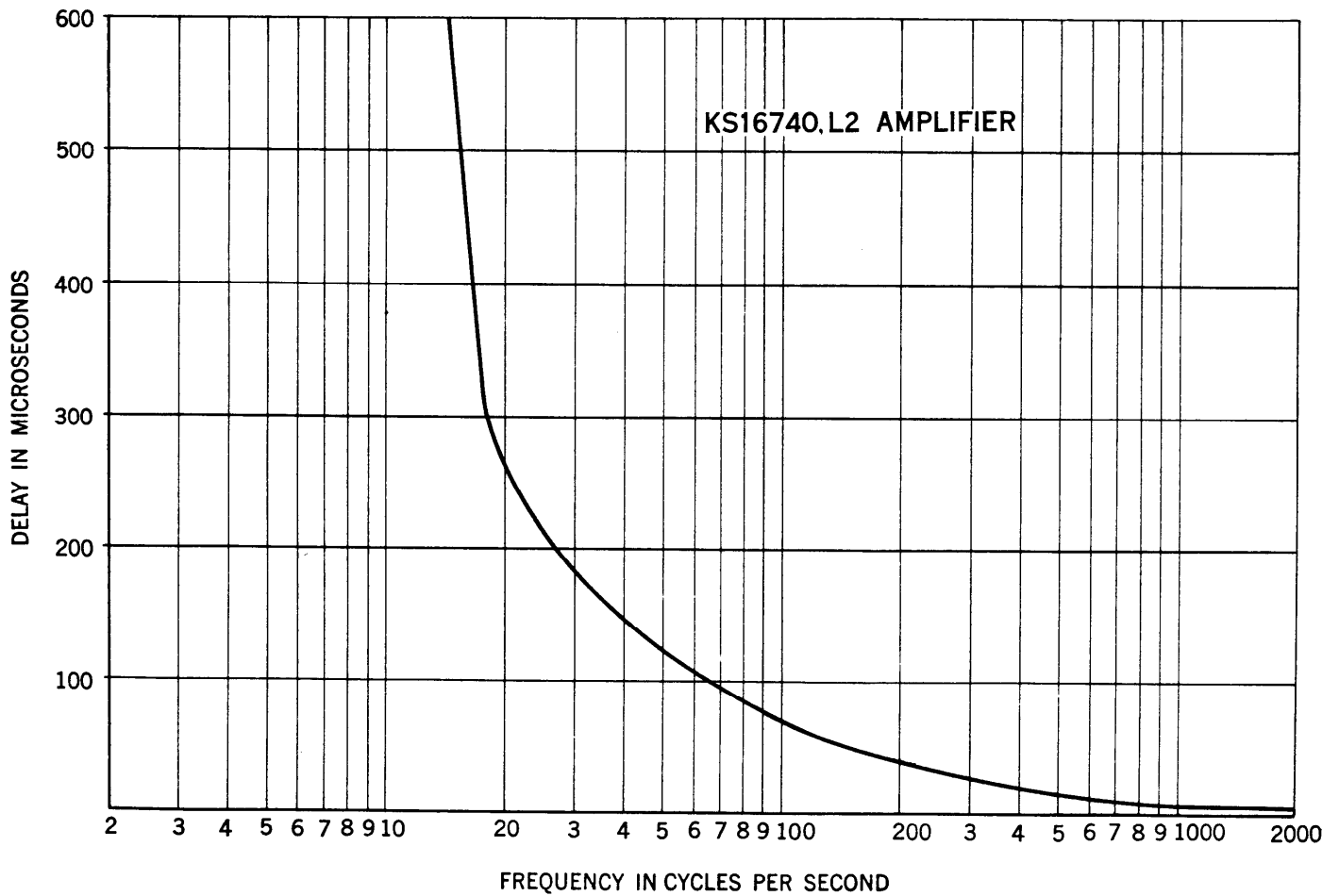


Fig. 9 - Delay Distortion vs Frequency - 2 kc

5.06 Fig. 10 shows the delay distortion characteristics of the amplifier up to 30 kc.

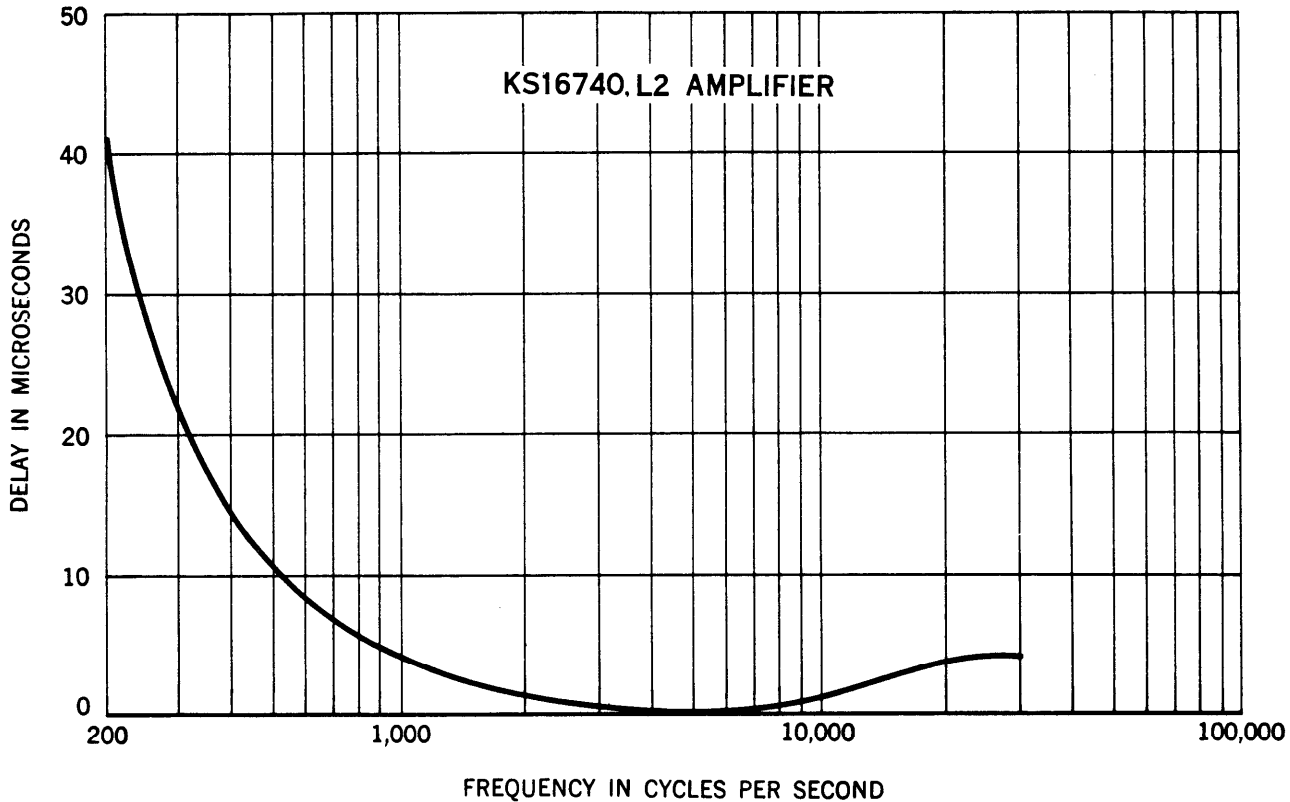


Fig. 10 - Delay Distortion vs Frequency — 30 kc

## 6. EQUIPMENT ARRANGEMENTS

6.01 The KS-16740 Amplifier System is a two-channel arrangement made up of the following apparatus. Each unit must be ordered by list number.

- 2 — KS-16740, L2 Amplifiers
- 2 — KS-16740, L3 or L5 Equalizers
- 1 — KS-16740, L6 Cabinet and Jack Bay

6.02 If desired, a complete system may be purchased with, for example, one 8 kc equalizer and one 15 kc equalizer instead of two similar units. A cabinet may also be purchased for use with one amplifier and one equalizer.

6.03 The KS-16740, L2 Amplifier is the same as the Altec 437B Amplifier which is used in their S-17 Amplifier System. It contains its

own ac operated power supply and is a plug-in unit. The input and output transformers are sufficiently well-balanced and shielded to make the use of external line repeating coils unnecessary. Input and output impedances of 150 or 600 ohms are selected by means of plugs on the front of the amplifier.

6.04 Connections to the input and output circuit of the amplifier are made by means of jacks or terminal strips located on the cabinet below the jacks. The output of the amplifier contains a "Y" network with a 6 db loss. The main output is obtained through one branch of the "Y" while the other branch may be used for monitoring or for a volume indicator. The monitoring output is available through a pair of jacks which is terminated in a resistance when not in use. The termination is removed when a plug is inserted in the jacks.

**6.05** The KS-16740, L3 Equalizer is designed for use on 8 kc nonloaded cable circuits. It is the same, electrically, as the 23A Equalizer. The fixed resistances provided with the 23A are replaced with a continuously variable potentiometer to facilitate adjustment. The potentiometer is equipped with a locking device to prevent accidental changes in adjustment. This unit is the same as the Altec unit coded 17224.

**6.06** The KS-16740, L5 Equalizer is designed for use on 15 kc nonloaded cable circuits. It is the same, electrically, as the SD-55503-01 Bell System equalizer except for the resistance element. The L/C ratio and resonating frequency is selected by means of soldered straps. The fixed resistances have been replaced with a continuously variable 330-ohm potentiometer with a locking feature. This unit is the same as the Altec unit coded 17249.

**6.07** The above equalizers are held in the cabinet by two studs on the top of the can. The amplifier must be removed from the cabinet

when placing or removing the equalizer. Two wires, Tip and Ring, are soldered to appropriate terminals on the front of the unit. The opposite ends of the wires are connected to the appropriate terminal strip on the cabinet.

**6.08** The KS-16740, L6 Cabinet and Jack Bay is designed to house equipment for two equalized channels. The cabinet is equipped with two jack fields, two terminal strips, two mounting arrangements for equalizers, two connectors for the plug-in amplifiers, two power receptacles with fuses and a power cord. Mounting brackets are provided with the cabinet so that the whole assembly can be mounted in a standard 19" bay, if desired. These brackets may be stored in the cabinet cover when not in use. The KS-16740, L6 Cabinet and Jack Bay is the same as the Altec unit coded 12299 except for the jacks. Western Electric types 410D and 218A have been substituted for the jacks supplied with the Altec unit in order to provide more reliable service and lower contact noise.