

359L EQUALIZER DESCRIPTION

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1. GENERAL

1.01 This section describes the 359L equalizer, which is a plug-in apparatus unit designed for use in V4 telephone repeater applications.

1.02 The 359L equalizer is an adjustable low-frequency loss equalizer intended for use in applications where circuit gain is not required but loss equalization is required for H44-loaded exchange cable. The 359L equalizer is generally used in conjunction with an 849G network to provide adjustable loss equalization, when needed, to flatten the frequency attenuation characteristic of H44-loaded exchange cable.

1.03 The 359L equalizer contains the same circuit components as the 359K equalizer and also selects the 600-ohm ports of the repeater circuit toward the cable facilities. It differs from the 359K in its internal wiring to work with the 849G network in 24V4 or 44V4 repeaters.

2. EQUIPMENT DESCRIPTION

2.01 The 359L equalizer (see Fig. 1) is a plug-in unit equipped with a 20-pin connector plug and is designed to be plugged directly into the equalizer connector socket of the repeater mounting shelf.

2.02 The 359L equalizer consists of four resistors and four capacitors mounted on a printed wiring board and housed in a metal can approximately 1-3/4 inches high by 1-3/4 inches wide by 7 inches long. Tabs are provided on the front of the can to facilitate removal of the equalizer from the repeater mounting shelf with the use of a 602C or 602D tool.

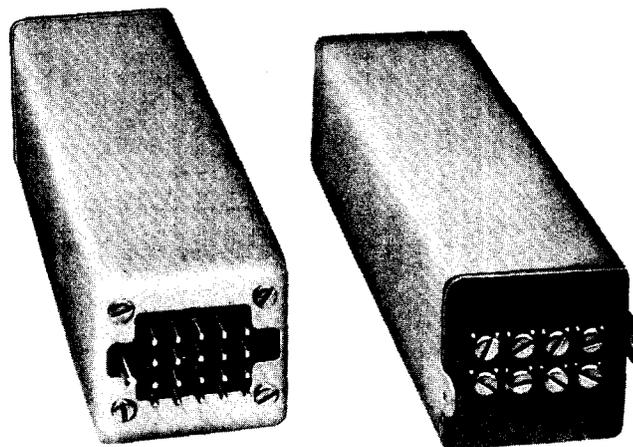


Fig. 1—359L Equalizer

2.03 Eight screw-type switches mounted in the equalizer faceplate permit selection of the indicated component values when adjusting equalization.

3. CIRCUIT DESCRIPTION

3.01 The general circuit configuration of the 359L equalizer showing its location in the 849G network is given in Fig. 2. Resistor R and capacitor C are the equalizer components. The 600- to 600-ohm transformer and the pad socket for the 89-type resistor are part of the 849G network.

3.02 Figure 3 is a schematic of the 359L equalizer illustrating typical circuit connections when the equalizer is plugged into the equalizer socket of a 24V4 or 44V4 repeater. The transmitting side is wired to provide connections to the AMPL OUT and MON jacks and also connects the 600-ohm output terminals at the transmitting amplifier socket of the repeater to the 4-wire line (H44-loaded cable).

3.03 The receiving side of the 359L equalizer contains the equalizing components for loss equalizing the H44-loaded cable. Received transmission signals from the 4-wire line (H44-loaded cable) are strapped through and connected to the

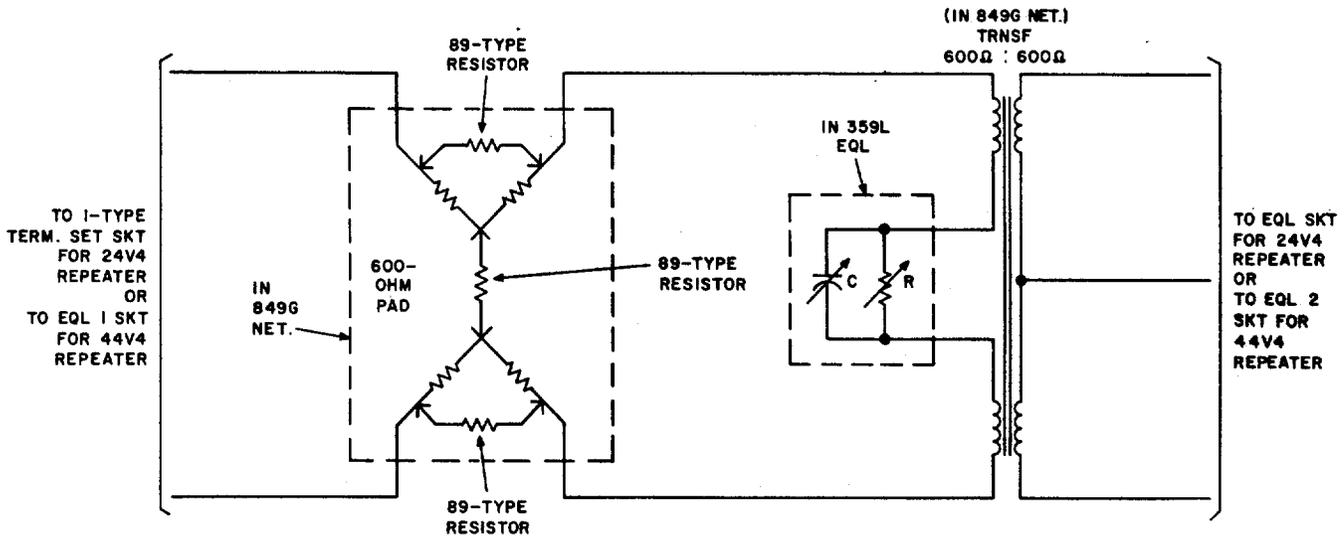


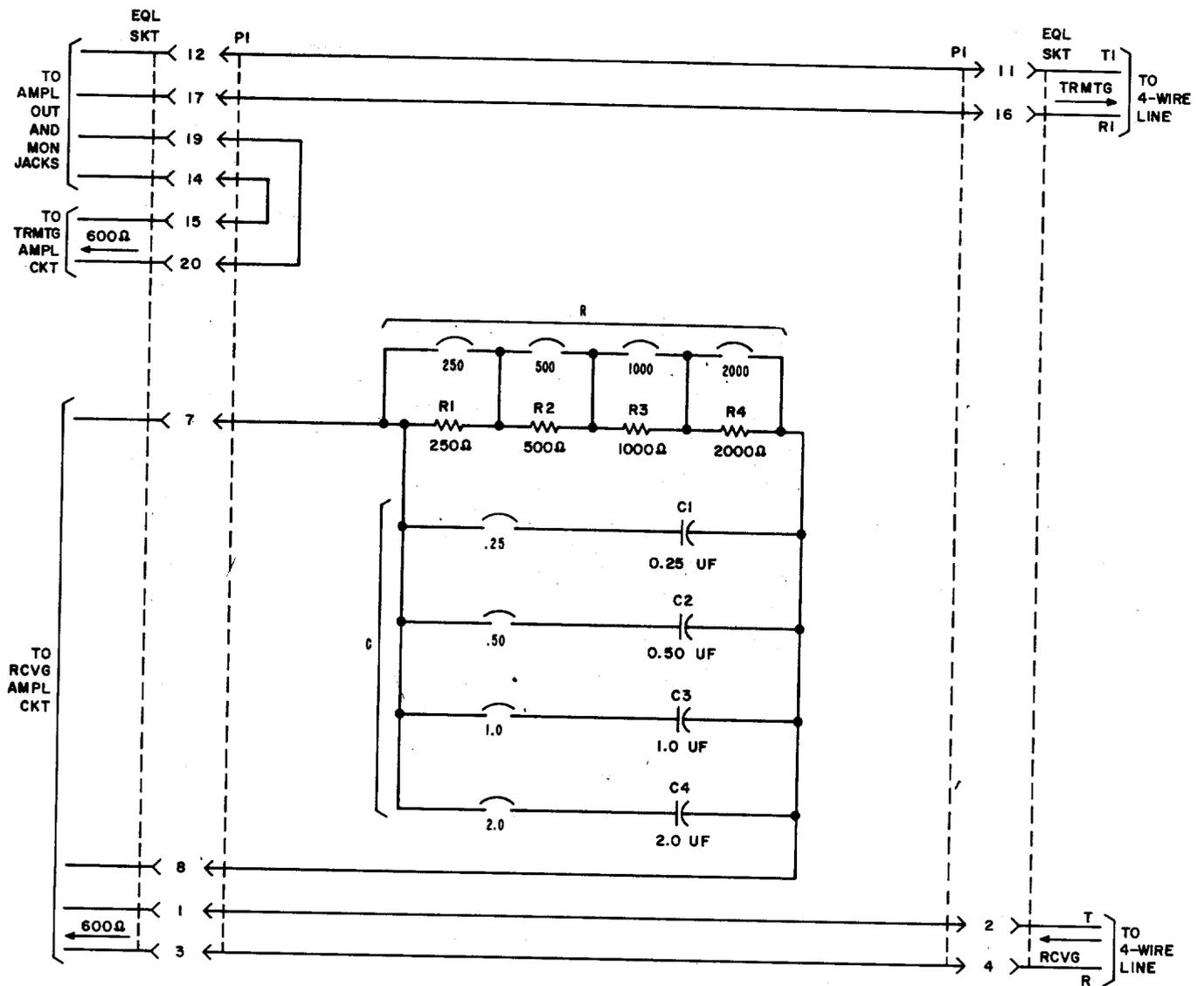
Fig. 2—359L Equalizer—General Circuit Configuration and Location in 849G Network

600-ohm receiving amplifier socket of the repeater (equipped with an 849G network) through terminals 1 and 3. Terminals 7 and 8 connect the equalizing section into the circuit of the associated 849G network.

3.04 The equalization circuit consists of a resistor section R made up of R1, R2, R3, and R4 in parallel with a capacitor section C made up of C1, C2, C3, and C4. All components are controlled by associated faceplate screw-type switches. The R section is adjustable from 0 to 3750 ohms in 250-ohm steps; the C section is adjustable from 0 to 3.75 μF in 0.25- μF steps. The resistors are bypassed when their associated screw-type switches are closed (turned in) and are included in the circuit when the switches are opened (turned out). The capacitors are added to the circuit when their associated screw-type switches are closed (turned in) and are removed when the switches are opened (turned out).

3.05 The 359L equalizer provides compensation for loss distortion in the 4-wire line (H44-loaded cable) at voiceband frequencies. Figures 4 and 5 illustrate typical equalization losses which may be obtained by various combinations of C and R. Figure 4 shows the results of keeping C constant and varying R; Fig. 5 shows the results of keeping R constant and varying C. At any adjustment settings of the equalizer normally used, the 1000-Hz transmission loss is negligible.

3.06 While the equalizer components provide compensation for amplitude distortion, they introduce delay distortion at the same time. Figures 6 and 7 illustrate typical delay-frequency characteristics obtained from various combinations of R and C. Figure 6 shows the results of keeping C constant at 0.25 μF and varying R; Fig. 7 shows the results of keeping R constant at 1500 ohms and varying C.



FACEPLATE

359L EQUALIZER			
250	500	1000	2000
R	⊗	⊗	⊗
C	⊗	⊗	⊗
.25	.50	1.0	2.0

Fig. 3—359L Equalizer—Schematic and Typical Circuit Connections

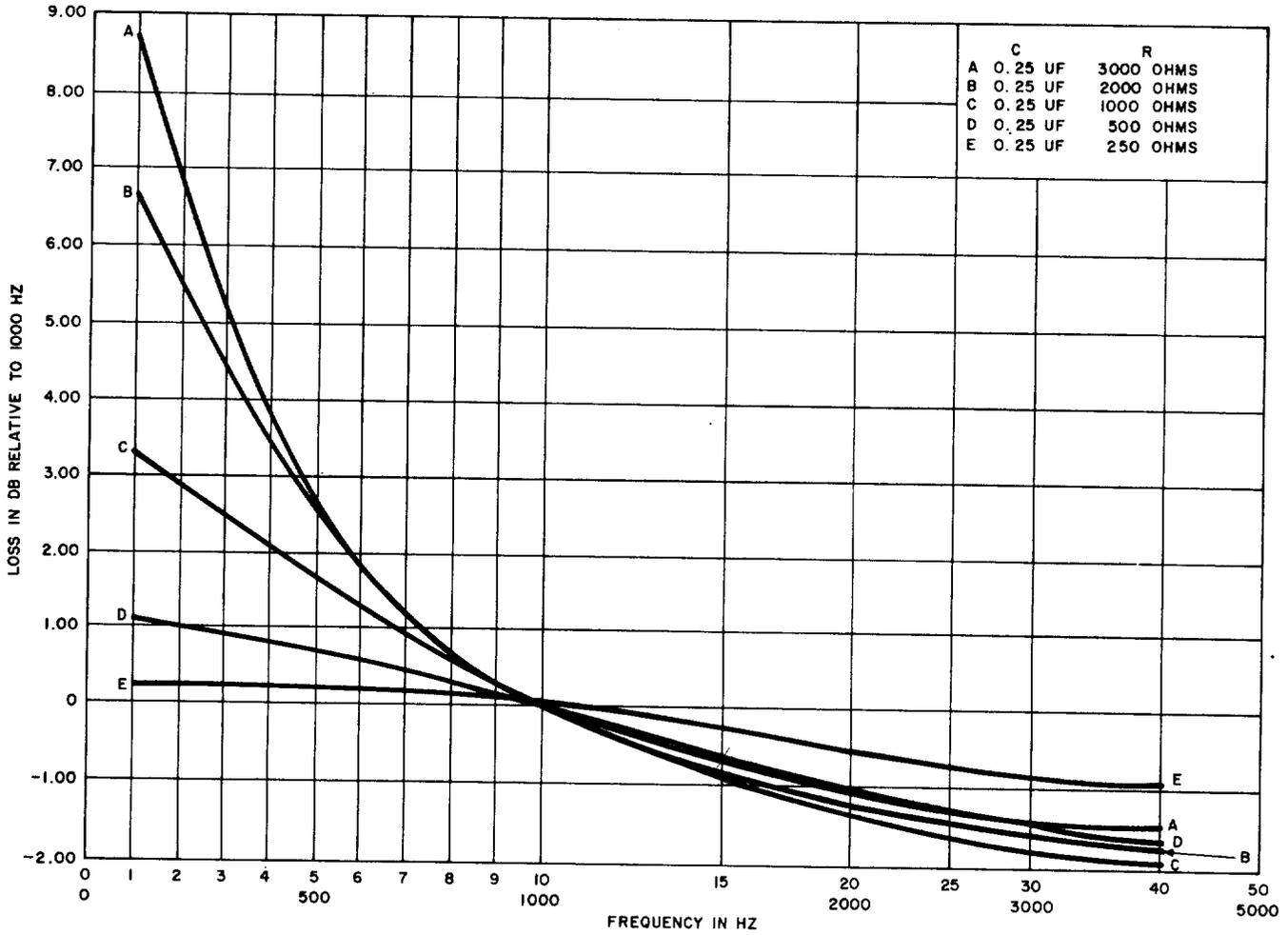


Fig. 4—359L Equalizer—Loss-Frequency Characteristics—Between 600 Ohms—Keeping C Constant and Varying R

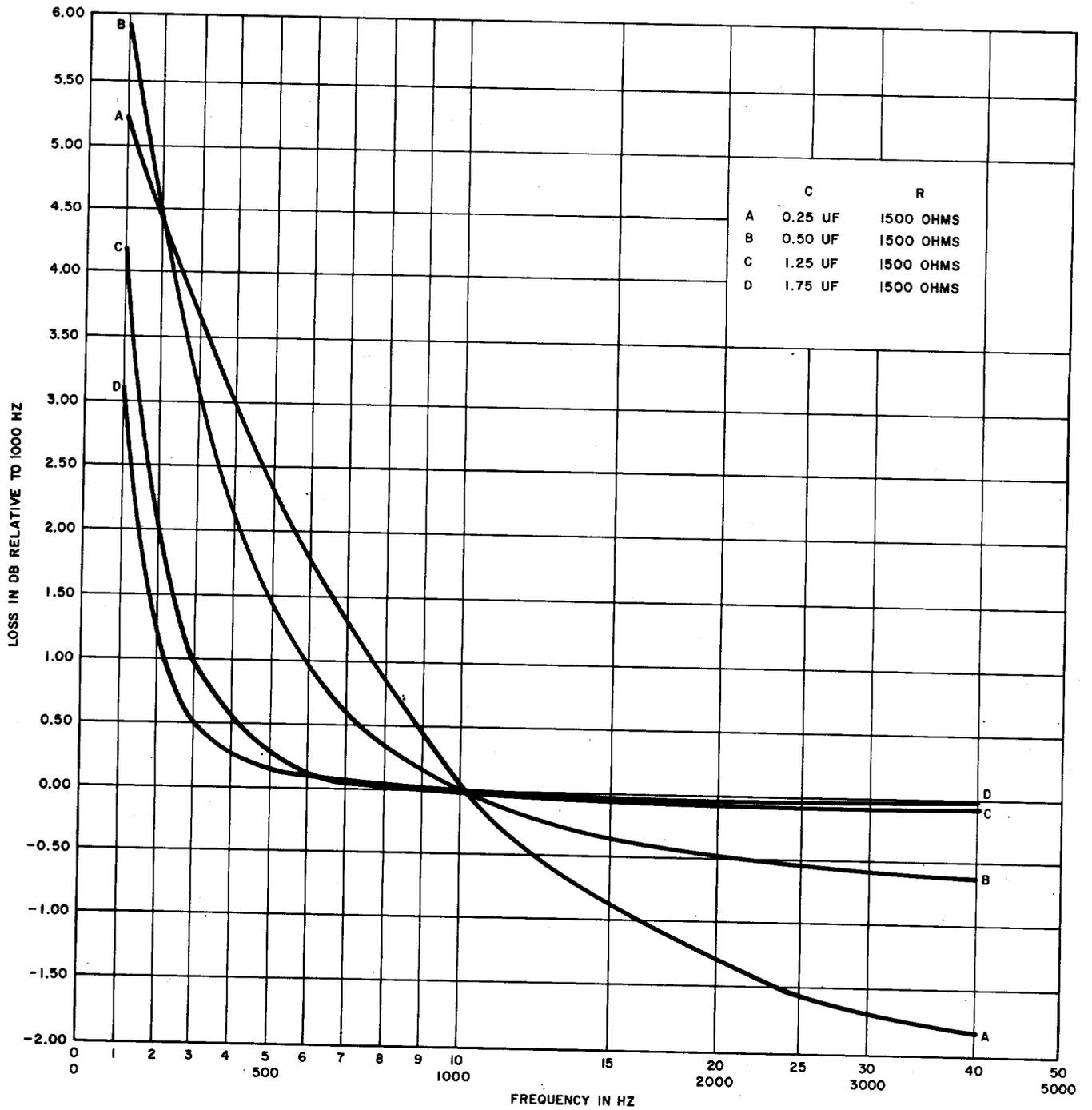


Fig. 5—359L Equalizer—Loss-Frequency Characteristics—Between 600 Ohms—Keeping R Constant and Varying C

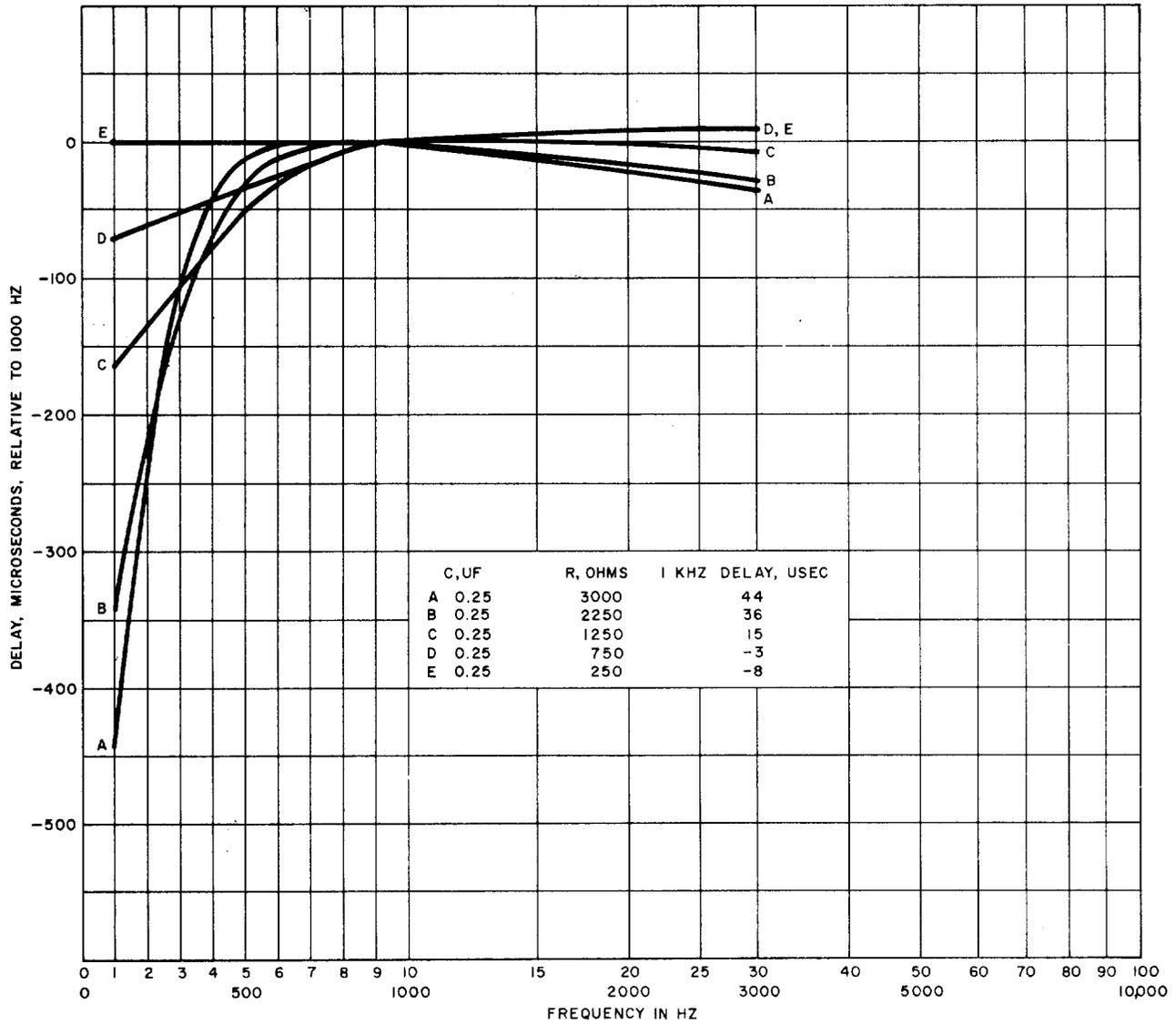


Fig. 6—359L Equalizer—Delay-Frequency Characteristics—Between 600 Ohms—Varying R for C=0.25 μF

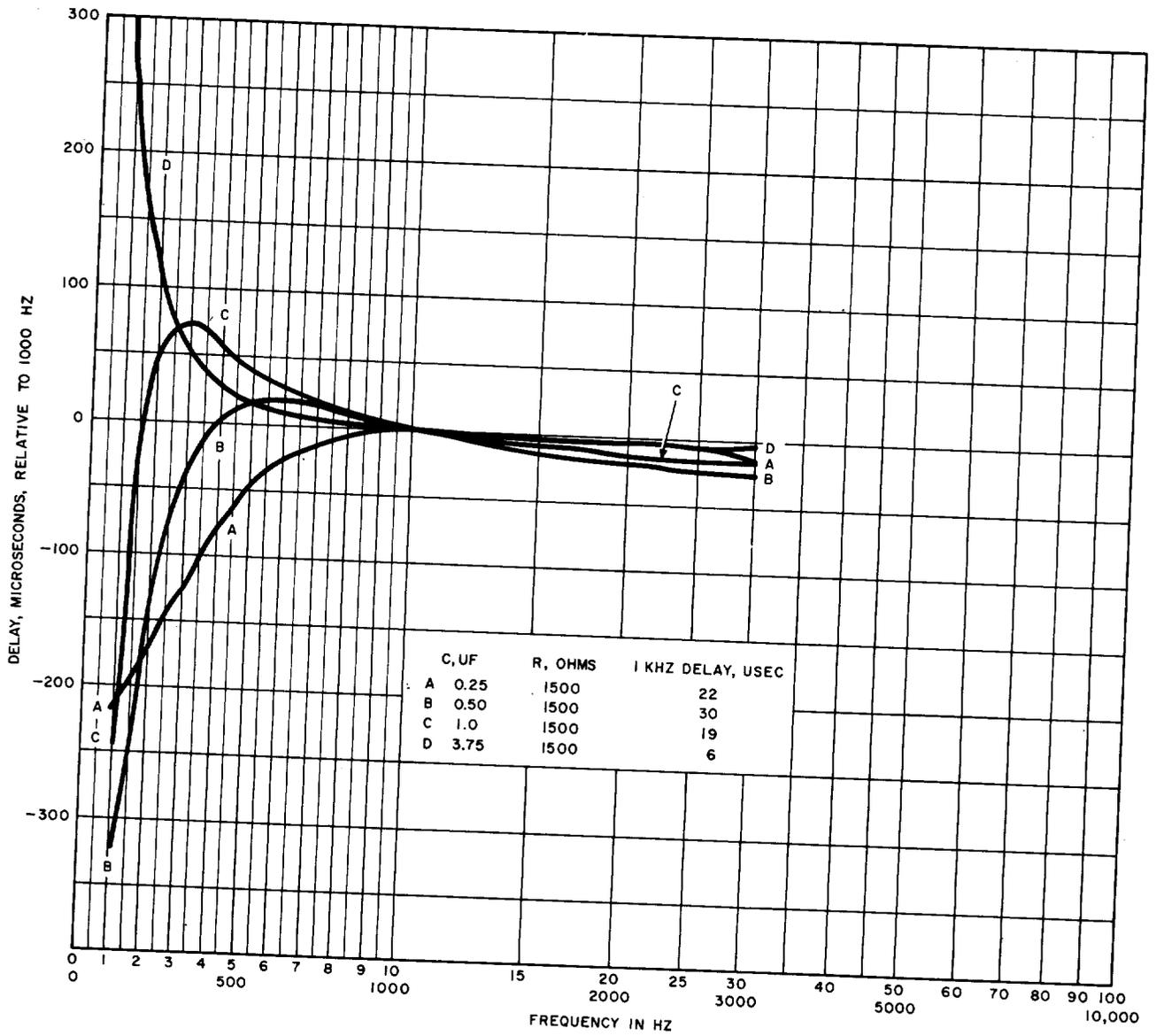


Fig. 7—359L Equalizer—Delay-Frequency Characteristics—Between 600 Ohms—Varying C for R=1500 Ohms