849G NETWORK
DESCRIPTION

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1. GENERAL

1.01 This section describes the 849G network, which is designed for use in V4 telephone repeater applications.

1.02 The 849G network is a low delay-distortion network for use in critical voiceband data system applications and other H44 loaded voiceband circuits.

1.03 The 849G network is used in place of a 227-type amplifier when gain is not required but equalization is required in circuits receiving from H44 loaded cable. The network provides transmission level control on the pad side, impedance mismatching on the H44 loaded cable side, and a transformer centertap on the cable side for simplex signaling.

2. EQUIPMENT DESCRIPTION

2.01 The 849G network is a plug-in unit (see Fig. 1) equipped with a 15-pin connector plug and is designed to be plugged directly into the mating connector socket of the equipment mounting shelf. The network consists of a 600:600-ohm transformer and a 600-ohm balanced pad (when the required 89-type plug-in resistor is inserted in the pad socket). The network is housed in a metal can approximately 1-3/4 inches wide by 1-3/4 inches high by 7 inches long.

2.02 Recessed in the front of the can is a 6-pin socket for receiving the 89-type plug-in resistor (see Note). An extractor tool, KS-5637, L1 is helpful in removing the 89-type plug-in resistor from its socket. Tabs are provided on the front of the can to facilitate removing the network from its connector socket by the use of a 602C or 602D tool.

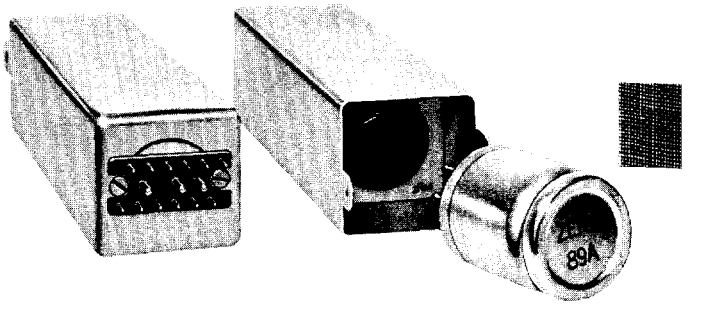

Fig. 1 — 849G Network

Note: The 89-type resistor is not a part of the network. It must be ordered separately.

3. CIRCUIT DESCRIPTION

3.01 Fig. 2 is a schematic of the 849G network showing typical circuit connections. Transmission signals from a 600-ohm source are applied to terminals 1 and 5. Terminals 4 and 8 connect the output to 600-ohm repeater circuits. Terminals 7 and 9 connect the low-frequency section of the associated 359-type equalizer in series with the transformer. Terminals 11 and 13 bridge the high-frequency section of the associated 359-type equalizer across the line. When equalization is not required, terminals 7 and 9 are strapped in the associated 359-type equalizer to provide circuit continuity in the transformer and terminals 11 and 13 are left unconnected.

3.02 The 600-ohm balanced pad provides a means of setting the transmission level as desired. The loss is adjustable in 0.25-db steps by selection of the proper 89-type plug-in resistor. The 1-kc power loss of the network and associated 89-type resistor between nominal 600-ohm impedances is equal to the 0.3-db loss of the transformer plus the db loss marked on the 89-type resistor.

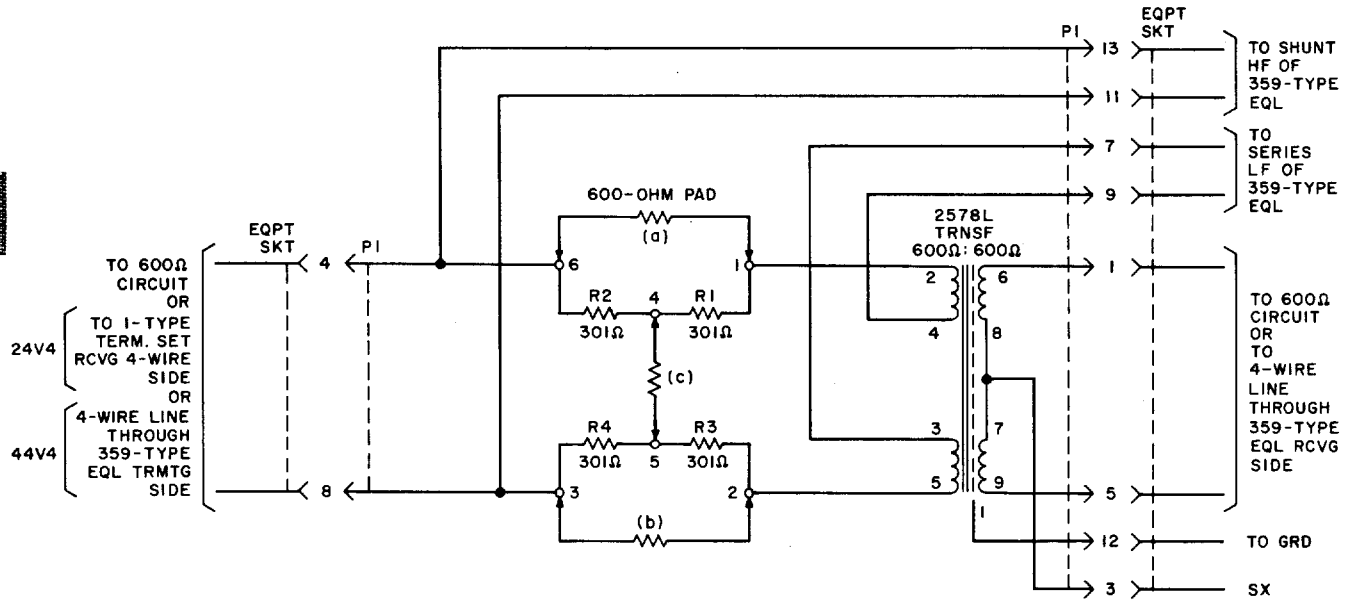

Fig. 2 — 849G Network — Schematic and Typical Circuit Connections

3.03 The 2578L 600:600-ohm transformer is a wideband low delay-distortion transformer which serves as a repeating coil between 600-ohm circuits. The transformer centertap on the line side is brought out to network terminal 3 to derive a simplex leg from the cable pair. The transformer is equipped with an electrostatic shield which is connected to network terminal 12. This shield and well-balanced line windings, in combination, tend to prevent false signals in the metallic circuit as a result of longitudinal noise. The loss-frequency distortion over the voiceband (300 to 3200 hz) is about 0.1 db. The envelope delay distortion over the vf data transmission band (500 to 3200 hz) is less than 3 microseconds. From 1000 hz to 5000 hz the delay distortion is negligible.

3.04 It should be noted that the performance data given above is for zero direct current through the transformer winding. With 2 ma dc the primary inductance is reduced from about 4.2 h (0 ma dc) to about 2.1 h. This increases the 200-hz loss about 0.1 db. For this reason it is recommended that dc currents be applied on a simplex basis only and that any loop current due to unbalances be limited to 1 ma maximum. The simplex current itself may be as high as 250 ma without damage to the transformer winding.