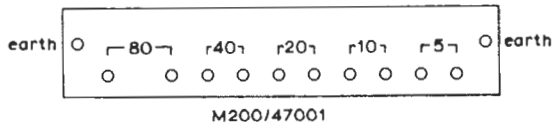
TRIMMING DELAY NETWORK NE4/509

General

The NE4/509 forms part of the EP1/516 Vertical Aperture Corrector in which it is used to increase the delay provided by each of a pair of UN14/507 video delay units to exactly one line period. It comprises four commercial encapsulated delay lines two of which each provide a fixed delay of 50 ns and two of which each provide a delay of 155 ns made up of sections of 80, 40, 20, 10 and 5 ns. In the EP1/516 the delay lines are connected in pairs to give two delay sections each of up to 155 + 50 = 205 ns. In other applications the delay lines can be used individually or in tandem to give a fixed video delay ranging from 5 ns to 410 ns in steps of 5 ns.

The delay lines have a sensibly flat frequency response up to nearly 20 MHz and introduce negligible distortion to any video waveform.



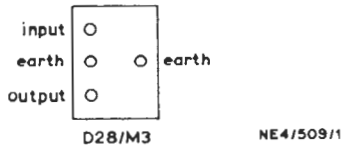


Fig. 1. Pin Connection details of Johnson Matthey Delay Lines

Construction

The delay lines are manufactured by Johnson Matthey & Co. Ltd. of Burslem, Stoke-on-Trent and the manufacturer's code numbers for the delay lines are M200/47001 for the 155-ns type and D28/M3 for the 50-ns type.

Fig. 1 shows the pin corrections (looking *onto* the pins) for both types of delay line. The figures indicate the delay (in nanoseconds) obtainable between the pins.

The NE4/509 has two of each type of delay line mounted on a printed board 100 mm by 60 mm (3·9 in by 2·3 in). Fig. 2 shows the layouts of the component side and copper side of the board.

The board is shown wired to provide two delay sections each of 205 ns.

Specification

This specification is for a single Johnson Matthey delay line. In practice the figures will differ slightly from those quoted below when some sections of a line only are used or when lines are connected in tandem.

Characteristic Impedance	75 ohms ± 3%
Insertion Loss	less than 5%
Frequency Response	within 0·5 dB up to 10 MHz
Luminance-Chrominance delay inequality	3 ns Chrominance lead
Temperature Coefficient of Delay	
worst case	2 parts in 10^4 per °C
typical	0·75 parts in 10^4 per °C
Maximum Working Voltage	125 volts d.c.
Temperature Range	−55°C to +100°C

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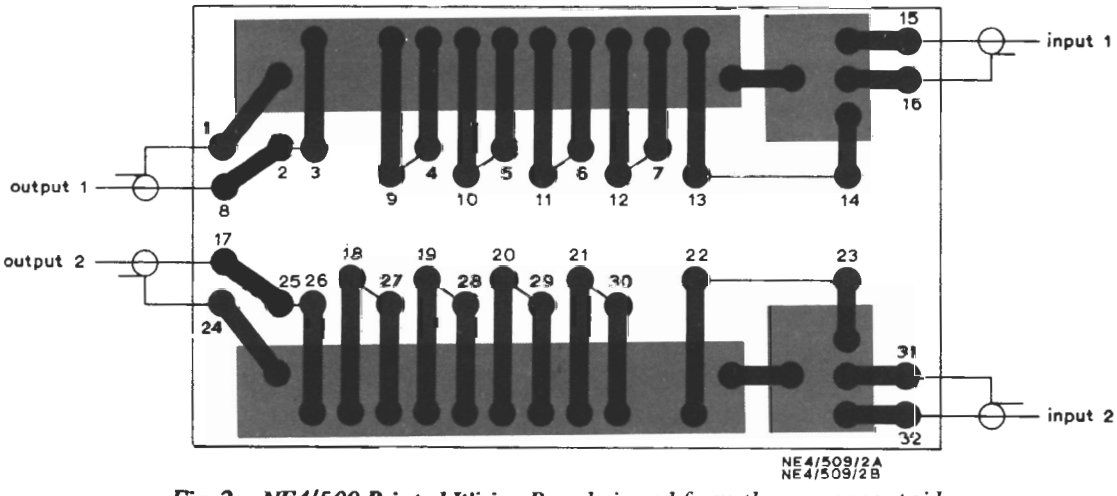

Fig. 2. NE4/509 Printed Wiring Board viewed from the component side