GATING PULSE GENERATORS GE2/503, GE2/503A AND GE2/503B

Introduction

All these units accept a positive-going feed of sync pulses and provide two feeds of positive-going gating pulses and two feeds of negative-going gating pulses[1,2,3,4]. The units differ only in the duration of the gating pulses produced. The GE2/503 is suitable only for monochrome operation, the GE2/503A is suitable for both monochrome and colour operation and the GE2/503B is suitable only for colour operation.

The units are constructed on a CH1/12A chassis with index-peg positions 3 and 14. Power supplies at +12 volts, +4 volts and −4 volts are required[5,6]. The GE2/503 and GE2/503A units also require a 50-volt supply for relay operation.

General Specification

The specification is given, in conjunction with associated units, under AM18/513[2].

Circuit Description

The circuit diagram is given in Fig. 1 overleaf. Modifications to the pulse-generating stage in the GE2/503A and 503B are shown in sketches A and B respectively, in the bottom right-hand corner of the circuit.

GE2/503

The input signal is applied, via emitter-follower TR1, to the amplifying stage TR2. The collector load of TR2 consists of delay lines X1 and X2 which are connected in cascade and provide a delay of 2 μs. Delay line X2 is open-circuit at its far end and so any signal developed at the collector of TR2 travels along the delay network and is reflected back to the input. When RLA is not operated (405-line condition) the return pulse continues for 4 μs after the input pulse has ceased and produces a waveform which, across its base portion, is 4 μs wider than the input signal. For 625-line working relay RLA is operated and contact RLA-1 connects the collector of TR2 to the junction of the delay lines; thus the overall delay is reduced to 2 μs. The signal developed at the collector of TR2 is applied, via emitter-followers TR3, TR4 and TR5 to the emitter of TR6. Diode D1 removes the narrow step present at the negative end of the pulse and D2 removes the positive extremities of the waveform. The negative portion of the remaining signal drives TR6 into cut-off and so the signal developed at the collector of TR6 is clipped at each end, is free from noise components and has short rise times and fall times. Capacitor C5, which is adjusted on test, removes unwanted very-high-frequency components from the signal. Transistor TR6 drives the emitter follower stage TR7 and this stage drives the push-pull output stages TR8 and TR9. Positive-going gating pulses are produced at the collectors of these transistors and negative-going gating pulses at the emitters.

GE2/503A

Only that part of the circuit which differs from the GE2/503 is described below.

When RLA is not operated (monochrome working condition) signals appearing at the collector of TR2 travel along X2 and are reflected back to the collector. Note that, in this application, X1 is effectively out of circuit. The return pulse continues for 2 μs after the input pulse has ceased and produces a waveform which, across its base portion is 2 μs wider than the input signal. For colour working relay RLA is operated and contact RLA-1 connects the collector of TR2 to a tap on delay line X2 and so reduces the reflected delay to 1·2 μs. The narrower pulse thus produced ensures that no portion of the colour burst is removed when the gating pulses are applied to a composite colour signal.

GE2/503B

This unit is similar to the GE2/503A, but does not contain a relay and has only one delay line.

Maintenance

See parent unit[1,2]. The waveforms shown in Fig. 1 represent conditions when the unit is functioning as part of a stabilising amplifier.

References to Typical Associated Equipment

1. Sync Pulse Stabilising Amplifier AM18/503.
2. Sync Pulse Stabilising Amplifier AM18/513.
3. Processing Amplifier AM18/514.
4. Sync Pulse Generator GE2/504.
5. Stabilised Power Supplier PS2/10A.
6. Stabilised Power Supplier PS2/57.

TES 2/67

See overleaf for Fig. 1

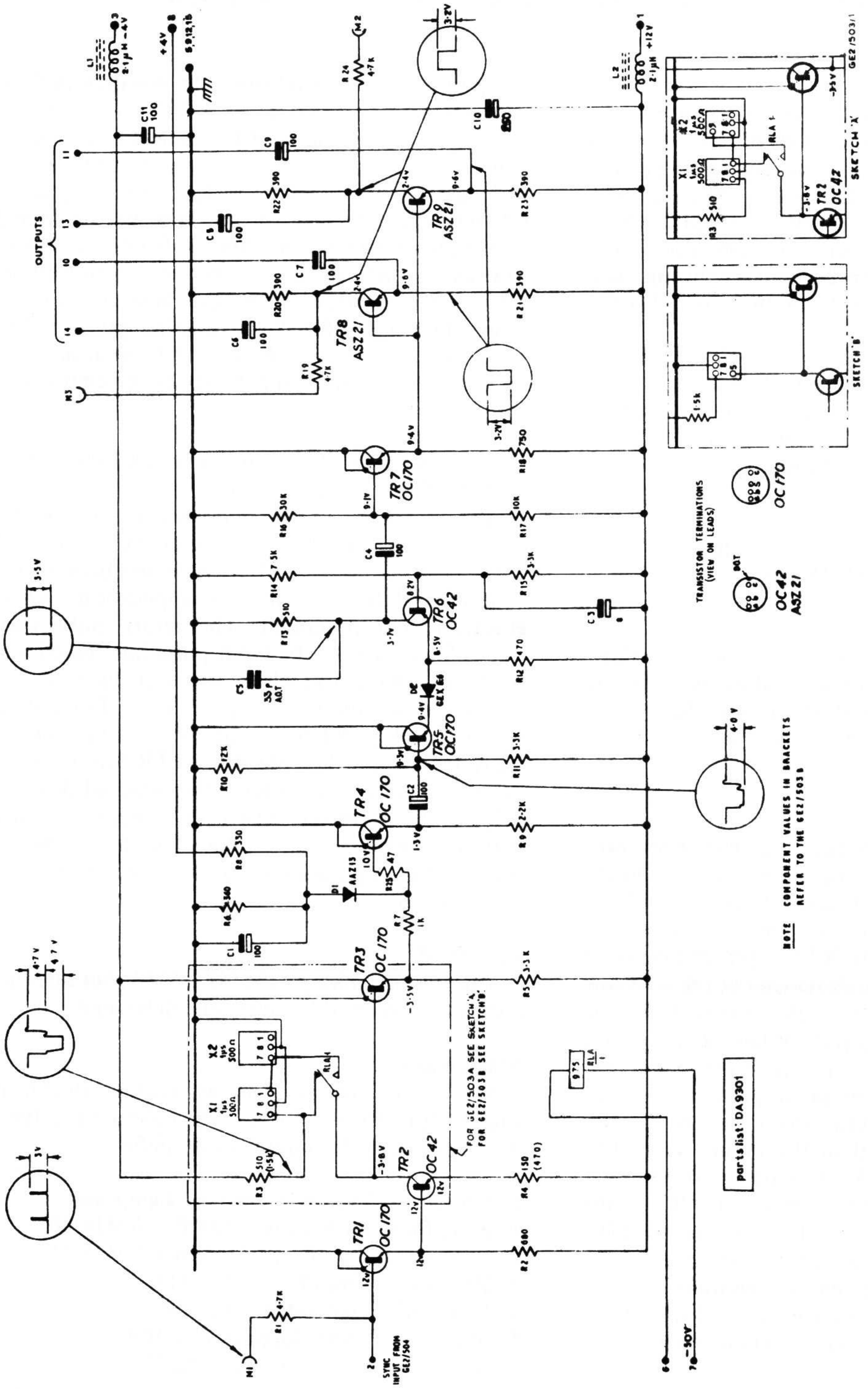


Fig. 1 Circuit of GE2/503