STAIRCASE AND PEDESTAL GENERATOR GE4/517

Introduction

The GE4/517 generates the pedestal and 5-step staircase components of the Test Line Signal Waveform[1]. It requires two negative going input pulses, one for each waveform component. The unit is not dual standard, but requires only the selection of three items to convert between standards.

The unit is constructed on a CH1/12A chassis having index pegs 16 and 17.

General Specification

Input Trigger Pulse Amplitudes	approx 2 V negative going	
Input Trigger Pulse Delays (with respect to leading edge of syncs)	*405-lines*	*625-lines*
Pedestal generator	16·5 μs	9 μs
Staircase generator	58·5 μs	40 μs
Duration of Staircase Steps		
1st to 4th steps incl.	8μs ±0·1μs	4μs ±0·1μs
5th step	6·5 μs	3·5 μs
Output Amplitudes		
Pedestal	50 mV ±5 mV approx.	
Staircase	0·65 V	
Non-linearity of Staircase	less than 1%	
Working Temperature Range	5°C to 45°C	
Power Supply Required	45 mA at −12 V 20 mA at +12 V	

Circuit Description

The circuit is given in Fig. 1. The input trigger pulse to the pedestal generator occurs once per field. It is differentiated by C23/R38 and the negative going component, after amplification and inversion by TR12, triggers the bistable multivibrator TR11/TR10. TR11 is switched off and TR10 switched on and the circuit remains in this condition until the arrival of a pulse via C16. This resets the multivibrator into its original state.

The input pulse to the staircase generator also occurs once per field and triggers the monostable circuit formed by TR1 and TR2 which has a period of about 40μs (405-line standard). The negative-going pulse at the collector of TR2 performs three functions:

(a) it initiates the generation of the staircase waveform via TR3
(b) the lagging edge resets TR11/TR10 as above
(c) it cuts off TR7.

TR3, which is normally conducting, is cut off by the pulse from TR2. This allows the emitter-coupled multivibrator TR4/TR5 to operate, the mark space ratio being controlled by C5 with R10 and R14. The pulses from the collector of TR4 are differentiated by C8/R19, the negative going spikes charging C11 via TR6. Thus C11 is charged in a series of steps and these are passed to the output by the compound emitter follower TR8/TR9.

When the monostable circuit TR1/TR2, reverts to its stable state, TR3 conducts and stops the action of TR4/TR5 and so TR7 conducts and discharges C11. The circuit then waits for the next pair of input pulses on the next field.

The required number of steps, five for each test line, is obtained by adjustment of RV1 and this adjustment also sets the duration of the last step. RV2 sets the amplitude of the output staircase waveform.

Maintenance

Routine maintenance is not required beyond an occasional check that the output amplitudes are correct.

References

1. Test Line Signal Generator and Inserter GE4M/518A.
2. Designs Department Specification No. 9.69(66).

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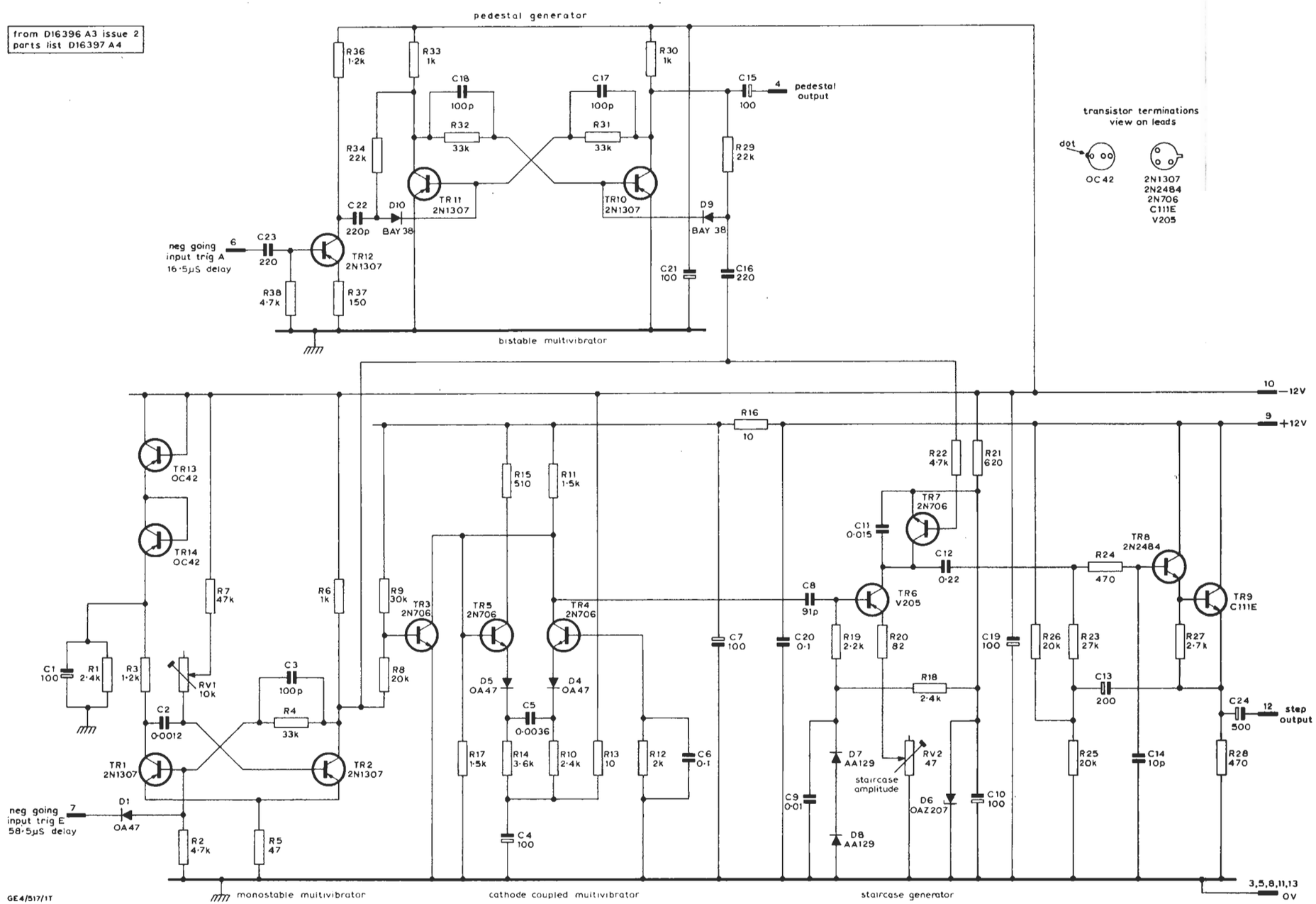

Fig. 1 Circuit of the Staircase and Pedestal Generator GE4/517