FIELD SAWTOOTH GENERATOR GE1/506

Introduction

The GE1/506 accepts a field drive input signal and produces a field sawtooth waveform of either polarity. The polarity of the waveform is switched by means of a relay fed via a diode matrix (see PA1/512), part of which is contained in the GE1/506.

The GE1/506 is constructed on a CH1/12A chassis with index peg positions 4 and 5.

Circuit Description

The circuit of the GE1/506 is given in Fig. 1. Emitter followers TR1 and TR2 form an input buffer amplifier for the field drive waveform. Transistors TR3 to TR8 form a linear sawtooth generator. The sawtooth waveform is inverted in transistor TR9 and an output of either polarity is selected by means of relay RL4.

The diode matrix which includes diodes D1 to D10 is described under PA1/512

The negative-going field drive pulse at the base of transistor TR3 charges capacitor C4 to a voltage determined by resistors R11 and R12. This positive-going voltage across capacitor C4 is fed via emitter followers TR4 and TR5 to the emitter of transistor TR6. The base voltage of transistor TR6 is almost constant so that when its emitter goes positive current flows through the transistor and charges capacitor C5.

At the end of the field-drive pulse, transistor TR3 cuts off and capacitor C4 starts to discharge. The negative-going voltage at the base of transistor TR4 is fed to the emitter of transistor TR6. Because a change in voltage at one end of resistor R13 is fed via transistors TR4 and TR5 to the other end a constant current flows through the resistor. This constant-current discharge path for capacitor C4 through resistor R13 and capacitor C5 produces a linear sawtooth waveform.

The negative excursion of the sawtooth waveform at the base of transistor TR7 is sufficient to overcome the emitter bias of transistor TR8. At the end of the sawtooth the current pulse through transistors TR7 and TR8 charges capacitor C6. The voltage across capacitor C6 determines the voltage to which capacitor C5 is charged by the next field drive pulse, thereby determining the amplitude of the sawtooth waveform. This amplitude stabiliser circuit prevents a change in amplitude which would otherwise occur with a change in field frequency owing to a change in line standard.

Test Procedure

The GE1/506 is tested as part of its parent unit 1,2,3.

References to Typical Associated Equipment

1. Keying Waveform Generator PA1/512.
2. Split Screen Effects Unit UN4/501.
3. Split Screen Effects Unit UN4/502.

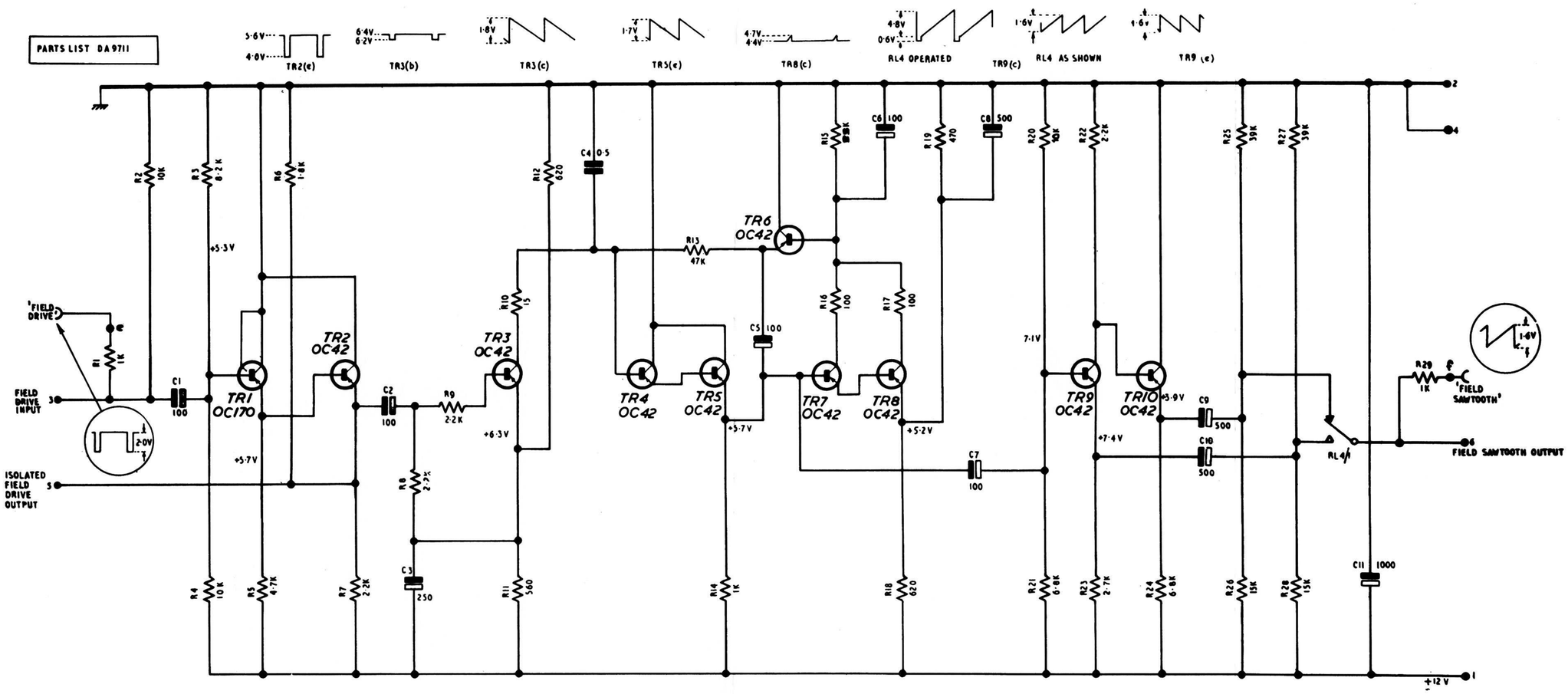


Fig. 1 Circuit of the GE1·506