

SAMPLING PULSE GENERATOR GE2/502

Introduction

The GE2/502 separates sync pulses from a composite video signal and generates two trains of sampling pulses. It accepts monochrome or colour signals on any of the normal line-standards and, when receiving a 405-line signal, the duration of the output pulses is increased automatically. The generator forms part of a stabilising amplifier¹.

The generator is constructed on a CH1/12A chassis with index-peg positions 1 and 10.

General Specification

Signal Input 0.65 V p-p composite video

Signal Outputs (405 lines)

(a) wide sampling pulses positive-going and negative-going pairs

amplitude 3 V
duration 4 μ s
timing leading and trailing edges of syncs

(b) narrow sampling pulses as in (a)
amplitude 3 V
duration 3.6 μ s
timing 0.2 μ s after leading and trailing edges of syncs

Signal Outputs (625 lines)

(a) wide sampling pulses as in (a)
amplitude 2.5 V
duration 2 μ s
timing leading and trailing edges of syncs

(b) narrow sampling pulses as in (a)
amplitude 2.5 V
duration 1.6 μ s
timing 0.2 μ s after leading and trailing edges of syncs.

Signal Outputs (other line standards)

Pulse duration can be reduced by shifting internal links.

Output Impedance 10 ohms approximately

Input-signal Distortions

The output signal should be satisfactory when one or more of these distortions are present at the input:

- (a) sync-pulse amplitude variations ± 6 dB.
- (b) 50-Hz interference equal in amplitude to picture signal.
- (c) LF distortion equivalent to that caused by an RC time constant of 2.4 ms.
- (d) Random noise with r.m.s. level -40 dB with respect to p-p picture (C.C.I.R. weighting).

Maximum Ambient Temperature 40° C

D.C. Power Supplies +12 V at 72 mA
+4 V at 0.1 mA
-4 V at 7 mA

Weight 1.5 lb

Circuit Description

The circuit is given in Fig. 1. The input video signal is applied to the base of TR1 via the sub-carrier trap formed by L1, C2 and C1. TR1 and TR2 are a feedback pair with a gain of about 15 dB. The signal is clamped on the base of TR3 by D1 which is pulsed into conduction by positive going sync pulses from the emitter of TR6. TR4 provides a low impedance source for the sync separator TR5. TR5 is cut off by the positive picture components but conducts during the negative going sync pulse period. The coupling between TR3 and TR4, R8, C5 and R9 comprises an l.f. boost circuit to ensure proper operation of the sync separator when fed with a signal suffering l.f. distortion.

The positive going sync pulses at the collector of TR7 are clipped to about 7 V by D2 and are fed to TR6 and TR7. Two 1- μ s delay lines, DN1 and DN2, in series are fed from the emitter of TR7, the

second line being shortcircuited at the far end. The delay lines modify the positive going pulses at the emitter of TR7 which are fed to TR8, producing pairs of positive and negative going pulses having an amplitude of 3V and a duration of 4 μ s. TR9 is connected to a tap on the delay line and receives pulses of the same form as TR8 but having a duration of 3.6 μ s with the leading edge delayed by 0.2 μ s.

These pulse lengths are satisfactory for 405-line working but, for 525 and 625 line signals, the pulses must be shorter to fit into the back porch period. The shorter pulses are achieved by short-circuiting the delay line at 0.6 μ s for both 525-line and 625-line working or at 1 μ s for 625-line signals only.

The short-circuiting action is automatic and depends on L2 and C10 which resonate at 10125 Hz. When a 525-line or a 625-line signal is being handled, the voltage across the resonant circuit is

small and the standing potential provided by the zener diode D5 via TR11 allows TR12 to conduct and to short-circuit the delay line. With a 405-line signal, the 10125 Hz pulses from the collector of TR5 cause L2, C10 to ring. The signal produced is amplified by TR10 and rectified by the voltage doubling circuit C1, D3, D4 and C13. The negative-potential across C13 overrides the steady potential provided by D5 and so TR11 conducts heavily, cutting off TR12. The short-circuit is thus removed from the delay line.

Maintenance

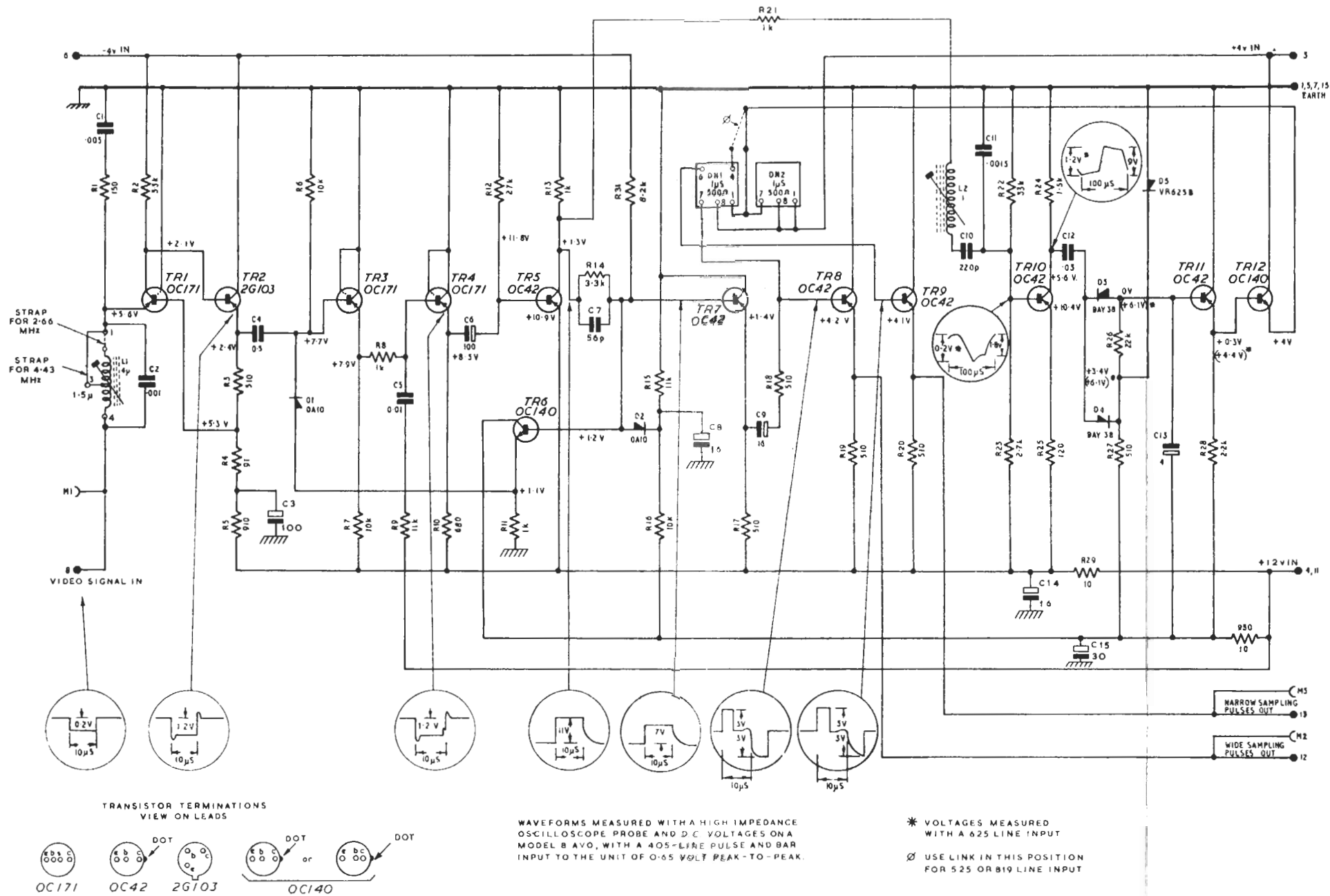
Routine maintenance is not required, but reference should be made to the maintenance instructions for the parent unit.

Reference to Typical Associated Equipment

1. Stabilising Amplifier AM18/509.

DPEB/AIB 5/69

from DC8811
parts list DA8812



GE2/502/1T

Fig.1 Sampling Pulse Generator
GE2/502 : Circuit