VIDEO SWITCH UNITS UN9/514 and UN9/514A

Introduction

This unit accepts two composite video signals[1], clamp pulses and a switch-drive waveform; it provides an output which is switched electronically between the video input signals by the switch-drive waveform. Both versions of the unit form part of a Split-screen Effects Unit[2]; the UN9/514 is designed for monochrome operation and the UN9/514A for colour operation.

The units are constructed on CH1/12A chassis with index-peg positions 7 and 26. Power supplies at +12 volts are required.

General Specification

See parent unit[1].

Circuit Description

The circuit diagram of the UN9/514A is given in Fig. 1. Differences between the UN9/514 and the UN9/514A are given in the notes on Fig. 1.

The A-input signal is applied via gain control RV1 to the compound emitter-follower TR1, TR2. From TR2 the signal is applied via C3 to TR3A. During the back-porch period, diodes D1 and D2 are driven into conduction by push-pull clamp pulses and so the signal at the base of TR3A is clamped to blanking level. The inductors in series with the clamp diodes are tuned to resonance at colour-subcarrier frequency and ensure that the clamping action does not distort the back-porch reference burst of subcarrier. From TR3A the signal is fed via successive emitter-follower stages to TR4B from where it is applied to the input-A side of the video switch.

The input-B video signal is applied to an identical circuit and the signal developed at the emitter of TR13B is applied to the input-B side of the video switch.

The video switch is driven by the push-pull switch-drive current applied to pins 4 and 5 of the unit connector. When all the current is applied to pin 4 there is a voltage drop of 5·4 volts across resistors R12 and R41, diodes D5 and D13 are cut off and the input-A signal flows through D4 and D8 to the dummy load R15. At the same time, the input-B signal flows through D12 and D14 to the true load R16. Under these conditions current does not flow through pin 5 of the input connector, therefore diodes D6 and D5 both conduct. The potential drop across R14 caused by the current flow through D6 cuts off diodes D3 and D7 and so prevents the input-A signal reaching the output. The potential drop across R43 caused by the current through D15 cuts off diodes D16 and D11 and so prevents the input-B signal reaching the dummy load.

When all the switch-drive current is applied to pin 5, the input-A signal flows through D3 and D7 to R16 while the input-B signal flows through D11 and D16 to the dummy load R15.

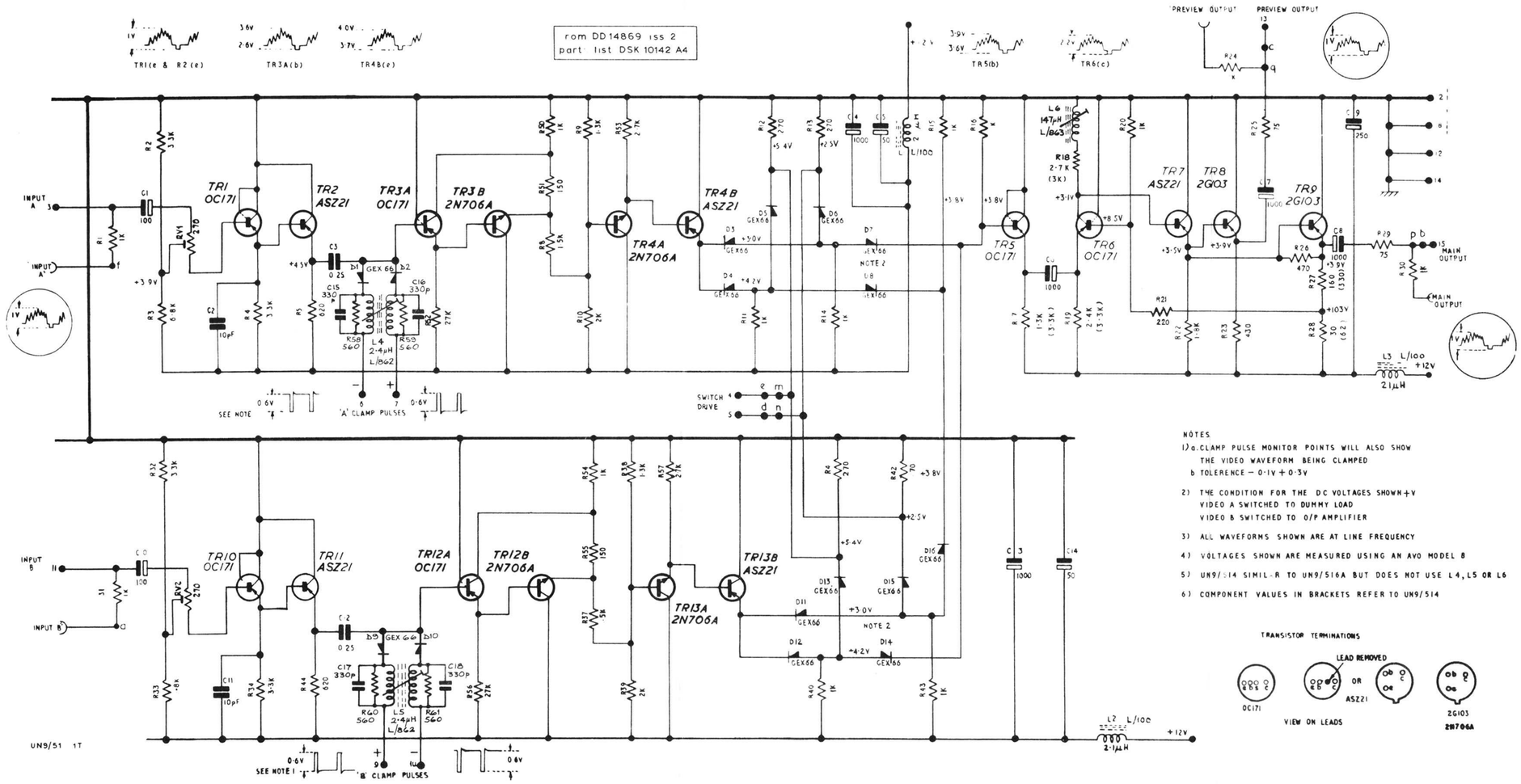
The video signal developed across R16 is fed via emitter-follower TR5 and grounded-base stage TR6 to emitter-follower TR7. Inductor L6 in the collector load of TR6 is adjusted on test for minimum differential-phase distortion. Transistor TR7 drives the main output stage TR9 and the preview output stage TR8. Negative feedback is applied from TR9 to TR7.

Alignment

See parent unit.

References to Typical Associated Equipment

1. O.B. Mixers MX1/501 (monochrome) and MX1/501A (colour)
2. Split-screen Effects Unit UN4/501
3. Clamp Pulse Generator GE2/505
4. Switch Pulse Generator GE2/506



NOTES

1) a. CLAMP PULSE MONITOR POINTS WILL ALSO SHOW THE VIDEO WAVEFORM BEING CLAMPED
   b. TOLERENCE − 0·1V + 0·3V
2) THE CONDITION FOR THE DC VOLTAGES SHOWN +V
   VIDEO A SWITCHED TO DUMMY LOAD
   VIDEO B SWITCHED TO O/P AMPLIFIER
3) ALL WAVEFORMS SHOWN ARE AT LINE FREQUENCY
4) VOLTAGES SHOWN ARE MEASURED USING AN AVO MODEL 8
5) UN9/514 SIMILAR TO UN9/516A BUT DOES NOT USE L4, L5 OR L6
6) COMPONENT VALUES IN BRACKETS REFER TO UN9/514

TRANSISTOR TERMINATIONS

Fig.1. Circuit of the Video-Switch Units UN9/514,A