

## CAPTION EFFECTS UNIT UN4/503

**Introduction**

This unit accepts the following input signals:

- Composite or non-composite video
- Mixed-blanking pulses
- Mixed-synchronising pulses

(For non-composite video inputs, line-drive pulses may be used instead of mixed-syncs.)

It provides two separate video output signals<sup>1,2</sup>; these are labelled *Letters Out* and *Background Out*.

The unit is constructed on a CH1/12A chassis with index-peg positions 25 and 30. Input monitor sockets are mounted on the front panel of the unit together with a mains-indication lamp. Mains fuses (100 mA) are mounted on the rear panel.

Power supplies at -12 volts are provided by an integral power supplier which also provides power for associated units<sup>1</sup>.

**Circuit Description**

The circuit diagram is given in Fig. 1.

*Sync Circuit*

Negative-going mixed-sync (or line-drive) pulses are applied, via two cascaded emitter-follower stages comprising transistors TR1 and TR2, to the amplifier-inverter stage TR3. The positive-going signal developed at the collector of TR3 is applied via a differentiating circuit to TR4. Transistor TR4 functions as a clamp-pulse generator and its output is applied via the synchronous switch transistors TR5 and TR6 to the base of transistor TR10.

*Video and Letters Circuit*

The video input signal is applied via a long-tailed pair (transistors TR7 and TR8) and emitter follower TR9 to the base of TR10 at which point it is clamped. The clamped video signal is then fed via a complementary emitter-follower stage comprising transistors TR10 and TR11 to the base of TR12. Transistors TR12 and TR13 form a Schmitt

trigger in which the triggering level is determined by the setting of preset resistor R39. The base of TR13 is connected via diode D1 to an external *Letters Off* switch; when this switch is closed the diode is forward-biased and TR13 is cut off.

The output from TR13 is applied via driver stage TR14 to the complementary output stage formed by transistors TR15 and TR16. Two negative-going outputs are taken from this stage, one to the *Letters Out* connection and the other to TR21 in the blanking-and-background circuit.

*Blanking and Background Circuit*

Negative-going mixed-blanking pulses are applied to the blanking amplifier comprising transistors TR17 to TR20; diode D2 d.c.-restores the signal at the base of TR19. The signal developed at the collector of TR20 is fed to the emitter of adding stage TR21 and a feed of the *Letters Out* video signal is applied to the base of the adding stage. Thus the output of TR21 consists of the letter information suitably blanked.

Transistors TR22 and TR23 form an emitter-coupled clipping stage in which the blanking pulses are clipped, by the cut-off of TR22, at a level determined by the setting of R68. The output from TR23 is applied via TR24 to the complementary output stage comprising transistors TR25 and TR26.

*Power Supplies*

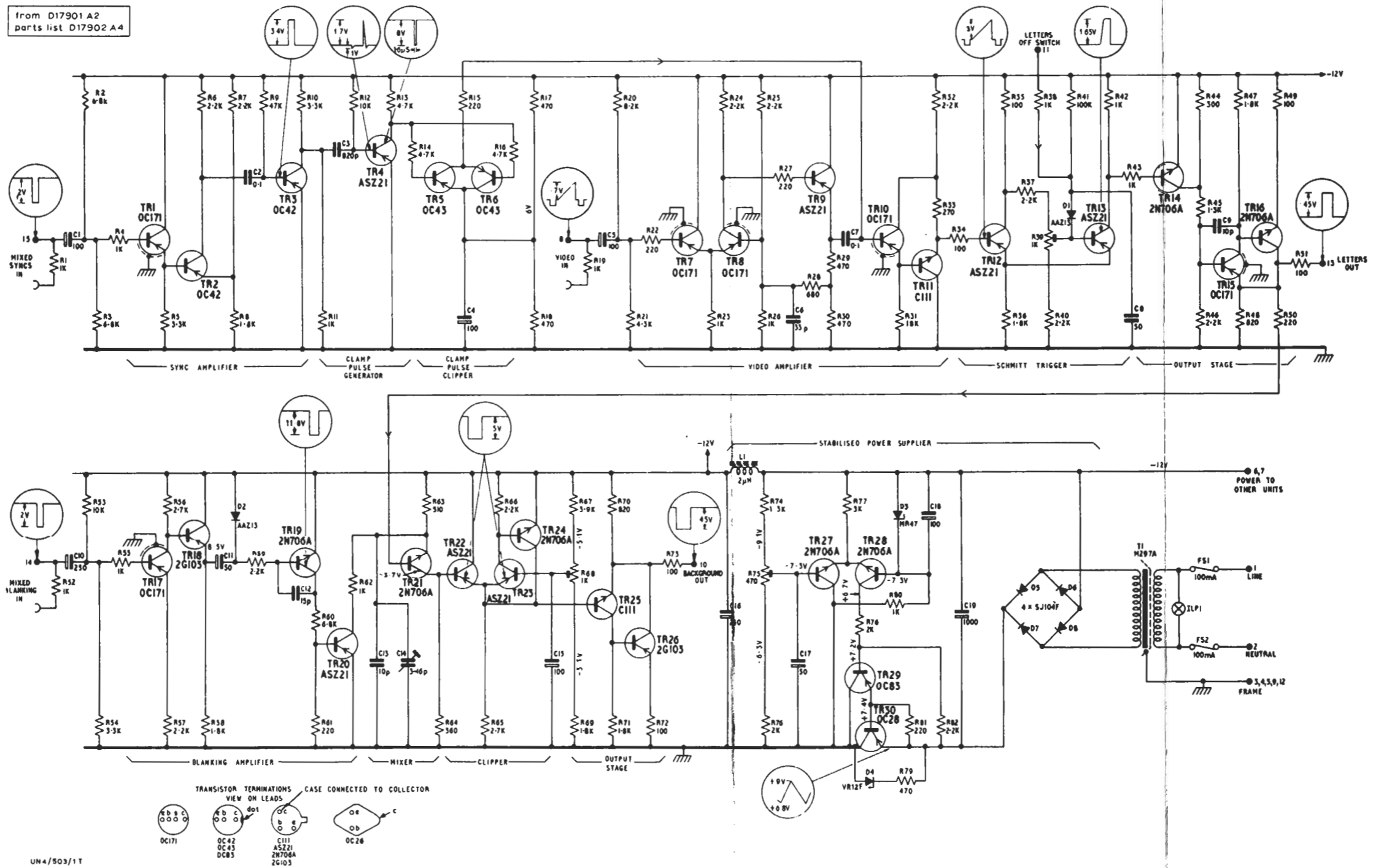
The zener diode and the resistor which are connected in series between the emitter and collector of TR30 provide continuity, at the moment of switching on, between the positive junction of the bridge rectifier and the earth line.

**References to Typical Associated Equipment**

1. Caption Effects Mixer MX1/506.
2. Colour Caption Synthesiser EP1/506.

TES 1/68

from D17901 A2  
parts list D17902 A4



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Fig. 1 Circuit of Caption Effects Unit UN4/503