

SECTION 40

VIDEO OUTPUT AMPLIFIER AM1/540

Introduction

This amplifier accepts:

- picture signal
- mixed blanking
- mixed syncs
- white-level bar waveform
- extra-blanking pulses¹
- 9 volt power supplies

The output is a clamped composite video signal which may incorporate a reference white-level bar; the amplifier operates in conjunction with an external clamp circuit².

The AM1/540 is mounted on a chassis type CH1/12A with index-peg positions 1 and 27.

Circuit Description

A circuit diagram of the unit is given in Fig. 40.1. The amplifier comprises a video amplifier, a sync-pulse amplifier, a blanking-pulse amplifier and two gating circuits. One of the gating circuits is used to insert blanking into the picture signal and the other acts as a white-level clipper.

The picture-signal input is connected via an inverting stage TR1 to an emitter-follower stage TR2 at the output of which the black level is clamped by means of the external clamp circuit. The clamped signal is taken via another emitter follower TR3 to the blanking-insertion gate circuit. This consists of transistors TR4 and TR5, diodes D1 and D2 and zener diode D4. The collector of TR5 is connected to the collector of TR4 and, via diode D2, to its own collector load R12. The potential of the collector supply for TR5 is determined by D4.

The positive-going output from the blanking-pulse amplifier TR6 is connected to the base of TR4 which is cut off between blanking pulses. TR5 conducts and picture signal appears at the junction of D2 and R12.

When TR4 conducts, the collector of TR5 is driven negative so that D2 is cut off and D1 becomes conductive. The overall effect at the junction is to produce a non-composite video signal with a blanking level determined by zener diode D4. Diode D1 acts as a catcher diode to maintain TR5

collector at blanking level for the duration of the blanking pulses; this reduces to a minimum the time required to drive D2 into conduction at the end of a blanking period.

The non-composite video is direct-coupled to the other gating circuit which consists of transistors TR11 and TR12, diodes D6 and D7 and zener diodes D5 and D8. This circuit is similar to the blanking-insertion gate but the base of TR11 is held at a fixed potential by the potential divider chain R29 and R30. D5 ensures that TR12, which is direct coupled to TR5, operates at its correct working point. The input signal applied to the base of TR12 is positive going and, if sufficiently large, tends to cut off the transistor. This results in the transistor collector being driven negative until D7 is cut off and D6 conducts thereby clipping the waveform. The clipping level is determined by the choice of value for R33 which determines the current flowing through D5.

A non-composite clipped waveform appears at the junction of D7 and R34 where syncs are added to form a composite video waveform. This waveform is inverted by TR13 and fed to a pair of cascaded emitter followers TR14 and TR15. The overall gain of the amplifier is controlled by RV2 in the emitter circuit of TR13.

The sync pulses are fed via an emitter-follower input stage TR9 and an amplifier stage TR10; the amplitude of the pulses is set by means of RV1 in the emitter circuit of TR10. The h.t. return path for TR10 collector is via R27, R34 and R35.

The blanking-pulse amplifier comprises emitter-follower input stage TR8 and amplifier TR7. The output from TR7 is coupled to the base of TR4 via another emitter follower TR6. Diode D3 limits the blanking pulse amplitude. The extra blanking pulses are added to the normal blanking pulses at the base of TR4.

References to Typical Associated Equipment

1. Peak-white Bar Generator GE2/522, Instruction V.10.
2. Camera Drive Generator GE2/523, Instruction V.10.

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See overleaf for Fig. 40.1

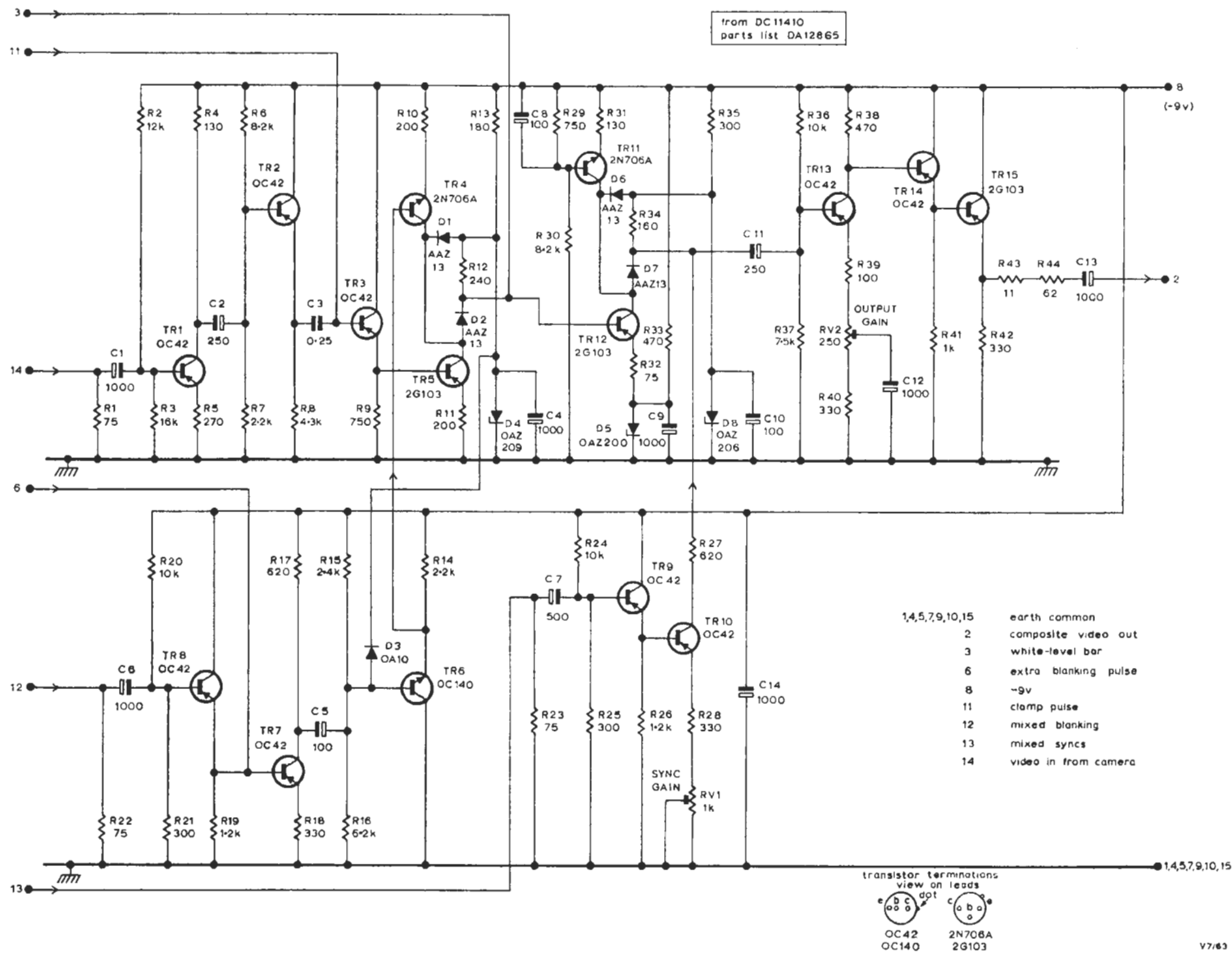


Fig. 40.1 Circuit of the AM11540