

## SECTION 29

### NEGATIVE PICTURE AMPLIFIER AM1/529

#### Introduction

This amplifier enables the polarity of the picture information of a video signal to be inverted by the operation of a switch. The device accepts a video signal, mixed syncs and mixed blanking and provides a clamped output with syncs and blanking re-inserted. Remote polarity and lift controls can be switched into circuit in place of the internal controls. Gamma correction can be switched to provide either a linear characteristic or a pre-set law.

The amplifier has an integral stabilised power supply and is constructed on Veroboard mounted on a chassis type CH1/12A with index peg positions 8 and 18.

#### Circuit Description

A circuit diagram of the amplifier is given in Fig. 29.1. The input signal is connected via gain control RV1 to a phase-splitter TR1 which enables either a positive-going or a negative-going signal to be obtained. The required signal is selected by switch S1 which controls the bias conditions of diodes D1 and D2. With S1 in the *Remote* position either of these two operating modes can be selected by an external switch.

The selected output is taken to the input of a Darlington pair, TR2 and TR3, where it is clamped. Either of two gamma-correction circuits are connected into the emitter circuit of TR3 by switch S2 and the degree of correction is determined by the settings of RV2 and RV3 respectively; the correction circuit corresponding to the *Off* position

of S2 is adjusted to give the amplifier a linear response.

Sync pulses and blanking in the output from the Darlington pair are removed by applying large positive-going blanking pulses to the signal and clipping the resultant waveform by diode D6; the clipping level is set by RV4. The resultant clipped waveform is amplified by common-emitter output stage TR4 and syncs are re-inserted in the collector circuit.

Clamp pulses are derived from the leading edges of syncs in a circuit comprising TR9, TR8 and differentiating circuit C11-R28. These clamp pulses are applied to the base of TR7 and cause it to conduct, thereby clamping the base of TR2 to a potential determined by an associated potential-divider network. Note that this circuit clamps the bottom of sync pulses in the output from TR1. Two potential-divider networks are provided to enable the clamping level for each of the two internal operating conditions to be set independently. In the *Remote* condition an external divider network is required. The inverted sync output of TR9 is used also to drive an amplifier stage TR11 which provides sync pulses for insertion in the output from TR4; the amplitude of these is set by RV8.

The stabilised power supply is of standard form and uses a series-stabilising transistor TR5, a shunt amplifier TR6 and a reference zener diode D7. The potential of the supply is set by RV5. Stabilisation is improved by capacitor C6 and a feed-forward resistor R23.

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See page 29.3 for Fig. 29.1

