BURST ERROR AMPLIFIER AM1/558

Introduction

This unit accepts two coded colour-video signals and a feed of positive-going sync pulses [1,2,3]; it provides an output which is the difference between the colour-burst components of the two video input signals[4].

The unit is constructed on a CH1/43 chassis with index-peg positions 2, 4 and 6. Power supplies at +9 volts and −14 volts are required[5].

General Specification

Video Inputs	1 volt p-p
Sync Input	3 volts p-p, positive-going
Input Impedances	about 10 kilohms
Output Impedance	about 50 ohms
Operating Temperature	0–45°C
Power Consumption	+9 volts, 170 mA
	−14 volts, 175 mA
Weight	about 1 lb.

Circuit Description

A simplified block diagram is given in Fig. 1 and the circuit diagram is given in Fig. 2 on page 3.

Video Circuit

The video input signal is applied to a feedback amplifier comprising transistors TR1 and TR2; the phase-shift of the stage at the higher video frequencies is determined by capacitor C10. Transistor TR2 feeds emitter-followers TR3 and TR4 whose outputs are coupled together by resistor R13. The signal is clamped at this point by the action of the synchronous-switch transistors TR6 and TR7 which are fed with clamp pulses from diode D9. The clamping level (nominally zero volts) is determined by the emitter voltage of transistor TR9 and is set by adjustment of R22. Resistor R13 and capacitors C4 and C5 form a low-pass filter which prevents high-frequency components of the clamp pulses reaching the base of TR5; thus clamp-pulse transients do not appear in the output of the complementary emitter-follower stage comprising transistors TR5 and TR8.

From the emitter of TR8 the signal is applied to two diode-bridge gating stages connected in cascade. Here the video and sync components of the signal are removed and the remaining signal, consisting of the colour-burst only, is applied via emitter-follower TR12 to transistor TR18 where it is compared with the output of the reference signal chain

Reference Signal Circuit

The reference signal is processed in the same way as the video signal described above. However, the input feedback-amplifier in the reference signal chain differs in two respects from its video counterpart. Firstly the amplifier is fed via a movable link which is used for alignment; secondly the amplifier is provided with a gain control, R110, which is used to balance the reference amplifier against the video amplifier.

Clamping and Gating Circuits

Positive-going mixed sync pulses are applied, via emitter-follower TR13, to shunt clipper D19. Here the positive extremities of the signal are removed; the clipped sync pulses are then inverted by transistor TR15 and fed via a C-R ramp-generating circuit to clamp-pulse generator TR16. Transistor TR16, which is normally bottomed, is cut off by the positive-going edges of the waveform applied to its base and negative-going pulses with a peak-to-peak amplitude of about 22 volts are developed at the collector. Portions of these pulses are passed by diodes D9 and D10 and applied as clamp pulses to the associated synchronous switches (see Video Circuit). The remaining attenuated pulses are clipped by diodes D20 and D21 and applied to the phase-splitters (TR10, TR11, TR30 and TR31) which drive the diode-bridge gating stages

The polarity of the current applied to each gating stage is such that for the greater part of each line period the diodes conduct and the bridge impedances are low. However, during the colour-burst period the diodes are reverse-biased by the gate pulses and each bridge circuit becomes high-impedance. Thus, in both the video and reference signal chains, the video and sync-pulse components of the signal are heavily attenuated by the action of the gating stages while the colour-burst component is unaffected.

Differential trimming capacitors are connected between the positive and negative junctions of the diodes in each gating stage. These components are

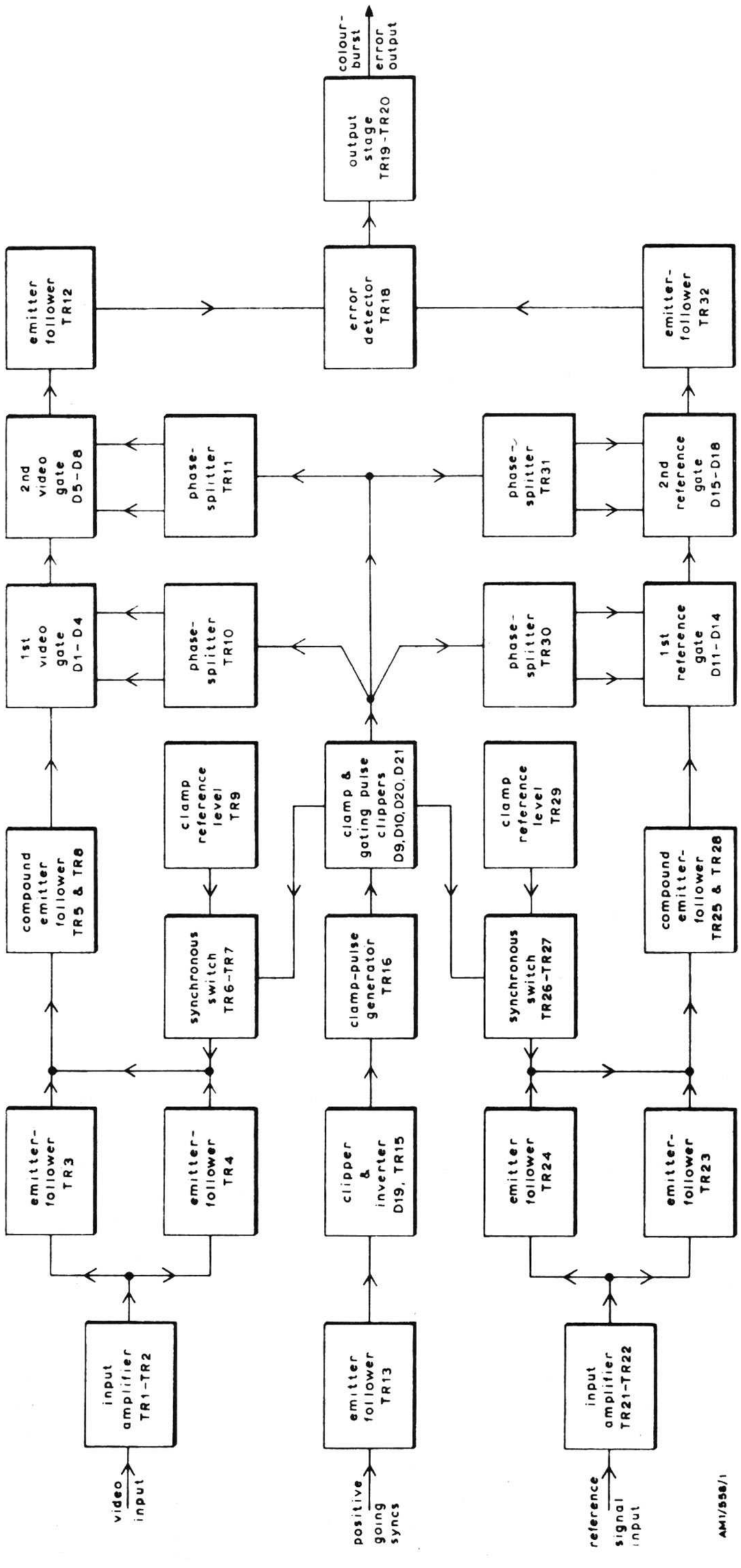


Fig. 1 Simplified Block Diagram of AM1/558

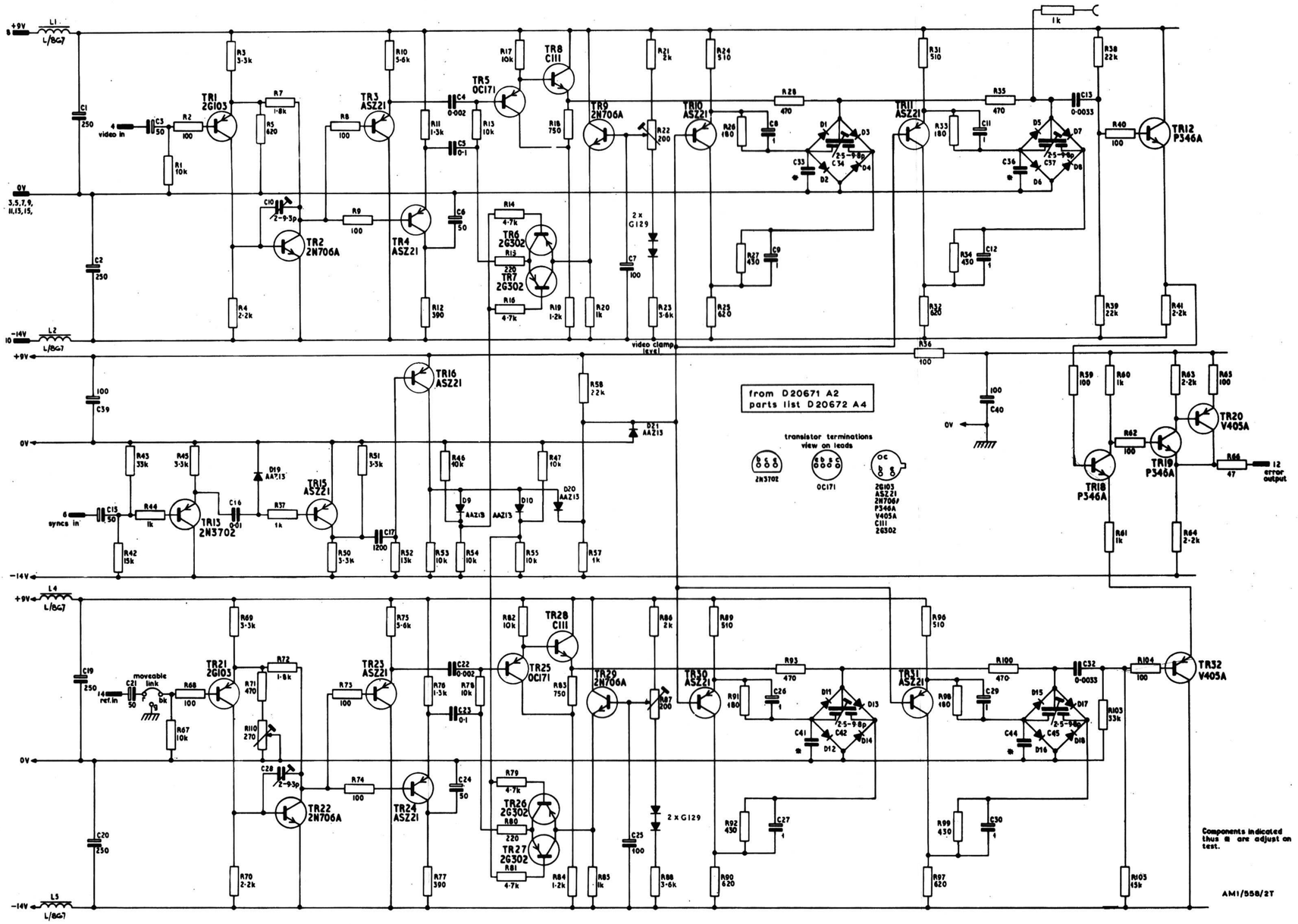


Fig. 2 Circuit of the AM1/558

adjusted to minimise transients caused by the gating pulses.

Error Detector and Output Stage

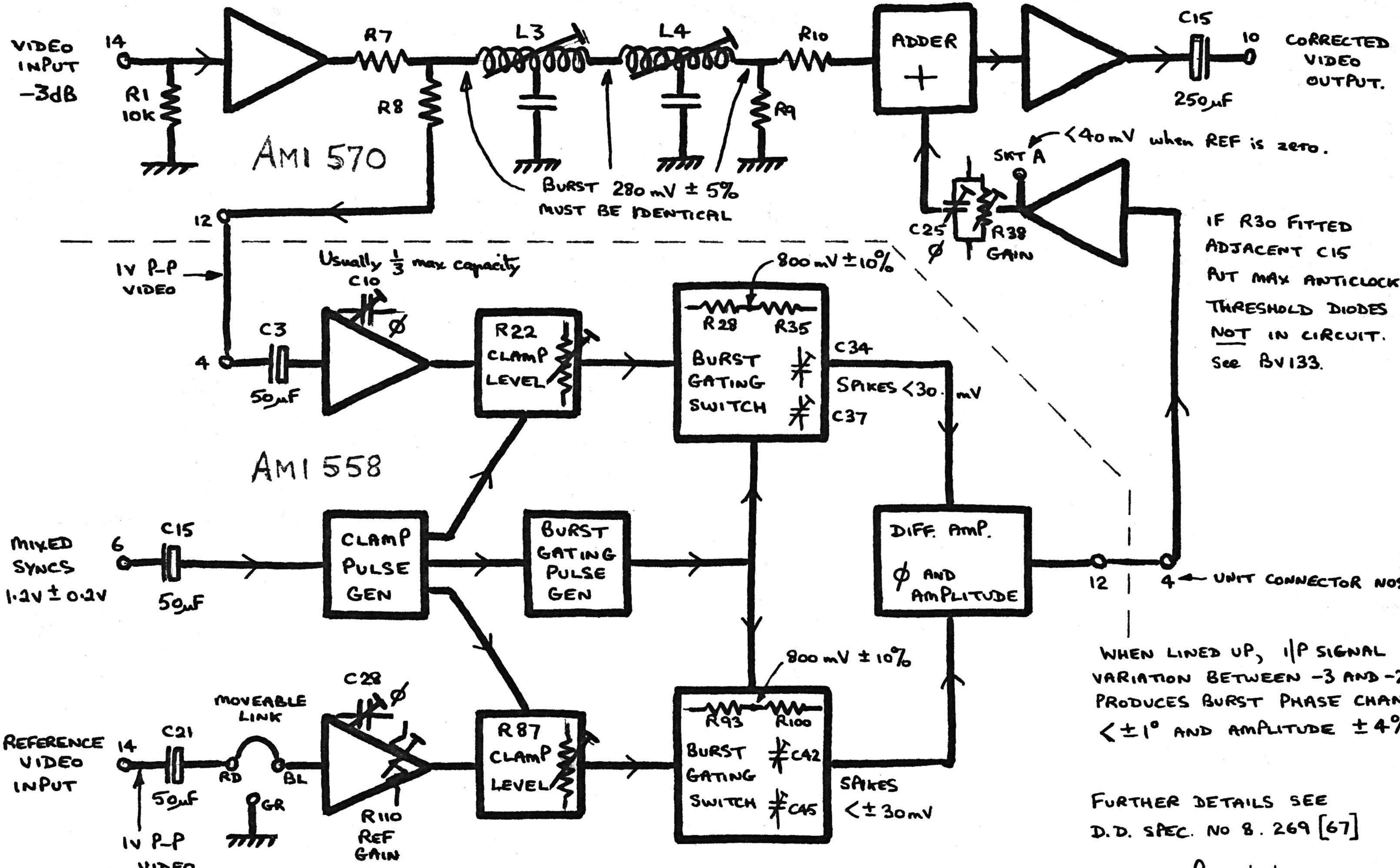
The clamped colour-burst signals from the video and reference chains are applied to the base and emitter respectively of transistor TR18. If the signals applied to TR18 are identical in amplitude and phase they cancel and the stage has no output. If the applied signals differ then the resulting difference signal is applied to the complementary output stage TR19-TR20.

References to Typical Associated Equipment

1. Sync Pulse Stabilising Amplifier AM18/513.
2. Video Switching Panel PA18M/514.
3. Sync Pulse Generator GE2/504.
4. Video Amplifier AM1/570.
5. Stabilised Power Supplier PS2/57A.

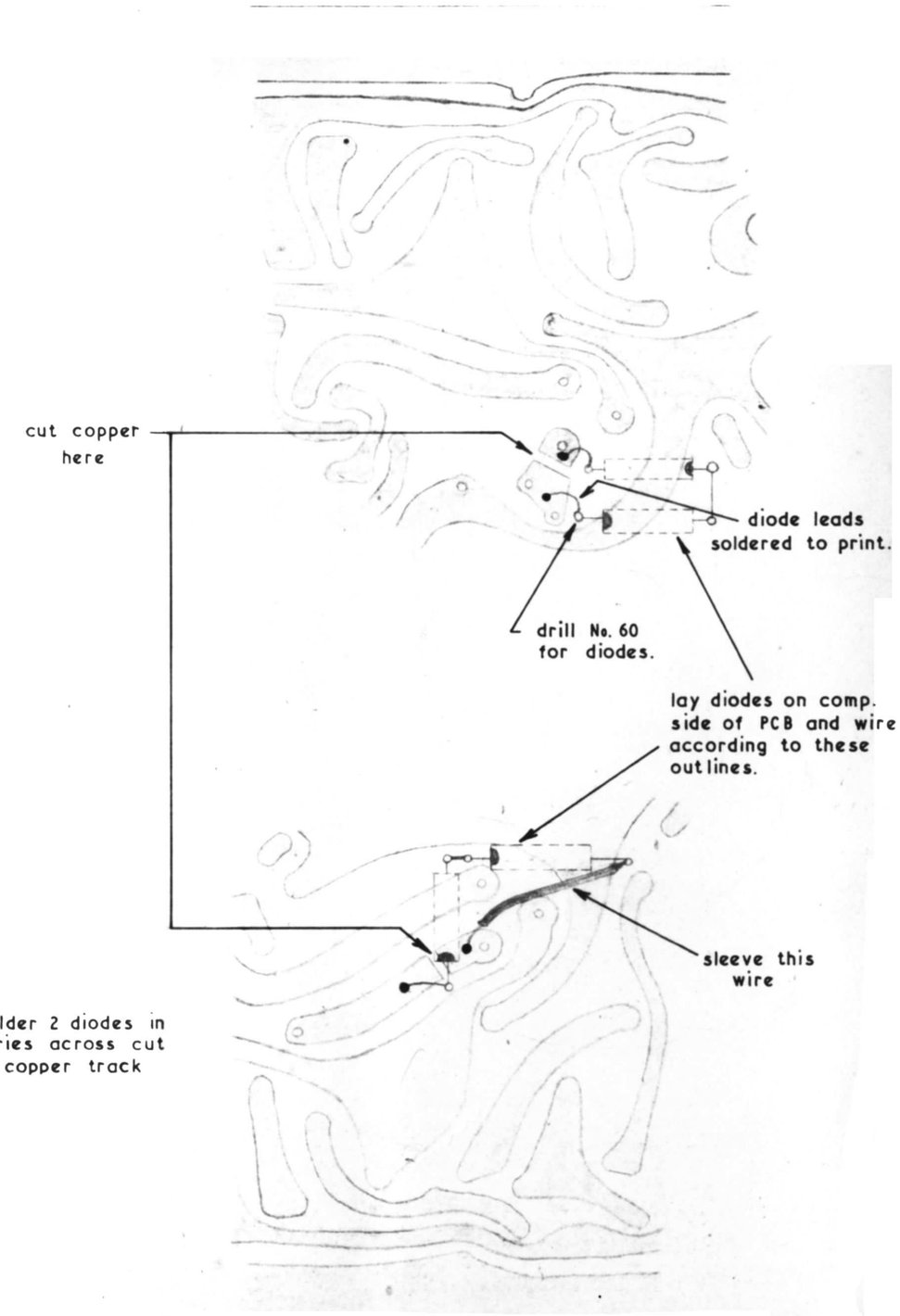
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AMI 570 AND AMI 558 BLOCK SCHEMATIC



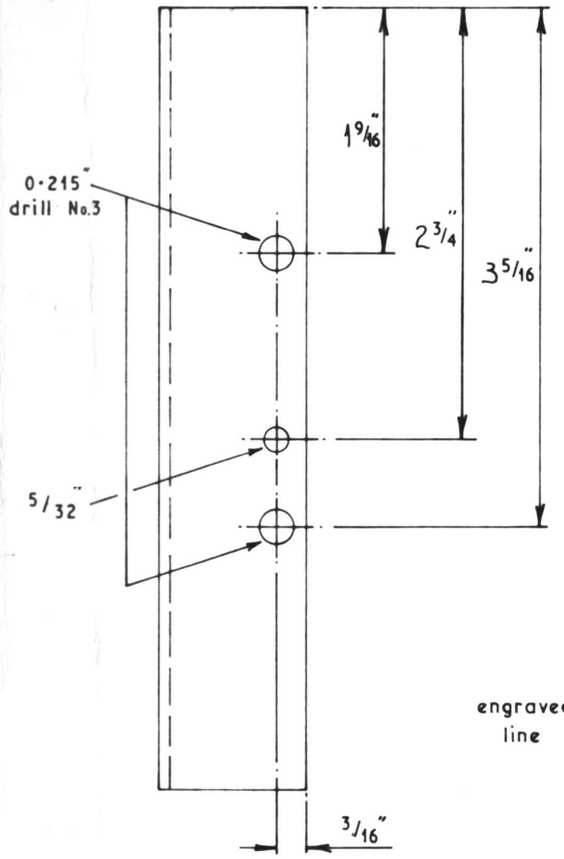
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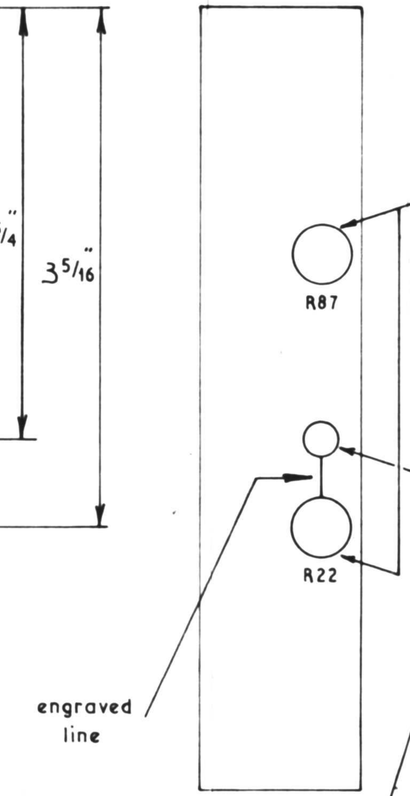
MODIFICATIONS TO PRINTED WIRING

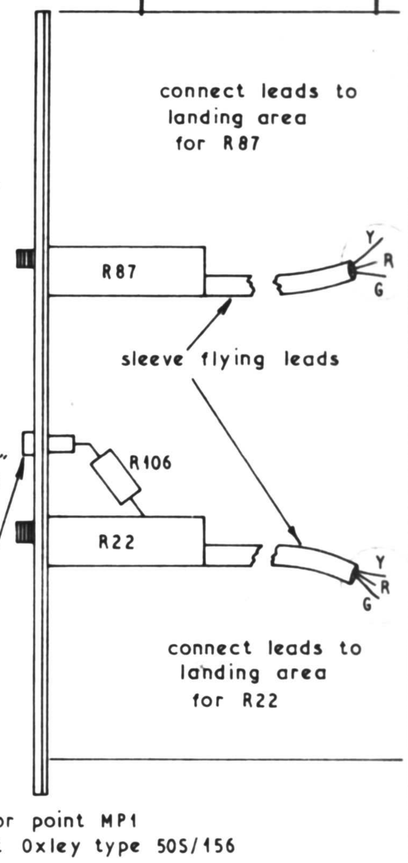


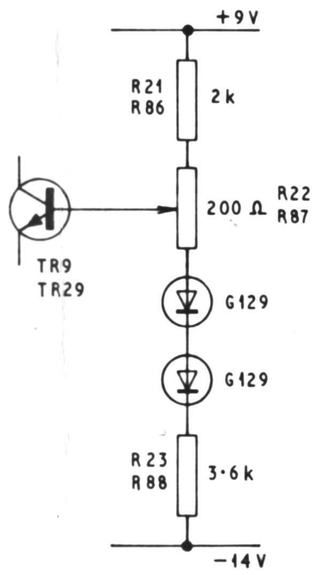
Solder 2 diodes in series across cut in copper track

FRONT PANEL DRILLING DETAILS









Changes :- (CF 10784 seq. No. 4)

R21 and R86 = 2k N6
R22 " R87 = 200 Ω Morganite type 80F panel mounting potentiometer
R23 " R88 = 3·6k N6

Add :-

R106 = 1k N6 between junction of R35 – C13 and monitor point MP1

D22, D23, D24, D25 Texas type G129

In order to improve the thermal stability of the clamp reference circuit add diodes as shown to both signal and reference paths

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DS/A3

IMPROVEMENTS TO BURST ERROR AMP. AM1/558 (DD CF 10784 SEQ No 4)

DRN		DESIGNS DEPARTMENT
TCD	K.T.	DSK 13676 A3
CKD		
APPD		