

## SHUNT CLAMP AMPLIFIER AM18/508

**Introduction**

The AM18/508 is part of a stabilising amplifier<sup>1</sup> and contains the video signal circuit. It also supplies power to associated units<sup>1</sup>. It accepts a 1-volt p-p video signal on 405, 525 or 625 lines-standards and a black-level error-correction signal from an associated unit<sup>1</sup>. It has an insertion loss of 3 dB.

The unit is constructed on a CH1/12B chassis with index-peg positions 3 and 4.

**General Specification**

<i>Signal Input</i> (composite video)	1 V p-p
<i>Signal Output</i>	-3 dB relative to input
<i>Input and Output Impedances to Video Signals</i>	75 ohms $\pm 5\%$
<i>D.C. Outputs</i>	
+12 V (A) ripple	35 mA less than 2mV p-p
+12 V (B) ripple	120 mA less than 80 mV p-p
+4 V ripple	5 mA less than 1mV p-p
-4 V ripple	15 mA less than 70 mV p-p
-10 V ripple	66 mA less than 150 mV p-p
<i>Maximum Ambient Temperature</i>	40°C
<i>Weight</i>	5 lb

**Circuit Description**

The circuit is given in Fig. 1. The main video signal circuit is from input terminal 14 to output terminal 13 via two 13-ohm resistors R16 and R17. These resistors form the series arms of a 75-ohm T network and the clamp forms the shunt arm. This introduces an insertion loss of 3 dB but prevents a mismatch at the point of connection.

From the junction of R16 and R17 the signal is taken to a compound emitter follower stage TR6/TR7 and to the clamp in-out switch. The emitter follower feeds the signal to an associated clamp-pulse generator<sup>1</sup> via terminal 5. The clamp switch, when in the *In* position, feeds the signal to an associated unit<sup>1</sup> which extracts a signal proportional to any deviation from zero volts of the back-porch level. This error correction signal is inverted and fed back to terminal 6 and thence to TR8 via the zener diode MR11. The smoothing circuit R28/C9 removes unwanted h.f. components in the correction signal. The zener diode shifts the standing d.c. level of the correction signal negatively by about 9 volts to provide the correct working conditions for TR8 and therefore for the common base amplifier TR9. The collector of TR9 is required to be at approximately earth potential when not being driven. The source impedance for common-base stage TR9 is about 35 ohms and, because the collector load is nominally of the same order, the gain of the stage is unity.

The inverted correction signal is mixed with the video signal and error signal at the junction of R16 and R17; the error signal is thus cancelled.

The impedance seen by the video signal is approximately 200 ohms in either position of the clamp switch. L1 and R36 offset the effect of stray capacitance.

The power supply circuits are conventional and include the necessary feeds for associated circuits<sup>1</sup>.

**Maintenance**

Routine maintenance is not required but the performance of the power supply circuits should be checked occasionally. Reference should also be made to the maintenance instructions for the parent unit<sup>1</sup>.

**References**

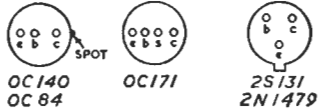
1. Stabilising Amplifier AM18/509.
2. Designs Department Technical Memorandum No.6.39(62).

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See overleaf for Fig. 1.

THE DC AND RIPPLE VOLTAGES SHOWN ARE TYPICAL FOR A FULLY LOADED UNIT FED AT 240 V AC; THEY ARE WITH RESPECT TO EARTH (MEASURED ON AN AVO 8) AND PEAK-TO-PEAK (ON AN OSCILLOSCOPE) RESPECTIVELY. THE WAVEFORMS ARE THOSE OBTAINED ON A HIGH IMPEDANCE OSCILLOSCOPE WITH A 40S-LINE PULSE AND BAR INPUT AND THE SWITCH 5A CLOSED.

TRANSISTOR TERMINATIONS VIEW ON LEADS



From DB 9513  
Parts list DA9514

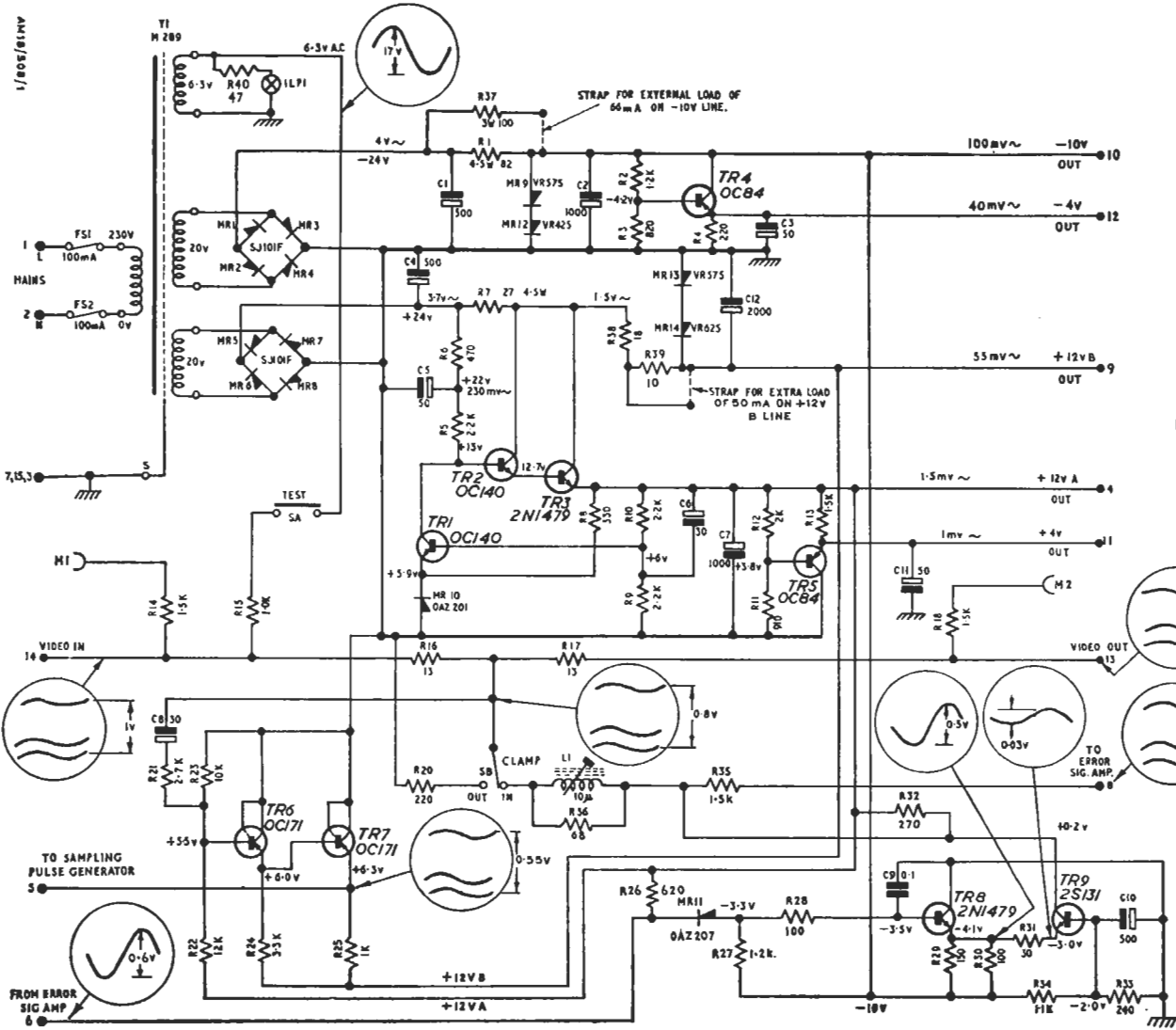


Fig 1 Stabilising Amplifier AM18/508: Circuit