

BLANKING MIXER MX1/504

Introduction

The MX1/504 forms part of a waveform-suppression unit¹ which is used in the automatic gain control systems of vidicon telecine machines^{2,3}. The MX1/504 accepts a composite or non-composite video signal together with feeds of mixed-sync and mixed-blanking pulses. It provides, in conjunction with associated units^{3,4,5}, a composite or non-composite video output signal in which a border is blanked out round the picture. Provision is made for the use of externally-generated blanking pulses if these are required.

Power supplies at -24 volts and -12 volts are required.

Circuit Description

The circuit diagram is given in Fig. 1. Mixed-sync pulses are applied via emitter-follower TR8 to the Sync Switch Unit UN9/526 and also to the clipper-inverter stage TR9. From the clipper, the inverted sync pulses are fed via emitter follower TR10 to three plug-in blanking generators and they are fed also via an integrating circuit to transistor TR11 which functions as a field pulse separator. Transistor TR11 is normally cut off by the standing bias applied to its emitter but, during the broad-pulse period, the charge on C13 builds up and the transistor is driven into conduction. Thus a negative-going pulse which corresponds to the broad pulses in the applied sync waveform is developed at the collector of TR11. This pulse is then routed to the field-pulse inputs on the three plug-in blanking generator boards.

The video input signal is fed to an amplifier

comprising transistors TR1 and TR2 which has a gain of about 3; preset resistor RV1 acts as a gain control and is adjusted to make the gain of the video signal from the input of the unit to the output of the unit 0 dB. The output of the amplifier stage is clamped at blanking level by the action of the UN9/526 unit and is then applied via the compound emitter-follower stage TR3, TR4 to the gating transistor TR5.

Transistor TR5 is switched on when a positive-going pulse is applied to its base; in this condition the transistor acts as a closed switch and any video information present is removed from the signal. Diode D1 ensures that only signals which are positive-going with respect to blanking level are applied to the gating stage, therefore sync information is not affected by the action of the gate. The blanking pulses used are normally derived from the associated plug-in blanking generators; alternatively, externally-generated blanking pulses can be used.

The gated video signal present at R14 is fed to the output of the unit via emitter-followers TR6 and TR7. The output impedance is low, but it is not intended to feed into a 75-ohm load because the value of C8 is not high enough to ensure good low-frequency response when the unit is so loaded.

Maintenance

In the event of a fault, remove the suspect unit and replace it with a correctly operating one; service the faulty unit on the bench using suitable power supplies.

TABLE 1

<i>Transistor</i>	<i>Emitter</i>	<i>Base</i>	<i>Collector</i>
TR1	16.0	15.2	9.5
TR2	15.8	15.1	6.2
TR3	*	*	0
TR4	6.0	*	18.4
TR5	6.1	*	*
TR6	6.8	6.0	0
TR7	19.1	18.5	0
TR8	4.0	4.1	12.0
TR9	0	*	10.8
TR10	11.2	10.8	12.0
TR11	6.2	*	6.2
Junction R17/R19	6.1	—	—

Voltages are measured with an Avometer Model 8 on either the 10-volt or the 25-volt range with an input of 2-volt mixed syncs but without a video input. All voltages are negative with respect to earth.

Do not monitor points marked with an asterisk except with a high-impedance instrument such as an oscilloscope probe.

Alignment

See parent unit¹.

References to Typical Associated Equipment

1. Waveform Suppression Unit UN1/556
2. 16 mm. Colour Telecine Equipment EP6/505
3. Pre-field Pulse Generator GE2/530
4. Post-field Pulse Generator GE2/531
5. Line Blanking Generator GE2/532

TES 4/69

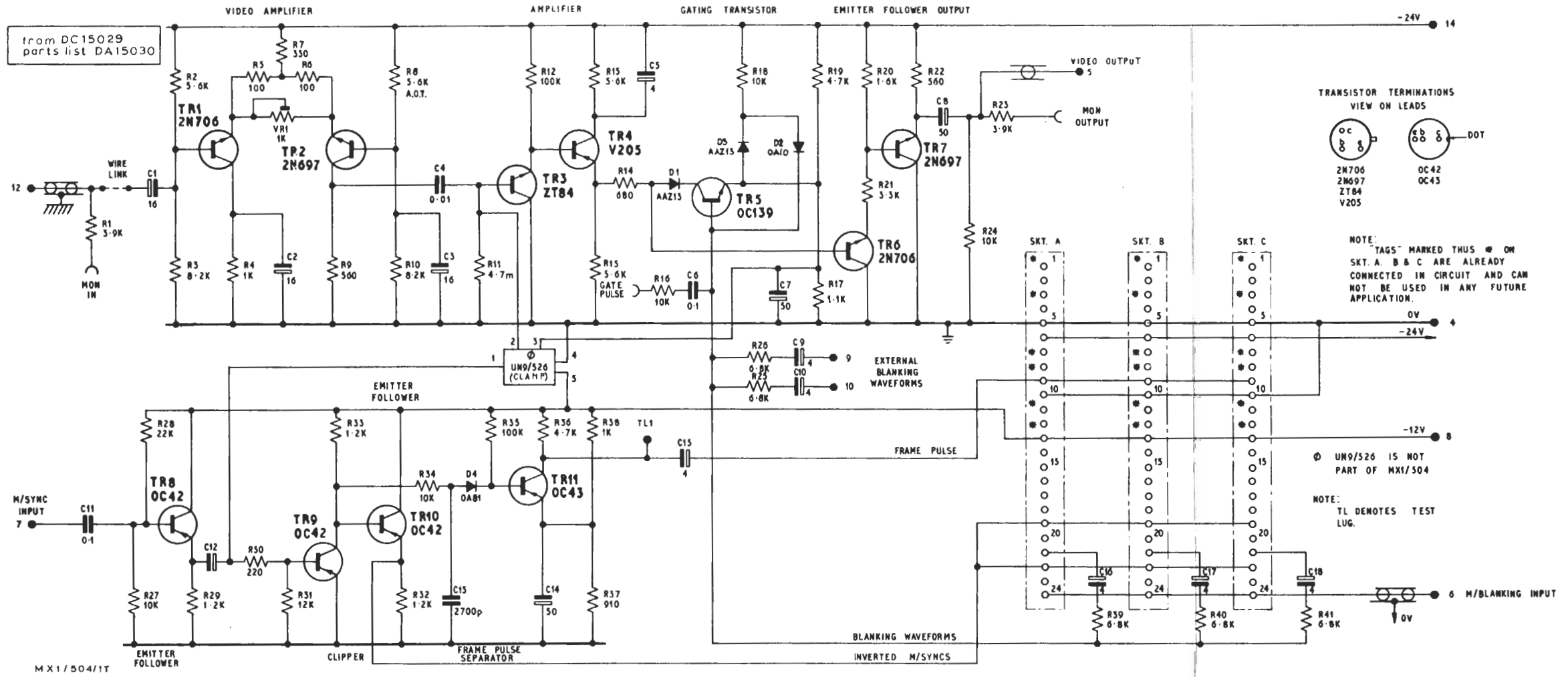


Fig.1. Circuit of the Blanking Mixer MXI/504