

COMPRESSOR UNIT UN1/24

This unit forms part of the constant volume speech amplifier AM1/6 and effects the automatic balancing of the volumes of two speakers as described in the Instruction on the AM1/6. The UN1/24 unit acts as a variable attenuator in parallel with the speech path and controlled by currents derived from that path. The unit is on a chassis CH1/18C with index peg positions 1 and 9.

Fig. 1 shows the circuit of the UN1/24, the input terminals (5, 6) of which in the AM1/6 are fed from the line bridging unit UN1/23. Speech entering the compressor unit via transformer T1 passes through resistors R1-R4 with the diode bridge MR1-MR4 in parallel. The impedance of this bridge is high if the current supply to it is very small or zero. The current to the bridge MR1-MR4 is supplied partly from the rectifier bridge MR9-MR12 and partly, as a 'preset' amount, depending on the setting of the switch S, from the 24-volt power supply.

The speech signal passes via transformer T2 to tapping points A and B, across which is connected a transistor amplifier of high input impedance. The gain of this amplifier is stabilised by series feedback from the uncoupled emitter resistor R16 in the circuit of TR1 and by overall feedback from the low impedance output of the emitter-follower TR3 through R17. The audio signal at the amplifier output is fed to transformers T5 and T6 in parallel. T5 passes the signal on to the rectifier bridge MR9-MR12. The d.c. signal output from MR9-MR12 is used to control the

resistance of the diodes forming the bridge MR1-MR4 across the speech path. Thus the greater the speech volume incoming, the greater will be the attenuation introduced, but compression also takes place.

The compression of this one bridge, however, is not enough and a further diode bridge MR5-MR8 is therefore inserted in the speech path between transformers T3 and T4. This second bridge is supplied with controlling signals from the amplifier via transformer T6 and the rectifier bridge MR13-MR16.

These two compression circuits keep the speech volume at the output of transformer T4 constant to within 2 dB for a 40-dB volume range across the input terminals 5 and 6.

The compression time-constants have been carefully chosen as a result of subjective tests. The charge time is controlled by the values of the components C1, R5 and C2, R8, while the discharge time depends on C1 and the resistance of the diode bridge MR1-MR4 and on C2 and the resistance of the diode bridge MR5-MR8. The capacitance and resistance values are such that high-level signals following low-level signals are attenuated to a steady level in a few milliseconds, while low-level signals following high-level signals reach a steady level only after about two seconds.

The range switch S sets the appropriate bias on the bridge MR1-MR4 so that the attenuation provided by the bridge cannot be less than a selected value.

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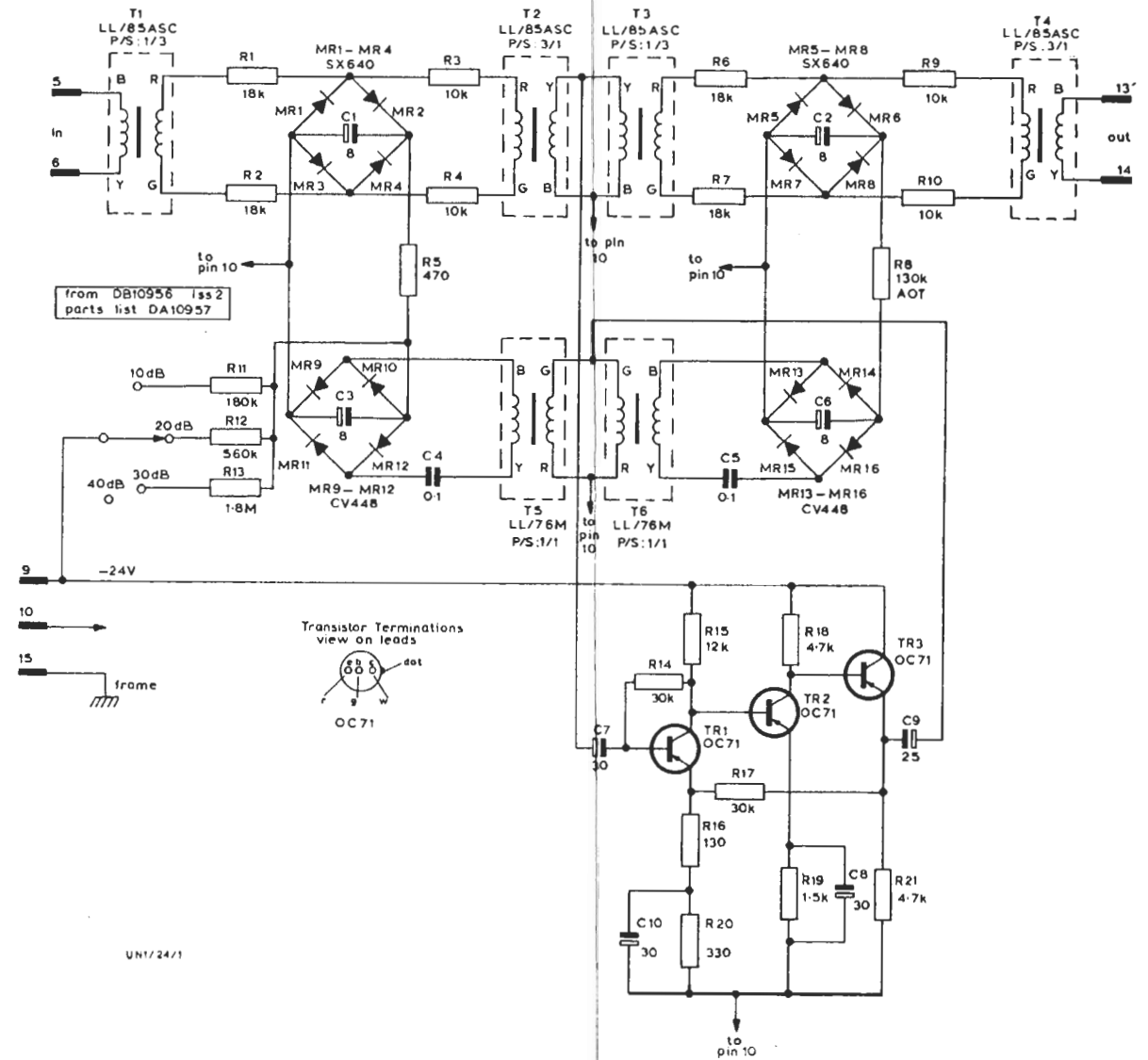


Fig. 1. Circuit of UN1/24