Transistor Miniature Tape Recorder

THE STUZZI MAGNETTE

SEVERAL electronic and mechanical features of interest are to be found in this Austrian tape recorder, which is being imported into this country. Taking the electronics first, a transformerless single-ended, push-pull output stage can give up to 350mW in the 32-Ω, 4-in internal loudspeaker; two OC308 transistors being used. When recording, these same two transistors provide the 40kc/s bias and erase supplies through a transformer feeding the record/replay head and the low-loss ferrite erase head. The bias is also rectified to produce the 60-V h.t. supply required for the DM71 level indicator.

The output varies by less than ±3dB from 80 to 9,000 or 4,000c/s at the alternative tape speeds of $3\frac{3}{4}$ or $1\frac{7}{8}$in/sec respectively. The good contact between the tape and the record/replay head implied by this high frequency response is obtained without the use of a pressure pad.

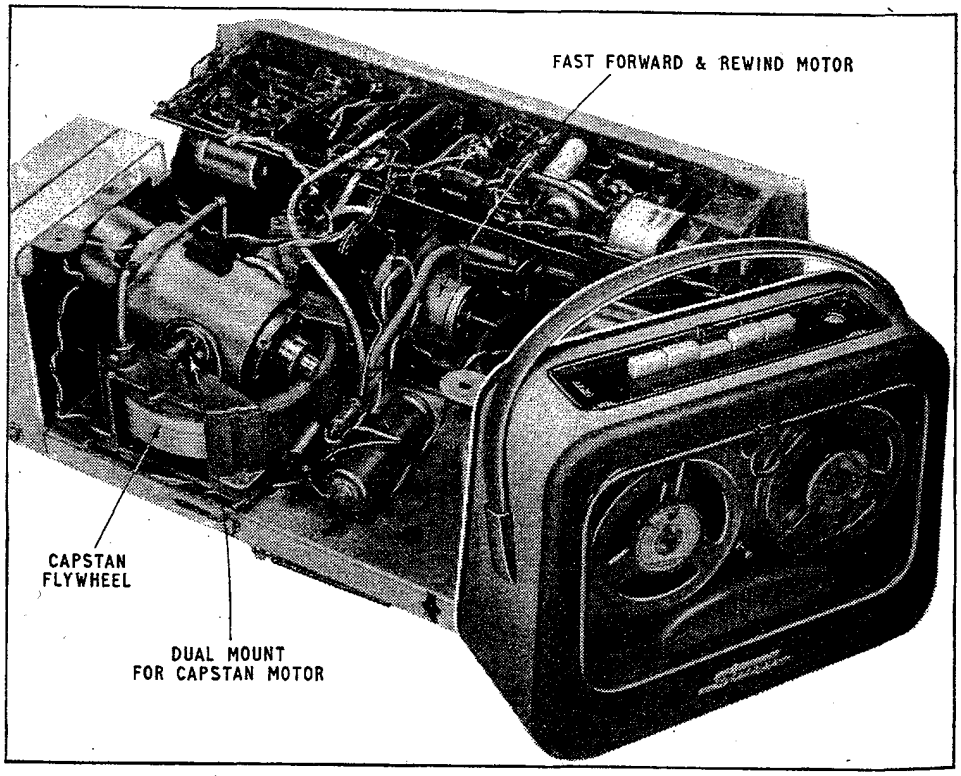
The capstan motor is pivoted by two trunnions located in either of two pairs of slots in the supporting base. The motor is shifted from one pair to the other by linkages attached to the speed change control. In this way, either of the two edges of the stepped diameter end of the rotating motor shaft are made to bear on the capstan flywheel rim. The capstan also drives the take-up reel by means of a spring belt which slips at the small diameter capstan drive shaft, thus giving the required tape tension. A revolution counter is driven from the supply reel.

The other end of the capstan motor shaft drives a contact switch centrifugal speed regulator. This intermittently joins the base and collector of an OC302 transistor, and thus shorts out a 100Ω resistor connected between the collector and emitter and in series with the 9V supply to the motor. In this way, the average voltage on the motor is kept at the required level of 5V and the speed remains constant to within 2% as the battery supply falls from 9 to 5V. The contact current is very low and long contact life is thus ensured.

Fast forward and rewind of 400ft of tape (up to 4-in diameter reels can be used) takes about two minutes using a separate motor. This is fed from the same 9V supply as the capstan motor. Two additional $4\frac{1}{2}$V supplies in series are used for the amplifier and oscillator. Normal flashlamp batteries are suitable for all the supplies. Their life will generally be about 30 hours or more, so that the running costs are about a penny an hour or less.

An indication of when the amplifier and oscillator battery supply is running down is provided by the DM71 level indicator which will cease to glow when its h.t. supply becomes too low. An electromechanical indicator shows when the motor battery supply needs replacing. This consists of four white vanes (shaped like a cross) which rotate to indicate the current through the capstan motor. When this current is held correctly by the centrifugal regulator, these vanes show in a similarly cross-shaped viewing hole. If the battery voltage falls so far that the regulator is no longer able to hold the motor current to its correct value, these vanes will at first vibrate, and later rotate away from the viewing hole.

The dimensions of this recorder are only 11 × 8 × $4\frac{1}{2}$-in and its weight is 7 lb (with batteries). It is imported into this country by Recording Devices, Ltd., 95, Villiers Road, London, N.W.2, and costs 69 guineas.



Interior of "Magnette" showing mechanical tape drive arrangements and (inset) the complete recorder.