



Duplicating equipment at Magnetic Tape Duplicators, Hollywood. Ampex duplicating equipment produces copies of master tapes at high speed with as many as ten copies produced with each run of the master.

in series with the reel motor (or clutch) and thus the torque of the turntable. Measurement is made with a spring-type scale and adjusted to the manufacturer's specifications.

Braking Adjustment

Our brakes control our stopping function, and must be correctly adjusted if we are to stop tape motion without throwing loops (all tape tension imparted by the turntables is lost the moment we press the stop button). So we must always have a greater braking force acting on the turntable which is supplying the tape than on the turntable reeling in the tape.

Mechanical adjustments, where we control braking forces, are provided for each turntable. In some cases we must adjust for each direction of rotation of the reel; in others, we will adjust only for one direction of rotation and the other direction will be automatically acceptable.

Demagnetization

If any of the components in our tape threading path become permanently magnetized, we might partially erase any high frequencies recorded on the tape. If magnetization occurs at our magnetic heads we can at least expect an increase in noise level. Some means of demagnetizing these components must therefore be available.

Demagnetization is usually achieved through a small, hand type, device that is readily available on the open market or from tape equipment manufacturers. It is easily operated and very effective when used correctly.

Noise Balance

One of our greatest potential sources of noise is in

our bias and erase oscillator. If there is any asymmetry from this circuit it will show up as a d-c component — capable of permanently magnetizing our record and erase heads and causing distortion and noise in our recorded signal.

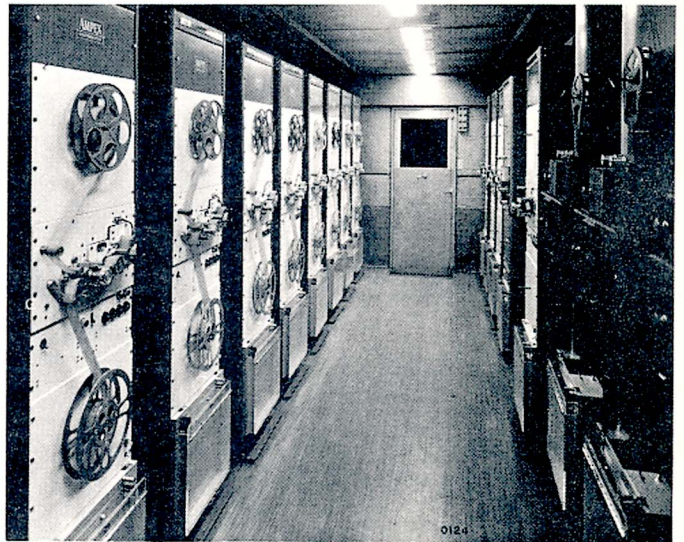
When we use a push-pull oscillator we can balance out any asymmetry by using a variable cathode resistor common to each tube in the circuit. This resistor is adjusted for a minimum noise as read at the output of the equipment.

Cleaning

It does little good to buy professional quality equipment if we allow accumulations of matter to build up on the tape transport. One of the easiest, one of the most important, and probably one of the most neglected maintenance procedures is the cleaning of the transport.

The major source of foreign material on the transport is the magnetic tape. Oxide and lubricant from the tape will gradually accumulate on the components in the tape threading path, and if it is not removed our equipment will not operate satisfactorily — even though everything else on the recorder is in perfect condition. For example, if the accumulation is on our precisely machined capstan (or the capstan idler) we will have excessive flutter. If it is on a tape guiding component it is apt to cause a vibration in the tape — similar to the vibration that occurs when we pluck a violin string — and again, we will have excessive flutter. If it accumulates on the heads, the tape will not maintain good contact, and our recorded level and/or frequency response will suffer.

So we must clean the transport on a regularly scheduled basis, with each component in the tape threading path receiving attention. *But we must be*



Magnetic film transports are used extensively in the motion picture industry for dubbing master sound tracks. Here is the Ampex 35-mil film transport installation at Glen Glenn Sound Studios, Hollywood.