

TALK

SOUND

FROM THE MAKERS OF "SCOTCH" BRAND MAGNETIC TAPE

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Storage of Master Tapes to Minimize Print

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Magnetic printing—the transfer of a recorded signal from a layer of magnetic tape in a roll to its adjacent layers—is seldom a difficulty to the home recordist. To the professional tape duplicator it can be a bothersome problem. On home recording equipment, print is usually lost in the noise level of the system. On professional equipment, however, print becomes more noticeable because of the greater dynamic range of the system.

This bulletin will explain how the tape duplicator can minimize magnetic printing by storing master tapes on the take-up reel (i.e., tail-end out), and rewinding just before using.

Print

Since the amount of print received by a given section of tape depends (among other things) upon the separation of this section from the

section carrying the printing signal, the next *outer* layer of tape from the printing signal in a normal oxide-in wind will receive more print than the next *inner* layer. This is true because the printing field, to produce relatively significant print, must reach the *top* surface of the oxide coating of the section undergoing print. Thus, to print the next outer layer of tape, the printing signal must pass through the thickness of the base material only. But to print the next inner layer of tape, the printing signal must pass through both the thickness of the base and the additional thickness of a layer of oxide.

This can readily be seen by referring to the illustrations, whose elements have been dimensionally distorted for clarity. Figure 1 shows recording direction. Figure 2 shows tape stored on the take-up reel, with section C undergoing maximum print. On playback, section C goes past the playback head *after* the printing signal and is heard as *post-print*. Figure 3 shows tape rewound to and stored on the stock reel, with section A receiving maximum print. On playback, section A precedes the printing signal past the head and appears as *pre-print*.

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The method of storage illustrated in Figure 2 is recommended for master tapes because it results, upon playback, in the stronger of the two prints appearing as post-print, and the weaker as pre-print. Post-print is less troublesome than pre-print because it is likely to be masked by the original signal. Pre-print, on the other hand, may be quite noticeable if it is strong, and if it is preceded by a quiet stretch of tape, as it frequently is.

There are further reasons for and benefits of this method of storage:

Removal

The printed signal is transient; its level drops rapidly upon removal from the printing field. Measured a few minutes after removal from intimate contact with the printing signal, the printed signal will show a drop of 6 db or more from the level measured seconds after removal. This is another reason for suggesting rewinding just before playing: the printed signal is reduced and there is usually not sufficient time before playback for a new signal of bothersome strength to be printed.

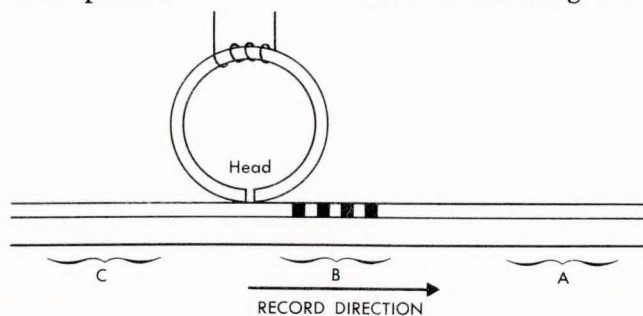


Figure 1

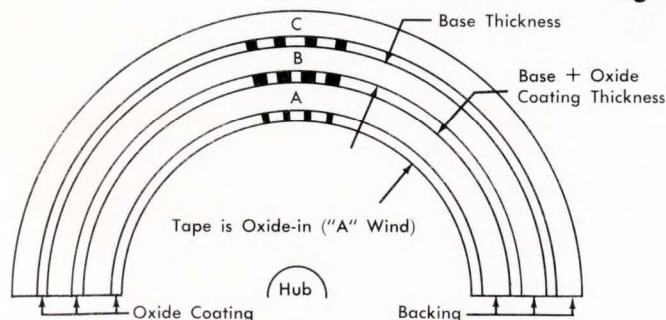


Figure 2

Tape stored on take-up reel. Section C receives most signal transfer, which appears as post-print on playback. This method of storage is recommended for master tapes.

Splices

A master tape is likely to have one or more splices. Storing the tape tail-end out necessitates rewinding before using, and this rewinding should release any sticking from splices that might be present.

Physical Distortion

In general, we feel that least physical distortion results if the tape is prepared for storage by winding it evenly with relatively low tension so as to produce a rather soft, stable roll. These conditions can best be met if the roll is last wound at playing speed on the take-up reel of a professional machine properly adjusted for take-up tension. High speed winds are generally soft enough as a result of entrapped air, but an even wind is usually sacrificed in the process. Resultant "weaving" may lead to serious physical distortion if the reel is subjected to adverse storage and handling conditions. This is especially true if the tape has a cellulose acetate base (many master tapes do). Cellulose acetate is more subject to physical damage than polyester and therefore requires more care in handling and storage.

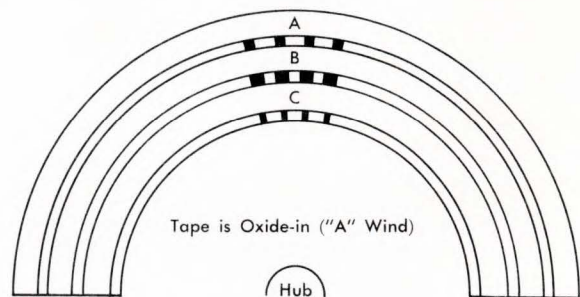


Figure 3

Tape rewound to and stored on stock reel. Section A receives most signal transfer, which appears as pre-print on playback.