

TALK

VIDEO

FROM THE MAKERS OF "SCOTCH" BRAND MAGNETIC TAPE

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Factors Affecting Dropout Performance In "Scotch" Brand Video Tape No. 179

While numerous tape factors enter into the satisfactory application of magnetic recording to standard television video signals, dropout performance and signal-to-noise ratio are, perhaps, the main points of concern.

Although true dropouts relate to basic imperfections in a given roll of tape, their apparent rate of occurrence and intensity in the reproduced scene is affected rather markedly by other factors. Some of these are as follows:

- 1 Nature of picture material being recorded.
- 2 Head-to-tape contact pressure due to penetration.
- 3 Total limiting gain in the reproduction system.*
- 4 Transient response of the reproduction system.*

**These will be treated in later bulletins*

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Effect of Picture Composition on Dropouts

Dropout streaks in a reproduced picture may be either white or dark, depending on the exact transient nature of the video signal as well as other instantaneous machine factors. Furthermore, should defects occur during the period of video clamping or restoration, polarity of the resulting effect becomes rather unpredictable.

In general, dropouts are most annoying when they appear as white streaks on a predominantly dark or low-key background. It should be kept in mind that more defects may be noticed under different conditions of picture composition, even though tape quality and machine constants remain unchanged.

Effect of Head Penetration on Dropouts

Manufacturers' tests indicate that video tapes exhibit less dropouts at the higher head-to-tape contact pressures secured by deeper penetration. Also, and within limits, these higher penetrations have a greater tendency actually to remove certain offending particles in or on the surface of the tape.

Quite definite improvement from a dropout standpoint usually results after a tape has been preconditioned through several passes with deeper head penetrations. Most defects which remain, despite initial head passes, still produce visible

dropouts in a degree which is related to head penetration.

As a matter of operating practice, tapes must be recorded in such a manner that "skew" and "scallop" patterns in the individual head bands remain complementary even when spliced onto stock recorded with heads having different head projections. This requires that the degree of actual penetration of the heads into the tape surface be different for different head projections, which is to say that it should be reduced approximately 1 mil for each change of 1 mil in average head projection. Therefore, as heads gradually wear, for example, from a 3 mil to a 1 mil projection, the penetration into the center of the tape would undergo a reduction of around 2 mils when the female guide is adjusted for minimum skew and scallop.

Inasmuch as less head penetration results in less intimate contact in a potential tape defect area, it is to be expected that higher dropout counts will occur with worn heads, either during the record or the playback mode. Even if a disturbing particle is removed by the heads during the recording pass, the disturbed magnetic pattern remains and reproduces as such during ensuing playbacks. Future recordings, however, may show few or no defects in the particular area.