

American National Standard position, dimensions and reproducing speed of 200-mil magnetic sound record on 16-mm motion-picture film

Approved February 19, 1982
Secretariat: Society of Motion Picture and Television Engineers

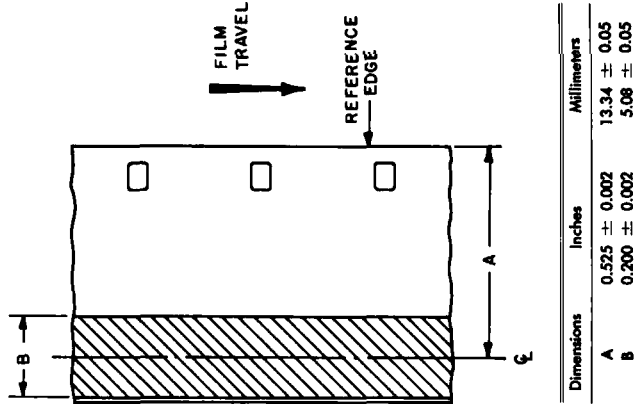
Page 1 of 2 pages

1. Scope

This standard specifies the position, dimensions, and reproducing speed of the nominal 0.200-in (5.08-mm) magnetic sound record on 16-mm motion-picture film.

2. Sound Record

- 2.1 The lateral location and width of the magnetic sound record shall be as specified in the figure and table.
- 2.2 The recording shall be made so that the azimuth of the record is at an angle of $90^\circ \pm 5'$ to the reference edge of the film.
- 2.3 With the direction of travel as shown in the figure, the magnetic coating is on the surface toward the observer.



3. Reproducing Speed

The recording shall be made so that the sound record will reproduce properly at 24 perforations per second (approximately 36 ft [11 m] per minute or 7.2 in [183 mm] per second) which is 24 frames per second.

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Appendix

(The Appendix is not a part of this American National Standard, but is included for information purposes only)

A1. Record Width

The width of the recorded area must be measured with great care as it enters directly into the calculation of flux per unit track width.

When the recording head gap is narrower than the width of the coating or stripe, as is normal for all motion-picture test films, there is a measurement complication involving both the uncertainties in seeing the track and in determining the recording fringing.

If the recording head is available, the track width is best measured indirectly by measuring the gap width and adding to this dimension twice the thickness of the test record magnetic coating. This correction will usually be 0.0003 to 0.0006 in (8 to 15 μm).

If the recording head is unavailable, the recorded record may be made visible by the use of a carbonyl iron suspension. Care should be taken to apply the minimum quantity that makes the recording visible, so that the developed image is not wider than the actual recorded area.

A2. Reproducing Head Gap Width

If precision measurements or calibrations are to be made on magnetic sound records made in accordance with this standard, reproducing head gaps of the same width dimension or wider than the recorded track must be used to prevent edge effects or fringing.

A3. Erase Heads

Erasing head gaps used to erase the records specified in this standard should be substantially wider than the record specified.

A4. Reference Standard

The film base used for the sound records conforming to this standard is usually made in accordance with American National Standard Dimensions for 16-mm Motion-Picture Film Perforated 1R, ANSI PH22.109-1980.

A5. Picture-Sound Synchronization

The film is used for sound records only. Any accompanying picture is on a separate photographic film. When sound records are intended to be used in synchronization with pictorial material found on a separate film, the picture-sound relationship should be in accordance with SMPTE Recommended Practice on Sound and Picture Synchronization on Motion-Picture Film Relative to the Universal Leader for Magnetic and Photographic Tracks, RP 25-1968.

A6. Magnetic Coating

The dimensions of the magnetic coating are not specified, but it is assumed to be wide enough to permit the placement of the sound records in accordance with this standard.

American National Standard position, dimensions and reproducing speed of magnetic sound record on 8-mm type R motion-picture film

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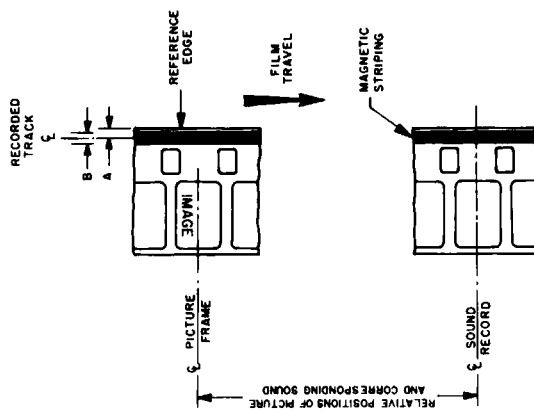
1. Scope

- 1.1 This standard specifies the position, dimensions, and reproducing speed of the magnetic sound record on 8-mm Type R motion-picture film having a nominal 0.030-in (0.76-mm) width magnetic stripe.
- 1.2 This standard also specifies the longitudinal picture-sound displacement on the film.

2. Sound Record

- 2.1 The lateral location and width of the magnetic sound record shall be as specified in the figure and table.
- 2.2 The recording shall be made so that the azimuth of the record is at an angle of $90^\circ \pm 5'$ to the reference edge of the film. (The 90° angle is established from a datum guide or rail 6 pitches in length.)
- 2.3 With the direction of travel as shown in the figure, the magnetic striping shall be on the surface of the film facing toward the projector lamp for direct front projection with conventional optics.

Page 1 of 2 pages



Dimensions	Inches	Millimeters
A	0.015 ± 0.001	0.38 ± 0.03
B*	0.019 min	0.48 min

*See Appendix A2.

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3. Reproducing Speed

The recording shall be made so that the sound record will reproduce properly at 24 perforations per second (approximately 18 ft [5.5 m] per minute or 3.6 in [91 mm] per second). This is equivalent to the projection speed of the picture film of 24 frames per second.

4. Longitudinal Picture-Sound Displacement

The magnetic sound record on the film shall precede the center of the corresponding picture by a distance of 56 frames $\pm 1/2$ frame.

Appendix

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A1. Record Width

The width of the recorded area must be measured with great care as it enters directly into the calculation of flux per unit track width.

When the recording head gap is narrower than the width of the coating or stripe, as is normal for all motion-picture test films, there is a measurement complication involving both the uncertainties in seeing the track and in determining the recording fringing.

If the recording head is available, the track width is best measured indirectly by measuring the gap width and adding to this dimension twice the thickness of the test record's magnetic coating. This correction will usually be 0.0003 to 0.0006 in (8 to 15 μ m).

If the recording head is unavailable, the recorded record may be made visible by the use of a carbonyl iron suspension. Care should be taken to apply the minimum quantity that makes the recording visible, so that the developed image is not wider than the actual recorded area.

A2. Reproducing Head Gap Width

Dimension B applies to records produced in equipment using the same head for recording and reproducing. In

commercially produced prints intended for use on a variety of reproducers, it is recommended that a recording head be used capable of producing a 0.025-in (0.64-mm) minimum width record having the same centerline. A recording head gap of this same minimum width must be used to prevent edge effects or fringing.

A3. Erase Heads

Erasing head gaps used to erase the records specified in this standard should be substantially wider than the record specified.

A4. Reference Standards

Motion-picture prints conforming to this standard are usually made on film made in accordance with American National Standard Dimensions for 16-mm Motion-Picture Film Perforated 8-mm Type R, 2R, ANSI PH22.17-1982; magnetically striped in accordance with American National Standard Specifications for Magnetic Striping of 8-mm Type R (Regular 8) Motion-Picture Film, Perforated 1R-1500, ANSI PH22.88-1976, and projected in accordance with American National Standard Specifications for Projector Usage of 8-mm Type R (Regular 8) Motion-Picture Film Perforated One Edge, ANSI PH22.22-1975 (R1981).