

American National Standard for motion-picture film (8-mm type S) — magnetic audio record — position, dimensions and reproducing speed

Approved May 31, 1988

Sponsor: Society of Motion Picture and Television Engineers

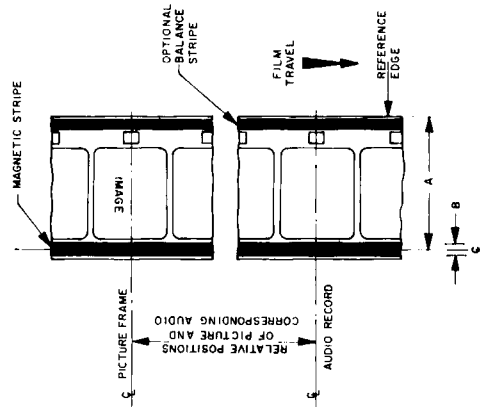
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1. Scope

- 1.1** This standard specifies the position, dimensions, and reproducing speed of the magnetic audio record on 8-mm Type S motion-picture film having a nominal 0.027-in (0.69-mm) width magnetic stripe.
- 1.2** This standard also specifies the longitudinal picture-audio displacement on the film.

2. Referenced American National Standards

- This standard is intended for use in conjunction with the following American National Standards:
- ANSI/SMPTE 149-1988, Motion-Picture Film (8-mm Type S)—Perforated 1R
 - ANSI PH22.155-1982, Motion-Picture Film (8-mm Type S)—Projector Usage
 - ANSI/SMPTE 161-1986, Motion-Picture Film (8-mm Type S)—Magnetic Striping



Dimensions	Inches	Millimeters
A	0.298 ± 0.001	7.57 ± 0.03
B*	0.019 min	0.48 min

*See Appendix A2.

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3. Audio Record

- 3.1** The lateral location and width of the magnetic audio record shall be as specified in the figure and table.
- 3.2** 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.)
- 3.3** 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.

Appendix

(This Appendix is not part of the American National Standard, but is included for information 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'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

4. Reproducing Speed

The recording shall be made so that the audio record will reproduce properly at 24 perforations per second (approximately 20 ft [6.1 m] per minute or 4 in [102 mm] per second). This is equivalent to the projection speed of the picture film of 24 frames per second.

5. Longitudinal Picture-Audio Displacement

The magnetic audio record on the film shall precede the center of the corresponding picture by a distance of 18 frames $\pm 1/2$ frame.

head be used capable of producing a 0.025-inch (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. Secondary Audio Recording Speed

The audio speed recommendation of 24 frames per second (Section 4) is primarily intended for professional application of 8-mm Type S audio motion-picture photography. It is expected that the nonprofessional, in using single-system audio or in using post-processed magnetically striped film, will record his audio at 18 frames per second, as limited by the speed of his original photography or his desire to conserve film stock.

A5. Relevant Standards

Motion-picture prints conforming to this standard are usually made on film made in accordance with ANSI/SMPTE 149-1988, magnetically striped in accordance with ANSI/SMPTE 161-1986, and projected in accordance with ANSI PH22.155-1982.

ANSI/SMPTE 164-1988

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American National Standard for motion-picture film (8-mm type S) — 16-mm film perforated 2R-1667 (1-3) — magnetic striping

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1. Scope

This standard specifies the location and dimensions of recording stripes and balance stripes applied to 16-mm motion-picture film with two rows of 8-mm Type S perforations in positions 1 and 3.

2. Referenced American National Standards

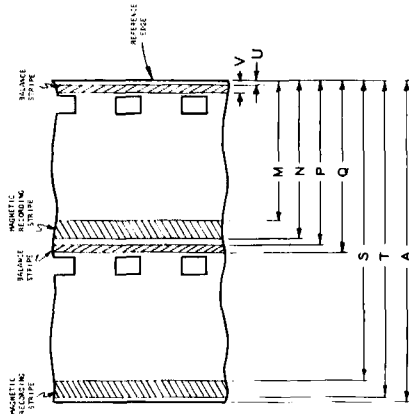
This standard is intended for use in conjunction with the following American National Standards: ANSI/SMPTE 151-1987, Motion-Picture Film (8-mm Type S)—16-mm Film Perforated 8-mm Type S, (1-3)

ANSI/SMPTE 161-1986, Motion-Picture Film (8-mm Type S)—Magnetic Striping

3. Dimensions

3.1 The location and dimensions of the magnetic recording stripes and balance stripes shall be as given in the figure and table.

3.2 The magnetic striping material shall be applied to the surface of the film away from a camera or projector lens; for example, toward the light source of a projector arranged for direct front projection on a reflection-type screen.



Dimensions	Inches	Millimeters
A	0.628 ref	15.95 ref
M*	0.285 ± 0.002	7.24 ± 0.05
N*	0.312 ± 0.002	7.92 ± 0.05
P	0.317 ± 0.003	8.05 ± 0.08
Q	0.329 ± 0.003	8.36 ± 0.08
S*	0.599 ± 0.002	15.21 ± 0.05
T*	0.626 ± 0.002	15.90 ± 0.05
U	0.003 ± 0.003	0.08 ± 0.08
V	0.015 ± 0.003	0.38 ± 0.08

*See Note 3.

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3.3 The stripes designated as "recording" are made of a magnetic material and are intended for the audio record. The stripes adjacent to the perforations are the balance stripes. The balance stripes may be stripes of magnetic or nonmagnetic material of such thickness that the balance and recording stripes project above the surface of the film to substantially the same degree.

4. Film Stock

The film stock used shall be of the low-shrinkage, safety type, cut and perforated in accordance with ANSI/SMPTE 151-1987.

NOTE 1: The width and edge-to-perforation distance of the 8-mm slit strip shall be in accordance with ANSI/SMPTE 151-1987. The location of the magnetic record

and balance stripes shall be in accordance with ANSI/SMPTE 161-1986.

Consequently, it is not possible to take full advantage of the tolerances of both the slit width and the location of the magnetic record and balance stripes.

NOTE 2: Tolerances for the center recording stripe and center balance stripe are specified to permit usage of a single wide stripe or two separate stripes. If two stripes are used, the amount of separation between the stripes should be sufficient to permit slitting within the requisites of the standard without obtaining undesirable feather edges of magnetic material. The separation required is determined by laboratory practice.

NOTE 3: Notwithstanding the tolerance on Dimensions M, N, S, and T, the width of the stripes, Dimensions N minus M and T minus S, shall be 0.0250 in (0.635 mm) minimum.

ANSI/SMPTE 176-1988