

SMPTE STANDARD

SMPTE 164-2002Revision of
ANSI/SMPTE 164-1993

for Motion-Picture Film (8-mm Type S) — Magnetic Audio Record — Position, Dimensions and Reproducing Speed



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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 Audio record

2.1 The lateral location and width of the magnetic audio record shall be as specified in figure 1 and table 1.

2.2 The recording shall be made so that the azimuth of the record is at an angle of 90 ± 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 figure 1, the magnetic striping shall be on the surface of the film facing toward the projector lamp for direct front projection with conventional optics.

3 Recording 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.

4 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 $\pm \frac{1}{2}$ frame.

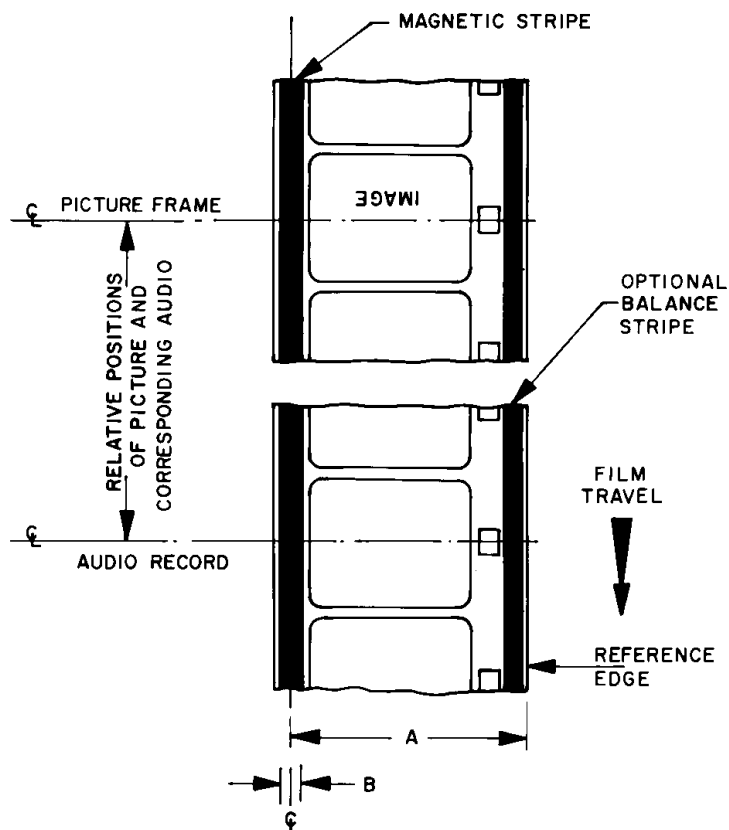


Figure 1 – Magnetic audio record

Table 1 – Specifications

Dimensions	Inches	Millimeters
A	0.298 ± 0.001	7.57 ± 0.03
B*	0.019 min	0.48 min
*See annex A.2.		

Annex A (informative)

Additional data

A.1 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 in to 0.0006 in (8 μm 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.

A.2 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.

A.3 Erase heads

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

A.4 Secondary audio recording speed

The audio speed recommendation of 24 frames per second (clause 3) 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.

Annex B (informative)

Bibliography

ANSI/SMPTE 154-1998, Motion-Picture Film (8-mm Type S) — Projectable Image Area and Projector Usage

SMPTE 149-1999, Motion-Picture Film (8-mm Type S) — Perforated 1R

SMPTE 161-1998, Motion-Picture Film (8-mm Type S) — Magnetic Striping