

# for Motion-Picture Film (70-mm) — Six Magnetic Records on Release Prints — Position, Dimensions, Reproducing Speed and Identity



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## 1 Scope

1.1 This standard specifies the position, dimensions, reproducing speed, identity, and use of the six magnetic audio records on 70-mm motion-picture release prints.

1.2 The standard also specifies the longitudinal picture-audio displacement on the film.

## 2 Audio records

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

2.1.1 The records shall be referred to by number, as shown in figure 1, with record No. 1 nearest the reference edge. The left and right channel apply to a listener facing the screen. Record No. 1 shall be used for the left loudspeaker channel. Record No. 2 shall be used for the left center loudspeaker channel. Record No. 3 shall be used for the center loudspeaker channel. Record No. 4 shall be used for the right center loudspeaker channel. Record No. 5 shall be used for the right loudspeaker channel. Record No. 6 shall be used for the surround and auditorium loudspeakers.

2.1.2 Audio records No. 4 and 5 shall be adjacent to the frameline identifier.

2.2 The recordings shall be made so that the azimuth of the record is at an angle of  $90^\circ \pm 2'$  to the reference edge of the film.

2.3 With the direction of film travel as shown in figure 1, the magnetic striping shall be on the surface of the film facing the projector lens.

2.4 The audio records shall be recorded in such a manner that they can be reproduced properly by reproducing heads whose gaps are positioned in a straight line within the film plane and conforming in orientation to 2.2.

## 3 Reproducing speed

The recording shall be made so that the audio records will reproduce properly at 120 perforations per second (approximately 112 ft [34 m] per minute or 22.4 in [569 mm] per second) which is 24 frames (5 perforations each) per second.

## 4 Picture-audio displacement

The magnetic audio records on the film shall lag behind the center of the corresponding picture by a distance of 23 frames  $\pm 1/2$  frame (see annex A).

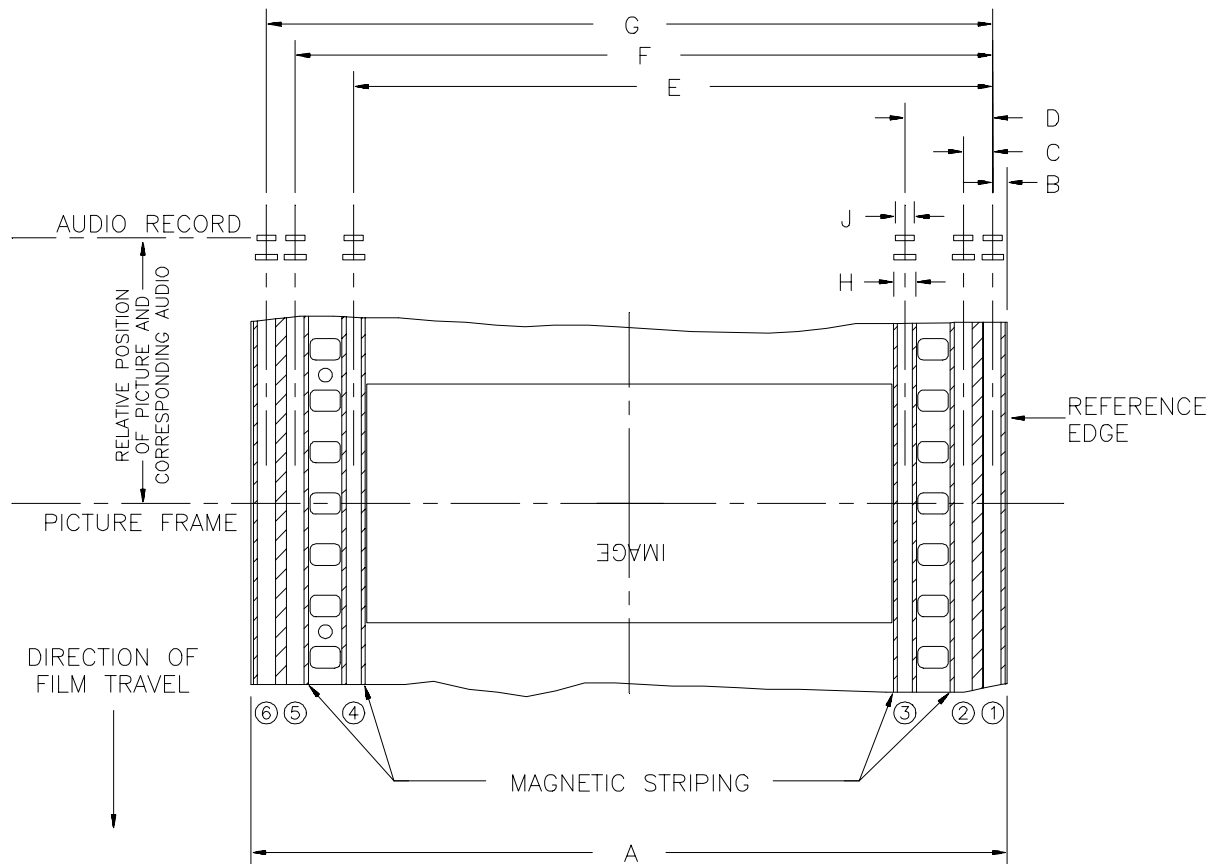


Figure 1 – Record location and width

Table 1 – Record dimensions

Dimensions	Inches	Millimeters
A	2.754 ref *	69.95 ref
B	$0.050 \pm 0.002$	$1.27 \pm 0.05$
C	$0.115 \pm 0.002$	$2.92 \pm 0.05$
D	$0.323 \pm 0.002$	$8.20 \pm 0.05$
E	$2.331 \pm 0.002$	$59.21 \pm 0.05$
F	$2.539 \pm 0.002$	$64.49 \pm 0.05$
G	$2.654 \pm 0.002$	$67.41 \pm 0.05$
H (recording gap width)	$0.075 \pm 0.002$	$1.90 \pm 0.05$
J (reproducing gap width)	$0.070 \pm 0.002$	$1.78 \pm 0.05$
*See note 1.		

## NOTES

- 1 Locations and width dimensions of magnetic stripes and recording gaps of magnetic heads are chosen on the assumption that the lateral film shrinkage is within range of 0% to 0.2% at the time of striping and/or recording.
- 2 The locations of reproducing gaps of magnetic heads for projectors are chosen on the assumption that the lateral film shrinkage at the time of presentation is 0.2% greater than at the time of striping. The locations of reproducing gaps of magnetic heads in the equipment used for the production of release prints should be the same as those for the recording heads.

**Annex A** (informative)  
**Projector thread path**

As a working procedure, the accuracy of picture-audio displacement in a projection print is frequently judged by screening in a review room. It is important that the standard thread path in this review room projector be set accurately to the value specified in this standard plus one frame for every 50 ft (15 m) separating the loudspeaker from the observer. Otherwise, nonstandard prints may be produced.

**Annex B** (informative)  
**Bibliography**

SMPTE 119-1999, Motion-Picture Film (70-mm) — Perforated 65-mm, KS-1870

SMPTE 152-2003, Motion-Picture Film (70-mm) — Projectable Image Area

SMPTE 221-2003, Motion-Picture Film (70-mm) — Six-Track Audio Release Prints — Magnetic Striping