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>
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SMPTE 194-2002
Revision of
ANSI/SMPTE 194-1997

SMPTE STANDARD

for Motion-Picture Film (35-mm) — Projector Usage — Release Prints Having Four Perforations per Frame

1 Scope

1.1 This standard specifies the position of the emulsion for 35-mm motion-picture release prints having four perforations per frame and the position of the magnetic striping relative to the projector lens.

1.2 The standard also specifies the rate of projection for systems defined in 1.1 and the relevant standards on location of the picture and audio records.

2 Position of photographic emulsion and magnetic striping

2.1 The photographic emulsion shall be on the side of the film which faces away from the projector lens. The projectable image area is specified in SMPTE 195.

2.2 The magnetic striping shall be on the side of the film which faces the projector lens. Relevant standards on audio records are listed in annex B.

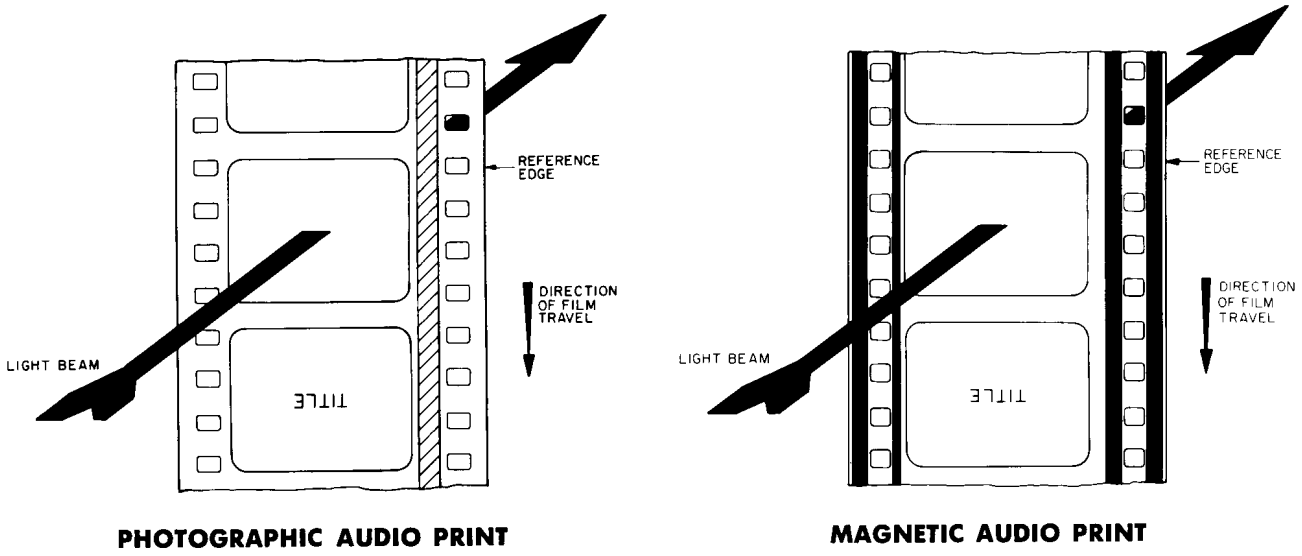

Figure 1 – Photographic and magnetic audio prints

Approved
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3 Projection frame rate

The standard frame rate for motion-picture projection is 24 frames per second. However, it is recognized that nonstandard frame rates are sometimes used for specific applications. For example, 24, 25, or 30 frames per second may be used for motion-pictures intended for television, higher or lower frame rates may be used for special effects and analysis, and nonstandard rates may be used for special motion-picture systems. The use of nonstandard frame rates requires notification and agreement of all parties concerned with the use of the particular film.

4 Framing adjustment

It is customary to provide a vertical framing adjustment movement of at least 0.315 in (8.00 mm) above and below the normal image position, as specified in SMPTE 195.

Annex A (informative)
Positioning of audio records

When the audio records are reproduced, the distance from the audio-scanning point to the center of the projector aperture shall be adjusted to bring the picture and sound into synchronism for the average observer. Since sound travels at a rate of about 1100 ft (335 m) per second (approximately 50 ft [15 m] in 1/24 second), synchronism can be achieved by repositioning the audio record in the projector one frame for every 50 ft from the average observer.

Annex B (informative)
Bibliography

SMPTE 40-2002, Motion-Picture Film (35-mm) — Release Prints — Photographic Audio Records

SMPTE 137-2000, Motion-Picture Film (35-mm) — Release Prints — Four Magnetic Audio Records

SMPTE 195-2000, Motion-Picture Film (35-mm) — Motion-Picture Prints — Projectable Image Area