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Reaffirmed 2009

REAFFIRMED 2004

SMPTE 157-1999
Revision of
ANSI/SMPTE 157-1994

SMPTE STANDARD

for Motion-Picture Film (8-mm Type S) — Camera Aperture Image and Usage

1 Scope

1.1 This standard specifies the dimensions of the camera aperture image and its relative position to the reference edge and the perforations of 8-mm type S motion-picture film, as specified in ANSI/SMPTE 149.

1.2 This standard also specifies the position of the emulsion and the frame rate for 8-mm type S motion-picture film.

2 Emulsion and film position

2.1 Except for special processes, the emulsion shall be toward the camera lens.

2.2 The perforation used for the film-positioning device shall be two perforations following the perforation adjacent to the image being formed when a positioning device is at the end of its stroke (the minus-2 position). This location coincides with that of the positioning device required for the projected image and thereby improves steadiness through cancellation.

3 Dimensions

3.1 The dimensions shall be as given in figure 1 and table 1 and shall apply to measurements of the aperture image as formed on freshly exposed and processed film.

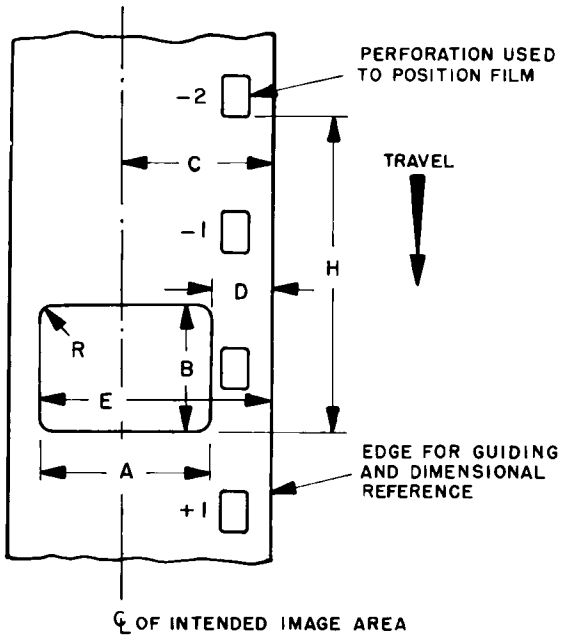
3.2 The angle between the vertical and horizontal edges of the aperture image shall be 90° ± ½° to each other.

4 Frame rate

4.1 The standard frame rate for motion-picture photography 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.

4.2 A frame rate of 18 frames per second shall be used for nonprofessional films using single-system audio or post-processed magnetically-striped film when the film is intended for projection at 18 frames per second.

Approved
April 20, 1999



FILM AS SEEN FROM INSIDE CAMERA LOOKING TOWARD LENS

Figure 1 – Camera aperture image

Table 1 - Specifications

Dimensions	Inches	Millimeters
A	0.228 ref	5.79 ref
B	0.163 min	4.14 min
C	0.170 nom	4.32 nom
D	0.037 min 0.058 max	0.94 min 1.47 max
E	0.282 min	7.16 min
H*	0.393 ± 0.005	9.98 ± 0.13
R	0.005 max	0.13 max

*Dimension H is the distance from the bottom edge of the picture frame to the bottom of the perforation which is two pitches following the perforation adjacent to that picture frame.

Annex A (informative)
Additional data

A.1 If the aperture plate is not in the plane of the emulsion, the physical dimensions of the aperture in the camera will be slightly different from the dimensions given in the figure. The exact amount of this difference will depend upon the f/value and focal length of the camera lenses used and upon the distance between the emulsion and the physical aperture. This separation should be no greater than is necessary to prevent scratching of the film.

A.2 It is the intent of this standard to provide a camera image such that the exposed area will always be larger than the area of the projector aperture. Observance of the dimensions given in the standard meets this objective without causing double exposure of the area between the frames.

A.3 The centerline of the image area is given for convenience in interpreting the standard, facilitating such applications as the optical design of equipment, and assisting in the understanding of suitable mechanical embodiments related to the camera aperture image area. Note that the centerline of the image area is displaced from the centerline of the film by 0.013 in (0.33 mm) nominal.

A.4 The pull-down claw is located at the minus-2 perforation (see figure 1) with respect to the projector or camera aperture. The reason for selecting the minus-2 perforation for positioning is to obtain the positioning perforation as close as possible to the image being photographed, yet not so close as to interfere with the optical system and gate structure.

Annex B (informative)
Bibliography

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