

American National Standard dimensions of projectable image area on 16-mm motion-picture film

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Secretariat: Society of Motion Picture and Television Engineers

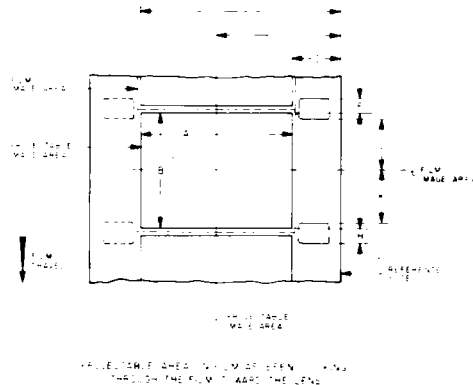
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1. Scope

This standard specifies the maximum dimensions of the film image area intended for projection from a 16-mm motion-picture film, and the placement of this area relative to the perforations and the reference edge of the film.

2. Dimensions

2.1 The dimensions shall be as given in the figure and table.



Dimensions	Inches	Millimeters
A	0.380 ref	9.65 ref
B	0.286 max	7.26 max
C	0.314 ref	7.98 ref
D	0.122 min	3.10 min
E	0.506 max	12.85 max
F = H	within 0.014	within 0.36
J = K	nominally equal	nominally equal

the print (which is of primary importance because the projection print is the most commonly interchanged item). (See Appendix A2.)

3.2 The following standards define image areas for other important phases of motion-picture operations, and are consistent with this standard and with one another under currently acceptable commercial practice:

2.2 The angle between the horizontal edges of the image area and the reference edge of the film shall be $90^\circ \pm 1/2^\circ$.

3. Relationship to Other Standards

3.1 This standard may be used as the basis for establishing picture areas from original photography for final viewing because it presents a description of the picture area on the projection print that is usable for the indicated purposes of

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American National Standard Dimensions of 16-mm Motion-Picture Camera Aperture Image, ANSI PH22.7-1976

American National Standard Location of Printed Areas for 16-mm Picture and Sound Contact Printing, ANSI PH22.48-1976

American National Standard Dimensions for Television Image Area on 16-mm Motion-Picture Film, ANSI PH22.96-1963 (R1975)

NOTE 1: Camera and Printer Apertures. The actual image on the film is significantly larger than the maximum area intended for projection, so that in placement of the images throughout the sequence of films the tolerance is not restrictive of commercial practice. Upper limits have been established through consideration of good practice in avoiding frame overlap, encroachment upon areas reserved for optical sound records, flare from perforation edges, etc. Lower limits are similarly related to the avoidance of image effects at a defined edge, tolerances in film positioning, etc.

NOTE 2: Projector Aperture. Dimensions B, D, and E define the maximum image area on the film that is available for projection. They do not define the opening in the aperture plate of a projector. The size of this opening may differ from Dimensions A and B, for example, because of the physical separation necessary between the aperture plate and the film to avoid scratching the film, the slant of the marginal rays accepted by the projection lens, etc.

NOTE 3: Actual Projected Area. It is recognized that, in many cases, the actual film image area that is projected may be smaller than the projectable maximum and, in some cases, may be nonrectangular (for example, an irregular four-sided figure bound by either

SMPTE Recommended Practice on Specifications for Safe Action and Safe Title Areas Test Pattern for Television Systems, RP 27.3-1972

SMPTE Recommended Practice on Step Optical Reduction Printing of 35-mm Images to 16-mm Prints and Duplicate Negatives, RP 65-1976

SMPTE Recommended Practice on Step Optical Enlargement Printing of 35-mm Images from 16-mm Images, RP 66-1976

straight or curved lines). Such departures may result from equipment considerations, such as slight inconsistencies among lenses, screen sizes, etc.; from geometric limitations such as the screen surface being at an angle other than 90° from the projection axis, or being non-planar, or both; and from aesthetic considerations such as pictorial composition within more restrictive image limits. In the absence of specific instructions to the contrary, it is intended that the actual projected film image area be the largest appropriately-shaped figure that can be inscribed within the specified dimensions.

When the picture outline on the screen is defined by the projector aperture, it is customary to round the corners of the projected film area. A maximum corner radius of 0.020 in (0.51 mm) at the film plane is recommended.

NOTE 4: Film Perforations. Film intended for projection with this image area is normally perforated as specified in American National Standard Dimensions for 16-mm Motion-Picture Film Perforated 1R, ANSI PH22.109-1980; and American National Standard Dimensions for 16-mm Motion-Picture Film Perforated 2R, ANSI PH22.110-1980.

NOTE 5: Print Preparation. Prints conforming to this standard are prepared for use as specified in American National Standard Specifications for Projector Usage of 16-mm Motion-Picture Film, ANSI PH22.10-1980.

Appendix

(The Appendix is not a part of this American National Standard, but is included for information purposes only.)

A1. Centerlines

The centerlines of the image area are 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 projectable image area.

A2. Projectable Image Area

Essentially, the entire image within the maximum established by this standard will be transferred in such operations as reduction or enlargement printing (SMPTE RP 65-1976 and RP 66-1976), for television broadcasting (ANSI PH22.96-1963), etc. Since the entire area will be pre-

sented, it is important that the projectable area include only material that meets recognized standards for technical and artistic excellence.

A3. Image Area for Television

It is recognized that home television receivers are adjusted to show a distribution of picture sizes, ranging downward from the maximum. Guides to picture composition, based upon a statistical survey of receivers in use, are presented in SMPTE RP 27.3-1972. Note that some portion of the audience will see the entire transmitted area, but for certainty in presentation of critical information over broadcast television, such information should be confined to a smaller, central area.

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