

Proposed American Standards

Four Proposed American Standards are published here for a trial period and public review. Comments should be addressed to Alex E. Alden, staff engineer, at Society Headquarters, prior to November 16. If no adverse criticism is received by that date, the proposed standards will be submitted to ASA Sectional Committee PH22 for further processing.

PH22.9, Proposed American Standard Specifications for Camera Usage of 16mm Motion-Picture Film Perforated Two Edges, is a revision of the 1956 issue. Although the revision is primarily editorial, the technical content differs in reflecting the currently used rate of exposure of 18 frames per second.

The remaining three proposals are revisions of 35mm image area standards, previously referred to as aperture standards. The departure from the term "aperture" was prompted by the philosophy that the standards specify the pictorial area on the film, not a hole in a piece of metal. It is obvious that the size

of this hole will vary with respect to its physical location in the optical system.

PH22.59, Proposed American Standard Dimensions of 35mm Motion-Picture Camera Aperture Images, has been expanded to encompass the three commonly used camera image sizes: nonanamorphic sound frame, anamorphic sound frame, and full-frame for instrumentation and special processes.

PH22.58, Proposed American Standard Dimensions of 35mm Motion-Picture Nonanamorphic Projected Image Area, has been expanded to reflect the four aspect ratio sizes most commonly used in American theaters: 1.33:1, 1.66:1, 1.75:1 and 1.85:1.

PH22.106, Proposed American Standard Dimensions of 35mm Motion-Picture Anamorphic Projected Image Area, is substantially a reaffirmation of the 1957 issue differing only in an editorial manner to conform in style and format with more recently approved American Standards.

Proposed American Standard Specifications for Camera Usage of 16mm Motion-Picture Film Perforated Two Edges

PH22.9
Revision of
PH22.9-1956

1. Scope

This standard specifies the position of the emulsion and the rate of exposure for 16mm motion-picture film perforated two edges, not used for sound.

2. Position of Emulsion

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

3. Rate of Exposure

The usual rate of exposure shall be 18 frames per second. For high-speed photography, the speed can be from 128 to 3000 or more frames per second. In some cases, a speed of 24 frames is used even though sound is not used.

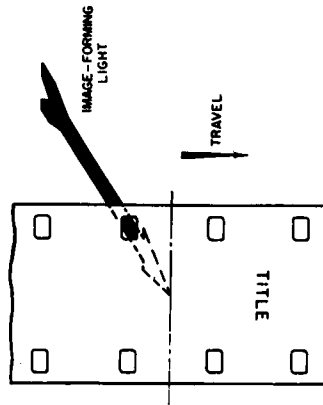


Figure shows film as seen from inside the camera, looking toward camera lens

Appendix

(This Appendix is not a part of Proposed American Standard Specifications for Camera Usage of 16mm Motion-Picture Film Perforated Two Edges, PH22.9, but is included to facilitate its use.)

Section 3, giving the usual rate of exposure as 18 frames per second, is in apparent contradiction with 16 frames per second associated with silent film speeds. In modern 16mm practice, however, 16mm film perforated along two edges is used to a large extent in the amateur field; cameras designed for the amateur are usually spring wound, portable, and not closely governed in taking speed. Variations from 20 to 14 frames per second, at least, are commonly observed. It is not customary to design amateur projectors that will reproduce exactly the taking speeds and, as a matter of fact, it has been found that, for amateur cinematography, this exact speed reproduction is not necessary. Projection at 18 frames does not detract objectionably from films exposed at 20, 16 or even 14 frames, and it has the advantages discussed in Proposed American Standard Specifications for Projector Usage of 16mm Motion-Picture Film Perforated Two Edges (Revision of PH22.10-1956).

Therefore, the camera dial setting of 16 or 18 frames per second is regarded as an aim to which considerable

tolerance will normally apply. Pictures taken in cameras having this speed tolerance, as well as pictures taken in cameras having a constant-speed motor governed at 16 frames per second, will show some change in the velocity of movement when projected at 18 frames per second, but this is not considered objectionable.

For professional camera work, the film used is 16mm film perforated 2R-2994. The rate of exposure for this class of work is 24 frames per second. These films are normally used to produce prints.

There are cameras used to take pictures at high rates. Many of these high-speed cameras traditionally use 16mm film perforated 2R-3000 which is packaged for the purpose and labeled "For Use in High-Speed Cameras" even though the same emulsion will be supplied at 0.2994 in. pitch for professional cameramen taking pictures from which prints will be made. The films used in high-speed cameras are generally used for purposes of measurement and prints are seldom prepared.

NOT APPROVED

Appendix

(This Appendix is not a part of Proposed American Standard Dimensions of 35mm Motion-Picture Nonanamorphic Projected Image Area, PH22.58, but is included to facilitate its use.)

A1. Projection Angles

When the projection angle is other than zero degree, an undersized aperture must be used to make allowance for the keystone effect. This aperture would then be filed out to fit the particular projection angle. If the projection angle is greater than zero degree, the bottom of the aperture is filed out to the maximum width to obtain the necessary width at the top of the picture. If the angle is less than zero degree, the top of the aperture is filed out. The sides of the aperture are then filed to square off the projected picture. This results in Dimension A being less than the maximum at all points other than at the top, if the angle is less than zero degree, and at the bottom if the angle is greater than zero degree.

A2. Use with Curved Screen

When a curved screen is used, the aperture will also have to be undersized with respect to Dimension B, to

A3. Terminology

The dimensions specified in this standard have previously been referred to as the projection aperture. The change in terminology has been made to show clearly that the dimensions are those of the area on the film rather than those of a part of the projection apparatus.

A4. Aspect Ratio

The aspect ratio of the 0.825 by 0.600 in. film area is actually 1.38:1, but it has long been referred to as 1.33:1. The original 35mm silent-camera frame had this ratio, and the 35mm projection aperture, revised for sound, kept the same nominal designation on the assumption that the projection angle would foreshorten the screen image to this same convenient round number.

PH22.58
Revision of
PH22.58-1954

Proposed American Standard Dimensions of 35mm Motion-Picture Nonanamorphic Projected Image Area

1. Scope

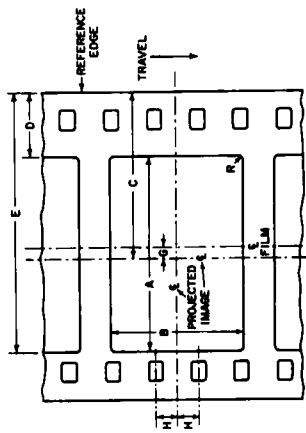
1.1 Specifications. This standard specifies the dimensions of the maximum image area which may be projected for motion pictures from a 35mm nonanamorphic print.

1.2 Dimensions Covered. The projected image area dimensions covered in this standard include those resulting in the following aspect ratios: 1.33:1, 1.66:1, 1.75:1 and 1.85:1.

2. Dimensions

2.1 Specifications. The dimensions shall be as specified in the figure and tables.

2.2 Undersized apertures are required when the projection angle is other than zero degree, so that they may be filed to correct for keystone effect. (See Appendix.)



Film as Seen From Inside the Projector Lamphouse Looking Toward the Lens

Table 2

Aspect Ratio	Inches	Millimeters
1.33:1*	0.600 nom 0.602 max	15.24 nom 15.29 max
1.66:1	0.497 nom 0.499 max	12.62 nom 12.67 max
1.75:1	0.472 nom 0.474 max	11.99 nom 12.04 max
1.85:1	0.446 nom 0.448 max	11.33 nom 11.38 max

* See Appendix A4

Table 1

Dimensions	Inches	Millimeters
A	0.825 ± 0.002	20.96 ± 0.05
C	0.738 ± 0.002	18.75 ± 0.05
D	0.324 min	8.23 min
E	1.148 min	29.16 min
G	0.050 nom	1.27 nom
H	0.093 ± 0.002	2.36 ± 0.05
R	0.005 max	0.13 max

NOTES:

1. Dimensions and locations are shown relative to unshrunken raw stock. For films in current use, the shrinkage has been found to be sufficiently low so that the dimensions shown in this standard are normally used in projection without a shrinkage correction.

2. Perforation. Film intended for projection with this image area is normally perforated as specified in American Standard Dimensions for 35mm Motion Picture Film Alternate Standards for Either Positive or Negative Raw

Stock, PH22.1-1953, and American Standard Dimensions for 35mm Motion-Picture Positive Raw Stock, PH22.36-1954.

3. Distance of Centerline from Edge. The distance of the image centerline from the reference edge of the film is the same as that specified in American Standard Aperture for 35mm Sound Motion-Picture Cameras, PH22.59-1954 and American Standard Projector Aperture for 35mm, Anamorphic, 2.35:1 Prints With Squeeze Ratio of 2:1, PH22.106-1957.

Proposed American Standard Dimensions of 35mm Motion-Picture Anamorphic Projected Image Area, 2.35:1 Aspect Ratio

PH22.106
Revision of
PH22.106-1957

Appendix

[This Appendix is not a part of Proposed American Standard Dimensions of 35mm Motion-Picture Anamorphic Projected Image Area, 2.35:1 Aspect Ratio, PH22.106, but it is included to facilitate its use.]

A1. Projection Angles

When the projection angle is other than zero degree, an undersized aperture must be used to make allowance for the keystone effect. This aperture would then be filed out to fit the particular projection angle. If the projection angle is greater than zero degree, the bottom of the aperture is filed out to the maximum width, to obtain the necessary width at the top of the picture. If the angle is less than zero degree, the top of the aperture is filed out. The sides of the aperture are then filed to square off the projected picture. This results in Dimension A being less than the maximum at all points other than at the top, if the angle is less than zero degree, and at the bottom, if the angle is greater than zero degree.

A2. Use with Curved Screen

When a curved screen is used, the aperture will also have to be undersized with respect to Dimension B, to permit the filing of the top and bottom so that the picture edges will appear horizontal on the screen.

A3. Terminology

The dimensions specified in this standard have previously been referred to as the projection aperture. The change in terminology has been made to show clearly that the dimensions are those of the area on the film rather than those of a part of the projection apparatus.

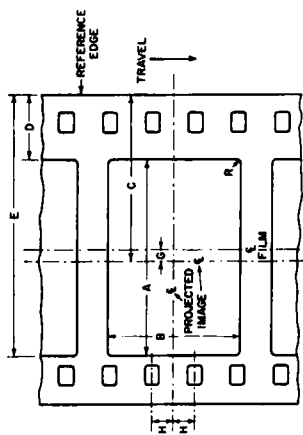
1. Scope

This standard specifies the dimensions of the maximum image area which may be projected for motion pictures from a 35mm anamorphic print with a squeeze ratio of 2:1 and an aspect ratio of 2.35:1.

2. Dimensions

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

2.2 Undersized apertures are required when the projection angle is other than zero degree, so that they may be filed to correct for keystone effect. (See Appendix.)



Film as Seen From Inside the Projector Lamphouse Looking Toward the Lens

Dimensions	Inches	Millimeters
A	0.839 ± 0.002	21.31 ± 0.05
B	0.715 ± 0.002	18.16 ± 0.05
C	0.738 ± 0.002	18.75 ± 0.05
D	0.319 min	8.10 min
E	1.155 min	29.34 min
G	0.050 nom	1.27 nom
H	0.093 ± 0.002	2.36 ± 0.05
R	0.005 max	0.13 max

2. Perforation. Film intended for projection with this aperture is normally perforated as specified in American Standard Dimensions for 35mm Motion Picture Film Alternate Standards for Either Positive or Negative Ray Stock, PH22.1-1953, American Standard Dimensions for 35mm Motion-Picture Positive Ray Stock, PH22.36-1954, and American Standard Dimensions for 35mm Motion-Picture Film, CS-1870, PH22.102-1956.

3. Distance of Centerline from Edge. The distance of the image area centerline from the reference edge of the film is the same as that specified in American Standard Aperture for 35mm Sound Motion-Picture Projectors, PH22.58-1954, and American Standard Aperture for 35mm Sound Motion-Picture Cameras, PH22.59-1954.

NOTES:

1. Dimensions and locations are shown relative to unshrink raw stock. For films in current use, the shrinkage has been found to be sufficiently low so that the dimensions shown in this standard are normally used in projection without a shrinkage correction.

Proposed American Standard Dimensions of 35mm Motion-Picture Camera Aperture Images

PH22.59
Revision of
PH22.59-1954

1. Scope

1.1 This standard specifies the dimensions of the camera aperture images and the relative positions of their vertical and horizontal center lines with respect to the reference edge and the perforations for 35mm motion-picture cameras.

1.2 Motion-picture cameras used for different purposes require different aperture sizes. This standard specifies the image dimensions resulting from three styles of apertures used for the following purposes:

- Style A: Nonanamorphic sound motion pictures
- Style B: Anamorphic sound motion pictures
- Style C: Instrumentation photography and special processes

2. Dimensions

The dimensions shall be as specified in the figure and Tables 1 through 3. They shall apply to measurements of the images formed on freshly exposed and processed film.

Table 1

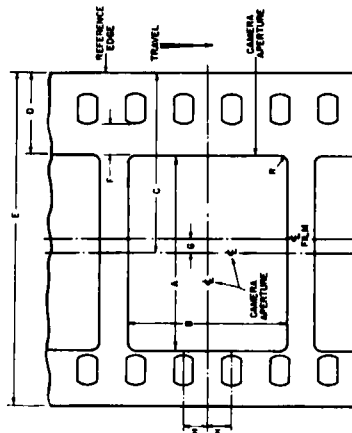
Style A	
Dimensions	Millimeters
A	22.05 nom
B	16.03 ± 0.05
C	18.75 ± 0.05
D	7.72 ± 0.05
E	29.77 ± 0.05
F	2.92 nom
G	1.24 nom
H	2.36 ± 0.05
R	0.76 max

Table 2

Style B	
Dimensions	Millimeters
A	22.10 nom
B	18.67 ± 0.05
C	18.75 ± 0.05
D	7.70 ± 0.05
E	29.79 ± 0.05
F	2.90 nom
G	1.27 nom
H	2.36 ± 0.05
R	0.76 max

Table 3

Style C	
Dimensions	Millimeters
A	24.89 nom
B	18.67 ± 0.05
C	17.48 ± 0.05
D	5.03 ± 0.05
E	29.87 ± 0.05
F	0.23 nom
G	0.00
H	2.36 ± 0.05
R	0.76 max



Film as Seen from Inside the Camera Looking Toward Camera Lens

NOT APPROVED

Proposed Withdrawal of American Standard

The Laboratory Practice and Standards Committees have proposed the withdrawal of American Standard Scene-Change Cueing for Printing 16mm Motion-Picture Film, PH22.89-1958 (published in the June 1958 Journal). If no objections are received, ASA Sectional Committee PH22 will be requested to approve termination of this inaccurate and outdated document since it is no longer being followed in the industry.

SMPTE Recommended Practice Reaffirmed

Upon the recommendation of the Society's Instrumentation and High-Speed Photography Committee, the Board of Governors in meeting on July 19, 1964 reaffirmed SMPTE Recommended Practice RP 3, Lens Mount Surface for High-Speed Motion-Picture Cameras (published in the August 1957 Journal). Individual copies of SMPTE Recommended Practices may be obtained free from Society Headquarters.