

## Changes of Address Needed by 1 February for 1974 Directory for Members

The 1974 Directory for Members, complete with alphabetic listing of individual members' names and addresses, will be published in early March. As in 1972 the Society will use a computer to produce the Directory pages. Members' current addresses, affiliations and job titles are needed for data processing as early as possible.

**All address changes that reach the Society's office in Scarsdale, N.Y., by 1 February 1974 will be included in the Directory.** Any changes received after 1 February are likely

to be omitted. (In that event, the address to which the member's *Journal* was mailed during 1973 will be included.)

The March publication date has been chosen because the Society's membership files are most up-to-date in early February. The majority of the changes, of course, are received with membership dues payments and arrive before the first of February.

### Lacuna

In the process of clearing the following paper for publication in the September 1973 *Journal*, the authorship was inadvertently left incomplete. It should read:

"Production Considerations in Super-8 Printing System Design" by William M. Bowles, William D. Hedden and Kenneth B. Curtis.

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## standards and recommended practices

### Draft American National Standards

Three Draft American National Standards, which are editorial revisions of previous issues, are published here for a trial period and public review.

PH22.17, Dimensions for 16mm Motion-Picture Film Perforated Regular 8, 2R-1500

PH22.169, Dimensions for 35mm Motion-Picture Film Perforated Super 8, 2R-1664 (1-0)

PH22.171, Dimensions for 35mm Motion-Picture Film Perforated 16mm, 3R (1-3-0), revision of PH22.170-1968 and PH22.171-1968

Comments should be addressed to Alex E. Alden, Staff Engineer, at Society Headquarters prior to 1 February 1974. The proposals have been submitted to American National Standards Committee PH22. All comments received through *Journal* publication will be reviewed before conclusion of action by that Committee. — Alex E. Alden, *Staff Engineer*

NOTE 2: The metric values in the table of dimensions are converted from the inch values in accordance with conversion principles outlined in American National Standard Practice for Inch-Millimeter Conversion for Industrial Use, B48.1-1947 (R-1933).

NOTE 1: The title of this standard was established by the application of a nomenclature system developed for all film dimension standards. Each title provides an indication of the film width, a code designation for the perforation shape (BH, KS, DH or CS) or the number of rows of perforations (1R, 2R, etc.), depending upon which is the significant factor, or the perforation pitch without the decimal point.

Draft American National Standard  
**Dimensions for 16 mm Motion-Picture Film Perforated Regular 8, 2R-1500**

PH22.17  
 Revision of  
 PH22.17-1965

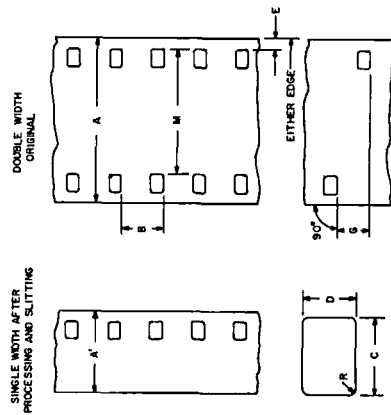
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**1. Scope**

This standard specifies the cutting and perforating dimensions for 16 mm motion-picture film with two rows of regular 8 perforations and a perforation pitch of 0.1500 inch (3.810 mm). The width of the 8 mm strip after processing and slitting is also specified.

**2. Dimensions**

- 2.1 The dimensions shall be as given in the figure and table.
- 2.2 The dimensions pertain to a safety film as defined in American National Standard Specifications for Motion-Picture Safety Film, PH22.31-1973 (R-1967).
- 2.3 Except for Dimension A', the dimensions apply at the time of cutting and perforating for film adjusted to a temperature of  $23 \pm 1^\circ\text{C}$  (nominally converted to  $73 \pm 2^\circ\text{F}$ ) and a relative humidity of  $50 \pm 2$  percent. The manufacturer may indicate other nominal humidity conditions under which the dimensions apply. Dimension A' applies immediately after slitting.



Dimensions	Inches	Millimeters
A	0.628 ± 0.001	15.95 ± 0.03
A'	0.314 ± 0.002	7.98 ± 0.05
B	0.1500 ± 0.0005	3.810 ± 0.013
C	0.0720 ± 0.0004	1.829 ± 0.010
D	0.0500 ± 0.0004	1.270 ± 0.010
E	0.0355 ± 0.0020	0.902 ± 0.051
G	0.001 max	0.03 max
L	15.000 ± 0.015	381.00 ± 0.38
M	0.485 ± 0.001	12.32 ± 0.03
R	0.010 ± 0.001	0.25 ± 0.03

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Standard Practice for Inch-Millimeter Conversion for industrial Use, B48.1-1947 (R-1933). The metric conversion of Dimension A is purposely chosen and shown to three decimal places to prevent the maximum width dimension from exceeding 35 mm.

NOTE 3: As indicated in the Scope, the film for which this standard applies will normally be used as an intermediate and, therefore, will not be slit into smaller width strips at any stage of its use. The special row of perforations has a lesser edge-to-perforation spacing relative to the row of super 8 perforations. The perforations in the special row also are larger than the latter.

**Appendix**

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

to roll, are of little significance compared to variations from one perforation to the next within any small group of consecutive perforations. As an example, the uniformity of the margin is uniquely critical for optical printing. During the printing process, the placement of the image on the film is usually with respect to successive lateral pairs of perforations at one-frame intervals. During subsequent projection, however, the portion of the image projected is usually located, not by these perforations, but by the edge of the film. The lateral steadiness of the projected image is, therefore, directly related to the frame-to-frame uniformity of the margin.

A4. For historical background on the development of this standard, refer to A. J. Miller and A. C. Robertson, "Motion-picture film—its size and dimensional characteristics," Jour. SMPTE, 74: 3-11, Jan. 1965.

NOTE 1: The title of this standard was established by the application of a nomenclature system developed for all film dimension standards: Each title provides an indication of the film width, a code designation for the perforation shape (BH, KS, DH or CS) or the number of rows of perforations (1R, 2R, etc.), depending upon which is the significant factor, or the perforation pitch without the decimal point.

NOTE 2: The metric values in the table of dimensions are converted from the inch values in accordance with conversion principles outlined in American National

A1. The user is reminded that, as a plastic, film can change dimensions temporarily due to moisture or temperature, or permanently due to solvent loss or strain effect.

A2. Film for positive use has a longitudinal pitch 0.2 percent longer than its companion negative. Shrinkage of the negative during aging and processing prior to printing will generally not exceed 0.2 percent. Thus, the negative stock is expected to be  $0.3 \pm 0.1$  percent shorter than the positive. This difference will minimize slippage between the two on the 12-inch (305-mm) circumference sprocket of the printer, assuming a film thickness of 0.0035 to 0.0065 in (0.140 to 0.165 mm).

A3. The uniformity of pitch, hole size and margin (Dimensions B, C, D and E) is an important variable affecting steadiness. Variations in these dimensions, from roll

Draft American National Standard

**Dimensions for 35 mm Motion-Picture Film Perforated Super 8, 2R-1664 (1-0)**

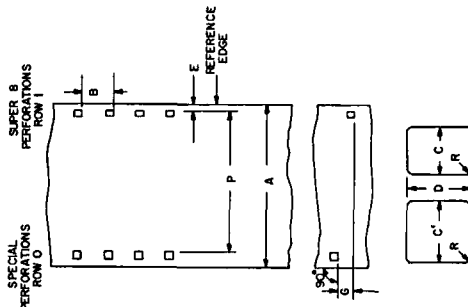
PH22.169  
Revision of  
PH22.169-1969

**1. Scope**

This standard specifies the cutting and perforating dimensions for 35 mm motion-picture film with one row of super 8 perforations and one row of special perforations having a perforation pitch of 0.1664 in (4.227 mm). The film stock described in this standard is intended for use as an intermediate film in the production of prints.

**2. Dimensions**

- 2.1 The dimensions shall be as given in the figure and table.
- 2.2 The dimensions pertain to a safety film as defined in American National Standard Specifications for Motion-Picture Safety Film, PH22.31-1973 (R-1967).
- 2.3 The dimensions apply at the time of cutting and perforating for film adjusted to a temperature of  $23 \pm 1^\circ\text{C}$  (nominally converted to  $73 \pm 2^\circ\text{F}$ ) and a relative humidity of  $50 \pm 2$  percent. The manufacturer may indicate other nominal humidity conditions under which the dimensions apply.



Dimensions	Inches	Millimeters
A Film width	1.377 ± 0.001	34.975 ± 0.025
B Perforation pitch	0.1664 ± 0.0004	4.227 ± 0.010
C Perforation width	0.0360 ± 0.0004	0.914 ± 0.010
D Special perforation width	0.0450 ± 0.0004	1.143 ± 0.010
E Perforation height	0.0450 ± 0.0004	1.143 ± 0.010
F Edge to perforation	0.050 ± 0.002	1.27 ± 0.05
G Perforation skewness	0.0015 max	0.038 max
L 100 consecutive perforation pitches	16.640 ± 0.017	422.66 ± 0.43
P Lateral perforation displacement	1.251 ± 0.001	31.78 ± 0.03
R Radius of perforation fillet	0.005 ± 0.001	0.13 ± 0.03

# Dimensions for 35 mm Motion-Picture Film

## Perforated 16 mm, 3R (1-3-0)

PH22.171

Revision and consolidation of  
PH22.170-1968  
and  
PH22.171-1968

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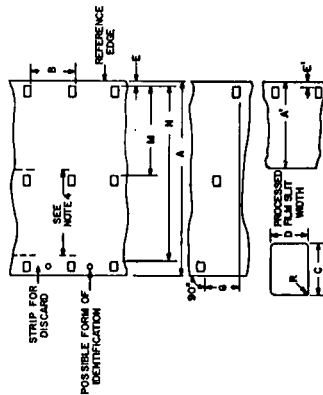
### 1. Scope

This standard specifies the cutting and perforating dimensions for 35 mm motion-picture film with 16 mm perforations in positions 1-3-0 and a perforation pitch of either 0.2994 or 0.3000 in (7.605 or 7.620 mm). The width of the 16 mm strip after processing and slitting is also specified.

### 2. Dimensions

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

2.2 The dimensions pertain to a safety film as defined in American National Standard Specifications for Motion-Picture Safety Film, PH22.31-1973 (R-1967).



	Dimensions	Inches	Millimeters
A	Film width	1.377 ± 0.001	34.975 ± 0.025
A'	Film width after processing and slitting	0.627 ± 0.002	15.93 ± 0.05
B	Perforation pitch (long)	0.3000 ± 0.0004	7.620 ± 0.010
B'	Perforation pitch (short)	0.2994 ± 0.0004	7.605 ± 0.010
C	Perforation width	0.0720 ± 0.0004	1.829 ± 0.010
D	Perforation height	0.0500 ± 0.0004	1.270 ± 0.010
E	Reference edge to first perforation row	0.0355 ± 0.0020	0.902 ± 0.051
E'	Edge to perforation after processing and slitting	0.0355 ± 0.0020	0.902 ± 0.051
G	Perforation skewness	0.001 max	0.03 max
L	100 consecutive perforation pitches	30.00 ± 0.03	762.0 ± 0.8
L'	100 consecutive perforation pitches	29.94 ± 0.03	760.5 ± 0.8
M	Reference edge side of first perforation row to second perforation row	0.628 ± 0.001	15.95 ± 0.03
N	Reference edge side of first perforation row to third perforation row	1.234 ± 0.001	31.34 ± 0.03
R	Radius of perforation fillet	0.010 ± 0.001	0.25 ± 0.03

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contain a 0-numbered row of perforations if that perforated row corresponds to the discard row of perforations on the subsequent print stock. For all films with non-symmetrical perforation rows, there could be two different windings for the same numbered rows of perforations. Film perforated 1-0 would be 1-0 regardless of winding, but depending on the location of the reference edge, the winding would be A or B, according to American National Standard Designation of A and B Windings for Motion-Picture Raw Stock, PH22.75-1969, which has been expanded to include all non-symmetrical perforated film.

NOTE 2: The perforations in the 0-numbered discard row are provided with a visible means of identification.

NOTE 3: Dimension A' represents the film width and Dimension E' the edge-to-perforation distance after slitting a nominal 16 mm strip from the exposed and processed parent 35 mm-width film. In deriving the dimension of 0.627 in (15.93 mm), the specified film shrinkage characteristics described in Appendix A2 have been taken into account.

NOTE 4: The dotted lines in the figure indicate the edge of the 16 mm cuts after slitting.

NOTE 5: The metric values in the table of dimensions are converted from the inch values in accordance with conversion principles outlined in American National Standard Practice for Inch-Millimeter Conversion for Industrial Use, B48.1-1947 (R-1933). The metric conversion of Dimension A is purposely chosen and shown to three decimal places to prevent the maximum width dimension from exceeding 35 mm.

### Appendix

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

A1. The user is reminded that, as a plastic, film can change dimensions temporarily due to moisture or temperature, or permanently due to solvent loss or strain effect.

A2. Film for positive use has a longitudinal pitch 0.2 percent longer than its companion negative. Shrinkage of the negative during aging and processing prior to printing will generally not exceed 0.2 percent. Thus, the negative stock is expected to be 0.3 ± 0.1 percent shorter than the positive. This difference will minimize slippage between the two on the 12-inch (305-mm) circumference sprocket of the printer, assuming a film thickness of 0.0055 to 0.0065 in (0.140 to 0.165 mm).

A3. The uniformity of pitch, hole size and margin (Dimensions B, C, D and E) is an important variable affecting steadiness. Variations in these dimensions, from roll to roll, are of little significance compared to variations from one perforation to the next within any small group of consecutive perforations. As an example, the uniformity of the margin is uniquely critical for optical printing. During the printing process, the placement of the image on the film is usually with respect to successive lateral pairs of perforations at one-frame intervals. During subsequent projection, however, the portion of the image projected is usually located, not by these perforations, but by the edge of the film. The lateral steadiness of the projected image is, therefore, directly related to the frame-to-frame uniformity of the margin.

A4. For historical background on the development of this standard, refer to A. J. Miller and A. C. Robertson, "Motion-picture film—its size and dimensional characteristics," *Jour. SMPTE*, 74: 3-11, Jan. 1965.