Three Proposed American Standards

THREE PROPOSED American Standards for cutting and perforating 32-mm film appear on the following pages. They have been developed by a subcommittee on film dimensions, of the SMPE Standards Committee.

Film of this type has been used since 1934 although there never has been a formal standard. During the intervening years a number of changes have been made in the dimensions. Debrie, who was the originator of this film, was aware that the slitting of the 32-mm film into two 16-mm widths might be inaccurate. This inaccuracy would make one half wider than the other half, and might cause trouble since the wide half might stick in the projector gate. Therefore, he made the original French film narrower than twice the width of 16-mm film. The first French film was about 1.252 inches in width. Manufacturers in this country made film of this width for some time but later widened it to 1.257 inches, an increase of 0.005 inch.

It appears that there have been four or five slightly different styles of perforating in use at various times. The values currently adopted for the width of the film and for the transverse pitch of the perforations are believed to be acceptable to all manufacturers. The differences between the present standards and the earlier dimensions are so slight, it is doubtful that the users can perceive them. The dimensions of the perforation, the longitudinal pitch, and the like, are the same as that of the current 16-mm film and the dimensioning of the drawing is in keeping with those standards (Z22.5-1947 and Z22.12-1947).

It will be noticed that the new standards include one for 35-mm film with 32-mm perforations. The reason for the existence of this film is that it can be processed on 35-mm sprocketless developing machines with consequent saving in equipment. This film is commonly used for sound recording and reduction negatives. The negative thus made is printed in the usual fashion. In general, this 32- on 35-mm film is not used for release purposes. However, the fact that people other than manufacturers can perforate 35-mm film in this way has led to some concern. If 35-mm nitrate film were to be perforated with 32-mm perforations, it might later be slit to 16-mm size and be used in projection equipment. Therefore, the standard includes a proviso, "This film should not be made on nitrate base because if this

material were slit to 16-mm it might be used on a projector with consequent danger of fire."

No proviso of this sort has ben indicated in other standards for the reason that it is an unwritten law in film-manufacturing companies that no nitrate base should ever be slit to 8-, 16-, or 32-mm widths. The manufacturers do, however, slit both nitrate and acetate film to 35-mm dimensions. Other film users sometimes buy unperforated film and perforate it as they see fit. It was thought, therefore, that special attention should be called to the danger that might result if nitrate film were perforated to any dimensions that might make it usable on 16-mm projectors.

These proposed standards are being published for a ninety-day period for your comment and criticism. If no adverse comment is received before the end of this period, these proposals will be submitted to the Standards Committee for final approval.

Letter Symbols for Physics

Another new standard that will be of interest to many motion picture engineers is ASA Z10.6-1948 "Letter Symbols for Physics" recently announced by the American Standards Association.

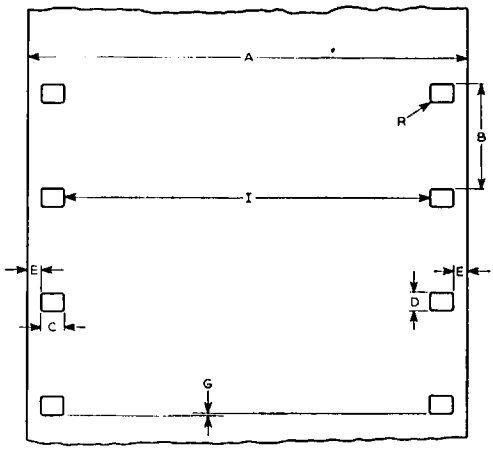
The standard suggests that authors who are preparing manuscripts give careful attention to the use of symbols which should always be clearly defined to avoid errors in interpretation. "Letter symbols are to be distinguished from abbreviations, mathematical signs and operators, graphical symbols, and chemical symbols:

(a) Abbreviations are shortened forms of names and expressions employed in texts and tabulations and should not be used as symbols in equations.
(b) Mathematical Signs and Operators are characters used with letter symbols to denote mathematical operations and relations.
(c) Graphical Symbols are conventionalized diagrams and letters used on plans and drawings.
(d) Chemical Symbols are letters and other characters designating chemical elements and groups."

Copies are now available from the American Standards Association, 70 East 45 Street, New York 17, N. Y., at the price of $1.00.

Proposed American Standard
Cutting and Perforating Dimensions for
32-mm Sound Motion Picture
Negative and Positive Raw Stock

Z22.71
December 1948



Dimensions	Inches	Millimeters
A	1.257 ± 0.001	31.93 ± 0.025
B*	0.300 ± 0.0005	7.620 ± 0.013
C	0.0720 ± 0.0004	1.83 ± 0.01
D	0.0500 ± 0.0004	1.27 ± 0.01
E	0.036 ± 0.002	0.91 ± 0.05
G	Not > 0.001	Not > 0.025
I	1.041 ± 0.002	26.44 ± 0.05
L**	30.00 ± 0.03	762.00 ± 0.76
R	0.010 ± 0.001	0.25 ± 0.03

These dimensions and tolerances apply to the material immediately after cutting and perforating.

* In any group of four consecutive perforations, the maximum difference of pitch shall not exceed 0.001 inch and should be as much smaller as possible.

** This dimension represents the length of any 100 consecutive perforation intervals.

Proposed American Standard
Cutting and Perforating Dimensions for
32-mm Sound Motion Picture
Negative and Positive Raw Stock

Z22.71
December 1948

Appendix

The dimensions given in this standard represent the practice of film manufacturers in that the dimensions and tolerances are for film immediately after perforation. The punches and dies themselves are made to tolerances considerably smaller than those given, but owing to the fact that film is a plastic material, the dimensions of the slit and perforated film never agree exactly with the dimensions of the punches and dies. Shrinkage of the film, due to change in moisture content or loss of residual solvents, invariably results in a change in these dimensions during the life of the film. This change is generally uniform throughout the roll.

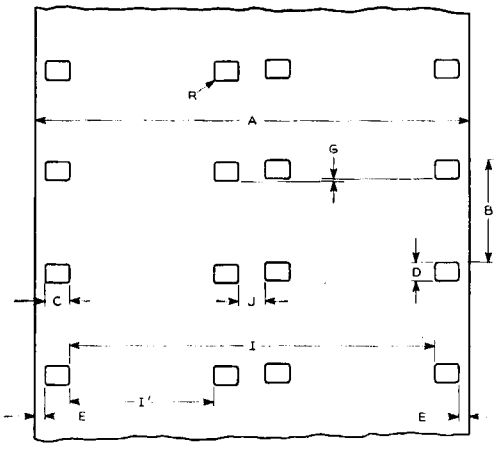
The uniformity of perforation is one of the most important of the variables affecting steadiness of projection.

Variations in pitch from roll to roll are of little significance compared to variations from one sprocket hole to the next. Actually, it is the maximum variation from one sprocket hole to the next within any small group that is important. This is one of the reasons for the method of specifying uniformity in dimension B.

Thirty-two-millimeter release print stock is slit, after printing and developing, to 16-mm. width. Since a possible error is involved in this slitting, the width of 32-mm. film is made 0.001" narrower than twice the width of standard 16-mm. film. This narrowing gives a tolerance of 0.001" in this secondary slitting operation. If the error of slitting exceeds this tolerance, one of the 16-mm. halves may exceed the width allowed for 16-mm. film and cause interference in the gate of a projector. In addition to errors of centering, there are errors caused by recurring variations in width. These errors will cause weave on the screen even though the maximum width of the film may not be great enough to cause interference in the projector gate.

Proposed American Standard
Cutting and Perforating Dimensions for
32-mm Silent Motion Picture
Negative and Positive Raw Stock

Z22.72
December 1948



Dimensions	Inches	Millimeters
A	1.257 ± 0.001	31.93 ± 0.025
B*	0.300 ± 0.0005	7.620 ± 0.013
C	0.0720 ± 0.0004	1.83 ± 0.01
D	0.0500 ± 0.0004	1.27 ± 0.01
E	0.036 ± 0.002	0.91 ± 0.05
G	Not > 0.001	Not > 0.025
I	1.041 ± 0.002	26.44 ± 0.05
I'	0.413 ± 0.001	10.490 ± 0.025
J	0.071 ± 0.001	1.803 ± 0.025
L**	30.00 ± 0.03	762.00 ± 0.76
R	0.010 ± 0.001	0.25 ± 0.03

These dimensions and tolerances apply to the material immediately after cutting and perforating.

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Proposed American Standard
Cutting and Perforating Dimensions for
32-mm Silent Motion Picture
Negative and Positive Raw Stock

Z22.72
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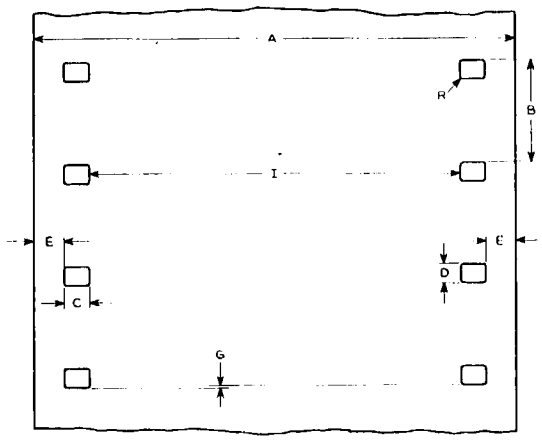
Proposed American Standard
Cutting and Perforating Dimensions for
32-mm on 35-mm Motion Picture
Negative Raw Stock

Z22.73
December 1948



Dimensions	Inches	Millimeters
A	1.377 ± 0.001	34.98 ± 0.025
B*	0.300 ± 0.0005	7.620 ± 0.013
C	0.0720 ± 0.0004	1.83 ± 0.01
D	0.0500 ± 0.0004	1.27 ± 0.01
E	0.096 ± 0.002	2.44 ± 0.05
G	Not > 0.001	Not > 0.025
I	1.041 ± 0.002	26.44 ± 0.05
L**	30.00 ± 0.03	762.00 ± 0.76
R	0.010 ± 0.001	0.25 ± 0.03

These dimensions and tolerances apply to the material immediately after cutting and perforating.

* In any group of four consecutive perforations, the maximum difference of pitch shall not exceed 0.001 inch and should be as much smaller as possible.

** This dimension represents the length of any 100 consecutive perforation intervals.

Proposed American Standard
Cutting and Perforating Dimensions for
32-mm on 35-mm Motion Picture
Negative Raw Stock

Z22.73
December 1948

Appendix

The dimensions given in this standard represent the practice of film manufacturers in that the dimensions and tolerances are for film immediately after perforation. The punches and dies themselves are made to tolerances considerably smaller than those given, but owing to the fact that film is a plastic material, the dimensions of the slit and perforated film never agree exactly with the dimensions of the punches and dies. Shrinkage of the film, due to change in moisture content or loss of residual solvents, invariably results in a change in these dimensions during the life of the film. This change is generally uniform throughout the roll.

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This kind of 32 mm. film is made on 35 mm. stock so that it may be processed on 35 mm. sprocketless negative developing machines.

This film should not be made on nitrate base, because if this material were slit to 16 mm. it might be used on a projector with consequent danger of fire.