

## Three New Standards

THREE RECENTLY APPROVED American Standards appear on the following pages:

1. Cutting and Perforating Dimensions for 32-Mm on 35-Mm Motion Picture Negative Raw Stock, PH22.73-1951
2. Zero Point for Focusing Scales on 16-Mm and 8-Mm Motion Picture Cameras, PH22.74-1951 (Revision of American War Standard Z52.51-1946)
3. Mounting Threads and Flange Focal Distances for Lenses on 16-Mm and 8-Mm Motion Picture Cameras, PH22.76-1951 (Revision of American War Standard Z52.50-1946)

The first standard was developed by the Film Dimensions Committee and first published as a proposal in February 1949.

The reason for the existence of this type of film (35-mm film with 32-mm perforations) 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-mm on 35-mm film is not used for release purposes. However, the fact that people other than manufac-

turers 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. The standard, therefore, includes the 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 been indicated in other standards because it is an unwritten law in film-manufacturing companies that no nitrate-base film 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.

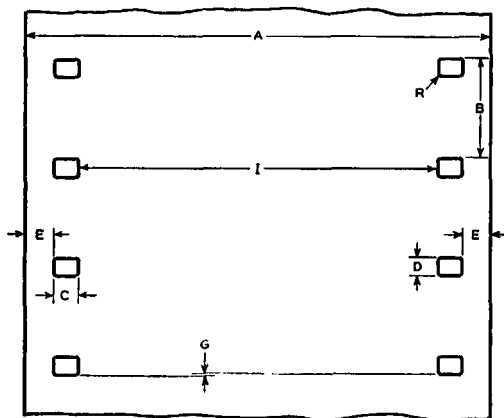
The other two standards resulted from the work of the 16-Mm and 8-Mm Committee in reviewing and revising two War Standards, Z52.50-1946 and Z52.51-1946. The revisions in both standards consisted chiefly in making them apply to 8-mm as well as 16-mm cameras.

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

**ASA**  
 Reg. U. S. Pat. Off.  
**PH22.73-1951**

\*UDC 778.58

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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.

Approved May 9, 1951, by the American Standards Association, Incorporated.

\*Universal Decimal Classification

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**Cutting and Perforating Dimensions for  
32-Millimeter on 35-Millimeter  
Motion Picture Negative Raw Stock**

  
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**PH22.73-1951**

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**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.

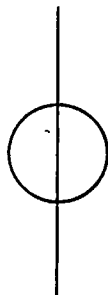
*This kind of 32-mm film is made on 35-mm stock so that it may be processed on 35-mm sprocketless negative developing machines.*

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.

American Standard  
**Zero Point for Focusing Scales on 16-Millimeter  
and 8-Millimeter Motion Picture Cameras**

**ASA**  
*Am. S. Inst. of Eng.*  
**PH22.74-1951**  
Revision of  
Z52.51—1946  
\*UDC 778.533.25

1. Focusing scales for 16-millimeter and 8-millimeter motion picture cameras and associated lenses shall indicate object distances measured to the film plane; i.e., the zero point for the focusing scale shall be in the plane of the film.
2. An index mark to indicate the film plane shall be placed on the outside of the camera. This mark shall consist of a circle crossed by a line having a length of between two and three times the diameter of the circle (see illustration below). The line shall be in the plane of the film within 0.040 inch.



Note: One way to distinguish focusing scales made in accordance with this standard is to have the words "From Film" appear after the word "Feet" or other unit designation.

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American Standard

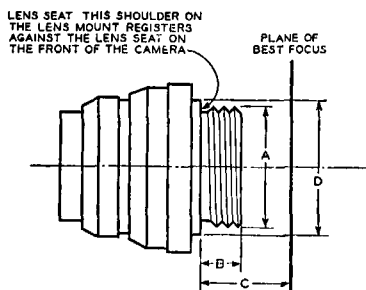
# Mounting Threads and Flange Focal Distances for Lenses on 16-Millimeter and 8-Millimeter Motion Picture Cameras

  
 Reg. U. S. Pat. Off.  
**PH22.76-1951**  
 Revision of  
 Z52.50-1946  
 \*UDC 778.53:771.352

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## 1. Purpose

**1.1** The purpose of this standard is to describe the two sizes of screw threads and the related flange focal distances in common use for mounting objective lenses on 8-millimeter and 16-millimeter motion picture cameras. The external thread is on the lens, and the internal thread is in the camera.



Nominal (Major) Diameter of Lens Attaching Thread	Threads Per Inch	Length from Shoulder to End of Thread	Flange Focal Distance	Diameter of Lens Seat
A Inch		B Inch	C Inch	D Inch
0.625	32	0.115	0.484	1.000
1.000	32	0.160	0.690	1.187

## 2. Dimension A

**2.1** The American National Thread Form should be used.

Dimensions and tolerances shall conform to those established for a Class-2 fit by the National Bureau of Standards Handbook, H28, Screw Thread Standards for Federal Services (Section V, Screw Threads of Special Diameters, Pitches, and Lengths of Engagement).

## 3. Dimension B

**3.1** The values given for this dimension in the above table are to be considered as the maximum for the lens; a little additional length, for clearance, should be provided in the camera.

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**3.2** With some lenses a section of the mount, with a diameter smaller than the root of the thread, necessarily extends closer to the film than is indicated by the drawing. In those cases, the mechanical clearance in the camera must be determined individually.

**3.3** In the past, a number of lenses with the 1-inch thread had a B dimension of 0.187 inch. This is considered to be an obsolete practice.

**3.4** Past practice has not been entirely consistent so far as the B dimension of the 0.625-inch thread is concerned; some existing cameras will not accept a thread longer than 0.115 inch; some lenses have been made with a length of 0.120 or 0.125 inch.

#### **4. Dimension C**

**4.1** This dimension is defined as the distance from the lens seat to the plane of the best photographic image. It should be determined photographically with panchromatic film and with the camera operating normally. Sometimes a compromise is necessary between best central definition and best over-all definition.

**4.2** The tolerance acceptable for dimension C is dependent on the depth of focus and on a decision as to what portion of the depth can be used for the focus tolerance. In some cases, the tolerance is very small. For example, with a 25-millimeter  $f/1.4$  lens and a 0.001-inch circle of confusion, the depth of focus is 0.0014 inch; only part of this is available for the sum of the lens and camera focusing tolerances.

#### **5. Dimension D**

**5.1** The values given in the table are to be considered as the maximum diameter of the seat on the lens; the seat on the camera should provide clearance for these diameters.

**5.2** If any part of the lens mount has a larger diameter, it should be checked for mechanical interference with the camera on which it is to be used. Some lenses with the 1-inch thread have been made with a flange diameter of 1.500 inches.

Note: This standard does not apply to continuous-type motion picture cameras because of the type of optical system employed in these cameras.