

American National Standard motion-picture film (16-mm) — 100-mil magnetic striping

Approved August 7, 1985 Sponsor: Society of Motion Picture and Television Engineers

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ANSI PH22.109-1980, Dimensions for 16-mm
Motion-Picture Film Perforated 1R

1. Scope

This standard specifies the location and dimensions of the magnetic striping material applied to 16-mm motion-picture film, which is used for both picture and sound.

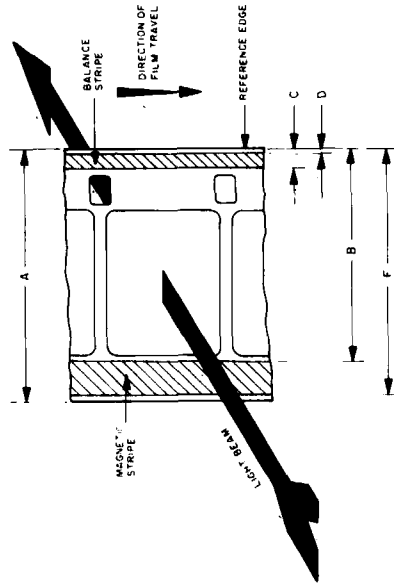
2. Reference Standard

The following American National Standard is intended to be used in conjunction with this standard:

3. Magnetic Striping

3.1 The location and dimensions of the magnetic striping shall be as given in the figure and table.

3.2 The magnetic striping material shall be on the side of the film toward the lamp on a projector arranged for direct projection on a reflection-type screen.



Dimensions	Millimeters	Inches
A	15.95 ref	0.628 ref
B	13.25 + 0.00 - 0.15	0.522 + 0.000 - 0.006
C	0.80 + 0.00 - 0.15	0.031 + 0.000 - 0.006
D	0.15 max	0.006 max
F	15.80 min	0.622 min

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4. Film Stock

The film stock used shall be safety type, cut and perforated in accordance with ANSI PH22.109-1980.

5. Balance Stripe

If the stripe is raised significantly (greater than 0.1 mil), then a balance stripe is required. The balance stripe need not be a continuous magnetic coating.

Appendix

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

The outer edge of both stripes ideally should be coincident with the edge of the film.

American National Standard motion-picture film (8-mm type S) — printed area — 16-mm film perforated 8-mm type S (1-4)

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1. Scope

This standard specifies the location and size of the printed picture area for negative/positive and reversal printing operations on 16-mm motion-picture film perforated 8-mm type S (1-4), 2R-1664 or 2R-1667.

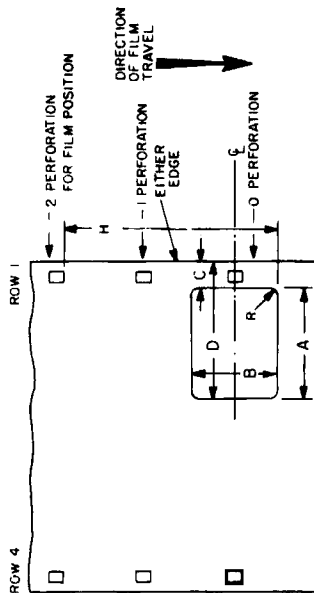
2. Reference Standards

The following American National Standards are intended to be used in conjunction with this standard:

- ANSI PH22.157-1971 (R1984), Dimensions of Camera Aperture Image on Super 8 Motion-Picture Film
- ANSI PH22.168-1973 (R1980), Dimensions for 16-mm Motion-Picture Film Perforated Super 8, (1-4)
- ANSI PH22.182-1978 (R1984), Dimensions for Photographic Sound Record on 8-mm Type S (Super 8) Motion-Picture Prints

3. Dimensions

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



Dimensions	Inches	Millimeters
A	0.278 ref	5.79 ref
B	0.163 min	4.14 min
C	0.058 max	1.47 max
D*	0.282 min	7.16 min
H	0.393 ± 0.002	9.98 ± 0.05
R	0.005 max	0.013 max

*See Note 4.

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3.2 Dimension H is measured from the minus-2 perforation because this perforation position coincides with the perforation used to position the resulting 8-mm print in the projector. (See Appendix A1.)

3.3 Two images may be printed on this film. The image area on the left side, not shown in the figure, is symmetrical but opposite in direction to that shown on the right side. The dimensions for each image area, however, are taken from the nearest edge of the film as shown.

NOTE 1: The reduction ratio of prints made from 16-mm negative or reversal originals shall be approximately 1.8:1. The correct ratio is controlled by Dimensions C and D.

NOTE 2: The vertical Dimension B of the reduced 8-mm type S image of the original camera aperture image

should be nominally centered on the horizontal centerline of the perforation although the exact location will be determined by Dimension H and its tolerance.

NOTE 3: The direction of film travel shown in the figure is to aid in illustrating the minus-2 perforation and is the direction of motion in the projector for the resulting 8-mm print if the figure is as seen from the light source of a projector used for direct front projection.

NOTE 4: If photographic audio is to be applied to the print, it is necessary to consider the required compatibility between this standard and ANSI PH22.182-1978, and the strong trade preference that a clear septum not appear between the edge of the printed picture and the edge of the printed track. Both standards allow overlap (double) printing of adjacent areas of the printed picture and printed track without permitting undesirable incursions of one area into the restricted area of the other. A suggested value of 0.0015 in (0.038 mm) more than minimum may be used until the values are established.

Appendix

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

A1. If prints are made with a step printer, the registration device should be in the minus-2 perforation, or that perforation which corresponds to the minus-2 perforation when the final print stage is reached, to obtain maximum benefit of cancellation as films are projected in accordance with ANSI PH22.155-1982, which specifies the minus-2 perforation for projected films.

A2. The parenthetical numerals have been added to the title of this standard to specify how the rows of perforations are placed on the film. This designation is necessary

only when the film stock is wider than its end use and more than one combination of perforation rows is possible. The perforation rows are numbered starting at the reference edge, which is the edge nearest to that row of perforations which is retained in the slitting operation. The row of perforations which is discarded is given the number 0. Negative or intermediate films which are not slit may contain a 0-numbered row of perforations if that perforated row corresponds to the discard row of perforations on the subsequent print stock.

2. Purpose

American National Standard for Motion-Picture Equipment—8-mm Type S Projection Reels—100- to 312-mm Diameter, ANSI PH22:160M-1983, describes the reels most likely to be used on 8-mm type S spindles and are the primary items of interchange which must fit onto various projectors. The intent of this practice is to ensure that the primary reel specifications have been adequately considered and will be applied during projector design.

3. Dimensions

The dimensions shall be as given in the figure and table. The dimensional values stated first (metric) are primary and those stated second (inches) are conversions in accordance with ISO practice.

Notes:

- Use of spindles in 8-mm projection equipment is not necessarily restricted to reels having a vertical plane of rotation. Because horizontally-oriented reels are possible, it is not necessary that the spindle protrude completely through the projection reel. Therefore, a reference dimension is supplied primarily for use with vertical reels. When horizontal reels are considered, the minimum spindle length shall be governed by the minimum lug protrusion, Dimension B.
- If the manufacturer desires to round, taper, or point the end of the spindle, this may be done at his discretion with any value needed for aesthetic

or other design considerations. Hence, Dimension E is optional.

3. The shape and amount, if any, of the extension of the drive lug beyond Dimension B is optional with the manufacturer, provided that it does not exceed Dimensions C and D.

4. A minimum spindle shoulder diameter is provided by Dimension G. Good design practice would place any reel-locking device of the spindle outboard of the width of the projection reel at the spindle hole, possibly forcing the reel against the shoulder. The maximum for Dimension G is intentionally less than the minimum diameter of the corresponding surface of the reel to allow for runout tolerances of both the spindle and reel and for a loose fit of the reel on the spindle.

5. A radius is permitted on the drive lug equivalent to half its width in order to allow manufacturers to use a variety of construction methods or materials. The Dimension D specified is for a drive lug with no radius (i.e., flat). Any radius (R_1) utilized by the manufacturer may be added to Dimension D so the maximum overall span of the spindle plus lug becomes $D + R_1$.

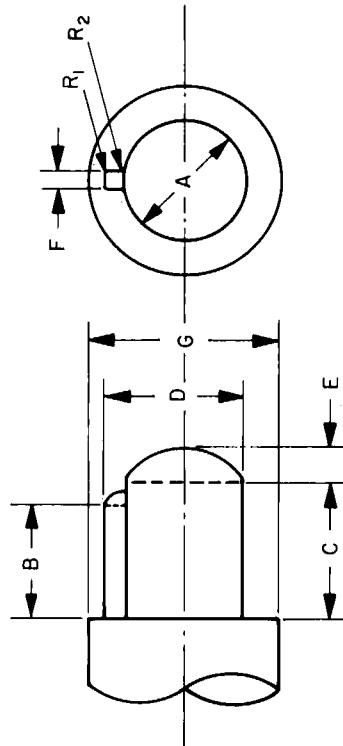
6. The use of three driving lugs spaced approximately 120° around the spindle is not restricted by this document. However, the width and height tolerances of the lug have not been adequately accounted for if such a design is incorporated. If the manufacturer chooses to utilize this approach, he is referred to ANSI PH22:160M-1983 to ensure adequate fit.

Dimensions for 8-mm Type S Motion-Picture Projector Reel Spindles



1. Scope

This practice specifies the dimensions for 8-mm type S motion-picture projector reel spindles.



Dimensions	Millimeters*	Inches
A	12.70 + 0.00	0.500 + 0.000
B	4.0 min	0.16 min
C	14.0 ref	0.55 ref
D	14.2 ± 1.5	0.56 ± 0.06
E	optional	optional
F	1.40 max	0.055 max
G	16.00 min	0.630 min
R ₁	21.50 max	0.865 max
R ₂	0.7 max	0.03 max
	0.20 max	0.008 max

* Millimeter dimensions are primary.