

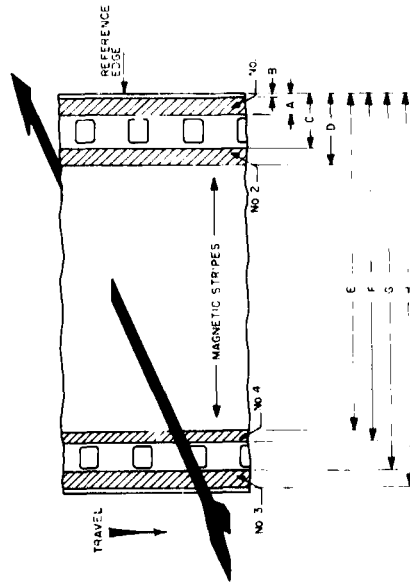
# American National Standard motion-picture film (35-mm) — four track magnetic sound release prints — magnetic striping

Approved December 14, 1982 Secretariat: Society of Motion Picture and Television Engineers

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## 1. Scope

This standard specifies the location and dimensions of the magnetic recording stripes on 35-mm motion-picture film used for four-track magnetic sound release prints having an amorphobic-type picture image.



AS SEEN FROM INSIDE PROJECTOR LAMPHOUSE  
LOOKING TOWARD THE LENS

| Dimensions | Inches        | Millimeters  |
|------------|---------------|--------------|
| A          | 0.072 ± 0.003 | 1.83 ± 0.08  |
| B          | 0.008 max     | 0.20 max     |
| C          | 0.179 ± 0.003 | 4.55 ± 0.08  |
| D          | 0.242 ± 0.003 | 6.15 ± 0.08  |
| E          | 1.169 ± 0.003 | 29.69 ± 0.08 |
| F          | 1.207 ± 0.003 | 30.66 ± 0.08 |
| G          | 1.306 ± 0.003 | 33.17 ± 0.08 |
| H          | 1.369 min     | 34.77 min    |

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## 2. Dimensions

2.1 The location and dimensions of the recording stripes shall be as specified in the figure and table.

2.2 The magnetic stripes shall be on the side of the film which is away from the light source when used on a projector arranged for direct front projection on a reflection-type screen.

## Appendix

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

A1. The dimensions specified in this standard are predicted on the use of unshrank film. It is recognized, however, that some shrinkage may occur when striping a processed print. Specific measurements should take into account the overall width of the film as specified by Dimension A in ANSI PH22.102-1980. Should the film width fall outside the permissible tolerance, all dimensions specified in this standard may be multiplied by the ratio of nominal dimensions determined as follows:

$$\frac{\text{Measured width}}{\text{Specified width}} = \text{Ratio of nominal dimensions}$$

A2. The outer edge of the magnetic striping ideally should be coincident with the edge of the film and, for this reason, Dimension B is specified as maximum and Dimension H as minimum.

A3. Prints conforming to this standard are prepared in accordance with American National Standard Specifications for Projector Usage of 35-mm Release Prints Having Four Perforations Per Picture Frame, ANSI PH22.194-1977, and American National Standard Position, Dimensions and Reproducing Speed of Four Magnetic Sound Records on 35-mm Motion-Picture Release Prints, ANSI PH22.137-1981.

## 3. Film Stock

The film stock used shall be safety type, cut and perforated in accordance with American National Standard Dimensions for 35-mm Motion-Picture Film, CS-1870, ANSI PH22.102-1980.

# American National Standard motion-picture equipment—8-mm type S model 1 camera cartridges—camera run length, perforation cutout and end-of- run notch

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## 1. Scope

**1.1** This standard describes the camera run length, perforation cutout notch, and end-of-run notch of film supplied in 8-mm Type S Model 1 motion-picture film camera cartridges of 15- and 60-m (50- and 200-ft) nominal capacity, and the length of film returned to the customer.

**1.2** The purpose of this standard is to provide a uniform basis for the operation of footage counters in cameras.

## 2. Camera Run and Customer Return Lengths

**2.1.1** The camera run length of film may vary between 3666 and 3715 perforation pitch intervals (15.52 and 15.73 m [50.919 and 51.608 ft]). (See Note 1.) The overall length of the film shall be determined by the manufacturer and shall provide the camera run length specified.

**2.1.2** The length of film returned to the customer shall contain a minimum of 3600 perforation pitch intervals. The customer return length shall be that portion of the camera run length available for subject matter which starts at least 13 perforation pitch intervals (55 mm [2.17 in]) after the frame located at the camera aperture, as the cartridge is supplied by the manufacturer, and

ends at least 37 perforation pitch intervals (157 mm [6.18 in]) short of the limit as provided by a perforation cutout. (See Appendix A1.)

**2.2** 60-m (200-ft) Capacity Cartridge

**2.2.1** The camera run length of film may vary between 14 450 and 14 530 perforation pitch intervals (61.18 and 61.52 m [200.722 and 201.837 ft]). (See Note 1.) The overall length of the film shall be determined by the manufacturer and shall provide the camera run length specified.

**2.2.2** The length of film returned to the customer shall contain a minimum of 14 400 perforation pitch intervals. The customer return length shall be that portion of the camera run length available for subject matter which starts at least 13 perforation pitch intervals (55 mm [2.17 in]) after the frame located at the camera aperture, as the cartridge is supplied by the manufacturer, and ends at least 37 perforation pitch intervals (157 mm [6.18 in]) short of the limit as provided by a perforation cutout. (See Appendix A1.)

**2.3** The end of the film shall have a visual marking in the frame area, and a means shall be provided of stopping the final portion of the film in the film cartridge aperture, affording the user visual confirmation that all the film has been exposed. (See Appendix A2.)

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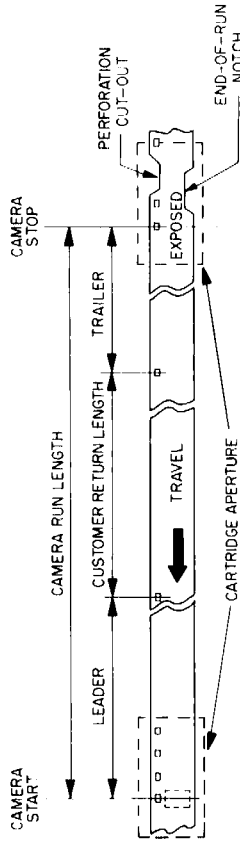


Fig. 1  
Camera Run Length and Notches

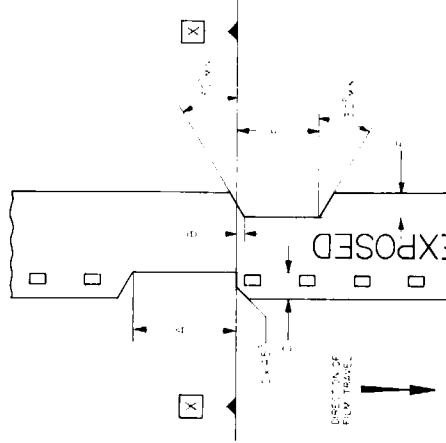


Fig. 2  
Notch Dimensions

| Dimensions | Millimeters | Inches        |
|------------|-------------|---------------|
| A*         | 5.38 min    | 0.212 min     |
| B†         | 0.30 max    | 0.012 max     |
| C          | 0.55 max    | 0.022 max     |
| D          | 1.50 min    | 0.059 min     |
| E          | 4.75 ± 0.75 | 0.187 ± 0.030 |
| F          | 0.80 min    | 0.031 min     |

\*See 3.2.  
†See 3.6.

ANSI PH22.200M-1982

### 3. Perforation Cutout and End-of-Run Notches

3.1 The dimensions shall be as given in Fig. 2 and the table.

3.2 Datum Line X (see Fig. 2) is established by the leading edge of the perforation cutout, which is the last edge of the film to be contacted by the camera pull-down claw. It is recognized that in some manufacturing operations the perforation cutout notch leading edge may intersect a perforation. When a perforation is intersected, Datum Line X is established by the leading edge of the perforation.

3.3 The beveled cut shown at the trailing edge of the perforation cutout is not a requirement of this standard. Some bevel is desirable, however, to reduce the possibility of catching or snagging the edge of the notch in the internal mechanism of the cartridge.

3.4 The 30-degree minimum beveled cuts at the ends of the end-of-run notch are to facilitate the entry of the camera's sensing finger and to reduce the possibility of catching or snagging the edge of the notch in the internal mechanism of the cartridge.

3.5 The inside and outside corners of the notches shall have a maximum radius of 0.3 mm (0.01 in).

3.6 Dimension B for the end-of-run notch shown in Fig. 2 is expressed as a maximum to ensure a

minimum notch length. There is no functional need to specify a maximum notch length. The trailing edge of the notch, specified by Dimension B, may approach or cross Datum Line X so that the notch length could extend to the end of the film, provided the notch depth, Dimension F, is maintained.

NOTE 1: A nominal pitch, based on 72 perforation pitch intervals per foot, of 4.234 mm (0.1667 in) is assumed for all comparisons of the number of perforation pitch intervals in a given film length.

NOTE 2: The sum of the minimum customer return length, leader, and trailer is intentionally less than the minimum camera run length. This difference provides a tolerance for the film processor in unloading the cartridge, making processing machine splices, and the like.

NOTE 3: In addition to this standard, the following documents relating to 8-mm Type S Model 1 motion-picture film camera cartridges are available:

American National Standard Specifications for 8-mm Type S Model 1 Motion-Picture Film Camera Cartridge, Cartridge-Camera Interface and Take-Up Core Drive, ANSI PH22.159.1-1980

American National Standard Specifications for 8-mm Type S Model 1 Sound Motion-Picture Film Camera Cartridge, Cartridge-Camera Interface and Take-Up Core Drive, ANSI PH22.197-1980

American National Standard Specifications for 8-mm Type S Motion-Picture Camera Cartridge, Cartridge-Camera Interface and Take-Up Core Drive (200-Ft Capacity), ANSI PH22.205-1982.

### Appendix

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

use of a projection over which a hole in the film can be made to drop during the collapse of the loop between the picture and sound recording areas of the cartridge.

A3. When a punch and die set is used to cut both perforation and end-of-run notches simultaneously, the dimension equivalent to Dimension E may utilize the entire range from 4.00 to 5.50 mm (0.157 to 0.217 in). However, the set may be designed with a dimension equivalent to Dimension E of 5.18 to 5.50 mm (0.204 to 0.217 in) to ensure that the minimum for Dimension E is met.

A4. The dimensions established for the end-of-run notch will permit the use of the cutout in the upper half of the cartridge pressure pad.

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# American National Standard motion-picture film (8-mm type S) — projector usage

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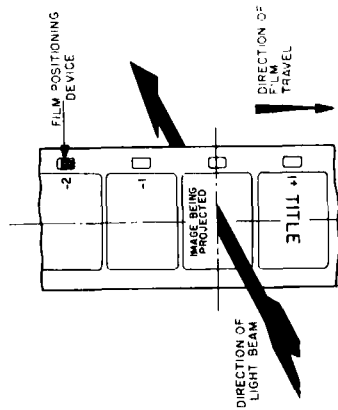
## 1. Scope

This standard specifies the emulsion position, the projection frame rate, and the orientation of the area to be projected for 8-mm Type S motion-picture film.

## 2. Emulsion and Film Position

2.1 The emulsion orientation of sound or silent prints or original camera films shall be toward the projection lens when the film is threaded for direct front projection, as shown in the figure.

2.2 The perforation used for the film-positioning device shall be two perforations above the perforation adjacent to the projected aperture when the positioning device is at the bottom of its stroke (the —2 position). This location coincides with that of the vertical positioning device required for 8-mm Type S camera original films and therefore improves steadiness through cancellation.



Film as Seen from Projector Light Source  
Looking toward Lens; Emulsion  
Away from Observer

## 3. Projected Image Area

The dimensions and position of the projectable image area relative to the film-positioning perforation and reference edge of the film shall be as specified in American National Standard Dimensions of Projectable Image Area on 8-mm Type S Motion-Picture Film, ANSI PH22.154-1982. It is customary to provide a framing movement of approximately 0.015 in (0.38 mm) above and below this position.

## 4. Projection Frame Rate

4.1 A projection frame rate of 24 frames per second shall be used for professional films containing a sound record which was recorded for 24-frame projection.

4.2 A projection frame rate of 18 frames per second shall be used for non-professional films containing a sound record which was recorded for 18-frame projection.

## Appendix

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Because of the increased intensity of illumination available in modern 8-mm projection systems, the industry has found it desirable to extend the flicker threshold by choosing as high a projection rate (and, therefore, as high a flicker frequency) as practicable. A projection rate of 18 frames per second and a corresponding flicker frequency of 54 Hz (obtained with a three-blade shutter) has been found by experience to be an acceptable compromise.

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