SMPTE STANDARD

SMPTE 200M-2003
Revision of
ANSI/SMPTE 200M-1998

for Motion-Picture Film (8-mm Type S) — Model 1 Sound Camera Cartridge — Camera Run Length, Perforation Cutout and End-of-Run Notch

1 Scope and purpose

1.1 Scope

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-m and 60-m (50-ft and 200-ft) nominal capacity, and the length of film returned to the customer.

1.2 Purpose

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 (see figure 1)

2.1 15-m (50-ft) capacity cartridge

2.1.1 The camera run length of film may vary between 3666 and 3715 perforation pitch intervals (15.52 m and 15.73 m [50.919 ft 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 annex A.1).

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 m and 61.52 m [200.722 ft 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 annex A.1).

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 annex A.2).

Approved
November 12, 2003

3 Perforation cutout and end-of-run notches

3.1 The dimensions shall be as given in figure 2 and table 1.

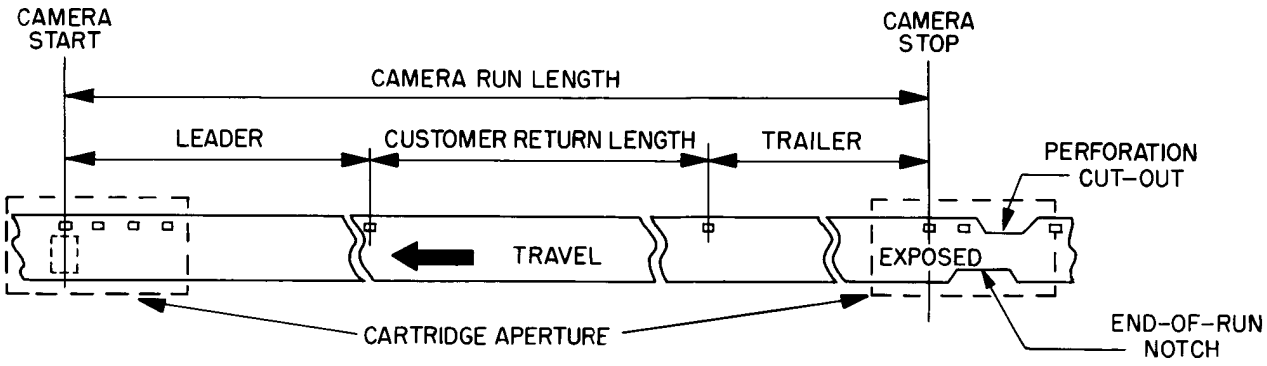

Figure 1 – Camera run length and notches

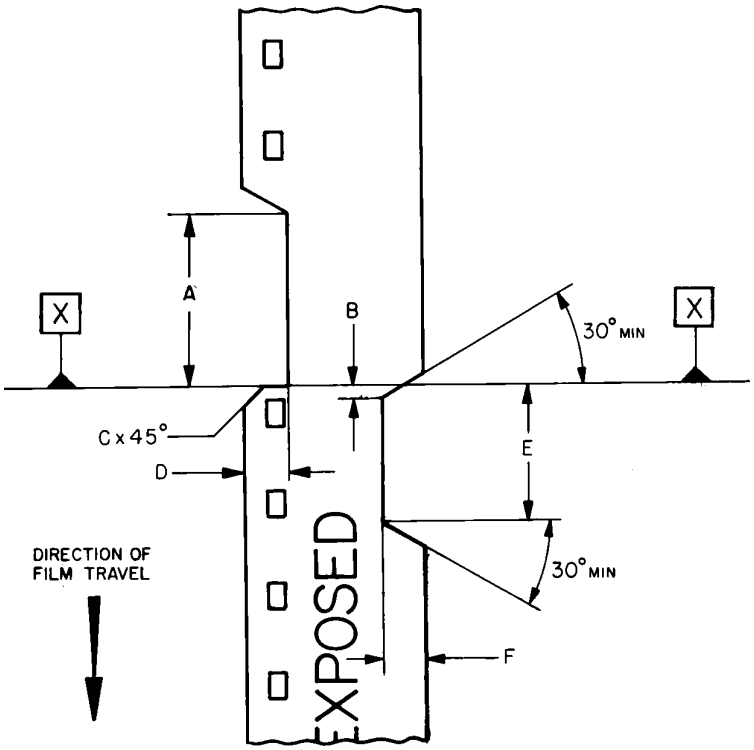

Figure 2 – Notch dimensions

Table 1 – Specifications

Dimensions	Millimeters	Inches
A[1)]	5.38 min	0.212 min
B[2)]	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

[1)] See 3.2.
[2)] See 3.6.

3.2 Datum line X (see figure 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° 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 figure 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.

NOTES

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.

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.

Annex A (informative)
Additional data

A.1 The lengths specified for the leader and trailer are necessary to avoid image fogging near the aperture. The leader and trailer also provide space for identification numbers and allow for manufacturing variability of film lengths.

A.2 For sound cartridges, it is suggested that positive means of stopping the film at the end of the camera run be provided to prevent the film end from being completely wound into the cartridge. This could be accomplished by a mechanical latching arrangement activated by changes in the film path through the cartridge at the time that film transport through the picture aperture ceases as a result of the presence of the perforation cutout notch. A technique to accomplish this involves the 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 area of the cartridge.

A.3 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 mm to 5.50 mm (0.157 in to 0.217 in). However, the set may be designed with a dimension equivalent to dimension E of 5.18 mm to 5.50 mm (0.204 in to 0.217 in) to ensure that the minimum for dimension E is met.

A.4 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.

Annex B (informative)
Bibliography

ANSI/SMPTE 205-1993 (R2003), Motion-Picture Equipment (8-mm Type S) — Model 1 Camera Cartridge — Interface and Take-Up Core Drive (200-Ft Capacity)

SMPTE 159.1-2001, Motion-Picture Film (8-mm Type S) — Model 1 Camera Cartridge, Cartridge-Camera Interface and Take-Up Core Drive

SMPTE 197-2003, Motion-Picture Film (8-mm Type S) — 50-Ft Model 1 Sound Camera Cartridge — Cartridge, Cartridge-Camera Interface and Take-Up Core