

Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 69 was prepared by Technical Committee ISO/TC 36, *Cinematography*.

This second edition cancels and replaces the first edition (ISO 69:1972), tighter tolerances on pitch and margin having been introduced for professional camera films.

Annex A of this International Standard is for information only.

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Cinematography — 16 mm motion-picture and magnetic film — Cutting and perforating dimensions

1 Scope

This International Standard specifies the cutting and perforating dimensions for 16 mm motion-picture and magnetic films with one or two rows of perforations for the following two categories:

- a) 16 mm motion-picture and magnetic films;
- b) manufacturer-designated 16 mm professional motion-picture camera films with tighter tolerances.

This International Standard applies to safety raw stock film as described in ISO 543.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 543:1974, *Cinematography — Motion-picture safety film — Definition, testing and marking*.

ISO 554:1976, *Standard atmospheres for conditioning and/or testing — Specifications*.

3 Dimensions

3.1 The dimensions and tolerances shall be as given in table 1 and in the accompanying figure 1 to figure 4, and apply to safety raw stock film as described in ISO 543. The dimensions shall apply at the time of cutting and perforating for film adjusted to a temperature of $23 \text{ }^{\circ}\text{C} \pm 1 \text{ }^{\circ}\text{C}$ and a relative humidity of $(50 \pm 2) \%$, which is the recommended

atmosphere for conditioning and/or testing with reduced tolerances specified in ISO 554.

NOTES

1 If required by usage, the manufacturer may indicate other atmospheric conditions which applied to the dimensional control and testing at the time of cutting and perforating.

2 This International Standard is based on values adopted for film defined as "low-shrinkage". See annex A, clause A.3 for definition of "low-shrinkage".

3.2 The dimensions and tolerances of 16 mm full-coat magnetic materials at the time of cutting and perforating shall be as specified by dimensions B' and L' in table 1.

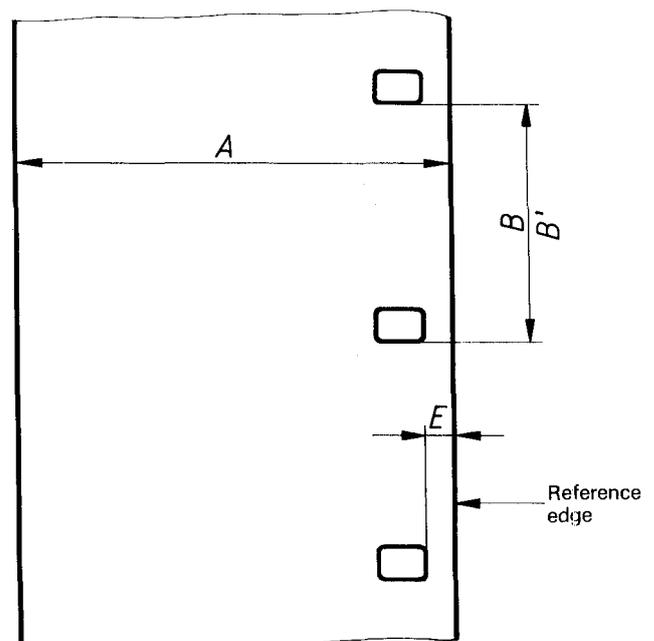


Figure 1 — Film with perforations along one edge (Type 1)

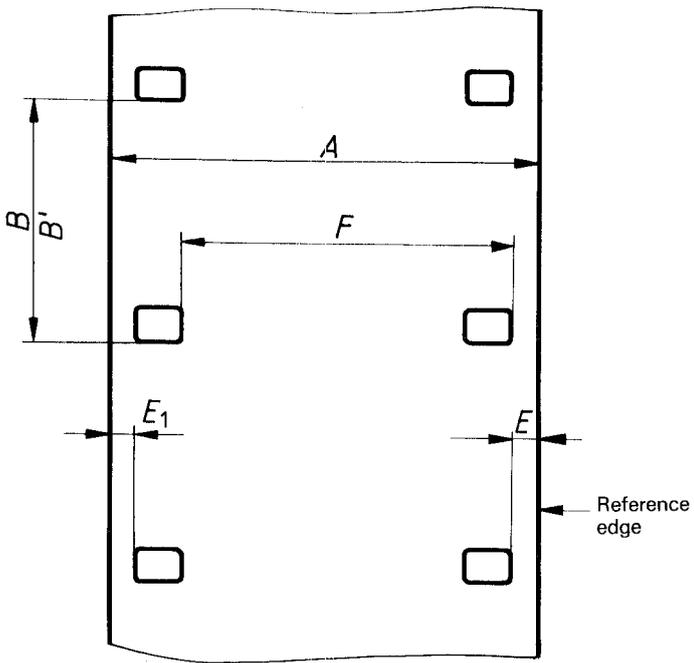


Figure 2 — Film with perforations along two edges (Type 2)

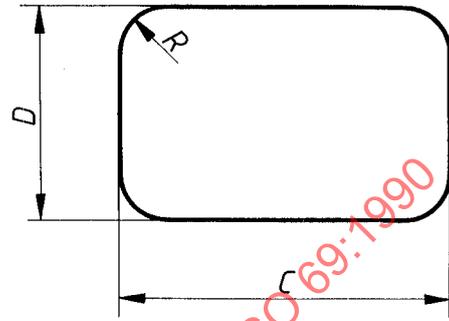


Figure 3 — Detail of perforation

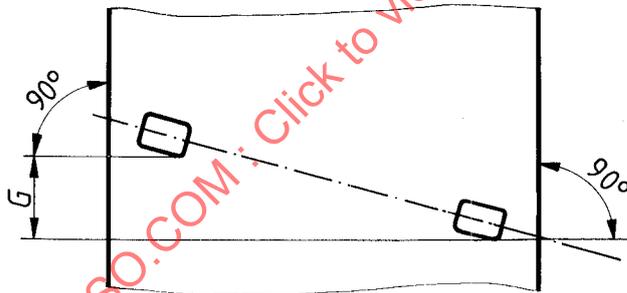


Figure 4 — Permissible alignment deviation of the rows of perforations (Type 2)

Table 1 — Dimensions and tolerances

Dimension	All films		Designated professional camera films (with tighter tolerances in bold type)		
	mm	in	mm	in	Notes
<i>A</i>	15,950 ± 0,025	0,628 0 ± 0,001 0	15,950 ± 0,025	0,628 0 ± 0,001 0	
*) <i>B</i>	7,620 ± 0,010	0,300 0 ± 0,000 4	7,620 ± 0,010	0,300 0 ± 0,000 4	4 and 5
**) <i>B'</i>	7,605 ± 0,010	0,299 4 ± 0,000 4	7,605 ± 0,010	0,299 4 ± 0,000 4	4 and 5
<i>C</i>	1,830 ± 0,010	0,072 0 ± 0,000 4	1,830 ± 0,010	0,072 0 ± 0,000 4	4
<i>D</i>	1,270 ± 0,010	0,050 0 ± 0,000 4	1,270 ± 0,010	0,050 0 ± 0,000 4	4
<i>E</i>	0,900 ± 0,050	0,035 5 ± 0,002 0	0,900 ± 0,025	0,035 5 ± 0,001 0	4 and 5
<i>E</i> ₁	0,900 ± 0,050	0,035 5 ± 0,002 0	0,900 ± 0,050	0,035 5 ± 0,002 0	
<i>F</i>	12,32 ref.	0,485 ref.	12,32 ref.	0,485 ref.	
<i>G</i>	0,025 max.	0,001 0 max.	0,010 max.	0,000 4 max.	
*) <i>L</i>	762,0 ± 0,8	30,00 ± 0,03	762,0 ± 0,8	30,00 ± 0,03	
**) <i>L'</i>	760,5 ± 0,8	29,94 ± 0,03	760,5 ± 0,8	29,94 ± 0,03	
<i>R</i>	0,25 ± 0,03	0,010 ± 0,001	0,25 ± 0,03	0,010 ± 0,001	

*)*B* and *L* refer to long pitch.
 **)*B'* and *L'* refer to short pitch.

NOTES (applicable to all 16 mm films)

- Dimensions *L* and *L'* represent the length of any 100 consecutive perforation intervals.
- Dimensions *B'* and *L'* (short perforation pitch) are provided to fulfil the requirements of continuous-sprocket printing (see annex A, clause A.4).
- F* is given as a reference dimension and typically represents manufacturing punch and die setup.

NOTES (applicable only to films designated by the manufacturer for professional camera use)

- In addition, the range of values measured in any 50 consecutive perforations shall not exceed 0,010 mm (0,000 4 in) for dimensions *B*, *B'*, *C* and *D*, and 0,020 mm (0,000 8 in) for dimension *E* (see annex A, clause A.1).
- In addition, the difference in dimensional value of *B* or *B'* between any consecutive perforation intervals shall not exceed 0,005 mm (0,000 2 in). Between consecutive perforations, the difference in dimensional value of *E* shall not exceed 0,010 mm (0,000 4 in) (see annex A, clause A.1).

4 Identification of reference edge for guiding

4.1 For film perforated along one edge, the edge adjacent to the perforation is the reference edge.

4.2 For film perforated along two edges, the reference edge shall be identified by the winding of the

film. With the film wound emulsion-in, and the roll of film unwinding downwards toward the observer, the reference edge is along the right-hand side of the film (see figure 5).

4.3 The sequential edge numbers (key numbers or footage numbers) are exposed by the film manufacturer along the reference edge of the film.

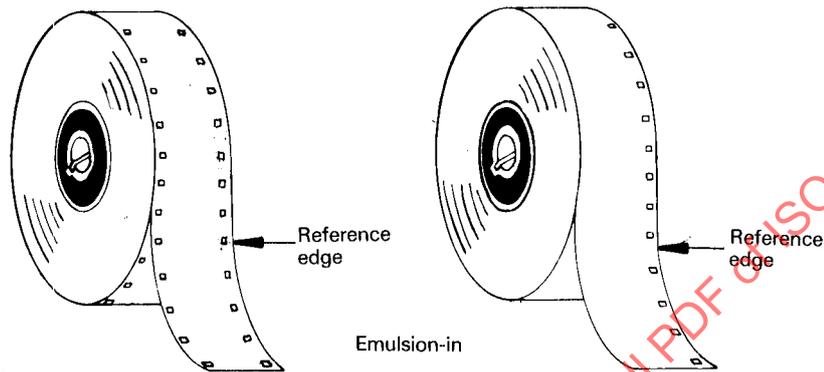


Figure 5 — Identification of reference edge