

INTERNATIONAL
STANDARD

ISO
490

Second edition
1993-06-01

**Cinematography — Magnetic stripes and
magnetic recording head gaps for sound
record on 16 mm motion-picture film
perforated along one edge (Type 1) —
Positions and width dimensions**

*Cinématographie — Pistes magnétiques et entrefers de têtes
magnétiques d'enregistrement pour l'enregistrement du son sur film
cinématographique 16 mm perforé sur un bord (Type 1) — Emplacement
et largeurs*



Reference number
ISO 490:1993(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 490 was prepared by Technical Committee ISO/TC 36, *Cinematography*.

This second edition cancels and replaces the first edition (ISO 490:1978), of which it constitutes a technical revision.

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Cinematography — Magnetic stripes and magnetic recording head gaps for sound record on 16 mm motion-picture film perforated along one edge (Type 1) — Positions and width dimensions

1 Scope

1.1 This International Standard specifies the location and width of the magnetic striping on 16 mm motion-picture film perforated along one edge (Type 1) with picture, slit and perforated in accordance with ISO 69.

1.2 This International Standard also specifies the location and width of the magnetic recording head gaps in systems using a magnetic stripe on 16 mm motion-picture film.

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 69:1990, *Cinematography — 16 mm motion-picture and magnetic film — Cutting and perforating dimensions*.

ISO 359:1983, *Cinematography — Projectable image area on 16 mm motion-picture prints — Dimensions and location*.

ISO 1188:1984, *Cinematography — Recorded characteristic for magnetic sound on full-coat 16 mm motion-picture film — Specifications*.

ISO 4243:1979, *Cinematography — Picture image area and photographic sound record on 16 mm motion-picture release prints — Positions and dimensions*.

3 Location and width of magnetic striping

3.1 The location and width of the magnetic striping shall be as shown in figure 1 and table 1.

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

3.3 If the magnetic sound stripe increases the thickness of the film by more than 0,005 mm, a balance stripe shall be applied to equalize effectively the thickness of the two edges of the film. The balance stripe should have essentially the same thickness and shall have the same composition as the sound record stripe.

3.4 The thickness of the magnetic sound stripe and of the balance stripe shall not exceed 0,020 mm (0,000 8 in).

4 Location and width of gaps of magnetic heads

4.1 The location and width of gaps of the recording magnetic heads shall be as shown in figure 1 and table 1.

4.2 The effective gaps in the magnetic heads shall be at an angle of $90^\circ \pm 5'$ to the longitudinal axis of the film travel.

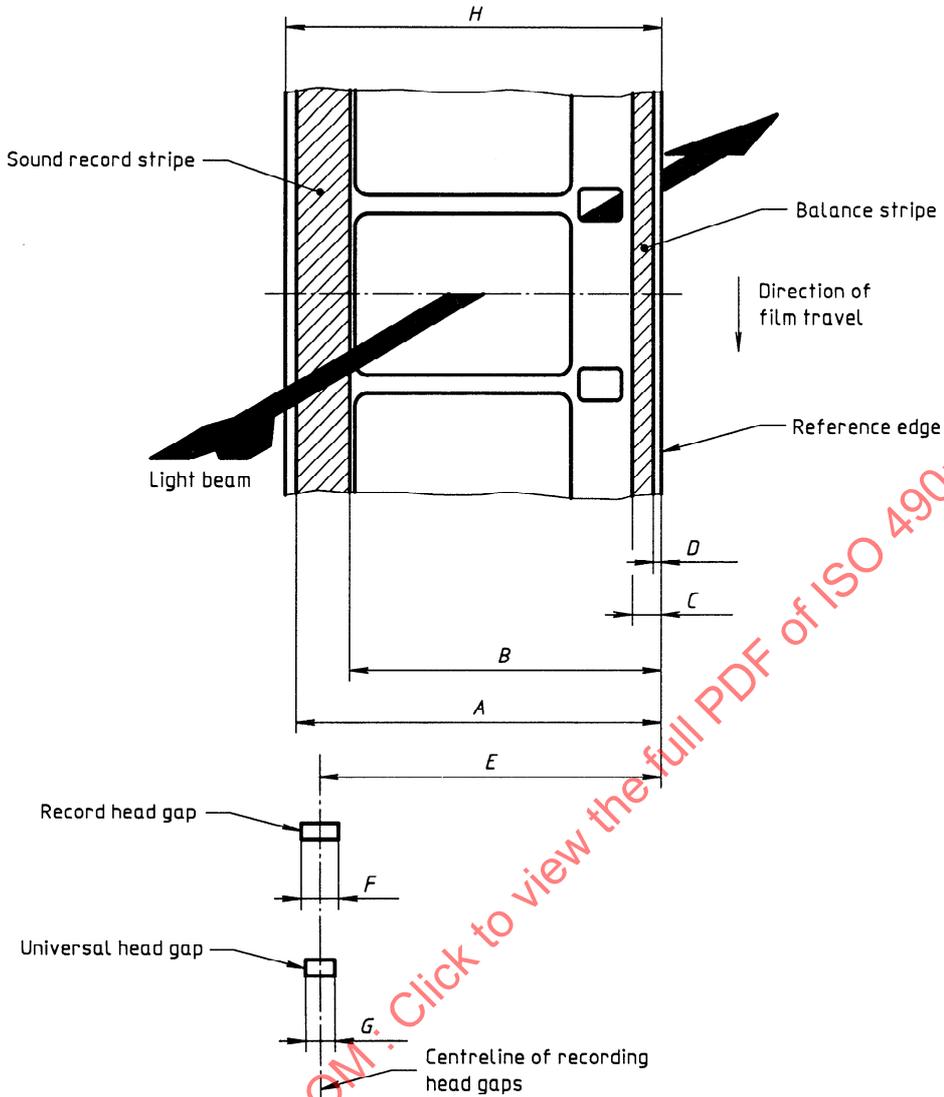


Figure 1

Table 1 — Dimensions

Dimension	mm	in
A min.	15,80	0,622
B	13,25 $\begin{smallmatrix} 0 \\ -0,15 \end{smallmatrix}$	0,522 $\begin{smallmatrix} 0 \\ -0,006 \end{smallmatrix}$
C	0,80 $\begin{smallmatrix} 0 \\ -0,15 \end{smallmatrix}$	0,031 $\begin{smallmatrix} 0 \\ -0,006 \end{smallmatrix}$
D max.	0,15	0,006
E	14,55 ± 0,05	0,573 ± 0,002
F	2,35 ± 0,10	0,092 ± 0,004
G ¹⁾	2,15 ± 0,10	0,085 ± 0,004
H ref.	15,95	0,628

1) When it is desired to employ a single head for the dual function of recording and reproducing, the universal head dimensions shall apply.

5 Film projection speed

The recording should be made in accordance with ISO 1188 so that the sound record will reproduce properly at the projection speeds indicated for the applications specified in table 2.

6 Longitudinal picture-sound displacement

The magnetic sound record on the film shall precede the centre of the corresponding picture by a distance of 28 ± 1 frames, and preferably by a distance of $28 \pm 0,5$ frames.

Table 2 — Film projection speed

Application	cm/s	ft/min	Frames or perforations per second
A. Primary standards			
1) Cinematography	18,3	36	24
2) Television			
— for 50 Hz supplies	19,05	37,5	25
— for 60 Hz supplies	18,3	36	24
B. Secondary standards			
(non-professional use)	13,716	27	18 ¹⁾
1) It is recognized that some equipment is available and in use which operates at 16 frames per second.			

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