
International Standard 2404

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Cinematography — Six-track magnetic sound records on 70 mm film for release prints — Locations and dimensions

Cinématographie — Copies d'exploitation 70 mm à six pistes magnétiques — Emplacements et dimensions

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 2404 was developed by Technical Committee ISO/TC 36, *Cinematography*, and was circulated to the member bodies in August 1978.

It has been approved by the member bodies of the following countries :

Australia	Germany, F. R.	Poland
Belgium	Italy	Spain
Canada	Japan	Sweden
Czechoslovakia	Korea, Rep. of	United Kingdom
Denmark	Mexico	USA
France	Netherlands	USSR

No member body expressed disapproval of the document.

Cinematography — Six-track magnetic sound records on 70 mm film for release prints — Locations and dimensions

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1 Scope and field of application

This International Standard specifies the locations and the width dimensions of magnetic stripes and recording and reproducing gaps of magnetic heads for six-track magnetic sound records on 70 mm release prints.

2 References

[ISO 2404:1979](#)

[ISO 2467, Cinematography — 65 mm and 70 mm motion-picture film — Image area produced by camera aperture and projectable image area.](#)

ISO 3023, *Cinematography — 65 mm and 70 mm motion-picture film — Cutting and perforating dimensions.*

3 Dimensions

The locations and width dimensions of magnetic stripes and gaps of magnetic heads shall be as given in the figure and table.

Dimension	mm	in
A (see note 1)	69,95 ± 0,05	2.754 ± 0.002
B	69,15 ± 0,05	2.722 ± 0.002
C	4,80 ± 0,05	0.189 ± 0.002
D	8,15 ± 0,05	0.321 ± 0.002
E	9,95 ± 0,05	0.392 ± 0.002
F	G ± 0,10	G ± 0.004
H	67,15 ± 0,05	2.644 ± 0.002
J	2,80 ± 0,05	0.110 ± 0.002
K	8,05 ± 0,05	0.317 ± 0.002
L	1,60 ± 0,05	0.063 ± 0.002
M	N ± 0,10	N ± 0.004
P (see note 3)	67,00 ± 0,05	2.638 ± 0.002
Q	1,25 ± 0,05	0.049 ± 0.002
R	S ± 0,10	S ± 0.004

NOTES

1 For reference only.

The locations and width dimensions of magnetic stripes and recording gaps of magnetic heads are chosen on the assumption that the lateral film shrinkage is within the range of 0 to 0,2 % at the time of striping and/or recording.

3 The locations of reproducing gaps of magnetic heads for projectors are chosen on the assumption that the lateral film shrinkage at the time of presentation is 0,2 % greater than at the time of striping. The locations of reproducing gaps of magnetic heads in the equipment used for the production of release prints can be the same as that for the recording heads.

4 Alignment of heads

The gaps of recording and reproducing magnetic heads respectively shall be in line at an angle of 90° ± 5' to the direction of the film travel.

5 Sound recording

For the listener facing the screen, the stripes shall be used for the sound recording for the following channels :

Stripe No. 1 — for the extreme left channel

Stripe No. 2 — for the left central channel

Stripe No. 3 — for the central channel

Stripe No. 4 — for the right central channel

Stripe No. 5 — for the extreme right channel

Stripe No. 6 — for the loudspeakers in auditorium or for recording (monitoring) signals inaudible to a spectator.

NOTE — In special motion-picture films, for achieving certain sound effects some other arrangement of the stripes on the release print is warranted.

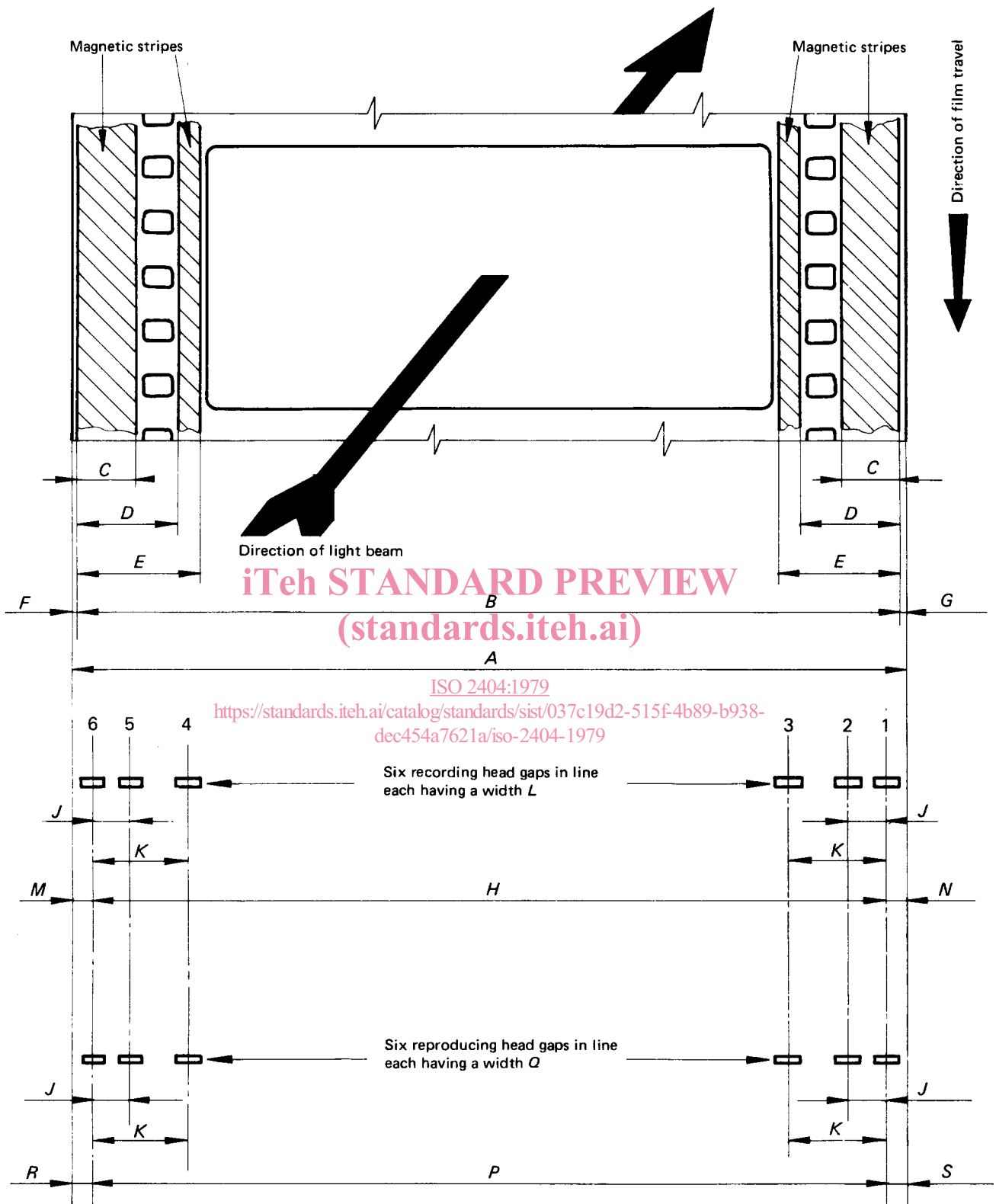
6 Picture-sound displacement

The magnetic sound records on the film shall lag behind the centre of the corresponding picture by a distance of 24 frames ± 1/2 frame.

NOTE — With the picture-sound displacement on the film of 24 frames and the projector threaded at 25 frames, synchronisation of picture and sound will be correct for an observer at a distance of about 15 m (50 ft) from the screen.

7 Reproducing speed

The recording shall be made so that the sound records will reproduce properly at 120 perforations per second [approximately 34 m (112 ft) per minute or 57 cm (22.4 in) per second], which is 24 frames (5 perforations each) per second.



Figure

The figure shows the film as seen from the light source in the projector arranged for projection onto a reflection type screen. With the direction of film travel as shown in the figure, the photographic layer is on the side of the film facing the light source and the magnetic coating is on the side of the film away from the light source.

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