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# INTERNATIONAL STANDARD



# 26

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

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## Cinematography — Projector usage of 16 mm motion-picture films for direct front projection — Specifications

*Cinématographie — Utilisation du film 16 mm dans le projecteur pour la projection frontale directe —  
Spécifications*

**iTeh STANDARD PREVIEW**

First edition — 1977-11-01

**(standards.iteh.ai)**

ISO 26:1977

<https://standards.iteh.ai/catalog/standards/sist/fe3a6e66-95e0-42df-8117-39a73e3b9902/iso-26-1977>

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UDC 778.5

Ref. No. ISO 26-1977 (E)

**Descriptors** : cinematography, motion-picture film-16 mm, projection, photographic images, positioning.

Price based on 2 pages

## 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 26 (originally ISO/DIS 4245) was developed by Technical Committee ISO/TC 36, *Cinematography*, and was circulated to the member bodies in August 1976.

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

Australia	India	Sweden
Austria	Italy	Switzerland
Belgium	Japan	Turkey
Canada	Korea, Rep. of	United Kingdom
Czechoslovakia	Mexico	U.S.A.
Denmark	Netherlands	U.S.S.R.
France	Romania	Yugoslavia
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No member body expressed disapproval of the document.

This International Standard cancels and replaces ISO Recommendation R 26-1956, of which it constitutes a technical revision.

# Cinematography — Projector usage of 16 mm motion-picture films for direct front projection — Specifications

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the emulsion orientation, the rate of projection, the position of the projected image area and the relationship between picture and sound in the projector, intended for direct front projection of 16 mm motion-picture films with photographic and magnetic sound records, and 16 mm silent motion-picture films.

## 2 REFERENCES

ISO 25, *Cinematography — Camera usage of 16 mm motion-picture film — Specifications.*

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

ISO 490, *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.*<sup>1)</sup>

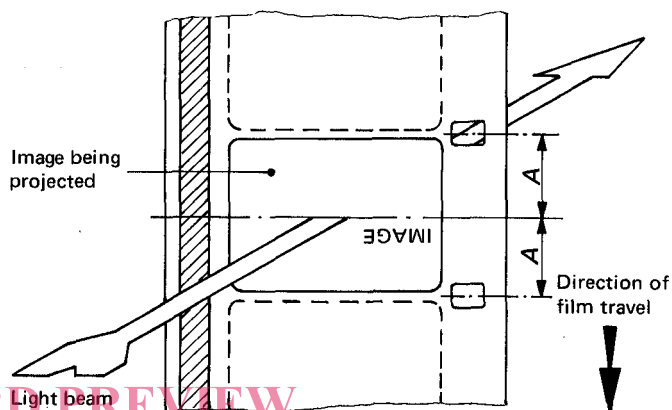
ISO 3640, *Cinematography — Motion-picture prints and sound records for international exchange of television programmes — Specifications.*

ISO 4243, *Cinematography — Picture image area and photographic sound record on 16 mm motion-picture release prints — Positions and dimensions.*<sup>2)</sup>

## 3 EMULSION ORIENTATION

The preferred emulsion orientation of 16 mm motion-picture films shall be toward the projection lens when the film is threaded for direct front projection, as shown in the figure.

NOTE — Silent 16 mm motion-picture films perforated on both edges may be threaded into the projector with the emulsion side either towards the projection lens or towards the light source. The appropriate orientation should be indicated on the leader or on the container. There should be no sequences with different emulsion orientation on the same spool.



The film is shown as seen from the light source in the projector looking towards the projector lens.

For 16 mm film, the emulsion position is dependent on the process of preparation, and either emulsion-to-light source or emulsion-to-objective lens orientation may be encountered. The actual emulsion position should be indicated by clear statement or diagram on the leader and on the label of the film container.

## 4 RATE OF PROJECTION

The rate of projection shall be  $16 \pm 2,0$  and/or  $18 \pm 1$  frame per second for silent motion-picture films and  $24 \pm 1$  frame per second for sound motion-picture films.

NOTE — Silent projectors having manually adjustable speed should be capable of reaching projection rates of 16 and 18 frames per second.

## 5 POSITION OF PROJECTED IMAGE AREA

The projected image area should be located in the vertical direction so that the horizontal axis of the projected area passes through the middle of the distance between the film perforations, as shown in the figure (dimension A).

1) At present at the stage of draft. (Revision of ISO/R 490-1966.)

2) At present at the stage of draft.

It is recommended that projectors be provided with a framing movement of 0,4 mm (0.015 in) minimum above and below the nominal position.

## 6 RELATIONSHIP BETWEEN PICTURE AND SOUND RECORD IN THE PROJECTOR

The sound record as located in the film path of the projector shall precede the centre of the corresponding picture by a distance

- a) to the scanning beam of  $26 \begin{smallmatrix} + 0,5 \\ - 1,0 \end{smallmatrix}$  frames – for photographic sound;
- b) to the gap of the reproducing magnetic head of  $28 \begin{smallmatrix} + 0,5 \\ - 1,0 \end{smallmatrix}$  frames.

## NOTES

- 1 Picture-sound displacement for prints with photographic sound is specified in ISO 4243 as  $26 \pm 1$  frame.
- 2 Picture-sound displacement for prints with magnetic sound is specified in ISO 490 as  $28 \pm 0,5$  frame.
- 3 For very short loudspeaker-to-audience distances, the film is threaded into the projector at approximately the same distance as on the film prints. For longer loudspeaker-to-audience distances, the displacement in the projector should be shortened by one frame for each approximately 15 m (50 ft) of distance from the loudspeaker to the audience centre.
- 4 The measurement of this distance must be made on the film threaded in the projector, with the same configuration of the film path as with projector running, and with the intermittent mechanism in the middle position between the end of the stroke and the beginning of the next stroke.

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ANNEX

## APPLICATIONS

The rate of projection, 24 frames per second (see clause 4) is primarily intended for professional application of 16 mm sound motion-picture prints. For non-professional applications, films may be shot at the rate of 16 to 18 frames per second, magnetically striped and a magnetic sound record added.