BSI Standards Publication

Cinematography — Projection film leader (time-based), trailer and cue marks — Specifications

bsi.

National foreword

This British Standard is the UK implementation of ISO 4241:2019. It supersedes BS ISO 4241:2013, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee CPW/36, Cinematography.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

ISBN 978 0 580 51354 1

ICS 37.060.20

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 July 2019.

Amendments/corrigenda issued since publication

Date	Text affected

INTERNATIONAL STANDARD

ISO
4241

Cinematography — Projection film leader (time-based), trailer and cue marks — Specifications

Cinématographie — Amorce de début et fin et repère de synchronisation pour la projection — Spécifications

Contents

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

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

This fifth edition cancels and replaces the fourth edition (ISO 4241:2013), of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

— change of the title;

— editorial revision of the structure of the document.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

INTERNATIONAL STANDARD

Cinematography — Projection film leader (time-based), trailer and cue marks — Specifications

1 Scope

This document specifies the makeup or assembly of time-based leaders and cue marks for 70 mm, 35 mm, and 16 mm motion-picture release prints.

NOTE   Extraneous materials are dealt with in Annex A.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4238:1976, *Cinematography — Optical printing ratios for enlargement and reduction of motion-picture film images — Specifications*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Reduction ratio

The reduction ratio in the production of the head and foot leaders from 35 mm motion-picture film to 16 mm motion-picture film shall be in accordance with ISO 4238.

5 General specifications

5.1   Orientation and dimensions of letters and numerals in this document are with respect to 35 mm motion-picture films and are modified proportionally in accordance with ISO 4238 for 70 mm and 16 mm prints.

5.2   Information appearing in the leader which is printed lengthwise (in the direction of film travel) shall read from left to right when viewed from the projection lens towards the projector light source with the head end of the film at the right. Information appearing in the leader which is printed upright shall read normally when the reel is uppermost and the head of the film hangs down ready for threading (see Figures 1 and 5 for orientation of information).

5.3   All frames in the head-leader and trailer-leader identification sections (see 6.3 and 8.3) and in frames 1 through 171 of the head-leader synchronizing section (see 6.4) shall be masked to the nominal anamorphic projection aperture [20,95 mm (0,825 in) × 17,53 mm (0,690 in)] with clear framelines nominally the height of anamorphic projection aperture framelines [1,55 mm (0,061 in)]. Frames 172 through 218 of the head-leader synchronizing section and frames 1 through 87 of the

6.2   Splicing frame

A single frame with the upright words "SPLICE HERE" and an arrow pointing to the frameline between this frame and frame 1 of the identification section to indicate where the protective section joins the identification section. The clear letters should be at least 3,2 mm (1/8 in) high on a black background.

6.3   Identification section

The identification section of the leader shall be 43 frames in length. The identification section of the head leader, when viewed as specified in 5.2, shall be made up as follows:

— Frame 1 — Black.

— Frame 2 — The word "BEG" in clear letters 11,1 mm (7/16 in) high printed upright in the centre of the frame, on a black background.

— Frame 3 — Black.

— Frame 4 — The word "of" in clear letters 2,4 mm (3/32 in) high printed lengthwise in the centre of the frame, on a black background.

— Frame 5 — Black.

— Frame 6 — The words "Subject", "Reel No.", and "Language" in clear letters 2,4 mm (3/32 in) high printed lengthwise, on a black background.

— Frame 7 — Black.

— Frame 8 — The words "Length", "Titles", and "Track" with clear letters 2,4 mm (3/32 in) high printed lengthwise, on a black background.

— Frames 9-10 — Black.

— Frame 11 — The words "Lab", "Company", and "Prod No." with clear letters 2,4 mm (3/32 in) high printed lengthwise, on a black background.

— Frame 12 — The word "HEAD" in black letters nominally 9,5 mm (3/8 in) high printed upright in the centre of the frame, on clear background.

— Frame 13 — A 1/8 in (3,2 mm) diameter black dot in the centre of the frame on a clear background.

— Frame 14 — The word "PICTURE" in black letters nominally 9,5 mm (3/8 in) high printed upright in the centre of the frame, on a clear background.

— Frames 15-16 — Two frames in which the words "SMPTE Projection Leader" in clear letters are printed upright on a black background. The letters shall not be less than 3,2 mm (1/8 in) high.

— Frame 17 — Four letter "X"s, printed in a lengthwise line adjacent to the 35 mm analogue photographic audio record, approximately 7,9 mm (5/16 in) from the 35 mm camera aperture centreline towards the 35 mm analogue photographic audio record. Letters shall be clear, 3,2 mm (1/8 in) high and 3,2 mm (1/8 in) wide, on a black background.

— Frames 18-19 — Same as frames 15-16.

— Frames 20-23 — Same as frames 3-6.

— Frame 24 — Black.

— Frames 25-26 — The words "Special Data" with clear letters 2,4 mm (3/32 in) high printed lengthwise along the edge of the frame opposite the sound track area, on a black background, starting in the 26th frame.

— Frames 27-28 — Black.

— Frames 29-30 — The words "Aspect Ratio", "Sound Type", and "Frame Rate" with clear letters 2,4 mm (3/32 in) high printed lengthwise, on a black background, starting in the 30th frame and in three separate lengthwise lines.

— Frames 31-32 — Black.

— Frame 33 — The words "16 mm", "Wind", "A", and "B" with clear letters 2,4 mm (3/32 in) high printed lengthwise, on a black background.

— Frame 34 — Black.

— Frame 35 — The words "16 mm", "Kelvin", "3200", and "5400" with clear letters 2,4 mm (3/32 in) high printed lengthwise, on a black background.

— Frames 36-43 — Black.

6.4 Synchronizing section

6.4.1   The synchronizing section of the leader shall be 218 frames in length.

6.4.2   The words and numerals indicating 16-frame units in the synchronizing section shall have the vertical dimension of the 1,85:1 projection aperture [11,3 mm (0,446 in)]. The orientation of the words and numerals shall be upright. These frames (27, 43, 59, 75, 91, 107, 123, 139, 155, and 171) shall have dashed lines to indicate the 1,37:1 projection aperture height [15,29 mm (0,602 in)].

6.4.3   The synchronizing section, when viewed as specified in 5.2, shall be made up as follows:

— Frame 1 — The 16 mm sound indication; the numeral "16" printed lengthwise in clear letters on a black background on both sides of a clear horizontal line with a clear dot of 3,2 mm (1/8 in) diameter in the centre of the frame (as shown in Figure 2). The line shall extend to the edges of the frame. This frame is repeated every 16 frames to frame 129. Frame 1 shall also contain the words "SOUND START" printed lengthwise in clear letters 3,2 mm (1/8 in) high on a black background (see Figure 2).
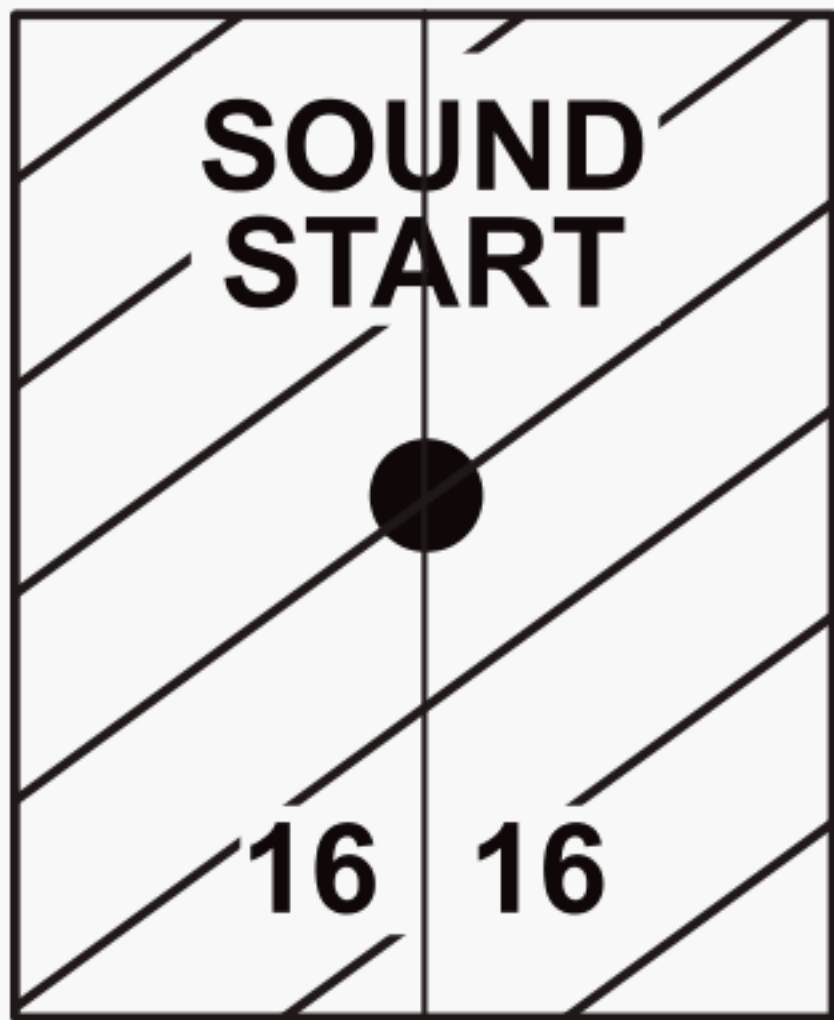

Figure 2 — 16 mm sound-start identification frame

— Frames 2-6 — Black.

— Frame 7 — The 35 mm sound indication; the numeral "35" printed lengthwise in clear letters on a black background on both sides of a clear horizontal line with a clear diamond at least 4,76 mm × 4,76 mm (3/16 in) in the centre of the frame (as shown in Figure 3). The line shall extend to the edges of the frame. This frame is repeated every 16 frames to frame 135. Frame 7 shall also contain the words

"SOUND START" printed lengthwise in clear letters 3,2 mm (1/8 in) high on a black background (see [Figure 3](#)).
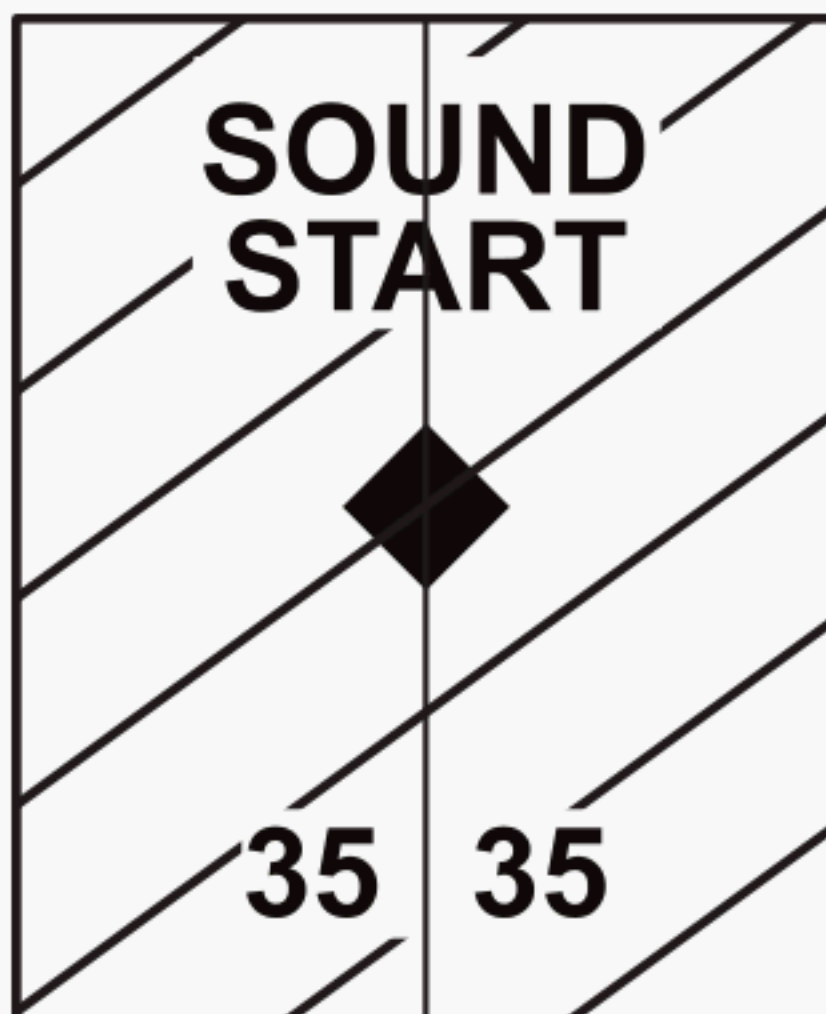

Figure 3 — 35 mm sound-start identification frame

— Frames 8-16 — Black.

— Frame 17 — Same as frame 1. Frames 18-22 — Black.

— Frame 23 — Same as frame 7.

— Frames 24-26 — Black.

— Frame 27 — The words "PICTURE START" printed upright in black on a clear background. The letters shall be 4,8 mm (3/16 in) high. The total vertical dimensions of the words shall be as described in [6.4.2](#). Visual countdown begins with this frame.

— Frames 28-32 — Black.

— Frame 33 — Same as frame 1. Frames 34-38 — Black.

— Frame 39 — Same as frame 7. Frames 40-42 — Black.

— Frame 43 — The numeral "11" printed upright in black on a clear background, with dimensions as described in [6.4.2](#).

— Frames 44-48 — Black.

— Frame 49 — Same as frame 1. Frame 50 — Black.

— Frame 51 — The 70 mm sound indication; the numeral "70" printed lengthwise in clear letters on a black background on both sides of a clear horizontal line with a clear circle of 9,5 mm (3/8 in) diameter within a clear square 9,5 mm × 9,5 mm (3/8 in) in the centre of the frame (as shown in [Figure 4](#)). This frame is repeated every 16 frames to frame 131. Frame 51 shall also contain the words "SOUND START" printed lengthwise in clear letters 3,2 mm (1/8 in) high on a black background (see [Figure 4](#)).
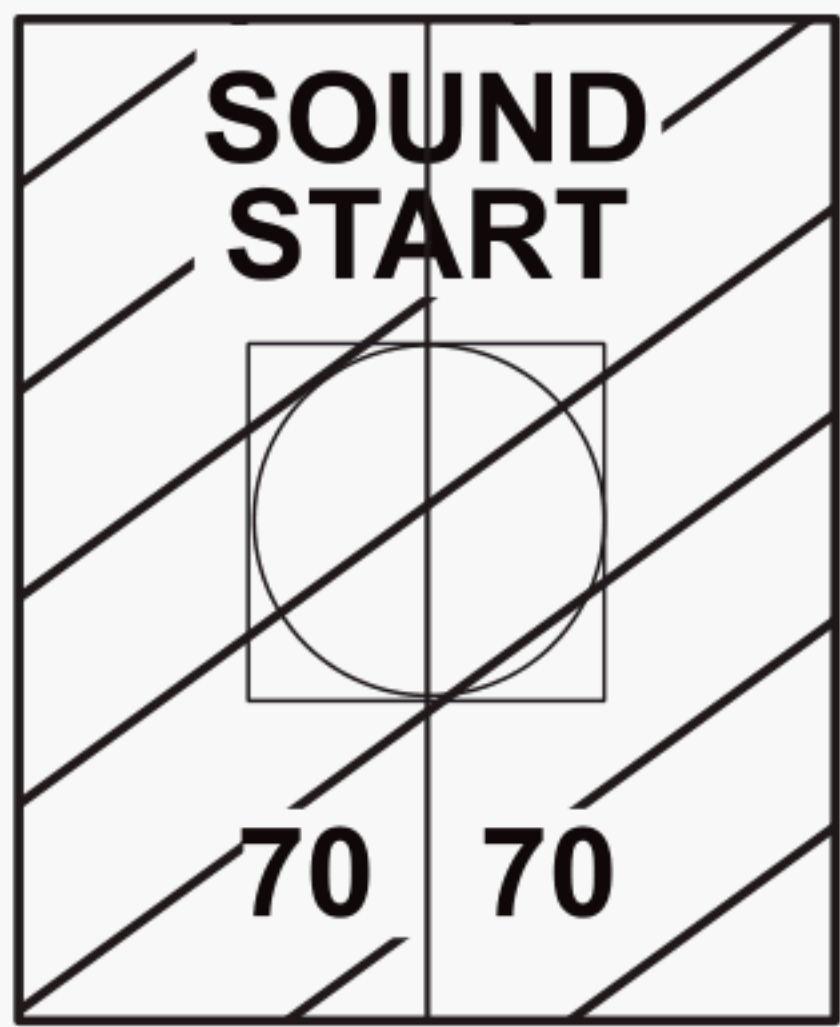
Figure 4 — 70 mm sound-start identification frame

— Frames 52-54 — Black.

— Frame 55 — Same as frame 7. Frames 56-58 — Black.

— Frame 59 — The numeral "10" printed upright in black on a clear background, with dimensions as described in 6.4.2.

— Frames 60-139 — Continuation of the sequence described from frame 44 to frame 59, inclusive, with the 16-frame units counting down. The numeral "9" shall be superscripted with the word "Nine". The numeral "6" shall be subscripted with the word "Six".

— Frames 140-144 — Black.

— Frames 145-152 — Eight frames labelled with clear arrows in frames 145 and 152 and the words "Control Test" printed lengthwise in clear letters on a black background to indicate the position in the leader where one to eight frames may be removed and a similar number of control frames spliced in.

— Frames 153-154 — Black.

— Frame 155 — The numeral "4" printed upright in black on a clear background, with dimensions as described in 6.4.2.

— Frames 156-170 — Black.

— Frame 171 — The numeral "3" printed in black on a clear background, with dimensions as described in 6.4.2.

— Frames 172-218 — Black.

6.5   Splicing frame

One additional frame shall follow with the inverted upright words "SPLICE HERE" as shown in Figure 1, and an arrow pointing to a clear frameline between frame 218 and this frame to indicate where the synchronizing section joins the picture section. The clear letters should be at least 3,2 mm (1/8 in) high printed on a black background.

7 Picture section (see Figure 5)

7.1 Picture

It is recommended that picture action start and finish on fades wherever possible. Otherwise, significant audio should be kept at least 80 frames from the start and finish of the picture.
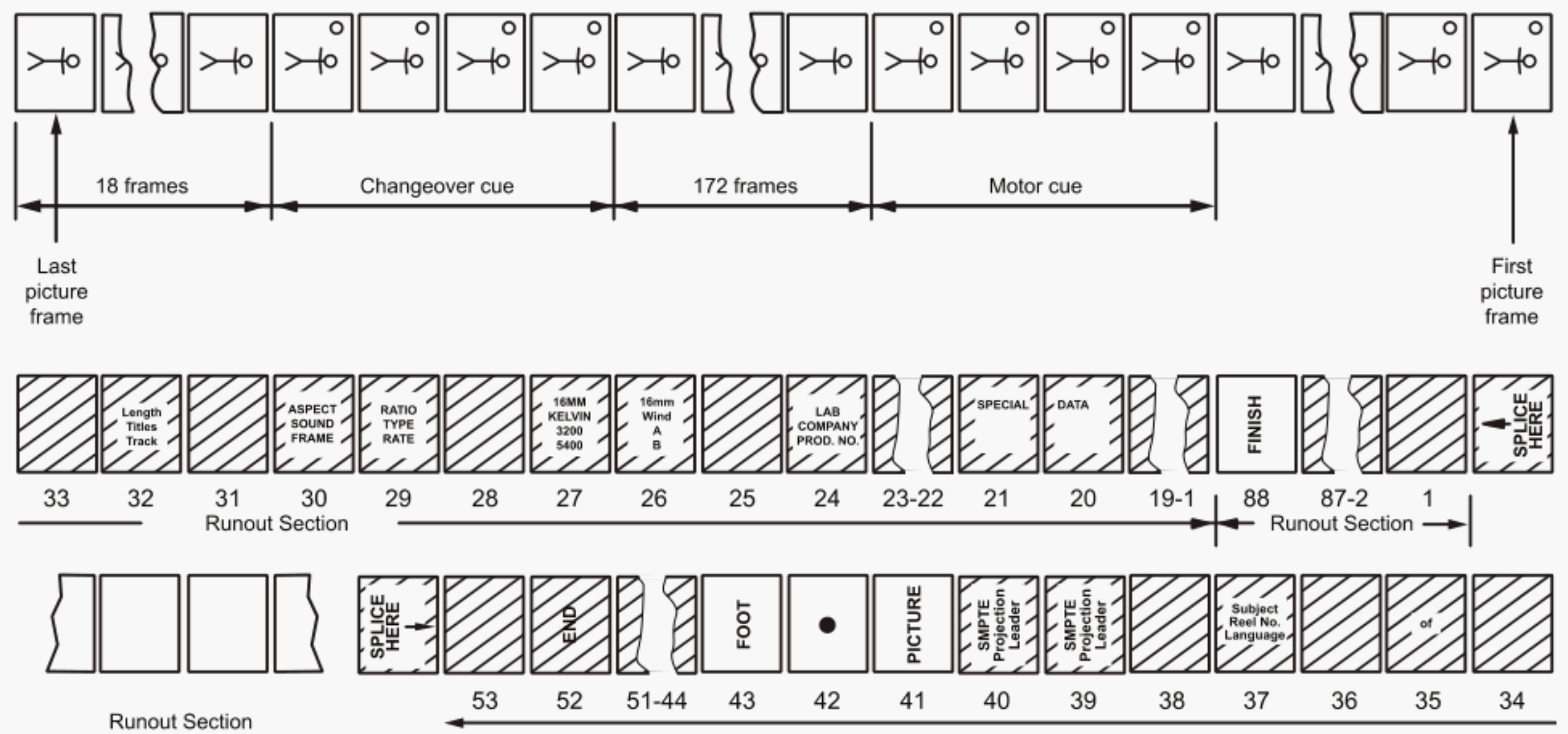
Figure 5 — Picture and trailer leader

7.2 Motor cue

The motor cue shall consist of black circles or clear circles, printed from a negative, which has had four consecutive frames marked as shown in Figures 6, 7, and 8 for 16 mm, 35 mm, and 70 mm films, respectively. The position and dimensions of this mark shall be as given in Table 1. Following the four frames containing the motor cue, there shall be 172 frames to the beginning of the changeover cue.

7.3 Changeover cue

The changeover cue shall consist of four frames containing circles of the same dimensions and position on the frame as those in the motor cue. Following the four frames of the changeover cue, there shall be 18 frames to the beginning of the runout section of the trailer.
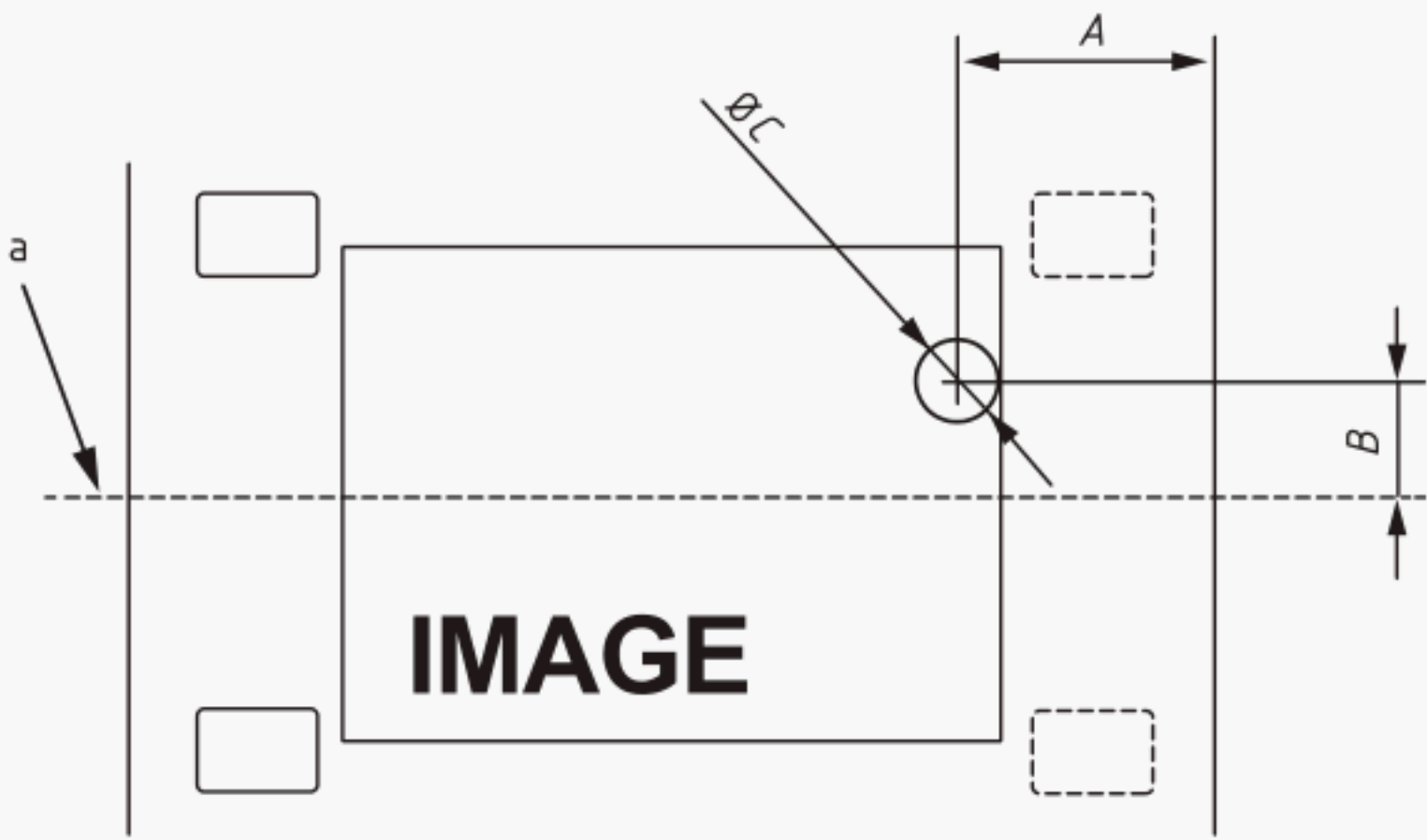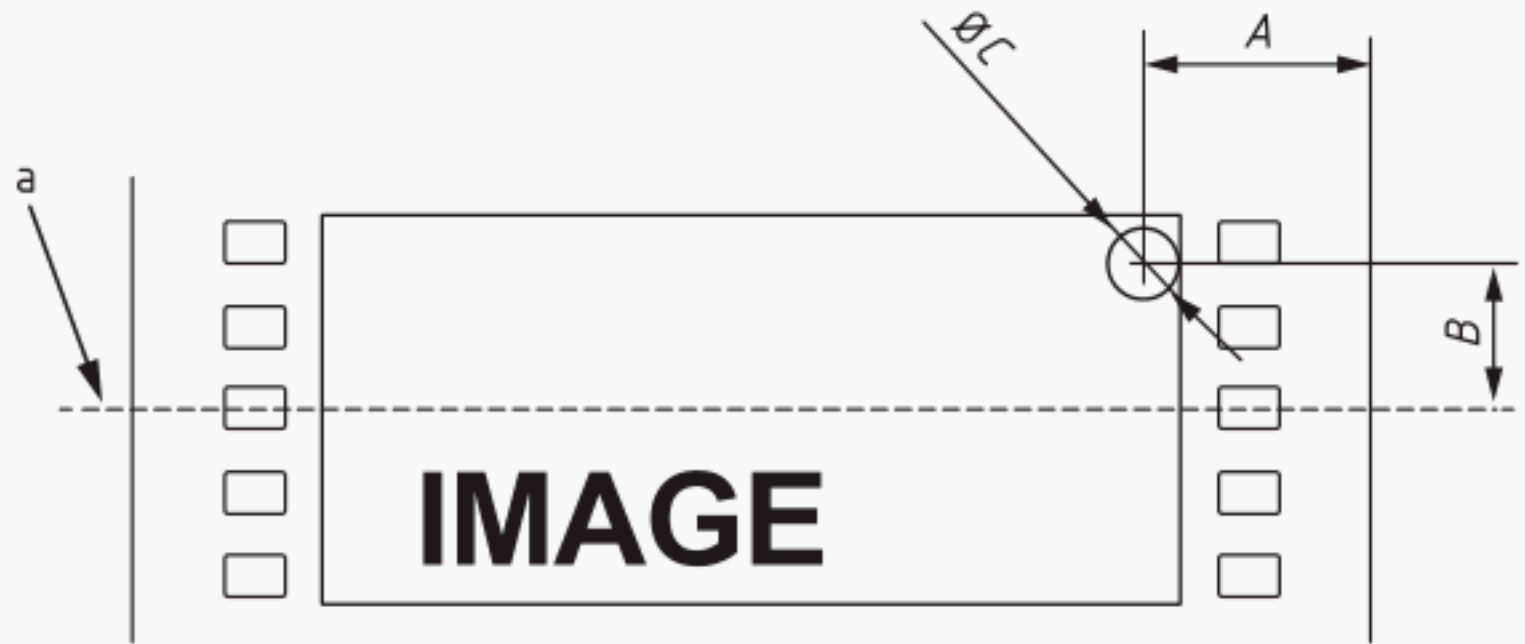
a   Centreline of projectable image area.

Figure 6 — 16 mm cue marks
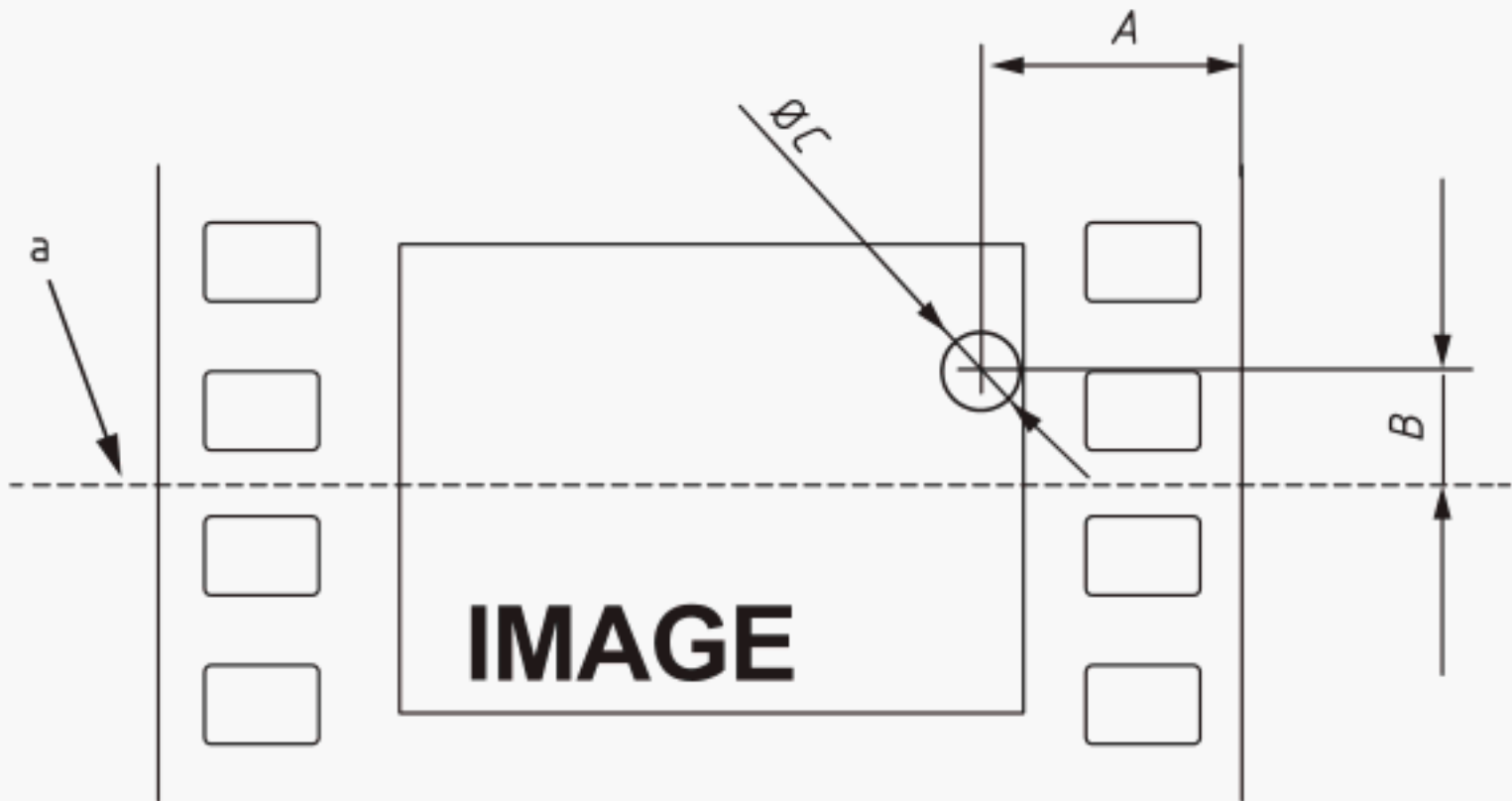
a   Centreline of projectable image area.

Figure 7 — 35 mm cue marks

a   Centreline of projectable image area.

Figure 8 — 70 mm cue marks

Table 1 — Position and dimensions of cue marks

Dimensions	16 mm film		35 mm film		70 mm film	
	mm	in	mm	in	mm	in
Centre of cue mark to edge of film, *A*	3,78	0,149	7,14	0,281	12,70	0,500
Centre of cue mark to horizontal centreline of projectable image area, *B*	1,73	0,068	3,76	0,148	8,31	0,327
Diameter of cue mark, *C*	1,09	0,043	2,39	0,094	3,45	0,136

8 Trailer (foot) leader (see Figure 5)

8.1 Splicing frame

A single frame with the upright words "SPLICE HERE" and an arrow pointing to the clear frameline shall precede frame 1 of the runout section to indicate where the runout section joins the picture section. The clear letters should be at least 3,2 mm (1/8 in) high printed on a black background.

8.2 Runout section

The runout section of the trailer shall consist of 88 frames, the first 87 of which are to be black with framelines as described in 5.3. Frame 48 shall have an asterisk on the horizontal centreline adjacent to the sound track area. Frame 88 shall have the printed word "FINISH" nominally 9,5 mm (3/8 in) high in upright black letters on a clear background.

8.3 Identification section

8.3.1 The identification section of the trailer shall consist of 53 frames.

8.3.2 The identification section shall be made up as follows.

— Frames 1-19 — Black.

— Frames 20-21 — Similar to frames 25-26 of the head-leader identification section.

— Frames 22-23 — Black.

— Frame 24 — Similar to frame 11 of the head-leader identification section.

— Frame 25 — Black.

— Frame 26 — Similar to frame 33 of the head-leader identification section.

— Frame 27 — Similar to frame 35 of the head-leader identification section.

— Frame 28 — Black.

— Frames 29-30 — Similar to frames 29-30 of the head-leader identification section.

— Frame 31 — Black.

— Frame 32 — Similar to frame 8 of the head-leader identification section.

— Frames 33-34 — Black.

— Frame 35 — Similar to frame 4 of the head-leader identification section.

— Frame 36 — Black.

— Frame 37 — Similar to frame 6 of the head-leader identification section.

— Frame 38 — Black.

— Frames 39-40 — Similar to frames 15-16 of the head-leader identification section.

— Frame 41 — Similar to frame 14 of the head-leader identification section.

— Frame 42 — Dot similar to that in frame 13 of the head-leader identification section.

— Frame 43 — Similar to frame 12 of the head-leader identification section, except that the printed word shall be "Foot".

— Frames 44-51 — Black.

— Frame 52 — The printed word "End" in clear letters 11,1 mm (7/16 in) high in the centre of the frame in the inverted upright position, as shown in Figure 5, on a black background.

— Frame 53 — Black.

8.3.3   One additional frame with the inverted upright words "SPLICE HERE" as shown in Figure 5, and an arrow pointing to a clear frameline between this frame and frame 53 to indicate where the protective section joins the trailer. The clear letters should be at least 3,2 mm (1/8 in) high printed on a black background.

8.4   Protective section

The protective section of the trailer shall consist of a minimum of 2,44 m (8 linear feet) of transparent or raw stock. When the protective leader has been reduced to a length of 1,83 m (6 linear feet), it shall be restored to its original length. Logos, trademarks, part titles, or other extraneous materials, if absolutely necessary, should be placed in this section.

Annex A
(informative)

Extraneous materials

Logos, trademarks, part titles, or other extraneous materials, if absolutely necessary, can be used to replace an equivalent number of frames in frames 36 to 43 of the head-leader identification section or in frames 44 to 51 of the trailer-leader identification section. The preferred placement area for these materials is in the protective section.

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards-based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Copyright in BSI publications

All the content in BSI publications, including British Standards, is the property of and copyrighted by BSI or some person or entity that owns copyright in the information used (such as the international standardization bodies) and has formally licensed such information to BSI for commercial publication and use.

Save for the provisions below, you may not transfer, share or disseminate any portion of the standard to any other person. You may not adapt, distribute, commercially exploit or publicly display the standard or any portion thereof in any manner whatsoever without BSI's prior written consent.

Storing and using standards

Standards purchased in soft copy format:

- A British Standard purchased in soft copy format is licensed to a sole named user for personal or internal company use only.

- The standard may be stored on more than one device provided that it is accessible by the sole named user only and that only one copy is accessed at any one time.

- A single paper copy may be printed for personal or internal company use only.

Standards purchased in hard copy format:

- A British Standard purchased in hard copy format is for personal or internal company use only.

- It may not be further reproduced – in any format – to create an additional copy. This includes scanning of the document.

If you need more than one copy of the document, or if you wish to share the document on an internal network, you can save money by choosing a subscription product (see 'Subscriptions').

Reproducing extracts

For permission to reproduce content from BSI publications contact the BSI Copyright and Licensing team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member.**

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email cservices@bsigroup.com.

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Useful Contacts

Customer Services
Tel: +44 345 086 9001
Email: cservices@bsigroup.com

Subscriptions
Tel: +44 345 086 9001
Email: subscriptions@bsigroup.com

Knowledge Centre
Tel: +44 20 8996 7004
Email: knowledgecentre@bsigroup.com

Copyright & Licensing
Tel: +44 20 8996 7070
Email: copyright@bsigroup.com

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

bsi.