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SMPTE STANDARD

SMPTE 301-2005Revision of
SMPTE 301-1999

for Motion-Picture Film — Theater Projection Leader, Trailer and Cue Marks



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1 Scope

This standard specifies the make-up or assembly of leaders and cue marks for 70-, 35-, and 16-mm motion-picture release prints for use in motion-picture theaters and screening rooms.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standard listed below.

SMPTE RP 65-2000, Motion-Picture Enlargement/Reduction Ratios

3 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 SMPTE RP 65.

4 General specifications

4.1 Orientation and dimensions of letters and numerals in this standard are with respect to 35-mm motion-picture film and are modified proportionally in accordance with SMPTE RP 65 for 70-mm and 16-mm prints .

4.2 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).

4.3 All frames in the head leader and trailer leader identification sections (see 5.3 and 7.3) and in frames 1 through 171 of the head leader synchronizing section (see 5.4) shall be masked to the nominal anamorphic projection aperture (0.825 in [20.96 mm] × 0.690 in [17.53 mm]) with clear framelines nominally the height of anamorphic projection aperture framelines (0.061 in [1.55 mm]). Frames 172 through 218 of the head leader synchronizing section and frames 1 through 87 of the trailer leader runout section shall be masked to the nominal anamorphic camera aperture (0.864 in [21.95 mm] × 0.732 in [18.59 mm]) with clear framelines nominally the height of anamorphic camera aperture framelines (0.016 in [0.41 mm]).

4.4 Since many types of film may be used for leaders, exact neutral densities have not been specified. For the purpose of this standard, the following approximate neutral densities are referred to:

- clear (neutral density less than 0.35);
- black (neutral density greater than 1.95).

5 Head leader (see figure 1)

5.1 Protective section

The protective section of the leader shall consist of a minimum of 8 linear feet (2.44 m) of transparent or raw stock. When the protective leader has been reduced to a length of 6 linear feet (1.83 m), 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.

5.2 Splicing frame

A single frame with the upright words "SPICE 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 1/8 in (3.2 mm) high on a black background.

5.3 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 4.2, shall be made up as follows:

Frame 1 – Black.

Frame 2 – The word "BEG" in clear letters 7/16 in (11.1 mm) high printed upright in the center of the frame, on black background.

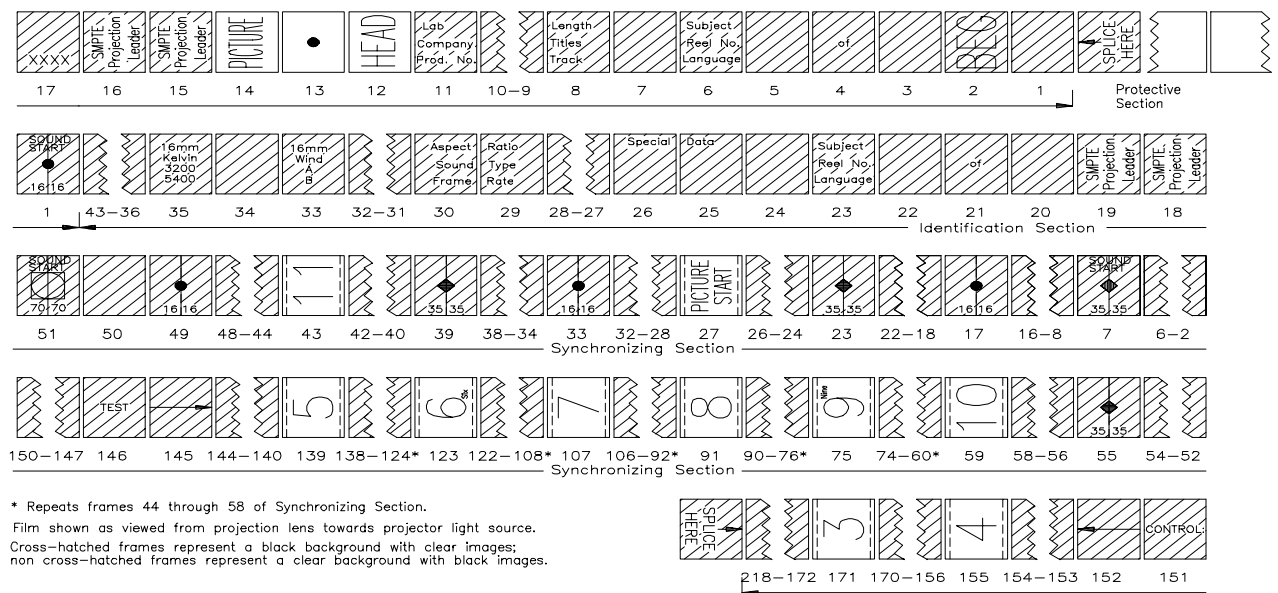


Figure 1 – Head leader

Frame 3 – Black.

Frame 4 – The word "of" in clear letters $\frac{3}{32}$ in (2.4 mm) high printed lengthwise in the center of the frame, on black background.

Frame 5 – Black.

Frame 6 – The words "Subject," "Reel No.," and "Language" in clear letters $\frac{3}{32}$ in (2.4 mm) high printed lengthwise, on black background.

Frame 7 – Black.

Frame 8 – The words "Length," "Titles," and "Track" with clear letters $\frac{3}{32}$ in (2.4 mm) high printed lengthwise, on black background.

Frames 9-10 – Black.

Frame 11 – The words "Lab," "Company," and "Prod No." with clear letters $\frac{3}{32}$ in (2.4 mm) high printed lengthwise, on black background.

Frame 12 – The word "HEAD" in black letters nominally $\frac{3}{8}$ in (9.5 mm) high printed upright in the center of the frame, on clear background.

Frame 13 – A $\frac{1}{8}$ -in (3.2-mm) diameter black dot in the center of the frame on clear background.

Frame 14 – The word "PICTURE" in black letters nominally $\frac{3}{8}$ in (9.5 mm) high printed upright in the center of the frame, on clear background.

Frames 15-16 – Two frames in which the words "SMPTE Projection Leader" in clear letters are printed upright on a black background. Letters shall not be less than $\frac{1}{8}$ in (3.2 mm) high.

Frame 17 – Four letter "X"s, printed in a lengthwise line adjacent to 35-mm analog photographic audio record, approximately $\frac{5}{16}$ in (7.9 mm) from the 35-mm camera aperture centerline toward 35-mm analog photographic audio record. Letters shall be clear, $\frac{1}{8}$ in (3.2 mm) high and $\frac{1}{8}$ in wide, on 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 $\frac{3}{32}$ in (2.4 mm) high printed lengthwise along the edge of the frame opposite the sound track area, on 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 $\frac{3}{32}$ in (2.4 mm) high printed lengthwise, on 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 $\frac{3}{32}$ in (2.4 mm) high printed lengthwise, on black background.

Frame 34 – Black.

Frame 35 – The words "16-mm," "Kelvin," "3200," and "5400" with clear letters 3/32 in (2.4 mm) high printed lengthwise, on black background.

Frames 36-43 – Black.

5.4 Synchronizing section

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

5.4.1 The words and numerals indicating 16-frame units in the synchronizing section shall have the vertical dimension of the 1.85:1 projection aperture (0.446 in [11.3 mm]). 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 (0.602 in [15.29 mm]).

5.4.2 The synchronizing section, when viewed as specified in 4.2, 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 1/8 in (3.2 mm) diameter in the center 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 (see note).

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 3/16 ´ 3/16 in (4.76 mm) in the center 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 (see note).

Frames 8-16 – Black.

Frame 17 – Same as frame 1.

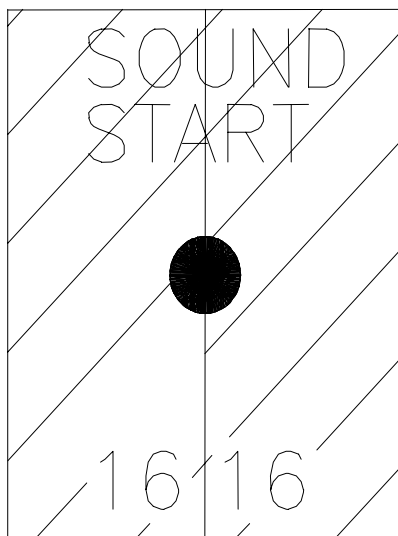


Figure 2 – 16-mm sound start identification frame

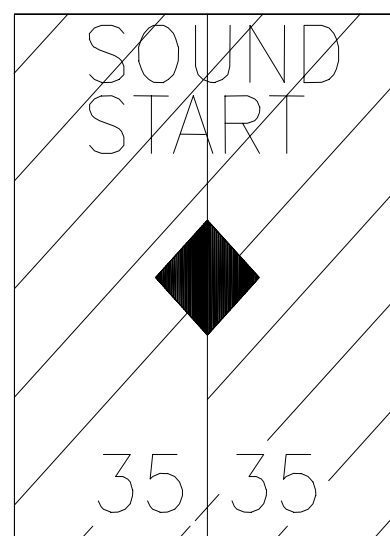


Figure 3 – 35-mm sound start identification frame

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 3/16 in (4.8 mm) high. The total vertical dimensions of the words shall be as described in 5.4.1. 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, dimensions as described in 5.4.1.

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 3/8 in (9.5 mm) diameter within a clear square 3/8 in × 3/8 in (9.5 mm) in the center of the frame (as shown in figure 4). This frame is repeated every 16 frames to frame 131 (see note).

Frames 52-54 – Black.

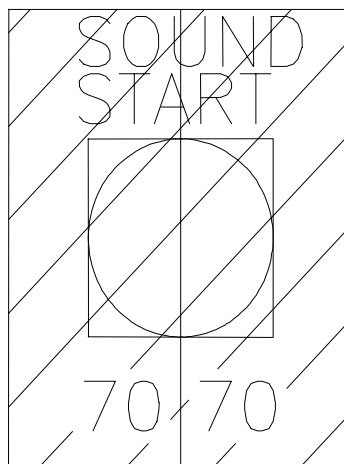


Figure 4 – 70-mm sound start identification frame

Frame 55 – Same as frame 7.

Frames 56-58 – Black.

Frame 59 – The numeral "10" printed upright in black on a clear background; dimensions as described in 5.4.1.

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 labeled 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; dimensions as described in 5.4.1.

Frames 156-170 – Black.

Frame 171 – The numeral "3" printed in black on a clear background; dimensions as described in 5.4.1.

Frames 172-218 – Black.

NOTE – Frames 1, 7, and 51 only shall also contain the words "SOUND START" printed lengthwise in clear letters 1/8 in (3.2 mm) high on a black background (see figures 2, 3, and 4).

5.5 Splicing frame

One additional frame shall follow with the inverted upright words "SPICE 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 1/8 in (3.2 mm) high printed on a black background.

6 Picture section (see figure 5)

6.1 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.

6.2 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.

6.3 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.

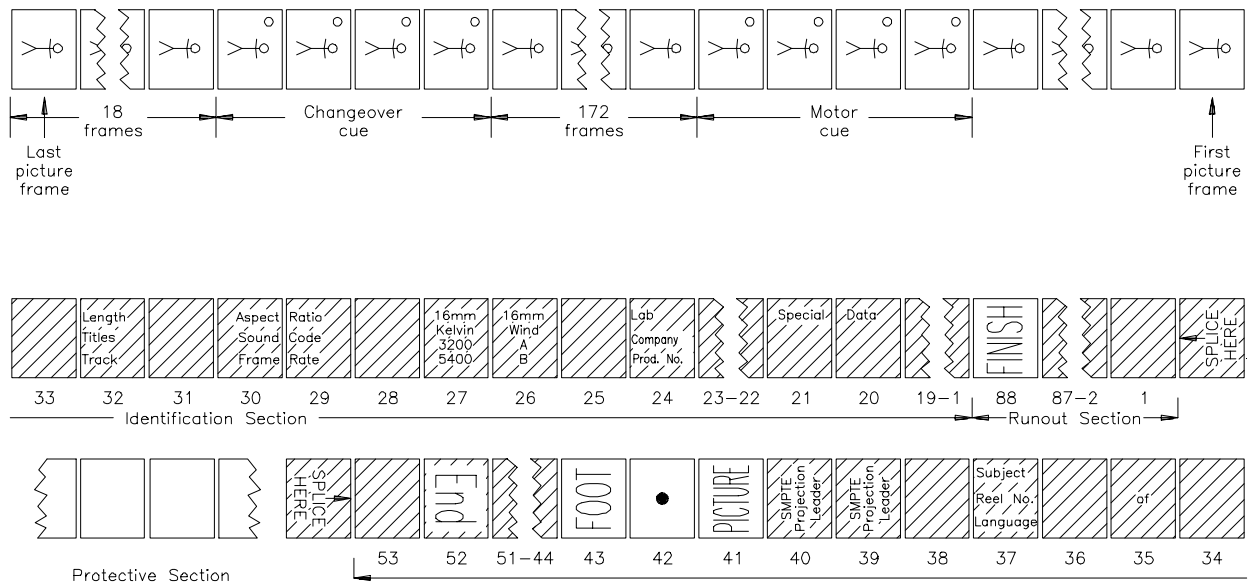


Figure 5 – Picture and trailer leader

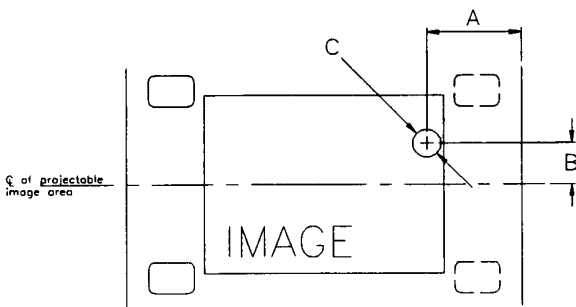


Figure 6 – 16-mm cue marks

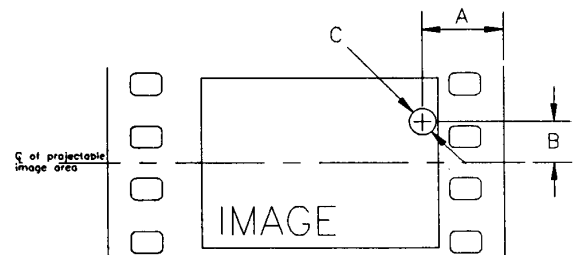


Figure 7 – 35-mm cue marks



Figure 8 – 70-mm cue marks

Table 1 – Position and dimensions of cue marks

Dimensions		16-mm film		35-mm film		70-mm film	
		in	mm	in	mm	in	mm
A	Center of cue mark to edge of film	0.149	3.78	0.281	7.14	0.500	12.70
B	Center of cue mark to horizontal centerline of projectable image area	0.068	1.73	0.148	3.76	0.327	8.31
C	Diameter of cue mark	0.043	1.09	0.094	2.39	0.136	3.45

7 Trailer (foot) leader (see figure 5)

7.1 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 1/8 in (3.2 mm) high printed on a black background.

7.2 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 4.3. Frame 48 shall have an asterisk on the horizontal centerline adjacent to the sound track area. Frame 88 shall have the printed word "FINISH" nominally 3/8 in (9.5 mm) high in upright black letters on clear background.

7.3 Identification section

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

7.3.1 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 frames 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 the printed word shall be "Foot."

Frames 44-51 – Black.

Frame 52 – The printed word "End" in clear letters 7/16 in (11.1 mm) high in the center of the frame in the inverted upright position, as shown in figure 5, on black background.

Frame 53 – Black.

7.3.2 One additional frame with the inverted upright words "SPICE 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 1/8 in (3.2 mm) high printed on a black background.

7.4 Protective section

The protective section of the trailer shall consist of a minimum of 8 linear feet (2.44 m) of transparent or raw stock. When the protective leader has been reduced to a length of 6 linear feet (1.83 m), 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 material**

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.