

# SMPTE STANDARD

## for Motion-Picture Film — 35- and 16-mm Audio Release Prints — Leaders and Cue Marks



Page 1 of 6 pages

### 1 Scope

This standard specifies the make-up or assembly of leaders and cue marks for 35- and 16-mm audio motion-picture release prints for use in both motion-picture theaters and television studios.

### 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 indicated below.

SMPTE RP 65-1991, Step Optical Reduction Printing of 35-mm Images to 16-mm Prints and Duplicate Negatives

### 3 Reduction ratio

The reduction ratio in the production of the head and foot leaders from 35-mm motion-picture film shall be in accordance with SMPTE RP 65.

### 4 Orientation of words and numerals

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 for 16-mm prints in accordance with clause 3.

4.2 The third, fourth, and fifth frames of the identification sections containing the title of the

film and reel number shall be printed in clear letters on a black background so that they can be read normally when the reel is uppermost and the leading end or head of the film hangs down ready for threading.

4.3 The words "type of sound," "aspect ratio," "picture title," "company," "series," "reel No.," and "prod. No." shall be printed lengthwise with the film in clear letters on a black background.

4.4 In sections where information is to be printed lengthwise with the film, clear framelines shall be included and all such printing must be placed within the outlined areas so that it can be read on 16-mm reduction prints.

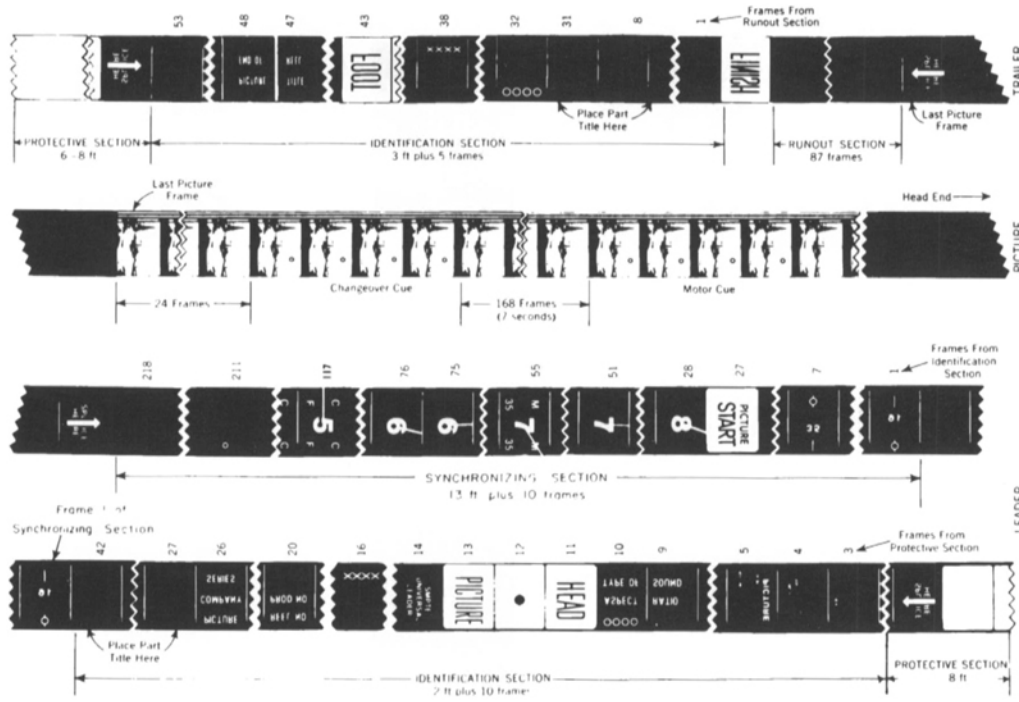
4.5 In the trailer (foot leader), the title of the film and the reel number shall be printed so that they appear inverted when the remainder of the reel is uppermost and the film hangs downward.

### 5 Head leader (See figure 1)

#### 5.1 Protective section

The protective section of the 35-mm leader shall contain frameline marks and consist of 8 ft (2.44 m) of transparent or raw stock; for 16-mm leader, 3.25 ft (0.99 m). When the protective leader has been reduced to a length of 6 ft (1.83 m) for 35-mm film or 2.5 ft (0.76 m) for 16-mm film, it shall be restored to its original length.

The last frame of this section shall contain the words "splice here" and an arrow pointing to the frameline between this frame and frame 1 of the identification section. The letters should be at least 0.125 in (3.18 mm) high.



NOTE - Figure shows 35-mm film with audio track on right edge as seen from the light source in the projector. The audio track is on the left edge of 16-mm film.

Figure 1 - Leaders and cue marks



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### 5.2 Identification section

The identification section of the leader shall be 42 frames in length. The frames may be of the 4 x 3 format or of a reduced height.

5.2.1 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 (low neutral density of 0.35);
- Black (high neutral density of 1.95).

5.2.2 The identification section, when viewed as specified in 4.2, shall be made up as follows:

Frames 1-2 — Black.

Frame 3 — The printed word "subject" with letters 1/16 in (1.6 mm) high at top of frame in upright position, clear on black background (4 x 3 format).

Frame 4 — The printed word "length" at top left side of frame and the printed word "roll" at center of frame on left side. Lettering shall be comparable to that in frame 3 (4 x 3 format).

Frame 5 — The printed words "reel No." at top left side of frame and printed word "color" at center of frame on left side. Lettering, read upright, shall be comparable to that in frame 3. At bottom of frame printed word "picture" 1/8 in (3.2 mm) high.

Frames 6-10 — Five frames of black with clear framelines on which the words "aspect ratio" and "type of sound" are plainly printed lengthwise with the film in 1/8 in (3.2 mm) high clear letters. Each group of words shall start in the 10th frame and in two separate lengthwise lines reading through base of film from left to right with head end of film at right.

Frame 10 — Four letter Os vertically in line and opposite the audio track area approximately 5/16 in (7.9 mm) from the 35-mm camera aperture centerline opposite the audio area. Letters shall be 1/8 in (3.2 mm) high and 1/8 in wide, clear on black background (4 x 3 format).

Frame 11 — The printed word "head" nominally 3/8 in (9.5 mm) high in inverted black letters on clear background.

Frame 12 — A 1/8-in (3.2-mm) diameter black dot in center of 4 x 3 format on clear background with black framelines.

Frame 13 — The printed word "picture" nominally 3/8 in (9.5 mm) high in inverted black letters on clear background.

Frame 14-15 — Two frames in which the words "SMPTE Universal Leader" are printed. Letters shall not be less than 1/8 in (3.2 mm) high, inverted clear letters on a black background (4 x 3 format).

Frame 16 — Four letter Xs vertically in line adjacent to audio track area approximately 5/16 in (7.9 mm) from the 35-mm camera aperture centerline toward audio area. Letters shall be 1/8 in (3.2 mm) high and 1/8 in wide, clear on black background (4 x 3 format).

Frames 17-18 — Same as frames 14-15.

Frames 19-26 — Eight frames of black with clear framelines. The words "reel No." and "prod. No." shall be printed lengthwise with the film in 1/8 in (3.2 mm) high clear letters in frame 20. In frame 26, on three lines lengthwise, reading left to right through film base with head of leader to right, the words "picture," "company," and "series" shall be printed using the same format as that in frame 20.

Frame 27 — The words "picture start," printed in black on a clear background. The letters in the word "picture" shall be not less than 1/8 in (3.2 mm) high and those in "start" not less than 1/4 in (6.4 mm) high. Visual count-down begins with this frame.

Frames 28-50 — Continuation of visual count-down, beginning with a clear figure "9" on a black background and a clear clock arm extending vertically from the center to the top of the frame. In each succeeding frame, the clock arm shall rotate clockwise from the center of the frame in 15° increments. (See figure 4.)

Frame 51 — Change of the numeral to a clear "7" on a black background. The clear clock arm shall again be vertical from the center of the frame.

Frame 55 — "M" and "35" vertically on each side of the "7" in letters 1/8 in (3.2 mm) high, clear on a black background, to indicate 35-mm magnetic sound start. (See figure 5.)

Frames 56-117 — Continuation of the sequence of numerals marking the seconds of film running time at 24 frames per second.

Frames 117-122 — The moving clock arm and numeral, with the addition of the Gothic letters "C" and "F" on the left- and right-hand side of the circle, respectively, to indicate the position in the leader where one to six frames may be removed and a similar number of control frames spliced in.

Frames 123-170 — Continuation of the sequence of numerals and moving clock arm marking the seconds of film running time.

Frame 171 — The numeral "2" in black on a clear background, ending the visual count-down.

Frames 172-210 — Thirty-nine frames of black density.

Frame 211 — A single clear dot, located as specified in 6.2.



Figure 2 — 16-mm sound start identification frame



Figure 3 — 35-mm sound start identification frame



Figure 4 — Example of visual count-down

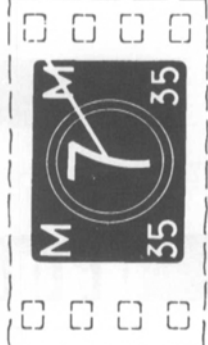


Figure 5 — 35-mm magnetic sound start

### 5.3 Synchronizing section

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

5.3.1 The two large concentric circles used throughout the visual count-down shall be clear on a black background. Seconds count-down numerals shall be clear on a black background and shall project right side up. The broad clock arm shall be clear.

5.3.2 The synchronizing section, when viewed as specified in 4.2, shall be made up as follows (see 5.3.3):

Frame 43 — Similar to frame 11 of head leader identification section, except printed word shall be "foot," which is upright (not inverted).

Frames 44-48 — Five blank frames of black with clear framelines upon which the words (1) "picture title" and (2) "end of reel" are printed lengthwise with the film in 1/8 in (3.2 mm) high clear letters on black background.

Frames 49-51 — Three frames identical to frames 5, 4, and 3, respectively, of head leader identification section, except that the letters shall be inverted.

Frames 52-53 — Two black frames.

**7.3.2** One additional frame with the words "splice here" and an arrow pointing to a clear frameline between this frame and frame 53 to indicate where the protective section joins the trailer.

#### 7.4 Protective section

The protective section of the trailer shall consist of 8 ft (2.44 m) of transparent or raw stock for 35-mm prints and 3.2 ft (0.99 m) for 16-mm prints.

**NOTE** - The Society of Motion Picture and Television Engineers makes available leaders on master positive motion-picture stock in 16-mm and 35-mm sizes. Intended for reproduction as negatives, they are identified as SMPTE Universal Leaders.

**A.3** The outside diameter of the larger clear circle, referred to in 5.3.1, is approximately the height of the television safe action area specified in SMPTE RP 27.3.

**A.4** The outside diameter of the smaller clear circle, referred to in 5.3.1, is approximately the height of a projector aperture having an aspect ratio of 1.85:1.

Frames 8-31 — Twenty-four frames in which part titles are inserted. In each frame (1) the end of reel, (2) the reel number (Arabic numeral not less than 1/4 of frame height), and (3) the picture title shall be printed in black letters on a clear background. If part titles are not available, these frames shall be black with narrow clear framelines.

Frame 32 — Four letter Os vertically in line and opposite the audio track area approximately 5/16 in (7.9 mm) from the 35-mm camera aperture centerline opposite the audio area. Letters shall be 1/8 in (3.2 mm) high and 1/8 in wide, clear on black background (4 x 3 format).

Frames 33-37 — Five black frames with clear framelines for reproduction of information written on the negative.

Frame 38 — Black with four Xs adjacent to the audio track, similar to frame 16 of the head leader identification section.

Frames 39-40 — Similar to frames 14-15 of head leader identification section with words "SMPTE Universal Leader," except that the words shall be upright.

Frame 41 — Similar to frame 13 of head leader identification section, except that the word "picture" shall be upright (not inverted).

Frame 42 — Dot similar to that in frame 12 of head leader identification section.

#### Annex A (informative) Additional data

**A.1** The difference between projection rates of 24 and 25 frames per second is negligible in the normal usage of the leader.

**A.2** Logos, trademarks, or other extraneous material, if absolutely necessary, should be inserted in the leader prior to the 16-mm sound-start cue or just preceding frame 32 of the trailer identification section or both.

#### Annex B (informative) Bibliography

SMPTE RP 27.3-1989, Specifications for Safe Action and Safe Title Areas Test Pattern for Television Systems

#### 6.3 Changeover cue

The changeover cue shall consist of four frames containing circular dots 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 24 frames, or one second running time, to the beginning of the runoff section of the trailer.

#### 7 Trailer (foot leader) (See figure 1)

##### 7.1 Additional frame

One additional frame shall follow with the words "splice here" and an arrow pointing to a clear frameline between the picture section and the trailer. The letters should be at least 1/8 in (3.2 mm) high.

##### 7.2 Runout section

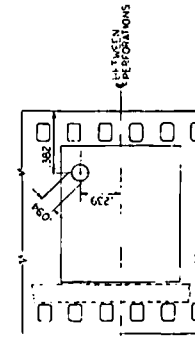
The runoff section of the trailer shall consist of 88 frames, 87 of which are to be black. Frame 88 shall have the printed word "finish" nominally 3/8 in (9.5 mm) high in upright black letters on clear background.

##### 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 1-7 — Seven frames of black without framelines.



**NOTE** - Image as seen on the screen.

**Figure 6 - Position of cue marks for nonanamorphic release prints**

# SMPTE STANDARD

for Television —

## 35- and 16-mm Motion-Picture Film and 2x2-in Slides — Scanned Area and Photographic Image Area for 4:3 Aspect Ratio

**ANSI/SMPTE 96-1992**  
Revision, redesignation and consolidation of  
ANSI/SMPTE 94-1985, ANSI PH22.95-1984  
and ANSI PH22.96-1982



Page 1 of 3 pages

### 1 Scope

This standard specifies the size and location of that portion of 35- and 16-mm motion-picture film and 2x2-in slides to be reproduced by a 4:3 aspect ratio television film chain (telecine) and the size and location of the image area recorded on 35- and 16-mm motion-picture film in television-to-film recording equipment with a 4:3 aspect ratio.

### 2 Normative references

The following standards contain provisions which, through reference in this standard, constitute provisions of this standard. At the time of publication, the editions indicated were 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 standards indicated below.

- ANSI/SMPTE 7-1988, Motion-Picture Film (16-mm) — Camera Aperture Image and Usage
- ANSI/SMPTE 59-1991, Motion-Picture Film (35-mm) — Camera Aperture Images and Usage
- ANSI PH22.195-1984, Motion-Picture Film (35-mm) — Projectable Image Area — Motion-Picture Prints
- ANSI/SMPTE 233-1987, Motion-Picture Film (16-mm) — Projectable Image Area
- SMPTE RP 9-1986 (R1990), Dimensions of Double-Frame 35-mm 2x2 Slides for Precise Applications in Television
- SMPTE RP 27.3-1989, Specifications for Safe Action and Safe Title Areas Test Pattern for Television Systems

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August 13, 1992

ANSI/SMPTE 96-1992

### 4 Television-to-film recording

The camera aperture image of a 16- or 35-mm television film recording camera shall be in accordance with ANSI/SMPTE 59 or ANSI/SMPTE 7. Within this image shall be recorded the entire television active picture area. The dimensions of the television active picture area as recorded on the film shall be as

given in tables 3 and 4, and shall depend upon the intended use of the resulting film image: film images intended only for television rebroadcast (kinescopes) and film images intended for motion-picture audiences (cinema). The center of the television active picture area shall coincide with the centers given in the appropriate camera aperture image standards.

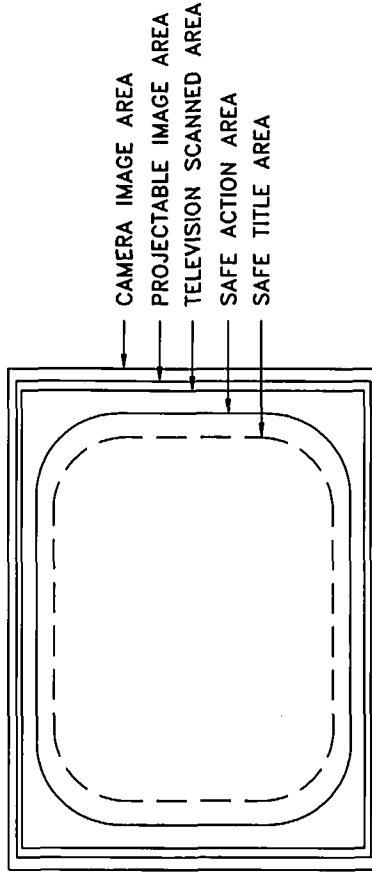


Figure 1 — Television reproduction film areas

Page 2 of 3 pages

Table 1 - Dimensions in inches for television reproduction

Film size	Camera image area		Projectable image area		Television scanned area		Safe action area		Safe title area	
	Height	Width	Height	Width	Height	Width	Height	Width	Height	Width
16 mm	0.295	0.404	0.284	0.380	0.276	0.368	0.248	0.331	0.221	0.293
							0.066R	corner	0.058R	corner
35 mm	0.630	0.864	0.602	0.825	0.594	0.792	0.535	0.713	0.475	0.630
							0.143R	corner	0.125R	corner
2x2-in slides	0.952	1.417	0.921	1.228	0.843	1.124	0.759	1.013	0.674	0.894
							0.203R	corner	0.177R	corner

Table 2 - Dimensions in millimeters for television reproduction

Film size	Camera image area		Projectable image area		Television scanned area		Safe action area		Safe title area	
	Height	Width	Height	Width	Height	Width	Height	Width	Height	Width
16 mm	7.49	10.26	7.21	9.65	7.01	9.35	6.30	8.41	5.61	7.44
							1.68R	corner	1.47R	corner
35 mm	16.00	21.95	15.29	20.96	15.09	20.12	13.59	18.11	12.06	16.00
							3.63R	corner	3.18R	corner
2x2-in slides	24.18	35.99	23.39	31.19	21.41	28.55	19.28	25.73	17.12	22.71
							5.16R	corner	4.50R	corner

Table 3 - Dimensions in inches for television-to-film recording

Film size	Kinescope		Cinema	
	Height	Width	Height	Width
16 mm	0.285 ± 0.002	0.380 ± 0.002	0.295 ± 0.003	0.393 ± 0.003
35 mm	0.612 ± 0.002	0.816 ± 0.002	0.630 ± 0.002	0.840 ± 0.004

Table 4 - Dimensions in millimeters for television-to-film recording

Film size	Kinescope		Cinema	
	Height	Width	Height	Width
16 mm	7.24 ± 0.05	9.66 ± 0.05	7.49 ± 0.08	9.98 ± 0.08
35 mm	15.54 ± 0.05	20.73 ± 0.05	16.00 ± 0.05	21.34 ± 0.10

## SMPTE STANDARD

for Motion-Picture Film (35-mm) —  
Stereoscopic Prints with  
Vertically Positioned Subframes —  
Projectable Image Areas

## 1 Scope

This standard specifies the maximum dimensions of the film image area intended for projection from a 35-mm motion-picture film using vertically positioned subframes for stereoscopic projection, and the placement of this area relative to the perforations and the reference edge of the film.

subframe relative to the direction of film travel shall be the left image, and the lower subframe relative to the direction of film travel shall be the right image.

## 4 Projection lens alignment

Projection lenses must be aligned to take into account the differences between the two formats, principally dimension G.

## 2 Dimensions

The dimensions shall be as given in figure 1 and table 1.

## 5 Reference marks

It is suggested that frameline reference marks be printed between the perforations along the nonreference edge of the film. These frameline marks are meant to encourage proper assembly of release print reels and to prevent loss of subframe sequence.

## 3 Subframes

The image area intended for projection is divided into two subframes, as shown in figure 1. The upper

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