

# Motion Picture Standards

## Withdrawal of Two American Standards


On September 30, 1957, the American Standards Association approved for withdrawal the following American Standards:

- Z22.29-1948, Dimensions for Theatre Projection Screens
- Z22.78-1950, Dimensions for Mounting Frames for Theater Projection Screens

These two standards were reviewed by the Film Projection Practice and Standards Committees. A thorough investigation disclosed that they no longer represent current practice or future trends and it was recommended that they be withdrawn. —*J. H. S.*

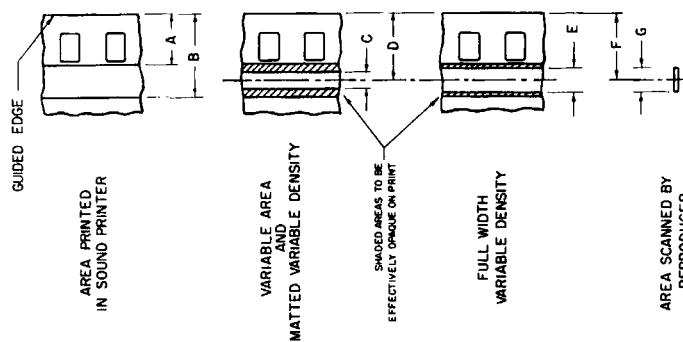
## Revision of American Standard

Published here is American Standard PH22.40-1957, Photographic Sound Record on 35mm Prints (Revision of Z22.40-1950), which was approved by the American Standards Association on October 1, 1957. This standard does not differ from the proposal published for trial and comment in the November 1956 Journal, where a summary of its development will be found. —*J. Howard Schumacher*, Staff Engineer.



Am. S. S. Std. Div.  
**PH22.40-1957**  
Revision of Z22.40-1950  
\*UDC 778.334.4

Page 1 of 2 pages



### 1. Scope

1.1 This standard specifies the location and dimensions of variable area and variable density sound records for the photographic printing of sound on 35mm sound motion-picture prints.

1.2 This standard specifies the area scanned in the sound reproducer.

### 2. Dimensions

2.1 The dimensions and location of the sound record shall be as specified in the diagram and table.

2.2 The sound record as printed on the film shall be displaced from the center of the corresponding picture by a distance of 21 frames in the direction of film travel during normal projection.

2.3 When the sound record is reproduced, the distance from the center of the projector aperture to the sound scanning point shall be adjusted to bring the picture and sound into synchronism for the average observer. Usually this separation will be 20 frames, and this will provide synchronism for an observer at a distance of 50 feet from the speaker.

Dimension	Inches	Millimeters
A	0.192 ± 0.001	4.88 ± 0.03
B	0.308 ± 0.002	7.82 ± 0.05
C	0.076 ± 0.001	1.93 ± 0.03
D	0.244 ± 0.002	6.20 ± 0.05
E	0.100 ± 0.000	2.54 ± 0.00
F	0.244 ± 0.001	6.20 ± 0.03
G	0.084 ± 0.001	2.13 ± 0.03

Approved October 1, 1957, by the American Standards Association, Incorporated  
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Page 2 of 2 pages

### APPENDIX

(This Appendix is not a part of the American Standard Photographic Sound Record on 35mm Prints, PH22.40-1957, but is included to facilitate its use.)

The picture-sound separation is specified in Section 2 in two different ways:

- (1) For laboratory printing—21 frames
- (2) For projector threading—20 frames

This seems to imply that the printing operation establishes the 21-frame separation, but this, in fact, is not so. The printer adds a 20-frame separation to an existing one-frame differential.

The one-frame difference results from the fact that editorial or "in-line" sync (picture and corresponding sound aligned side by side) is changed by one frame to accommodate the mixer in a rerecording studio where the mixing console is approximately 50 feet from screen and speaker. Under normal conditions, sound travels about 1100 feet per second and thus

In the projector, a 21-frame threadup separation will bring corresponding picture and sound to the screen and speaker at the same instant; a 20-frame threadup separation produces this synchronous condition about 45 to 50 feet from the screen; a 19-frame threadup separation results in synchronism at about 90 to 100 feet from the screen. Consequently, the projectionist in a drive-in theater will thread 21 frames since the speaker is within a few feet of the patron; in a theater of moderate size, he will thread 20 frames and in a very large theater, he may thread 19 or 19½ frames.

45 to 50 feet during the 1/24 second that a frame is in the projector aperture. The sound at the speaker is thus one frame, in time units, ahead of that same sound at the mixer's position. The mixer, to adjust for sync at his location, automatically calls for a one-frame increase.