RP 9-1995
Revision of RP 9-1986

SMPTE RECOMMENDED PRACTICE

Dimensions of Double-Frame 35-mm 2×2 Slides for Precise Applications in Television

Introduction

The use of 2×2 slides has increased enormously in many television stations. The handling of these slides is or will be by automatic or remote methods. Slides containing titles or geometric material must not tilt. In many sequences, slides bear related subject matter and it is necessary to lap-dissolve between them. Under these conditions, it is important that the material be accurately located on the film clip and that the film clip be accurately located in the mount. This is achieved in this practice by locating the picture information relative to the sprocket holes of the film clip and then using the sprocket holes to locate the clip in the mount. The dimensions and tolerances specified below are based on the fact that information on successive slides will register in a suitable television slide projector within the equivalent of ± 5 television lines in a horizontal and vertical direction when the datum B and datum C edges of the mount are against the stops in the projector.

Television scanned area has an aspect ratio of 4:3. The mask dimensions shown in figure 2 are sufficiently larger than those of the scanned area to permit convenient use.

1 Scope

1.1 This practce specifies dimensions and tolerances for a double-frame 35-mm film clip and an associated 2×2-in mount which are intended to ensure that picture information is accurately and consistently positioned in a suitable slide projector.

1.2 The slide mount described in clause 4 represents one suitable method for attaining accurate and consistent positioning of picture information in a suitable slide projector. The use of alternate methods of mounting the film clip to within the same accuracy shall be considered as meeting the requirements of this practice.

1.3 This practice is not intended to replace or to void ANSI/SMPTE 96 or ANSI PH3.43.

2 Normative reference

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

ANSI/SMPTE 139-1986 (R1991), Motion-Picture Film (35-mm) — Perforated KS

3 Double-frame 35-mm film clip

3.1 The film for double-frame 35-mm film clips to be mounted and used in compliance with this practice shall be in accordance with ANSI/SMPTE 139 and shall be of low-shrinkage safety film base.

3.2 The location of the image on the film and the length of the film clip shall be in accordance with figure 1 and table 1 (see note 10).

4 Slide mount

4.1 The mount for the double-frame 35-mm film clip shall be manufactured in accordance with figure 2 and table 2.

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4.2 Slide mounts produced in accordance with this practice shall meet the dimensional tolerances of figure 2 and table 2 for at least one year following manufacture.

4.3 In the event that both halves of the mount are hinged together, the hinge shall be located along edge E. In the absence of a hinge, datum B shall be identified in an appropriate manner on the external edge of the mount.

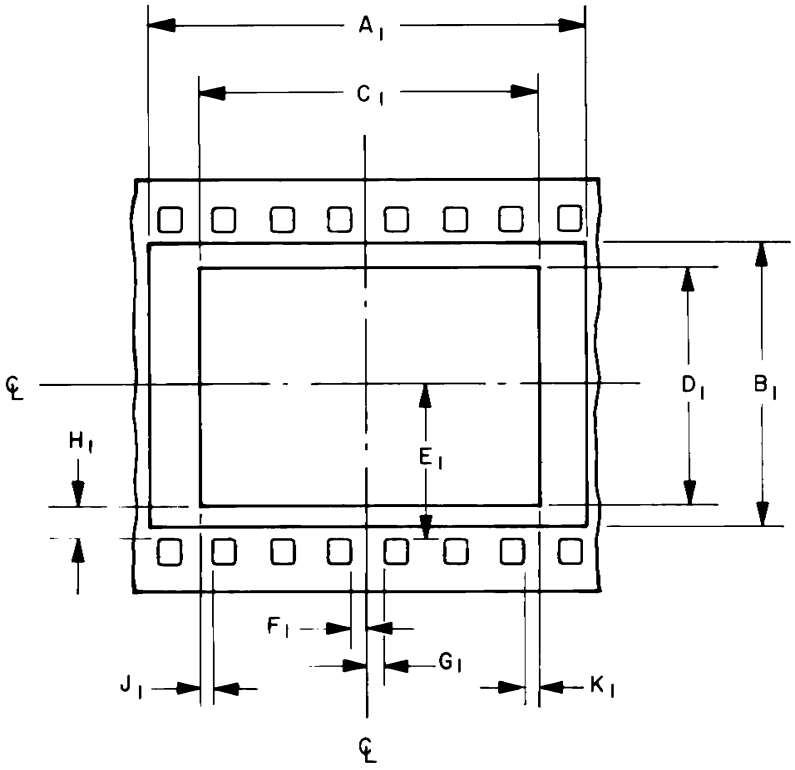

Figure 1 – Location of image on film

Table 1 – Image specifications

Dimensions		Inches	Millimeters
A_1	Width of camera image	1.417 min	35.99 min
B_1	Height of camera image	0.952 min	24.18 min
C_1	Width of scanned image	1.124 ref	28.55 ref
D_1	Height of scanned image	0.843 ref	21.41 ref
E_1		0.4995 ± 0.0020	12.687 ± 0.051
$F_1 = G_1$		within 0.002	within 0.05
H_1 [1)]		0.078 ± 0.002	1.98 ± 0.05
$J_1 = K_1$ [1)]		within 0.002	within 0.05

[1)] Dimensions H_1, J_1, and K_1 are for images with no centerline designation.

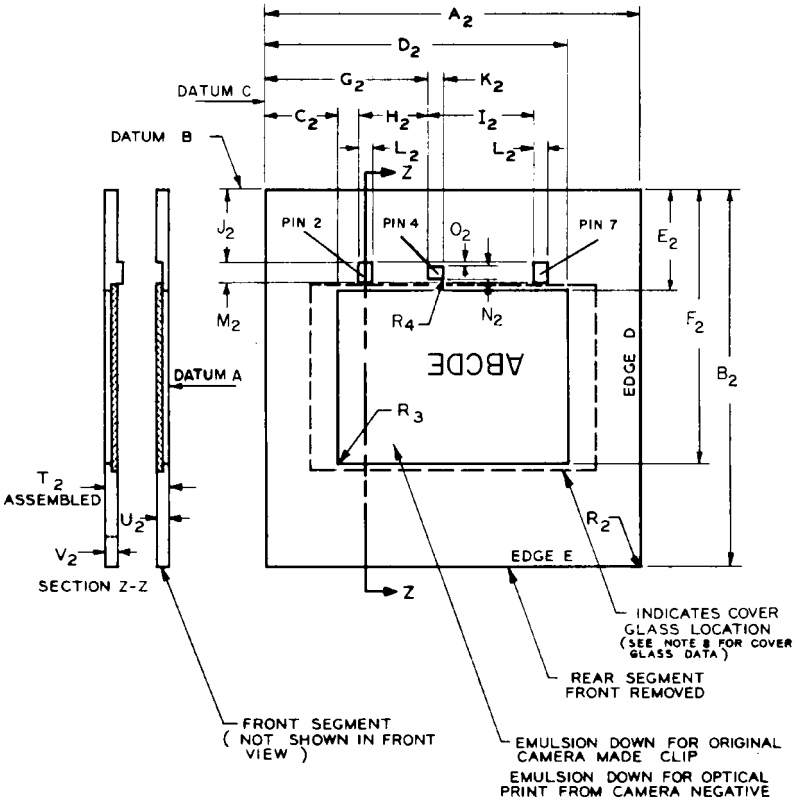

Figure 2 – Slide mount

Table 2 – Mount specifications

Dimensions	Inches	Millimeters
A_2	1.984 ± 0.004	50.39 ± 0.10
B_2	1.984 ± 0.004	50.39 ± 0.10
C_2	0.3780 ± 0.0020	9.601 ± 0.051
D_2	1.6060 ± 0.0020	40.792 ± 0.051
E_2	0.5244 ± 0.0020	13.320 ± 0.051
F_2	1.4496 ± 0.0020	36.820 ± 0.051
G_2	0.8602 ± 0.0017	21.849 ± 0.043
H_2	0.3681 ± 0.0020	9.350 ± 0.051
I_2	0.5659 ± 0.0010	14.374 ± 0.025
J_2 [1)]	0.3831 ± 0.0025	9.731 ± 0.064
K_2	0.0768 ± 0.0005	1.951 ± 0.013
L_2	0.0656 ± 0.0010	1.666 ± 0.025
M_2	0.1088 ± 0.0005	2.764 ± 0.013
N_2	0.1000 ± 0.0010	2.540 ± 0.025
O_2	0.0036 ± 0.0020	0.091 ± 0.051
R_2	0.062 max	1.57 max
R_3	0.062 max	1.57 max
R_4	0.018 ± 0.002	0.46 ± 0.05
T_2	0.120 max	3.05 max
U_2	0.060 +0 −0.005	1.52 +0 −0.13
V_2	0.060 +0 −0.005	1.52 +0 −0.13

[1)] See note 5.

NOTES

1 The surfaces indicated by datum A shall be plane within 0.002 in (0.05 mm).

2 The edges indicated by datums B and C and edge D shall be straight within 0.002 in (0.05 mm).

3 Datums B and C and edge D shall be perpendicular to datum plane A within 1°.

4 Datum C and edge D shall be perpendicular to datum B within 0.002 in (0.05 mm).

5 Pins 2 and 7 must not depart from dimension J_2 by more than 0.0020 in (0.051 mm) with respect to each other.

6 The pins must maintain their indicated dimensions at least 0.010 in (0.25 mm) beyond the emulsion position.

7 The pins should extend through the film clip but must not project beyond either exterior surface of the slide mount.

8 Cover glass should be built into the mount on each side of the film surface. This glass should be nominally 0.030 in (0.76 mm) thick and should be treated to reduce Newton's rings where film contacts the glass. When the mount is assembled, there should be sufficient space between the cover glasses to accommodate a film thickness of 0.006 in (0.15 mm) in a snug manner.

9 Material shrinkage and other practical considerations should be taken into account when choosing dimensions and tolerances for manufacturing purposes. The dimensions and tolerances in table 2 provide a guide for the final product.

10 The recommended emulsion position is that of an original reversal camera film.

11 Slide mounts manufactured in accordance with the reference edges specified as datums B and C will have minimum position variations among different mounts when these edges are against the projector stops. When edges D and E are against the projector stops, slightly poorer positioning accuracy results due to the added dimensional tolerances of A_2 and B_2.

Annex A (informative)
Bibliography

ANSI PH3.43-1977 (RI991), Dimensions for Projector Slides

ANSI/SMPTE 96-1992, Television — 35- and 16-mm Motion-Picture Film and 2×2-in Slides — Scanned Area and Photographic Image Area for 4:3 Aspect Ratio