

los rayos de color, circuitos electricos tipo empresados utilizando transistores y una construcción modular. El elemento con tamaño de 19 pulgadas tipo cuadro usado para montar la unidad de control de la cámara ofrece mayor en flexibilidad por medio de modulares tipo enchufe. Las unidades de operación y registración siendo elementos individuales pueden ser colocados a una distancia (remote) del CCU.

Experiencias de la CBS con las cámaras en colores tipo Plumbicon

RICHARD G. STREETER y ROBERT L. COBLER [749]

En 1963 una cámara de televisión en colores experimental, llamada tipo Plumbicon, fue sacada a la publicidad por la N. V. Philips Gloeilampenfabrieken de Holanda. La cámara y su integración a la planta existente de la CBS fueron evaluados, así como también las experiencias obtenidas en su operación hasta la fecha. Aunque se ha utilizado una cámara específica, los resultados obtenidos pueden considerarse como representativos del funcionamiento de las cámaras en colores tipo Plumbicon de otras compañías.

Photoelastische studien dynamischer spannungszustände in materialien mit hohem modulus

PAUL D. FLYNN [729]

Höchstgeschwindigkeit-Photographie wird benötigt, um die kurzzeitigen Spannungszustände von Modellen aufzunehmen, welche aus von einem mit hohem Modulus behafteten photoelastischen Material angefertigt wurden. Es wurde ein ungewöhnliches photo-optisches System entwickelt, welches die gleichzeitige Aufnahme von normalen und geneigten (oblique) dynamischen Spannungserscheinungen mit einer Bildgeschwindigkeit bis zu etwa 10⁶ Rahmen/sec. ermöglicht. Ein Vergleich der somit gewonnen photoelastischen Resultate mit den durch Dehnungsaufnehmern erstellten Werten demonstrierte die Brauchbarkeit der schiefwinkligen Auffallmethode bei der Trennung prinzipieller dynamischer Spannungen in einem flachen Rundkörper. Die dynamischen Werte des optischen Spannungskoeffizient, Youngs Modulus and Poissons Ratio wurden durch photoelastische und Dehnungsaufnehmer-Messwerte für die in einer Vollstange auftretenden elastischen Wellen ermittelt. Mit Hilfe dieser Technik studierte man Beispiele der Wellenpropagierung in durchsichtigen und zweidimensionalen Modellen. (Üb. L. G. Lawrence)

Studien einiger explodierender drahtlichtquellen

ESTHER C. CASSIDY und STANLEY ABRAMOWITZ [735]

Es wurden fortlaufende und zeiterlegte Messungen von spektraler Lichtverteilung, ausgestrahlt von verschiedenen explodierenden Drahtsystemen, mittels einer Hochgeschwindigkeits Trommelkamera und einer rotierenden Verschlussvorrichtung, respektive, gewonnen. Die Ergebnisse der Experimente mit mehreren Systemen zeigen Wirkungen von Umgebung, Druck, Energie und Drahtmaterial auf das Spektrum. Es sind verschiedene Spezies, entstanden durch die Explosion, spektroskopisch bestimmt.

Eine photographische untersuchung über den zerfall BZW. das zerstäuben von flüssigkeitstropfen

HAROLD E. WOLFE [738]

Eine Untersuchung mittels photographischer Schnellaufnahme wurde durchgeführt, um die Mechanik eines aerodynamischen Zerfalls von Flüssigkeitstropfen im Sog einer von einem Flugzeug erzeugten Schockwelle genau zu untersuchen. Zu diesem Zweck wurden die gewünschten Sog- bzw. Fließbedingungen in einer kleinen Schockröhre erzeugt, die derart mit Instrumenten ausgerüstet wurde, dass eine Messung der Parameter vorgenommen werden konnte, die für die Feststellung der erforderlichen bzw. existierenden Fließbedingungen erforderlich waren, und weiterhin eine Synchronisierung der unter Höchstgeschwindigkeit ablaufenden Vorgänge mit der photographischen Ausrüstung gestattet. Dabei wurden mit einer Geschwindigkeit von 26,000 Bildwechsell pro Sek. Bilder von der Verformung bzw. Verzerrung und dem sich anschließenden Zerfall dieser freifallenden Flüssigkeitstropfen im Sog hinter der Schockwelle aufgenommen. Während der Untersuchung wurden dann die Parameter unterschiedlich festgesetzt, und zwar, u.a., für die Feststellung der Fließgeschwindigkeit, der Tropfengröße, der Oberflächenspannung, der Viskosität sowie der Flüssigkeitsdichte. Ferner werden die Betätigung dieser experimentellen Ausrüstung und die Resultate beschrieben, die mit dieser Untersuchung erzielt wurden.

Filmisches studium der Hochgeschwindigkeit-gasfluss-phänomene

THOMAS J. KESSLER und ALFRED A. KUEBLER [742]

Mit hoher Geschwindigkeit aufgenommene

Filme ermöglichen das Studium verschiedener Hochgeschwindigkeit-Gasfluss-Phänomene im supersonischen Windkanal der Rutgers Universität. Spezielle Geräte senden und reflektieren Lichtstrahlen zur Kameralinse. Durch die Dichte der im Luftfluss auftretenden Gradiationswerte bedingt, formen die Lichtstrahlen einen optischen Eindruck, in welchem die Schockwellen und Grenzschichten farbig oder schwarz/weiß erscheinen. Die Technik ist wertvoll für das Studium von Schockformationen, transsonischen und supersonischen Strömungen, wie sie im Zusammenhang mit verschiedenen Modellen von Geschossköpfen und Flugzeugtragflächen auftreten mögen. (Üb. L. G. Lawrence)

Entwicklung eines neuen Plumbicon-Farb-Kamera-Zuges

MICHAEL T. FISHER [745]

Es wurde ein neuer Plumbicon-Farb-Kamera-Zug entwickelt, dessen besondere Vorzüge Zoom-Objektiv, Farbteilungsprisma, Transistorisierung, leicht auswechselbare, gedruckte Schaltungen und Einschub-Bauweise ist. Das Kamera-Kontroll-Geraet wurde durch die Anwendung der Einschub-Bauweise sehr flexibel gestaltet. Die einzelnen Einschube sind in einen 19 Inch Standard-Gestell montiert. Das Bediengerat und auch die Aufzeichnungsgeraete sind selbststaendige Baugruppen, die sogar in grosserer Entfernung vom Kamera-Kontroll-Geraet aufgestellt werden koennen.

CBS sammelt erfahrung mit Plumbicon-farbaufnahmekameras

RICHARD G. STREETER und ROBERT L. COBLER [749]

Im Jahre 1963 wurde von der Firma N. V. Philips Gloeilampenfabrieken in Holland zum ersten Mal ein Versuchsmodell einer neuen Farbaufnahmekamera der Öffentlichkeit vorgestellt, die mit einer neuartigen Aufnahmeröhre ausgerüstet ist, und unter dem Namen "Plumbicon" angeboten wird. In dieser Abhandlung werdende Kamera selbst und ihre Einschaltung in den bisherigen CBS-Aufnahmebetrieb sowie die bisher damit gewonnenen Betriebserfahrungen beurteilt. Obwohl sich dieser Bericht nur mit diesem speziellen Kameramodell befasst, können die hier aufgezeigten Ergebnisse auch für die Leistungsfähigkeit anderer Plumbicon-Farbaufnahmekameras für verbindlich angesehen werden, die von anderen Firmen hergestellt werden.

standards and recommended practices

Approved American Standards

Published here for your information are two American Standards approved on June 30, 1966 by the American Standards Association. PH22.87-1966, Dimensions of 100-Mil Magnetic Striping on 16mm Motion-Picture Film Perforated One Edge, and PH22.113-1966, 16mm 3,000-Hertz Flutter Test Film, Magnetic Type, are revisions of the previous issues modified only editorially to facilitate their use. It might be noted that the permissible flutter specified in PH22.113-1966 has been reduced to 0.07 per cent.

Inasmuch as compliance with American Standards is purely voluntary, these Standards will become truly effective if very broad publicity is given to their existence. The ASA and the SMPTE would appreciate any personal influence to promote their use where such action is appropriate and proper. Copies of the Standards may be obtained for a nominal

fee from the American Standards Association, 10 East 40th Street, New York City, 10016.—A.E.A.

Approved SMPTE Recommended Practices

The Society's Board of Governors approved the two new Recommended Practices published here.

SMPTE Recommended Practice RP 9-1966, Dimensions of Double-Frame 35mm 2 × 2 Slides for Precise Applications in Television, specifies a slide mount which positions the film clip through the use of the perforation holes themselves with an accuracy of ±5 television lines.

SMPTE Recommended Practice RP 21-1966, Dimensions of 35mm Rewind Spindles, is intended to be a guide for the design of general film-handling equipment such as rewinds, etc.

Copies of these and all SMPTE Recommended Practices may be acquired from Society Headquarters upon request.

American Standard Dimensions of

100-Mil Magnetic Striping on 16mm Motion-Picture Film Perforated One Edge



Reg. U.S. Pat. Off.
PH22.87-1966
Revision of
PH22.87-1958
*UDC 778.554.4

1. Scope

This standard specifies the location and dimensions of the magnetic striping material applied to 16mm motion-picture film with perforations along one edge. This film is used for both picture and sound.

2. Magnetic Striping

2.1 Dimensions. The dimensions shall be as given in the figure and table.

2.2 Material. The magnetic striping material shall be on the side of the film toward the lamp on a projector arranged for direct projection on a reflection-type screen.

3. Film Base

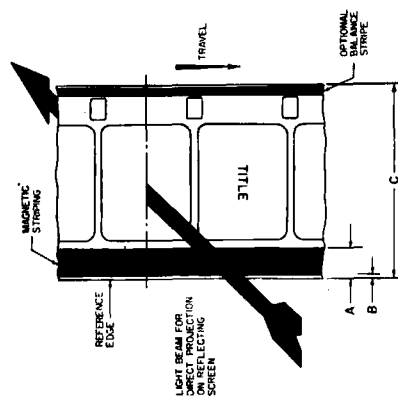
The film base used shall be of the low-shrinkage safety type, cut and perforated in accordance with American Standard Dimensions for 16mm Motion-Picture Film, 1R-3000, PH22.12-1964, or American Standard Dimensions for 16mm Motion-Picture Film, 1R-2994, PH22.109-1965.

Appendix

(This Appendix is not a part of American Standard Dimensions of 100-Mil Magnetic Striping on 16mm Motion-Picture Film Perforated One Edge, PH22.87-1966, but is included to facilitate its use.)

The outer edge of the magnetic striping ideally should be coincident with the edge of the film, and for this reason, Dimension B as listed is based upon practical considerations of present striping techniques

and film-handling mechanisms. Every effort should be made to reduce this dimension as far as possible, consistent with the best uniformity of stripe thickness and flatness of stripe profile.



Dimensions	Inches	Millimeters
A	0.100 + 0.005 - 0.000	2.54 + 0.13 - 0.00
B	0.005 max 0.628 nom	0.13 max 16 nom
C	0.628 nom	16 nom

NOTE: The balance stripe is optional and may be a magnetic coating or another material of the same thickness.

American Standard Specifications for

16mm 3,000-Hertz Flutter Test Film, Magnetic Type



Reg. U.S. Pat. Off.
PH22.113-1966
Revision of
PH22.113-1958
*UDC 778.5.771.531.512

1. Scope

This standard specifies a 3,000-Hz magnetic sound test film for use in determining the amount of flutter in 16mm magnetic sound reproducers.

2. Sound Record

2.1 Dimensions. The test film shall have an originally-recorded, 200-mil width, magnetic sound record, the location and dimensions of which shall be in accordance with American Standard Dimensions for 200-Mil Magnetic Sound Record on 16mm Film Base, Perforated 1R-3000, PH22.97-1964.

2.2 Frequency. The recorded frequency shall be $3,000 \pm 25$ Hz with a film rate of 24 perforations per second (approximately 36 ft per minute).

2.3 Modulation. The recording shall be made at 100 percent modulation level with a tolerance of $+0 -2$ dB. One hundred percent modulation is defined as the recording head current at a signal frequency of 1,000 Hz which will result in a measurement of 3 percent total harmonic distortion when the sound record is reproduced.

2.4 Permissible Flutter. The total rms (root-mean-square) flutter of the sound record shall not exceed 0.07 percent and the flutter ampli-

tude, at any single flutter rate, shall not exceed 0.05 percent (as defined in American Standard Method for Determining Flutter Content of Sound Recorders and Reproducers, Z57.1-1954).

2.5 Level Uniformity. Variations in output level throughout the length of the test film, as measured by a vu-type meter, shall be not greater than ± 1 dB. Short-term level variations, such as those resulting from dropouts, shall be minimized by careful test film preparation.

3. Film Stock

The film stock shall be of the low-shrinkage safety type, cut and perforated in accordance with American Standard Dimensions for 16mm Motion-Picture Film, 1R-3000, PH22.12-1964.

4. Film Length

The film shall be supplied in 100-ft and 400-ft lengths.

5. Identification

The film shall have identification markings at both ends.

NOTE: A test film made in accordance with this standard is available from the Society of Motion Picture and Television Engineers.

Approved June 30, 1966, by the American Standards Association, Incorporated
Sponsor: Society of Motion Picture and Television Engineers, Inc.

†Optional Decimal Classification

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SMPTE RECOMMENDED PRACTICE

Dimensions of Double-Frame 35mm 2x2 Slides for Precise Applications in Television

RP 9-1966



Introduction

The use of 2x2 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 recommended 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 steps 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 recommended practice specifies dimensions and tolerances for a double-frame 35mm film clip and an associated 2x2 inch 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 Section 3 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 recommended practice.

1.3 This recommended practice is not intended to replace or to void American Standard Slides and Opaques for Television Film Camera Chains, PH22.94.1954, or American Standard Dimensions for Lantern Slides, Z387.19.1950.

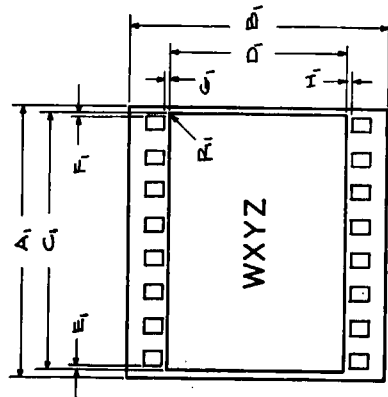


Fig. 1
Location of Image on Film

Table 1

Dimensions	Inches	Millimeters
A ₁	1.496 ± 0.004	38.00 ± 0.10
B ₁ *	1.377 nom	34.96 nom
C ₁	1.429 ± 0.012	36.30 ± 0.30
D ₁	0.964 ± 0.012	24.49 ± 0.30
E ₁ -F ₁	0 ± 0.004	0 ± 0.10
G ₁ -H ₁	0 ± 0.004	0 ± 0.10
R ₁	0.016 max	0.41 max

*For information only

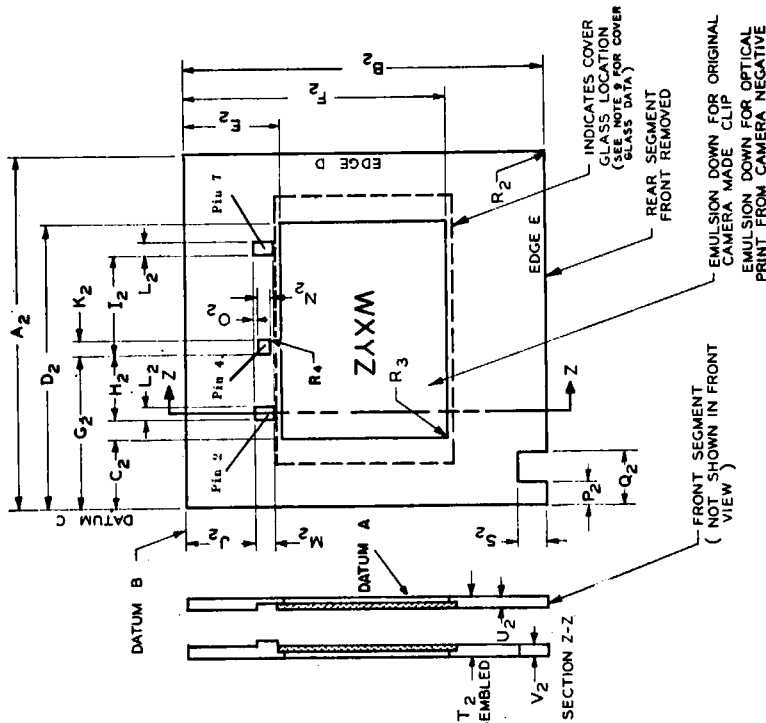


Fig. 2
Slide Mount

Table 2

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	21.819 ± 0.048
H ₂	0.8681 ± 0.0020	22.000 ± 0.051
I ₂	0.5659 ± 0.0010	14.371 ± 0.025
J ₂ *	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	2.761 ± 0.013
N ₂	0.1090 ± 0.0010	2.761 ± 0.025
O ₂	0.0036 ± 0.0020	0.091 ± 0.051
P ₂	0.180 max	4.57 max
Q ₂	0.330 max	8.38 max
R ₂	0.062 max	1.57 max
S ₂	0.062 max	1.57 max
T ₂	0.018 ± 0.002	0.46 ± 0.05
U ₂	0.150 max	3.81 max
V ₂	0.115 ± 0.005	2.92 ± 0.13
	0.060 ± 0.002	1.52 ± 0.05

*See Note 6

2. Double-Frame 35mm Film Clip

- 2.1 The film for double-frame 35mm film clips to be mounted and used in compliance with this practice shall be in accordance with American Standard Dimensions for 35mm Motion-Picture Film, KS-1870, PH22.36-1964, and shall be of low-shrinkage safety film base.
- 2.2 The camera used for exposure shall produce an image on the film the dimensions of which are in accordance with American Standard Picture Sizes for Roll and 35mm Still-Film Cameras, PH3.39-1961.

Note

1. The surfaces indicated by Datum A shall be plane within 0.002 in. (0.05mm).
2. The edges indicated by Datums B and C and Edge D shall be straight within 0.002 in. (0.05mm).
3. Datums B and C and Edge D shall be perpendicular to Datum plane A within 1 degree.
4. Datum C and Edge D shall be perpendicular to Datum B within 0.002 in. (0.05mm).
5. Dimensions P_2 , Q_2 , S_2 , and V_2 define an area within which a notch may be provided to indicate the proper position of the mount in a magazine or projector. When the film is inserted in the mount as shown in Figure 2 and the mount is placed in a normal film projector to produce a proper image on the screen, the notch will be down and away from the lamp. In this position the notch may be used as a mechanical interlock.
6. Pins 2 and 7 must not depart from Dimension J₂ by more than 0.0020 in. (0.051mm) with respect to each other.
7. The pins must maintain their indicated dimensions at least 0.010 in. (0.25mm) beyond the emulsion position.

- 2.3 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 11).

3. Slide Mount

- 3.1 The mount for the double-frame 35mm film clip shall be manufactured in accordance with Figure 2 and Table 2.
- 3.2 Slide mounts produced in accordance with this recommended practice shall meet the dimensional tolerances of Figure 2 and Table 2 for at least one year following manufacture.

8. The pins should extend through the film clip but must not project beyond either exterior surface of the slide mount.
9. Cover glass should be built into the mount on each side of the film surface. This glass should be nominally 0.030 in. (0.76mm) 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. (0.15mm) in a snug manner.
10. 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.
11. The recommended emulsion position is that of an original reversal camera film.
12. 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 A₂ and B₂.

SMPTE RECOMMENDED PRACTICE

Dimensions of 35mm Rewind Spindles



Introduction

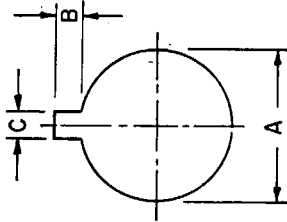
This recommended practice is intended as a guide for the design of rewind equipment generally used in 35mm motion-picture work. It is accepted practice to use hand rewinds for several types of motion-picture film-handling equipment such as 16mm and 35mm projection reels and flanges as well as microfilm reels.

1. Scope

This recommended practice specifies maximum dimensions for 35mm motion-picture rewind spindles.

2. Dimensions

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



Dimensions	Inches	Millimeters
A	0.315 max	8.00 max
B	0.120 max	3.05 max
C	0.120 max	3.05 max

3. Related American Standards

- Dimensions of reels which are likely to be used on the rewinds described in this recommended practice are specified in the following American Standards:
- Dimensions for 16mm 100-Foot Film Spools for Recording Instruments and for Microfilm and Still-Picture Cameras, PH1.33-1961
 - Dimensions for 16mm 200-Foot Film Spools for Recording Instruments and for Microfilm and Still-Picture Cameras, PH1.34-1961
 - Dimensions for 35mm 100-Foot Film Spools for Recording Instruments and for Microfilm and Still-Picture Cameras, PH1.35-1961
 - Dimensions for 70mm 100-Foot Film Spools for Recording Instruments and for Microfilm and Still-Picture Cameras, PH1.36-1961
 - Dimensions for 100-Foot Reels for Processed 16mm and 35mm Microfilm, PH5.6-1961
 - 16mm Motion Picture Projection Reels, PH22.11-1953
 - Dimensions of 35mm Motion-Picture Projection Reels, PH22.4-1965