Errata

September 1961

"A Method of Producing Telecine Test Materials of Specified Density," by Leslie H. Holmes, pp. 699–701

On p. 701, col. 3, line 5 of *Author's Note* (following References)
For: CBS; *Read:* CBC

November 1961

"SMPTE Elections," p. 920, col. 3

Line 27 (line 2 under *CANADIAN*):
For: Secretary-Treasurer, John Burman
Read: Secretary-Treasurer, Harold Hundert

Line 55 (line 1 of *ROCHESTER*):
For: Chairman, Walter R. Weller
Read: Chairman, William R. Weller

Last line (*ROCHESTER*):
For: Managers . . .Robert E. Hobkins
Read: Managers . . .Robert E. Hopkins

standards and recommended practices

Proposed SMPTE Recommended Practice RP 7

The Proposed SMPTE Recommended Practice RP 7, Density and Contrast Range of Black-and-White Films and Slides for Television, was first published for trial in January 1960. Receiving several adverse comments questioning the choice of density values and method of measurement, the proposal was returned to the subcommittee and, after many meetings and much deliberation, the points in question were clarified and the modifications written into this present draft. The fourth draft has now been accepted by both the Television and Standards Committees and is again published for a three-month period of trial. All comments should be sent to Alex E. Alden, Staff Engineer, prior to March 15, 1962. If no adverse comments are received, the proposal will then be submitted to the Society's Board of Governors for approval as an SMPTE Recommended Practice.—*A.E.A.*

Proposed American Standards

The proposals published here have been approved by the Engineering and Standards Committees and are presented now for a three-month period of trial and comment. Please address your comments to Alex E. Alden at Society Headquarters prior to March 15, 1962. If no adverse criticism is received by that date, these proposals will be submitted to ASA Sectional Committee PH22 for further processing.

Three of these proposed standards, PH22.134, 8mm Magnetic Reproduce Characteristic; PH22.135, Magnetic Sound Record on 8mm Motion-Picture Film Perforated 1R-1500; and PH22.136, 8mm Magnetic Striping of 16mm Motion-Picture Film Perforated 8mm 2R–1500, supplement the first four 8mm magnetic sound standards published in the October 1961 *SMPTE Journal*. The Sound Committee, anticipating the rapid growth of 8mm magnetic-sound developments, is working diligently to provide the necessary standards for the industrial use of 8mm products.

The Proposed American Standard PH22.107, Film Spools for 8mm Motion-Picture Cameras, 25-ft Size, has had a long and tedious history. This proposal, initiated in 1954, was first published in the January 1956 *SMPTE Journal* and again in June of 1959, bringing many adverse comments. The major difficulty in arriving at an agreement reflected the problem of finding a spool that would physically fit all existing 8mm cameras. The committee now feels certain that a spool made in accordance with this standard will fit known cameras of American manufacturers. A second proposed standard is being prepared for 50- and 100-ft size camera spools. The committee was in accord that combining this additional information with the present completed document would again curtail the acceptance of the highly necessary standard.—*A.E.A.*

PROPOSED SMPTE RECOMMENDED PRACTICE RP 7

Density and Contrast Range of Black-and-White Films and Slides for Television

Introduction

This Recommended Practice originated in the Subcommittee on Density Requirements for TV Films and Slides of the Television Committee. The purpose of the recommendation is to promote uniform, high, technical quality of television programs on films and slides from any source by specifying density values which are most desirable for effective television transmission. The achievement of optimum picture reproduction requires not only proper print quality and density but also the cooperation of the artist, production directors and technicians in matters such as make-up, composition, lighting, and exposure of negative as well as proper adjustment of the television system. It has been the experience of the members of the committee that any attempt to correct for shortcomings in one step by introducing nonstandard techniques in another, will usually result disadvantageously.

Films conforming to this Recommended Practice are intended to provide optimum quality when reproduced through a television system. However, they may not necessarily appear to be optimum when viewed by direct projection.

Recommendations

1. *Scope*

1.1 This recommendation specifies important density values of black-and-white 16mm and 35mm motion-picture films and slides intended for television transmission.

2. *Density Requirements*

2.1 The minimum diffuse density of highlight areas shall have a normal value of 0.4 to 0.3 but not less than 0.3 for optimum reproduction in the television system. This value is not intended to apply to glint, specular highlights or other small areas where details need not be reproduced.

2.2 The maximum diffuse density of lowlight areas shall have a normal value of 1.9 to 2.0 but not greater than 2.0 for optimum reproduction in the television system. This value is not intended to apply to small areas where details need not be reproduced.

2.3 The density of human faces, usually observed more intently than other picture areas, shall be greater than the measured minimum density as specified in Section 2.1 by a value not less than 0.15 or more than 0.5 unless special effects are desired. These density values are important in order to preserve the proper density relationships between face tones and high-lights.

3. *Measurement*

3.1 The method of density measurement shall be in accordance with American Standard Method of Determining Transmission Density of Motion-Picture Films, PH22.27-1960, or the latest revision thereof approved by the American Standards Association, Incorporated.

3.2 Evaluation of the film under normal conditions of television reproduction by means of an oscilloscope calibrated in terms of diffuse density may be used as an alternative method of measuring film density. The oscilloscope used shall be in accordance with the Institute of Radio Engineers Standard Measurement of Luminance Signal Levels, 58 IRE 23.S1, or the latest revision thereof.

NOTES

1. The following Society-sponsored American Standards apply to the dimensional values for films and slides for television:

(a) Picture Area—Motion-Picture Film. The television picture area of 35mm and 16mm motion-picture film shall be in accordance with American Standard Television Picture Area—35mm Motion-Picture Film, PH22.95-1954, and Television Picture Area—16mm Motion-Picture Film, PH22.96-1954, or the latest revisions thereof approved by the American Standards Association, Incorporated.

(b) Soundtrack. The photographic sound record on 35mm and 16mm motion-picture prints shall be in accordance with American Standard Photographic Sound Record on 35mm Prints, PH22.40-1957, and Photographic Sound Record on 16mm Prints, PH22.41-1957, or the latest revisions thereof approved by the American Standards Association, Incorporated.

(c) Film Dimensions. The film width, perforations, etc., shall be in conformance with American Standards or SMPTE Recommended Practices.*

(d) Television Slides. The dimensions of slides to be used for television transmission shall be in accordance with American Standard Slides and Opaques for Television Film Camera Chains, PH22.94-1954, or the latest revision thereof approved by the American Standards Association, Incorporated.

* A complete Standards Index is available from Society Headquarters.

Proposed American Standard

PH22.134

8mm Magnetic Sound Reproduce Characteristic

1. Scope

This standard specifies the reproduce characteristic for magnetic sound records on 8mm motion-picture film.

2. Sound Record

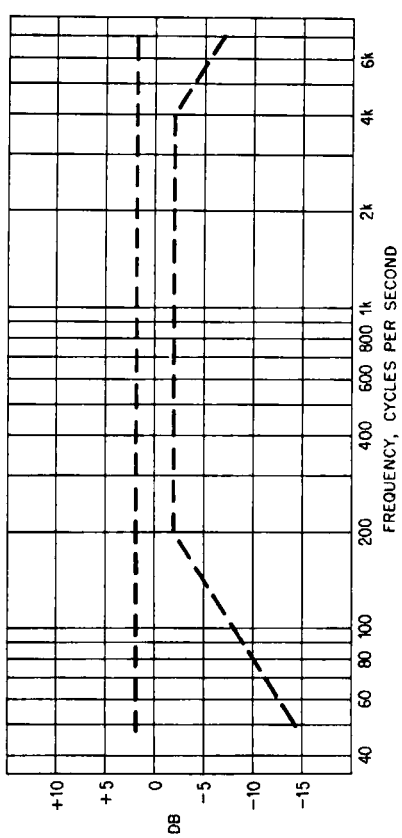
The test film used for determining the magnetic sound reproduce characteristic shall be in accordance with Proposed American Standard 8mm Multifrequency Test Film, Magnetic Type, Perforated 1R-1500, PH22.-131.

3. Mean Film Speed

In reproducing, the test film shall pass through the equipment at a rate of 24 perforations per second (approximately 18 ft per minute) with a mean film speed tolerance of ±0.5 percent.

4. Frequency Response

The electrical output of the system, when using the test film referred to in 2 and measured across a correctly matched impedance termination, shall be within the limits specified in the figure.



NOT APPROVED

Proposed American Standard

Magnetic Sound Record on 8mm Motion-Picture Film, Perforated 1R-1500

PH22.135

1. Scope

1.1 This standard specifies the lateral location and dimensions of the magnetic sound record on 8mm motion-picture film.

1.2 This standard specifies the picture-sound separation of 8mm motion-picture film with a magnetic sound record and a 0.030-in. nominal width magnetic coating.

2. Picture-Sound Separation

The magnetic sound record on the film shall precede the center of the corresponding picture by a distance of 56 ± 1 frame.

3. Magnetic Coating

3.1 With the direction of film travel as shown in the diagram, the magnetic coating shall be on the upper face of the film.

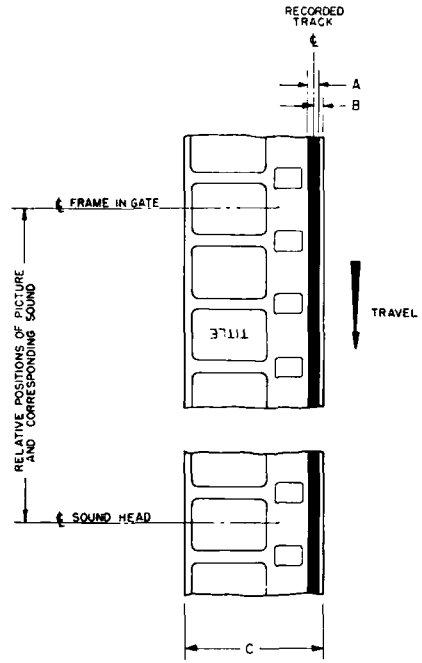
3.2 The magnetic coating shall be as specified in American Standard Magnetic Coating of 8mm Motion-Picture Film, PH22.88-1956.

4. Dimensions

The dimensions shall be as specified in the diagram and table.

5. Revision of American Standard Referred to in This Document

When the following American Standard referred to in this document is superseded by a revision approved by the American Standards Association, Incorporated, the revision shall apply: American Standard Magnetic Coating of 8mm Motion-Picture Film, PH22.88-1956.



Dimensions	Inches		Millimeters	
A'	0.019	min	0.48	min
B	0.015 ± 0.001		0.38 ± 0.03	
C	0.314	nom	7.98	nom

* This dimension is for tracks produced in equipment using the same head for recording and reproducing. In commercially produced prints intended for use on a variety of reproducers, it is recommended that a recording head be used capable of producing a 0.025-in. min width track having the same centerline.

NOT APPROVED

Proposed American Standard

Magnetic Striping of 16mm Motion-Picture Film, Perforated 8mm, 2R-1500

PH22.136

1. Scope

This standard specifies the location and dimensions of the magnetic striping material applied to 16mm motion-picture film with two rows of 8mm perforations.

2. Magnetic Coating

2.1 The location and dimensions of the magnetic coating shall be as specified in the diagram and table.

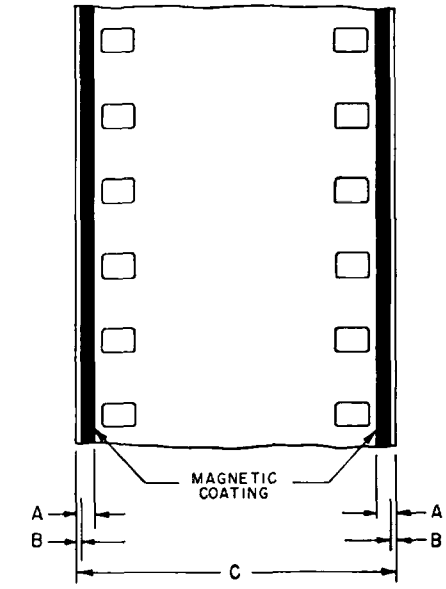
2.2 The magnetic strips are on the side of the film away from projector or camera lens.

3. Film Stock

The film stock used shall be of the low-shrinkage safety type, cut and perforated in accordance with American Standard Dimensions for 8mm Motion-Picture Film, PH22.17-1954.

4. Revision of American Standard Referred to in This Document

When the following American Standard referred to in this document is superseded by a revision approved by the American Standards Association, Incorporated, the revision shall apply: American Standard Dimensions or 8mm Motion-Picture Film, PH22.17-1954.



Dimensions	Inches		Millimeters	
A	0.031 0.028	max min	0.79 0.71	max min
B	0.000 + 0.005 − 0.000		0.00 + 0.13 − 0.00	
C	0.628	nom	15.95	nom

NOT APPROVED

Proposed American Standard

Film Spools for 8mm Motion-Picture Cameras, 25-ft Size

PH22.107

1. Scope

1.1 The dimensions shown in this standard are for 8mm motion-picture film spools with a nominal capacity of 25 ft. These spools are used in cameras of the type in which each roll of film is passed through the camera twice for exposure in accordance with American Standard 8mm Motion-Picture Film, Usage in Camera, PH22.21-1953. The spindle holes in the spool are shown with splines which are intended to assist in assuring correct orientation of the spool in the camera.

1.2 This standard does not specify the relative orientation of the splines in the two spindle holes (or of the core slot).

2. Operation in Camera

2.1 When the spool is on the supply spindle, the flange with the 3-splined spindle hole, flange A (Fig. 1), shall be on the left-hand side (as seen from the lens).

2.2 The half of the film adjacent to the flange with the 3-splined hole, when the spool is on the supply spindle, shall be in line with the camera lens.

2.3 When the spool is on the take-up spindle, the flange with the 4-splined spindle hole, flange B (Fig. 3), shall be on the lefthand side (as seen from the lens).

2.4 When the loaded camera is viewed from the side, with the lens to the left, both the supply and take-up spools shall rotate in a clockwise direction.

3. Dimensions

3.1 The dimensions shall be as given in the diagrams and table.

3.2 If rivet heads or other fastening devices extend beyond the outer surface of the flange, they shall lie within the zone indicated by diameters K and L (Fig. 3). It is not intended that this standard prescribe the nature or number of these fastening devices.

3.3 Dimension H_1 (Fig. 2) is the space between the flanges outside the core. It is measured from a point on the inner surface of one flange to the corresponding point on the opposite flange. The measurement shall be made with an instrument which does not distort the flanges.

3.4 Dimension H_2 (Fig. 2) is the space between the flanges inside the core. This space shall be sufficient to permit maximum width film of 0.630 in. (16.00mm) to fit freely into the film slot. The space between the inner surfaces of the splines, within a diameter of 0.384 in. (9.75mm) (D min), (Figs. 1,3), shall not be less than 0.622 in. (15.80mm).

3.5 Dimension J_1 (Fig. 4) is the overall thickness of the spool within a 0.615-in. (15.62mm) diameter zone at the center of each flange.

3.6 When the spool is rotated on an accurate, tight-fitting spindle, the maximum outward deviation from the intended plane of rotation for any point on the flange outside the 0.615-in. (15.62mm) diameter zone shall not exceed 0.015 in. (0.38mm). This 0.015-in. (0.38mm) tolerance includes fastening devices, variations in flange thickness, flatness and lateral runout of the flanges.

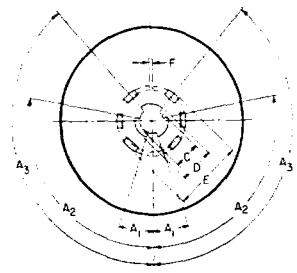


Fig. 1

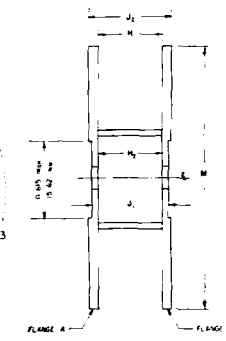


Fig. 2

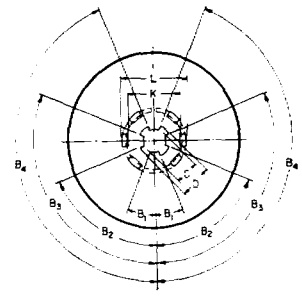


Fig. 3

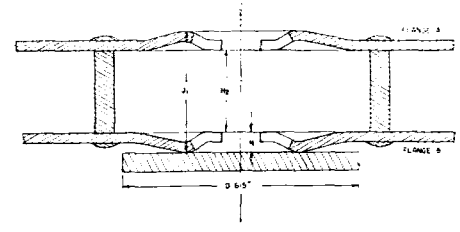


Fig. 4

Dimensions	Degrees	Dimensions	Inches	Millimeters
A_1	$19^1/_4 \pm 1$	C (bore for spindle)	0.288 + 0.007 − 0.004	7.32 + 0.18 − 0.10
A_2	$100^3/_4 \pm 1$	D	0.384 min	9.75 min
		E (core diameter)	0.750 ± 0.015	19.05 ± 0.38
A_3	$139^1/_4 \pm 1$	F	0.035 ± 0.020	0.89 ± 0.51
		H_1 (see 3.3)	0.631 min	16.03 min
B_1	$19^1/_4 \pm 1$	H_2 (see 3.4)	0.622 min	15.80 min
		J_1 (see 3.5)	0.720 ± 0.020	18.29 ± 0.51
B_2	$70^3/_4 \pm 1$	J_2 (see 3.7)	0.760 max	19.30 max
		K (see 3.2)	0.615 min	15.62 min
B_3	$109^1/_4 \pm 1$	L (see 3.2)	0.812 max	20.62 max
		M	2.031 ± 0.015	51.59 ± 0.38
B_4	$160^3/_4 \pm 1$	N (see 3.9)	0.038 min	0.97 min
		N_1 (see App. D)	0.025 min	0.64 min

The *intended plane of rotation* is defined as a plane perpendicular to the axis of the spindle and coincident with the surface of a flat support centered on the spindle axis and having a diameter of 0.395 in. (10.03mm).

3.7 Dimension J_2 is the overall thickness of the spool *outside* the 0.615-in. (15.62mm) zone which is centered on each flange. J_2 is a composite dimension covering all of the spool characteristics described in 3.6.

3.8 Dimension F (Fig. 1) specifies the width of slot in the core for attaching the end of the film.

3.9 Dimension N (Fig. 4) is the effective thickness of the 4-splined webs which engage most camera drivers. It is measured from a plane perpendicular to the axis of the spindle and coincident with the surface of a flat support having a diameter of 0.615 in. (15.62mm).

4. Revision of American Standard Referred to in This Document

4.1 When the following American Standard referred to in this document is superseded by a revision approved by the American Standards Association, Incorporated, the revision shall apply: American Standard 8mm Motion Picture Film, Usage in Camera, PH22.21-1953.

APPENDIXES

(These Appendixes are not a part of Proposed American Standard Film Spools for 8mm Motion-Picture Cameras, 25-ft Size, PH22.107, but are included to facilitate its use.)

Appendix A

Since the maximum value of H_1 (Fig. 2) does not affect the interchangeability of the spool, no limit is specified. However, the maximum is an important quality characteristic and it is expected that every spool manufacturer will hold H_1 within the narrowest limits that his design and manufacturing process permits.

Appendix B

The angular dimensions and tolerances for the width of the tongues in the splined spindle holes are in accord with current practice for new spools and with the requirements of existing cameras. However, there are in existence and use spools of older design with tongues slightly wider by 1° to 2° on each edge of each tongue.

Appendix C

Camera spindles should allow for a radius of not more than 0.015 in. (0.38mm) at each corner of each tongue.

Appendix D

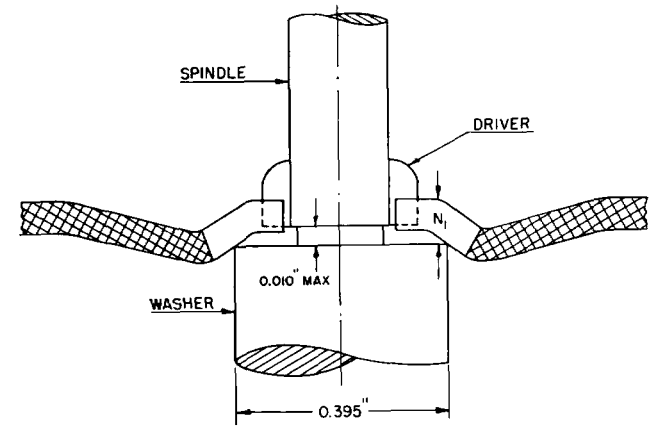
For a number of years, the effective thickness of the 4-splined webs which engage most camera drivers (Dimension N, Fig. 4) was the stock thickness, nominally 0.040 in. (1.02mm). Recently, spools have been made from thinner materials which require embossing to maintain Dimension J_1 (Fig. 4) and to enable the splines to engage the camera drivers, some of which have a clearance approaching 0.025 in. (0.64mm).

As outlined in 3.9, Dimension N (Fig. 4) is normally measured to a flat support having a diameter of 0.615 in. (15.62mm). Many cameras have spool support washers with diameters considerably less than 0.615 in. (15.62mm). In order to assure proper operation with such cameras, the dimension from the inside of the 4-splined flange to the plane of a flat support 0.395 in. (10.03mm) in diameter centered on the flange (Dimension N_1, Fig. 5) shall be at least 0.025 in. (0.64mm).

The enlarged section for Dimension N (Fig. 4) illustrates one method of shaping the splines in the 4-splined flange so they will engage the camera driving spindle when the flange thickness is less than 0.025 in. (0.64mm).

Camera spindles engaging the 4-splined flange of the spool should not have a gap greater than 0.010 in. (0.25mm) between the bottom of the spindle driving spline and the top of the spindle shoulder or washer that supports the spool.

It is recommended that, in newly designed cameras, the diameter of the supporting spindle shoulder or washer be not less than 0.500 in. (12.70mm) and no greater than 0.615 in. (15.62mm).



SPINDLE AND SPOOL RELATIONSHIPS

Fig. 5