

# 120th SMPTE Technical Conference—Update

Here is the last-minute information on the Society's Annual Technical Conference to be held at the Americana Hotel, New York City, on **29 October–3 November**. This supplements the extensive information published in last month's *Journal*.

## Additional Papers

Papers have been added to a number of the Technical Sessions since the Advance Program was printed:

**Overview: Imagery—Today and Tomorrow** (Monday morning): This session will feature a panel comprised of a major West Coast motion-picture producer, a creative director of a leading advertising agency, a market analyst, and a manager of prime-time development from a leading network, to be moderated by the Honorary Session Co-Chairman, Herb Oscar Anderson, noted television and radio personality. Each panelist will present a mini-paper that will provide new insights into the conference theme, Imagery — Today and Tomorrow.

**Film Production** (Wednesday afternoon): "The Louma Crane, A Modular Concept Crane That Only Carries the Remote Controlled Camera," Messrs. Masseron and LaValou, *Samuelson Alga Cinema, Vincennes, France* and *Samuelson Film Service, London, England*; "How

Cameramen are Helped by New Equipment," Jon Fauer, *Vision Associates, New York, N.Y.*; Linwood Dunn, ASC, will show a variety of special-effects film excerpts taken mostly from the RKO Radio Pictures feature productions on which he worked during his 28 years of association as a special effects cameraman, a director of photography, and department head. The presentation will include examples of various trick shots from such noted films as *Androcles and the Lion*, *Hunchback of Notre Dame*, *Citizen Kane*, *Bringing Up Baby*, and *It's a Mad, Mad, Mad, Mad World*. Some clips will illustrate graphically how the separate film elements are used to produce the final composite scene. Lin Dunn will be pleased to answer questions and discuss the application of this most important tool in film production.

**Film-to-Tape and Tape-To-Film Transfers** (Wednesday afternoon): "Hollogon's Continuous and Shutterless Film Projection System for Film-to-Tape and Tele-Cine Application," Ulrich M. Fritzler, *Hollogon Optical Systems Corp., New York, N.Y.*

**Video Production and Post Production** (Thursday morning): "A Survey of Television Blanking Width Problems," Frank Davidoff, *CBS Television Network, New York, N.Y.*; "Cut/Lap: A New Method for Programmable Fades and Soft Edit Transitions Using a Single Source VTR,"

George W. Bates, *Convergence Corp., Irvine, Calif.*

**Sound Technology I** (Thursday morning): This Session will be held at the Ziegfeld Theatre, 141 W. 54th St. (near 6th Ave.). "Design and Performance Considerations for a New Photographic Sound Recording System," Frank E. Pontius, *Westrex, Burbank, Calif.* and Terry Beard, *Nuoptix, Westlake Village, Calif.*; "Dolby Stereo Optical Soundtracks: A Progress Report and New Developments," Ioan Allen and Craig Todd, *Dolby Laboratories, Inc., San Francisco, Calif.*

## Equipment Exhibit

The equipment exhibit, which will be open Monday 3:00–6:00 p.m.; Tuesday, 11:00 a.m.–8:00 p.m.; Wednesday, 9:30 a.m.–4:00 p.m.; and Thursday, 11:00 a.m.–6:00 p.m., is the largest ever assembled in New York. New Exhibitors are:

Asaca	Hollogon
EPOI	Oxberry
Filtek Optics	Shintron

## Registration Information

Those interested in attending the Conference should consult the September *Journal* for Hotel and Registration rates. For further information contact SMPTE Headquarters, Attn: 120th Conference Registration.

# Standards & Recommended Practices

## Approved SMPTE Engineering Committee Recommendation

The Society's first SMPTE Engineering Committee Recommendation received the Board of Governors' approval on 13 July 1978.

ECR 1-1978, Alignment Color Bar Test Signal for Television Picture Monitors, was developed by a working group under the aegis of the Committee on Television Video Technology. The working group was chaired by David Horowitz of the CBS Television Network Engineering and Development Department. The new test signal includes the basic EIA color bar signal and presents a simplified means of accurately adjusting chroma gain, chroma phase, and black level on color picture monitors.

An engineering committee recommendation incorporates engineering consensus on a dimension or practice intended to guide future design. The document is processed in the same manner as a national standard or a recommended practice and may later be transformed into one of the other two categories. Copies are available from Society Headquarters for \$1.50.

## Draft American National Standards

Four Draft American National Standards are published here for a trial period and public review. The standards, which cover 8-mm Type S (super 8) Model I sound motion-picture film camera cartridges, are:

PH22.197, Specifications for 8-mm Type S (Super 8) Model I Sound Motion-Picture Film Camera Cartridge, Cartridge-Camera Interface and Take-Up Core Drive;

PH22.198, Specifications for 8-mm Type S (Super 8) Model I Sound Motion-Picture Film Camera Cartridge Aperture, Pressure Pad and Film Position;

PH22.199, Specifications for 8-mm Type S (Super 8) Model I Sound Motion-Picture Film Camera Cartridge Pressure Pad Flatness and Camera Aperture Profile; and

PH22.200, Specifications for 8-mm Type S (Super 8) Model I Sound Motion-Picture Film Camera Cartridge Camera Run Length, Perforation Cut-Out and End-of-Run Notch (15-m [50-ft] Capacity).

Specifications for the super 8 silent motion-picture film camera cartridges are documented in American National Standards PH22.159.1 through PH22.159.5

Comments should be addressed to Alex E. Alden, Manager of Engineering Services, at Society Headquarters before 1 December 1978. The proposals have been submitted to American National Standards Committee PH22. Consequently, all comments received through *Journal* publication will be reviewed prior to the conclusion of action by that committee. — Alex E. Alden, *Manager of Engineering Services.*

# SMPT E ENGINEERING COMMITTEE RECOMMENDATION

## ECR 1-1978



### Alignment Color Bar Test Signal for Television Picture Monitors

**1. Scope**

This recommendation specifies the purpose, format, and usage of a television picture monitor alignment color bar test signal with chroma set and black set signals.

**2. Purpose**

- 2.1 The alignment color bar test signal is intended to standardize the adjustment of chroma gain, chroma phase, and black level monitor controls.
- 2.2 Chroma gain and chroma phase for picture monitors are conventionally adjusted by observing the standard encoded color bar signal (see Fig. 1) with red and green monitor guns switched off. The four visible blue bars are adjusted for equal brightness. This procedure is prone to error because of the subjective judgment necessary and especially because the blue bars are widely separated on the screen. The use of the chroma set signal portion of the alignment color bar test signal greatly increases the accuracy of this adjustment since it provides a signal with the blue bars to be matched vertically adjacent to each other. Because the bars are adjacent, the eye can easily perceive any difference in brightness. It also eliminates effects due to shading or purity from one part of the monitor to another.
- 2.3 Black level for picture monitors is conventionally adjusted by observing a known black portion of the signal and matching it to a blanked area of the signal. This procedure is prone to error because of the subjective judgment necessary to make the match. The use of the black set signal portion of the alignment color bar test signal greatly increases the accuracy of this adjustment since it provides a positive go-no-go criterion for the proper setting. It also minimizes errors due to variations in ambient light.

**4. Usage**

- 4.1 To set chroma gain and phase, the picture monitor red and green guns are switched off. Chroma gain is adjusted by matching the brightness of the outer left or right main blue bar with the chroma set bar just below. In a similar manner, chroma phase is adjusted by matching the brightness of either center main blue bar with the chroma set bar just below.
- 4.2 To set black level, the picture monitor brightness control is adjusted so that the whiter-than-black bar is visible with respect to the black surround but the blacker-than-black bar is not visible.

**3. Format**

- 3.1 Fig. 1 shows the appearance of the EIA Standard RS-189-A, Encoded Color Bar Signal on a picture monitor. Fig. 2 shows the appearance of the alignment color bar test signal on a picture monitor. Note that Fig. 2, the Alignment Color Bar Test Signal, is the same as Fig. 1 except for the addition of chroma set signal (X-X') and black set signal (within Y-Y').
- 3.2 The chroma set signal is a small band of bars displayed in place of the bottom portion of normal color bars. The bars which contain blue are necessary; the remaining three bars may be black. Fig. 3 shows the appearance of one line of the chroma set signal on a waveform monitor.
- 3.3 The black set signal is located in the bottom right-hand portion of the raster. Two bars, one slightly whiter-than-black and the other slightly blacker-than-black, are included. Fig. 4 shows the appearance of one line of the black set signal on a waveform monitor.

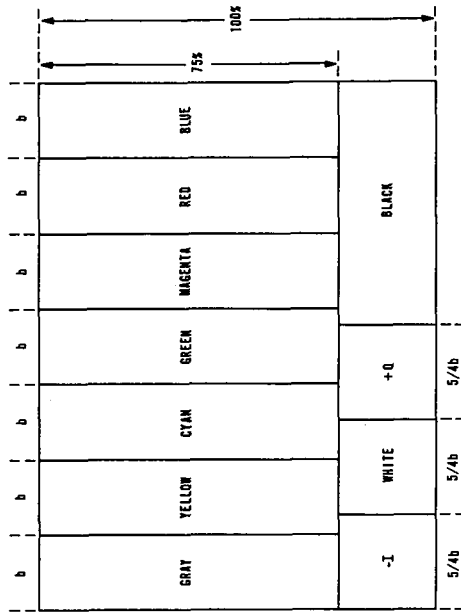


Fig. 1  
EIA Standard RS-189-A, Encoded Color Bar Signal

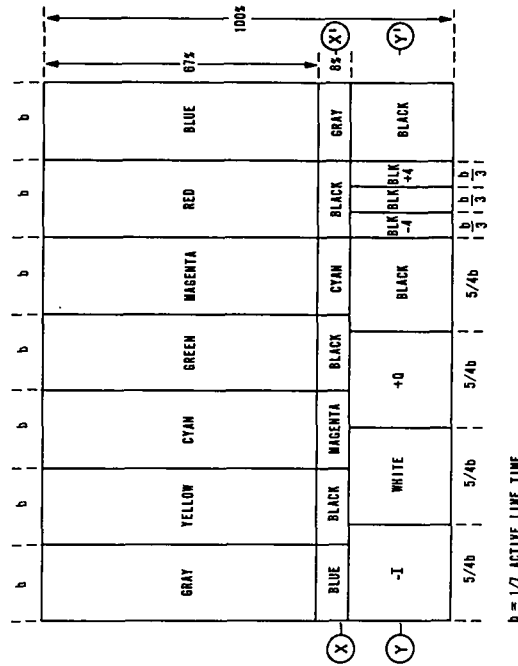


Fig. 2  
Alignment Color Bar Test Signal

b = 1/7 ACTIVE LINE TIME

# Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture Film Camera Cartridge, Cartridge-Camera Interface and Take-Up Core Drive

PH22.197

Page 1 of 5 pages

## 1. Scope

This standard specifies the dimensions of the 8-mm Type S (super 8) Model 1 sound motion-picture film camera cartridge and cartridge-camera interface. Also specified are the dimensions of the take-up core drive opening and critical dimensions of the take-up core as well as the driving force, direction of drive, and recommended drive ratio. An optional means of retaining the film supply scroll configuration until the cartridge is placed in the camera is also described.

**2.3.1** Datum Plane A is coincident with the center of a circle located by basic Dimension T. The circle is in contact with edges of the locating slot defined by Dimensions A, O, P, and Q. The diameter of this circle is such that it applies regardless of feature size (RFS) of the locating slot. (See Appendix A3.)

**2.4** Datum Features B, C, and A are primary, secondary, and tertiary, respectively.

**2.4.1** Datum Feature B is the unnotched, unlabeled surface of the cartridge. It is the primary datum feature and relates the cartridge to the datum reference frame by having a minimum of three points contact the first datum plane, B.

**2.4.2** Datum Feature C is the front seating surface of the cartridge. It is the secondary datum feature and relates the cartridge to the datum reference frame by having a minimum of two points contact the second datum plane, C.

**2.5** Dimensions L, N, U, Am, V, M, W, and R<sub>s</sub>, measured from Datum Planes A and C to the depth of Dimension E, as shown in the view of the label side, describe the extent of both triangular recessed areas. The inboard wall of the

license under these rights on reasonable and non-discriminatory terms and conditions to applicants desiring to obtain such a license. Details may be obtained from the publisher.

No representation or warranty is made or implied that this is the only license that may be required to avoid infringement in the use of this standard.

## 2. Dimensions

**2.1** The dimensions shall be as given in the figures and tables.

**2.2** The dimensions apply to an assembled cartridge with a film load at the time of manufacture.

**2.3** Datum Planes B, C, and A are referred to as first, second, and third, respectively. These planes, which are used for dimensioning, are mutually perpendicular and are jointly called a datum reference frame.

The user's attention is called to the possibility that compliance with this standard may require use of an invention covered by patent rights.

By publication of this standard, no position is taken with respect to the validity of this claim or of any patent rights in connection therewith. The patent holder has, however, filed a statement of willingness to grant a

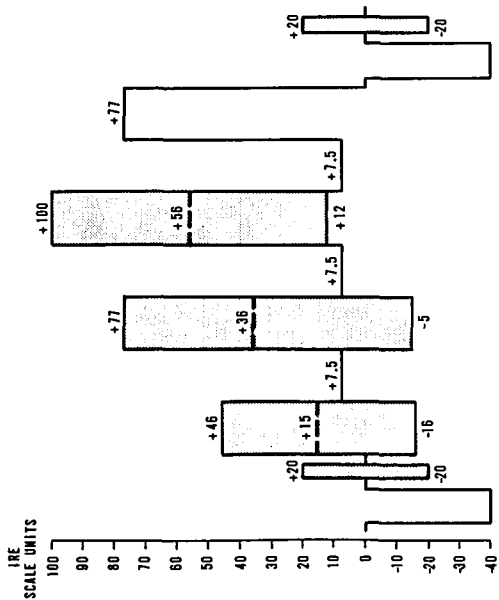


Fig. 3 One Line of Chroma Set Signal, X-X'

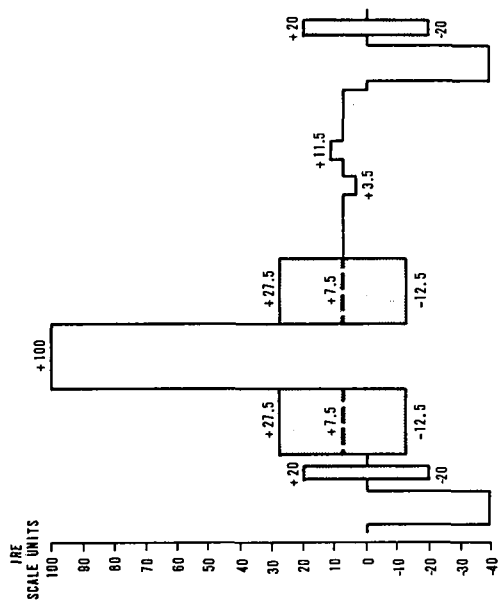
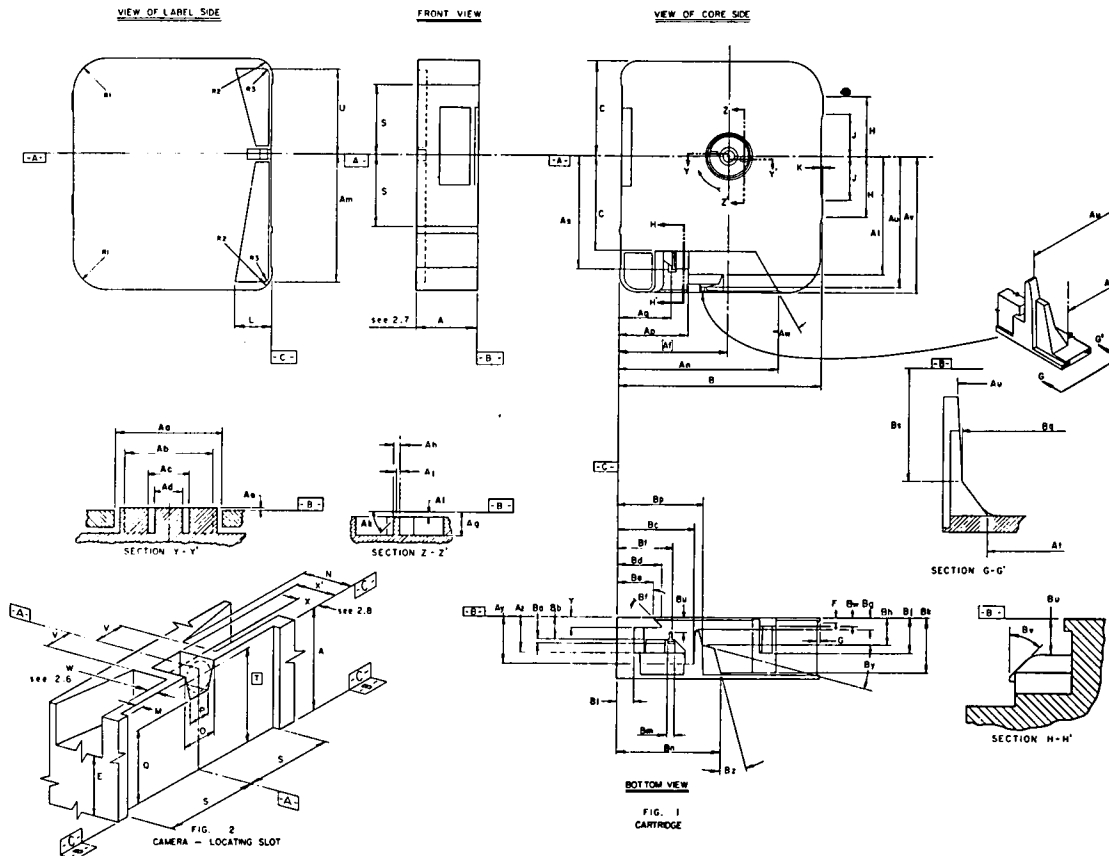


Fig. 4 One Line of Black Set Signal with -1, +0, & White Reference, Y-Y'

--- INDICATES LUMINANCE VALUES

THIS PROPOSAL IS PUBLISHED FOR COMMENT ONLY

Dimensions	Inches	Millimeters	Dimensions	Inches	Millimeters	Dimensions	Inches	Millimeters
A	0.944 min 0.980 max	23.98 min 24.89 max	Aa	0.680 max	17.27 max	Ba	0.060 ± 0.008	1.52 ± 0.20
B	2.99 ± 0.01	75.9 ± 0.3	Ab	0.575 min	14.60 min	Bb	0.319 ± 0.008	8.10 ± 0.20
C	1.390 ± 0.010	35.31 ± 0.25	Ac	0.327 max	8.31 max	Bc	1.152 min	29.26 min
E	0.780 max	19.81 max	Ad	0.264 max	6.71 max	Bd	0.660 max	16.76 max
F	0.09 ± 0.01	2.3 ± 0.3	Ae	0.030 max	0.76 max	Be	0.533 max	13.54 max
G	0.06 ± 0.01	1.5 ± 0.3	Af	1.608 basic	40.84 basic	Bf	45° nom	45° nom
H	0.88 ± 0.03	22.4 ± 0.8	Ag	0.100 min	2.54 min	Bg	0.162 ± 0.015	4.11 ± 0.38
J	0.61 ± 0.03	15.5 ± 0.8	Ah	0.040 ± 0.005	1.02 ± 0.13	Bh	0.347 min	8.81 min
K	0.015 ± 0.010	0.38 ± 0.25	Aj	0.020 max	0.51 max	Bj	0.502 min	12.75 min
L	0.470 min	11.94 min	Ak	45° nom	45° nom	Bk	0.840 min	21.34 min
M	0.007 ± 0.005	0.18 ± 0.13	Al	0.030 max	0.76 max	Bl	0.260 max	6.60 max
N	0.177 min	4.50 min	Am	1.835 min	46.61 min	Bm	0.093 ± 0.015	2.36 ± 0.38
O	0.154 ± 0.004	3.91 ± 0.10	An	2.340 min	59.44 min	Bn	1.550 max	39.37 max
P	0.142 ± 0.004	3.61 ± 0.10	Ap	1.032 max	26.21 max	Bp	1.280 max	32.51 max
Q	0.770 ± 0.010	19.56 ± 0.25	Aq	0.733 ± 0.008	18.62 ± 0.20	Bq	1.888 min	47.96 min
R <sub>1</sub>	0.50 ± 0.10	12.7 ± 2.5	As	1.710 ± 0.012	43.43 ± 0.30	Bs	0.658 min	16.71 min
R <sub>2</sub>	0.25 ± 0.05	6.4 ± 1.3	At	1.730 min	43.94 min	Bt	0.787 max	19.99 max
R <sub>3</sub>	0.160 max	4.06 max	Au	1.890 min	48.01 min	Bu	0.200 min	5.08 min
S	1.02 ± 0.01	25.9 ± 0.3	Av	2.000 ± 0.010	50.80 ± 0.25	Bv	45°	45°
T	0.870 basic	22.10 basic	Aw	30° +1° -5°	30° +1° -5°	Bw	0.151 ± 0.012	3.84 ± 0.30
U	1.225 min	31.12 min	Ay	0.620 min	15.75 min	By	15° ± 2°	15° ± 2°
V	0.125 max	3.18 max	Az	0.502 min	12.75 min	Bz	15° ± 2°	15° ± 2°
W	See Sec. 2.6							
X	0.070 min	1.78 min						
X <sup>1</sup>	0.158 min	4.01 min						
Y	0.151 ± 0.012	3.84 ± 0.30						



recessed area, defined by Dimensions L and N, shall be a smooth surface and may be tilted sufficiently from the perpendicular to Datum Plane B to allow proper release from a mold, when the cartridge is manufactured in a molding process.

**2.6** The thickness of the wall of the cartridge used for notching, Dimension W, shall be sufficient to withstand a force of at least 2.2 lbf (10 N), while deflecting no more than 0.04 in (1.0 mm). (For purposes of measurement, the force is applied by a solid round pin of nominal 0.05-in (1.3-mm) diameter centered 0.03 in (0.8 mm) nominally above or below the film speed or filter notch coincident with basic Dimension T on Datum Feature C.)

**2.7** Dimension A specifies the normal overall thickness of the cartridge.

**2.8** Some cartridge manufacturers may desire to provide a means of retaining the film supply scroll configuration until the cartridge is placed in the camera. One method employs a film locking slide which is activated by the camera locating pin. The film is released when the cartridge is inserted in the camera. Dimension X specifies the minimum depth of the camera locating slot as the cartridge is received from the manufacturer, that is, the distance from Datum Plane C to the end of the slide. Dimension X' is the minimum distance from Datum Plane C to the end of the slide after the cartridge is positioned in the camera. A camera locating pin having a maximum diameter of 0.140 in (3.56 mm) and a length of 0.155 ± 0.003 in (3.94 ± 0.08 mm) from Datum Plane C shall be sufficient to activate the film

locking slide. (See Appendix A5.) Allowance must be provided within the camera to accommodate a bowing of the notched, labeled side of the cartridge cover of up to a maximum of 1.009 in (25.63 mm) from Datum Plane B. The labeled side of the cartridge is shown in Fig. 1.

**2.9** Dimensions B and M are measured from Datum Plane C. Dimensions C, J, H, and S are measured from Datum Plane A.

**2.10** The take-up core axis shall be located within 0.010 in (0.25 mm) of the true center formed by Datum Plane A and basic Dimension Af.

**2.11** Dimensions Aa, Ab, Ac, and Ad are diameters.

**2.12** Dimensions Bt, Bu, and Bv define an optional guide provided to facilitate film loading at the time of cartridge manufacture.

### 3. Take-Up Core Drive

**3.1** The direction of rotation for the take-up core shall be clockwise when viewed from the core side of the cartridge. (See Appendix A5.)

**3.2** After disengagement of any core anti-back-up device, the cartridge shall operate with a nominal torque of 0.85 ounce-force inch with a permissible range of 0.5 to 1.5 ozf·in (6.0 x 10<sup>-3</sup> newton meters with a permissible range of 3.5 x 10<sup>-2</sup> to 10.6 x 10<sup>-3</sup> N·m) as applied to the cartridge. (See Appendix A2.)

**NOTE 1:** Placement of film data, such as name, number, and length of load, and the inclusion of any notches, shall be in accordance with American National Standard Specifications for 8-mm Type S (Super 8) Motion-Picture Film Camera Cartridge Notches for Exposure Control and Stock Identification, PH22.166-1977.

**NOTE 2:** Although two driving lugs are shown in the core and are recommended, only one is essential for satisfactory operation.

**NOTE 3:** In addition to this standard, there are available the following documents relating to 8-mm Type S (super 8) Model 1 sound motion-picture film camera cartridges:

Draft American National Standard Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture Film Camera Cartridge Aperture, Pressure Pad and Film Position, PH22.198

Draft American National Standard Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture Film Camera Cartridge Pressure Pad Flatness and Camera Aperture Profile, PH22.199

Draft American National Standard Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture Film Camera Cartridge Camera Run Length, Perforation Cut-Out and End-of-Run Notch (1.5-in [50-ft] Capacity), PH22.200

American National Standard Specifications for 8-mm Type S (Super 8) Motion-Picture Film Camera Cartridge Notches for Exposure Control and Stock Identification, PH22.166-1977

**NOTE 4:** The use of datum planes, datum features, dimensions, and tolerances in this standard is in accordance with American National Standard for Dimensioning and Tolerancing, Y14.5-1973.

## Appendix

(The Appendix is not a part of this American National Standard, but is included for information purposes only.)

**A1.** In designing the camera driver, consideration should be given to the fact that tooth-on-tooth engagement of the core lug on the camera driver pin is a possibility.

**A2.** It is recommended that the core be tendency driven (by some form of slip-drive mechanism) with a drive ratio of at least one turn of the core for every fifteen strokes of the pull-down claw.

**A3.** To provide a consistent method of measurement, it is recommended that a cartridge gauging fixture be used which incorporates datum surfaces, a locating pin, and means of exerting locating forces on appropriate sur-

faces of the cartridge. Drawings for a suitable cartridge-holding fixture may be obtained from the Society of Motion Picture and Television Engineers, 862 Scarsdale Avenue, Scarsdale, NY 10583.

**A4.** The camera locating pin should be capable of withstanding a force sufficient to activate the film locking slide.

**A5.** If an anti-backup mechanism is employed, such as described in Sec. 2.8, the mechanism should be capable of disengagement when the cartridge is placed in the camera, permitting the core to turn silently.

recessed area, defined by Dimensions L and N, shall be a smooth surface and may be tilted sufficiently from the perpendicular to Datum Plane B to allow proper release from a mold, when the cartridge is manufactured in a molding process.

**2.6** The thickness of the wall of the cartridge used for notching, Dimension W, shall be sufficient to withstand a force of at least 2.2 lbf (10 N), while deflecting no more than 0.04 in (1.0 mm). (For purposes of measurement, the force is applied by a solid round pin of nominal 0.05-in (1.3-mm) diameter centered 0.03 in (0.8 mm) nominally above or below the film speed or filter notch coincident with basic Dimension T on Datum Feature C.)

**2.7** Dimension A specifies the normal overall thickness of the cartridge.

**2.8** Some cartridge manufacturers may desire to provide a means of retaining the film supply scroll configuration until the cartridge is placed in the camera. One method employs a film locking slide which is activated by the camera locating pin. The film is released when the cartridge is inserted in the camera. Dimension X specifies the minimum depth of the camera locating slot as the cartridge is received from the manufacturer, that is, the distance from Datum Plane C to the end of the slide. Dimension X' is the minimum distance from Datum Plane C to the end of the slide after the cartridge is positioned in the camera. A camera locating pin having a maximum diameter of 0.140 in (3.56 mm) and a length of 0.155 ± 0.003 in (3.94 ± 0.08 mm) from Datum Plane C shall be sufficient to activate the film

locking slide. (See Appendix A5.) Allowance must be provided within the camera to accommodate a bowing of the notched, labeled side of the cartridge cover of up to a maximum of 1.009 in (25.63 mm) from Datum Plane B. The labeled side of the cartridge is shown in Fig. 1.

**2.9** Dimensions B and M are measured from Datum Plane C. Dimensions C, J, H, and S are measured from Datum Plane A.

**2.10** The take-up core axis shall be located within 0.010 in (0.25 mm) of the true center formed by Datum Plane A and basic Dimension Af.

**2.11** Dimensions Aa, Ab, Ac, and Ad are diameters.

**2.12** Dimensions Bt, Bu, and Bv define an optional guide provided to facilitate film loading at the time of cartridge manufacture.

### 3. Take-Up Core Drive

**3.1** The direction of rotation for the take-up core shall be clockwise when viewed from the core side of the cartridge. (See Appendix A5.)

**3.2** After disengagement of any core anti-back-up device, the cartridge shall operate with a nominal torque of 0.85 ounce-force inch with a permissible range of 0.5 to 1.5 ozf·in (6.0 x 10<sup>-3</sup> newton meters with a permissible range of 3.5 x 10<sup>-2</sup> to 10.6 x 10<sup>-3</sup> N·m) as applied to the cartridge. (See Appendix A2.)

**NOTE 1:** Placement of film data, such as name, number, and length of load, and the inclusion of any notches, shall be in accordance with American National Standard Specifications for 8-mm Type S (Super 8) Motion-Picture Film Camera Cartridge Pressure Pad Flatness and Camera Aperture Profile, PH22.199

**NOTE 2:** Although two driving lugs are shown in the core and are recommended, only one is essential for satisfactory operation.

**NOTE 3:** In addition to this standard, there are available the following documents relating to 8-mm Type S (super 8) Model 1 sound motion-picture film camera cartridges:

Draft American National Standard Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture Film Camera Cartridge Aperture, Pressure Pad and Film Position, PH22.198

Draft American National Standard Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture Film Camera Cartridge Pressure Pad Flatness and Camera Aperture Profile, PH22.199

Draft American National Standard Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture Film Camera Cartridge Camera Run Length, Perforation Cut-Out and End-of-Run Notch (1.5-in [50-ft] Capacity), PH22.200

American National Standard Specifications for 8-mm Type S (Super 8) Motion-Picture Film Camera Cartridge Notches for Exposure Control and Stock Identification, PH22.166-1977

**NOTE 4:** The use of datum planes, datum features, dimensions, and tolerances in this standard is in accordance with American National Standard for Dimensioning and Tolerancing, Y14.5-1973.

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**A1.** In designing the camera driver, consideration should be given to the fact that tooth-on-tooth engagement of the core lug on the camera driver pin is a possibility.

**A2.** It is recommended that the core be tendency driven (by some form of slip-drive mechanism) with a drive ratio of at least one turn of the core for every fifteen strokes of the pull-down claw.

**A3.** To provide a consistent method of measurement, it is recommended that a cartridge gauging fixture be used which incorporates datum surfaces, a locating pin, and means of exerting locating forces on appropriate sur-

faces of the cartridge. Drawings for a suitable cartridge-holding fixture may be obtained from the Society of Motion Picture and Television Engineers, 862 Scarsdale Avenue, Scarsdale, NY 10583.

**A4.** The camera locating pin should be capable of withstanding a force sufficient to activate the film locking slide.

**A5.** If an anti-backup mechanism is employed, such as described in Sec. 2.8, the mechanism should be capable of disengagement when the cartridge is placed in the camera, permitting the core to turn silently.

**NOTE 1:** Three lugs, Nos. 1, 2, and 3, on the pressure pad are intended to touch the camera aperture plate and thereby determine the film plane alignment and the clearance allowed for the thickness of the film. The required clearance is defined in Draft American National Standard Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture Film Camera Cartridge Pressure Pad Flatness and Camera Aperture Profile, PH22.199. Lug No. 4 should not touch the camera aperture plate. (See Appendix A5.)

**NOTE 2:** In addition to this standard, there are available the following documents relating to 8-mm Type S (super 8) Model 1 sound motion-picture film camera cartridges:

Draft American National Standard Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture

Film Camera Cartridge, Cartridge-Camera Interface and Take-Up Core Drive, PH22.197

Draft American National Standard Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture Film Camera Cartridge Pressure Pad Flatness and Camera Aperture Profile, PH22.199

Draft American National Standard Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture Film Camera Cartridge Camera Run Length, Perforation Cut-Out and End-of-Run Notch (15-m [50-ft] Capacity), PH22.200

American National Standard Specifications for 8-mm Type S (Super 8) Motion-Picture Film Camera Cartridge Notches for Exposure Control and Stock Identification, PH22.166-1977

**Appendix**

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**A1.** A force of 8 to 14 oz (2.2 to 3.9 N) must be exerted on the pressure pad for proper seating against the camera aperture plate.

**A2.** The two cut-out areas in the pressure pad permit the use of fingers for side-guiding. A force of 1.5 to 2.5 oz (0.42 to 0.70 N) per finger is adequate to ensure picture steadiness.

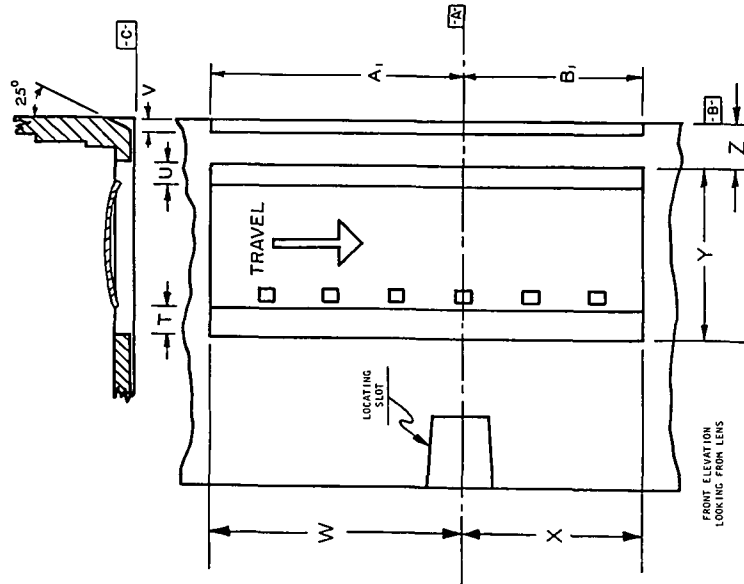
**A3.** Although sufficient recess from the front surface of the pressure pad to allow for camera claw and camera aperture guide finger penetration, as defined by Dimension C and Sec. 2.6, must be provided, additional portions of the pad surface may be recessed also.

**A4.** The cartridge pressure pad recess, defined by Dimensions D, E, and J, is available for camera claw film transport engagement. The perforation used for the film vertical registration at its stopping position is specified in American National Standard Dimensions of Cam-

era Aperture Image on Super 8 Motion-Picture Film, PH22.157-1971 (R1977), as minus 2 from the perforation adjacent to the image formed by the camera aperture. The horizontal centerline of the camera aperture should coincide nominally with Datum Plane A.

**A5.** Lug No. 4 is included on the pressure pad although it serves no function after the cartridge is properly inserted in the camera. It does, however, aid in seating the pressure pad and prevent the film from being pinched at the bottom of the cartridge aperture opening.

**A6.** To provide a consistent method of measurement, it is recommended that a cartridge gauging fixture be used which incorporates datum surfaces, a locating pin, and means of exerting locating forces on appropriate surfaces of the cartridge. Drawings for a suitable cartridge-holding fixture may be obtained from the Society of Motion Picture and Television Engineers, 862 Scarsdale Avenue, Scarsdale, NY 10583.



**Fig. 2**  
Cartridge Aperture Opening and Film Position

**Table 2**  
Aperture Opening and Film Position Dimensions

Dimensions	Inches		Millimeters	
	min	max	min	max
T	0.050		1.27	
U	0.040		1.02	
V	0.061 ± 0.006		1.55 ± 0.15	
W	0.648 ± 0.006		16.46 ± 0.15	
X	0.451 ± 0.004		11.46 ± 0.10	
Y	0.111 ± 0.003		2.82 ± 0.08	
Z	0.642		16.31	
A <sub>1</sub>	0.445		11.30	
B <sub>1</sub>				min

Draft American National Standard  
**Specifications for 8-mm Type S (Super 8)  
 Model 1 Sound Motion-Picture Film Camera  
 Cartridge Pressure Pad Flatness and  
 Camera Aperture Profile**

PH22.199

Page 1 of 3 pages

**1. Scope**

This standard specifies the dimensions and characteristics necessary for the appropriate flatness of the cartridge pressure pads as well as the required clearances for the film in the aperture area in 8-mm Type S (super 8) Model 1 sound motion-picture film camera cartridges.

**2. Dimensions**

**2.1** The dimensions shall be as given in the figure and tables and shall apply to a cartridge that is fully assembled but does not contain film.

**2.2** Datum Plane A, which is used for dimensioning, shall be established in accordance with Sec. 2.4.1 of Draft American National Standard Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture Film Camera Cartridge, Cartridge-Camera Interface and Take-Up Core Drive, PH22.197.

**2.3** Dimensions relative to the surface of the pressure pad are measured from a plane established through Surfaces 1, 2, and 3, as defined by 0.060-in (1.52-mm) circles dimensionally centered. (See figure.)

**2.4** Dimension G specifies the clearance for film in the camera aperture area, based on Dimension T, the thickness of the film in the center of the picture area.

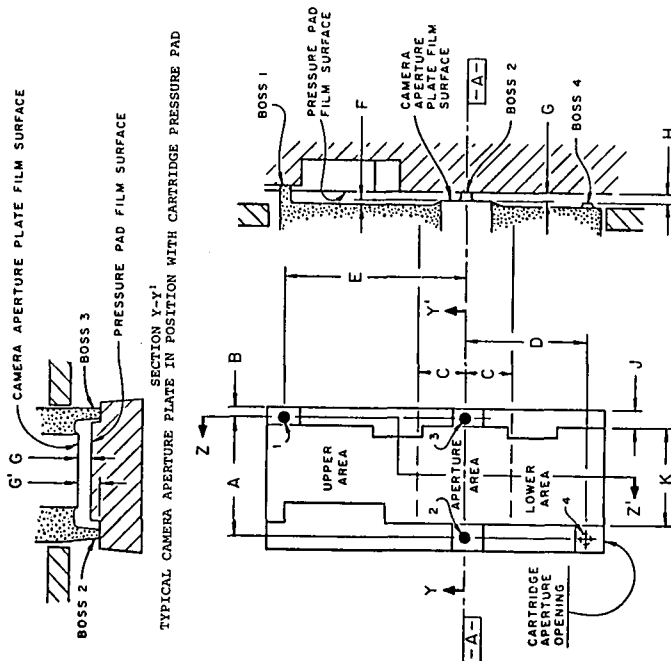
**2.4.1** Dimension G' specifies the extension of the camera aperture plate boss points (corresponding to 1, 2, and 3) beyond the aperture plate plane at the aperture opening.

**2.5** The upper and lower pad areas extend from Dimension C to the top and bottom of the cartridge pressure pad within Dimension K.

**2.6** Dimension H is intended to apply from a plane as described by Sec. 2.3.

**2.7** The plus values given for the pressure pad film surface flatness tolerances are to be directed toward the lens.

**2.8** Surface 4 of the cartridge pressure pad and Boss 4 of the camera aperture are established to aid in seating the cartridge pressure pad to the camera aperture plate. They serve no function once the pressure pad is in operating position.



SECTION Y-Y'  
TYPICAL CAMERA APERTURE PLATE IN POSITION WITH CARTRIDGE PRESSURE PAD

SECTION Z-Z'  
TYPICAL CAMERA APERTURE PLATE IN POSITION WITH CARTRIDGE PRESSURE PAD

**Table 1**  
Pressure Pad Dimensions

Dimensions	Inches	Millimeters
A	0.378 ± 0.001	9.60 ± 0.03
B	0.030 ± 0.002	0.76 ± 0.05
C	0.153 nom	3.89 nom
D	0.393 ± 0.001	9.98 ± 0.03
E	0.590 ± 0.001	14.99 ± 0.03
F	0.005	0.13
G	T + 0.0007 min	T + 0.018 min
	T + 0.0012 max	T + 0.030 max
G'	0.0065 min	0.165 min
	0.0070 max	0.178 max
H	0.004 min	0.10 min
J	0.055 min	1.40 min
K	0.310 max	7.87 max

**Table 2**  
Flatness Tolerances on Pressure Pad Film Surface

Areas	Inches	Millimeters
Aperture Area (within Dimension C)	+ 0.0058 -T	+ 0.147 -T
	+ 0.0048 -T	+ 0.122 -T
Upper Area	+ 0.0078 -T	+ 0.198 -T
	+ 0.0038 -T	+ 0.097 -T
Lower Area	+ 0.0078 -T	+ 0.198 -T
	+ 0.0018 -T	+ 0.046 -T

Table dimensions are measured from the zero plane defined by Surfaces 1, 2, and 3. (See figure and Notes 3 and 4.)

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NOTE 1: It is considered good practice to relieve the camera aperture plate above and below the picture area to allow a clearance for film transport and minimize the possibility of film pinching. Dimension F specifies the amount of recess for this purpose.

NOTE 2: Surfaces 1, 2, and 3, shown to establish the zero plane for purposes of measurement of the cartridge pressure pad film surface flatness, are circles having a diameter of 0.060 in (1.52 mm). The actual camera aperture plate bosses may deviate from this shape and size.

NOTE 3: It is intended that the film surface of the cartridge pressure pad be flat, or be molded as a flat plane. Pits or depressions, however, which do not interfere with the film flatness are acceptable. Tolerances for the flatness on the cartridge pressure pad film surface are specified to account for slight warpage in molding if the pressure pad is made from a plastic material.

NOTE 4: Relief in the pad surface equal to the sound stripe thickness may be provided beneath those areas of the film which are striped by adding material to the backing of the film.

NOTE 5: In addition to this standard, there are available the following documents relating to 8-mm Type S (super 8) Model 1 sound motion-picture film camera cartridges:

Draft American National Standard Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture Film Camera Cartridge, Cartridge-Camera Interface and Take-Up Core Drive, PH22.197

Draft American National Standard Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture Film Camera Cartridge Aperture, Pressure Pad and Film Position, PH22.198

Draft American National Standard Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture Film Camera Cartridge Camera Run Length, Perforation Cut-Out and End-of-Run Notch (15-m [50-ft] Capacity), PH22.200

American National Standard Specifications for 8-mm Type S (Super 8) Motion-Picture Film Camera Cartridge Notches for Exposure Control and Stock Identification, PH22.166-1977

Draft American National Standard  
**Specifications for 8-mm Type S (Super 8)  
Model 1 Sound Motion-Picture Film Camera  
Cartridge Camera Run Length, Perforation  
Cut-Out and End-of-Run Notch  
(15-m [50-Ft] Capacity)**

PH22.200

firmation that all the film has been exposed. (See Appendix A2.)

**3. Perforation Cut-Out and End-of-Run Notches**

**3.1** The dimensions shall be as given in Fig. 2 and the table.

**3.2** Datum Line X is established by the leading edge of the perforation cut-out. It is nominally perpendicular to the edge of the film.

**3.3** The beveled cut at the trailing end of the perforation cut-out is shown as a matter of convenience and not as a specification. Some bevel is desirable, however, to reduce the possibility of catching or snagging the edge of the notch in the internal mechanism of the cartridge.

**3.4** The beveled cuts of 30 degrees minimum at the ends of the end-of-run notch are to facilitate the entry of the camera sensing finger and to reduce the possibility of catching or snagging the edge of the notch in the internal mechanism of the cartridge.

**3.5** The inside and outside corners of the notches may have a radius of 0.3 mm (0.012 in) maximum.

**3.6** Dimension B for the end-of-run notch shown in Fig. 2 is expressed as a maximum to ensure a minimum notch length. There is no functional need to specify a maximum notch length. The trailing edge of the notch, specified by Dimension B, may approach or cross Datum Line X so that the notch length could extend to the end of the film provided the notch depth, Dimension F, is maintained.

**1. Scope**

**1.1** This standard describes the camera run length, perforation cut-out notch, and end-of-run notch of film supplied in 8-mm Type S (super 8) Model 1 sound motion-picture film camera cartridges of 15-m (50-ft) nominal capacity and the length of film returned to the customer.

**1.2** The purpose of this standard is to provide a uniform basis for the operation of footage counters in cameras.

**2. Specifications**

**2.1** The camera run length of film may vary between 3666 and 3715 perforation pitch intervals (15.52 and 15.73 m [50.9186 and 51.6076 ft]). (See Note 1.) The overall length of the film shall be determined by the manufacturer to provide the camera run length specified.

**2.2** A complete film as returned to the customer shall contain a minimum customer return length of 3600 perforation pitch intervals. The customer return length shall be that portion of the camera run length available for subject matter which starts at least 13 perforation pitch intervals (55 mm [2.17 in]) after the frame located at the camera aperture, as the cartridge is supplied by the manufacturer, and ends at least 37 perforation pitch intervals (157 mm [6.18 in]) short of the limit as provided by a perforation cut-out. (See Appendix A1.)

**2.3** The end of the film shall have a visual marking in the frame area and a means provided so that the final portion of the film stops in the film cartridge aperture, affording the user visual con-

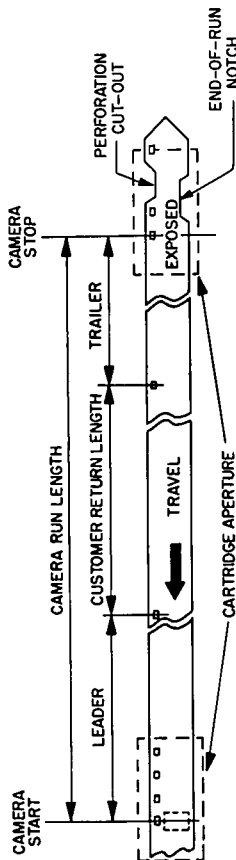


Fig. 1  
Camera Run Length and Notches

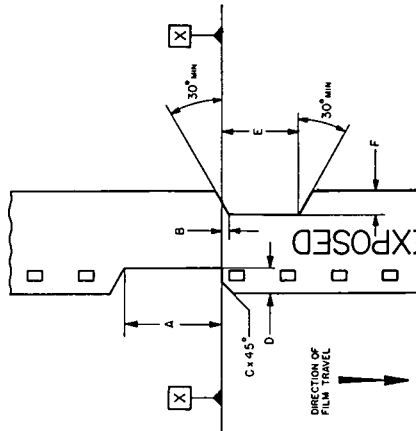


Fig. 2  
Notch Dimensions

Dimensions	Millimeters*	Inches
A†	5.38 min	0.2118 min
B‡	0.3 max	0.012 max
C	0.35 min	0.0217 min
D	1.50 min	0.0591 min
E	4.52 ± 0.50	0.1780 ± 0.020
F	0.80 min	0.0315 min

\*Metric units are primary.  
†See Sec. 4.2.  
‡See Sec. 4.6.

NOTE 1: A nominal pitch, based on 72 perforation pitch intervals per foot, of 4.234 mm (0.16669 in) is assumed for all comparisons of the number of perforation pitch intervals in a given film length.

NOTE 2: In addition to this standard, there are available the following documents relating to 8-mm Type S (super 8) Model 1 sound motion-picture film camera cartridges:

Draft American National Standard Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture Film Camera Cartridge, Cartridge-Camera Interface and Take-Up Core Drive, PH22.197

Draft American National Standard Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture Film Camera Cartridge Aperture, Pressure Pad and Film Position, PH22.198

Draft American National Standard Specifications for 8-mm Type S (Super 8) Model 1 Sound Motion-Picture Film Camera Cartridge Pressure Pad Flatness and Camera Aperture Profile, PH22.199

American National Standard Specifications for 8-mm Type S (Super 8) Motion-Picture Film Camera Cartridge Notches for Exposure Control and Stock Identification, PH22.166-1977

**Appendix**

(The Appendix is not a part of this American National Standard, but is included for information purposes only.)

A1. The lengths of the leader and trailer are necessary to ensure that the fog produced near the aperture is removed. Removing the material also provides space for identification numbers and allows for manufacturing variability of film lengths.

A2. It is suggested that positive means of stopping the film at the end of the camera run be provided to prevent the film end from being completely wound into the cartridge. This could be accomplished by a mechanical latch arrangement which is activated by changes in the film path through the cartridge at the time that film transport through the picture aperture ceases as a result

of the presence of the perforation cut-out notch. A technique to accomplish this involves the use of a projection over which a hole in the film can be made to drop during the collapse of the loop between the picture and sound recording area of the cartridge.

A3. The user is cautioned that some 8-mm Type S (super 8) camera cartridge films currently available do not meet the minimum specifications of Dimension E in Fig. 2. It is anticipated, however, that manufacturers will comply with the minimum specifications as it becomes necessary to change punches and dies through attrition or new machine design.