121st SMPTE Technical Conference and Equipment Exhibit

21 October – 26 October, 1979, Century Plaza Hotel, Los Angeles

Program Chairman **John C. Lakotas,** Eastman Kodak Co., has announced the appointment of thirteen Topic Chairmen, as well as two Associate Chairmen, for the Los Angeles Conference. The following will assist the Associate Chairmen **Gustavo Dato** (Television papers) and **Howard T. LaZare** (Motion-Picture papers) in the acquisition of papers for each session.

Consumer Video Technology

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Advanced Transmission Techniques

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Motion Picture Laboratory Practices

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Ecology and Effluent Management

John L. Baptista
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New Equipment and Processes

Michael V. Chewey
MGM Laboratories, Inc.
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Culver City, CA 90230
(213) 836-3000

Unconventional Imaging Systems

Julian D. Hopkinson
Agfa-Gevaert, Inc.
1801 Century Park E., Suite 110
Los Angeles, CA 90067
(213) 552-9622

Motion Picture Sound Technology

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International Image Distribution

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Other topics to be covered are Television Production, Motion-Picture Production, and Special Effects and the Videodisk.

For additional program information, please contact the Papers Program Chairman: **John C. Lakotas,** Eastman Kodak Co., 6706 Santa Monica Blvd., Hollywood, CA 90038 (213) 464-6131; the Co-Chairman for Television: **Gustavo Dato**, ABC Television Center, 4151 Prospect Ave., Hollywood, CA 90027 (213) 663-3311; or the Co-Chairman for Motion Pictures: **Howard T. LaZare**, Consolidated Film Industries, 959 Seward St., Hollywood, CA 90038 (213) 462-3161, or any of the aforementioned Topic Chairmen.

Prospective authors wishing to present papers on one of the topics within the SMPTE's scope, should obtain the appropriate author forms from the Conference Programs Secretary: **Lynne Robinson**, SMPTE Headquarters, 862 Scarsdale Ave., Scarsdale, NY 10583, (914) 472-6606. Forms and synopses are due at Headquarters by 1 June and manuscripts by 15 August 1979.

Standards & Recommended Practices

Proposed American National Standards

Two Proposed American National Standards are published here for a trial period and public review: PH22.203, Dimensions of Two-Track Photographic Sound Records on 35-mm Motion-Picture Prints; and PH22.204, Dimensions of Two-Track Photographic Sound Records on 16-mm Motion-Picture Prints. The new documents may be used for binural or stereophonic recordings.

Comments should be addressed to Alex E. Alden, Manager of Engineering Services, at Society Headquarters before 1 June 1979. The proposals have been submitted to American National Standards Committee PH22. All comments received through *Journal* publication will be reviewed prior to conclusion of action by that committee.

Approved International Standard

The International Organization for Standardization (ISO) recently approved an International Standard, the technical content of which is published here for your information. ISO 3654-1978, Cinematography — Motion-Picture Camera Cartridge, 8-mm Type S, Model 1 — Cartridge-Camera Interface and Take-Up Core Drive — Dimensions and Specifications, is in agreement with American National Standards PH22.159.1-1968 (R1973) and PH22.159.4-1968 (R1973).

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Proposed American National Standard

Dimensions of Two-Track Photographic Sound Records on 35-mm Motion-Picture Prints

PH22.203

1. Scope

1.1 This standard specifies the lateral location and dimensions of two-track variable-area sound records on 35-mm motion-picture prints.

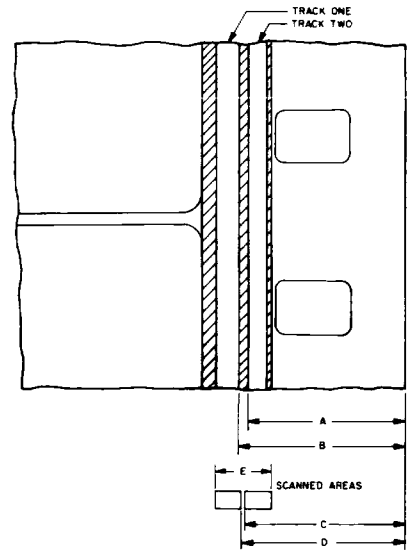
1.2 This standard also specifies the area scanned in the sound reproducer.

2. Sound Records

2.1 The dimensions and locations of the sound records shall be as specified in the figure and table. In all other respects, the sound records shall comply with American National Standard Position, Dimensions and Reproducing Speed of Photographic Sound Records on 35-mm Motion-Picture Release Prints, PH22.40-1978.

2.2 The Channel 1 and Channel 2 recording and reproducing slit images shall be positioned in line at an angle of 90° ± 5′ to the reference edge of the film.

2.3 Channel 2 shall be recorded in the record nearest the outer edge of the film, as shown in the figure.



Dimensions	Inches	Millimeters
A	0.238 ± 0.002	6.05 ± 0.05
B	0.248 ± 0.002	6.30 ± 0.05
C	0.242 ± 0.001	6.15 ± 0.03
D	0.244 ± 0.001	6.20 ± 0.03
E	0.084 ref	2.13 ref

2.4 The septum between channel records shall be effectively opaque on prints. A lighter septum resulting from direct positive recordings being printed on reversal print materials shall not be cause for rejection of prints.

3. Reproducing Speed and Picture-Sound Displacement

Reproducing speed and picture-sound displacement shall be as specified in ANSI PH22.40-1978.

4. Track Usage

The two tracks specified in this standard may be used for either related stereophonic material or unrelated material such as two languages. When used for two-channel stereophonic program material, track one shall be used for the left (as viewed from the auditorium) loudspeaker channel. Track two shall be used for the right loudspeaker channel.

NOTE: Dimensions C and D were chosen to ensure separation of the Channel 1 and Channel 2 signals upon reproduction. Projector manufacturers will probably want to reduce the guard band between the Channel 1 and Channel 2 scanned areas as much as possible so that the projector will be compatible with sound records made in accordance with ANSI PH22.40-1978.

Proposed American National Standard

Dimensions of Two-Track Photographic Sound Records on 16-mm Motion-Picture Prints

PH22.204

1. Scope

1.1 This standard specifies the lateral location and dimensions of two-track variable-area sound records on 16-mm motion-picture prints.

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

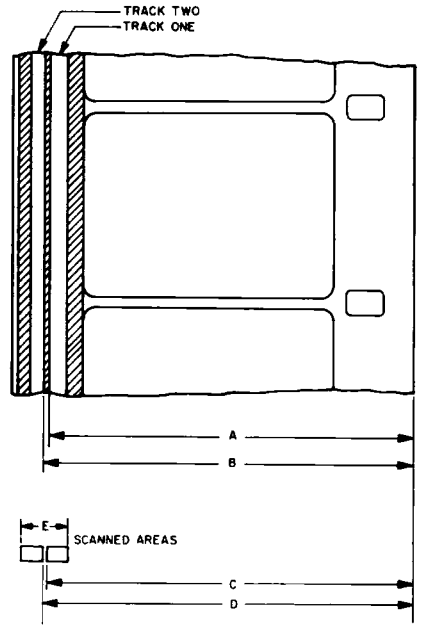
2. Sound Records

2.1 The dimensions and locations of the sound records shall be as specified in the figure and table. In all other respects, the sound records shall comply with American National Standard, Dimensions of Photographic Sound Records on 16-mm Motion-Picture Prints, PH22.41-1975.

2.2 The Channel 1 and Channel 2 recording and reproducing slit images shall be positioned in line at an angle of $90^{c} \pm 5'$ to the reference edge of the film.

2.3 Channel 2 shall be recorded in the record nearest the outer edge of the film, as shown in the figure.

2.4 The septum between channel records shall be effectively opaque on prints. A lighter septum resulting from direct positive recordings being printed on reversal print materials shall not be cause for rejection of prints.



Dimensions	Inches	Millimeters
A	0.565 ± 0.002	14.35 ± 0.05
B	0.575 ± 0.002	14.60 ± 0.05
C	0.569 ± 0.001	14.45 ± 0.03
D	0.571 ± 0.001	14.50 ± 0.03
E	0.071 ref	1.80 ref

3. Reproducing Speed and Picture-Sound Displacement

Reproducing speed and picture-sound displacement shall be as specified in ANSI PH22.41-1975.

4. Track Usage

The two tracks specified in this standard may be used for either related stereophonic material or unrelated material such as two languages. When used for two-channel stereophonic program material, track one shall be used for the left (as viewed from the auditorium) loudspeaker channel. Track two shall be used for the right loudspeaker channel.

NOTE: Dimensions C and D were chosen to ensure separation of the Channel 1 and Channel 2 signals upon reproduction. Projector manufacturers will probably want to reduce the guard band between the Channel 1 and Channel 2 scanned areas as much as possible so that the projector will be compatible with sound records made in accordance with ANSI PH22.41-1975.

INTERNATIONAL STANDARD ISO 3654-1978 (E)

Cinematography — Motion-picture camera cartridge, 8 mm Type S, Model I — Cartridge-camera interface and take-up core drive — Dimensions and specifications

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the dimensions of 8 mm Type S motion-picture film camera cartridge, Model I, and gives cartridge-camera interface specifications.

This International Standard also specifies the dimensions of the take-up core drive opening and critical dimensions of the take-up core. In addition, the driving force, direction of drive and recommended drive ratio of the take-up core are specified.

2 REFERENCES

ISO 1780, *Cinematography — Motion-picture camera cartridge, 8 mm Type S, Model I — Aperture opening, pressure pad and film load — Positions and dimensions.*

ISO 3024, *Cinematography — Motion-picture camera cartridge, 8 mm Type S, Model I — Camera run length, perforation cut-out and end-of-run notch in film — Specifications.*

ISO 3067, *Cinematography — Motion-picture camera cartridge, 8 mm Type S, Model I — Notches for film speed, film identification and colour-balancing filter — Dimensions and positions.*

3 DIMENSIONS

3.1 The dimensions shall be as shown in the figures and given in the tables.

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

3.3 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 jointly called a datum reference frame.

3.3.1 Datum plane A (figure 2) is coincident with the centre of a circle, located by basis 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 is applies regardless of feature size (RFS) of the locating slot. (See annex, clause A.3).

3.4 Datum features B, C and A are primary, secondary, and tertiary respectively.

3.4.1 Datum feature B is the unnotched, unlabelled 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 in contact with the first datum plane B.

3.4.2 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 in contact with the second datum plane C.

3.5 In figure 1, dimensions *L*, *N*, *U*, *V*, *M*, *W* and R_3, measured from datum planes A and C respectively, describe the extent of both triangular recessed areas having a depth controlled by dimension *E*, as shown in the view of the label side. The inboard wall of the recessed area, defined by dimensions *L* and *N*, shall be a straight plane and may be tilted from the perpendicular to the datum plane B sufficiently to allow proper release from a mould when the cartridge is manufactured in a moulding process.

3.6 The thickness of the wall of the cartridge used for notching, dimension *W*, shall be sufficient to withstand a force at least 10 N (2.2 lbf), while deflecting no more than 1 mm (0.04 in).

NOTE – For the purpose of measurement, the force is applied by the end of a solid cylindrical pin of diameter nominally 1,27 mm (0.05 in), applied at a point nominally 0,8 mm (0.03 in) below the film speed notch or above the filter notch. The axis of the pin shall be situated within a plane parallel to datum plane B and at the distance *T*. Force is to be exerted in a direction away from and normal to datum plane C.

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

3.8 The camera locating pin shall have a maximum diameter of 3,56 mm (0.140 in).

3.9 Dimensions *B* and *M* are measured from datum plane C. Dimensions *C*, *J*, *H* and *S* are measured from datum plane A.

3.10 The take-up core axis shall be located within 0,25 mm (0.010 in) of the true centre formed by datum plane A and basic dimension A_f (see figure 3).

3.11 Dimensions A_a, A_b, A_c and A_d in figure 3 are diameters.

4 TAKE-UP CORE DRIVE

4.1 The nominal axial position of the highest point on the outer surface of the core shall not protrude more than 0,38 mm (0.015 in) above datum plane B as shown in figure 3. The axial position of the top edge of the drive lugs established by dimensions A_b and A_c shall not be recessed more than 0,61 mm (0.024 in) below datum plane B.

4.2 The normal direction of drive for the core shall be "clockwise" (right-hand drive) when viewed from the core side of the cartridge.

4.3 A nominal torque of $6{,}0 \times 10^{-3}$ N·m with a permissible range of $3{,}5 \times 10^{-3}$ N·m to $10{,}6 \times 10^{-3}$ N·m (0.85 ozf-in with a permissible range of 0.5 to 1.5 ozf-in) from start of run is required to drive the core. (See annex, clause A.2.)

NOTES

1 Placement of film data, such as name, number and length of load, and the inclusion of any notches, should be in accordance with ISO 3067.

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

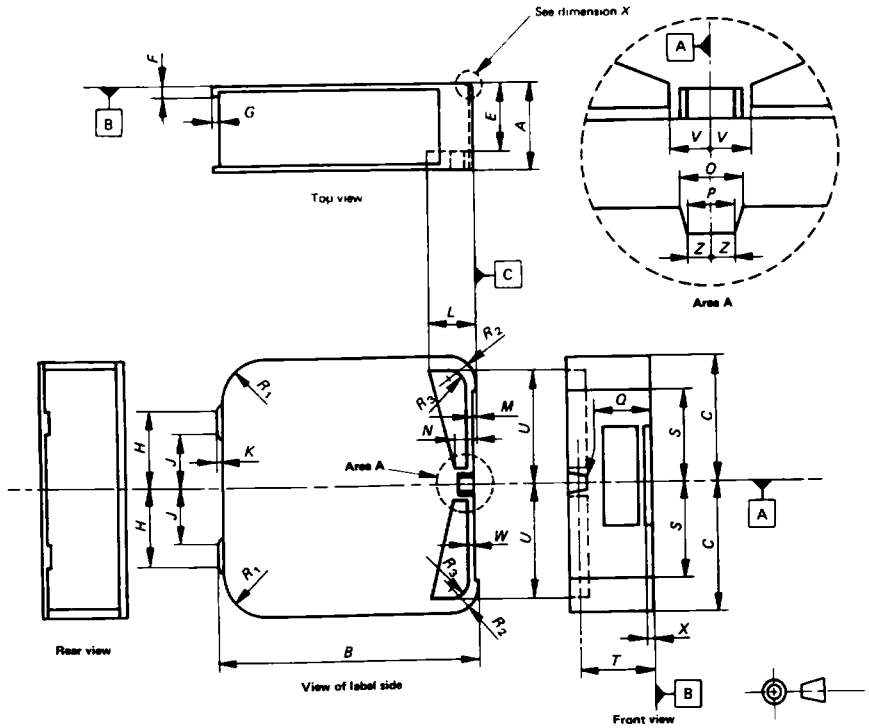


FIGURE 1 – External cartridge camera fit characteristics

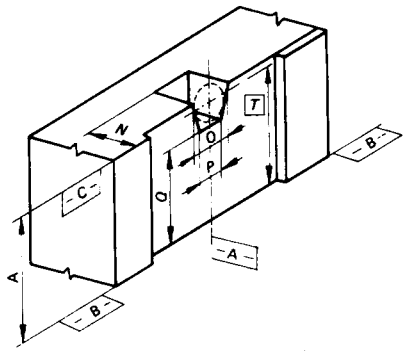


FIGURE 2 – Camera-locating slot

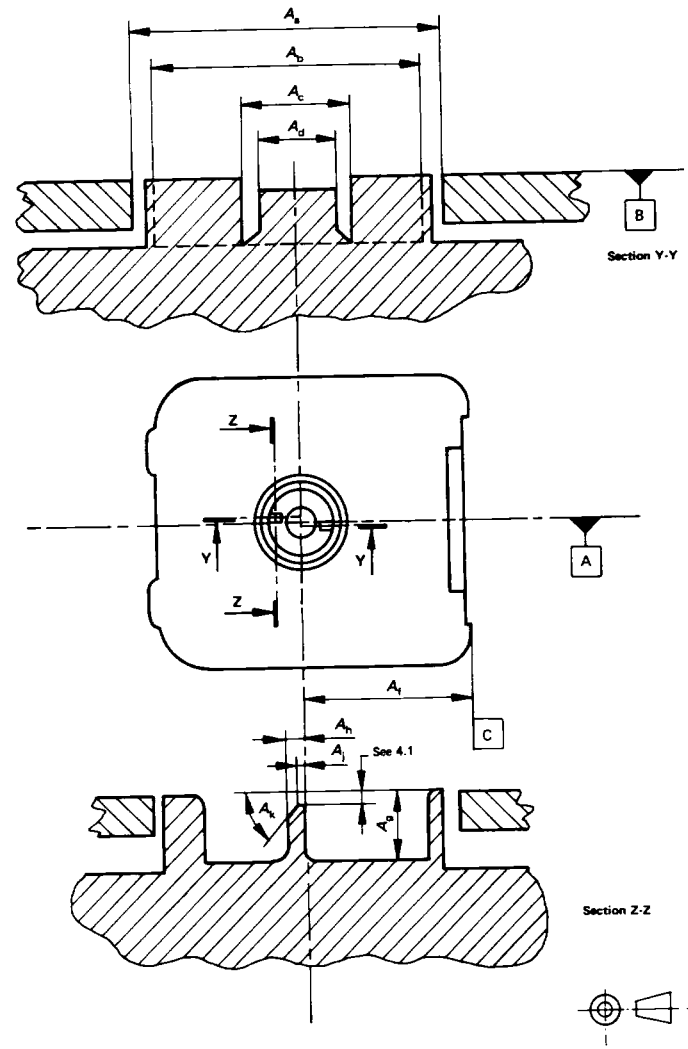


FIGURE 3 – Take-up core specifications

TABLE 1

Dimension	mm	in
A	24,23 ± 0,25	0.954 ± 0.010
B	75,9 ± 0,3	2.99 ± 0.01
C	35,31 ± 0,25	1.390 ± 0.010
E	19,81 max.	0.780 max.
F	2,3 ± 0,3	0.09 ± 0.01
G	1,5 ± 0,3	0.06 ± 0.01
H	22,4 ± 0,8	0.88 ± 0.03
J	15,5 ± 0,8	0.61 ± 0.03
K	0,38 ± 0,25	0.015 ± 0.010
L	11,94 min.	0.470 min.
M	0,13 ± 0,08	0.005 ± 0.003
N	4,50 min.	0.177 min.
O	3,91 ± 0,10	0.154 ± 0.004
P	3,61 ± 0,10	0.142 ± 0.004
Q	19,56 ± 0,25	0.770 ± 0.010
R_1	12,7 ± 2,5	0.50 ± 0.10
R_2	6,4 ± 1,3	0.25 ± 0.05
R_3	4,06 max.	0.160 max.
S	25,9 ± 0,3	1.02 ± 0.01
*T**	22,10	0.870
U	31,12 min.	1.225 min.
V	3,18 max.	0.125 max.
W	See 3.6	See 3.6
X	1,55 min.	0.061 min.
Z	1,80 ± 0,05	0.071 ± 0.002

* Basic dimension – No tolerance intended. (See 3.3.1.)

TABLE 2

Dimension	mm	in
A_a	17,27 max.	0.680 max.
A_b	14,60 min.	0.575 min.
A_c	8,31 max.	0.327 max.
A_d	6,71 max.	0.264 max.
A_f*	40,84	1.608
A_g	2,54 min.	0.100 min.
A_h	1,02 ± 0.13	0.040 ± 0.005
A_j	0,51 max.	0.020 max.
A_k	45° nom.	45° nom.

* Basic dimension – No tolerance intended. (See 3.10.)

ANNEX

A.1 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.

A.2 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.

A.3 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.