Standards and Recommended Practices

Approved American National Standards

The American National Standards Institute approved two American National Standards on June 30, 1989: ANSI/SMPTE 31M-1989, Television Analog Recording — ¾-in Type E — Small Video Cassette; and ANSI/SMPTE 152-1989, Motion-Picture Film (70-mm) — Projectable Image Area. Copies of the standards are available for a nominal fee from the American National Standards Institute, 1430 Broadway, New York, NY 10018.

Approved SMPTE Recommended Practices

Two SMPTE Recommended Practices were approved by the Society's Executive Committee for Standards Approval: RP 24-1989, Dimensions for 16-mm Motion-Picture Camera Spindles; and RP 34-1989, Dimensions for 16-mm Motion-Picture Projector Reel Spindles. These and other practices may be obtained from Society Headquarters for $3.00 each.

Reaffirmed SMPTE Recommended Practice

The Society's Executive Committee for Standards Approval approved reaffirmation of an SMPTE Recommended Practice: RP 124-1984, Insertion Pivot for Studio Lighting Units and the Mating Holders for Use with Standing and Hanging Support Systems. The practice may be purchased from Society Headquarters for $3.00.

Withdrawn SMPTE Recommended Practices

Withdrawal of two SMPTE Recommended Practices was approved by the Executive Committee for Standards Approval on August 23, 1989: RP 99-1983, Video and Audio Reference Tape for 1-in Type C Helical-Scan Video Tape Recorders; and RP 100-1983, Interchange Reference Tape for 1-in Type C Helical-Scan Video Tape Recorders. Withdrawal action was initiated because new documents to cover the specifications are being prepared.

— Sherwin H. Becker, Director of Engineering

ANSI/SMPTE 31M-1989
Revision and Redesignation of
ANSI V98.31M-1983

American National Standard
for television analog recording— ¾-in type E— small video cassette

Approved June 30, 1989 Sponsor: Society of Motion Picture and Television Engineers

1. Scope

This standard specifies the dimensions of a video cassette for use with a ¾-in type E helical-scan video tape recording cassette system, operating at a tape speed of 95.3 mm/s (3.75 in/s).

2. Referenced American National Standard

This standard is intended for use in conjunction with the following American National Standard:

ANSI/SMPTE 21M-1986, Video Recording — ¾-in Type E Helical-Scan—Records

3. Dimensions

3.1 The dimensions necessary for the interface of equipment shall be as specified in the figures and table.

3.2 The metric dimensions are primary.

4. Datum Planes

4.1 Datum plane A is the plane determined by spots A, B, and C in Fig. 5.

4.2 Datum plane B is the plane that includes the center of datum holes (a) and (b) and is orthogonal to datum plane A. Datum holes (a) and (b) are specified in Fig. 2.

4.3 Datum plane C includes datum hole (a) and is orthogonal to both datum planes A and B.

5. Measurement Environment

The temperature shall be 20°C ± 1°C (68°F ± 2°F) with a relative humidity of 50 ± 2 percent.

Table 1
Dimensional Tolerances Not Otherwise Specified

Millimeters			Inches		
Over	To	Tolerances	Over	To	Tolerances
0.0	4.0	± 0.2	0.000	0.157	± 0.008
4.0	16.0	± 0.3	0.157	0.630	± 0.012
16.0	63.0	± 0.4	0.630	2.480	± 0.016
63.0	250.0	± 0.5	2.480	9.843	± 0.020

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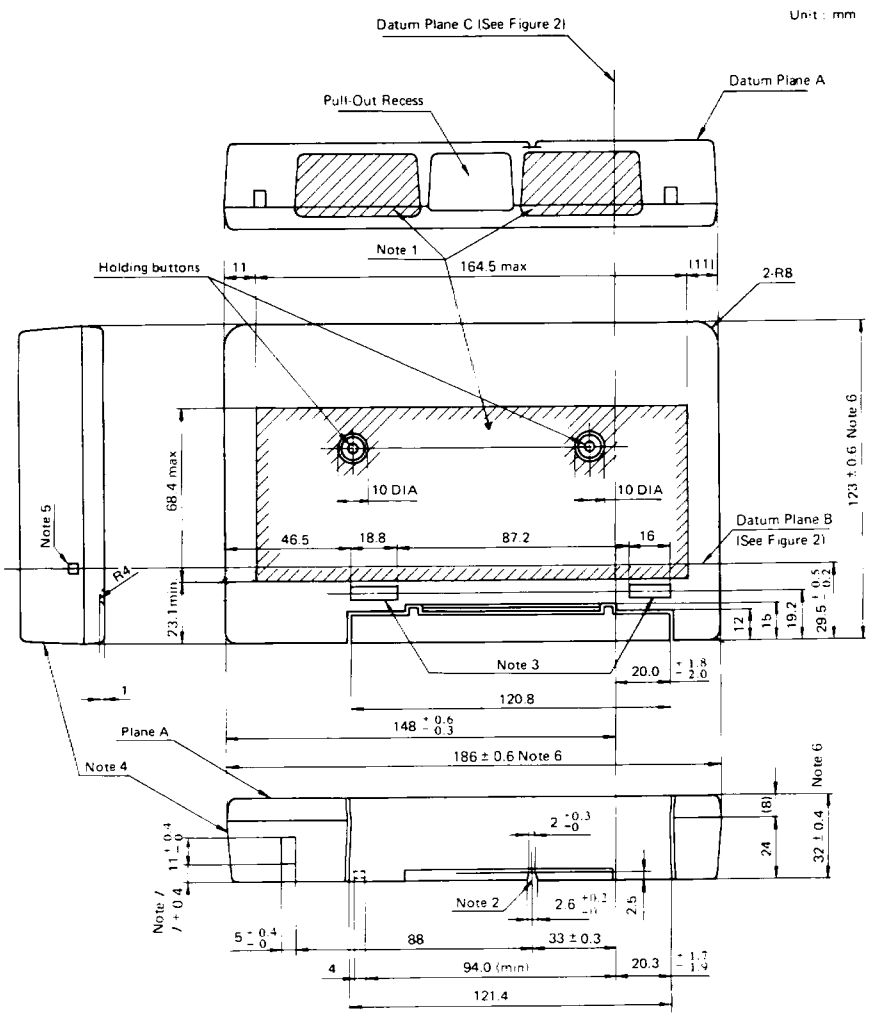


Fig. 1
Top View of Video Cassette

NOTES:

1. Hatched area shows the label area and/or window area.
2. Guide groove.
3. Holding groove.
4. The outer edges should be slanted, but not more than 5° from vertical.
5. An adaptor recess should be on both sides.
6. These dimensions are inspected by using limit gauges.
7. The dimension shall be specified from datum plane A. (See Fig. 5.)

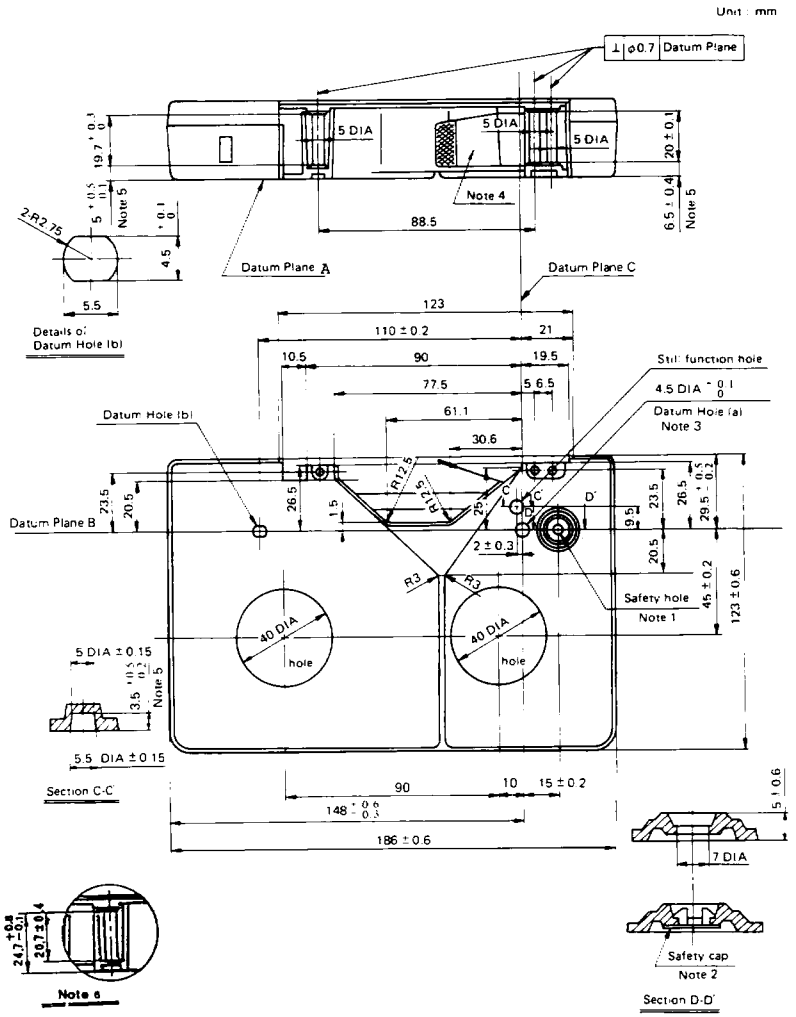


Fig. 2
Bottom View of Video Cassette

NOTES:

1. Recording is possible when the hole is covered.
2. The cap must not protrude from datum plane A.
3. Datum hole (a) is primary.
4. Tape holder.
5. These dimensions are specified from datum plane A. (See Fig. 5.)
6. The tape guide of supply side specified in the figure may also be used.

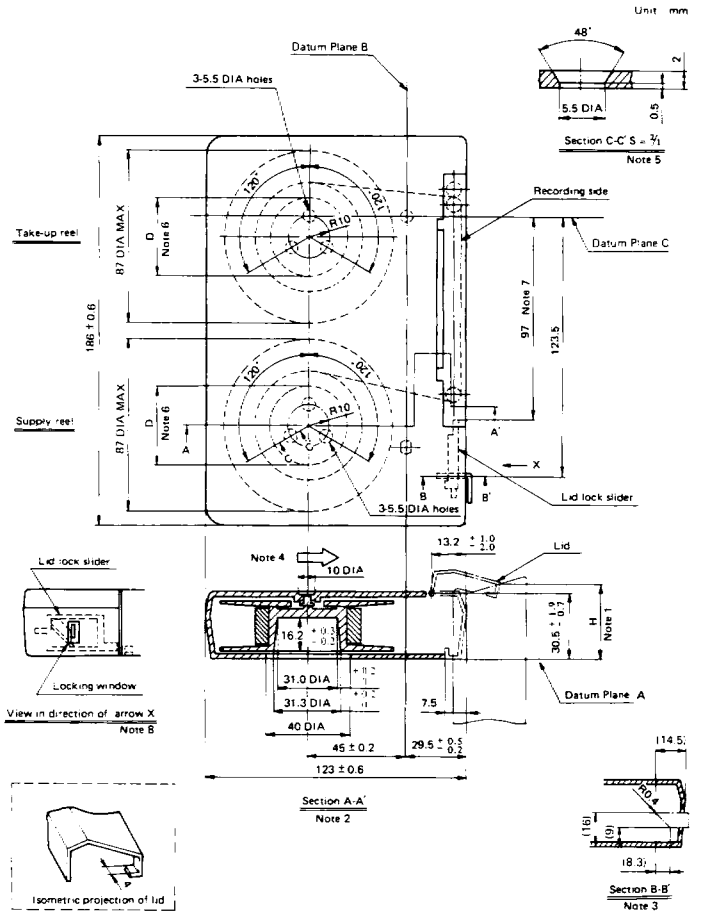


Fig. 3
Location of Reels and Protecting Lid

NOTES:

1. The protecting lid of the cassette shall open (height H) more than 35 mm (1.38 in). Height H is measured from datum plane A. Recorder/player unit shall be designed to open the protecting lid (height H) between 30 and 35 mm (1.18 and 1.38 in) during operation.
2. The protecting lid opens as shown in Section A-A' when the cassette is inserted into the recorder/player. Maximum force to open the lid shall be 0.981 N (100 gf).
3. Section B-B' shows the relationship between the cassette and the unlocking lever of the recorder/player.
4. The arrow shows the direction of cassette insertion.
5. Hole for drive pin.
6. The supply and take-up reels are of two types:

   Hub diameter (D) of type I reels: 38 mm (1.50 in)
   Hub diameter (D) of type II reels: 59 mm (2.32 in)

7. Distance when the lid is locked.
8. Suggested design.

Unit : mm

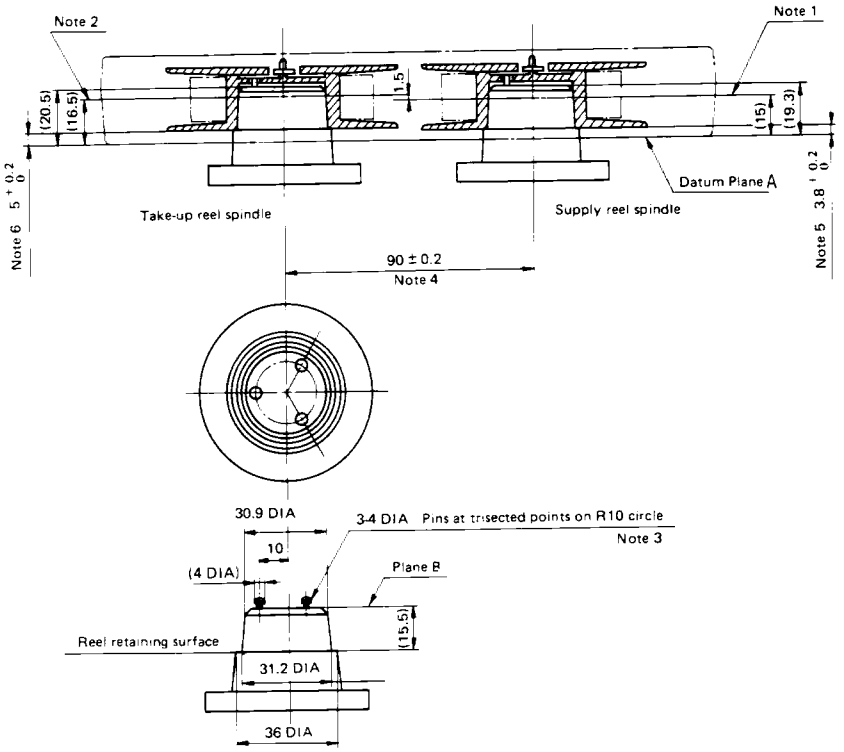


Fig. 4
Relationship between Reels and Spindles

NOTES:

1. Center of tape on supply reel when cassette is inserted in recorder/player.
2. Center of tape on take-up reel when cassette is inserted in recorder/player.
3. Pins of the reel spindle drive the reel and can be pressed down to the level of plane B.
4. Distance between centers of two reel spindles.
5. Distance between reel retaining surface of supply reel and datum plane A of cassette when cassette is inserted in recorder/player.
6. Distance between reel retaining surface of take-up reel and datum plane A of the cassette when cassette is inserted in recorder/player.

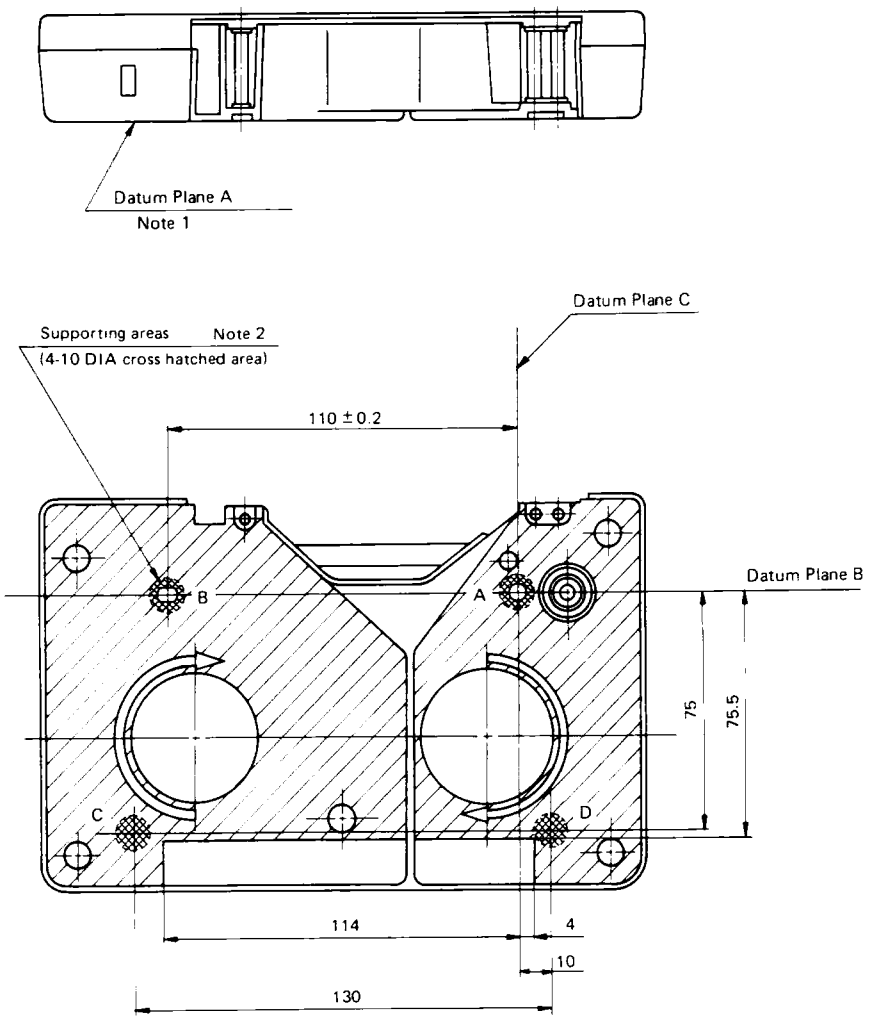


Fig. 5
Flatness of Bottom Surface of Cassette

NOTES:

1. Datum plane A is determined by datum spots A, B, and C.
2. Datum spot D shall be coplanar within 0.2 mm (0.008 in) of datum plane A.
3. Flatness of the hatched area shall be coplanar within 0.5 mm (0.020 in) of datum plane A.

ANSI/SMPTE 152-1989
Revision and Redesignation of
ANSI PH22.152-1983

American National Standard
for motion-picture film (70-mm)—projectable image area

Approved June 30, 1989

Sponsor: Society of Motion Picture and Television Engineers

1. Scope

This standard specifies the maximum dimensions of the film image area intended for projection from a 70-mm motion-picture film, and the placement of this area relative to the perforations and the reference edge of the film.

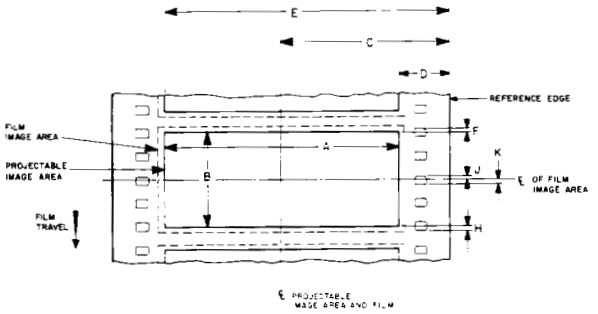
2. Referenced American National Standard

This standard is intended for use in conjunction with the following American National Standard:

ANSI/SMPTE 119-1988, Motion-Picture Film (70-mm)—Perforated 65-mm, KS-1870

3. Dimensions

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



Projectable Area on Film as Seen Looking Through the Film Toward the Lens

Dimensions	Inches	Millimeters
A	1.912 nom	48.56 nom
B	0.870 max	22.10 max
C	1.377 ref	34.98 ref
D	0.420 min	10.67 min
E	2.334 max	59.28 max
F = H	within 0.008	within 0.20
J = K	nominally equal	nominally equal

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4. Relationship to Other Standards

This standard may be used as the basis for establishing picture areas from original photography for final viewing because it presents a description of the picture area on the projection print that is usable for the indicated purposes of the print (which is of primary importance because the projection print is the most commonly interchanged item). (See Appendix A2.)

NOTE 1: Camera and Printer Apertures. The actual image on the film is significantly larger than the maximum area intended for projection, so that in placement of the images throughout the sequence of films the tolerance is not restrictive of commercial practice. Upper limits have been established through consideration of good practice in avoiding frame overlap, encroachment upon areas reserved for audio records, flare from perforation edges, etc. Lower limits are similarly related to the avoidance of image effects at a defined edge, tolerances in film positioning, etc.

NOTE 2: Projector Aperture. Dimensions B, D, and E define the maximum image area on the film that is available for projection. They do not define the opening in the aperture plate of a projector. The size of this opening may differ from Dimensions A and B, for example, because of the physical separation necessary between the aperture plate and the film to avoid scratching the film, the slant of the marginal rays accepted by the projection lens, etc.

NOTE 3: Actual Projected Area. It is recognized that, in many cases, the actual film image area that is projected may be smaller than the projectable maximum and, in some cases, may be nonrectangular (for example, an irregular four-sided figure bound by either straight or curved lines). Such departures may result from equipment considerations, such as slight inconsistencies among lenses, screen sizes, etc.; from geometric limitations such as the screen surface being at an angle other than 90° from the projection axis, or being nonplanar, or both; and from aesthetic considerations such as pictorial composition within more restrictive image limits. In the absence of specific instructions to the contrary, it is intended that the actual projected film image area be the largest appropriately-shaped figure that can be inscribed within the specified dimensions.

NOTE 4: Film Perforations. Film intended for projection with this image is normally perforated as specified in ANSI/SMPTE 119-1988.

Appendix

(This Appendix is not part of the American National Standard, but is included for information only.)

A1. Centerlines

The centerlines of the image are given for convenience in interpreting the standard, facilitating such applications as the optical design of equipment, and assisting in the understanding of suitable mechanical embodiments related to projectable image area.

A2. Projectable Image Area

Essentially, the entire image within the maximum established by this standard will be transferred in such operations as reduction printing and other indirect uses of the picture information. Since the entire area will be presented, it is important that the projectable area include only material that meets recognized standards for technical and artistic excellence.