

Table 4
Flatness Tolerances on Pressure Pad Film Surface

Areas	Inches	Millimeters
Aperture Area (within Dimension C)	+ 0.0058 — T_1	+ 0.147 — T_1
	+ 0.0048 — T_2	+ 0.122 — T_2
Upper Area	+ 0.0078 — T_3	+ 0.198 — T_3
	+ 0.0038 — T_4	+ 0.097 — T_4
Lower Area	+ 0.0078 — T_5	+ 0.198 — T_5
	+ 0.0018 — T_6	+ 0.046 — T_6

Dimensions are measured from the zero plane defined by Surfaces 1, 2, and 3.
(See Sec. 2.8, Fig. 3, and Note 2.)

2.13 The plus values given for the pressure pad film surface flatness tolerances are to be directed toward the lens. (See Note 2.)

2.14 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. (See Note 3.)

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_3 specifies the amount of recess for this purpose.

Appendix

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

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. Other portions of the pressure pad front surface may be recessed in addition to the required recesses, defined by Dimension C in Sec. 2.5, for camera claw and camera aperture guide finger penetration.

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 ver-

NOTE 2: It is intended that the film surface of the cartridge pressure pad be flat, or molded as a flat plane. Pits or depressions, however, which do not interfere with the film flatness are acceptable. 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. Tolerances for the flatness on the 8-mm Type S cartridge pressure pad film surface are specified to account for slight warpage in molding if the pressure pad is made from a plastic material. (See Appendix A3.)

NOTE 3: 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. Lug 4 should not touch the camera aperture plate.

tical registration at its stopping position is specified in American National Standard Dimensions of Camera Aperture Image on Super 8 Motion-Picture Film, ANSI 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. 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 for exerting locating forces on appropriate surfaces of the cartridge. For pressure pad measurements, a second fixture, incorporating three 0.060-in (1.52-mm) diameter bosses and a means for exerting the appropriate pressure pad seating force, is recommended.

Dimensions of Video, Audio and Tracking-Control Records for 1/2-in Type G Video Cassette Systems

V98.34M

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1. Scope

This standard specifies the location of the edges of the video, audio, and tracking-control records and the mechanical separation of the simultaneously recorded information of the video and audio records, as recorded on 1/2-in Type G video magnetic tape cassette systems operating at tape speeds of 40, 20, and/or 13.3 mm/s (1.57, 0.79, and/or 0.52 in/s).

2. Definitions

Downstream. Pertaining to locations on the tape longitudinally displaced from a given reference point in the direction of tape travel.

Longitudinal. Pertaining to dimensions parallel to the direction of tape travel.

Reference Edge. The lower edge of the magnetic tape nearest the reference plane of the cassette.

Trailing Edge of Video Track. The upstream edge of the video track.

Transverse. Pertaining to dimensions perpendicular to the direction of tape travel.

Upstream. Pertaining to locations on the tape longitudinally displaced from a given reference point in the direction opposite tape travel.

3. General Specifications

3.1 Measurement Conditions. The dimensions shall be measured with no transverse or longitudinal tension applied to the tape.

3.2 Measurement Environment. The temperature shall be $20^\circ\text{C} \pm 1^\circ\text{C}$ ($68^\circ\text{F} \pm 2^\circ\text{F}$) with a relative humidity of 50 ± 2 percent.

3.3 Magnetic Coating. With the direction of tape travel as shown in Fig. 1, the magnetic coating is on the surface facing the observer.

3.4 Tape Speed. The tape speed shall be 40.0 mm/s (1.57 in/s) $\pm 0.5\%$, 20 mm/s (0.79 in/s) $\pm 0.5\%$, and 13.3 mm/s (0.52 in/s) $\pm 0.5\%$.

3.5 Video Writing Speed. The nominal video writing speeds shall be 6.973 m/s (22.88 ft/s) at a tape speed of 40 mm/s, 6.993 m/s (22.94 ft/s) at a tape speed of 20 mm/s, and 7.000 m/s (22.97 ft/s) at a tape speed of 13.3 mm/s.

3.6 Video Head Drum Diameter. The video head drum diameter shall be 74.487 ± 0.010 mm (2.9326 ± 0.0004 in).

4. Dimensions

The transverse and longitudinal dimensions shall be as specified in Fig. 1 and Table 1.

5. Audio and Control Head Position

The distance on the tape pattern from the end of the 180° scan of a video head to the audio and control head position has a length (X) of 68.00 mm (2.677 in) as shown in Table 1.

Table 1

Dimensions	Tape Speed											
	40 mm/s		1.57 in/s		20 mm/s		0.79 in/s		13.3 mm/s		0.52 in/s	
A Tape Width	12.65	± 0.02	0.498	± 0.001	12.65	± 0.02	0.498	± 0.001	12.65	± 0.02	0.498	± 0.001
B Video recording zone width	10.62	nom	0.418	nom	10.62	nom	0.418	nom	10.62	nom	0.418	nom
C Control track width	0.60	± 0.10	0.024	± 0.004	0.60	± 0.10	0.024	± 0.004	0.60	± 0.10	0.024	± 0.004
D Audio 2 track width (stereophonic)	0.35	± 0.05	0.014	± 0.002	0.35	± 0.05	0.014	± 0.002	0.35	± 0.05	0.014	± 0.002
E Audio 1 track width (stereophonic)	0.35	± 0.05	0.014	± 0.002	0.35	± 0.05	0.014	± 0.002	0.35	± 0.05	0.014	± 0.002
F Audio track reference	11.51	nom	0.453	nom	11.51	nom	0.453	nom	11.51	nom	0.453	nom
H Audio to audio track guard width	0.35	nom	0.014	nom	0.35	nom	0.014	nom	0.35	nom	0.014	nom
L Video track center from reference edge	6.01	nom	0.237	nom	6.01	nom	0.237	nom	6.01	nom	0.237	nom
P Video track pitch	0.0585	nom	0.00230	nom	0.0292	nom	0.00115	nom	0.0194	nom	0.00076	nom
R Audio track width (monophonic)	1.05	± 0.10	0.041	± 0.004	1.05	± 0.10	0.041	± 0.004	1.05	± 0.10	0.041	± 0.004
W Video recording zone effective	10.2	nom	0.40	nom	10.2	nom	0.40	nom	10.2	nom	0.40	nom
X Audio and control head position	68.00	± 0.15	2.677	± 0.006	68.00	± 0.15	2.677	± 0.006	68.00	± 0.15	2.677	± 0.006
θ Video track angle	5°1'42"				5°0'51"				5°0'34"			
Video head azimuth angle	+7°, -7°				+7°, -7°				+7°, -7°			

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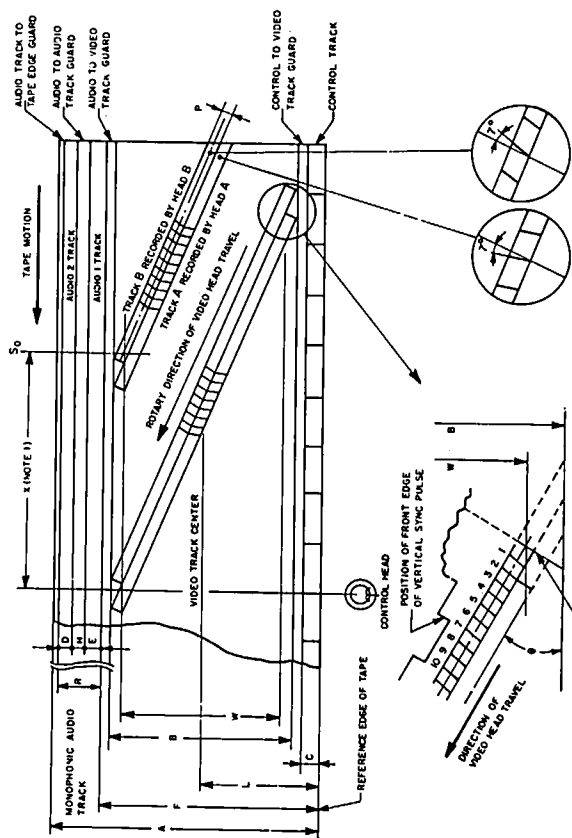


Fig. 1
Track Configuration from Recording Side

Notes:

1. Distance X shall be measured from position S_0 to the recorded control signal on the tape. Position S_0 is defined as the switching position of recording heads in the center of Track B.
2. Although odd and even fields are not specified for ordinary recordings, the even fields are recommended as the fields to be recorded on Track A when such identification is necessary.

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6. Audio Record Displacement

Program audio or other information which is time coincident with video information recorded at a point, S_v , of any video track shall be recorded on audio tracks at a distance, X , downstream from that point (S_v). (See Fig. 1.) The point S_v is the center of the video track at the switching position of video heads.

7. Video Head Switching

The switching position between the two heads during playback shall lie between 5 and 9 horizontal

lines ahead of the leading edge of the vertical sync signal, as shown in Fig. 2.

8. Tape Back-Tension

The tape back-tension for the record and playback mode, measured with a spring scale for a full supply reel, shall be normally 0.40 to 0.50 N (41 to 51 gf) at the entrance of the drum when the tape is pulled at 40 mm/s (1.57 in/s). The ratio of tension between the maximum and minimum tape pack diameters shall be as follows:
 tension at minimum tape pack diameter (30 mm) = 1:1.2
 tension at maximum tape pack diameter (70 mm)

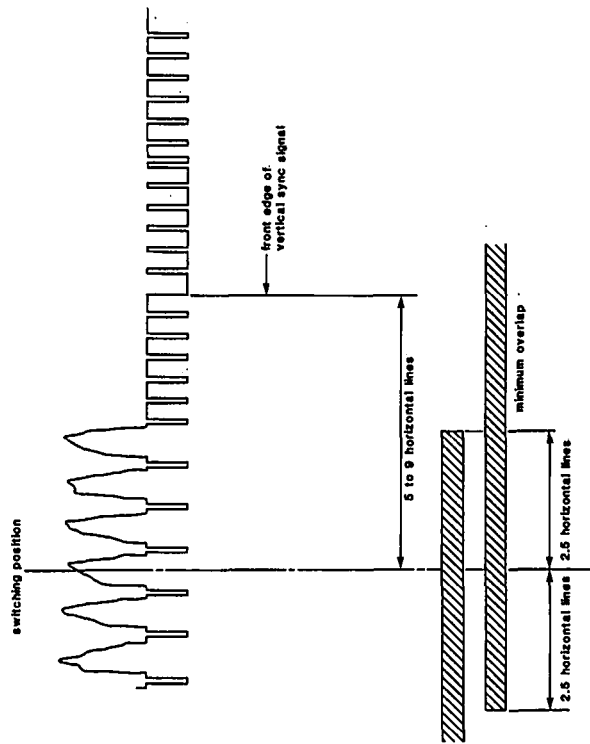


Fig. 2
Video Head Switch Position

Dimensions of Video Cassette and Tape for 1/2-in Type G Helical-Scan Video Tape Recording

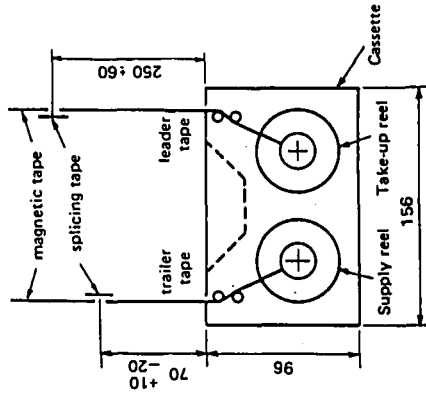


Fig. 1
Leader and Trailer

1. Scope
 This standard specifies the dimensions of a video cassette and a video magnetic tape intended for use with 1/2-in Type G video systems operating at tape speeds of 40, 20, and/or 13.3 mm/s (1.57, 0.79, and/or 0.52 in/s).

2. Video Tape

- 2.1 The width of the video tape shall be 12.65 ± 0.02 mm (0.498 ± 0.001 in).
- 2.2 The maximum allowable thickness of the magnetic tape, including the coating, shall be 25 μ m. The distance between the edge of the reel flange and the outer edge of a full reel pack shall be more than 0.5 mm (0.02 in).

3. Leader and Trailer Tape

- 3.1 The leader and trailer tape of the width and thickness specified in 3.2 and 3.3 shall contain a metal foil that provides conductivity per centimeter of more than 200 S to ensure that noncontacting automatic stopping devices function properly at both ends of the magnetic tape.
- 3.2 The width of the leader and trailer tape shall be 12.65 ± 0.03 mm (0.498 ± 0.001 in).
- 3.3 The maximum allowable thickness of the leader and trailer tape shall be 45 μ m.
- 3.4 The length of the leader and trailer tape shall be 250 ± 60 mm (9.84 ± 2.36 in) and 70 ± 10 — 20 mm (2.76 ± 0.39 — 0.79 in) respectively. (See Fig. 1.)
- 3.5 The spliced section shall withstand a tension of 15 N.

- 4.2 Datum Plane X shall be orthogonal to Datum Plane Z and shall include the centers of Datum Hole (a) and Datum Hole (b), as shown in Fig. 3.
- 4.3 Datum Plane Y shall be orthogonal to both Datum Plane X and Datum Plane Z and shall include the center of Datum Hole (a), as shown in Fig. 3.

5. Dimensions

- 5.1 The dimensions necessary for the interface of equipment shall be as specified in the figures.
- 5.2 Metric dimensions are primary.

6. Measurement Environment

The temperature shall be $20^\circ\text{C} \pm 2^\circ\text{C}$ ($68^\circ\text{F} \pm 4^\circ\text{F}$) with a relative humidity of 50 ± 2 percent.

4. Datum Planes

Datum Plane Z shall be defined by three datum spots, A, B, and C, as shown in Fig. 4.

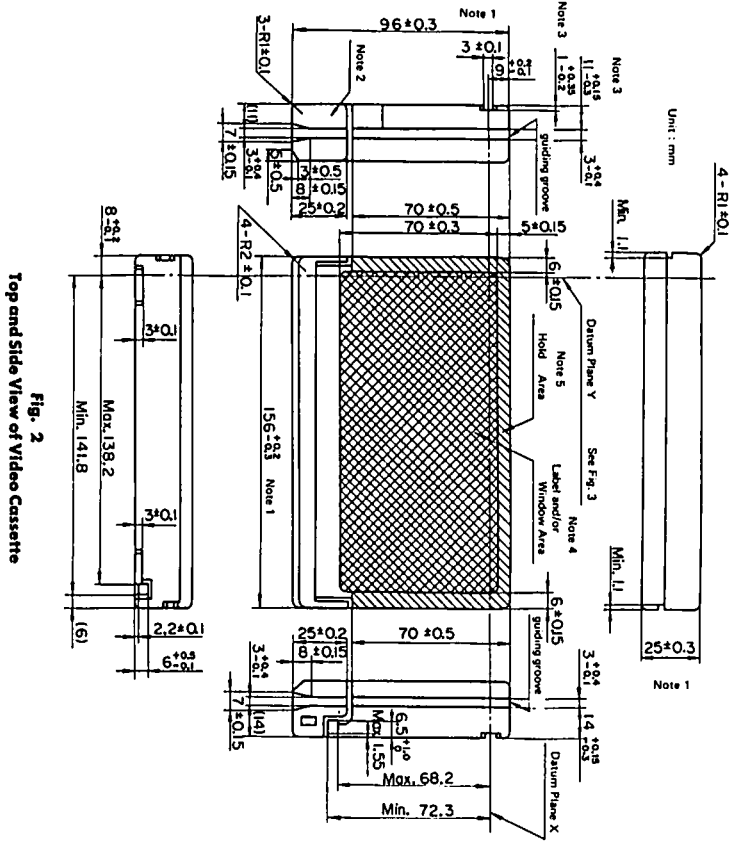


Fig. 2
Top and Side View of Video Cassette

Notes:

1. The dimensions are verified by using limit gauges.
2. No part of the lid shall protrude beyond the bottom plane of the cassette during opening and closing of the lid.
3. This dimension shall be measured from Datum Plane Z.
4. Label and/or window area is available for label and/or window.
5. The cassette may be held in position by the recorder and/or player unit on this holding area.

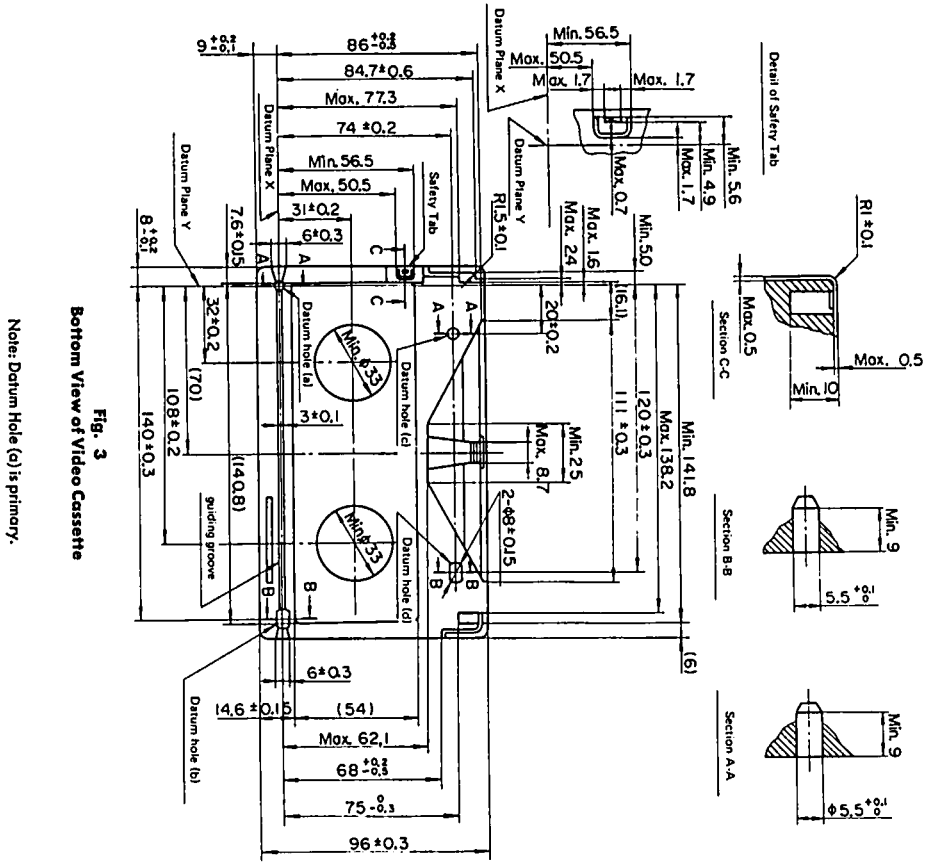


Fig. 3
Bottom View of Video Cassette

Note: Datum Hole (a) is primary.

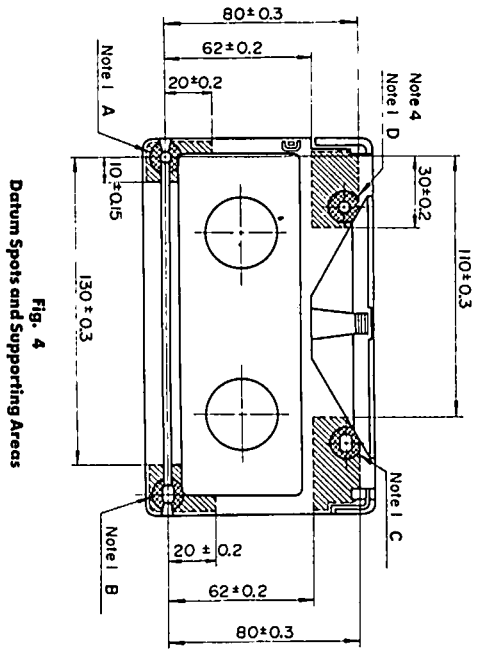


Fig. 4
Datum Spots and Supporting Areas

- Notes:
1. The crosshatched areas 10 mm (0.39 in) in diameter are datum spots.
 2. The four hatched areas, which are supporting areas, shall be coplanar within 0.05 mm (0.002 in) of each datum spot.
 3. Datum Plane Z shall be determined by Datum Spots A, B, and C.
 4. Datum Spot D shall be coplanar within 0.3 mm (0.012 in) of Datum Plane Z.
 5. The areas within 1 mm (0.04 in) from the edge of the cassette shall be removed from the supporting areas.

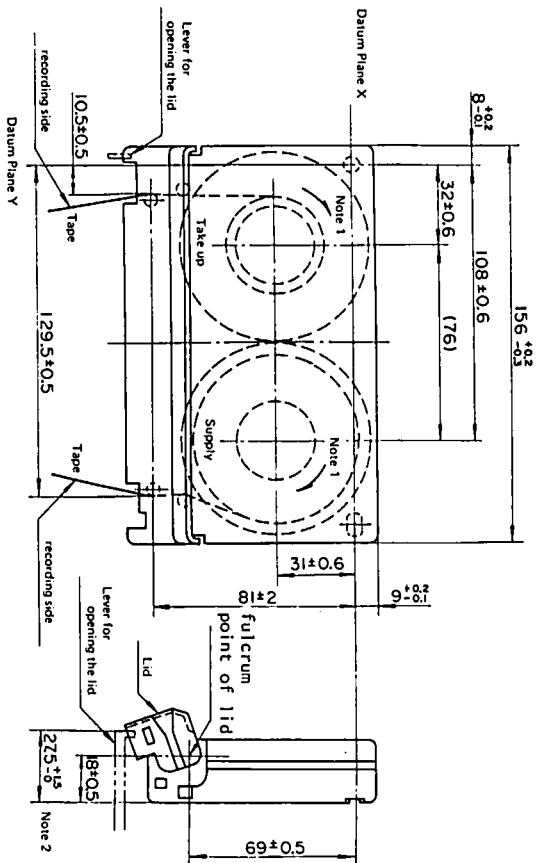


Fig. 5
Location of Reels in Recorder/Player

- Notes:
1. Rotating direction during forward operation.
 2. The opening range of the lid in the recorder/player is $27.5 + 1.5 - 0$ mm (1.083 + 0.059 — 0 in).
 3. The reels shall be locked to avoid loosening of the tape during storage or transportation.

