



### 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

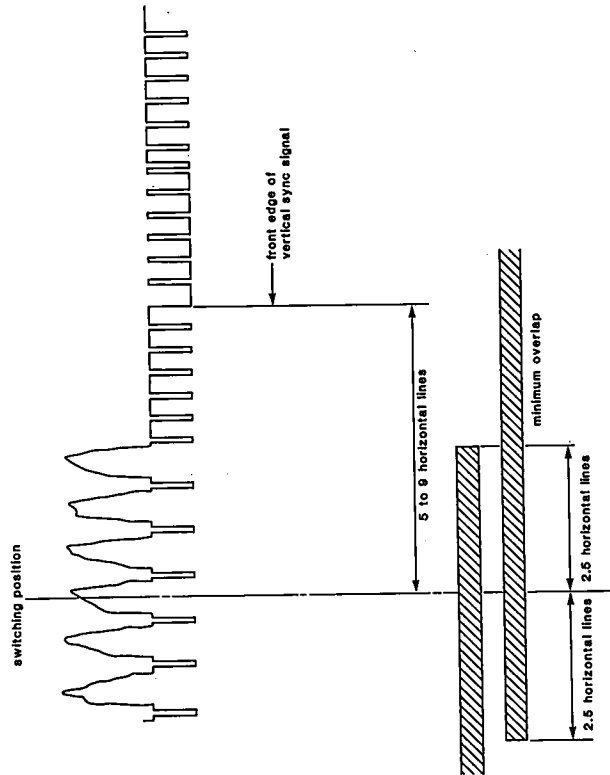


Fig. 2  
Video Head Switch Position

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 diameters shall be as follows:

$$\frac{\text{tension at minimum tape pack diameter (30 mm)}}{\text{tension at maximum tape pack diameter (70 mm)}} = 1:1.2$$

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°	

# American National Standard for video recording— 1/2-in type G— cassette and tape

Approved June 4, 1984

Secretariat: Society of Motion Picture and Television Engineers

## 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  $12.65 \pm 0.02$  mm (0.498  $\pm$  0.001 in).
- 2.2 The maximum allowable thickness of the magnetic tape, including the coating, shall be 25  $\mu$ 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  $12.65 \pm 0.03$  mm (0.498  $\pm$  0.001 in).
- 3.3 The maximum allowable thickness of the leader and trailer tape shall be 45  $\mu$ m.

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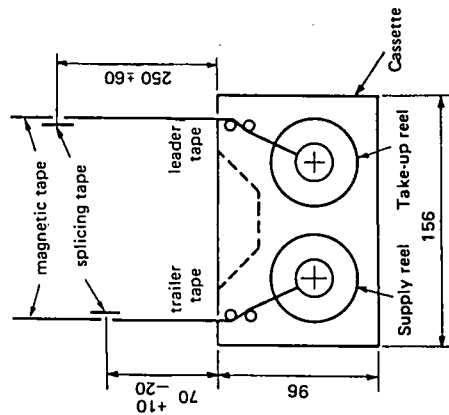


Fig. 1  
Leader and Trailer

- 3.4 The length of the leader and trailer tape shall be  $250 \pm 60$  mm (9.84  $\pm$  2.36 in) and  $70 \pm 10$  mm (2.76  $\pm$  0.39 — 0.79 in) respectively. (See Fig. 1.)
- 3.5 The spliced section shall withstand a tension of 15 N.

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## 4. Datum Planes

- 4.1 Datum Plane Z shall be defined by three datum spots, A, B, and C, as shown in Fig. 4.
- 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 (c), 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  $50 \pm 2$  percent.

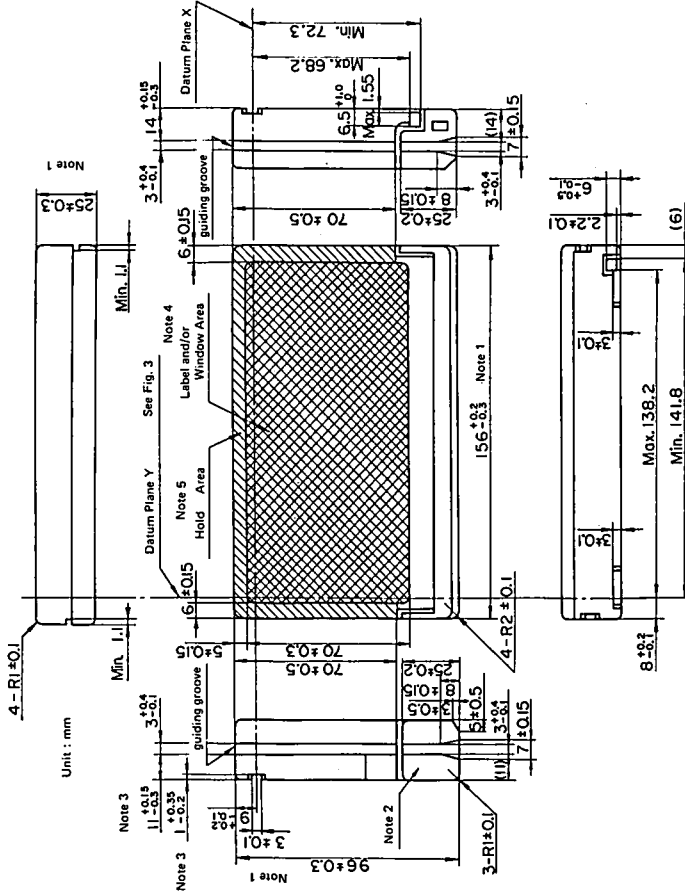


Fig. 2  
Top and Side View of Video Cassette

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.

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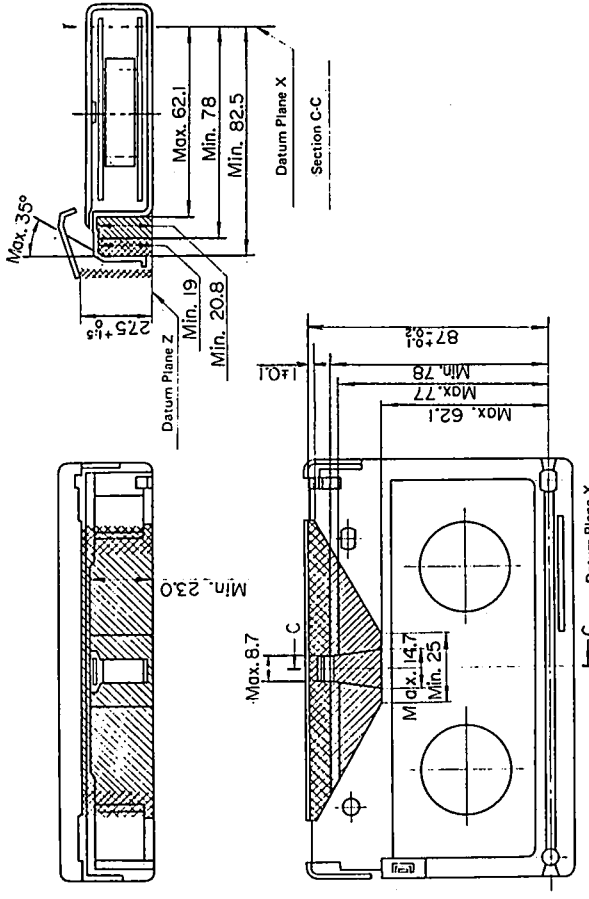


Fig. 6  
Cassette Protecting Lid

Notes:

1. The hatched area is for the loading mechanism of the unit before opening the lid.
2. The hatched and crosshatched areas are for the loading mechanism of the unit after opening the lid.

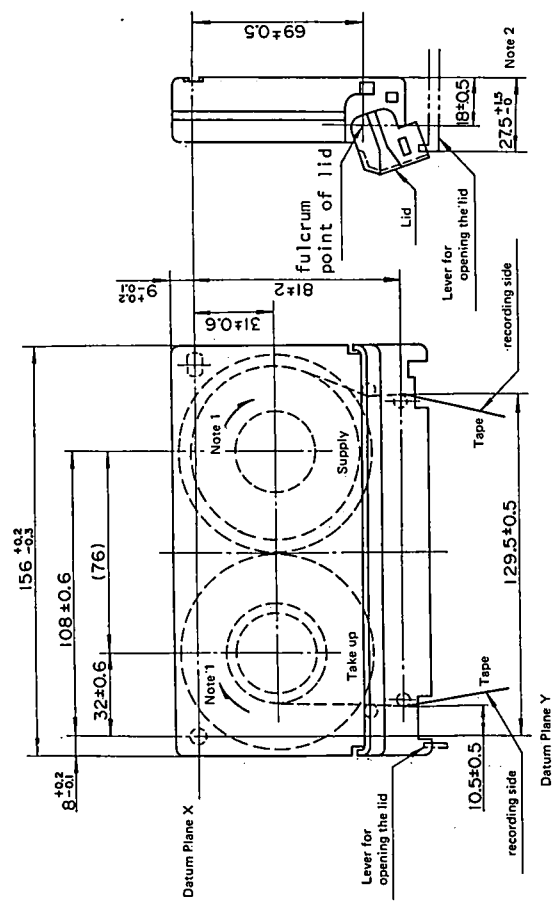


Fig. 5  
Location of Reels in Recorder/Player

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.

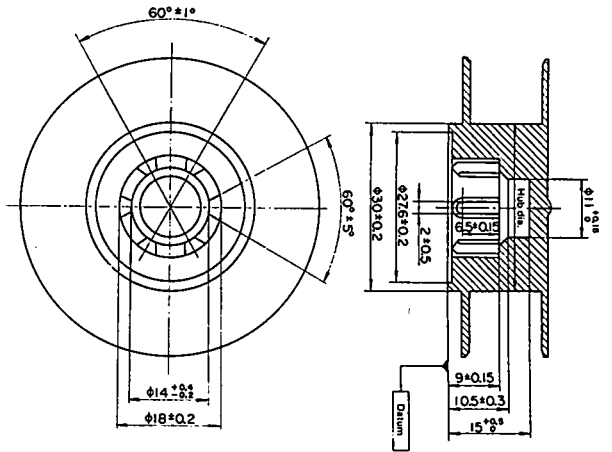


Fig. 7  
Cassette Reel

Recording Time*	Hub Diameter of Reels
< 60 Minutes	φ 52 ± 0.5
> 60 Minutes	φ 30 ± 0.5

\*Recording time is specified for the tape speed of 20 mm/s.

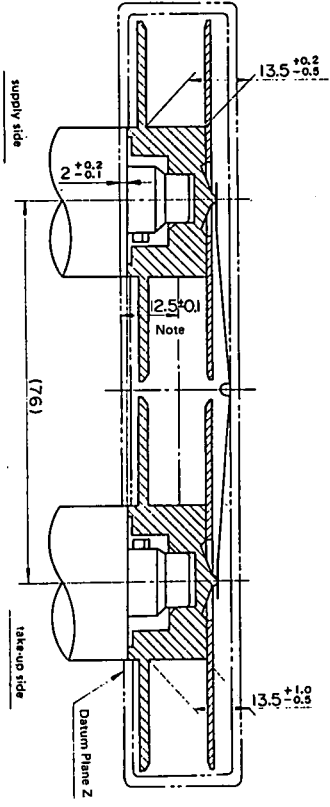


Fig. 8  
Relationship between Reels and Reel Splindles

Note: Center of tape on reels when cassette is inserted in recorder/player.

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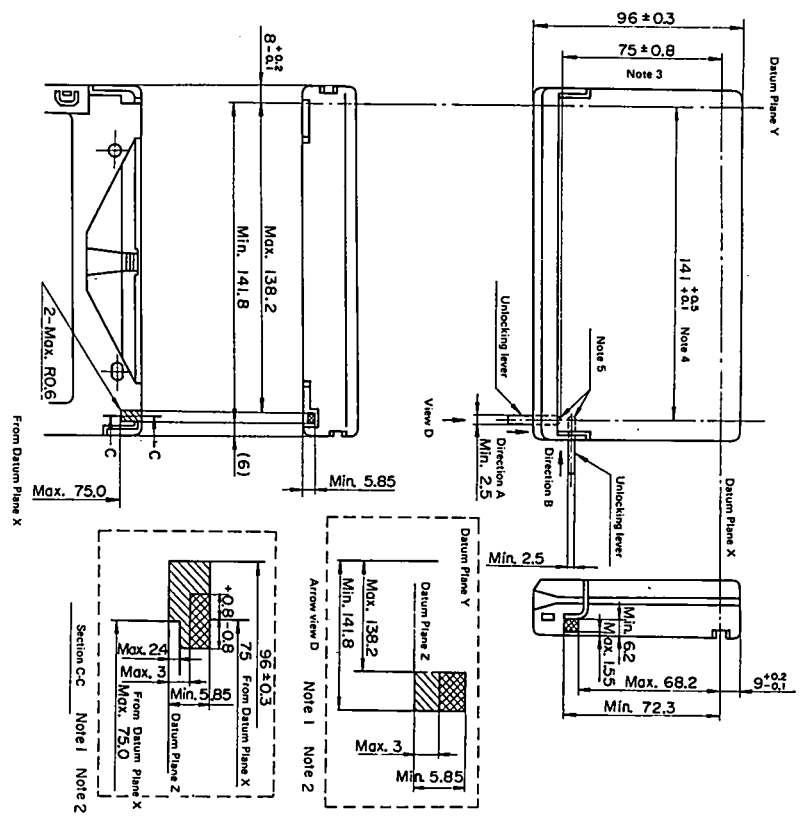


Fig. 9  
Allowable and Operating Ranges for Unlocking Cassette Lid Lever

- Notes:
1. The operating ranges, which are the crosshatched areas, show the limits within which the lid must be unlocked when an unlocking lever of 2.5 mm (0.098 in) minimum width is inserted.
  2. The allowable ranges, which are the hatched and crosshatched areas, show the limits within which an unlocking lever can be inserted.
  3. Allowable range in Direction A.
  4. Allowable range in Direction B.
  5. The tip of the unlocking lever shall be shaped into a semicircle or hemisphere, the radius of which is one half the unlocking lever width.

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