SMPTE 31M-2003
Revision of
ANSI/SMPTE 31M-1995

# SMPTE STANDARD

## for Television Analog Recording — ¾-in Type E — Small Video Cassette



## 1 Scope

This standard specifies the dimensions of a video cassette for use with a 3/4-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 Dimensions

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

**2.2** The metric dimensions are primary.

## 3 Datum planes

**3.1** Datum plane A is the plane determined by spots A, B, and C in figure 5.

**3.2** 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 figure 2.

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

## 4 Measurement environment

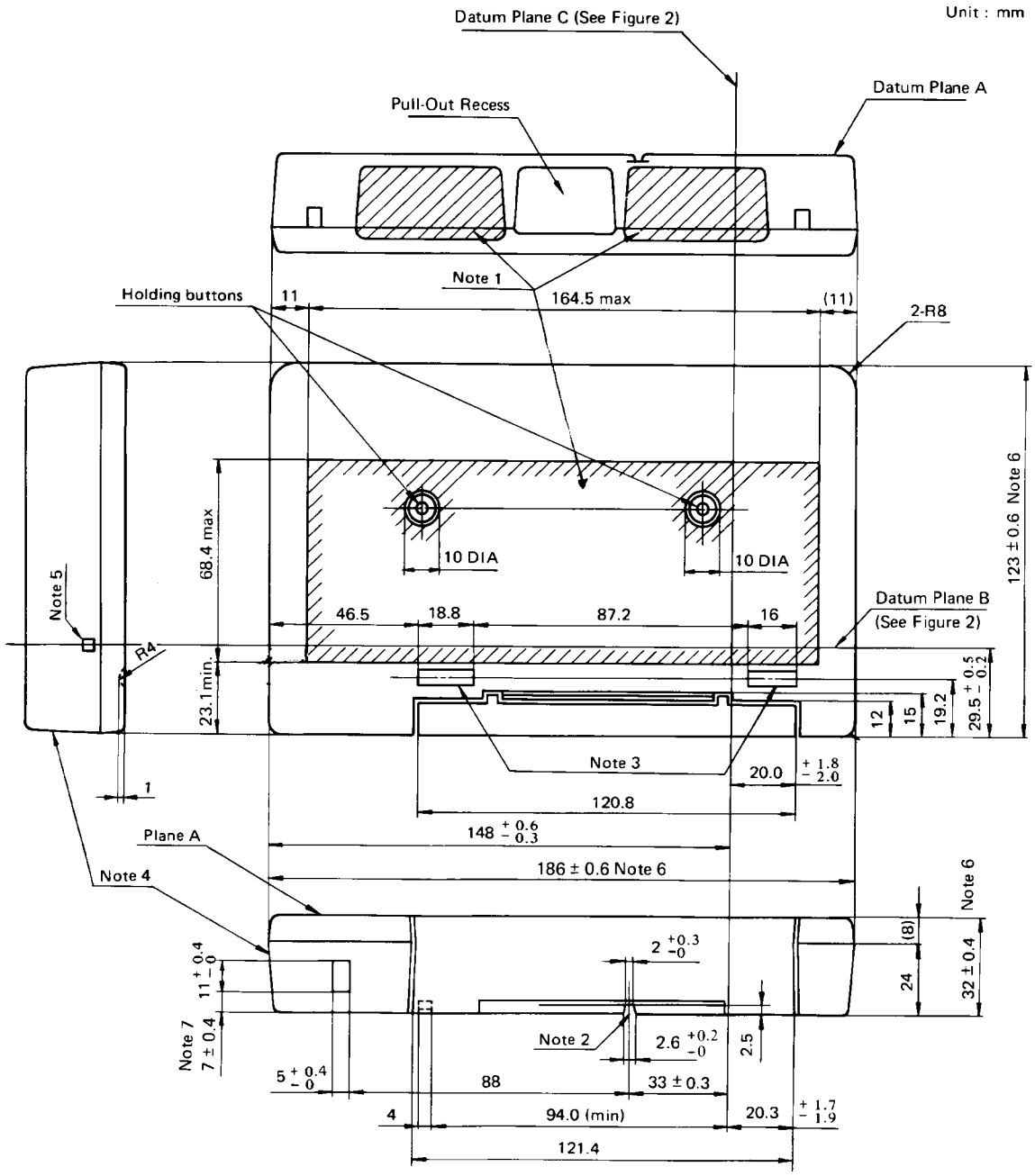
The temperature shall be 20°C ± 1°C (68°F ± 2°F) with a relative humidity of (50 ± 2)%.

**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 |

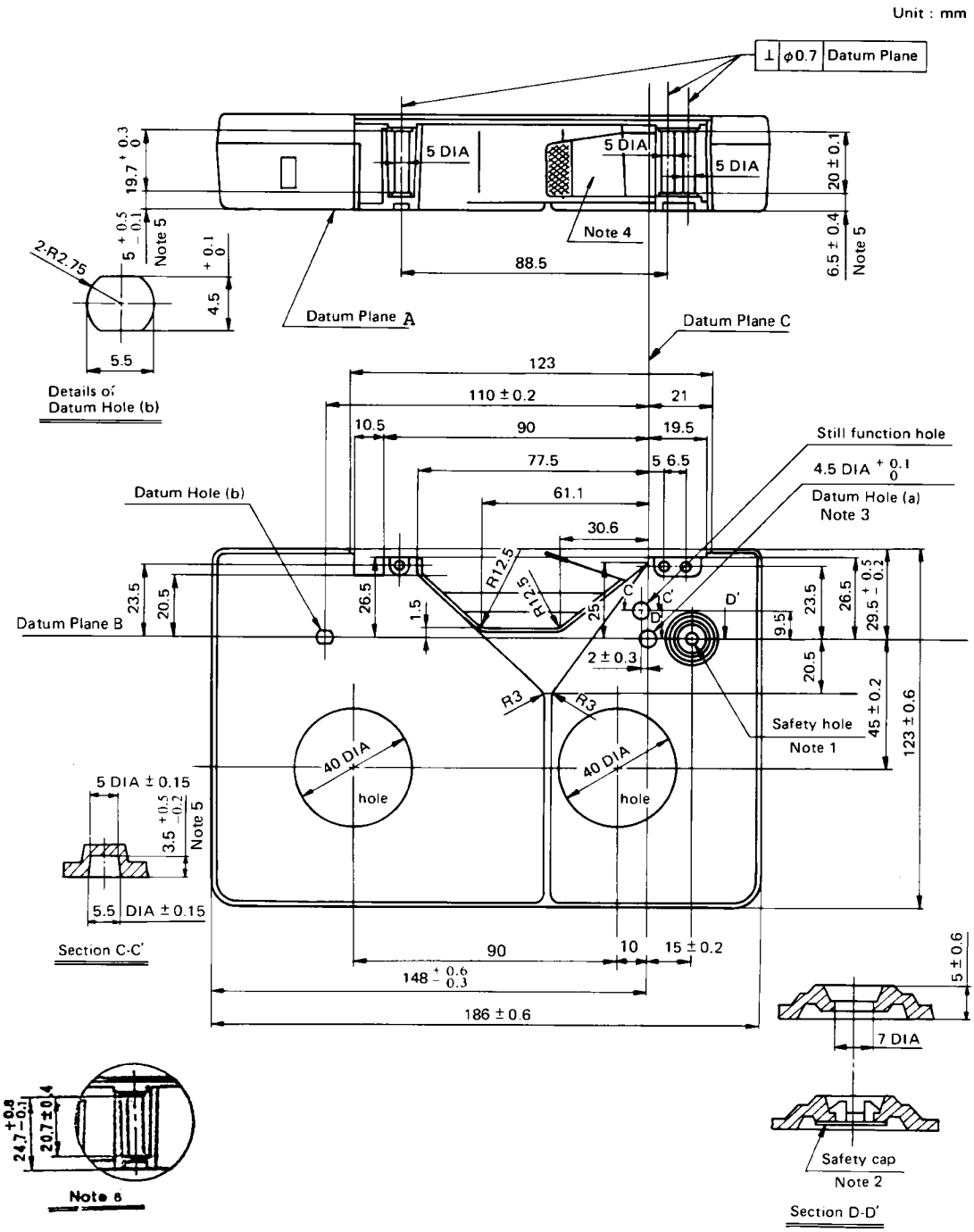


Approved
February 7, 2003



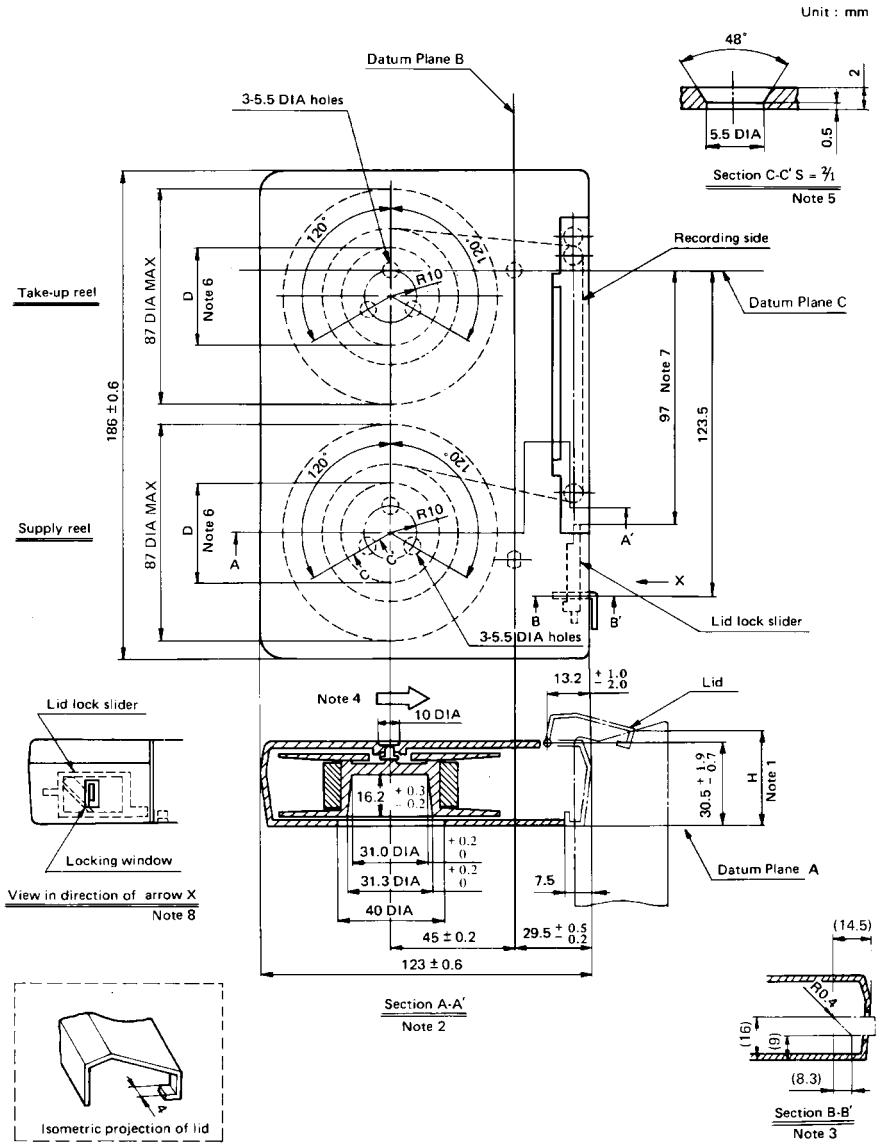

NOTES
1 Hatched area shows the label area and/or window area.
2 Guide groove.
3 Holding groove.
4 The outer edges should be slanted, but not more than 5° from vertical.
5 An adaptor recess should be on both sides.
6 These dimensions are inspected by using limit gauges.
7 The dimension shall be specified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

**Figure 1 - Top 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 figure 5).
6 The tape guide of supply side specified in the figure may also be used.

**Figure 2 - Bottom view of video cassette**




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 mm and 35 mm (1.18 in 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 level 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)

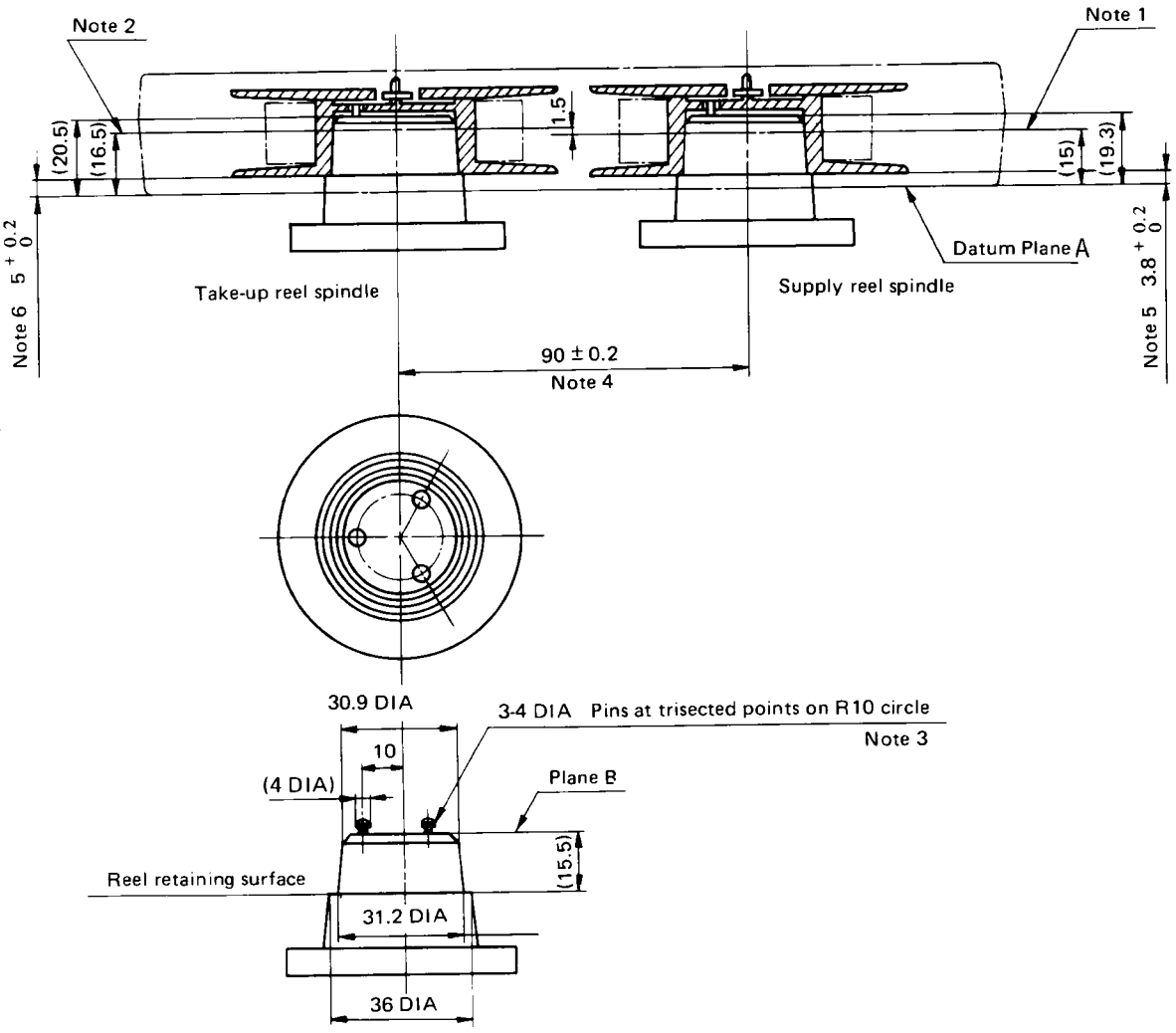
Hub diameter (D) of type II reels: 59 mm (2.32 in)

7 Distance when the lid is locked.

8 Suggested design.

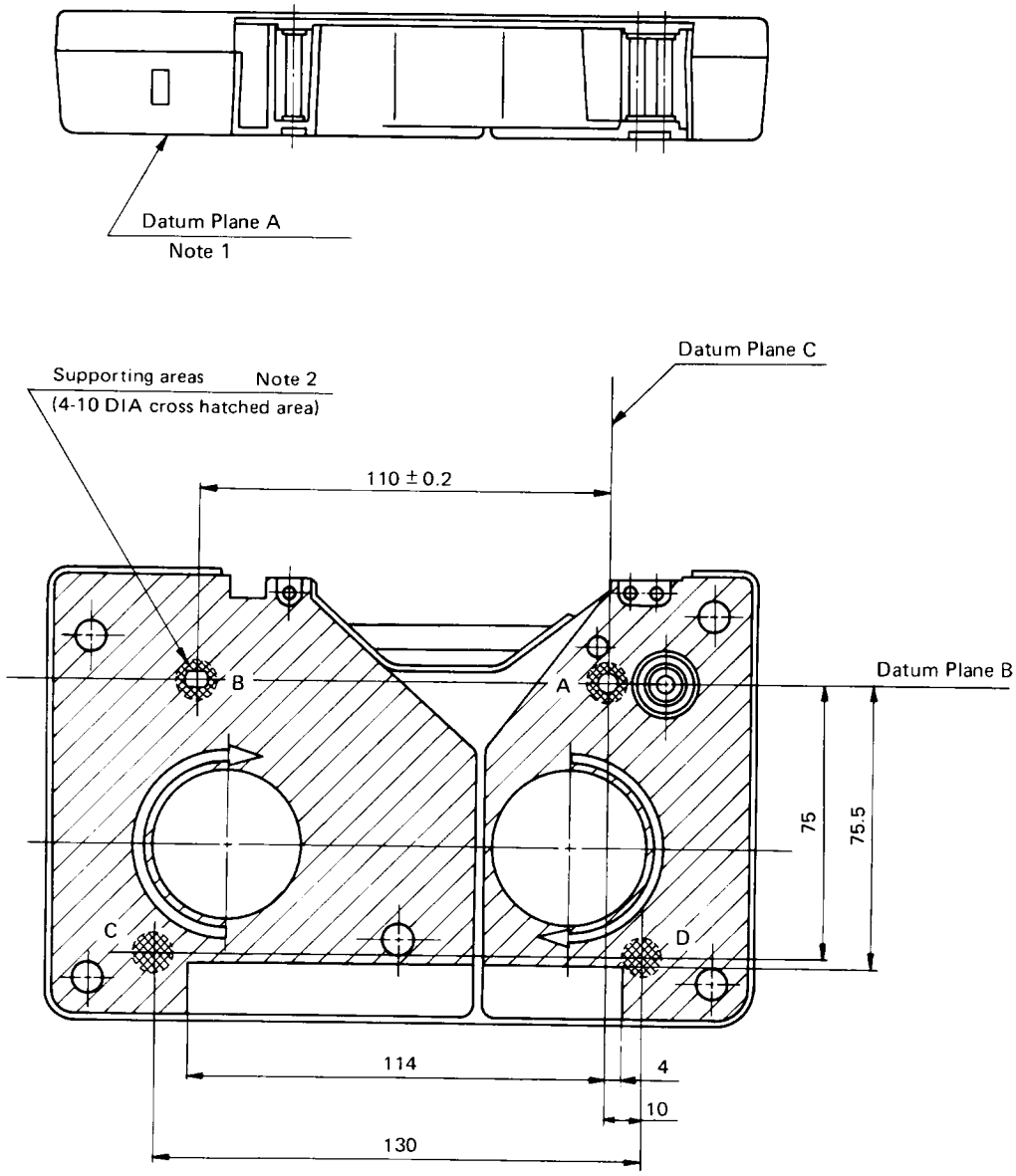
**Figure 3 - Location of reels and protecting lid**

Unit : mm




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.

**Figure 4 - Relationship between reels and spindles**




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 data plane A.
3 Flatness of the hatched area shall be coplanar within 0.5 mm (0.020 in) of datum plane A.

**Figure 5 - Flatness of bottom surface of cassette**

## **Annex A** (informative)
## **Bibliography**

ANSI/SMPTE 21M-1997, Video Recording – 3/4-in Type E Helical-Scan – Records