standards and recommended practices

Proposed American Standards

A Proposed American Standard is published here for a trial period and public review. Comments should be addressed to Alex E. Alden, Staff Engineer, at Society Headquarters prior to June 14. The proposal has also been submitted to ASA Sectional Committee PH22. Consequently, all comments received through Journal publication will be reviewed prior to the conclusion of action by the PH22 Committee.

It should be pointed out that PH22.147, Dimensions of Motion-Picture Projection Reels for Combination 70/35mm Projectors, does not apply to shipping reels but covers only projection reels intended for use on combination 70/35mm projectors and rewinds. — *A.E.A.*

Approved American Standards

Published here for your information are two American Standards approved on February 24, 1965 by the American Standards Association: C98.5-1965, Dimensions of 2-In. Video Magnetic Tape Reels, and C98.6-1965, Dimensions of Video, Audio and Tracking Control Records on 2-In. Video Magnetic Tape.

Inasmuch as compliance with American Standards is purely voluntary, these standards will become truly effective if very broad publicity is given to their existence. The ASA and the SMPTE would appreciate any personal influence to promote the use of these standards where such action is appropriate and proper. Copies of the standards may be obtained for a nominal fee from the American Standards Association, 10 East 40th Street, New York City, 10016. — *A.E.A.*

Proposed American Standard Dimensions of

Motion-Picture Projection Reels for Combination 70/35mm Projectors

PH22.147

1. Scope

1.1 This standard specifies the dimensions of 35mm and 70mm motion-picture projection reels intended for use on combination 70/35mm projectors and rewinds.

1.2 This standard does not apply to shipping reels.

2. Dimensions

2.1 The dimensions of the reels shall be as given in the figures and table.

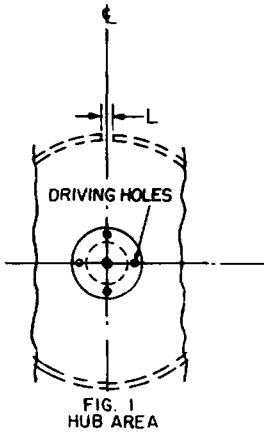


FIG. 1
HUB AREA

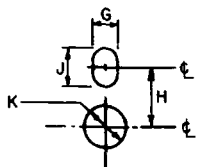


FIG. 2
ENLARGEMENT OF SPINDLE AND DRIVING HOLE

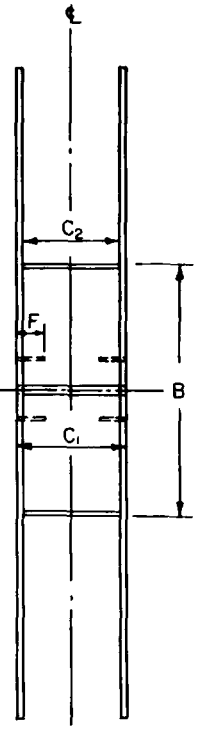


FIG. 3
70MM REEL

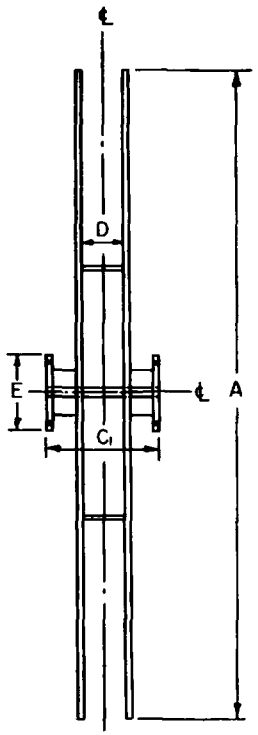


FIG. 4
35MM REEL

Dimensions	Inches	Millimeters
A (4000-ft capacity)	21.75 ± 0.03	552.4 ± 0.8
A (2700-ft capacity)	16.87 ± 0.03	428.5 ± 0.8
B (4000-ft capacity)	8.00 ± 0.03	203.2 ± 0.8
B (2700-ft capacity)	5.00 ± 0.03	127.0 ± 0.8
C_1	3.41 ± 0.03	86.6 ± 0.8
C_2	2.87 ± 0.03	72.9 ± 0.8
D	1.50 $^{+0.00}_{-0.03}$	38.1 $^{+0.0}_{-0.8}$
E	2.50 min	63.5 min
F	0.75 min	19.0 min
G	0.265 ± 0.002	6.73 ± 0.05
H	0.782 nom	19.86 nom
J	0.375 nom	9.52 nom
K (Diameter)	0.505 ± 0.002	12.83 ± 0.05
L (Threading slot)	0.035 nom	0.89 nom

2.2 Fig. 2 indicates the location and size of the spindle hole and the four driving holes. These appear on both flanges.

2.3 The reels are intended to be used on spindles whose diameter is $0.5000^{+0.0000}_{-0.0008}$ inch ($12.700^{+0.000}_{-0.020}$ mm) and to be driven by a drive pin of 0.250 inch (6.35mm) nominal diameter, engaging in one of the four driving holes.

2.4 Dimension F in Fig. 3 indicates a clearance for the driving pin, and shall be a minimum of 0.75 inch (19.0mm).

2.5 The centerlines indicated for Figs. 3 and 4 are coincident.

Appendix

(This Appendix is not a part of Proposed American Standard Dimensions of Motion-Picture Projection Reels for Combination 70/35mm Projectors, PH22.147, but is included to facilitate its use.)

A1. The specifications for the reels are based upon good engineering design of film winding and of a minimum tension change between hub and periphery. Complete interchangeability, however, may require some adjustment in the take-up and hold-back tensions of the projector when changing between 70mm and 35mm films.

A2. In designing reels of the size and weight described in this standard, it is the practice to chamfer the spindle hole to facilitate placing the reel on the spindle. The degree of chamfer should be in accordance with good engineering practice, and should not reduce the bearing surface of the spindle hole on the spindle to the point of endangering reel stability.

American Standard Dimensions of

2-In. Video Magnetic Tape Reels

ASA
Reg. U.S. Pat. Off.
C98.5–1965

*UDC 681.85:621.397.5

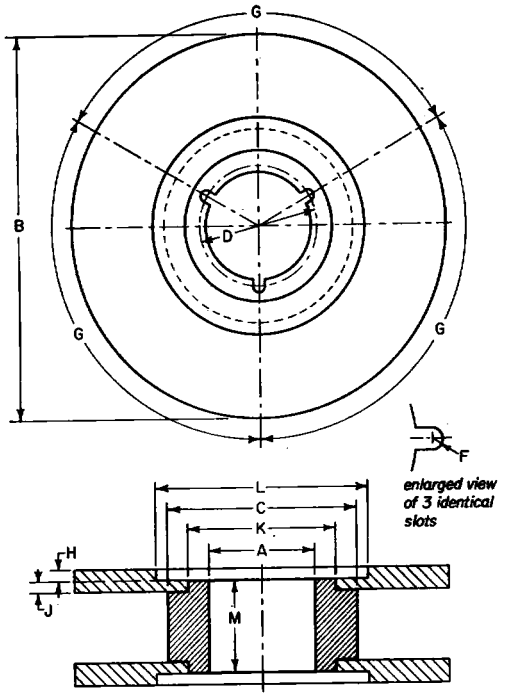
1. Scope

This standard specifies the dimensions of reels in maximum capacities of 750, 1650, 3600, 5540, and 7230 ft designed to accommodate the maximum thickness of 2-in. wide magnetic tape for television recording, as specified in American Standard Dimensions of 2-In. Video Magnetic Tape, C98.1-1963.

2. Reel Dimensions

2.1 The dimensions of the reels shall be as specified in the figure and tables.

2.2 Flange-fastening members shall be flush with or below the outer surface of the flanges.



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2.3 The outside cylindrical surface of the hub (C diameter) shall be concentric with the center bore (A diameter) within 0.002 in. (0.05mm) and shall have a maximum taper of 0.0004 in. (0.010mm).

2.4 The outside diameter of the flanges (B diameter) shall be concentric to the center bore of the hub (A diameter) within 0.02 in. (0.5mm).

Table 1

Reel Dimensions

Dimensions	Inches	Millimeters	Degrees
A	$3.000 \begin{smallmatrix}+0.004\\-0.000\end{smallmatrix}$	$76.20 \begin{smallmatrix}+0.10\\-0.00\end{smallmatrix}$	
B	See Table 2	See Table 2	
C	4.500 ± 0.100	114.30 ± 2.54	
D	3.250 ± 0.002	82.55 ± 0.05	
F	$0.109 \begin{smallmatrix}+0.003\\-0.000\end{smallmatrix}$	$2.77 \begin{smallmatrix}+0.08\\-0.00\end{smallmatrix}$	
G			120 ± 0.1
H	0.025 max†	0.64 max†	
J	0.099 max†	2.51 max†	
K	3.600 min‡	91.44 min‡	
L	6.000 min‡	152.40 min‡	
M*	2.212 ± 0.003	56.18 ± 0.08	

* The hub surfaces defined by M shall be parallel within 0.0002 in. (0.005mm) per inch and square with the hub outside diameter C within 0.001 in. (0.03mm) at maximum diameter.
† The surface of the flanges from B to L shall lie between the planes defined by H and J.
‡ Outside surfaces of reel flanges between diameters K and L shall not extend beyond the surfaces defined by Dimension M.

Table 2

Reel Capacities

Maximum Capacity,* Feet	Maximum Capacity,* Meters	Maximum Playing Time in Min at 7.5 In. (19.05 Cm) Per Second	Maximum Playing Time in Min at 15 In. (38.1 Cm) Per Second	Dimension B Inches	Dimension B Millimeters
750	228	20	10	6.50 ± 0.010	165.1 ± 0.25
1650	503	44	22	8.00 ± 0.010	203.2 ± 0.25
3600	1097	96	48	10.50 ± 0.010	266.7 ± 0.25
5540	1689	148	74	12.50 ± 0.010	317.5 ± 0.25
7230	2203	192	96	14.00 ± 0.010	355.6 ± 0.25

* Maximum capacity is based on a minimum distance of 0.2 in. (5mm) from the reel periphery to the tape stack, utilizing maximum thickness tape.

Appendix

(This Appendix is not a part of American Standard Dimensions of 2-In. Video Magnetic Tape Reels, C98.5-1965, but is included to facilitate its use.)

The outside diameters of the flanges, B, will give reels the capacities suggested in Table 2. These capacities should be regarded as maximum.

It is recommended that both flanges have air escape holes. If provided, these holes should extend to the hub periphery and be of such size at this point as to facilitate easy threading.

American Standard Dimensions of

Video, Audio and Tracking Control Records on 2-In. Video Magnetic Tape

ASA
Reg. U.S. Pat. Off.

C98.6–1965

*UDC 681.85:621.397.5

1. Scope

This standard specifies the locations and dimensions of the video, audio and tracking control records on 2-in. video magnetic tape.

2. Dimensions

The dimensions shall be as specified in the figures and tables.

3. Magnetic Coating

With the direction of tape motion as shown in Fig. 1, the magnetic coating is on the surface facing the observer.

4. Video Track Curvature

Each video track shall not deviate from a straight line by more than 0.001 in. (0.03mm).

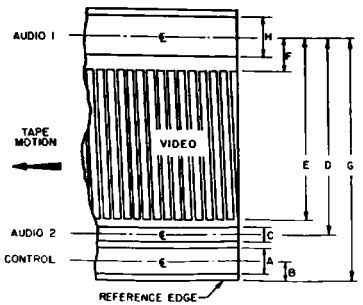

Fig. 1. Position of Records.

Table 1

Dimensions	Inches	Millimeters
A	0.045 ± 0.005	1.14 ± 0.13
B	0.022 ± 0.002	0.56 ± 0.05
C	0.022 ± 0.002	0.56 ± 0.05
D	1.894 ± 0.002	48.11 ± 0.05
E	$1.872^{+0.005}_{-0.000}$	$47.55^{+0.13}_{-0.00}$
F	$0.057^{+0.000}_{-0.005}$	$1.45^{+0.00}_{-0.13}$
G	1.962 ± 0.004	49.81 ± 0.10
H	0.070 ± 0.004	1.78 ± 0.10

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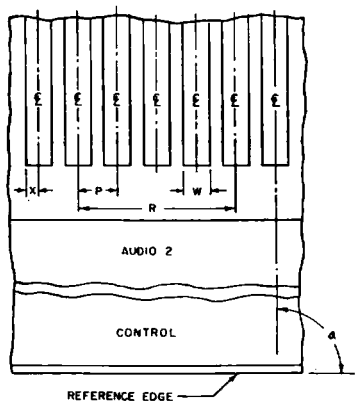

Fig. 2. Detail of Video Tracks.

Table 2

Dimensions of Video Tracks (15 in./sec, 960 tracks/sec)

Dimensions	Inches	Millimeters
P = R/4	Calc	Calc
R	0.0625 ± 0.0010	1.588 ± 0.025
W	0.0100 ± 0.0005	0.254 ± 0.013
X	W/2 ± 0.0002	W/2 ± 0.005
α	90° 33′ ± 3′	

Table 3

Dimensions of Video Tracks (7.5 in./sec, 960 tracks/sec)

Dimensions	Inches	Millimeters
P = R/4	Calc	Calc
R	0.0312 ± 0.0010	0.794 ± 0.025
W	0.0050 ± 0.0005	0.127 ± 0.013
X	W/2 ± 0.0002	W/2 ± 0.005
α	90° 17′ ± 3′	

Appendix

(This Appendix is not a part of American Standard Dimensions of Video, Audio and Tracking Control Records on 2-In. Video Magnetic Tape, C98.6-1965, but is included to facilitate its use.)

A magnetic record or track is that area in which magnetization conveying the intended signal exists. A common technique for measurement of record locations and dimensions is the use of carbonyl iron to make them visible.