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STABILIZED 2012

REAFFIRMED 2006

SMPTE STANDARD

SMPTE 159.1-2001
Revision of
ANSI/SMPTE 159.1-1996

for Motion-Picture Film (8-mm Type S) — Model 1 Camera Cartridge — Cartridge-Camera Interface and Take-Up Core Drive

1 Scope

This standard specifies the dimensions of the 8-mm type S motion-picture film camera cartridge and cartridge-camera interface. Also specified are the dimensions of the take-up core drive opening and critical dimensions of the take-up core as well as the driving force, direction of drive, and recommended drive ratio.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below.

SMPTE 166-1999, Motion-Picture Film (8-mm Type S) — Exposure Control and Stock Identification — Sound and Silent Camera Cartridge Notches

3 Dimensions

3.1 The dimensions shall be as given in figure 1 and table 1.

3.2 The dimensions apply to an assembled cartridge with a film load at the time of manufacture.

3.3 Datum planes B, C, and A are referred to as first, second, and third, respectively. These planes, which are used for dimensioning, are mutually perpendicular and are jointly called a datum reference frame.

3.3.1 Datum plane A is coincident with the center of a circle, located from plane B by the basic dimension T. The circle is in contact with the edges of the locating slot defined by dimensions A, O, P, and Q. The diameter of this circle is such that it applies regardless of feature size (RFS) of the locating slot (see annex A.3).

3.4 Datum features B, C, and A are primary, secondary, and tertiary, respectively.

3.4.1 Datum feature B is the unnotched, unlabeled surface of the cartridge. It is the primary datum feature and relates the cartridge to the datum reference frame by having a minimum of three points contact the first datum plane, B.

3.4.2 Datum feature C is the front seating surface of the cartridge. It is the secondary datum feature and relates the cartridge to the datum reference frame by having a minimum of two points contact the second datum plane, C.

3.5 Dimensions L, M, N, R_3, U, V, and W, measured from datum planes A and C to the depth of dimension E, as shown in the view of the label side in figure 1, describe the extent of both triangular recessed areas. The inboard wall of the recessed area, defined by dimensions L and N, shall be a smooth surface and may be tilted sufficiently from the perpendicular to datum plane B to allow proper release from a mold, when the cartridge is manufactured in a molding process.

Approved
June 6, 2001

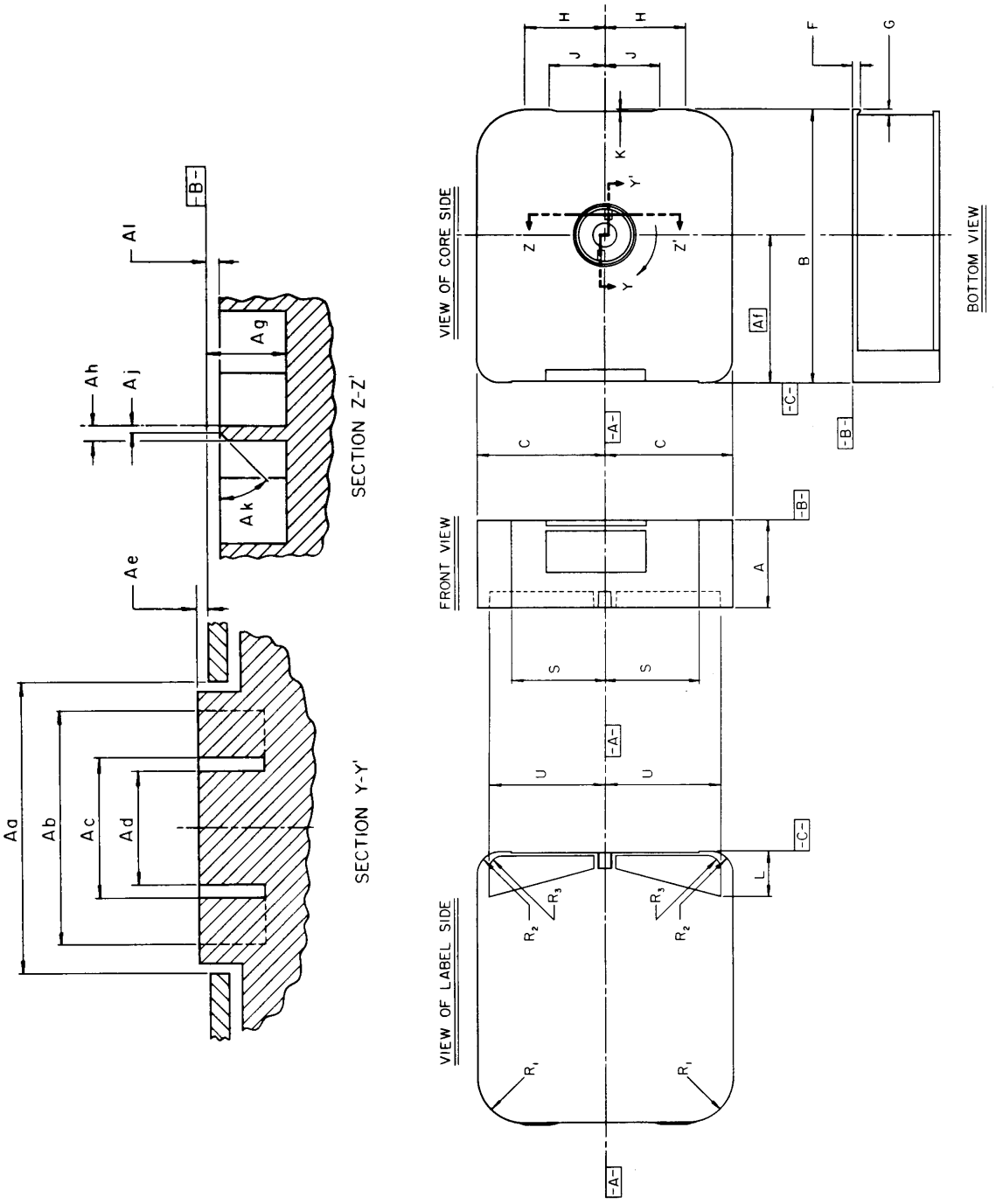

Figure 1 – Cartridge

Table 1 – Specifications

Dimensions	Inches	Millimeters
A	0.954 ± 0.010	24.23 ± 0.25
B	2.99 ± 0.01	75.9 ± 0.3
C	1.390 ± 0.010	35.31 ± 0.25
E	0.780 max	19.81 max
F	0.09 ± 0.01	2.3 ± 0.3
G	0.06 ± 0.01	1.5 ± 0.3
H	0.88 ± 0.03	22.4 ± 0.8
J	0.61 ± 0.03	15.5 ± 0.8
K	0.015 ± 0.010	0.38 ± 0.25
L	0.470 min	11.94 min
M	0.005 ± 0.003	0.13 ± 0.08
N	0.177 min	4.50 min
O	0.154 ± 0.004	3.91 ± 0.10
P	0.142 ± 0.004	3.61 ± 0.10
Q	0.770 ± 0.010	19.56 ± 0.25
R_1	0.50 ± 0.10	12.7 ± 2.5
R_2	0.25 ± 0.05	6.4 ± 1.3
R_3	0.160 max	4.06 max
S	1.02 ± 0.01	25.9 ± 0.3
T	0.870 basic	22.10 basic
U	1.225 min	31.12 min
V	0.125 max	3.18 max
W	See 3.6	
Aa	0.680 max	17.27 max
Ab	0.575 min	14.60 min
Ac	0.327 max	8.31 max
Ad	0.264 max	6.71 max
Ae	0.015 max	0.38 max
Af[1)]	1.608 basic	40.84 basic
Ag	0.100 min	2.54 min
Ah	0.040 ± 0.005	1.02 ± 0.13
Aj	0.020 max	0.51 max
Ak	45° nom	45° nom
Al	0.024 max	0.61 max

[1)] See 3.9.

3.6 The thickness of the wall of the cartridge used for notching, dimension W in figure 2, shall be sufficient to withstand a force of at least 1 kgf or 2.2 lbf (10 N) while deflecting no more than 0.04 in (1 mm). (For purposes of measurement, the force is applied by a solid round pin of nominal 0.05-in (1.3-mm) diameter centered 0.03 in (0.8 mm) nominally above or below the film speed or filter notch coincident with dimension T on datum feature C.)

3.7 Dimension A specifies the normal overall thickness of the cartridge.

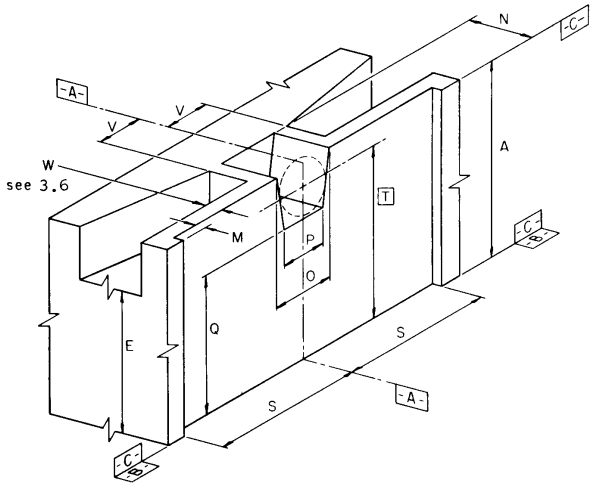

Figure 2 – Camera locating slot

3.8 Dimensions B and M are measured from datum plane C. Dimensions C, H, J, and S are measured from datum plane A.

3.9 The take-up core axis shall be located within 0.010 in (0.25 mm) of the true center formed by datum plane A and basic dimension Af.

3.10 Dimensions Aa, Ab, Ac, and Ad are diameters.

4 Take-up core drive

4.1 The direction of rotation for the core shall be clockwise when viewed from the core side of the cartridge.

4.2 After disengagement of any core anti-backup device, the cartridge shall operate with a nominal torque of 0.85 ounce-force inch with a permissible range of 0.5 ozf·in to 1.5 ozf·in (6.0×10^{-3} newton meters with a permissible range of 3.5×10^{-3} N·m to 10.6×10^{-3} N·m) as applied to the cartridge (see annex A.2).

NOTES

1 Placement of film data, such as name, number, length of load, and inclusion of any notches, shall be in accordance with SMPTE 166.

2 Although two driving lugs are shown in the core and are recommended, only one is essential for satisfactory operation.

Annex A (informative)
Additional data

A.1 In designing the camera driver, consideration should be given to the fact that tooth-on-tooth engagement of the core lug on the camera driver pin is a possibility.

A.2 It is recommended that the core be tendency driven (by some form of slip-drive mechanism) with a drive ratio of at least one turn of the core for every fifteen strokes of the pull-down claw.

A.3 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 of exerting locating forces on appropriate surfaces of the cartridge.

Annex B (informative)
Bibliography

SMPTE 159.2-2001, Motion-Picture Film (8-mm Type S) — Model 1 Camera Cartridge — Aperture, Profile, Film Position, Pressure Pad and Flatness