REAFFIRMED 2003

SMPTE STANDARD

ANSI/SMPTE 205-1993
Revision of
ANSI/SMPTE 205-1988

for Motion-Picture Equipment (8-mm Type S) — Model 1 Camera Cartridge — Interface and Take-Up Core Drive (200-Ft Capacity)

1 Scope

This standard specifies the dimensions of the 8-mm type S 200-ft (60-m) capacity motion-picture 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. An optional means of retaining the film supply until the cartridge is placed in the camera is described.

2 Dimensions

2.1 The dimensions shall be as given in the figures and table 1.

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

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

2.3.1 Datum plane A is coincident with the center of a circle located by 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 figure 2 and annex A.1).

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

2.4.1 Datum feature B is the unnotched, unlabeled surface of the cartridge, extending 2.00 in (50.8 mm) basic below and 1.635 in (41.53 mm) basic above datum plane A (cartridge surface between dimensions Av and Cs in figure 1). It is the primary datum feature and contacts datum plane B (of a gauging fixture [see annex A.1]) at a minimum of three points.

2.4.2 Datum feature C is the front seating surface of the cartridge, extending 2.00 in (50.8 mm) basic below and 1.635 in (41.53 mm) basic above datum plane A. It is the secondary datum feature and contacts datum plane C (of a gauging fixture [see annex A.1]) at a minimum of two points.

2.5 Dimensions L, N, U, Am, V, M, W, and R3, measured from datum planes A and C to the depth of dimension E, 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.

2.6 The thickness of the wall of the cartridge used for notching, dimension W, shall be sufficient to withstand a force of at least 2.2 lbf (10 N), while deflecting no more than 0.04 in (1.0 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 basic dimension T on datum feature C.)

595 W. Hartsdale Ave., White Plains, NY 10607
(914) 761-1100

American National Standard

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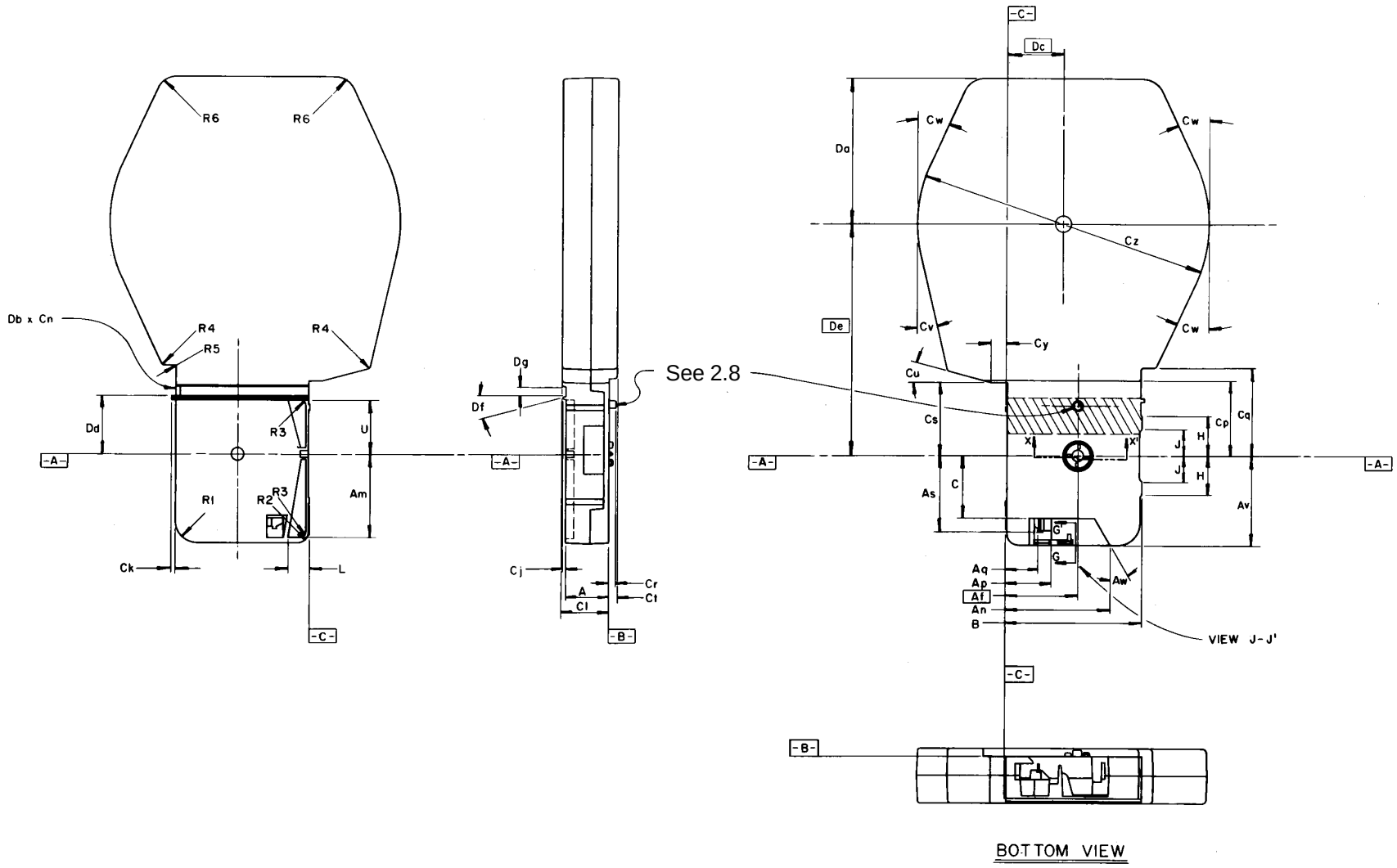

Figure 1 – Cartridge

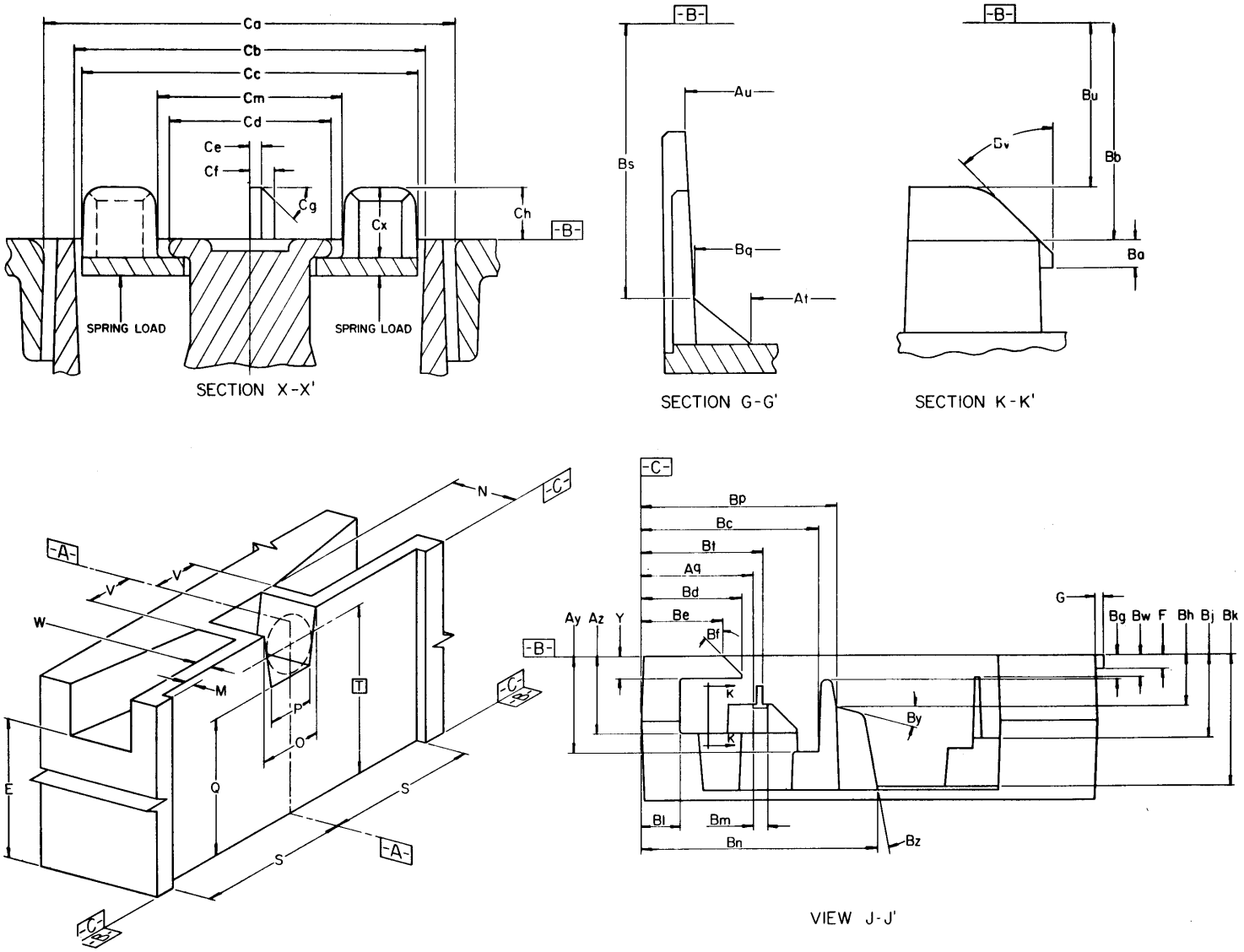

Figure 2 – Camera locating slot

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	0.090 ± 0.010	2.29 ± 0.25
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	0.007 ± 0.005	0.18 ± 0.13
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
R1	0.50 ± 0.10	12.7 ± 2.5
R2	0.25 ± 0.05	6.4 ± 1.3
R3	0.160 max	4.06 max
R4	0.050 min	1.27 min
R5	0.040 max	1.02 max
R6	0.25 min	6.4 min
S	1.02 ± 0.01	25.9 ± 0.03
T	0.870 basic	22.10 basic
U	1.225 min	31.12 min
V	0.125 max	3.18 max
W	See 2.6	
Y	0.151 ± 0.012	3.84 ± 0.30
Af	1.608 basic	40.84 basic
Am	1.835 min	46.61 min
An	2.340 min	59.44 min
Ap	1.032 max	26.21 max
Aq	0.733 ± 0.008	18.62 ± 0.20
As	1.710 ± 0.012	43.43 ± 0.30
At	1.730 min	43.94 min
Au	1.890 min	48.01 min
Av	2.000 ± 0.010	50.80 ± 0.25
Aw	30° + 1° – 5°	30° + 1° – 5°
Ay	0.620 min	15.75 min
Az	0.502 min	12.75 min
Ba	0.040 ± 0.008	1.02 ± 0.20
Bb	0.319 ± 0.008	8.10 ± 0.20
Bc	1.152 min	29.26 min
Bd	0.660 max	16.76 max
Be	0.533 max	13.54 max
Bf	45° nom	45° nom
Bg	0.162 ± 0.015	4.11 ± 0.38

Table 1 (concluded)

Dimensions	Inches			Millimeters		
Bh	0.347		min	8.81		min
Bj	0.502		min	12.75		min
Bk	0.840		min	21.34		min
Bl	0.260		max	6.60		max
Bm	0.093	±	0.015	2.36	±	0.38
Bn	1.550		max	39.37		max
Bp	1.280		max	32.51		max
Bq	1.888		min	47.96		min
Bs	0.658		min	16.71		min
Bt	0.787		max	19.99		max
Bu	0.200		min	5.08		min
Bv	45°	±	5°	45°	±	5°
Bw	0.151	±	0.012	3.84	±	0.30
By	15°	±	2°	15°	±	2°
Bz	15°	±	2°	15°	±	2°
Ca	0.690		max	17.53		max
Cb	0.555		min	14.10		min
Cc	0.500		min	12.70		min
Cd	0.264		max	6.71		max
Ce	0.020		max	0.51		max
Cf	0.040	±	0.015	1.02	±	0.38
Cg	45°		nom	45°		nom
Ch	0.090	±	0.050	2.29	±	1.27
Cj	0.080	±	0.010	2.03	±	0.25
Ck	0.065	±	0.015	1.65	±	0.38
Cl	1.074		max	27.28		max
Cm	0.310		max	7.87		max
Cn	45°		nom	45°		nom
Cp	1.692	±	0.015	42.98	±	0.38
Cq	1.985	±	0.030	50.42	±	0.76
Cr	0.185		max	4.70		max
Cs	1.655	±	0.020	42.04	±	0.51
Ct	0.165	±	0.020	4.19	±	0.51
Cu	15°	±	5°	15°	±	5°
Cv	13°	±	5°	13°	±	5°
Cw	25°	±	5°	25°	±	5°
Cx	0.100		min	2.54		min
Cy	0.310	±	0.020	7.87	±	0.51
Cz	6.500		dia max	165.10		dia max
Da	3.275		max	83.18		max
Db	0.094	±	0.020	2.39	±	0.51
Dc	1.246		basic	31.65		basic
Dd	1.300	±	0.015	33.02	±	0.38
De	5.237		basic	133.02		basic
Df	15°	±	2°	15°	±	2°
Dg	0.215	±	0.008	5.46	±	0.20

2.7 Dimension A specifies the normal overall thickness of the cartridge, extending from the bottom edge of the cartridge to the light lock rib (dimension U) and within the light lock channel (dimension Dg).

2.8 Some cartridge manufacturers may desire to provide a means of retaining the film supply and take-up spools until the cartridge is placed in the camera. One method employs a spool locking device which is activated by a lock pin extending through datum feature B. The device should be designed to unlock the spools when the lock pin is depressed by seating the cartridge on datum plane B (camera mechanism plate). The lock pin should be located within a zone from 0.50 in (12.7 mm) basic from datum plane A within dimension B. The force required to hold the lock pin coincident with datum plane B shall not exceed 20 oz (5.4 N). The initial force to depress the lock pin may be significantly higher than the force required to hold the lock pin coincident with datum plane B.

2.9 Dimension M is measured from datum plane C.

2.10 The sprocket axis shall be located within 0.010 in (0.25 mm) of the true center formed by datum plane A and basic dimension Af.

2.11 Dimensions Ca, Cb, Cc, Cd, and Cm are diameters.

2.12 Dimensions Bt, Bu, and Bv define an optional guide provided to facilitate film loading at the time of cartridge manufacture.

3 Take-up core drive

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

3.2 After disengagement of any film-locking device, the cartridge shall operate with a nominal torque of 1.3 ozf·in (9.2×10^{-3} N·m) with a permissible range of 1.0 ozf·in to 1.5 ozf·in (7.1×10^{-3} N·m to 10.6×10^{-3} N·m (see annex A.2).

To enable cameras to distinguish automatically between the 8-mm type S 200-ft (60-m) capacity cartridge and the 50-ft (15-m) capacity sound and silent cartridge, a spring-loaded drive plate is incorporated in the core drive of the 8-mm type S 200-ft (60-m) capacity cartridge. The spring-loaded drive plate will react axially against the core drive mechanism of the camera with a nominal force of 14 oz (3.9 N) with a permissible range of 10 oz to 18 oz (2.8 N to 5.0 N) when the spring-loaded drive plate is depressed to within 0.020 in (0.51 mm) from datum plane B. (Four driving lugs are shown in the core, and it is recommended that the camera core driver be designed in such a way as to present a plane surface for the four lugs to bear against.)

3.3 When operating the 200-ft (60-m) capacity cartridge loaded with film without a magnetic sound stripe, proper film transport requires that all camera film transport mechanisms, including those for recording should, be activated. (This may not be required when using the 8-mm type S 50-ft (15-m) capacity silent cartridge.)

Annex A (informative)
Additional data

A.1 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.

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 driver for every 14 strokes of the pulldown claw when no slippage occurs.

A.3 In designing the core driver, consideration should be given to the fact that tooth-on-tooth engagement of the core lug on the driver pin is a possibility.