

Cinematography — Motion-picture camera cartridge, 8 mm Type S, Model I — Cartridge-camera interface and take-up core drive — Dimensions and specifications

1 Scope and field of application

This International Standard specifies the dimensions of 8 mm Type S motion picture film camera cartridge, Model I, and gives cartridge-camera interface specifications.

This International Standard also specifies the dimensions of the take-up core drive opening and critical dimensions of the take-up core. In addition, the driving force, direction of drive and recommended drive ratio of the take-up core are specified.

2 References

ISO 564 *Standard atmospheres for conditioning and/or testing* — Specifications.

ISO 3067, *Cinematography — Motion-picture camera cartridge, 8 mm Type S, Model I — Notches for film speed, film identification and colour-balancing filter — Dimensions and positions*.

3 Dimensions

3.1 Measurements made at the time of manufacture shall be taken at a temperature of 23 ± 2 °C as stated in ISO 554. A manufacturer may indicate other nominal temperatures under which dimensions apply.

3.2 The dimensions shall be as shown in the figures and given in the tables. The dimensions apply to a cartridge with a film load at the time of manufacturing.

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 jointly called a datum reference frame.

Datum plane A (figure 2) is coincident with the centre of a circle, located by basis dimension *T*. The circle is in contact with 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, clause A.3.1)

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

3.4.1 Datum feature B is the unnotched, unlabelled 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 in contact with 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 in contact with the second datum plane C.

3.5 In figure 1, dimensions *L*, *N*, *U*, *V*, *M*, *W* and *R*₃ measured from datum planes A and C respectively, describe the extent of both triangular recessed areas having a depth controlled by dimension *E*, as shown in the view of the label side. The inward wall of the recessed area, defined by dimensions *L* and *N*, shall be a straight plane and may be tilted from the perpendicular to the datum plane B sufficiently to allow proper release from a mould when the cartridge is manufactured in a moulding process.

3.6 The thickness of the wall of the cartridge used for notching, dimension *W*, shall be sufficient to withstand a force at least 10 N (2.2 lbf), while deflecting no more than 1 mm (0.04 in).

NOTE — For the purpose of measurement, the force is applied by the end of a solid cylindrical pin of diameter nominally 1.27 mm (0.05 in), applied at a point nominally 0.8 mm (0.03 in) below the film speed notch or above the filter notch. The axis of the pin shall be situated within a plane parallel to datum plane B and at the distance *T*. Force is to be exerted in a direction away from and normal to datum plane C.

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

3.8 The camera locating pin shall have a maximum diameter of 3.56 mm (0.140 in).

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

3.10 The take-up core axis shall be located within 0.25 mm (0.010 in) of the true centre formed by datum plane A and basic dimension *A*₁ (see figure 3).

3.11 Dimensions *A*_a, *A*_b, *A*_c and *A*_d in figure 3 are diameters.

4 Take-up core drive

4.1 The nominal axial position of the highest point on the outer surface of the core shall not protrude more than 0.38 mm (0.015 in) above datum plane B as shown in figure 3. The axial position of the top edge of the drive lugs established by dimensions *A*₁ and *A*₂ shall not be recessed more than 0.61 mm (0.024 in) below datum plane B.

4.2 The normal direction of drive for the core shall be "clockwise" (right hand drive) when viewed from the core side of the cartridge.

4.3 A nominal torque of 6.0×10^{-3} N·m with a permissible range of 3.5×10^{-3} N·m to 10.6×10^{-3} N·m (0.86 oz·in) with a permissible range of 0.5 to 1.5 oz·in) from start of run is required to drive the core. (See annex, clause A.2.)

NOTES

1 Placement of film data, such as name, number and length of load, and the inclusion of any notches, should be in accordance with ISO 3067.

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

5 Bibliography

ISO 1780, *Cinematography — Motion-picture camera cartridge, 8 mm Type S Model I — Aperture, camera aperture profile, film position, pressure pad and pressure pad thickness — Dimensions and specifications*.¹⁾

ISO 3024, *Cinematography — Motion-picture camera cartridge, 8 mm Type S, Model I — Camera run length, perforation cut-out and end-of-run notch in film — Specifications*.²⁾

1) At present at the stage of draft. (Revision of ISO 1780:1975.)

2) At present at the stage of draft. (Revision of ISO 3024:1975.)

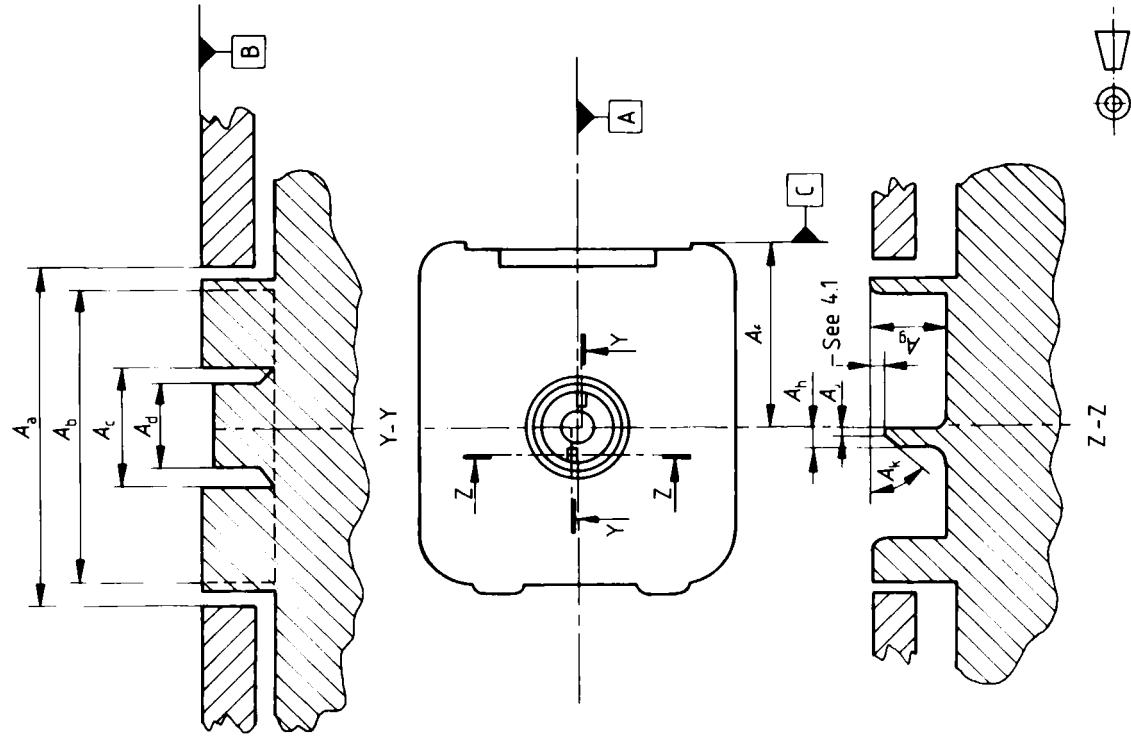


Figure 3 - Take-up core specifications

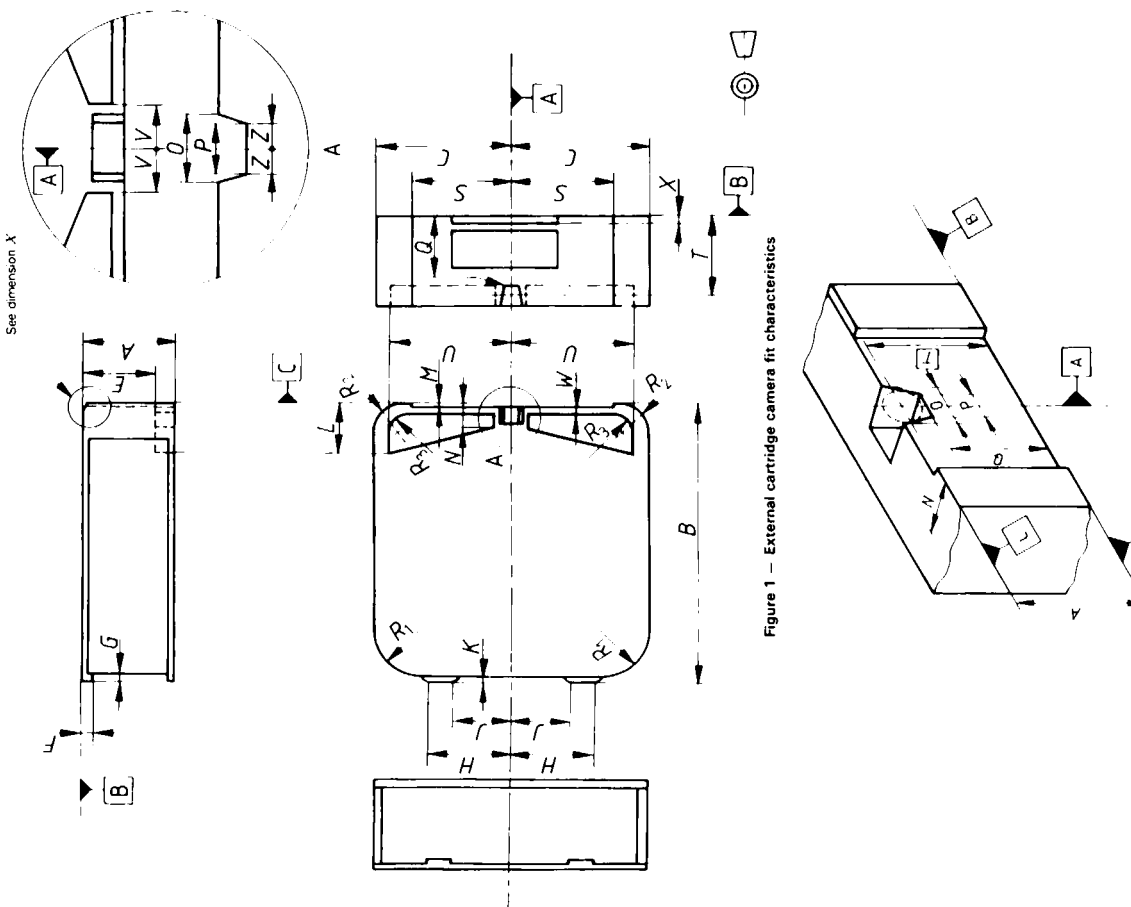


Figure 1 - External cartridge camera fit characteristics

Figure 2 - Camera-locating slot

Annex

Additional data

(This annex does not form part of the standard.)

Table 1

Dimension	mm	in
A	24,23 ± 0,25	0,954 ± 0,010
B	75,9 ± 0,3	2,99 ± 0,01
C	35,31 ± 0,25	1,390 ± 0,010
E	19,81 max	0,780 max
F	2,3 ± 0,3	0,09 ± 0,01
G	1,5 ± 0,3	0,06 ± 0,01
H	22,4 ± 0,8	0,88 ± 0,03
J	15,5 ± 0,8	0,61 ± 0,03
K	0,38 ± 0,25	0,015 ± 0,010
L	11,94 min	0,470 min
M	0,13 ± 0,08	0,005 ± 0,003
N	4,50 min	0,177 min
O	3,91 ± 0,10	0,154 ± 0,004
P	3,61 ± 0,10	0,142 ± 0,004
Q	19,56 ± 0,25	0,770 ± 0,010
R ₁	12,7 ± 2,5	0,50 ± 0,10
R ₂	6,4 ± 1,3	0,25 ± 0,06
R ₃	4,06 max	0,160 max
S	25,9 ± 0,3	1,02 ± 0,01
T*	22,10	0,870
U	31,12 min	1,225 min
V	3,18 max	0,125 max
H	See 3.6	See 3.6
X	1,55 min	0,061 min
Z	1,80 ± 0,05	0,071 ± 0,002

* Basic dimension — No tolerance intended. (See 3.3.)

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.

Table 2

Dimension	mm	in
A _a	17,27 max	0,680 max
A _b	14,60 min	0,575 min
A _c	8,31 max	0,327 max
A _d	6,71 max	0,264 max
A _i *	40,84	1,608
A _g	2,54 min	0,100 min
A _h	1,02 ± 0,13	0,040 ± 0,005
A _l	0,51 max	0,020 max
A _k	45° nom	45° nom

* Basic dimension — No tolerance intended. (See 3.10.)