International Standard 1019

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Cinematography — Spools, daylight loading type for 16 mm motion-picture cameras — Dimensions

Cinématographie — Bobines pour chargement en plein jour pour caméras 16 mm *— Dimensions*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 1019 was developed by Technical Committee ISO/TC 36, *Cinematography*.

This second edition was submitted directly to the ISO Council, in accordance with clause 5.10.1 of part 1 of the Directives for the technical work of ISO. It cancels and replaces the first edition (i.e. ISO 1019-1975), which had been approved by the member bodies of the following countries :

Belgium	Germany, F. R.	Romania
Brazil	Greece	South Africa, Rep. of
Bulgaria	Hungary	Sweden
Canada	Israel	Switzerland
Chile	Italy	United Kingdom
Czechoslovakia	Japan	USA
Egypt, Arab Rep. of	Korea, Rep. of	
France	Netherlands	

No member body had expressed disapproval of the document.

Cinematography — Spools, daylight loading type for 16 mm motion-picture cameras — Dimensions

1 Scope and field of application

1.1 This International Standard specifies the dimensions and characteristics of daylight loading spools of nominal capacities 15 m (50 ft), 30 m (100 ft), 60 m (200 ft) and 120 m (400 ft) for 16 mm motion-picture film.

NOTE — The dimensions specified in this International Standard are in substantial agreement with those given for microfilm camera supply and take-up spools in ISO 1116 (see the annex).

1.2 Spools for high-speed cameras should be carefully balanced and are not necessarily covered by this International Standard.

2 Reference

ISO 1116, *Microcopying — 16 mm and 35 mm microfilms, spools and reels.*

3 Dimensions and characteristics

3.1 The spindle and keyway holes shown in the figure shall be incorporated in both flanges[1] and shall be aligned. (Some laboratories use 35 mm rewind equipment for winding 16 mm film; often the spindles on this equipment have long keys.) A second keyway, in the corner of the spindle hole opposite the required keyway, is optional, but if used, shall be incorporated in both flanges.

3.2 If rivet heads or other fastening devices extend beyond the outer surfaces of the flanges, they shall lie at a diameter larger than the minimum K diameter and shall be within the boundaries defined by other portions of the volume of rotation diagram.

3.3 Dimension F refers to a slot in the spool core for attaching the film. The slot sides, starting immediately adjacent to each flange and running a minimum distance 6,0 mm (0.24 in) from each flange toward the other, shall be straight, parallel and 0,7 to 1,5 mm (0.03 to 0.06 in) apart. The slot sides may diverge over remaining (central) portions of the slot.

3.4 Dimensions J and J_1 represent the thickness and effective thickness respectively of the spool within the K diameter area which is centred on the spindle hole axis of each flange.

3.5 A reference plane of rotation for each flange is defined by a plane perpendicular to the axis of the spindle and coincident with the surface of a flat 15,0 mm (0.59 in) diameter support which is in contact with the flange and centred on the spindle hole axis of the flange.

The dimension P is the distance measured outwardly from this reference plane[2] of rotation to the farthest plane of rotation described by any point on the flange outside the K diameter area when the spool is rotated on an accurate, tight-fitting spindle. This includes rivets or other fastening devices, variations in flange thickness, flatness, and lateral run-out of the flanges.

Selection of a dimension P value is dependent upon the thickness of the material used for the flanges. According to the flange material thickness :

a) the K diameter area may be depressed (with P greater than zero), or

b) the outside surfaces of the flanges may be flat from spindle hole area to periphery (with P equal to zero), or

c) in the case of flanges made of very thin material, the K diameter area may be raised rather than recessed (effectively, P less than zero).

3.6 The maximum effective thickness of spools (including all the characteristics mentioned in 3.5) outside the K diameter area has not been stated because it is a function of a spool's specific J_1 value between the 15,0 mm (0.59 in) diameter reference zones on each flange. The largest overall effective thickness, however, will be $J_{1\,max} + 2\,P_{max} = 19{,}5$ mm (0.77 in).

3.7 The eccentricity of the core with respect to the spindle hole axis, Z, shall not exceed a total radius variation (total indicator reading) of 0,8 mm (0.03 in) for all spool sizes.

3.8 Flanges shall be opaque and their surfaces shall have low reflectance characteristics.

NOTE — When the loaded camera is viewed from the side, with the lens to the left and the bottom of the housing downward (regardless of whether or not the spool loading mechanism is visible from that side), both the supply and take-up spools rotate in a clockwise direction.

1) Some spools exist which have one flange with the construction recommended in 3.1, but the other flange with a round hole which has a diameter equal to dimension C. This older design is recognized temporarily, but is not recommended for future construction.

2) The reference plane from which P is measured is not necessarily coincident with all points within the K diameter area but only needs to be coincident with those which are in contact with the reference support which has a diameter smaller than K.