
INTERNATIONAL STANDARD



1020

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Cinematography — Spools, daylight loading type for double-8 mm motion-picture cameras — Dimensions

Cinématographie — Bobines pour chargement en plein jour pour caméras double 8 mm — Dimensions

First edition — 1974-07-01

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UDC 778.533.4 : 771.531.352

Ref. No. ISO 1020-1974 (E)

Descriptors : cinematography, motion-picture film, bobbins, dimensions, specifications.

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.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 36 has reviewed ISO Recommendation R 1020 and found it suitable for transformation. International Standard ISO 1020 therefore replaces ISO Recommendation R 1020-1969.

ISO Recommendation R 1020 was approved by the Member Bodies of the following countries :

Belgium	France	Korea, Rep. of
Brazil	Germany	Netherlands
Bulgaria	Greece	Romania
Canada	Hungary	Sweden
Chile	Israel	Switzerland
Czechoslovakia	Italy	United Kingdom
Egypt, Arab Rep. of	Japan	U.S.A.

No Member Body expressed disapproval of the Recommendation.

No Member Body disapproved the transformation of ISO/R 1020 into an International Standard.

Cinematography – Spools, daylight loading type for double-8 mm motion-picture cameras – Dimensions

1 SCOPE AND FIELD OF APPLICATION

1.1 This International Standard specifies the dimensions of daylight loading spools of nominal capacities 7,5 m (25 ft), 15 m (50 ft) and 30 m (100 ft) for double-8 mm Type R motion-picture film.

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

2 REFERENCES

ISO 486, *Cinematography – 16 mm motion-picture film perforated 8 mm Type R – Cutting and perforating dimensions.*

ISO . . . , *Cinematography – Spindles for 8 mm Type R motion-picture cameras and projectors – Dimensions.*¹⁾

1) In preparation.

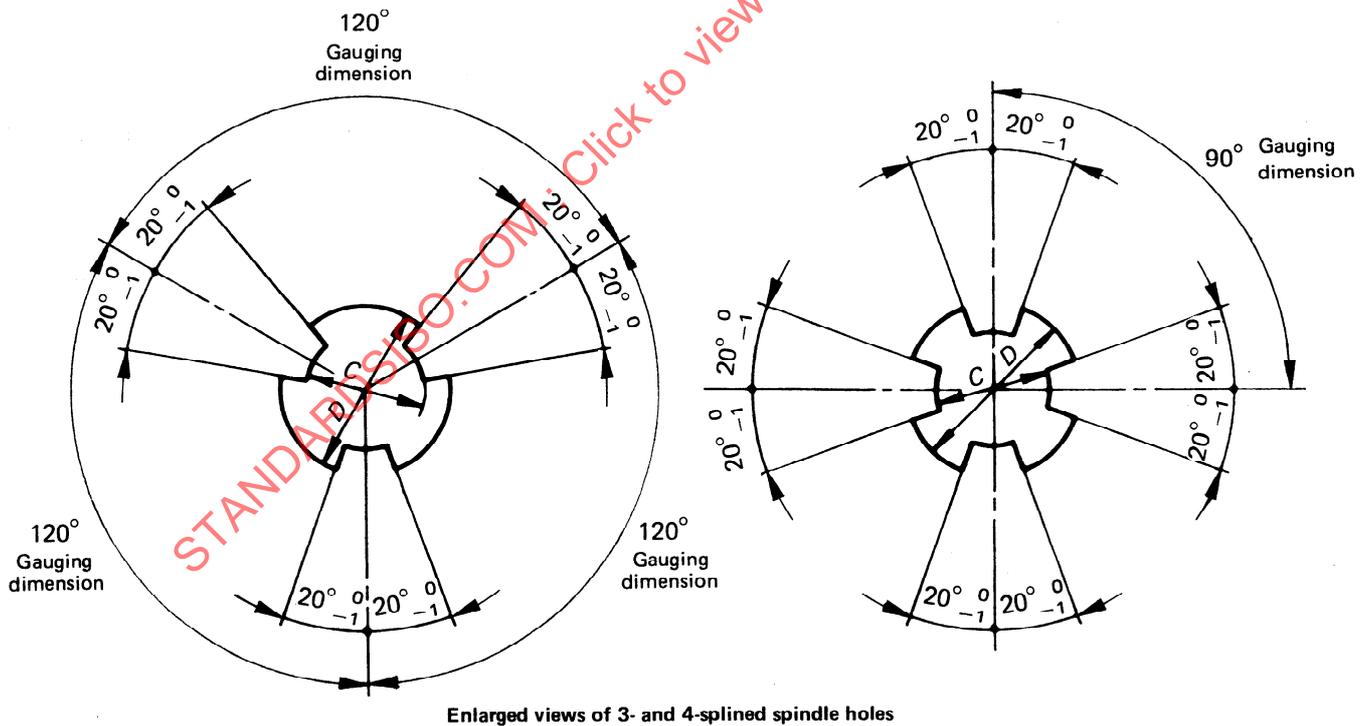
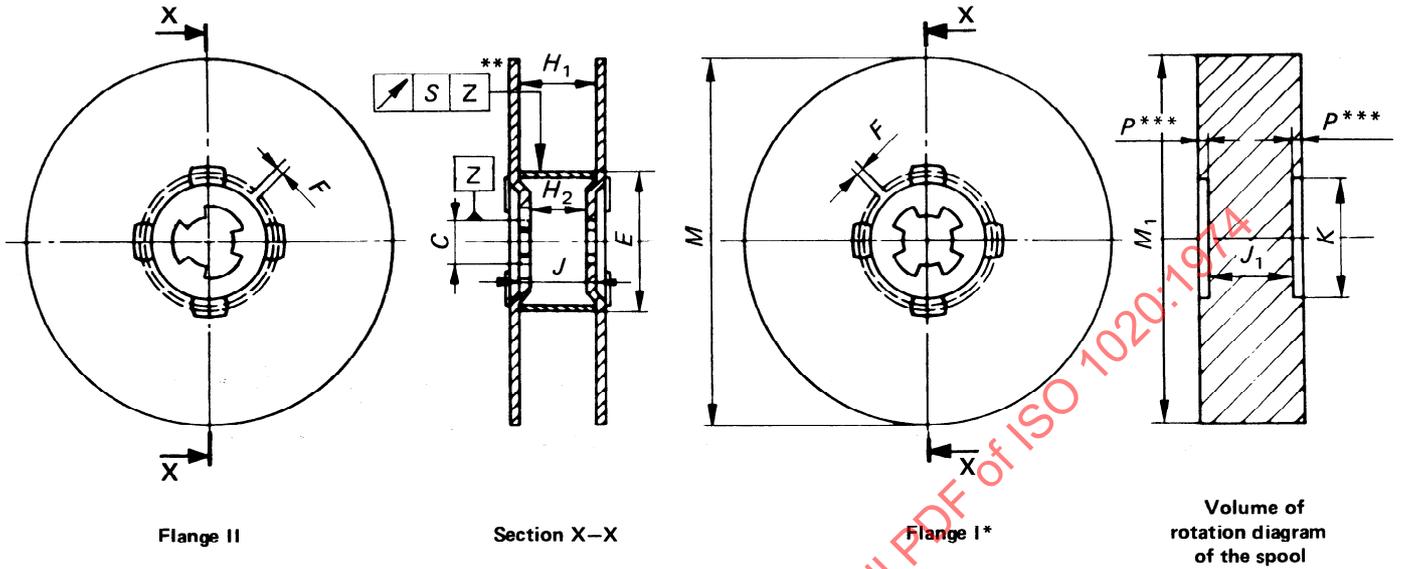


FIGURE – Dimensions of daylight loading spools for double-8 mm motion-picture cameras

* Flange I is provided on the side which engages the take-up spindle.

** See 3.7.

*** See 3.5 for an explanation of P.

TABLE — Dimensions of double-8 mm nominal spool sizes

Dimension	Nominal spool size	mm	in
C	7,5 m 15 m 30 m	7,30 $\begin{smallmatrix} + 0,20 \\ 0 \end{smallmatrix}$	0.287 $\begin{smallmatrix} + 0,008 \\ 0 \end{smallmatrix}$
D	7,5 m 15 m 30 m	9,8 $\begin{smallmatrix} + 0,2 \\ 0 \end{smallmatrix}$	0.38 $\begin{smallmatrix} + 0,01 \\ 0 \end{smallmatrix}$
E	7,5 m	19,0 $\pm 0,3$	0.75 $\pm 0,01$
	15 m 30 m	32,0 $\pm 0,5$	1.26 $\pm 0,02$
F	7,5 m 15 m 30 m	see 3.2	
H ₁	7,5 m 15 m 30 m	16,05 $\begin{smallmatrix} + 0,35 \\ 0 \end{smallmatrix}$	0.632 $\begin{smallmatrix} + 0,014 \\ 0 \end{smallmatrix}$
H ₂	7,5 m 15 m 30 m	16,00 min.	0.630 min.
J and J ₁	7,5 m 15 m 30 m	18,5 $\begin{smallmatrix} 0 \\ - 0,4 \end{smallmatrix}$	0.73 $\begin{smallmatrix} 0 \\ - 0,02 \end{smallmatrix}$
K	7,5 m	15,6 min.	0.61 min.
	15 m 30 m	25,5 min.	1.00 min.
M and M ₁	7,5 m	52,0 $\begin{smallmatrix} 0 \\ - 0,8 \end{smallmatrix}$	2.05 $\begin{smallmatrix} 0 \\ - 0,03 \end{smallmatrix}$
	15 m	71,5 $\begin{smallmatrix} 0 \\ - 1,0 \end{smallmatrix}$	2.81 $\begin{smallmatrix} 0 \\ - 0,04 \end{smallmatrix}$
	30 m	92,0 $\begin{smallmatrix} 0 \\ - 1,0 \end{smallmatrix}$	3.62 $\begin{smallmatrix} 0 \\ - 0,04 \end{smallmatrix}$
P (See 3.5)	7,5 m	0,40 max.	0.016 max.
	15 m 30 m	0,50 max.	0.020 max.
S	7,5 m	0,5	0.02
	15 m 30 m	0,8	0.03

3 DIMENSIONS AND CHARACTERISTICS

3.1 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.

3.2 Dimension *F* represents a slot in the spool core for attaching the film. Its design and dimensions are critical if a spool is to operate satisfactorily, both in self-threading cameras and cassette-loaded cameras. In self-threading cameras the film shall, without fail, seek out and easily slide into the slot, but for cassette-loaded cameras the slot shall

resist extraction of the film by action of the clock-spring at the end of the first camera exposure run.

Starting at a point adjacent to the four-splined flange and running at least one-half the core width, the slot shall be designed to meet manual-threading, self-threading, and cassette-loading requirements. Slot sides may diverge over the remaining one-half of the core width. One way of accomplishing this is to design the slot in the form of a weaving channel with an effective separation of 0,15 to 0,25 mm (0.006 to 0.010 in) between the teeth on one side of the slot and the teeth on the other side of the slot as measured with a wide, stiff blade-gauge which shall slip easily into this zone.

3.3 Dimension *H*₂ is the space between the flanges inside the core, but outside the *D* diameter zone.

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 plane¹⁾ 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 runout 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 :

- the *K* diameter area may be depressed (with *P* greater than zero), or
- the outside surfaces of the flanges may be flat from spindle hole area to periphery (with *P* equal to zero), or
- 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).

1) 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*.

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

0,5 mm (0.2 in) for a 7,5 m spool,

0,8 mm (0.3 in) for a 15 m spool,

0,8 mm (0.3 in) for a 30 m spool.

3.8 When a thin flange material is used for flanges, annexes B and C shall be taken into account.

3.9 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.

4 MARKING

To facilitate distinguishing between a roll of film which has been exposed along the first side (one-half width) only and one which has not been exposed at all or has been exposed along both the first and second sides (both one-half widths), the flanges of spools shall be marked prominently as follows :

Film manufacturers' raw stock spools		Camera accessory spools	
	Numeral	Numeral and/or phrase	
Flange with 4-splined spindle hole	1	2	No phrase (or numeral) necessary if phrase shown below is included on other flange
Flange with 3-splined spindle hole	2	1	Phrase as follows or equivalent : "Film when on this spool is half exposed".

Attention is called to the fact that if a camera accessory spool wound with the first exposure run of film is removed from the camera, identification of the film exposure status is more obvious if the spool has been marked with a phrase instead of (or in addition to) numerals. Some camera accessory spools have identical 4-spline holes in each flange. (Supply spindles of such cameras have one small lug or none at all.) Both flanges of such accessory spools shall be marked with the phrase above; to ensure proper orientation for the second exposure in this case, in addition to the phrase, it is helpful to have the numeral 1 on one flange and the numeral 2 on the other.

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