
INTERNATIONAL STANDARD



3644

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

Cinematography — Spindles for 8 mm Type R motion-picture cameras and projectors — Dimensions

Cinématographie — Axes pour caméras et projecteurs 8 mm type R — Dimensions

First edition — 1976-05-01

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[ISO 3644:1976](#)

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UDC 771.531.352 : 778.533

Ref. No. ISO 3644-1976 (E)

Descriptors : cinematography, motion-picture cameras, motion-picture projectors, motion-picture film-8 mm, spindles, dimensions.

FOREWORD

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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 3644 was drawn up by Technical Committee ISO/TC 36, *Cinematography*, and circulated to the Member Bodies in February 1975.

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It has been approved by the Member Bodies of the following countries :

Australia	India	ISO 3644:1976
Austria	Italy	Sweden
Belgium	Japan	Switzerland
Canada	Netherlands	Turkey
Czechoslovakia	Romania	United Kingdom
Denmark	South Africa, Rep. of	U.S.A.
France	Spain	U.S.S.R.
		Yugoslavia

No Member Body expressed disapproval of the document.

Cinematography – Spindles for 8 mm Type R motion-picture cameras and projectors – Dimensions

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1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the dimensions and characteristics of 8 mm Type R camera and projector spindles.

2 REFERENCE

ISO 1020, *Cinematography – Spools, daylight loading type for double-8 mm motion-picture cameras – Dimensions*.

3 DIMENSIONS

The dimensions shall be as shown in the figures and given in the tables.

NOTES

1 Angle γ represents the minimum effective angle between sides of two neighbouring lugs, but is not intended to limit the shape of the lug sides.

2 Dimension D represents profile limits for the tops of lugs, but is not intended to limit their shape to an arc. However, the radial height of the lug beyond the main shaft, diameter C , must not exceed the mating cut-out in the spool flange. The height of any spindle lug is therefore limited to 1,25 mm (0,050 in), in accordance with the spool flange cut-out shown in ISO 1020.

3 Dimension C represents the diameter of the spindle shaft, excluding key, drive lugs, and locking means. The maximum applies to all portions of the shaft but the minimum applies only to zones dimensioned by Q , R , S and T (see note 4 and A.3).

4 The zones dimensioned by Q , R , S and T , illustrated by cross-hatching on the figure, represent the spindle shaft areas on which the spool flanges rest or rotate.

5 The shape and action of the device for locking spools on spindles is optional but it should be located outside the area where spools are located on the spindle. Overall thickness of spools in the vicinity of the spindle hole is given as dimension

J and $J_1 = 18,5 \begin{smallmatrix} 0 \\ -0,4 \end{smallmatrix}$ mm ($0,73 \begin{smallmatrix} 0 \\ -0,02 \end{smallmatrix}$ in) in ISO 1020.

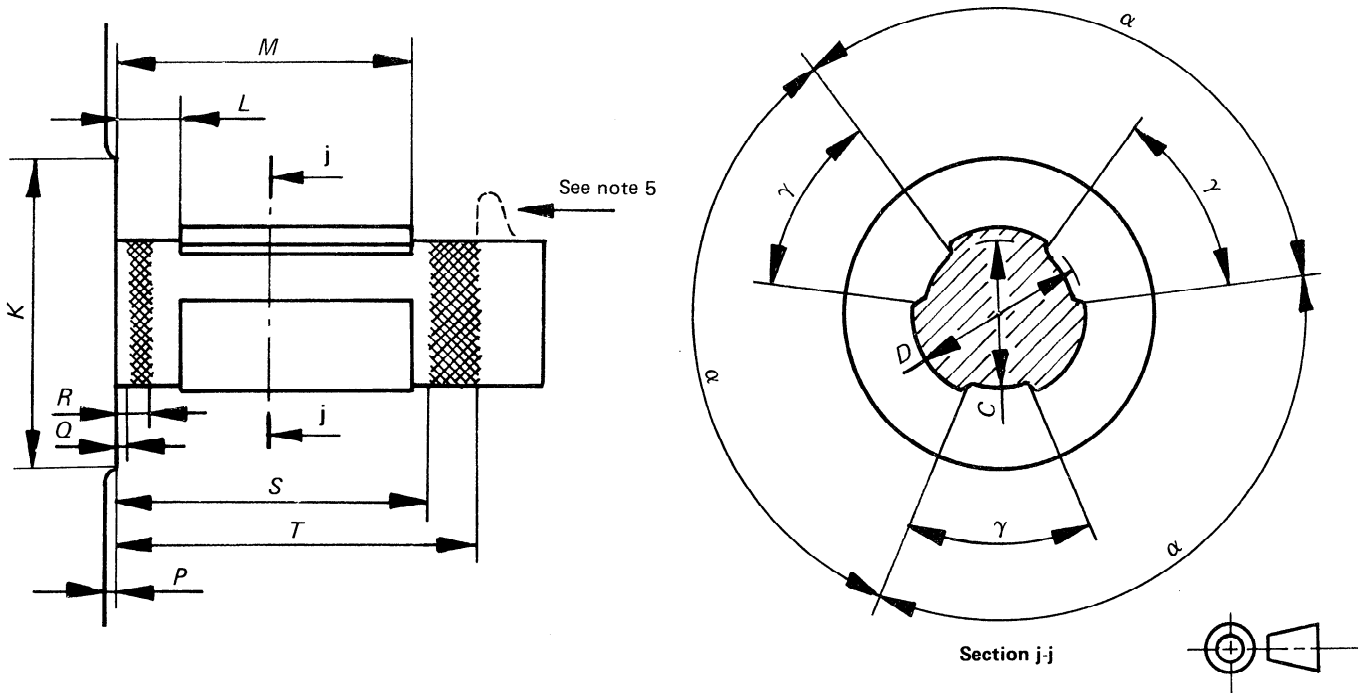
6 Some cameras are designed so that both the take-up and supply spools are driven during film exposure. For those cameras, the dimension L of the supply spindle should be 0,25 mm (0,01 in) maximum.

7 The dimension D maximum does not apply to 8 mm Type R camera take-up spindles manufactured with spring-loaded drive lugs which bear against the circumference as well as the sides of the corresponding slots in the spool spindle hole.

8 Dimension A maximum does not apply to projector spindles manufactured with spring-loaded reel-locking keys.

9 The shape and action of the device for locking reels on spindles is optional, but it should be located outside the area where reels are located on the spindle. Overall thickness of reels in the vicinity of the spindle hole is given as dimension

J and $J_1 = 12,5 \begin{smallmatrix} 0 \\ -1,5 \end{smallmatrix}$ mm ($0,49 \begin{smallmatrix} 0 \\ -0,06 \end{smallmatrix}$ in).



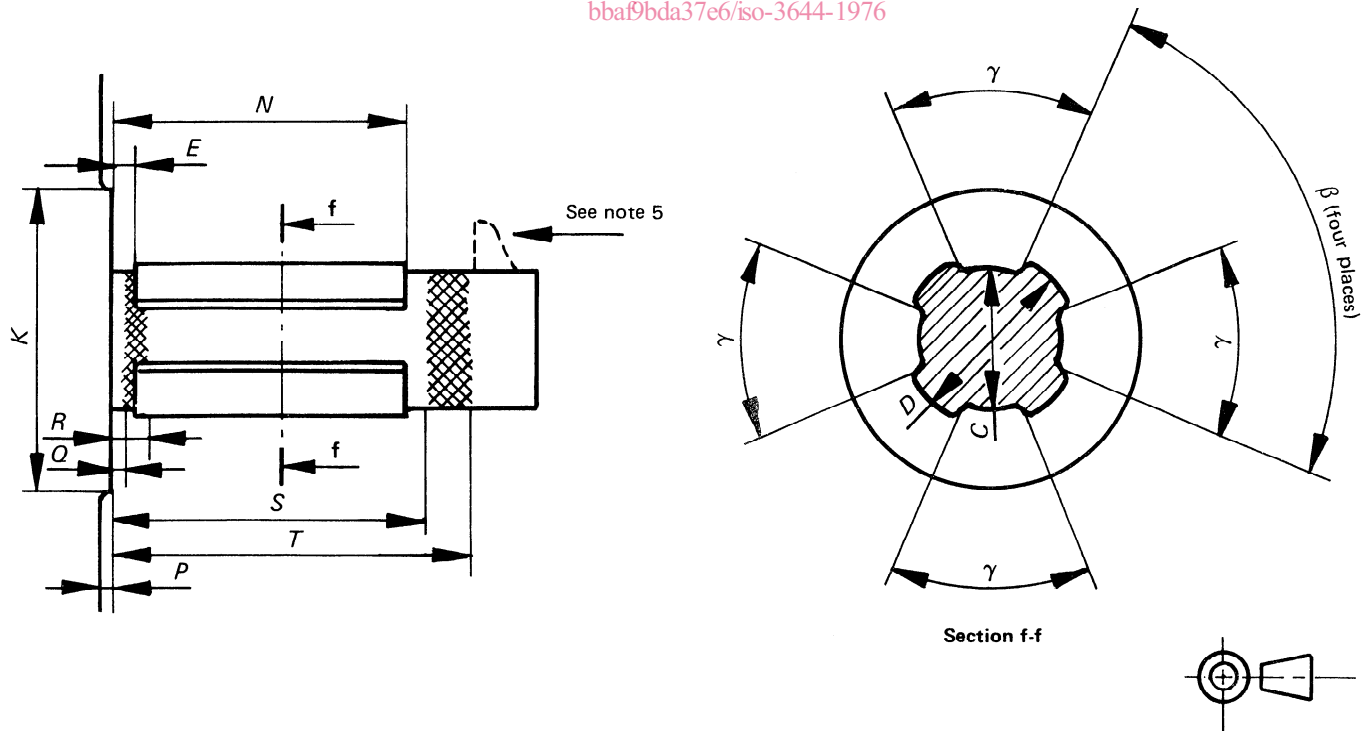
The figure illustrates three evenly spaced drive lugs, although one or two drive lugs are acceptable.

FIGURE 1 – Camera supply spindle

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The figure illustrates four evenly spaced drive lugs, although two lugs, preferably opposite each other, are acceptable (see A.2).

FIGURE 2 – Camera take-up spindle

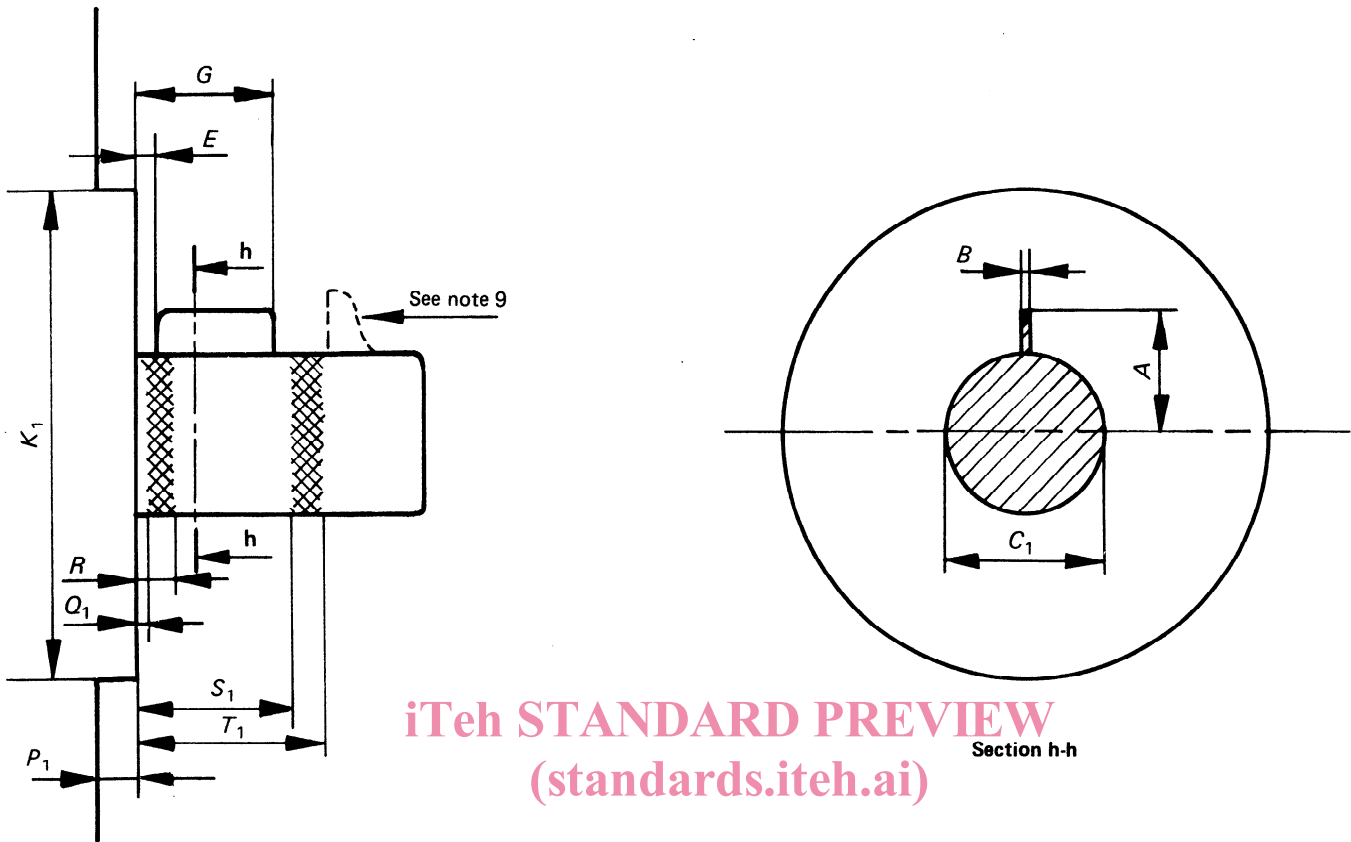
TABLE 1 – Dimensions of 8 mm Type R camera supply and take-up spindles

Dimension	Minimum		Maximum	
	mm	in	mm	in
<i>C</i> * (see note 3)	7,11**	0.280**	7,24***	0.285***
<i>D</i> * (see note 7)	9,0	0.35	9,5	0.37
<i>E</i> (see A.1)	–	–	0,25	0.010
<i>K</i> * (see A.3)	12,0	0.47	15,0	0.59
<i>L</i>	2,5	0.10	(see note 6)	
<i>M</i> (see A.1)	–	–	15,0	0.59
<i>N</i>	2,5	0.10	15,0	0.59
<i>P</i> If camera accommodates only 7,5 m (25 ft) spool	0,50	0.020	–	–
	If camera accommodates 15 m (50 ft) or 30 m (100 ft) spool	0,65	0.026	–
<i>Q</i> (see note 4, A.1 and A.3)	–	–	0,15	0.006
<i>R</i> (see note 4, A.1 and A.3)	2,0	0.08	–	–
<i>S</i> (see note 4, A.1 and A.3)	–	–	16,00	0.630
<i>T</i> (see note 4, A.1 and A.3)	19,0	0.75	–	–
α	120° basic			
β	90° basic			
γ (see A.1)	46°			

* Dimensions *C*, *D* and *K* are diameters.

** Applies only to zones defined by dimensions *Q*, *R*, *S* and *T*.

*** Some existing spools may have a minimum spindle hole at or near a diameter of 7,21 mm (0.284 in), but it is expected that the quantity at this value is not large, and for future spool construction, ISO 1020 specifies 7,30 mm (0.287 in) minimum.



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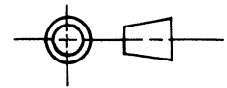


FIGURE 3 – Projector spindle

TABLE 2 – Dimensions of projector spindles

Dimension	Minimum		Maximum	
	mm	in	mm	in
A (see note 8)	5,59	0.220	7,0	0.28
B (see A.1)	—	—	1,3	0.05
C ₁ * (see note 3)	7,9**	0.31**	8,00	0.315
E (see A.1)	—	—	0,25	0.010
G	2,5	0.10	8,0	0.31
K ₁ *	16,0	0.63	24,5	0.96
P ₁ (see A.1)	2,4	0.09	—	—
Q ₁ (see note 4, A.1 and A.3)	—	—	0,13	0.005
R (see note 4, A.1 and A.3)	2,0	0.08	—	—
S ₁ (see note 4, A.1 and A.3)	—	—	8,89	0.350
T ₁ (see note 4, A.1 and A.3)	12,95	0.510	—	—

* Dimensions C₁ and K₁ are diameters.

** Applies only to zones defined by dimensions Q₁, R, S₁ and T₁.

ANNEX

A.1 Where only maximum or minimum values for a dimension are given, it is because the particular dimension is used to specify a function and to achieve interchangeability, and not to dictate design. While dimensions given only as a maximum can obviously go to zero, and dimensions given only as a minimum can obviously become very large, it is understood that designers will utilize established engineering practice in the dimensioning of the equipment covered by this International Standard.

A.2 Some cameras have been designed with the take-up spindle having only a single drive lug to engage one of the three or four spool slots. To ensure that the four-sided spool flange is placed into the take-up spindle first, the spindle was designed with four short orientation lugs located below the drive lug.

A.3 Some spool supports on old spindle designs have been as small as $K = 10,00$ mm (0.39 in) or as large as 15,5 mm (0.61 in). The first provides too little support and the latter corresponds exactly with the minimum diameter of the 7,5 m (25 ft) spool flange "clear area" assigned in ISO 1020. It is recommended that all future spindle construction observe the K dimensions shown in table 1 except that a 24,5 mm (0.97-in) K maximum would be permissible for cameras designed to accept only spools larger than the 7,5 m (25 ft) capacity size.

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