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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 1007

DIMENSIONS FOR 35 mm FILM MAGAZINES FOR STILL PICTURE USE AND TEST FOR FILM PULLOUT FORCE

1st EDITION

March 1969

For each individual country the only valid standard is the national standard of that country.

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BRIEF HISTORY

The ISO Recommendation R 1007, *Dimensions for 35 mm film magazines for still picture use and test for film pullout force*, was drawn up by Technical Committee ISO/TC 42, *Photography*, the Secretariat of which is held by the American National Standards Institute (ANSI).

Work on this question led to the adoption of a Draft ISO Recommendation.

In December 1966, this Draft ISO Recommendation (No. 1075) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Argentina	Czechoslovakia	Sweden
Belgium	Germany	Thailand
Brazil	Greece	U.A.R.
Bulgaria	Italy	United Kingdom
Canada	Japan	U.S.A.
Chile	South Africa, Rep. of	

One Member Body opposed the approval of the Draft :

France

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in March 1969, to accept it as an ISO RECOMMENDATION.

ISO Recommendation | R 1007 | March 1969

DIMENSIONS FOR 35 mm FILM MAGAZINES FOR STILL PICTURE USE AND TEST FOR FILM PULLOUT FORCE

1. SCOPE

This ISO Recommendation specifies the dimensions for 35 mm film magazines for still picture use. It also describes a test for film pullout force.

2. DIMENSIONS

TABLE – **Dimensions for 35 mm film magazines**

Dimension letter and ref.*	millimetres		inches		Dimension letter and ref.*	millimetres		inches	
	max.	min.	max.	min.		max.	min.	max.	min.
A (1) (7)	48.0	46.9	1.890	1.846	*O*		9.2 ϕ		0.362 ϕ
B (1)	46.6		1.835		*P*	11.4 ϕ		0.449 ϕ	
C (6)	46.1		1.815		*Q*	3.0		0.118	
D (7)	44.4	42.4	1.748	1.669	*R*		9.2 ϕ		0.362 ϕ
E (1) (5)	3.9		0.154		*S* (9)	2.4		0.094	
F	40.5		1.594		*T*		11.5 ϕ		0.453 ϕ
G (5)	1.0		0.039		*U*		18.2 ϕ		0.716 ϕ
H (5) (8)	9.1	8.3	0.358	0.327	*V*	25.4		1.000	
I	0.4		0.016		*W*	23.5	21.4	0.925	0.843
J (1) (7) (8)		3.1		0.122	X_1	See Note 10			
K (3) (4) (5)	6.3	4.9	0.248	0.193	X_2				
L (5)		7.5		0.295	X_3				
M (4) (5)	3.4	2.0	0.134	0.079	*Y*	5.0	4.5	0.197	0.177
N (3)	2.1		0.083		*Z* (2)	25.3 ϕ	24.9 ϕ	0.996 ϕ	0.980 ϕ

* See Figure 1 and the Notes, page 6.

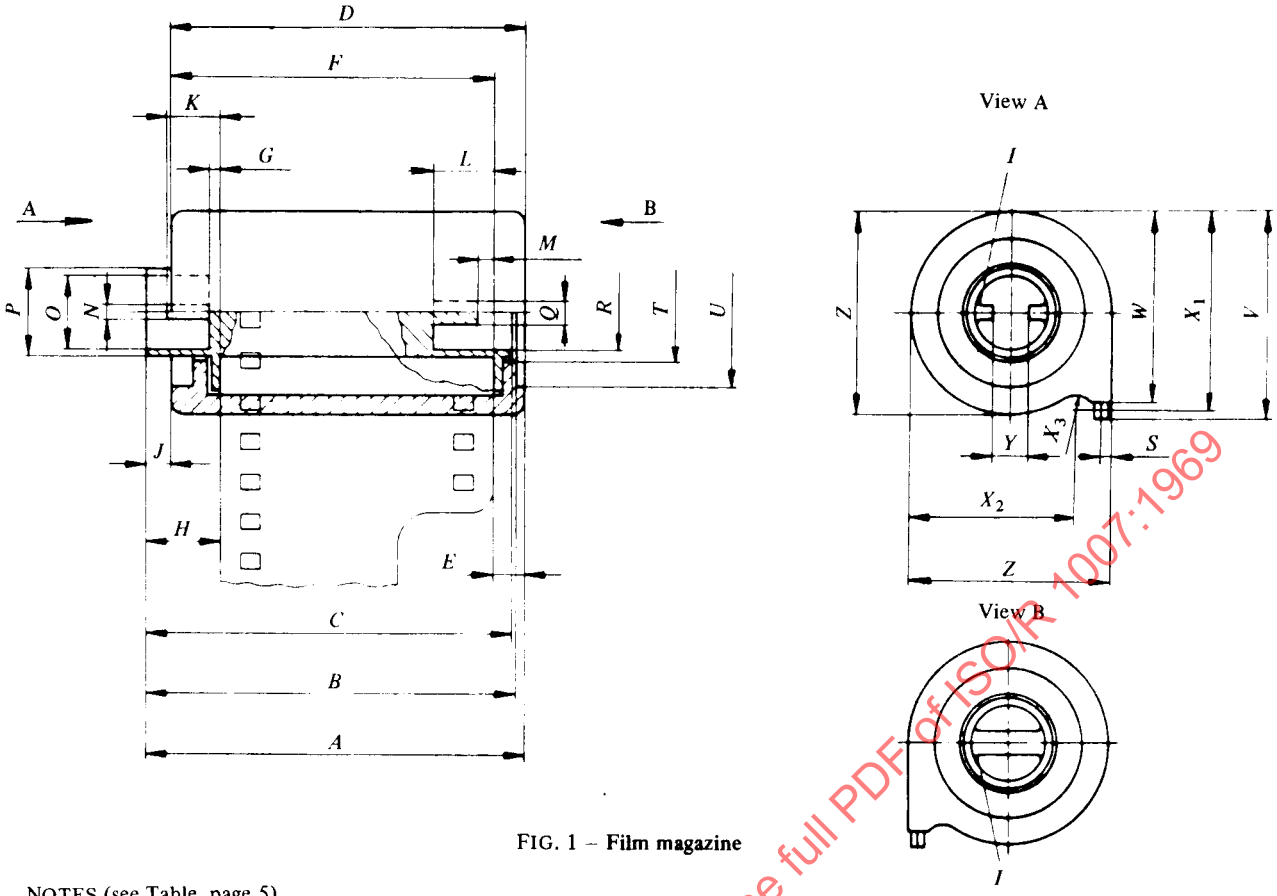

FIG. 1 – **Film magazine**

NOTES (see Table, page 5)

(1) These dimensions should be measured when the barrel and spool are assembled and the spool is pushed so that the short hub end is against the magazine end, that is toward the right hand end. This spool position should be used when, for example, dimensioning the camera key.

(2) This dimension needs to be observed strictly only at both ends of the barrel, in order to guarantee a radial guidance inside the camera. In the other area of the barrel wall, a smaller dimension than the given one is allowed.

(3) At the long hub end of the spool, splines are included for a second key. This construction should be preferred in the future.

(4) In order to facilitate engagement with the camera key, the ends of the spool splines may be rounded. However, such rounding should be accomplished within the maxima and minima established for K and M (see Fig. 2 below).

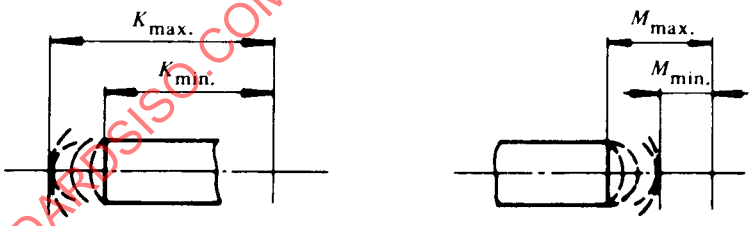

FIG. 2 – **Rounded spool splines**

(5) The dimensions refer to the film edges, when the film is wound tightly on the spool and the portion of the film projecting from the magazine is perpendicular to the axis of the magazine barrel.

(6) The short hub of the spool can be omitted without the spools being in contradiction to this ISO Recommendation.

(7) It should be noted that $J_{min.}$ (3.1 mm or 0.122 in) precludes the simultaneous occurrence of $A_{min.}$ (46.9 mm or 1.846 in) and $D_{max.}$ (44.4 mm or 1.748 in).

(8) It should be noted that when J is less than 3.6 mm (0.142 in), H is unable to achieve the maximum of 9.1 mm (0.358 in).

(9) The dimension S is measured to the emulsion side of the film.

(10) The radius X_3 can only be specified in terms of the maximum profile where the centre of this radius is at $X_1 = 23.8$ mm (0.937 in), $X_2 = 20.5$ mm (0.807 in), and $X_3 = 1.0$ mm (0.039 in) radius. These values, together with $Z_{max.}$, $W_{max.}$ and $V_{max.}$, are the dimensions for the hole in a profile gauge for checking magazines.

3. TEST FOR PULLOUT FORCE

It should be possible to pull the film out of the magazine lip with a force of 0.25 kgf, not taking into consideration the first 100 mm (3.937 in) of full width film. For the test it is recommended that a loadweight of 0.25 kg be used, not including the weight of the magazine, to which the magazine is attached with the lip vertically upwards. It should then be possible to pull the film out of the magazine in a vertical direction at a rate of approximately 40 mm (1.575 in) per second without raising the weight. The test should be carried out at a relative humidity of 40 to 60 % at a temperature in the range of 10 to 30 °C, with the film aged to a period of not less than 4 weeks from spooling.

4. EXPLANATORY MEMORANDUM CONCERNING FILM POSITION

Since complete interchangeability of all makes of spools and barrels has been found impossible, the spool is shown only in combination with the barrel, and its dimensions refer only to the keys which gear into the spool. The thickness of the spool flanges as well as the wall thickness of the barrel depend on the material used; thus they are not dimensioned. The position of the film is related to the spool keys or to the touching planes of the barrel in order that the camera designer can calculate on fixed dimensions from the film guidance to the spool key or touching plane of the magazine, as shown in Figure 3 below :

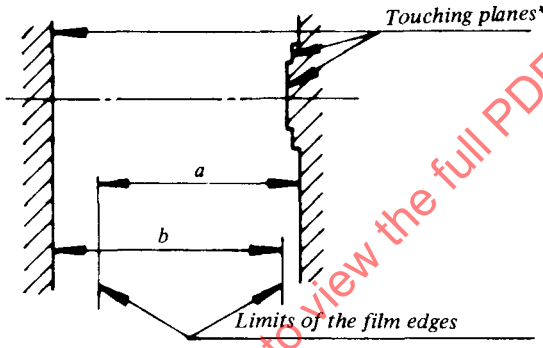

FIG. 3 – Position of film edges relative to camera-barrel touching planes

$a = 35 + 3.9$ mm $(1.378 + 0.154$ in$) = 38.9$ mm $(1.532$ in$)$

$b = 9.1 + 35$ mm $(0.358 + 1.378$ in$) = 44.1$ mm $(1.736$ in$)$

* The touching planes of the barrel, which might be possible inside the camera. These planes correspond to the features described by the dimensions *A*, *B (U)* and *C (T)*.

APPENDIX

SUGGESTED METHODS FOR MEASUREMENT OF PULLOUT FORCE AND DIMENSIONS RELATED TO THE EDGES OF THE FILM OF 35 mm FILM MAGAZINES FOR STILL PICTURE USE

This ISO Recommendation , in order to be of most value to camera designers, indicates a number of dimensions of the 35 mm magazine relative to the edges of the film. It also indicates a maximum pullout force, that is, the maximum force required to pull the film from the magazine. It is the purpose of this Appendix to record, solely for information purposes, how such dimensions and force could be measured in practice.

Z.1 MEASUREMENT OF PULLOUT FORCE

Various methods of measurement of the force required to pull the film from the magazine are in use by manufacturers and have been considered. Several of these methods provide a continuous record or scale reading of the actual force required as the film is drawn from the magazine.

However, for the purpose of this ISO Recommendation, it is only necessary to determine whether the force required to pull the film from the magazine is less than the specified value. It has been found convenient, therefore, to attach the magazine to a suitable weight and to observe if the film can be pulled from the magazine without lifting the magazine and weight from the bench by so doing.

Figure Z.1 of this Appendix gives the dimensions of such a suitable weight, i.e., a block of steel into which the magazine is inserted. The lips of the magazine are vertical and the centre of gravity is so positioned that the lips remain vertical when the block is lifted.

It should be noted that if the block lifts from the bench, the pullout force exceeds the specified value and the magazine does not conform to the Recommendation. Therefore, the balance of the gauge block and magazine need only be approximate.

In order that different weights are not required for the gauge block for each type of magazine tested, a weight of 0.25 kg has been specified in this ISO Recommendation for the weight of the block. The weight of the magazine and film are additional to this.

The exact weighing of the gauge block can be adjusted in manufacture by machining either the underside, or one of the end faces of the block.

This ISO Recommendation (section3) specifies the pullout force as follows :

> "It should be possible to pull the film out of the magazine lip with a force of 0.25 kgf, not taking into consideration the first 100 mm (3.937 in) of full width film. For the test it is recommended that a load-weight of 0.25 kg be used, not including the weight of the magazine, to which the magazine is attached with the lip vertically upwards. It should then be possible to pull the film out of the magazine in a vertical direction at a rate of approximately 40 mm (1.575 in) per second without raising the weight. The test should be carried out at a relative humidity of 40 to 60 % at a temperature in the range of 10 to 30 °C, with the film aged to a period of not less than 4 weeks from spooling."

The specification of the force being observed after 100 mm of full width film have been pulled from the magazine ensures that the pile of velvet, used for the lips of some magazines, is oriented in the outward direction and any set in the film at the lips of the magazine, arising during storage, does not interfere with the indication obtained.

The approximate speed of withdrawing the film is given to avoid the risk of snatching the film.

Dimensions in millimetres

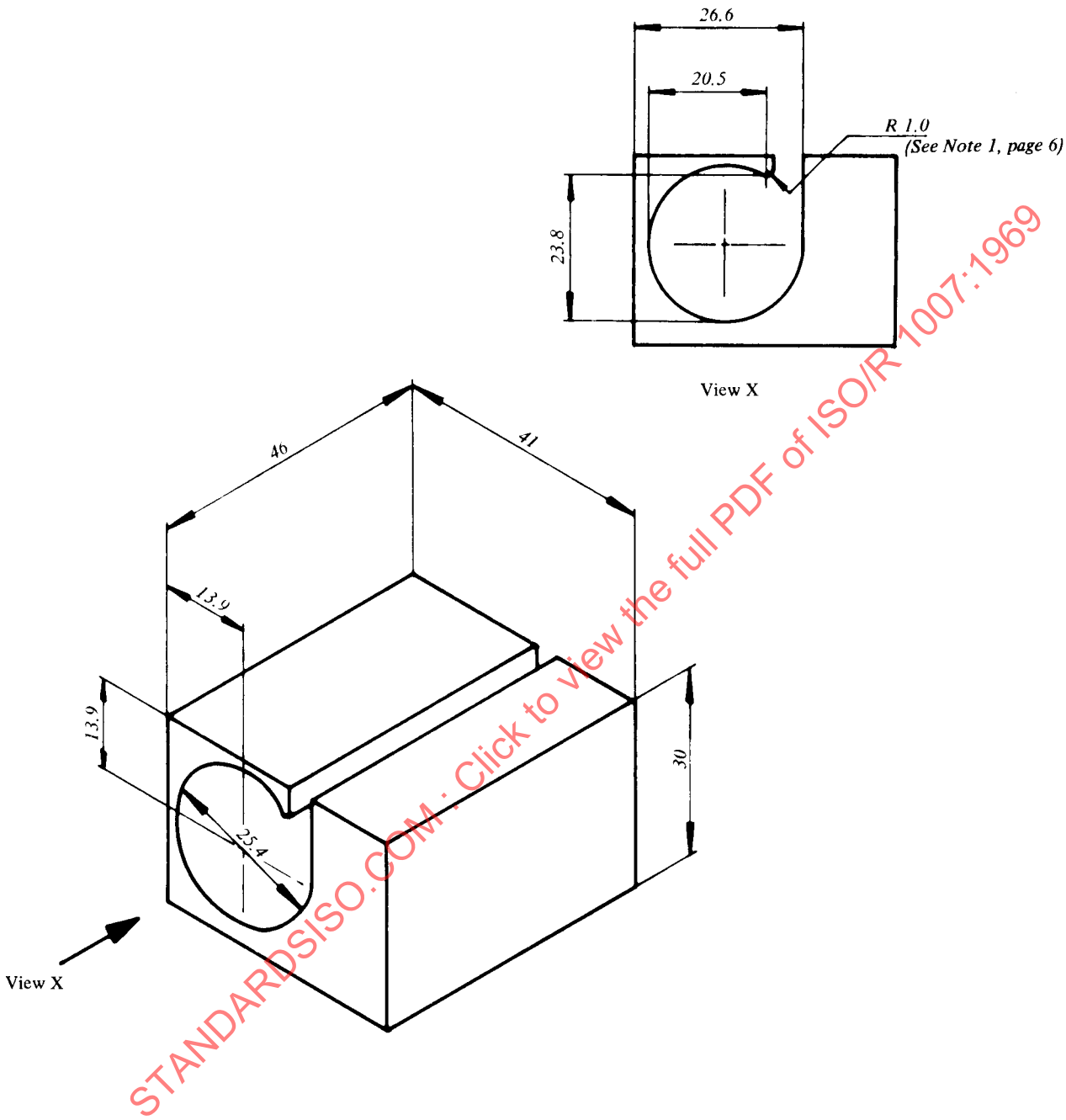

FIG. Z.1 – **Gauge block for film pullout force – 35 mm magazines**

NOTES

1. The 1.0 mm radius is not essential. It may be machined flat to 23.8 mm if it is not to also serve as a profile gauge.
2. The mass of the block is 250 g.