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INTERNATIONAL STANDARD 5235

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Textile machinery and accessories — Ring-spinning frames and speedframes — Top and bottom aprons

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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 5235 was developed by Technical Committee ISO/TC 72, *Textile machinery and accessories*, and was circulated to the member bodies in July 1976.

It has been approved by the member bodies of the following countries :

Belgium	Korea, Rep. of	Spain
Brazil	Mexico	Switzerland
Czechoslovakia	Netherlands	Turkey
France	Philippines	United Kingdom
Germany	Poland	U.S.S.R.
India	Romania	Yugoslavia
Italy	South Africa, Rep. of	

No member body expressed disapproval of the document.

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Textile machinery and accessories — Ring-spinning frames and speedframes — Top and bottom aprons

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the dimensions of top and bottom aprons for ring-spinning frames and speedframes made of elastomeric material with virtually inextensible textile interior reinforcement, as well as the types of gauge to be used for controlling these dimensions.

2 SYMBOLS AND ORDER SPECIFICATION

2.1 Symbols (see figure 1)

d = inside diameter
W = width
s = thickness

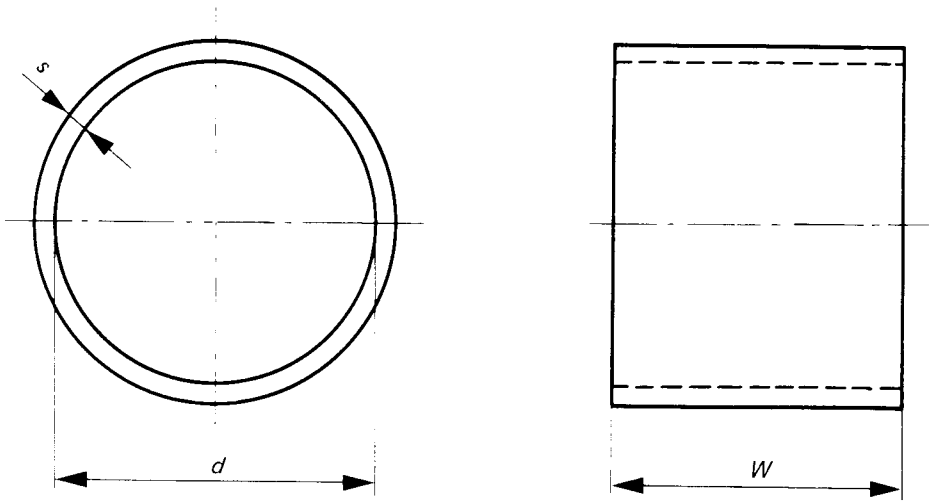

FIGURE 1 — Apron

2.2 Order specification

The designation to be used when ordering an apron shall include the following dimensions : inside diameter, width and thickness.

Example : Apron with $d = 37$ mm, $W = 30$ mm, $s = 1$ mm :

Apron 37 × 30 × 1, ISO 5235

3 DIMENSIONS

3.1 Top aprons

TABLE 1 — **Inside diameters**

Values in millimetres

d[1]	**Recommended values**[2]	**Tolerance**[3]
up to 48	30 32 34 36 37 38 39 40 42 44 46 48	0,3
over 48 to 65	50 52,5 55 57,5 60 62,5 65	0,4
over 65 to 90	70 75 80 85 90	0,5
over 90 to 110	95 100 110	0,8
over 110	$d > 110$ in 10 mm increments	1,0

TABLE 2 — **Widths**

Values in millimetres

W	**Deviations**[3]
26 28 30 32 34 36 38 40 45 50 55 60	0 − 0,5
65 70 80 90 100	0 − 1,0
$W > 100$ in 10 mm increments	0 − 1 %

TABLE 3 — **Thicknesses**

Values in millimetres

s	**Tolerance**
0,8 0,9 1,0 1,1 1,2 1,5	0,1

NOTE — Each of the above tables is to be used independently.

1) The dimensions of diameter d are to be considered as nominal, since diameters of aprons supplied by different apron manufacturers may differ slightly according to the recommendations of the apron supplier. However, each apron supplier should manufacture his recommended size of apron within the tolerances given in the table.

2) Values to be considered for future drafting systems.

3) When aprons are for bottom position operating on fixed centres without self-adjusting tension arrangement (for example cradle), the tolerances and deviations given in the tables shall be utilized.

3.2 Bottom aprons

TABLE 4 – **Inside diameters**

Values in millimetres

d[1]	Recommended values[2]	Tolerance[3]
up to 90	65 70 75 80 85 90	2,0
over 90 to 140	95 100 110 120 130 140	3,0
over 140	150 160 $d > 160$ in 20 mm increments	4,0

TABLE 5 – **Widths**

Values in millimetres

W	Deviations[3]
28 30 32 34 36 38 40 42 45 48 50 55 60 65 70 80 90 100	0 – 1,0
$W > 100$ in 10 mm increments	0 – 1 %

TABLE 6 – **Thicknesses**

Values in millimetres

s	Tolerance
0,8 0,9 1,0 1,1 1,2 1,5 2,0	0,1

NOTE – Each of the above tables is to be used independently.

1) The dimensions of diameter d are to be considered as nominal, since diameters of aprons supplied by different apron manufacturers may differ slightly according to the recommendations of the apron supplier. However, each apron supplier should manufacture his recommended size of apron within the tolerances given in the table.

2) Values to be considered for future drafting systems.

3) When aprons are for bottom position operating on fixed centres without self-adjusting tension arrangement (for example cradle), tolerances and deviations shall be as for top aprons. If no position is indicated, it should be presumed to be made as a top apron.

4 METHODS FOR CONTROL OF APRON DIMENSIONS

4.1 Measuring instruments

Apron dimensions shall be controlled by the following types of gauge :

a) Inside diameter d : with a 1 % tapered gauge or extending slide gauge.

b) Width W : with a normal slide gauge.

c) Thickness s : with a normal dial-type gauge.

NOTE – Two basic methods of measuring inside diameters of aprons are accepted as standard, the 1 % tapered plug gauge method (see 4.2.1) and an extending slide gauge method (see 4.2.2). Both systems are described, as each system has its own advantages and either method may be preferred according to the situation of the test, providing that the type of test normally utilized is made known by the apron manufacturer.

4.2 Control of inside diameter

4.2.1 *Tapered plug gauge*

4.2.1.1 MATERIAL AND DIMENSIONS (see figure 2)

Tapered plug gauges shall be manufactured from tubular aluminium alloy (for example Al-Mg-Si compound) having a highly polished-ground outer surface quality of N 5, equivalent to R_a 0,4 (see ISO 1302), which should be hardened by surface treatment (for example electrolytic oxidation).

The outer dimensions of the gauge shall be such that it has a straight taper of 1 % on diameter. Although any length of gauge may be used, a convenient length is 300 mm which would give a diameter difference at the ends of 3 mm. The surface shall be marked circumferentially at intervals of 10 mm on length thereby indicating diameters in increments of 0,1 mm.

4.2.1.2 PROCEDURE

The gauge shall be used vertically so that the apron may be passed over the small diameter end from above. The apron shall be guided with gentle two-fingered control until it is stopped on reaching the point at which its diameter is equal to the internal diameter of the apron. The apron diameter may then be easily read on the gauge, in line with the lower edge of the apron.

4.2.2 *Extending slide gauge*

4.2.2.1 PRINCIPLE

This instrument comprises essentially two parallel fixed and movable lugs (or fingers) round which the apron passes. The movable lug is moved by a measurable amount away from the fixed lug thereby enabling the inside circumference of the apron to be measured when brought to the correct tension, indicated in table 7. By means of a set of conversion figures, these values can be converted into diameter measurements.

4.2.2.2 RECOMMENDED TECHNICAL DETAILS

a) Length of lugs : 70 mm

b) Diameter of lugs : 12,5 mm

Dimensions in millimetres

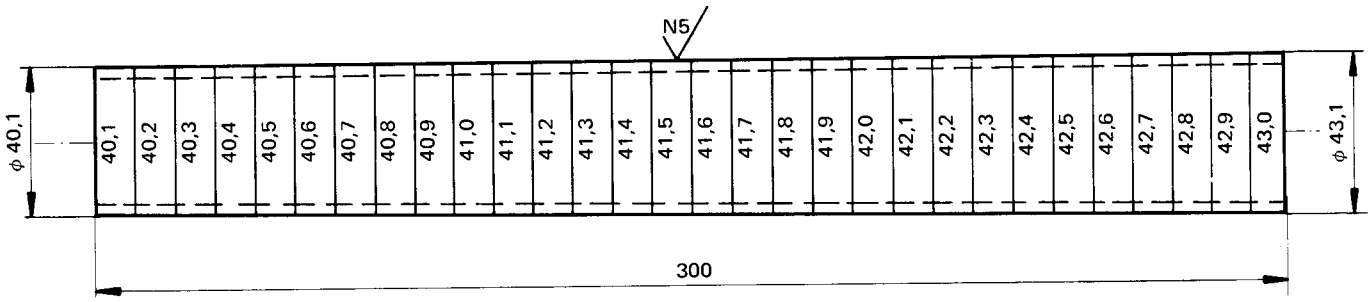

FIGURE 2 – **Example of tapered plug gauge**

4.2.2.3 TENSION APPLIED TO APRONS DURING MEASUREMENT

The tension applied to the apron during measurement of its inside diameter is dependent upon its width and thickness. Table 7 may be used as a guide to determine the standard tension applied according to the variables.

TABLE 7 – **Tensions to apply**

Width *W*	**Tension for thickness** *s*, N*				
mm	0,7 to 1,1	1,2	1,3	1,4	1,5
27 to 35	13	14	15	16	17
over 35 to 45	16	17	18	19	20
over 45 to 55	19	20	21	22	23
over 55 to 65	22	23	24	25	26

* 1 N (newton) = 0,102 kgf

4.3 Width control

The apron width shall be measured by means of a sliding gauge across the surface of the apron. Care shall be taken to ensure that there is no surface distortion during the measuring operation.

4.4 Thickness control

The apron thickness shall be measured by means of a normal dial-type thickness gauge having a flat plunger surface with a minimum area of plunger-foot contact of 30 mm^2 and exerting an approximate pressure of 50 kPa (5 N/cm^2). The reach of the gauge shall be of sufficient size to measure all parts of the apron in the flat condition without causing distortion of the material.