International Standard 4815

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Household sewing machines — Determination of sewing capacity

Machines à coudre domestiques (ou de ménage) — Détermination de la capacité d'assemblage

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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 4815 was developed by Technical Committee ISO/TC 148, *Sewing machines*, and was circulated to the member bodies in November 1978.

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

Chile	Poland	Turkey
Czechoslovakia	Romania	United Kingdom
France	South Africa, Rep. of	USA
Germany, F. R.	Spain	USSR
India	Sweden	
Italy	Switzerland	

No member body expressed disapproval of the document.

Household sewing machines — Determination of sewing capacity

1 Scope and field application

This International Standard specifies a method for the determination of the sewing capacity of household sewing machines.

The method is applicable to motor-operated household sewing machines, but it may also be possible to apply it to hand or treadle operated machines.

2 References

ISO 2, *Textiles — Designation of the direction of twist in yarns and related products.*

ISO 139, *Textiles — Standard atmospheres for conditioning and testing.*

3 Definition

For the purpose of this International Standard, the following definition applies.

sewing capacity : The maximum thickness of material that can be sewn without interfering with the sewing operation using the motor supplied with the machine and with the stitch type regulator set for straight stitches.

4 Principle

Sewing together, at a given speed, increasing numbers of fabric layers until the sewing operation of the machine is hindered. The number of layers that can be sewn together without hindering the sewing operation corresponds to the sewing capacity of the machine.

5 Material and apparatus[1)]

5.1 Samples of the cotton fabric specified in the annex, of width 90 mm and length 200 mm.

5.2 Threefold cotton thread, as specified in the annex.

5.3 Sewing machine needle Nm 80, as specified in the annex.

The needle system shall be in accordance with the specifications of the sewing machine manufacturer.

6 Preparation of the sewing machine

6.1 Fit the machine with the needle plate and presser foot supplied with the machine, as specified in the manufacturer's instruction manual.

6.2 Adjust the force of the presser foot as specified in the manufacturer's instruction manual.

If no instructions are specified in the manual, and if the force is adjustable by means of a setting device accessible to the user, the force shall be adjusted to 18 ± 1 N, measured with the presser foot in the down position.

If no force regulating device is provided for the presser foot, or if it is not accessible to the user, the test shall be carried out with the force as set by the manufacturer.

6.3 Set the stitch length regulator to a position corresponding to a stitch length of 3 mm ± 5 %. Determine the stitch length.

NOTE — This adjustment shall not be misconstrued as a stitch length test.

6.4 Set the tension of the lower thread as specified in the manufacturer's instruction manual.

6.5 Set the needle thread tension, when sewing together two samples, so that the interlocking of the threads takes place in between the two samples.

7 Procedure

7.1 Place two samples exactly on each other and then place them between the presser foot and the needle plate (see figure 1).

1) Materials other than those specified in the annex may be used, but, if so, this shall be stated in the test report.

7.2 Turn the hand-wheel until the needle pierces the samples and sew parallel to their long sides, 10 mm from the edge.

7.3 Sew 150 mm at a speed in the range 200 to 500 stitches per minute.

7.4 Determine the actual stitch length.

7.5 Add the next sample exactly under the previous samples and sew them all together approximately 5 mm beside the last seam (see figure 2) without changing the conditions specified in clause 6, 7.2 and 7.3.

7.6 Again determine the actual stitch length.

7.7 Continue as described in 7.5 and 7.6.

7.8 During the sewing operation no manual assistance shall be given to the needle when penetrating the fabric.

7.9 If the sewing operations result in failure to comply with the requirements of clause 8, c), d) or e), the preceding seam shall be repeated once, after having changed the needle.

7.10 The test shall be considered completed when

a) the needle does not pierce all the samples;

b) one of the requirements described in clause 8, a) or b) is not met;

c) one of the requirements described in clause 8, c), d) or e) is not met while repeating the seam as described in 7.9;

d) two or more of the requirements described in clause 8, c), d) or e) are not met.

8 Expression of results

Count the samples which have been sewn together without interfering with the sewing operation, i.e.

a) without the needle clamp touching the presser foot;

b) without there being a decrease in stitch length of more than 20 %;

c) without skip-stitches;

d) without breakage of the thread;

e) without breakage of the needle.

The number of samples sewn together is the criterion for the sewing capacity of the machine.

9 Test report

The test report shall include a reference to this International Standard together with the number of samples sewn together and, if necessary, the mode of failure that terminated the test.

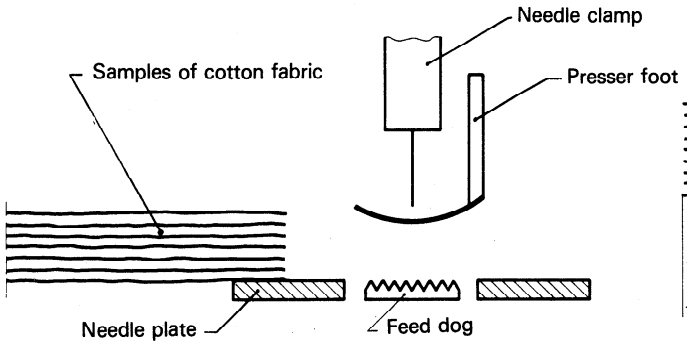

Figure 1 — General test arrangement

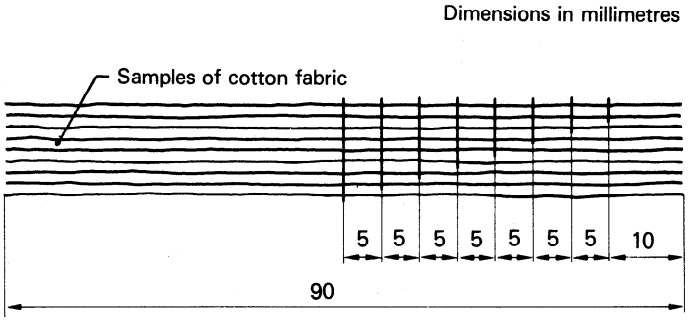

Figure 2 — Samples sewn together

Annex

Specification of material and apparatus

A.1 Cotton fabric[1)]

The cotton fabric shall have the following characteristics :

a) state of fabric : bleached and shrunk (maximum residual shrinkage 3 % when tumbler-washed);

b) composition : cotton;

c) yarn designation : warp — 300 dtex
weft — 360 dtex

d) counting threads per unit length (loomstate) : warp — 37 per cm
weft — 22 per cm

e) weave : twill 3/1

f) mass per unit area (loomstate) : at least 204 g/m²

NOTE — For the description of woven fabric, see ISO 2959, *Textiles — Woven fabric descriptions.*

A.2 Cotton thread

The threefold cotton thread shall be :

a) white;

b) mercerized;

c) Z twisted (left), as specified in ISO 2;

d) ticket No. 50/3 (i.e. 125 dtex × 3) (see note 2);

e) conditioned for 24 h in the standard atmosphere for testing textiles, i.e. at a temperature of 20 ± 2 °C and a relative humidity of 65 ± 2 %, as specified in ISO 139.

NOTES

1 For the designation of yarns, see ISO 1139, *Textiles — Designation of yarns.*

2 The yarn numbering system, Tex System, is not intended to apply to the product designation of sewing threads, for which special systems are recognized by producers and customers (see ISO 2947, *Textiles — Integrated conversion table for replacing traditional yarn numbers by rounded values in the Tex System*).

A.3 Sewing machine needle Nm 80

A.3.1 A sewing machine needle designated Nm 80 is a needle of 0,8 mm diameter at the cylindrical part of the needle blade above the short groove, but below any reinforcement of the blade.

1) A cotton fabric complying with these requirements is available commercially. Details may be obtained from the Secretariat of ISO/TC 148 (DIN, Federal Republic of Germany) or from the ISO Central Secretariat.

A.3.2 Comparison chart of needle sizes

Metric designation Nm[1]	Other types of designation													
	Columbia		Lewis		Merrow	Singer	Union Special	Willcox and Gibbs	Schiffli	System				
										81,88	292	332	339	459 R	731
40						3					22			21	
45						4					21			20	
50						5					20			19	
55					3/0	6	022				18			18	
60					2/0	8		2/0		3/0	16		8	17	
65			2 1/2		0	9	025	0			14			16	
70				10	1	10	027	1	2/0	2/0	13	2/0	10	15	
75	1	10	3			11	029				12			14	
80	1 1/2	15		12	2	12	032	2	0	0	11	0	12	13	
85	2	20				13				1/2	10				
90	2 1/2	25	3 1/2	14	3	14	036	3	1	1	9	1/2	13	12	
95	3	30				15					8				
100	3 1/2	35	4	16	4	16	040	4	2	2	7	1	14	11	0

1) Nm = Numbering metric; corresponding to 100 × the diameter, *d*, of the needle shaft within its cylindrical part above of the clearance above eye or the short groove — but not within the conic part where the shaft diameter increases to the shank diameter.

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