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## **Textile machinery — Noise test code —** **Part 7:** **Dyeing and finishing machinery**

*Matériel pour l'industrie textile — Code d'essai acoustique —*  
*Partie 7: Machines de teinture et de finissage*



Reference number  
ISO 9902-7:2001(E)

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 9902 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 9902-7 was prepared by Technical Committee ISO/TC 72, *Textile machinery and machinery for dry-cleaning and industrial laundering*, Subcommittee SC 8, *Safety requirements for textile machinery*.

This first edition of ISO 9902-7, together with ISO 9902-1, ISO 9902-2, ISO 9902-3, ISO 9902-4, ISO 9902-5 and ISO 9902-6, cancels and replaces ISO 9902:1993, which has been technically revised.

ISO 9902 consists of the following parts, under the general title *Textile machinery — Noise test code*:

- *Part 1: Common requirements*
- *Part 2: Spinning preparatory and spinning machinery*
- *Part 3: Nonwoven machinery*
- *Part 4: Yarn processing, cordage and rope manufacturing machinery*
- *Part 5: Weaving and knitting preparatory machinery*
- *Part 6: Fabric manufacturing machinery*
- *Part 7: Dyeing and finishing machinery*

# Textile machinery — Noise test code —

## Part 7: Dyeing and finishing machinery

### 1 Scope

This part of ISO 9902, taken together with ISO 9902-1, specifies the mounting, operating and measuring conditions required for the measurement, declaration and verification of noise emitted by dyeing and finishing machines.

It is applicable to engineering (grade 2) and survey (grade 3) methods, in accordance with the International Standards to which it makes normative reference, and to machines of different types used as defined in ISO 1506 for

- preparation,
- dyeing,
- printing,
- fixing, wetting and drying,
- finishing, and
- making-up or presentation.

It is not applicable to machines for hydro (centrifugal) extraction.

### 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 9902. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 9902 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 1506:1982, *Textile machinery — Dyeing, finishing and allied machinery — Classification and nomenclature.*

ISO 3744:1994, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering method in an essentially free field over a reflecting plane.*

ISO 3746:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane.*

ISO 3747:2000, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Comparison method in situ.*

## ISO 9902-7:2001(E)

ISO 9614-1:1993, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 1: Measurement at discrete points.*

ISO 9614-2:1996, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 2: Measurement by scanning.*

ISO 9902-1:2000, *Textile machinery — Noise test code — Part 1: Common requirements.*

ISO 11201:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Engineering method in an essentially free field over a reflecting plane.*

ISO 11202:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Survey method in situ.*

ISO 11204:1995, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Method requiring environmental corrections.*

### 3 Terms and definitions

For the purposes of this part of ISO 9902, the terms and definitions given in ISO 9902-1 apply.

### 4 Defining the test object

See Tables 1 to 6 of this part of ISO 9902 and clause 4 of ISO 9902-1:2001.

### 5 Sound power level determination

#### 5.1 International Standards required for basic measurements

##### 5.1.1 General

See 5.1 of ISO 9902-1:2001.

##### 5.1.2 Determination by measuring sound intensity

Determination of the A-weighted sound power level,  $L_{WA}$ , using sound intensity measurements shall be in accordance with ISO 9614-1 (discrete points) or ISO 9614-2 (scanning).

##### 5.1.3 Determination using emission sound pressure levels on a measurement surface

Determination of the A-weighted sound power level,  $L_{WA}$ , by measurement of A-weighted emission sound pressure levels on a prescribed measurement surface shall be in accordance with one of the following:

- ISO 3744,
- ISO 3747, or
- ISO 3746, but only where use of ISO 3744 or ISO 3747 is not practicable.

## 5.2 Very large machines

See 5.2 of ISO 9902-1:2001. Very large machines are designated by the letter “L” in Tables 1 to 6 of this part of ISO 9902.

## 6 Emission sound pressure level determination

### 6.1 International Standards required for basic measurements

See 6.1 of ISO 9902-1:2001.

The A-weighted emission sound pressure level,  $L_{pA}$ , shall be determined in accordance with one of the following:

- ISO 11201,
- ISO 11204, or
- ISO 11202, but only where use of ISO 11201 or 11204 is not practicable.

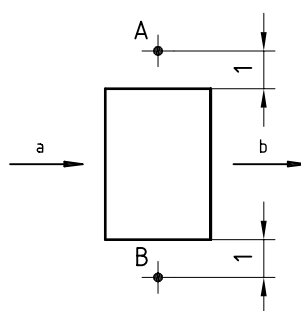
### 6.2 Selection of work station and other specified positions

See 6.2 of ISO 9902-1:2001.

There are 11 options, designated d) to n)<sup>1)</sup>, for defining a work station for dyeing and finishing machinery. For multi-tier machines it is sufficient to make the measurement at ground level, unless the machine is operated mainly from the upper tier. The options for particular machines are specified in Tables 1 to 6. All measurements shall be made at a height of 1,60 m above the floor or working platform (see 6.1 of ISO 9902-1:2001).

- d) Two measurement positions, one on each side of the machine, in mid-position, as shown in Figure 1.

Dimensions in metres



A and B are the measurement positions.

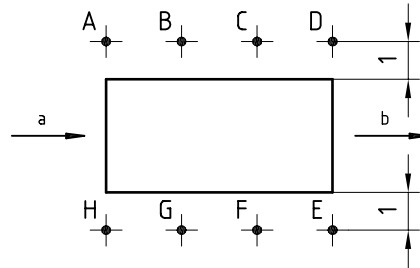
- a Cloth entry  
b Cloth exit

Figure 1 — Option d)

1) Continues the numeration begun in clause 4 of ISO 9902-1:2001.

- e) Four measurement positions, each on a side of the machine and parallel to the cloth passage direction; the positions shall be equally spaced, as shown in Figure 2.

Dimensions in metres



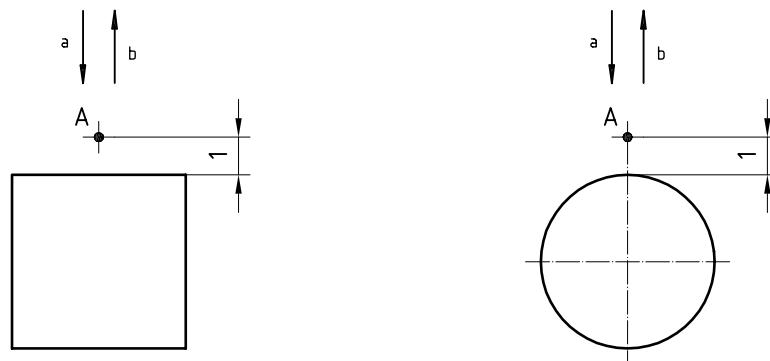
A to E are the measurement positions.

- a Cloth entry
- b Cloth exit

Figure 2 — Option e)

- f) A single measurement position in the middle of the loading side, as shown in Figure 3.

Dimensions in metres



A is the measurement position.

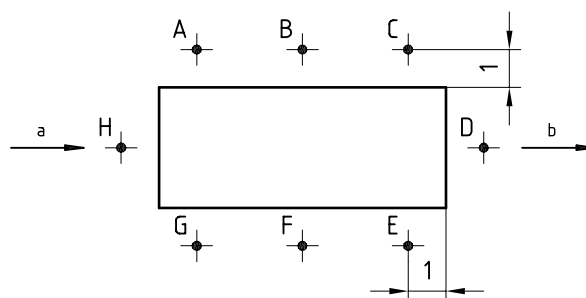
- a Cloth entry
- b Cloth exit

Figure 3 — Option f)



g) Eight measurement positions, in a line around the machine or plant, as shown in Figure 4.

Dimensions in metres



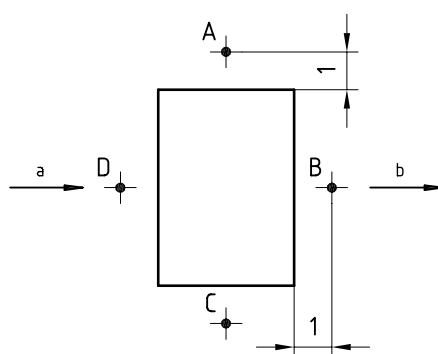
A to H are the measurement positions.

- a Cloth entry
- b Cloth exit

Figure 4 — Option g)

h) Four measurement positions, each in the middle of a side of the machine, as shown in Figure 5.

Dimensions in metres



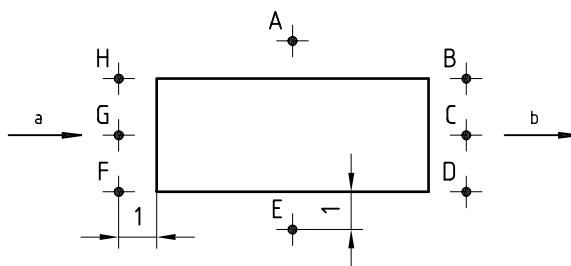
A to D are the measurement positions.

- a Cloth entry
- b Cloth exit

Figure 5 — Option h)

- i) Eight measurement positions in a line around the machine, as shown in Figure 6.

Dimensions in metres



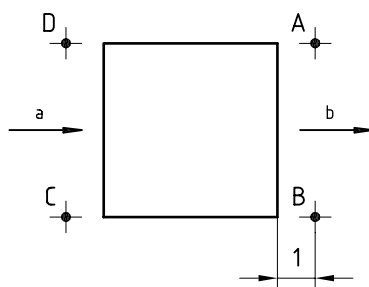
A to H are the measurement positions.

- a Cloth entry
- b Cloth exit

Figure 6 — Option i)

- j) Four measurement positions, adjacent to the corner points of the machine, as shown in Figure 7.

Dimensions in metres



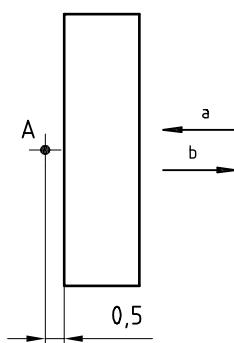
A to D are the measurement positions.

- a Cloth entry
- b Cloth exit

Figure 7 — Option j)

- k) A single measurement position in the middle of the operating side and at a distance of 0,5 m, as shown in Figure 8.

Dimensions in metres



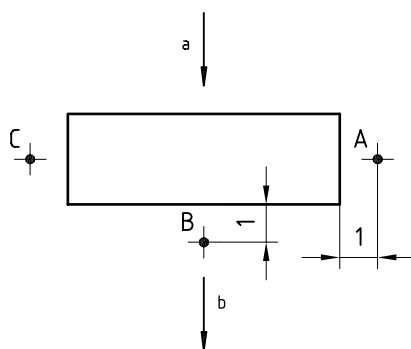
A is the measuring position.

- a Cloth entry
- b Cloth exit

Figure 8 — Option k)

- l) Three measurement positions, one in the middle of each side of the machine, parallel to the cloth passage direction, and the other in the middle of the doffing side, as shown in Figure 9.

Dimensions in metres



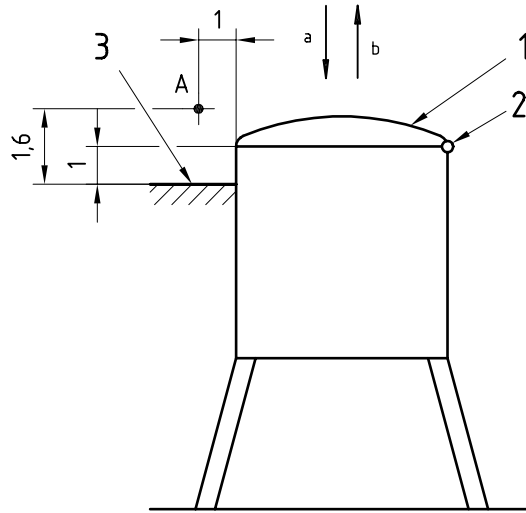
A, B and C are the measuring positions.

- a Cloth entry
- b Cloth exit

Figure 9 — Option l)

m) A single measurement position opposed to the hinge location, as shown in Figure 10.

Dimensions in metres



**Key**

- 1 Lid
- 2 Hinge
- 3 Platform

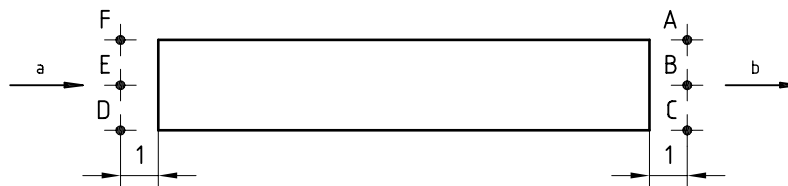
A is the measuring position.

- a Cloth entry
- b Cloth exit

**Figure 10 — Option m)**

n) Six measurement positions at the ends of the machine, as shown in Figure 11.

Dimensions in metres



A to F are the measuring positions.

- a Cloth entry
- b Cloth exit

**Figure 11 — Option n)**

For each of the options,  $L_{pA}$  shall be calculated from the values measured at the defined positions (see 6.1 of ISO 9902-1:2001). In areas where space is restricted, the measurement distance may be reduced to 0,50 m. In such cases, the distance shall be reported.

## **7 Installation and mounting conditions**

See clause 7 of ISO 9902-1:2001.

## **8 Operating conditions**

See clause 8 of ISO 9902-1:2001 and Tables 1 to 6 of this part of ISO 9902.

## **9 Measurement uncertainties**

See clause 9 of ISO 9902-1: 2001.

## **10 Information to be recorded**

See clause 10 of ISO 9902-1:2001.

## **11 Information to be reported**

See clause 11 of ISO 9902-1:2001: the information required to be reported includes that contained in Tables 1 to 6 of this part of ISO 9902.

## **12 Declaration and verification of noise emission values**

See clause 12 of ISO 9902-1:2001.

Table 1 — Measurement conditions for preparation machinery

Machine family	Test object definition (clause 4)			Very large machinery L (5.2)	Work station (see 6.2)	Operating conditions (see ISO 9902-1:2001, clause 8)		
	Equipment included for the test if applicable	Equipment excluded from the test <sup>a</sup>	Machine configuration (see ISO 9902-1:2001, clause 4)			Design features to be reported	Prescribed parameters	Variable parameters
Brushing machine	—	separate feed and take-off devices	a), b)	—	d)	without material central adjustment of brushing unit	operating speed in metres per minute	—
Cropping machine and shearing machine	fabric feed and take-off devices	—	a)	—	h)	with material maximum roller speed in revolutions per minute beating roller working	operating speed in metres per minute	fabric data height adjustment of beating roller
Singeing machine	—	exhaust air channel remote fans separate feed and take-off devices	a), b)	—	e)	maximum gas pressure in pascals	operating speed in metres per minute	with or without material material data if appropriate
Discontinuous washer	pump for horizontal apparatus pump for vertical apparatus, where the pump is above the operating plane	liquor preparation plant pump for vertical apparatus, where the pump is below the operating plane	a)	—	f)	with material	pressure difference in pascals	material data cycle used
Continuous washer/desizing (scouring) machine for material in hank and broad make-up	—	separate feed and take-off devices	b)	L	e)	—	operating speed in metres per minute	with or without material material data if appropriate
			c) (total plant)	L	g)			
Discontinuous bleaching plant and machine (open kler, bleaching pit, non-pressure and HT apparatus)	pump for horizontal apparatus pump for vertical apparatus, where the pump is above the operating plane	liquor preparation plant pump for vertical apparatus, where the pump is below the operating plane	a)	—	f)	with material	pressure difference in pascals	material data cycle used

Table 1 (continued)

Machine family	Test object definition (clause 4)			Design features to be reported	Very large machinery (5.2)	Work station (see 6.2)	Operating conditions (see ISO 9902-1:2001, clause 8)		
	Equipment included for the test if applicable	Equipment excluded from the test <sup>a</sup>	Machine configuration (see ISO 9902-1:2001, clause 4)				Prescribed parameters	Variable parameters	Parameters to be reported
Continuous bleaching plant (impregnating pad roll unit and washer plant) for material in hank and broad make-up	—	separate feed and take-off devices	b)	type of plant or machine	L	e)	—	operating speed in metres per minute	with or without material data if appropriate
			c) (total plant)		L	g)			
Autoclave-steamer	—	—	a)	volume of the autoclave steamer	—	f)	with material	—	material data
Continuous steamer	—	separate feed and take-off devices	a), b)	type of plant or machine	L	e)	with material	operating speed in metres per minute	steam pressure
Mercerizing machine (for hanks)	—	—	a)	—	—	f)	with material	hank speed in metres per minute	material data
Continuous mercerizing plant	—	separate feed and take-off devices	b)	—	L	e)	with material	operating speed in metres per minute	material data
Hammer milling machine	—	—	a)	—	—	f)	with material	—	material data
Rope milling machine	—	—	a)	—	—	f)	with material	—	material data
Roller milling machine	—	—	a)	maximum operation speed in metres per minute	—	g)	with material	operating speed in metres per minute	material data

<sup>a</sup> However, such equipment may be necessary for running the machine with material.

Table 2 — Measurement conditions for dyeing machinery

Machine family	Test object definition (clause 4)			Very large machinery (5.2)	Work station (see 6.2)	Operating conditions (see ISO 9902-1:2001, clause 8)		
	Equipment included for the test if applicable	Equipment excluded from the test <sup>a</sup>	Machine configuration (see ISO 9902-1:2001, clause 4)			Design features to be reported	Prescribed parameters	Variable parameters
Stock dyeing apparatus, yarn dyeing apparatus, beam dyeing machine	pump	liquor preparation plant	a)	—	horizontal: f) vertical: m)	with material dyeing phase	pressure difference in pascals	material data
Jet dyeing machine	pump blower	liquor preparation plant	a)	—	f)	with material maximum pump output in litres per minute dyeing phase maximum blower speed in revolutions per minute if applicable	—	material data
Winch dyeing machine	pump	—	a)	—	f)	with material dyeing phase maximum operation speed in metres per minute	—	material data
Jig	—	batcher liquor preparation plant	a)	—	f)	with material dyeing phase maximum pump output in litres per minute maximum operation speed in metres per minute	—	material data
Padding machine	—	liquor preparation plant	b)	—	h)	without material without contact pressure	operating speed in metres per minute	—
Continuous dyeing machine	—	liquor preparation plant separate feed and take-off devices	a)	L	n)	with material	operating speed in metres per minute	material data contact load in newtons
Liquor preparation plant	stirrer pump	—	a)	—	f) at any position	average of the whole heating phase	—	—

<sup>a</sup> However, such equipment may be necessary for running the machine with material.



Table 3 — Measurement conditions for printing machinery

Machine family	Test object definition (clause 4)			Very large machinery (5.2)	Work station (see 6.2)	Operating conditions (see ISO 9902-1:2001, clause 8)		
	Equipment included for the test if applicable	Equipment excluded from the test <sup>a</sup>	Machine configuration (see ISO 9902-1:2001, clause 4)			Design features to be reported	Prescribed parameters	Variable parameters
Flat screen printing machine	blanket washer	liquor preparation plant	b)	L	e)	without material maximum work advancing speed in cycles per minute	—	—
Rotary screen printing machine	blanket washer colour feeding device	liquor preparation plant separate feed and take-off devices	b)	L	e)	with or without cleaning belt	—	with or without material material data if appropriate
Transfer printing machine	—	separate feed and take-off devices	a)	—	e)	with material maximum operating speed in metres per minute	—	material data
Roller printing machine	—	separate feed and take-off devices liquor preparation plant	b)	L	e)	maximum operating speed in metres per minute	—	with or without material material data if appropriate
Liquor preparation plant	stirrer pump	—	a)	L	f) at any position	average of the whole heating phase	—	—

<sup>a</sup> However, such equipment may be necessary for running the machine with material.

Table 4 — Measurement conditions for fixation, wetting and drying machinery

Machine family	Test object definition (clause 4)			Very large machinery (5.2)	Work station (see 6.2)	Operating conditions (see ISO 9902-1:2001, clause 8)		
	Equipment included for the test if applicable	Equipment excluded from the test <sup>a</sup>	Machine configuration (see ISO 9902-1:2001, clause 4)			Design features to be reported	Prescribed parameters	Variable parameters
Steam chamber	—	—	a), b)	—	g)	with material	operating speed in metres per minute	steam pressure in pascals
Wringing machine	—	—	b)	—	h)	without material without contact pressure	operating speed in metres per minute	—
Stenter, tenter	—	separate feed and take-off devices external fans heat recovery device	a), b)	L	n)	with material	operating speed in metres per minute	fabric data
Cylinder dryer	heat recovery device	separate feed and take-off devices	a), b)	L	for a): n) for b): i)	—	operating speed in m/min or surface speed of cylinder in metres per minute	with or without fabric
High frequency dryer, infrared dryer	—	external fans	a), b)	—	for a): n) for b): i)	—	—	with or without fabric
Pressure dryer (stock, yarn and beam dryer)	pump	—	a)	—	horizontal f) vertical m)	with material drying phase	pressure difference in pascals	material data
Convection dryer	—	external fans heat recovery device separate feed and take-off devices	a), b)	L	i)	with material	operating speed in metres per minute	fabric data
Fan (B type standard to be considered)	drive	—	b)	—	i)	—	speed in revolutions per minute	—

<sup>a</sup> However, such equipment may be necessary for running the machine with material.

Table 5 — Measurement conditions for finishing machinery

Machine family	Test object definition (clause 4)			Very large machinery (5.2)	Work station (see 6.2)	Operating conditions (see ISO 9902-1:2001, clause 8)		
	Equipment included for the test if applicable	Equipment excluded from the test <sup>a</sup>	Machine configuration (see ISO 9902-1:2001, clause 4)			Design features to be reported	Prescribed parameters	Variable parameters
Padding machine	—	liquor preparation plant separate feed and take-off devices	b)	—	h)	without material without contact load	operating speed in metres per minute	working width in millimetres
Calender	fabric feed device fabric take-off device [only in case of single machine (a)]	separate feed and take-off devices	a), b)	—	i)	medium contact load in newtons for a): with material for b): without material	operating speed in metres per minute	for a) fabric data
Calender for knitted fabric	fabric feed and take-off devices	—	a)	—	calender for ready made cloth: f) calender for tubular knitted fabric: j)	with material maximum operation speed in metres per minute medium contact load in newtons	—	fabric data
Coating and lamination machine, flocking plant	—	separate feed and take-off devices dryer liquor preparation plant	b)	—	d)	—	operating speed in metres per minute	with or without fabric fabric data if appropriate flock type
Raising machine (raising plant)	fabric feed and take-off devices	external fan	c) (total plant) a), b)	L —	g) h)	with material medium blanket quality maximum operation speed in metres per minute	raising energy in kilowatt hours	fabric data

Table 5 (continued)

Machine family	Test object definition (clause 4)			Very large machinery L (5.2)	Work station (see 6.2)	Operating conditions (see ISO 9902-1:2001, clause 8)		
	Equipment included for the test if applicable	Equipment excluded from the test <sup>a</sup>	Machine configuration (see ISO 9902-1:2001, clause 4)			Design features to be reported	Prescribed parameters	Variable parameters
Shearing machine	fabric feed and take-off devices	—	a)	—	h)	with material maximum roller speed in revolutions per minute beating and polishing roller working central adjustment	operating speed in metres per minute	fabric data height adjustment of beating roller
Suede finishing machine	fabric feed and take-off devices	—	a)	—	h)	with material medium jeans quality maximum speed of emerizing roller in revolutions per minute	height of emerizing roller in millimetres	fabric data
Brushing machine	—	separate feed and take-off devices	a), b)	—	h)	with material maximum speed of brushing roller in revolutions per minute or tape in metres per minute	height of brushing roller or tape in millimetres	fabric data fabric speed in metres per minute
Cord fabric cutting machine	fabric feed and take-off devices	external fans	a)	—	h)	with material maximum speed of knife roller in revolutions per minute	operating speed in metres per minute	fabric data
Shrinking machine	—	separate feed and take-off devices	b)	—	e)	—	operating speed in metres per minute	with or without fabric
Decatizing machine	—	separate feed and take-off devices compensator	a)	—	f)	with material maximum winding speed in metres per minute whole winding phase	—	fabric data

<sup>a</sup> However, such equipment may be necessary for running the machine with material.

**Table 6 — Measurement condition for making-up and presentation machinery**

Machine family	Test object definition (clause 4)		Very large machinery L (5.2)	Work station (see 6.2)	Operating conditions (see ISO 9902-1:2001, clause 8)			
	Equipment included for the test if applicable	Equipment excluded from the test <sup>a</sup>			Machine configuration (see ISO 9902-1:2001, clause 4)	Design features to be reported	Prescribed parameters	Variable parameters
Inspection machine	fabric feed and take-off devices	—	a)	—	k)	with material	operating speed in metres per minute	type of feed and take-off devices
Folding machine	fabric feed and take-off devices	—	a)	—	i)	with material	operating speed in metres per minute	type of feed and take-off devices
Plaiting machine	fabric feed and take-off devices	—	a)	maximum plaiting width in millimetres	f)	with material medium plaiting width in millimetres	operating speed in metres per minute	type of feed and take-off devices

<sup>a</sup> However, such equipment may be necessary for running the machine with material.

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