INTERNATIONAL STANDARD

ISO 9902-4

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Textile machinery — Noise test code —

Part 4: Yarn processing, cordage and rope manufacturing machinery

Matériel pour l'industrie textile — Code d'essai acoustique —

Partie 4: Machines de transformation du fil et machines de production de cordages et articles de corderie

Reference number
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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 9902-4 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 9902-4, together with ISO 9902-1, ISO 9902-2, ISO 9902-3, ISO 9902-5, ISO 9902-6 and ISO 9902-7, 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 4:
Yarn processing, cordage and rope manufacturing 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 yarn processing, cordage and rope manufacturing machinery.

This part of ISO 9902 is applicable to engineering (grade 2) and survey (grade 3) test methods, in accordance with the International Standards to which it makes normative reference, and to machines of different types used for

— yarn processing (e.g. doubling, twisting and texturing machines, reeling and winding machines, ball winding machines),

— cordage and rope manufacturing (e.g. goods machines or spreaders, breakers, draw frames and finishers),

— combined stranding and closing, strand-plaited rope-making, and

— braiding.

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 3743-1:1994, *Acoustics — Determination of sound power levels of noise sources — Engineering methods for small, movable sources in reverberant fields — Part 1: Comparison method for hard-walled test rooms*.

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 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 9902-1:2001, *Textile machinery — Noise test code — Part 1: Common requirements.*

ISO 11111:1995, *Safety requirements for textile machinery.*

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 11203:1995, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions from the sound power level.*

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 and the following apply.

3.1
wind helix angle
helix angle of the yarn as it is wound on a package

NOTE It is equal to half the crossing angle of a layer of yarn on the previous layer and is determined as the ratio of traverse speed to yarn process (throughput) speed.

4 Defining the test object

See Table 1 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.

Where its conditions are met (e.g. in the case of small braiding machines), ISO 3743-1 provides an alternative method which may be used.

5.2 Very large machines

See 5.2 of ISO 9902-1:2001. Very large machines are designated by the letter “L” in Table 1 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.

Where its conditions are met (e.g. in the case of small braiding machines with principally omnidirectional sound radiation) and the sound power level has already been determined, ISO 11203:1995 (6.2.3) provides an alternative method which may be used, providing the distance from the machine surface is 1 m.

6.2 Selection of work station and other specified positions

See 6.2 of ISO 9902-1:2001.

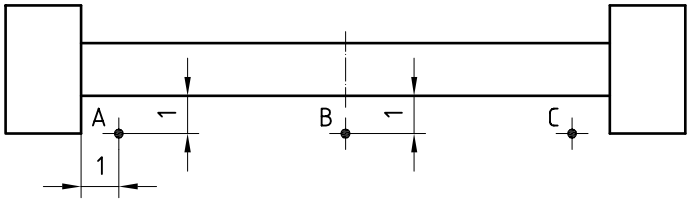
Two options, designated as d) and e)[1)], are used to define a work station for yarn processing, cordage and rope manufacturing machinery. For each machine family, select the option indicated in Table 1.

d) This option consists of several positions on a measurement line around the machine at a distance of 1 m from the surface of the machine and a height of 1,6 m above the floor or working platform. Where a centreline can be defined, both intersections between the centreline and the measurement line shall serve as measurement positions. In addition, sufficient further measurement positions equally spaced around the measurement line shall be used to ensure that the distance between any adjacent measurement positions does not exceed 2 m.

e) This option consists of three measurement positions at a height of 1,6 m, as shown in Figure 1.

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

Dimensions in metres



A, B and C are the measurement positions.

For single-sided machines the measurements shall be made on the operating side. For double-sided machines, if the operating conditions for both sides are identical, the measurements shall be made on one side only; otherwise, they shall be made on both sides.

Figure 1 — Option e)

For both 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 0,5 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 Table 1 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 Table 1 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 yarn processing, cordage and rope manufacturing machinery

Machine family	**Test object definition** (see clause 4)				**Very large machine** 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[a]	Machine configuration (see ISO 9902-1:2001, clause 4)	Design features to be reported			Prescribed parameters	Variable parameters	Parameters to be reported
Doubling and twisting machines	—	remote creel travelling cleaning device	a)	number of spindles spindle diameter in millimetres stroke in millimetres type of spindle drive (e.g. belt single motor drive) with or without balloon separator tube length in millimetres gauge in millimetres traveller type ring diameter in millimetres arrangement of spindles (horizontal, vertical) single or double deck machine particular noise control means	L	e)	yarn running	spindle speed in revolutions per minute	yarn data delivery speed in metres per minute take-up traverse speed in cycles per minute turns per metre traveller speed in metres per second bobbin weight in kilograms

Table 1 *(continued)*

Machine family	**Test object definition** (see clause 4)				**Very large machine** 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[a]	Machine configuration (see ISO 9902-1:2001, clause 4)	Design features to be reported			Prescribed parameters	Variable parameters	Parameters to be reported
Texturing machines	integrated fans	travelling service device remote creel	a)	type of texturing device (e.g. friction disc, crossing belts, spindle texturing unit, air texturing device) number of positions type of spindle drive (e.g. belt drive single motor drive) description of the drive belt (type, new belt) diameter of the friction discs with or without yarn suction with or without fume suction type of integrated fans (constant speed or speed controlled) particular noise control means	L	e) for single position machines: mid-position in front of the machine 1,60 m height 1 m distance	without yarn (except air texturing machines) waste suction closed sliding doors closed, if applicable fume suction on	surface speed of the delivery rollers after the texturing device in metres per minute	mingling air device on/off air pressure, if appropriate yarn data, if appropriate for friction texturing: rotational speed of the friction device in revolutions per minute or surface speed in metres per minute for belt type draw ratio contraction set traverse stroke in millimetres traverse speed in cycles per minute speed of fans during the test in revolutions per minute

Table 1 *(continued)*

Machine family	**Test object definition** (see clause 4)				**Very large machine** 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[a]	Machine configuration (see ISO 9902-1:2001, clause 4)	Design features to be reported			Prescribed parameters	Variable parameters	Parameters to be reported
Reeling and winding machines	device for cop preparation and cop feed integrated fan	external means of bobbin transportation in case of compound machines without the spinning machine travelling cleaning device	a)	traverse stroke in millimetres degree of automation number of winding heads gauge in millimetres kind of traverse type of knotter or splicer type of tube-sorting equipment type of package drive (centre or surface driven) type of integrated fan (constant speed or speed controlled)	L for machines with a length of more than 7 m	e) for single position machines: mid-position in front of the machine 1,60 m height 1 m distance	yarn running package half-full	yarn speed in metres per minute	yarn data traverse speed in cycles per minute for automatic machines: average switch frequency in switches per minute splicer pressure in pascals speed of fan during the test in revolutions per minute
Ball winding machines	creel	—	a)	number of working positions gauge in millimetres	—	e)	yarn running	flyer speed in revolutions per minute	yarn data
Goods machines or spreaders, breakers	—	—	b) or c)	—	—	—	—	—	—
Draw frames and finisher for bast fibres	—	—	a)	—	—	in front of the machine at control panel 1,60 m height 1 m distance	maximum no of deliveries doubling 8 fold	delivery speed in metres per minute	drafting ratio