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AMENDMENT 1
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Textile machinery — Safety requirements —

Part 6: Fabric manufacturing machinery

AMENDMENT 1

Matériel pour l'industrie textile — Exigences de sécurité —

Partie 6: Machines de production d'étoffes

AMENDEMENT 1

Reference number
ISO 11111-6:2005/Amd.1:2009(E)

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Foreword

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

Amendment 1 to ISO 11111-6:2005 was prepared by Technical Committee ISO/TC 72, *Textile machinery and accessories*, Subcommittee SC 8, *Safety requirements for textile machinery*.

Textile machinery — Safety requirements —

Part 6:
Fabric manufacturing machinery

AMENDMENT 1

Page v, Introduction

Replace “ISO 14121” in the fifth paragraph with “ISO 14121-1”.

Page 1, Normative references

Replace the references to ISO 11111-1:2005 and ISO 13849-1:1999 with the following:

ISO 11111-1:2009, *Textile machinery — Safety requirements — Part 1: Common requirements*

ISO 13849-1:2006, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

Replace the reference to ISO 13850:1996 with the following:

ISO 13850:2006, *Safety of machinery — Emergency stop — Principles for design*

Add the following reference:

ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs*

Delete the reference to ISO 14122-1.

Replace the reference to ISO 14122-2 with the following:

ISO 14122-2:2001, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways*

Delete the references to ISO 14122-3 and ISO 14122-4.

Replace the reference to IEC 61496-1:1997 with the following:

IEC 61496-1:2004, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests*

Add the following reference:

IEC 61496-1:2004/Amd.1:2007, *Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests*

Replace the reference to IEC 61496-2:1997 with the following:

IEC 61496-2:2006, *Safety of machinery — Electro-sensitive protective equipment — Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs)*

Add the following reference:

IEC 62061:2005*, Safety of machinery — Functional safety of safety-related electrical, electronic and programmable electronic control systems*, corrected by IEC 62061:2005 Corr.1:2005

Delete the reference to EN 1760-2

Clauses 1 to 7

Throughout the text, replace all the dated references to “ISO 11111-1:2005” with “ISO 11111-1:2009”.

Page 2, 5.2.1

Replace the second paragraph with the following:

Specific hazards

Mechanical, from the sley and associated moving parts including the reed, and from the gears of the let-off motion device, as well as from the Jacquard machine, shedding mechanism and heald frames, in particular, crushing and shearing.

Page 4, 5.2.1

Replace list item b), number 1), with the following:

1) sensitive protective equipment (SPE), e.g. active opto-electronic protective device(s) (AOPD), in accordance with ISO 11111-1:2009, Table 3. Reaching the hazard zone shall not be possible without activating the SPE (see Figure 1). The AOPD shall comply at least with type 2 as defined in IEC 61496-1 and IEC 61496-2. The SPE may be deactivated immediately after the machine has reached its normal production speed, unless it is used additionally to protect the danger zone between the moving sley and fixed machine parts (see 5.2.1 c);

In list item c), number 3), replace “trip devices” with “sensitive protective equipment”.

Page 6, 5.2.1

Replace list item d), number 2) with the following:

2) an optical signal is activated during the automatic sequence until the end of the starting process and the normal production speed is reached. The signal device shall be positioned so as to be visible and attract attention at the normal operating positions on the weaving machine and to provide an unmistakable warning for the imminent automatic restart of the machine.

Replace list item h) with the following:

h) For heavy-duty weaving machines of 8 m or more in width, the safety-related part of the control system shall comply with a performance level PL = d in accordance with ISO 13849-1:2006, or a safety integrity level SIL = 2 in accordance with IEC 62061:2005.

The adoption of a performance level lower than PL = d or a safety integrity level lower than SIL = 2 shall be based on a risk assessment in accordance with ISO 13849-1:2006, Annex A or IEC 62061:2005, Annex A.

Add new list item d) after item c) and renumber the items following:

d) The manual start of the machine by the operator is permitted only if

— all guards and safety devices provided for normal operation are in position and/or active, and

— an optical signal is activated from the operation of the start button until the end of the starting process and the normal production speed is reached. The signal device shall be positioned so as to be visible and attract attention at the normal operating positions on the weaving machine and to provide an unmistakable warning for the imminent startup of the machine.

Add new list item k):

k) Due to the low probability of minor to moderate injuries from crushing and shearing by the healdframes, safeguarding is not necessary. Information about the risk shall be given in the instruction handbook.

Page 8, 5.2.3

Replace item a), number 1), with the following:

1) sensitive protective equipment, e.g. active opto-electronic protective device(s) (AOPD), in accordance with ISO 11111-1:2009, Table 3, located such that the full width of the rapier path is covered;

Page 9, 5.2.5

Replace the fourth paragraph with the following:

Specific safety requirements

Sensitive protective equipment shall be fitted to protect the danger zones at the healds and at the bed of the carpet. The equipment may be muted as the grippers are moving away from the danger zone.

Page 13, Table 4

Delete the last row as follows:

"Automatic machines and equipment 6.21"

Page 14, 5.3.2

Replace list item b), number 2) with the following:

2) sensitive protective equipment, e.g. a pressure sensitive edge, in accordance with ISO 11111-1:2009, Table 3, or

Page 15, 5.3.4

Replace the second paragraph with the following:

Specific hazards

Mechanical, from the warp beam, in particular, falling of heavy loads and crushing by heavy loads during beam changing; from the traversing weft insertion device, in particular, crushing and impact; from the pattern drive mechanism, in particular, drawing-in and shearing; from the take-up device, in particular, intake; from the knitting elements, such as needles and sinkers, in particular, stitching, crushing and shearing; falling from a height while unclamping and lifting the beam and mending yarn breaks.

Replace the third paragraph with the following:

Specific risks

During normal and special operation, low probability of severe or fatal injury and moderate probability of minor to moderate injury and a moderate risk of falling.

Replace list item a) with the following:

a) Falling down of warp beams during operation shall be prevented, for example, by fall arrest devices to be positioned below the warp beam holdings.

Instructions about safe operation when changing the beams shall be given in the instruction handbook.

In list item b), number 1), replace “ISO 13852:1996” with “ISO 13857:2008”.

Replace list item b), number 2) with the following:

2) sensitive protective equipment, e.g. AOPD, in accordance ISO 11111-1:2009, Table 3, located so that the machine will stop before the danger zone is reached.

Replace list items c) and d) and add new list items e) and f) as follows:

c) The drawing-in points at the sprockets for the pattern chains shall be protected with fixed guards or movable interlocked enclosing guards.

d) The drawing-in points at the take-up device (e. g. between take-up rollers or between the warp knitted fabrics and the take-up devices) shall be safeguarded as follows:

— Guards in accordance with ISO 11111-1:2009, 6.5

— Alternatively, the take-up device can be safeguarded with sensitive protective equipment (SPE), provided the production speed does not exceed 8 m/min. The maximum stopping distance shall not be greater than 100 mm.

Deviating from EN 999, the SPE shall be attached at the machine frame in front of the front take-up roller at a minimum distance to the drawing-in point of 100 mm. The residual risk (low probability of minor to moderate injury) shall be given in the instruction handbook and indicated by warnings at the danger zone.

e) With regard to risks emanating from knitting elements such as needles or sinkers, instructions that allow a safe operation, in particular during adjusting and maintenance work shall be contained in the instruction handbook.

f) Permanent means of access shall be provided if, according to ISO 11111-1:2009, 5.6, access to an elevated position is required more than once per week and both operability and function of the warp knitting machine are not affected by the stationary access.

Permanent means of access shall be provided according to ISO 11111-1:2009, 6.13 a). The width of walkways between two warper beams may be reduced to the minimum value of 500 mm as defined in ISO 14122-2:2001, 4.2.2.

If, in a given knitting or warp knitting room, the available place for the installation of permanent work platforms and walkways is not allowed on individual new machines, information shall be given in the instruction handbook concerning the need for movable platforms. This exception shall be justified by the manufacturer in the instruction handbook.

Page 19, Bibliography

Replace the reference to ISO 14121 with the following:

[1] ISO 14121-1, *Safety of machinery — Risk assessment — Part 1: Principles*

ICS 59.120.30; 59.120.40; 59.120.99

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