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International Standard 7211/1

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Textiles — Woven fabrics — Construction — Methods of analysis — Part 1: Methods for the presentation of a weave diagram and plans for drafting, denting and lifting

Textiles — Tissus — Construction — Méthodes d'analyse — Partie 1: Représentation du dessin d'armure, du rentrage, du piquage au peigne et du levage

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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.

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

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INTERNATIONAL STANDARD ISO 7211/1-1984 (E)

Textiles — Woven fabrics — Construction — Methods of analysis — Part 1: Methods for the presentation of a weave diagram and plans for drafting, denting and lifting

0 Introduction

Although drafting, denting and lifting plans are not strictly within the province of fabric analysis, it has been thought convenient to include methods for their presentation in this part of this International Standard. Nothing within this document precludes the use of shortened methods of designing used extensively on Jacquard structures where the design is coloured in solid shades and supplied with a written series of card-cutting instructions to apply throughout with only bare details of weave starting points.

The attention of users of this part of ISO 7211 is drawn to ISO 2959 and ISO 3572. The terms used in this document are defined in ISO 3572.

1 Scope and field of application

This part of ISO 7211 deals with recording of fabric weaves and makes provision for showing in relation to the weave repeat the sequence in which yarns of different character are used. A method is also provided for the presentation of the warp and weft yarn arrangement.

This part of ISO 7211 applies to all woven fabrics, including compound fabrics in which interlacing of the warp and weft threads is accompanied by crossing of warp threads.

NOTE — If only a small sample, e.g. 4 cm × 4 cm, is available and it is desired to carry out further tests as described in other parts of this International Standard, the following order should be observed:

a) Measure the area of the sample and determine the mass per unit area.

b) Analyse for weave, keeping the removed threads.

c) Use the removed threads to determine the masses of warp and weft per unit area and/or linear density.

2 References

ISO 2959, *Textiles — Woven fabric descriptions.*

ISO 3572, *Textiles — Weaves — Definitions of general terms and basic weaves.*

3 Principle

The weave repeat shown on design paper is adopted as the means for showing the weave of the fabric, and provision is made in the repeat for showing the disposition of different yarns in relation to the weave when there is more than one yarn in the warp or weft. A tabular method is used for indicating the sequence of colours in a colour pattern. The drafting, denting and lifting plans are shown on the same design paper as the weave repeat and are related to it by conventional methods.

4 Apparatus

4.1 Design paper (see ISO 3572).

4.2 Low-power magnifier, such as a counting glass.

4.3 Forceps.

4.4 Scissors.

4.5 Dissecting needle.

5 Test specimen

Select a specimen from the fabric containing several complete repeats of the weave.

6 Procedure

6.1 Analysis

Identify the face, warp and weft. Decide whether to remove the weft from the warp or vice versa.

Form a fringe of threads on two perpendicular sides of the specimen by fraying threads until a fringe of about 1 cm length is obtained. With the aid of the dissecting needle (4.5), slide threads parallel to one fringed side in order to facilitate recording of interlacing as in 6.2. Continue removing threads progressively from the fabric, examining and recording the inter-

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lacing of each thread until, from a repeat of the interlacing of both warp and weft, it can be stated that a complete weave repeat has been obtained.

If necessary, superficially singe and lightly shave one of the faces of the fabric to improve the clarity of the interlacing.

NOTE — In some cases, where the weave repeat can be obtained directly by visual examination, possibly with the aid of the magnifier (4.2), dissection of the fabric is not necessary.

Record the weave repeat, drafting, denting and lifting plans as in 6.2, 6.3, 6.4 and 6.5 and, if required, the warp and weft yarn arrangement as in 6.6.

6.2 Weave repeat

By convention, the vertical rows of squares or rectangles on the design paper (4.1) are associated with warp threads or ends and horizontal rows with weft threads or picks. Use a mark on design paper to indicate the floating of one thread (usually a warp end) over another.

Unless otherwise stated, a mark on design paper is assumed to indicate an interlacing of a warp end lifted over the weft. On the few occasions when this is inconvenient, indicate clearly that marks are "weft up". Show at least one full repeat of the weave indicating its dimensions.

It is preferable to show only one repeat of the weave: that is, discontinue the diagram when further rows of squares in each direction are a repetition of the weave unit already recorded. A repeat of a simple weave is shown in figure 1a).

When it is convenient to do so, the weave repeat may be condensed. This is possible when the weave repeat can be divided warpway or weftway into two or more parts, any of which is made by repeating a sub-weave repeat. Indicate the sub-weave repeat by means of a bracket embracing the appropriate squares, and against the bracket show the number of repeats of the sub-weave preceded by the multiplication sign $\times$. The weave in figure 1a) can be condensed as shown in figure 1b).

It may be convenient to use a variety of marks (for example, diagonal, vertical or horizontal strokes) in place of filled-in squares, particularly when variations of notation will clarify the weave construction (for example, compound fabrics).

6.3 Drafting plan

Draw the drafting plan above the weave repeat [figure 2a)]. A vertical row of squares representing an end in the weave repeat represents the same end in the drafting plan. The horizontal rows in the drafting plan represent the loom shafts.

To represent the passage of an end through a heald eye on a particular shaft, insert a cross in the square at the intersection of the vertical row representing the end and the horizontal row representing that shaft. The drafting plan may be condensed, when possible, in the manner described for weave repeat [figure 2b)].

6.4 Denting

Show the denting between the weave repeat and drafting plan by means of thick horizontal lines running completely across the row of squares that represent the warp ends that are to pass throught the dent [figure 2a)]. When condensed presentation of the weave repeat and drafting plan makes this impossible, put the denting instructions in the margin between the repeat and the plan [figure 2b)].

6.5 Lifting plan

Draw the lifting plan to the right-hand side of the weave repeat. A horizontal row of squares representing a pick in the weave repeat represents the same pick in the lifting plan. The vertical rows in the lifting diagram correspond to shafts, the left-hand shaft in the diagram being the same as the lower shaft in the drafting diagram; the association between the two may be indicated by the right-angle line as shown in figure 3. The association between the other shafts in the two plans may be indicated similarly. The lifting plan may be condensed when possible in the manner described for a weave repeat.

6.6 Warp and weft yarn arrangement

The warp and weft yarn arrangement may be indicated by the method prescribed for showing different yarns, but generally this is not possible, either because the colour and weave repeats are not identical in size, or because they cannot be condensed identically.

Show the warp and weft colour patterns in tables, as in figure 4, in which each colour is represented by a horizontal line of the table and the number of threads in groups of the same colour are shown for consecutive groups in correct sequence across the page. If a sequence of groups is repeated within the colour pattern, this need not be shown in full. The sequence may be indicated by enclosing it between vertical lines whose ends are joined by a bracket embracing the sequence. Show the number of repeats of the sequence at the point of the bracket. Enclose the colour pattern by double vertical lines, joined at their lower ends by a bracket, and for the warp show the number of repeats in the width of the cloth at the point of the bracket. The first thread of the colour pattern corresponds to the first end in the weave repeat. Show part repeats, or non-repeating colour sequences in the warp at the sides of the cloth, at the sides of the diagram to the left and right of the double vertical lines which bound the colour pattern.

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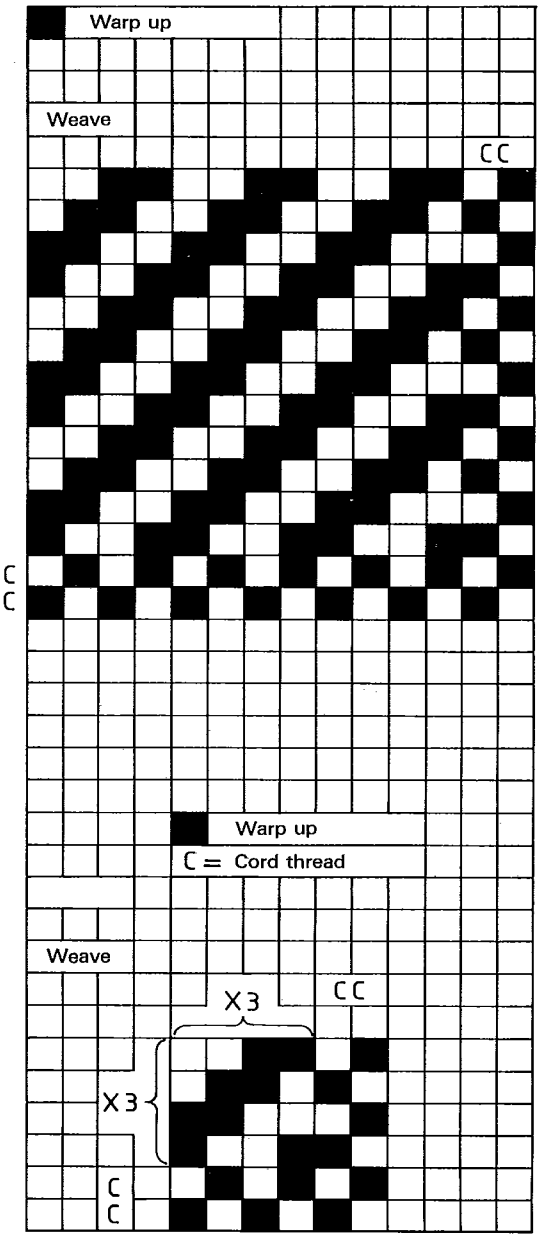

Figure 1a)
Simple weave repeat

Figure 1b)
Condensed version of figure 1a)

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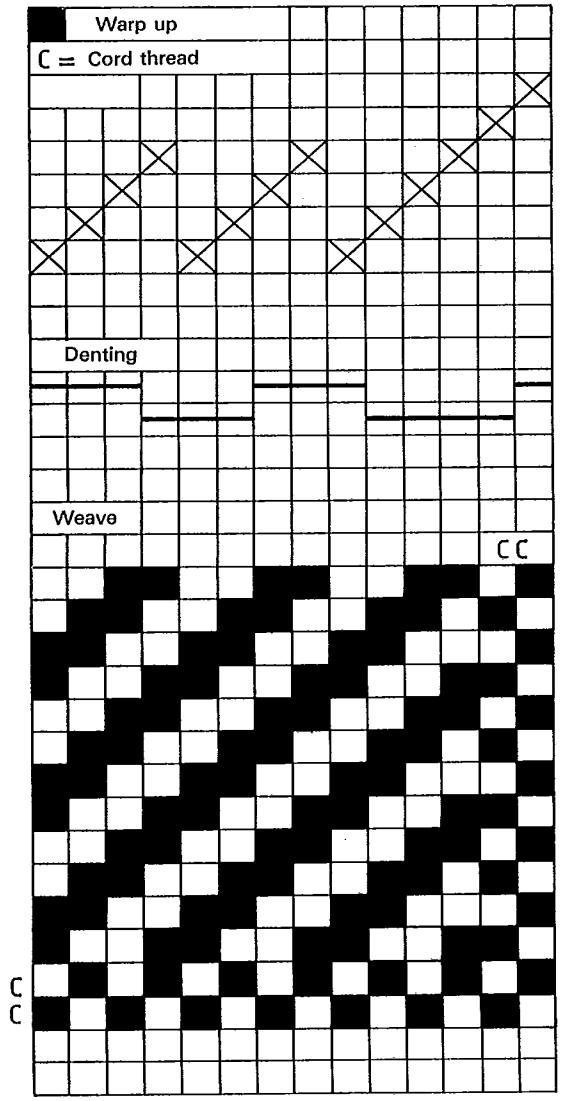

Figure 2a) — Drafting and denting plans of simple weave repeat

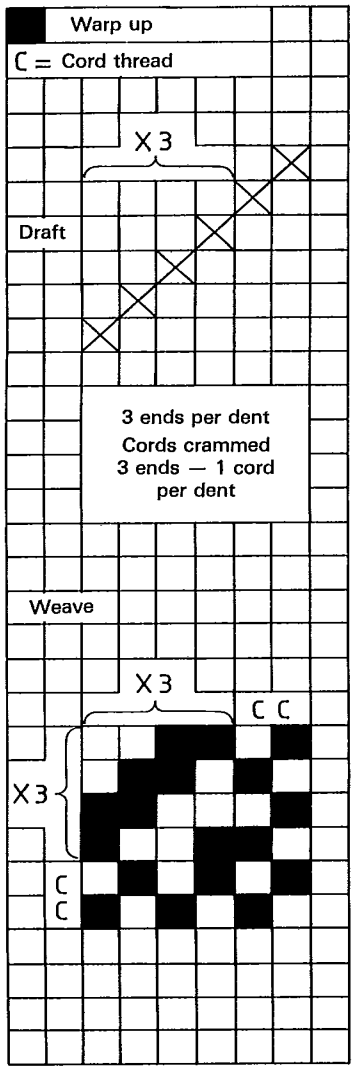

Figure 2b) — Condensed version of figure 2a)

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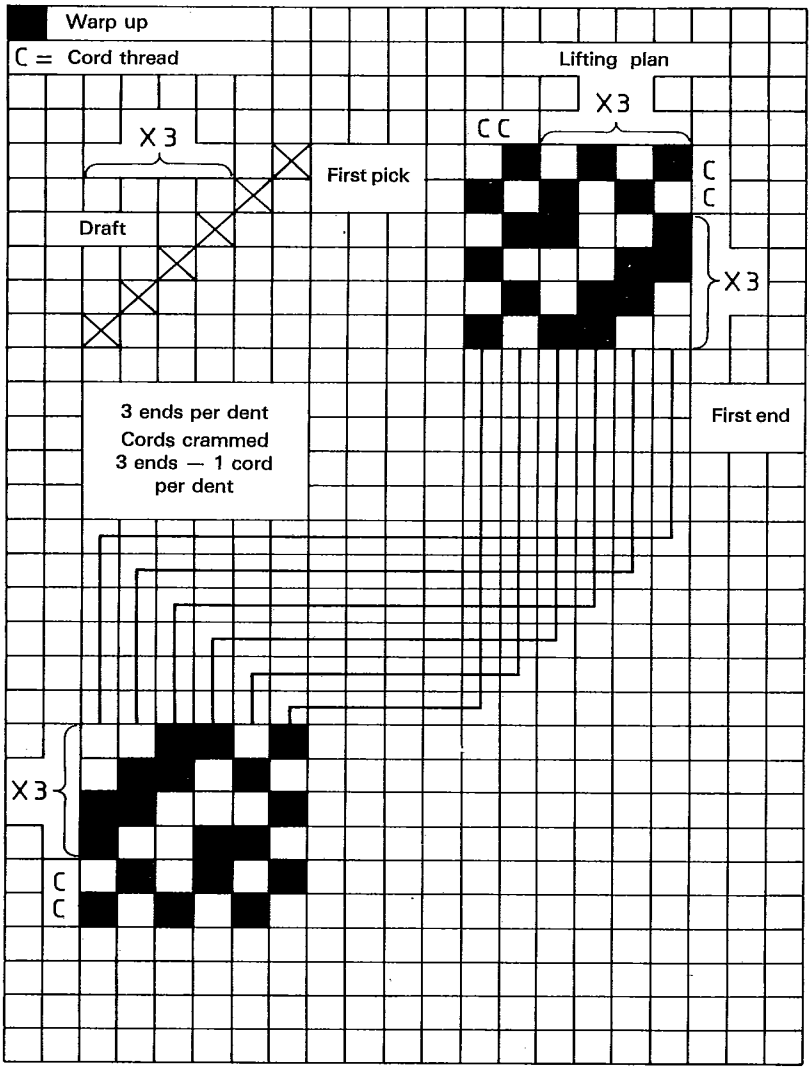

Figure 3 — Condensed weave repeat with drafting and lifting plans and denting instruction

Warp yarn arrangement

Blue	2				2		2				2	760
Yellow	2			2			2			2		760 } Beam 1
Orange		4	4					4	4			760
White Cord		2				2		2				378 Beam 2
	×2			×2			×2				×2	2 658 Total
					×94							

Weft yarn arrangement

Green	8		8	16
Orange	4	4		8
White Cord	2		2	4
				28 Total

Figure 4 — Warp and weft yarn arrangement

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