INTERNATIONAL STANDARD 1120

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Conveyor belts — Determination of strength of mechanical fastenings — Static test method

Courroies transporteuses — Détermination de la résistance des assemblages agrafés — Méthode d'essai statique

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

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 1120 was drawn up by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts).* It was submitted directly to the ISO Council, in accordance with clause 6.12.1 of the Directives for the technical work of ISO.

This International Standard cancels and replaces ISO Recommendation ISO/R 1120-1969 which had been approved by the Member Bodies of the following countries :

Australia	Greece	Spain
Austria	India	Sweden
Belgium	Israel	Switzerland
Brazil	Italy	Thailand
Czechoslovakia	Korea, Rep. of	Turkey
Denmark	Netherlands	United Kingdom
Finland	New Zealand	U.S.A.
France	Norway	U.S.S.R.
Germany	South Africa, Rep. of	

No Member Body had expressed disapproval of the document.

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Conveyor belts — Determination of strength of mechanical fastenings — Static test method

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a static test method for measuring the strength of a conveyor belt mechanical fastening; the joints can be of either the permanent type or capable of disconnection.

This International Standard does not cover vulcanized joints.

NOTE — The purpose of the test specified in this International Standard is to eliminate mechanical fastenings having an insufficient static strength. A dynamic test is to be established at a later date.

2 REFERENCE

ISO/R 283, *Full thickness tensile strength and elongation of conveyor belts — Specifications and method of test.*

3 DEFINITIONS

3.1 width of fastening : The number of units multiplied by the pitch, or the number of hooks multiplied by the pitch.

3.2 pitch : The distance between a point on a unit or hook and the corresponding point on the next unit or next hook, according to the type of fastening (see figure 1).

4 PRINCIPLE

Application of an increasing tensile force on a test piece until the joint made by the mechanical fastening breaks and comes apart.

5 APPARATUS

5.1 Metallic adaptor plate for joints that can be disconnected.

5.2 Dynamometer similar to that described in ISO/R 283.

6 TEST PIECES

6.1 Shape, dimensions and preparation

6.1.1 *Joints that can be disconnected*

The test piece shall consist of a full thickness piece of belting cut in the longitudinal direction, with a length of 150 mm plus the gripped length, and shall be 150 mm wide. It shall be connected to the connecting plate by the mechanical fastening to be used; the fastened width shall be at least 100 mm.

When the overall width of the fastening elements in service is equal to the width of the belt, the width of the test piece may be made to the overall width of the fastening elements under test and may be taken to be the "fastened width" but shall be not less than 100 mm.

6.1.2 *Joints that cannot be disconnected*

The test piece shall consist of two lengths of belting each having a minimum length of 150 mm plus the gripped length and a width of 150 mm, assembled by means of the mechanical fastening to be used.

When the overall width of the fastening elements in service is equal to the width of the belt, the width of the test piece may be made equal to the overall width of the fastening elements under test and may be taken to be the "fastened width" but shall be not less than 100 mm.

6.2 Number

Three test pieces shall be tested.

6.3 Conditioning

The test shall be conducted on pieces of belt cut at least 5 days after manufacture (including the conditioning period).

The test pieces shall be conditioned for 3 days at a temperature of 20 ± 2 °C and a relative humidity of 65 ± 5%. In the event of dispute, the period of conditioning shall be extended to 14 days.

7 TEST CONDITIONS

The test shall be carried out in a place having a temperature of 20 ± 2 °C and a relative humidity of 65 ± 5 %.

8 PROCEDURE

8.1 Joints that can be disconnected

Fasten the test piece in one of the grips of the dynamometer and attach the connecting plate to the belt at the distance between the grips as shown in figure 2.

Exert the tensile force in such a way that it is applied symmetrically, i.e. that there is no tendency to start rupture at one end of the joint.

Separate the grips at a rate of 100 ± 10 mm per minute; record the maximum force before the mechanical fastening breaks. A rate of 50 ± 5 mm per minute can be used but the results will be different from those obtained with a rate of 100 mm per minute; in the event of dispute the rate of 100 ± 10 mm per minute shall be used.

8.2 Joints that cannot be disconnected

Fasten the ends of the test piece in the grips of the dynamometer as shown in figure 2.

Exert the tensile force in such a way that it is applied symmetrically, i.e. that there is no tendency to start rupture at one end of the joint.

Separate the grips at a rate of 100 ± 10 mm per minute; record the maximum force before the mechanical fastening breaks.

9 EXPRESSION OF RESULTS

Find the mean of the values obtained and calculate :

a) the average breaking strength of the fastening, in newtons per millimetre width of fastening (see figures 1 and 2);

b) the strength of the fastening, expressed as a percentage of the full thickness longitudinal minimum tensile strength of the belt specified in ISO/R 283.

10 TEST REPORT

The test report shall include the following particulars :

a) the width of fastening;

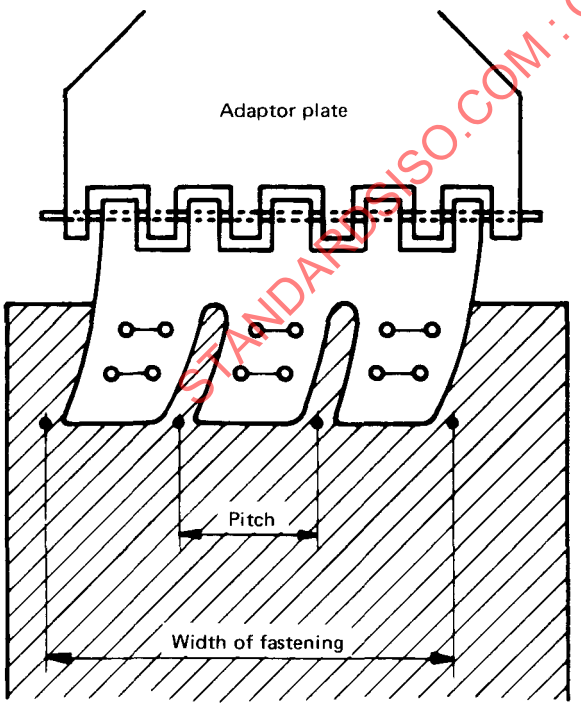
b) the brand of fasteners and whether they can be disconnected or not;

c) the brand and the type of the belt, or the minimum longitudinal and transversal breaking strength;

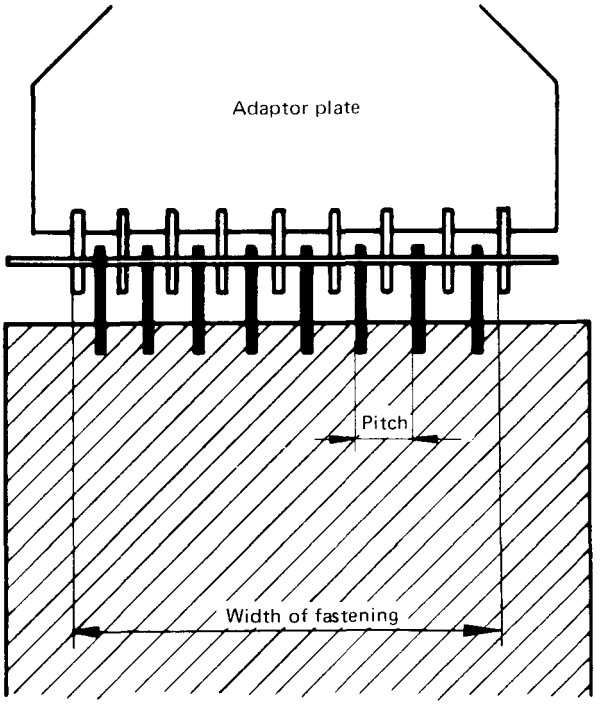
d) the rate of separation of the grips;

e) the results obtained;

f) the type of failure of the fastening : whether tearing of the belt or breaking or opening of the fasteners.



Width of fastening = pitch × 3



Width of fastening = pitch × 8

FIGURE 1

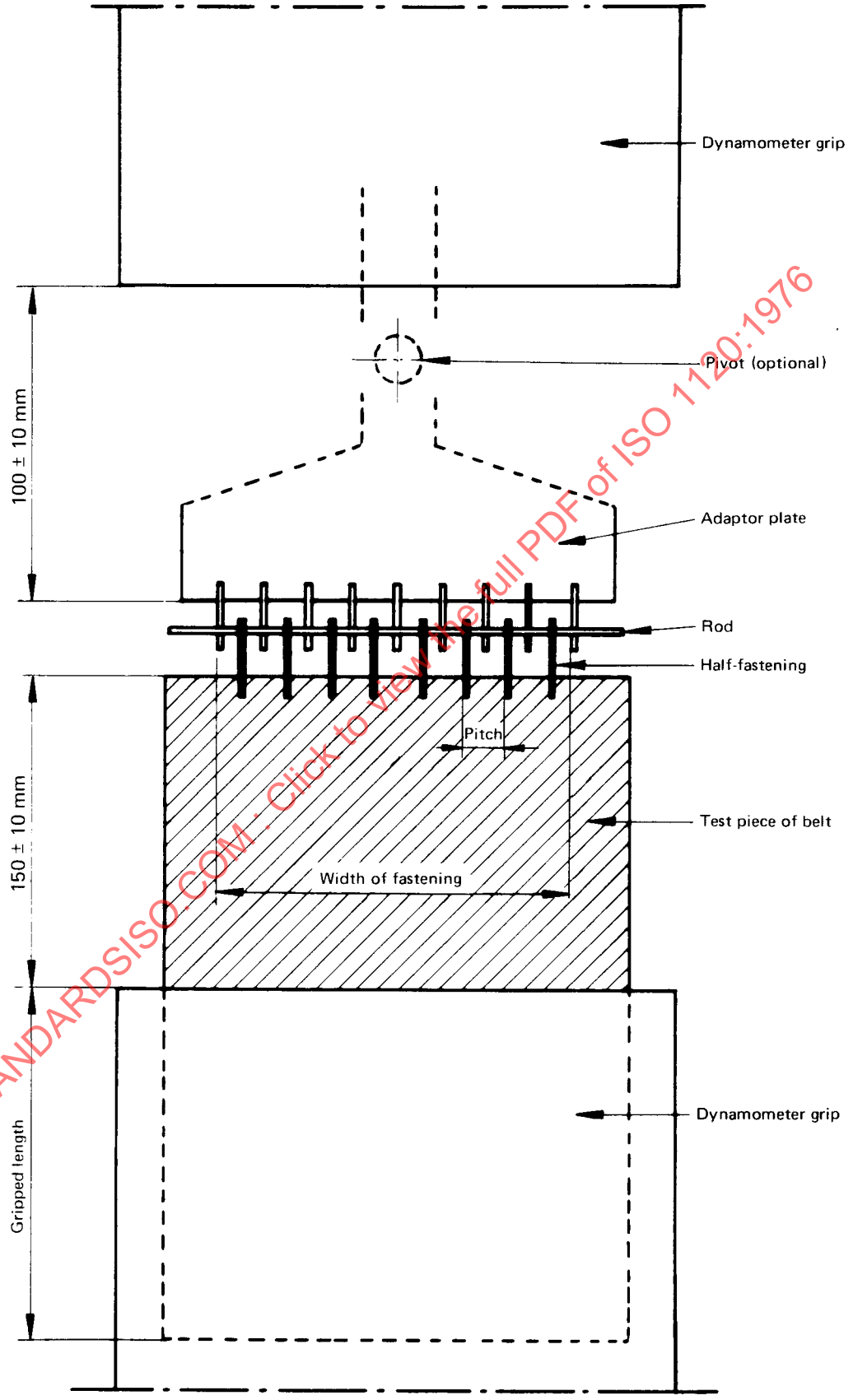


FIGURE 2