UDC 621.867.2 : 620.1

Ref. No. : ISO/R 1120-1969 (E)

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 1120

STRENGTH OF MECHANICAL FASTENINGS FOR CONVEYOR BELTS

(STATIC TEST METHOD)

1st EDITION

September 1969

For each individual country the only valid standard is the national standard of that country.

Printed in Switzerland

Also issued in French and Russian. Copies to be obtained through the national standards organizations.

BRIEF HISTORY

The ISO Recommendation R 1120, *Strength of mechanical fastenings for conveyor belts (Static test method),* was drawn up by Technical Committee ISO/TC 41, *Pulleys and belts (including vee-belts),* the Secretariat of which is held by the Association Française de Normalisation (AFNOR).

Work on this question led to the adoption of a Draft ISO Recommendation.

In August 1968, this Draft ISO Recommendation (No. 1668) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

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 opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in September 1969, to accept it as an ISO RECOMMENDATION.

ISO Recommendation R 1120 September 1969

STRENGTH OF MECHANICAL FASTENINGS FOR CONVEYOR BELTS

(STATIC TEST METHOD)

1. SCOPE

This ISO Recommendation describes 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 ISO Recommendation does not cover vulcanized joints.

NOTE. – The purpose of the test described in this ISO Recommendation is to eliminate mechanical fastenings having an insufficient static strength. A dynamic test is to be established at a later date.

2. DEFINITIONS

2.1 *Width of fastening.* The number of units multiplied by the pitch, or the number of hooks multiplied by the pitch.

2.2 *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 Fig. 1).

3. PRINCIPLE

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

4. APPARATUS

4.1 *Metallic adaptor plate* for joints that can be disconnected.

4.2 *Dynamometer* similar to that described in ISO Recommendation R 283, *Full thickness tensile strength and elongation of conveyor belts – Specifications and method of test.*

5. TEST PIECES

5.1 Shape, dimensions and preparation

5.1.1 *Joints that can be disconnected.* The test piece should consist of a full thickness piece of belting cut in the longitudinal direction, with a minimum length of 100 mm plus the gripped length, and should be 150 mm wide. It should be connected to the connecting plate by the mechanical fastening to be used; the fastened width should 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 equal to the overall width of the fastening elements under test and may be taken to be the "fastened width" but should be not less than 100 mm.

5.1.2 *Joints that cannot be disconnected.* The test piece should consist of two lengths of belting each having a minimum length of 100 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 should be not less than 100 mm.

5.2 Number of test pieces

Three test pieces should be used.

5.3 Conditioning of the test pieces

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

The test pieces should 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 should be extended to 14 days.

6. TEST CONDITIONS

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

7. PROCEDURE

7.1 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.

The grips should be separated at a rate of 100 ± 10 mm per minute; the maximum force before the mechanical fastening breaks should be recorded.

7.2 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.

The grips should be separated at a rate of 100 ± 10 mm per minute; the maximum force before the mechanical fastening breaks should be recorded.

8. EXPRESSION OF RESULTS

Find the mean of the values obtained and calculate

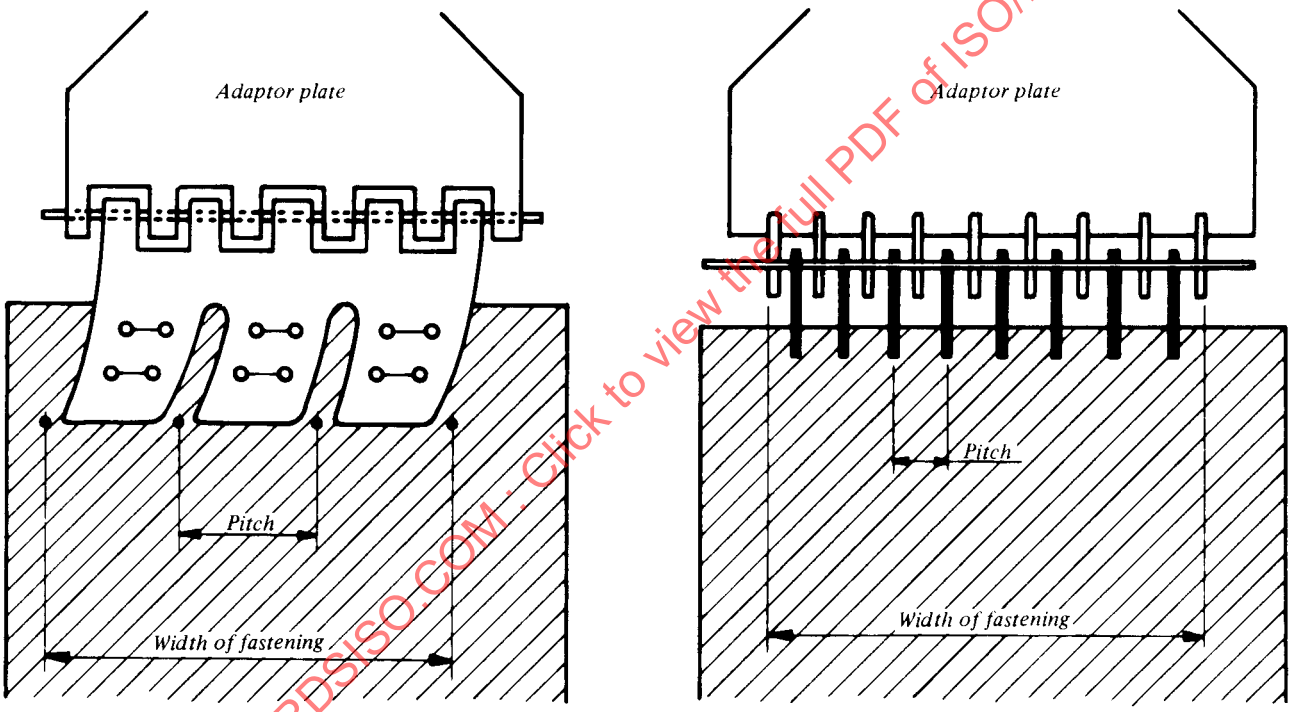
(*a*) the average breaking strength of the fastening in newtons per millimetre width of fastening (see Fig. 1 and 2);

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

9. TEST REPORT

The test report should mention, in addition to the results found,

- the width of fastening;
- the brand of fasteners and whether they can be disconnected or not;
- the brand and the type of the belt, or the minimum longitudinal and transversal breaking strength;
- the type of failure of the fastening : whether tearing of the belt or breaking or opening of the fasteners.



Width of fastening = pitch x 3

Width of fastening = pitch x 8

FIG. 1