



SLOVENSKI STANDARD

SIST EN 13277-3:2001

01-april-2001

Varovalna oprema za borilne športe – 3. del: Dodatne zahteve in preskusne metode za ščitnike trupa

Protective equipment for martial arts - Part 3: Additional requirements and test methods for trunk protectors

Schutzausrüstung für den Kampfsport - Teil 3: Zusätzliche Anforderungen und Prüfverfahren für den Oberkörperschutz

Équipement de protection pour les arts martiaux - Partie 3: Exigences et méthodes d'essai complémentaires relatives aux proteges-torses

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ICS:

13.340.10	Varovalna obleka	Protective clothing
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13277-3

August 2000

ICS 13.340.10

English version

Protective equipment for martial arts - Part 3: Additional requirements and test methods for trunk protectors

Équipement de protection pour les arts martiaux - Partie 3:
Exigences et méthodes d'essai complémentaires relatives
aux protège-torses

Schutzausrüstung für den Kampfsport - Teil 3: Zusätzliche
Anforderungen und Prüfverfahren für den Oberkörperschutz

This European Standard was approved by CEN on 5 August 2000.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

	Page
Foreword	2
1 Scope	3
2 Normative references	3
3 Terms and definitions	3
4 Requirements	3
5 Testing	4
6 Marking	7
7 Information supplied by the manufacturer	7
Annex ZA (informative) Clauses of this European Standard addressing essential requirements or other provisions of EU directives	8

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 162 "Protective clothing including hand and arm protection and lifejackets", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2001, and conflicting national standards shall be withdrawn at the latest by February 2001.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this standard.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

It is one of a series covering requirements and test methods for protective equipment used in martial arts.

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1 Scope

This European Standard specifies additional requirements and test methods for trunk protectors used in unarmed martial arts such as taekwondo, karate, kick-boxing and similar disciplines.

It also applies to breast protectors for men.

For general requirements and test methods for protective equipment for martial arts see EN 13277-1.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

EN 13277-1 : 2000

Protective equipment for martial arts – Part 1: General requirements and test methods

3 Terms and definitions

For the purposes of this European Standard the terms and definitions given in EN 13277-1 apply.

4 Requirements

4.1 Sizing

The manufacturer shall indicate in centimetres the range of the wearer's height and chest girth for which this protector is designed.

4.2 Combinations

Trunk protectors can be used in combination with other protectors for martial arts.

In the case of combined use, the requirements specified for the individual protectors are also to apply.

Possible combinations shall be indicated in the information supplied by the manufacturer.

If combined use is not permitted by the manufacturer, this restriction shall be indicated in the information supplied by the manufacturer.

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4.3 Restraint

A restraint system shall be supplied by the manufacturer which enables the user to attach trunk protectors with the support of no more than one assistant.

4.4 Zone of protection

Location and dimensions of the zone of protection see Figure 1 and Table 1.

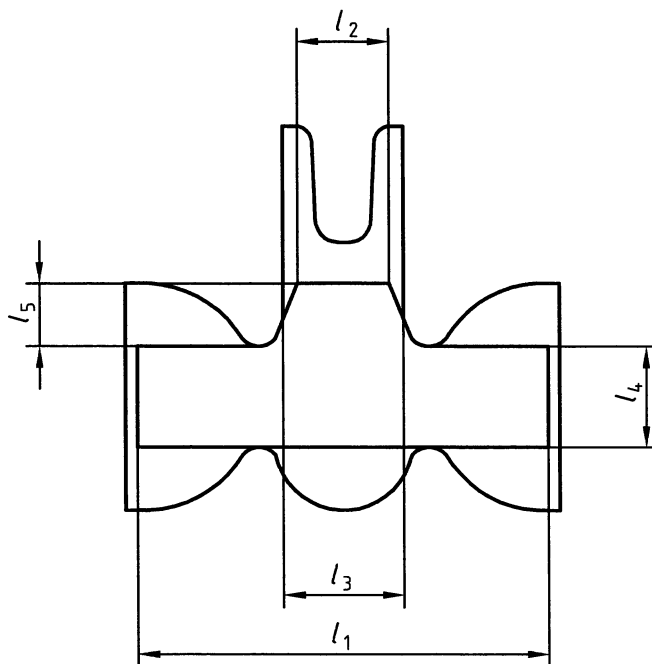


Figure 1 - Location of the zone of protection of trunk protectors

Table 1 - Zone of protection of trunk protectors

Dimensions in millimetres

Wearer's height	l_1 min.	l_2 min.	l_3 min.	l_4 min.	l_5 min.
< 1 340	610	140	170	150	90
from 1 304 to 1520	660	150	190	160	100
from 1 520 to 1700	710	160	210	175	110
from 1 700 to 1 880	760	180	230	190	130
> 1 880	810	200	250	210	150

4.5 Impact performance

Trunk protectors comply with this standard if the worst result after testing in accordance with 5.5 meets the following requirements:

– Impact energy: 12 J;

– Peak force: max. 3 kN;

– Positions to be tested: min. 3.

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5 Testing

5.1 Sampling

See EN 13277-1 : 2000, 5.1

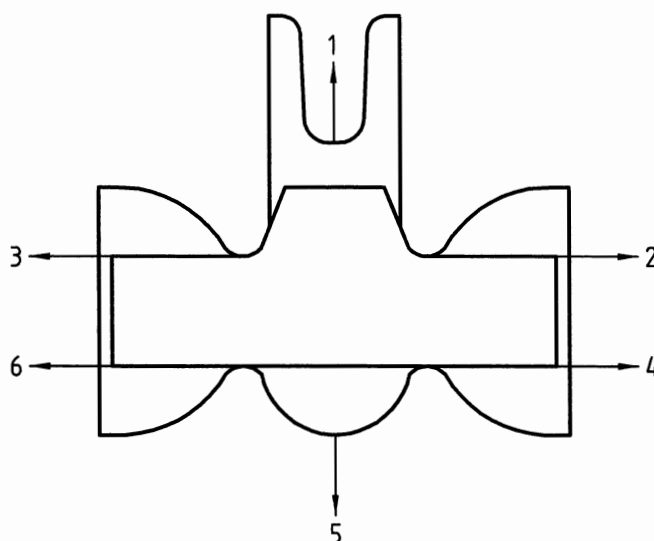
5.2 Conditioning

See EN 13277-1 : 2000, 5.2

5.3 Restraint

Restraint testing shall be carried out as defined in EN 13277-1 : 2000, 5.4. When testing the restraint the protector shall be attached to the trunk of a test person of an appropriate height in accordance with the information supplied by the manufacturer.

A test force of 50 N shall be applied at the edge of the zone of protection, in the directions and in the order shown on Figure 2, tangential to the surface of the body of the test person.



Key

1 to 6 Directions and order of the tests

Figure 2 - Restraint test of trunk protectors

5.4 Zone of protection

When testing according to EN 13277-1 : 2000, 5.5, the protector shall be attached to a test person of an appropriate height in accordance with the information supplied by the manufacturer.

The gauge shall be placed onto the surface of the zone of protection.

When the position of best coverage of the gauge is found, the outline of the gauge shall be marked on the protector.

5.5 Impact performance

5.5.1 Apparatus

The principle of impact testing is shown in Figure 3.

A flat horizontal steel plate with a width of at least 300 mm, a length of at least 350 mm and a thickness of at least 20 mm shall be used as a support of the sample. In the centre of the flat plate there shall be a cylindrical hole with a diameter of (106 ± 2) mm.

A cylindrical anvil with a diameter of (100 ± 2) mm, a thickness of at least 20 mm with a flat upper surface shall be mounted on a load cell.

The surface of the anvil facing the striker shall be in level with the surface of the flat plate with a tolerance of ± 1 mm.

A compression ring made of steel with a mass of $(10 \pm 0,1)$ kg, $(140 \pm 0,1)$ mm internal and (260 ± 4) mm external diameter shall be used to fix the sample to the support.

The striker shall be able to fall free in the vertical axis of the anvil with a tolerance of ± 2 mm. The striker shall be guided in such a way, that it will always reach at least 95 % of the freefall velocity. A means of measuring the velocity of the striker at the point of impact shall be provided.

To measure the maximum peak force an electronic measurement device with the following characteristics shall be used:

- Measurement frequency: min. 2 000 Hz;
- Accuracy class of the load cell: 0,2;
- Maximum load: 10 kN.

5.5.2 Procedure

The trunk protector shall be placed on the flat support so that the test positions to be tested shall be above the centre of the anvil and shall be fixed with the compression ring.

The compression ring shall be placed so that the anvil is situated in the centre of the ring with a tolerance of ± 5 mm.

The trunk protector shall be moved on the support in order to reach every test position to be tested.

If it is not possible to press the trunk protector flat with the compression ring, the protector shall be cut, until it is possible to place it flat.

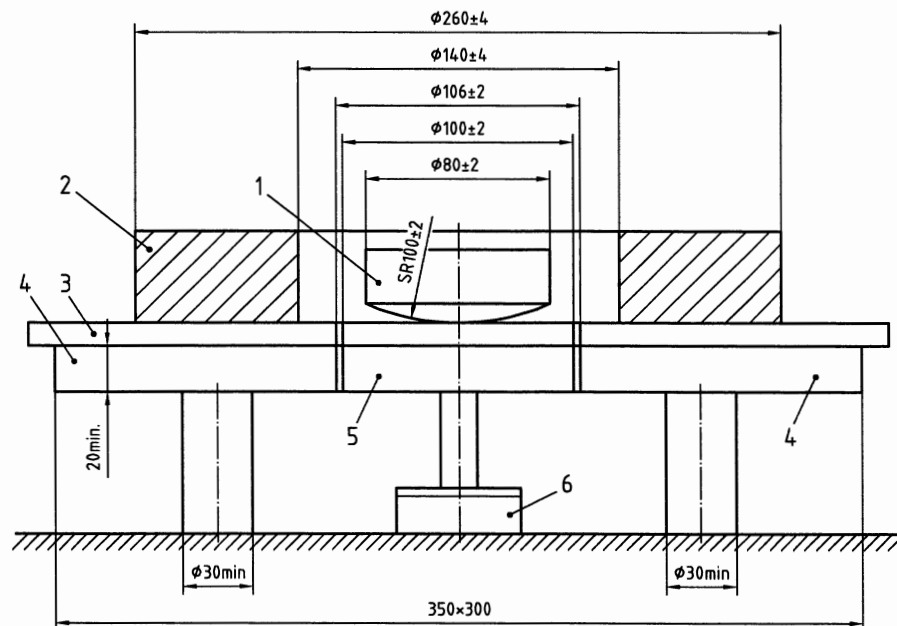
The test positions shall be selected so that they are not closer than 20 mm to the limit of the zone of protection. If the test position is closer to the edge of the zone of protection than 70 mm, and there is a gap between the protector and the compression ring, a part of the same protector or of another protector of the same construction shall be cut and placed in the gap.

The test positions shall be selected to include the positions on the protector where the worst test results are assumed to be likely.

Three impacts of the same energy level shall be carried out on each test position with an interval of (60 ± 10) s.

No other test position previously tested shall be within a circle of 80 mm around the test position to be tested. If positions are selected to be impacted less than 80 mm distant from each other, at least two protectors of the same type shall be selected for impact testing.

Dimensions in millimetres

**Key**

- | | |
|--------------------|---------------|
| 1 Striker | 4 Steel plate |
| 2 Compression ring | 5 Anvil |
| 3 Trunk protector | 6 Load cell |

Figure 3 - Principle of impact testing of trunk protectors**6 Marking**

See clause 6 in EN 13277-1 : 2000.

7 Information supplied by the manufacturer

See clause 7 in EN 13277-1 : 2000.

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