

Bureau de normalisation du Québec

CAN/BNQ 0102-565/2023 (ISO 10256-5: 2017, MOD)

Protective Equipment for Use in Ice Hockey — Part 5: Neck Laceration Protectors for Ice Hockey Players





STANDARD

Protective Equipment for Use in Ice Hockey — Part 5: Neck Laceration Protectors for Ice Hockey Players Équipement de protection pour le hockey sur glace — Partie 5 : Protège-cous contre les lacérations pour joueurs de hockey sur glace

Prepared by

International Organization for Standardization



Reviewed by

Bureau de normalisation du Québec



Bureau de normalisation du Québec

Approved by Standards Council of Canada





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The verb should, or the equivalent expressions it is recommended that and ought to, is used to indicate a useful, but not mandatory, suggestion or to indicate the most appropriate means of conforming to this document.

Except for notes presented as normative notes, which set out mandatory requirements and which appear in the lower portion of figures and tables only, all other notes are informative (non-mandatory) and provide useful information intended to facilitate understanding or clarify the intent of a requirement or to add clarification or further details.

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FOREWORD

This standard was developed in compliance with the Standards Council of Canada (SCC)'s Requirements and Guidance for standards development organizations and approved as a National Standard of Canada by the SCC. Its publication was approved by a Standards Development Committee, whose members were:

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CAN/BNQ 0102-565 (ISO 10256-5, MOD)

Protective Equipment for Use in Ice Hockey — Part 5: Neck Laceration Protectors for Ice Hockey Players

Preface

This is the first edition of the standard CAN/BNQ 0102-565 (ISO 10256-5, MOD) *Protective Equipment for Use in Ice Hockey — Part 5: Neck Laceration Protectors for Ice Hockey Players*, which is an adoption of a standard ISO (International Organization for Standardization), with Canadian deviations, i.e., the identically titled ISO 10265-5 (first edition, 2017-03).

This standard was reviewed for Canadian adoption by the Bureau de normalisation du Québec (BNQ) Standards Development Committee on neck laceration protectors.

This standard was approved to serve as a reference document for conformity evaluation activities of specific products.

NOTE — Conformity evaluation is defined as the systematic examination of the extent to which a product fulfils specified requirements.

Canadian deviations

1 Scope

[Replace the first paragraph with the following]

This standard specifies performance requirements and test methods for neck laceration protectors used in ice hockey and ringette. Neck laceration protectors are needed to reduce the risk of direct laceration to the neck caused by contact of a hockey skate blade.

EXPLANATION — The BNQ Standards Development Committee decided to include ringette in the scope to retain the spirit of the standard CAN/BNQ 9415-370, which was in effect prior to the publication of the standard CAN/BNQ 0102-565 (ISO 10256-5, MOD), and because ringette has a large community in Canada.



2 Normative references

[Modify the wording of ISO 10256-1:2016 as follows]

ISO 10256-1, Protective equipment for use in ice hockey — Part 1: General requirements

EXPLANATION — The BNQ Standards Development Committee is of the opinion that the year should be removed, so that when the referred document is published anew, the latest edition is the one taken into consideration.

[Add the following document]

CAN/CGSB-4.2 No. 58, Textile Test Methods — Dimensional Change in Domestic Laundering of Textiles

EXPLANATION — The BNQ Standards Development Committee is of the opinion that the document CAN/CGSB-4.2 No. 58 must be added as a normative reference since it shall be referred to in 5.2.2.1 of the standard CAN/BNQ 0102-565 (ISO 10256-5, MOD).

4.1 Innocuousness/materials

[Replace the paragraph 4.1.1 with the following]

4.1.1 In addition to the requirements of ISO 10256-1, 3.1, the requirements in 4.1.2 to 4.1.4 shall apply. Examination shall be made according to 5.3.

EXPLANATION 1 — The BNQ Standards Development Committee is of the opinion that the publication year of the document ISO 10256-1 must be removed so as to always refer to the latest version.

EXPLANATION 2 — The BNQ Standards Development Committee is of the opinion that the document must refer to the requirements in 3.1 instead of 4.1, which describes the test methods.

4.2 Ergonomics, ease of use and adjustment

[Replace the paragraph 4.2.1 with the following]

4.2.1 The neck protector shall comply with the requirements of ISO 10256-1, 3.2.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that the publication year of the document ISO 10256-1 must be removed so as to always refer to the latest version.



[Replace the paragraph 4.2.4 with the following]

4.2.4 The neck laceration protector shall be designed and manufactured so that it remains in place during normal ice hockey play when worn according to the manufacturer's instructions. The portion of the neck laceration protector that covers the protected area shall be firm, so that it will not fold onto itself during use. To verify, exert uniform downward pressure on both sides of the protector and on the front of the collar, one side at a time, so that it lowers by one centimeter and immediately comes back up to cover the protected area.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that, for the safety of the users, it is important to add a requirement and a verification method regarding the firmness of the neck laceration protector. As well, this requirement was included in the standard CAN/BNQ 9415-370, which was in effect prior to the standard CAN/BNQ 0102-565 (ISO 10256-5, MOD).

4.3 Protected area and area of coverage

[Replace 4.3 with the following]

When examined according to 5.3.3.1, the protective material of the neck laceration protector shall cover the protected area established according to the type of neck laceration protector as shown in Figure 1.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that this modification is required in order to distinguish the protected areas that are determined for each type of neck laceration protector.

4.4 Cut resistance

[Replace 4.4 with the following]

When the neck laceration protector is tested according to 5.3.5, no cuts shall be observed on the artificial neck foam, nor through the bottom layer (the one found in contact with the skin of the user) of the neck laceration protector.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that the first and third paragraphs of 4.4 are no longer required as there is only one remaining cut resistance test method given its decision to remove Annex B.

5.1 Test apparatus tolerances

[Replace 5.1 with the following]

Unless otherwise specified, the dimensions of the cut test apparatus shall have a tolerance of ± 2 mm.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that a tolerance expressed in percentage can lead to a too broad range of results, and that the tolerance of \pm 2 mm used in the standard CAN/BNQ 9415-370, which was in effect prior to the standard CAN/BNQ 0102-565 (ISO 10256-5, MOD), remains the safest tolerance.



5.2.2.1 Washed and dried

[Replace 5.2.2.1 with the following]

All neck laceration protector samples shall be washed according to the document CAN/CGSB-4.2 No. 58 under the following conditions:

a) number of washing cycles in a washing machine: three;

b) wash procedure 1: at cold temperature (20° C, not 30° C), low mechanical action, synthetic detergent.

After each wash, the neck laceration protector shall be hung for drip dry in ambient conditions according to ISO 10256-1, 6.1.

NOTE — The measurement of shrinkage and stretch described in the document CAN/CGSB-4.2 No. 58 does not apply to neck laceration protectors.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that ambient conditions for drying and conditioning must be aligned with the ones described in the document ISO 10256-1 for all neck laceration protectors.

5.2.2.2 Conditioning

[Replace point a) with the following]

a) dry condition — dry conditioned under ambient temperatures according to ISO 10256-1, for at least 24 h, and

EXPLANATION — The BNQ Standards Development Committee is of the opinion that a drying duration needs to be specified to make the conditioning valid.

[Replace point b) with the following]

b) wet condition — submerged in water at a temperature of (20 ± 2) °C for at least 4 h. After removal from the water, the neck laceration protector shall be hung for (30 ± 5) min in ambient conditions according to ISO 10256-1, 6.1.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that the publication year of the document ISO 10256-1 must be removed so as to always refer to the latest version.



5.3.2 Ergonomics

[Replace 5.3.2 with the following]

The protector shall fulfil the ergonomics requirements in 4.2, and manufacturers shall provide documentation in the product/certification file to support that the design and construction of the neck laceration protector minimizes restriction and discomfort for all normal playing movements according to ISO 10256-1, 4.2.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that this change must be made to avoid any confusion and ensure that contents of both 4.2 of the documents ISO 10256-5 and ISO 10256-1 are clearly included and identified.

5.3.3.1 Verification of coverage of the protected area

[Replace the first paragraph with the following]

The protected area of a neck laceration protector shall include the following, depending on its type:

- a) type 1: a neck part (collar);
- b) type 2: a neck part (collar) and a bib.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that two types of neck laceration protectors should be included, as the one with a bib (type 2) is not commonly used nor required by organizations in Canada, and that one type does not provide a higher level of protection than the other.

[Replace the third paragraph with the following]

When the neck laceration protector is installed on the anatomical form and held in place according to the manufacturer's recommendations, the protective material shall cover the protected area requirements of the neck part (type 1), or the neck part and a bib (type 2) (see Figure 1).

EXPLANATION — The BNQ Standards Development Committee is of the opinion that two types of neck protectors should be included, as the one with a bib (type 2) is not commonly used or required by organizations in Canada, and that one type does not provide a higher level of safety than the other.

[Replace point a) with the following]

a) Neck laceration protector shall be placed on corresponding size of anatomical form.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that the last sentence of point a) must be deleted since it is already covered by point b).



[Replace point b) with the following]

- b) In order to simulate a standard fit, a piece of foam with the same characteristics as the foam used on the artificial neck described in A.2.2 shall be placed over the front part of the anatomical form between the form and the neck laceration protector. This piece of foam shall be lined up at midpoint of the anatomical form. Depending on the size classification of the anatomical form used, the piece of foam shall have the following dimensions:
 - 1) extra small, small and medium: 2,5 cm wide × 15 cm high × 1 cm thick;
 - 2) large, extra large and double extra large: 5 cm wide × 15 cm high × 1 cm thick.

The lower centre part of the piece of foam shall be lined up with point J of the anatomical form in order to cover a 1,25-cm wide area on each side of this point, for the extra small, small and medium sizes, and a 2,5-cm wide area on each side of this point for the large, extra large and double extra large sizes. The median plane of the neck protector shall be lined up with point J of the anatomical form. After positioning the neck protector on the anatomical form, the piece of foam shall be removed during the verification of the protected area. If there is an adjustable fastening system, no further adjustment shall be permitted.

A manual adjustment of the neck protector is allowed in the vertical axis as long as its centerline remains lined up with point J.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that more details were required, for a more thorough verification of coverage, as described in the standard CAN/BNQ 9415-370, which was in effect prior to the standard CAN/BNQ 0102-565 (ISO 10256-5, MOD).

[Point d) is entirely removed from the standard]

EXPLANATION — The BNQ Standards Development Committee is of the opinion that point d) must be removed since its content is included in point b).

[Point e) is entirely removed from the standard]

EXPLANATION — The BNQ Standards Development Committee is of the opinion that point e) must be removed since point b) already mentions the possibility of manual adjustment in the vertical axis.



[Replace point i) with the following]

- i) In the case of a type 2 neck protector, verification of the protected area of the bib shall be determined by measuring the bib height according to the following conditions:
 - measurements shall be taken at three points on the anatomical form: at 0°, 90° and -90° (see Figure 1);
 - 2) measurements shall be taken from bib seam to bottom edge of bib, at 90° angles from seam.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that two types of neck laceration protectors should be included, as the one with a bib (type 2) is not commonly used or required by any organization in Canada, and that one type does not provide a higher level of safety than the other.

[A point j) is added]

j) If the neck protector includes a bib, the bib can be manually kept in contact with the anatomical form.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that it is relevant to add this point about the methods that can be used to facilitate the testing as it was included in the standard CAN/BNQ 9415-370, which was in effect prior to the standard CAN/BNQ 0102-565 (ISO 10256-5, MOD).

5.3.5 Cut testing

[Replace 5.3.5 with the following]

Cut testing of neck laceration protectors shall be performed as described in Annex A.

EXPLANATION — The reference to Annex B was removed as the BNQ Standards Development Committee has decided to entirely remove Annex B.

6 Test report

[Replace the beginning of the sentence with the following]

In addition to the requirements in ISO 10256-1, Clause 7, the test report shall include at least the following information:

EXPLANATION — The BNQ Standards Development Committee is of the opinion that the publication year of the document ISO 10256-1 must be removed so as to always refer to the latest version.



7.1 Markings

[Replace 7.1 with the following]

Markings shall be according to ISO 10256-1, Clause 8.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that the publication year of the document ISO 10256-1 must be removed so as to always refer to the latest version.

7.2 Labelling

[Replace the beginning of the sentence with the following]

Label(s) securely attached to the neck laceration protector shall contain the following information both in English and in French:

EXPLANATION — The BNQ Standards Development Committee is of the opinion that "in English and in French" must be added as labelling shall be made in both official languages in Canada.

8 Information for users

[Add the following second paragraph after the first one]

If the neck laceration protector includes a bib (type 2), it shall be made in such a way that the bib stays in place during use and does not come out of the jersey of the user.

[Replace Table 1 with the following]

Table 1 — Neck laceration protector test specimens

Test Samples Required When Using Annex A Cut Testing Method			
Test	Conditioned	Samples Needed	Model Size
Protected area of coverage	Washed	1	All model sizes
Cut test	Dry	3	1 model size
Cut test	Wet	1	1 model size

EXPLANATION — The second part of the table was removed as it refers to Annex B, which the BNQ Standards Development Committee has decided to entirely remove.





Figure 1 — Protected area for neck laceration protectors

[Replace Figure 1 and the Key with the following]



Key

- 1 centreline
- 2 protected area neck part (type 1 and type 2)
- 3 protected area bib (type 2 only)

EXPLANATION — The BNQ Standards Development Committee is of the opinion that the protected area varies whether a bib is present or not. Hence, for a better understanding by the users, it is useful to distinguish the protected area of a type 1 neck laceration protector from the one of a type 2 neck laceration protector.

[Replace header of the table of figure 1 by the following]

Neck Laceration Protector Size	Minimum Protected Area Dimensions — Neck Part (type 1 and type 2)	Minimum Protected Area — Bib Part (h) Dimensions (mm) (Type 2 Only)
--------------------------------------	--	--

EXPLANATION — The BNQ Standards Development Committee is of the opinion that two types of neck protectors should be included, as the one with a bib (type 2) is not commonly used or required by any organization in Canada, and that one type does not provide a higher level of safety than the other.



Annex A (normative) Cut test using guided horizontal monorail apparatus

A.2.2 Artificial neck

[Add a note at the end of A.2.2]

NOTE — The foam Ethafoam #221 is the trade name of a product distributed by Dow Chemical Company that meets these criteria. This information is provided for the convenience of users of this standard and in no way constitutes an endorsement by the BNQ to use this product exclusively. Equivalent products may be used if it can be shown that they achieve the same results. It is the responsibility of users of this standard to choose an adequate equivalent product.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that this note must be added as it was present in standard CAN/BNQ 9415-370, which was in effect prior to the standard CAN/BNQ 0102-565 (ISO 10256-5, MOD), and because it is relevant for users who are interested in replicating the tests and who want to be guided with regards to accepted foams.

A.2.3 Hockey skate blade

[Replace point c) with the following]

c) profile according to the inspection template for skate blades specified in Figure A.2;

EXPLANATION — The BNQ Standards Development Committee is of the opinion that this reference to the figure must be changed to reflect the removal of Annex B and, as a result, the move of former Figure B.3, now designated Figure A.2, in Annex A.

A.3 Cut resistance test procedure

[Add a paragraph between point d) and the last paragraph]

In the case of a type 2 neck laceration protector that includes a bib composed of a rigid chest protector in all the minimum protected area, cut testing shall be performed as if it were a type 1 neck laceration protector.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that it is important to make this specification as the test apparatus used to conduct the cut tests cannot perform the skating kick on a material as thick and rigid as a chest protector. If no portion of the minimum protected area can be tested, the skating kick must be limited to the portion of the neck part.



Table A.1 — Neck laceration protector cut site requirements

[Replace the table by the following]

Test Specimen	Conditioning	Site	Number of Cuts in Cut Resistance Testing
1	Dry ^a	This test shall be performed on each neck protector at three different locations in the protective zone. If an assembly of two parts covers the protective zone of the neck protector, the skate blade test shall be performed on each of the two parts and the seam between the two parts.	3
2	Dry ^a	This test shall be performed on each neck protector at three different locations in the protective zone. If an assembly of two parts covers the protective zone of the neck protector, the skate blade test shall be performed on each of the two parts and the seam between the two parts.	3
3	Dry ^a	This test shall be performed on each neck protector at three different locations in the protective zone. If an assembly of two parts covers the protective zone of the neck protector, the skate blade test shall be performed on each of the two parts and the seam between the two parts.	3
4	Wet	Neck part	2
4	Wet	Bib (type 2 only)	2
^a The neck laceration protectors shall be conditioned at an ambient temperature of 20 °C \pm 3 °C in the test laboratory for at least 24 h.			

EXPLANATION — The BNQ Standards Development Committee is of the opinion that two types of neck protectors should be included, as the one with a bib (type 2) is not commonly used or required by any organization in Canada, and that one type does not provide a higher level of safety than the other.



Figure A.1 — Diagram of the test bench

[Add a note to Figure A.1]

NOTE — Starting position: assembly after adjustment and pressurization, catch in the closed position.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that the addition of this note is required to retain the description of the figure from standard CAN/BNQ 9415-370, which was in effect prior to the standard CAN/BNQ 0102-565 (ISO 10256-5, MOD).

Annex B (normative) Cut test using guided drop apparatus

[Annex B is removed from the standard]

EXPLANATION — The BNQ Standards Development Committee is of the opinion that this annex must be removed because no equivalency tests are performed for the test described in Annex A and the test described in Annex B in order to verify whether or not they would yield different results. Without this testing, a neck laceration protector could fail one test but successfully pass the other. Finally, there is no testing installation in Canada that is equipped with the necessary equipment to perform the test described in Annex B.

Figure B.3 — Inspection template for skate blades

[Move Figure B.3, now designated Figure A.2, and its associated table to Annex A and add two notes]

Figure A.2 — Inspection template for skate blades

NOTES —

1 The tolerances in millimetres are:

- n ± 5 mm
- $n,n \pm 0,5\,mm$
- $n,nn\pm 0,10\,mm$

2 The median line of the inspection template represents the nominal profile of the hockey skate blade 270R distributed by Nike Bauer Hockey Inc. and the tolerance permitted is \pm 1,5 mm.

EXPLANATION — The BNQ Standards Development Committee is of the opinion that this action is necessary since the cut test apparatus, to which it refers and which is currently used in the test laboratory used by the BNQ, was built with the tolerances specified in standard CAN/BNQ 9415-370, which was in effect prior to the standard CAN/BNQ 0102-565 (ISO 10256-5, MOD).

INTERNATIONAL STANDARD ISO 10256-5:2017

ISO/TC 83/SC 5

Protective equipment for use in ice hockey —

Part 5: Neck laceration protectors for ice hockey players

Équipement de protection pour le hockey sur glace —

Partie 5: Protège-cous contre les lacérations pour joueurs de hockey sur glace

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Foreword

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: <u>www.iso.org/iso/foreword.html</u>.

The committee responsible for this document is ISO/TC 83, *Sports and other recreational facilities and equipment*, Subcommittee SC 5, *Ice hockey equipment and facilities*.

This first edition of ISO 10256-5, together with ISO 10256-1, ISO 10256-2, ISO 10256-3, ISO 10256-4 and ISO 10256-6, cancels and replaces ISO 10256:2003, which has been technically revised.

This document was developed primarily from neck laceration protector standards previously published by Bureau de Normalisation du Québec (BNQ) (CAN/BNQ 9415-370) and the European Committee for Standardization (CEN/TS 15256:2005).

A list of all the parts in ISO 10256 can be found on the ISO website.

Introduction

The intention of neck laceration protection is to reduce the frequency and severity of lacerations to the neck while playing ice hockey. The protective function is such that the penetration of a skate blade is counteracted.

Neck laceration protection for use in ice hockey consists of a neck laceration protector. To achieve the performance of which it is capable and to ensure stability on the neck, a neck laceration protector should be as closely fitting as possible consistent with comfort. In use, it is essential that the neck laceration protector is securely fastened according to the manufacturer's instructions.

ISO/TC 83/SC 5 is aware that specifications for the performance of the neck laceration protector are required to reduce the risk of injury in ice hockey. The goal of the subcommittee is to promote the use of improved materials and/or constructions as they become available to meet the future requirements of the sport of ice hockey. ISO/TC 83/SC 5 recognizes that in order to provide for comfort, fit and use, neck laceration protectors should be constructed from materials providing the appropriate performance characteristics.

The intent of this document is to reduce the risk of lacerations to the neck without compromising the form or appeal of the game.

Ice hockey is a sport in which there is a risk of injury. This document is intended only for neck laceration protectors used for ice hockey. Ice hockey neck laceration protectors do not afford protection from impacts to the neck or spine, nor do they protect against axial compressive loading of the cervical spine. Severe head, brain or spinal injuries, including paralysis or death, may occur even though an ice hockey neck laceration protector meeting the requirements of this document is used.

In order for a neck laceration protector to perform adequately, it needs to be in good condition, fit properly, be worn properly and not be altered in any way.

Protective equipment for use in ice hockey —

Part 5: Neck laceration protectors for ice hockey players

1 Scope

This document specifies performance requirements and test methods for neck laceration protectors used in ice hockey. Neck laceration protectors are needed to reduce the risk of direct laceration to the neck caused by contact of a hockey skate blade.

The tests required to ensure that a neck laceration protector conforms to the requirements of this document do not attempt to predict the performance of the neck protector in all possible situations. This document does not address protection from the impact of pucks, sticks or other objects.

This document does not address accessories that are associated with a neck laceration protector.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 6330, Textiles — Domestic washing and drying procedures for textile testing

ISO 10256-1:2016, Protective equipment for use in ice hockey — Part 1: General requirements

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10256-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at <u>https://www.iso.org/obp/</u>

3.1

anatomical form

solid or hollow object defined by its shape and size, used to support a *neck laceration protector* (3.6) for the verification of the test requirements of this document

3.2

anvil

round or square sectioned rigid metal block with a specified shape at its upper end used to transmit the force of impact from the inside of the test specimen to the force transducer

3.3

bib

part of a neck laceration protector (3.6) that lies over the anterior thoracic region