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(Reaffirmed 2016)**

**STANDARD FOR INTERNAL LUG QUICK-CONNECT
COUPLINGS FOR FIRE HOSE**

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Normes ULC

Approved by:



Standards Council of Canada
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CORPORATE HEADQUARTERS

Underwriters Laboratories of Canada
7 Underwriters Road
Toronto, Ontario M1R 3A9
Telephone: (416) 757-3611
Fax: (416) 757-9540

REGIONAL OFFICES

PACIFIC OFFICE

13775 Commerce Parkway, Suite 130
Richmond, British Columbia V6V 2V4
Telephone: (604) 214-9555
Fax: (604) 214-9550

EASTERN OFFICE

6505, Rte Transcanadienne, Suite 330
St-Laurent, Québec H4T 1S3
Telephone: (514) 363-5941
Fax: (514) 363-7014

For further information on ULC standards, please contact:

ULC STANDARDS

171 Nepean Street, Suite 400
Ottawa, Ontario K2P 0B4
Telephone: (613) 755-2729
Fax: (613) 231-5977
E-mail: customerservice@ulc.ca
Web site: www.ulc.ca

The intended primary application of this standard is stated in its scope. It is important to note that it remains the responsibility of the user of the standard to judge its suitability for this particular application.

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CETTE NORME NATIONALE DU CANADA EST DISPONIBLE EN VERSIONS FRANÇAISE ET ANGLAISE

STANDARD FOR INTERNAL LUG QUICK-CONNECT COUPLINGS FOR
FIRE HOSE

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Amendment Notice

ULC STANDARDS

STANDARD FOR INTERNAL LUG QUICK-CONNECT COUPLINGS FOR FIRE HOSE	CAN/ULC-S543-09
AMENDMENT 1	JULY 2010

The following amendments are being incorporated into CAN/ULC-S543-09:

1. Revised Subsection 3.8.

NOTICE

PLEASE NOTE THAT THIS STANDARD INCLUDES AMENDMENT(S). THE CURRENT EDITION OF THIS STANDARD IS NOT VALID UNLESS USED TOGETHER WITH THE AMENDMENT(S).

IT IS POSSIBLE, HOWEVER, THAT CERTAIN CODES WILL REFER TO THE SUPERSEDED EDITION OF THIS STANDARD, WITHOUT THE AMENDMENT(S). IN THOSE INSTANCES, THE COMPILATION OF THIS DOCUMENT ALLOWS FOR REFERENCE TO BE MADE TO THE STANDARD PRIOR TO THE INCLUSION OF THE AMENDMENT(S).

NO TEXT ON THIS PAGE

3.8 10-Day Moist Ammonia Air Stress Cracking Test

3.8.1 After being subjected to the conditions described in 3.8.2 - 3.8.4, hose couplings or adaptors containing more than 15% zinc shall show no evidence of cracking when examined using 25X magnification.

Exception: Cracking is not prohibited when the cracking does not impact the ability of the product to comply with the requirements of this standard.

3.8.2 Each test sample is to be subjected to the physical stresses normally imposed on or within a part as the result of assembly with other components. Such stresses are to be applied to the sample prior to and maintained during the test.

3.8.3 Three samples are to be degreased and then continuously exposed in a set position for 10 d to a moist ammonia-air mixture maintained in a glass chamber approximately 300 by 300 by 300 mm (12 by 12 by 12 in) having a glass cover.

3.8.4 Approximately 600 mL (0.15 gal) of aqueous ammonia having a specific gravity of 0.94 is to be maintained at the bottom of the glass chamber below the samples. The samples are to be positioned 38 mm (1-1/2 in) above the aqueous ammonia solution and supported by an inert tray. The moist ammonia-air mixture in the chamber is to be maintained at atmospheric pressure and at a temperature of $34 \pm 2^{\circ}\text{C}$ ($93 \pm 4^{\circ}\text{F}$).

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ULC STANDARDS COMMITTEE ON FIRE PROTECTION EQUIPMENT AND SYSTEMS

NAME	AFFILIATION	REGION	CATEGORY
S. Meringer (Chair)	Canadian Association of Fire Chiefs	Canada	General Interest
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M. Ramlochan (Project Manager)	ULC Standards	Canada	Non-Voting

This list represents the membership at the time the Committee balloted on the final text of this edition. Since that time, changes in the membership may have occurred.

REFERENCE PUBLICATIONS

The documents shown below are referenced in the text of this Standard. Unless otherwise stated elsewhere in this Standard such reference shall be considered to indicate the edition and/or revisions of the document available at the date on which the Committee approved this ULC Standard.

Documents Published by the American Society for Testing and Materials (ASTM)
100 Barr Harbour Drive, PO Box C700, West Conshohocken, PA 19428-2959 U.S.A.
Telephone: (610) 832-9585
www.astm.org

- ASTM B 30-04, Standard Specification for Copper Alloys in Ingot Form
- ASTM B 117-03, Standard Practice for Operating Salt Spray (Fog) Apparatus
- ASTM B 154-01, Standard Test Method for Mercurous Nitrate Test for Copper and Copper Alloys
- ASTM B 584-04, Standard Specification for Copper Alloy Sand Castings for General Applications
- ASTM D 395-03, Standard Test Methods for Rubber Property – Compression Set
- ASTM D 412-98a (2002)e1, Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension
- ASTM D 572-04, Standard Test Method for Rubber-Deterioration by Heat and Oxygen
- ASTM D 3183-02, Standard Practice for Rubber – Preparation of Pieces for Test Purposes from Products

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- ULC-S513-1978, Standard for Threaded Couplings for 1½- and 2½ -Inch Fire Hose
-

STANDARD FOR INTERNAL LUG QUICK-CONNECT COUPLINGS FOR FIRE HOSE

PREFACE

This is the Second Edition of the Standard for Internal Lug Quick-Connect Couplings for Fire Hose

This Edition of the Standard has been formally approved by the ULC Standards Committee on Fire Protection Equipment and Systems

This Standard has been developed in compliance with the requirements of SCC for accreditation of a Standards Development Organization.

Only metric SI units of measurement are used in this Standard. If a value for measurement is followed by a value in other units in parentheses, the second value may be approximate. The first stated value is the requirement.

Appendix A, identified as informative, is for informational purposes only.

In Canada, there are two official languages, English and French. All safety warnings must be in French and English. Attention is drawn to the possibility that some Canadian authorities may require additional markings and/or installation instructions to be in both official languages.

This Second Edition National Standard of Canada is based on the First Edition, and now has been reaffirmed.

Attention is drawn to the possibility that some of the elements of this Canadian standard may be the subject of patent rights. ULC Standards shall not be held responsible for identifying any or all such patent rights.

Requests for interpretation of this Standard should be sent to ULC Standards. The requests should be worded in such a manner as to permit a “yes” or “no” answer based on the literal text of the requirement concerned.

The review and action to revise or reaffirm this Standard will not exceed 5 years from the date of publication, unless the Standard is identified as fitting within a stabilized category, whereby the review will commence within the appropriate time frame set out by ULC Standards.

This Standard is intended to be used for conformity assessment.

1. SCOPE

1.1 This Standard contains requirements for non-threaded, quick-connect couplings of the internal lug design for use in fire protection service. (See Appendix A.)

1.2 The couplings are intended for use with fire hose in the following standard sizes: 38 mm, 65 mm, 100 mm, 125 mm and 150 mm.

1.3 This Standard also contains requirements for the non-threaded, quick-connect portion of adaptor fittings intended for use in modifying threaded fittings to accommodate couplings of the internal lug design. The remaining requirements for these adaptor fittings shall be in accordance with the applicable sections of the Standard for Threaded Couplings for 1-1/2- and 2-1/2-Inch Fire Hose, ULC-S513.

NOTE: It is also intended that this Standard will contain, in a future edition, requirements for adaptors intended for use in modifying couplings of the external lug design to accommodate the attachment of couplings of the internal lug design.

2. REQUIREMENTS

2.1 GENERAL

2.1.1 The form and dimensions of 38, 65 and 150 mm coupling mating faces and operating parts employed in the connection of couplings shall be of the standard design as illustrated by Figures 1, 2, and 4. 100 mm and 125 mm couplings shall meet the requirements specified in Section 4.

2.1.2 Couplings shall be made and finished in a workmanlike manner throughout. All edges shall be chamfered and free from burrs. The tailpiece lip shall have a rounded inner or outer edge to prevent damage to the hose.

2.1.3 An indent or embossed marking shall be provided on each coupling to indicate when the coupling is in the fully locked position.

2.1.4 The 150 mm quick-connect coupling shall be provided with locks as specified in Section 4.2.

2.2 MATERIAL PROPERTIES - COUPLING BODY

2.2.1 The material from which the coupling body is manufactured shall have strength and other characteristics sufficient to withstand the performance tests detailed herein.

2.3 MATERIAL PROPERTIES - SEALS

2.3.1 The material from which the seals are manufactured shall be vulcanized natural rubber or a synthetic compound and have the following minimum strength characteristics as determined by ASTM D412, Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers in Tension:

- A Tensile Strength, 15 MPa combined with an ultimate elongation of 200% (25.4 to 76.2 mm); or
- B Tensile Strength, 10 MPa combined with an ultimate elongation of 300% (25.4 to 102 mm).

2.4 PERFORMANCE

2.4.1 The performance of the hose-coupling assemblies shall be as required in Subsections 3.1 through 3.9.

2.4.2 The performance of the hose-coupling seals shall be as required in Subsections 3.10 through 3.13.

3. LABORATORY PERFORMANCE TESTS

3.1 HYDROSTATIC PRESSURE TEST

3.1.1 A hose-coupling assembly shall be capable of withstanding, without rupture or separation of the hose from the couplings, a hydrostatic test pressure applied for 1 min in accordance with the following:

<u>Hose Size, mm</u>	<u>Pressure, kPa</u>
38	6200
65	6200
100	4100
125	3100
150	3100

3.1.2 The couplings under test shall be assembled, in accordance with the coupling manufacturer's instructions, onto a section of hose at least 450 mm in length, having a demonstrated burst strength in excess of the required test pressure and coupled, as in service. The free ends of the coupling assemblies thus formed shall be sealed and provided with fittings, one of which shall be connected to a source of hydrostatic pressure, with the fitting on the opposite end plugged, following the complete filling of the hose-coupling assembly with water and the exclusion of air. The hose and the coupling shall be arranged in a straight line position.

3.1.3 With the coupling assemblies under test in a protective enclosure, the pressure shall be applied at a rate of 3000 kPa/min until the required test pressure is achieved. The test pressure shall be held for a period of 1 min and then released.

3.2 LEAKAGE TEST

3.2.1 A hose-coupling assembly shall be capable of withstanding, without separation of the hose from the coupling, or leakage, a hydrostatic test pressure of 2800 kPa, applied for 10 min.

3.2.2 The couplings under test shall be assembled onto sections of hose and coupled as described and required in Clause 3.1.2.

3.2.3 With the coupling assemblies under test in a protective enclosure, the pressure shall be applied at a rate of 2000 kPa/min until a test pressure of 2800 kPa is achieved. The test pressure shall be held for a period of 10 min, during which time observations shall be made for any tendency of the hose to "creep" from its assembled position or develop leaks at any portion of the coupling assembly.

3.3 VACUUM TEST

3.3.1 A hose coupling assembly shall be capable of withstanding the application of a vacuum equal to a minimum of 75 kPa for a period of 10 min with a drop of no more than 20 kPa during that period.

3.3.2 The coupling under test shall be assembled onto sections of hose prepared as required in Clause 3.1.2 and connected to a source of vacuum.

3.3.3 The vacuum shall be developed at a rate of 10 kPa/min and the source sealed and/or removed.

3.4 PULL TEST

3.4.1 A hose-coupling assembly shall be capable of withstanding an axial load tending to separate the coupling, in accordance with the following:

<u>Coupling Size, mm</u>	<u>Axial Load, kN</u>
38	13
65	23
100	35
125	44
150	53

3.4.2 Following the application of the test load:

A The couplings shall not have separated;