



Underwriters Laboratories Inc.®

A not-for-profit organization dedicated to public safety
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February 18, 1994

Revision pages for

Standard for

Fire Department Connections

UL 405, Third Edition

Attached to this transmittal notice is a revision of the Third edition of UL 405.

A CHANGE ON A PAGE DATED FEBRUARY 18, 1994 IS INDICATED BY A SMALL PRINT NOTE FOLLOWING THE AFFECTED ITEM, PRECEDED AND FOLLOWED BY AN ASTERISK.

THESE NEW AND REVISED REQUIREMENTS ARE NOW IN EFFECT.

The new and revised requirements are substantially in accordance with UL's bulletin on this subject dated July 16, 1993. The bulletin is now obsolete and may be discarded.

Revised and/or additional pages may be issued from time to time.

With the inclusion of the accompanying material, the standard consists of pages dated as shown in the following checklist:

Page	Date
1	June 28, 1993 (Reprinted: February 18, 1994)
2	—
3	February 18, 1994
4 – 6	June 28, 1993
7 – 9	February 18, 1994

JUNE 28, 1993

(Title Page Reprinted: February 18, 1994)

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UL 405

Standard for

Fire Department Connections

First Edition – January, 1975

Second Edition – September, 1979

Third Edition

June 28, 1993

An effective date included as a note immediately following certain requirements is one established by Underwriters Laboratories Inc.

Revisions of this standard will be made by issuing revised or additional pages bearing their date of issue. A UL Standard is current only if it incorporates the most recently adopted revisions, all of which are itemized on the transmittal notice that accompanies the latest published set of revision pages.

ISBN 1-55989-345-1

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(1 – 06/28/93 – 02/18/94)

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FOREWORD

A. This Standard contains basic requirements for products covered by Underwriters Laboratories Inc. (UL) under its Follow-Up Service for this category within the limitations given below and in the Scope section of this Standard. These requirements are based upon sound engineering principles, research, records of tests and field experience, and an appreciation of the problems of manufacture, installation, and use derived from consultation with and information obtained from manufacturers, users, inspection authorities, and others having specialized experience. They are subject to revision as further experience and investigation may show is necessary or desirable.

B. The observance of the requirements of this Standard by a manufacturer is one of the conditions of the continued coverage of the manufacturer's product.

C. A product which complies with the text of this Standard will not necessarily be judged to comply with the Standard if, when examined and tested, it is found to have other features which impair the level of safety contemplated by these requirements.

D. A product employing materials or having forms of construction differing from those detailed in the requirements of this Standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be judged to comply with the Standard.

E. UL, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. The opinions and findings of UL represent its professional judgment given with due consideration to the necessary limitations of practical operation and state of the art at the time the Standard is processed. UL shall not be responsible to anyone for the use of or reliance upon this Standard by anyone. UL shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use, interpretation of, or reliance upon this Standard.

F. Many tests required by the Standards of UL are inherently hazardous and adequate safeguards for personnel and property shall be employed in conducting such tests.

6 Clearances

6.1 The clearance between the clapper rim and the body in all positions of travel shall be at least 1/4 inch (6.4 mm) with gray, cast, or malleable iron bodies, and 1/8 inch (3.2 mm) with brass and bronze bodies. The clearance between the clapper hub or hinge and the body or seat ring shall be at least 1/8 inch (3.2 mm). The length of the clapper hub or hinge shall be 1/32 inch (0.8 mm) less than the distance between the bearings. The hole through the clapper hub shall be at least 1/32 inch (0.8 mm) greater in diameter than the diameter of the hinge pin.

7 Seat Rings

7.1 The seat or seat rings shall be of ductile iron or other equivalent corrosion-resistant material and shall be smoothly machined. Raised seats shall be at least 1/4 inch (6.4 mm) wide and raised at least 1/8 inch (3.2 mm). Machined surfaces of seats which are not raised shall extend at least 1/8 inch (3.2 mm) beyond the clapper rim. If the seat rings are not a part of the body casting, they shall be screwed or pressed into place.

7.2 *7.2 deleted February 18, 1994*

7.3 *7.3 deleted February 18, 1994*

7.4 *7.4 deleted February 18, 1994*

7.5 *7.5 deleted February 18, 1994*

8 Outlets

8.1 The outlet of the connection shall have an area not less than the total area of all inlets and wherever possible shall be provided with a standard pipe thread. Pipe threads shall conform to the Standard for Pipe Threads, General Purpose (Inch), ANSI/ASME B1.20.1-1983(R1992) and the Standard for Dryseal Pipe Threads (Inch), ANSI B1.20.3-1976(R1991).

PERFORMANCE

9 General

9.1 Representative samples of each fire department connection are to be subjected to the tests described in Sections 10 – 11A.

9.1 revised February 18, 1994

10 Leakage Test

10.1 A fire department connection shall be capable of withstanding without leakage at joints or at the seat an internal hydrostatic pressure of two times the rated working pressure, but no less than a test pressure of 350 psi (241 MPa), applied for a period of 1 minute. Slight weeping of water at the seat is acceptable but, if such leaking is evident, the test shall be conducted three times, releasing pressure after each test, opening and reclosing the clapper, and then pressurizing the connection.

10.2 The leakage at any inlet shall not exceed 20 fluid ounces per hour (9.86 mL/min) for each nominal inch (mm $\times$ 0.039) of inlet diameter pipe size.

11 Strength of Body Test

11.1 One sample fire department connection shall withstand without rupture a hydrostatic pressure of five times the rated working pressure, but not less than 875 psi (6.03 MPa) test pressure, applied for a period of 1 minute.

11.2 During this test the clapper shall be blocked open so as to impress the test pressure on all parts of the body.

11A Elastomeric Parts (Except Gaskets) Test

11A.1 An elastomeric part used to provide a seal shall have the following properties when tested as specified in the Standard for Gaskets and Seals, UL 157:

- a) For silicone rubber (having poly-organo-siloxane as its constituent characteristic), a minimum tensile strength of 500 psi (3.4 MPa) and a minimum ultimate elongation of 100 percent.
- b) For natural rubber and synthetic rubber other than silicone rubber, a minimum tensile strength of 1500 psi (10.3 MPa) and minimum ultimate elongation of 150 percent; or a minimum tensile strength of 2200 psi (15.2 MPa) and a minimum ultimate elongation of 100 percent.
- c) Those properties relating to maximum tensile set; minimum tensile strength and elongation after oven aging; and hardness after oven aging, all as specified in UL 157. The maximum service temperature used to determine the oven time and temperature for oven aging is considered to be 60°C.

11A.1 added February 18, 1994