



## ACCEPTANCE CRITERIA FOR BACKWATER VALVES

**AC247**

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### PREFACE

Evaluation reports issued by ICC Evaluation Service, Inc. (ICC-ES), are based upon performance features of the International family of codes and other widely adopted code families, including the Uniform Codes, the BOCA National Codes, and the SBCCI Standard Codes. Section 104.11 of the *International Building Code*® reads as follows:

The provisions of this code are not intended to prevent the installation of any materials or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.

Similar provisions are contained in the Uniform Codes, the National Codes, and the Standard Codes.

This acceptance criteria has been issued to provide all interested parties with guidelines for demonstrating compliance with performance features of the applicable code(s) referenced in the acceptance criteria. The criteria was developed and adopted following public hearings conducted by the ICC-ES Evaluation Committee, and is effective on the date shown above. All reports issued or reissued on or after the effective date must comply with this criteria, while reports issued prior to this date may be in compliance with this criteria or with the previous edition. If the criteria is an updated version from the previous edition, a solid vertical line (|) in the margin within the criteria indicates a technical change, addition, or deletion from the previous edition. A deletion indicator (→) is provided in the margin where a paragraph has been deleted if the deletion involved a technical change. This criteria may be further revised as the need dictates.

ICC-ES may consider alternate criteria, provided the report applicant submits valid data demonstrating that the alternate criteria are at least equivalent to the criteria set forth in this document, and otherwise demonstrate compliance with the performance features of the codes. Notwithstanding that a product, material, or type or method of construction meets the requirements of the criteria set forth in this document, or that it can be demonstrated that valid alternate criteria are equivalent to the criteria in this document and otherwise demonstrate compliance with the performance features of the codes, ICC-ES retains the right to refuse to issue or renew an evaluation report, if the product, material, or type or method of construction is such that either unusual care with its installation or use must be exercised for satisfactory performance, or if malfunctioning is apt to cause unreasonable property damage or personal injury or sickness relative to the benefits to be achieved by the use of the product, material, or type or method of construction.

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# ACCEPTANCE CRITERIA FOR BACKWATER VALVES

## 1.0 INTRODUCTION

**1.1 Purpose:** The purpose of this acceptance criteria is to establish requirements for backwater valves to be recognized in an ICC Evaluation Service, Inc. (ICC-ES), evaluation report under the 2003 *International Plumbing Code*<sup>®</sup> (IPC), the 2003 *International Residential Code*<sup>™</sup> (IRC), and the 2003 *Uniform Plumbing Code* (UPC). Bases of recognition are IPC Section 715, IRC Section P3008, and UPC Section 710.1.

**1.2 Scope:** Backwater valves are installed in the building drain or sewer pipe to prevent backflow of sewage in buildings where the flood-level rim of a plumbing fixture is below the elevation of the manhole cover of the next upstream manhole in the public sewer.

### 1.3 Reference Standards:

**1.3.1** 2003 *International Plumbing Code*<sup>®</sup> (IPC), International Code Council.

**1.3.2** 2003 *International Residential Code*<sup>®</sup> (IRC), International Code Council.

**1.3.3** 2003 *Uniform Plumbing Code* (UPC), International Association of Plumbing and Mechanical Officials.

**1.3.4** ASME A112.14.1.-1975 (R1998), Backwater Valves, American Society of Mechanical Engineers.

**1.3.5** CSA B181.1-99 ABS, Drain, Waste, and Vent Pipe and Pipe Fittings, Canadian Standards Association.

**1.3.6** CSA B181.2-99, PVC Drain, Waste, and Vent Pipe and Pipe Fittings, Canadian Standards Association.

**1.3.7** NSF 14-1999, Plastic Piping System Components and Related Materials, National Sanitation Foundation.

**1.4 Definitions:** Definitions shall be in accordance with the referenced standard, except as noted below:

**1.4.1 Access Sleeve:** Pipe opening through which access is gained to the disc or valve seat.

**1.4.2 Collar, Insert Pipe, and Disc Assembly:** Designed to fit inside the access sleeve, this removable assembly consists of a length of insert pipe permanently attached to the access collar (on top) and a disc assembly (on the bottom). When removed vertically from the access sleeve, the attached disc assembly is also removed, allowing above-grade repair.

## 2.0 BASIC INFORMATION

**2.1 General:** The following information shall be submitted:

**2.1.1 Product Description:** Complete information concerning material specifications, thickness, size and the manufacturing process.

**2.1.2 Installation Instructions:** Installation details and limitations, pipe connection details.

**2.1.3 Packaging and Identification:** A description of the method of packaging and field identification of the valve must be provided. Identification provisions must include the evaluation report number, and the name or logo of the inspection agency.

**2.1.4 Maintenance:** A copy of the recommended maintenance instructions that include methods and recommended intervals shall be provided.

**2.2 Testing Laboratories:** Testing laboratories shall comply with Section 4.2 of the ICC-ES Rules of Procedure for Evaluation Reports.

**2.3 Test Reports:** Test reports shall comply with the ICC-ES Acceptance Criteria for Test Reports (AC85).

**2.4 Product Sampling:** Products shall be sampled in accordance with Section 3.0 of AC85.

## 3.0 DATA, TEST AND PERFORMANCE REQUIREMENTS

**3.1** All bearing portions of backwater valves shall be of corrosion-resistant material.

**3.2** Backwater valves shall comply with one of the following standards.

**3.2.1** ASME A112.14.1.

**3.2.2** CSA B181.1.

**3.2.3** CSA B181.2.

### Exceptions:

1. When valves otherwise conforming with CSA B181.2 are provided with access sleeves in excess of 24 inches and accommodating a removable collar, insert pipe, and disc assembly, said valve shall also conform to Sections 5.2 and 5.3 of this criteria.

2. Plastic valve bodies may be of any color plastic.

**3.3** Backwater valves shall be so constructed as to provide a mechanical seal against backflow.

**3.4** Backwater valves, when fully opened, shall have a capacity not less than that of the pipes in which they are installed.

**3.5** Backwater valves shall be installed so that access is provided to the working parts for service and repair.

**3.6** Materials used in the valve shall comply with NSF 14.

## 4.0 QUALITY CONTROL

**4.1** The products shall be manufactured under an approved quality control program with inspections by an inspection agency accredited by the International Accreditation Service, Inc. (IAS), or as otherwise acceptable to ICC-ES.

**4.2** A quality control manual complying with the ICC-ES Acceptance Criteria for Quality Control Manuals (AC10) shall be submitted.

## 5.0 EVALUATION REPORT RECOGNITION

**5.1** The report shall require the installed valve to be tested for leakage in accordance with IPC Section 312 or UPC Section 712 or 723, as applicable.

**5.2** When valves otherwise conforming with CSA B 181.2 have access sleeves up to 12 feet long and are equipped with removable collar, insert pipe, and disc assemblies, the tests described in Sections 5.2.1 and 5.2.2 shall be successfully completed.

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**5.2.1** The seat cleaning test shall be performed in accordance with Sections 5.2.1.1 through 5.2.1.2, with the maximum length of access sleeve. The inner access sleeve and disc assembly shall be removed for this test.

**5.2.1.1** The valve seat shall be covered with a mixture of cooking lard and 25% by weight mortar sand to a minimum depth of 0.25 inch (6.35 mm).

**5.2.1.2** The mixture shall be dislodged by using a hose or pipe with water pressure of maximum 30 psi and a minimum nozzle opening diameter of  $\frac{1}{4}$  inch (6.35 mm), for a maximum duration of 3 minutes through the maximum sleeve length.

**5.2.2 Pressure Test:** The valve tested as noted in Section 5.2.1, with no additional cleaning of the disc seat, and with the inner access sleeve and disc assembly installed, shall then successfully complete the following leakage test: The valve shall be oriented in its normal operating position. Over a 1-minute period, water pressure shall be gradually increased to 4.5 psi on the exit side of the valve and maintained for a test period of 10 minutes. During the test period, any water that is emitted from the entrance side of the fitting shall be collected, measured, and

recorded. Emitted water shall not exceed 21.5 fluid ounces for a valve with a nominal size of 3 inches; or 38.5 fluid ounces for a valve with a nominal size of 4 inches.

**5.3** The removable collar, insert pipe, and disc assemblies shall satisfy Sections 5.3.1 through 5.3.3, as follows:

**5.3.1** The valve shall have an integral lifting device consisting of the removable collar insert pipe and disc assembly equipped with an indicator located not more than 12 inches from the access opening, indicating that the seal element is aligned properly.

**5.3.2** The valve shall be designed such that the removable collar insert pipe and disc assembly is self-aligning and self-seating.

**5.3.3** The valve shall have no seating surface other than the moving seal element below the top of the inlet pipe of the valve.

**5.4** The evaluation report shall require that a copy of the maintenance instructions be left with the property owner. ■