

ASSE Standard #1093-2019

WSC Standard PAS-97 (2019)

ASSE Board Approved: July 2019

ANSI Approved: July 2019

ICS Code: 91 140 60

ASSE International
WATER SYSTEMS COUNCIL

Performance Requirements for

**Pitless Adapters,
Pitless Units, and
Well Caps**



An American National Standard

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General Information

Neither this standard, nor any portion thereof, may be reproduced without the written consent of ASSE International or the Water Systems Council.

It is generally required by jurisdictions that in order to demonstrate conformity to this standard by a third-party, that the products are certified and listed. Listings are offered by ASSE International, Water Systems Council, and others.

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Mokena, Illinois
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ASSE International Product Listing Information

Information on how to certify and list products is found at www.asse-plumbing.org/asse/product-certification/how-to-get-your-product-certified. Products are applied to be listed, tested at an ASSE International recognized laboratory or by a laboratory that is an ILAC-MRA signatory, the factory is audited, and the application materials are evaluated by ASSE staff and reviewed by the ASSE Seal Control Board. Periodic retesting is required, including modifications potentially affecting conformance with the standards. The ASSE Seal may then be placed on the product to demonstrate conformity under ASSE's ISO 17065 process.

Water Systems Council

Product Listing Information

1.0 LISTING

1.1 ELIGIBILITY – In order to be eligible for listing by the Water Systems Council, pitless adapters, pitless units, and sanitary well caps must be certified as meeting WSC PAS-97 (2017), WSC PAS-97(2012), PAS-97(04) (or, previously, to the predecessor standard PAS-1 and/or PAS-2) by a third-party testing laboratory. Applicants for such listing must identify the original equipment manufacturer of the product in their certification applications. At least one size of the same design and model series of these products must be tested and certified as meeting PAS-97 (2017) in order for the entire model series to be listed. The tested sample must be forwarded to WSC to retain for future comparison.

1.2 LISTING FORMAT – Beginning in 2012, manufacturers listing their products by “series” must provide WSC with a complete list of individual products included in the series listing and indicate which products are “lead free.” Or, companies can submit an individual product-by-product list with the “lead free” designation where appropriate.

1.3 SYMBOL AUTHORIZATION – Manufacturers or redistributors of products eligible for listing may be licensed or authorized by the Water Systems Council to use its symbol of compliance with this Standard. Listed manufacturers and listed redistributors shall be eligible to utilize the WSC symbol of testing compliance with the PAS standard for their products that are listed.

1.4 FEES FOR LISTING – Fees for listing will be set from time to time by the Water Systems Council.

1.5 PRODUCT LISTING – A list of products certified by third-party testing laboratories to the PAS standard shall be published once per year by the Water Systems Council. This list will be available on the WSC website. Listed manufacturers and redistributors shall have the annual opportunity to add newly certified products to the list as needed and incur the obligation to inform the certifying laboratory of any changes in their listed products' design or function that could necessitate a retest and recertification.

1.6 ENFORCEMENT – WSC reserves the right to require a retest of any product on the PAS list. Any challenge by a member or non-member to the veracity of a product's compliance with PAS requirements must be submitted to WSC in writing. The letter must include the basis for the challenge as well as the name of the person and/or company submitting the information. The WSC Board of Directors is responsible for determining what actions, if any, will be taken.

If the retesting is required in answer to a challenge to a product listing and the retested product meets the PAS standard requirements, challenger will reimburse the manufacturer for the cost of the retesting. If product fails, the manufacturer of the failed product shall pay the cost of retesting. Proper notification must be made to WSC PAS Committee and the manufacturer being challenged.

Foreword

This foreword shall not be considered a part of the standard; however, it is offered to provide background information.

ASSE standards are developed in the interest of consumer safety. ASSE International considers product performance standards to be of great value in the development of improved plumbing systems.

This standard was originally developed by the Water Systems Council and was co-developed with ASSE for the 2019 revision.

The purpose of this standard is to establish worldwide recognized performance standards for sanitary water well pitless adapters, pitless units, and sanitary well caps. It is also the purpose of this standard to provide government agencies, specifiers, engineers, installers, and other interested parties, including the general public, with a single definition of pitless adapter, pitless unit, and sanitary well cap; to provide a single standard for the evaluation of pitless products and sanitary well caps by governmental regulatory agencies; to provide a means for listing products which are certified to comply with the standards; and to promote better understanding between the manufacturer and the user.

The well pit is a common method of providing convenient access to underground lateral pipe connections below the frost line on individual water systems, but is generally unsanitary. Potentially contaminated surface and near-surface sources may drain into the pit. Pitless well construction sharply reduces the possibility of contaminated water entering the well and system, and avoids well pit construction costs as well as the need to inspect and regulate well pits.

Pitless adapters and pitless units are devices designed to attach to openings in the water well casing. When properly installed, they provide sanitary connections by preventing the entrance of contaminants or pollutants from surface or near-surface sources through such openings into the well or potable water supply, and permit the termination of the well above the ground surface. Pitless adapters and pitless units, also sometimes known as diverting devices, sanitary underground discharges, attachments and connectors, also conduct water from the well, protect the water from temperature extremes, and permit access to the well and to water systems parts within the well without the exterior excavation or disruption of the earth. Pitless adapters and pitless units are the modern way to maintain a sanitary water well supply when water is conducted to a location remote from the well.

The Pitless Adapter Division Recommended Standard (PAS-1) and Installation Procedures for Sanitary Water Well Pitless Adapters and Units have been in effect since 1966. They define product performance criteria and testing procedures, and provide recommended installation procedures for pitless well adapters. Over the years it has become widely accepted that wells must be vented to the atmosphere to prevent a vacuum from being drawn on the casing and on attachments to the casing, including well caps, electrical conduit and pitless adapters. Most sanitary well caps have provision for either a factory or field installed vermin-proof vent device; PAS-2 was adopted to set a minimum standard for performance inspection and approval of vented sanitary well caps. Note: The factory or field installation of a vent and/or open electrical conduit connection can result in the cap's being watertight only at the point of attachment between the standard well casing and well cap. The culmination of years of field experience and manufacturing using the PAS-1 and PAS-2 led to the combined standard PAS-97.

The Pitless Adapter Manufacturers Committee reviewed and revised PAS-97 Standard in 2004. The amended standard was designated PAS-97(04).

The Pitless Adapter Manufacturers Committee reviewed the PAS-97(04) Standard in February 2008 and again in November 2010. There were no changes to the Standard at those times.

The passage of the "Reduction of Lead in Drinking Water Act" in January 2011 has resulted in many manufacturers making material changes (not design changes) to their products to comply with the "lead free" requirements. The 2012 revisions to PAS-97 (04) clarify the changes to listing requirements for the manufacturers of these products. The revised standard was called WSC PAS-97(2012).

The 2017 revisions to WSC PAS-97 (2012) clarified pitless adapter and pitless unit definitions, revised the pitless adapter and pitless unit testing, and revised the sanitary well cap watertight capability testing. A separate set of tests, 6.1.1 – Surface Water Contamination Test and 6.1.2 – Internal Pressure Test, were developed for pitless adapters. Similarly, a separate set of tests, 6.2.1 – Surface Water Contamination Test, 6.2.2 – External Housing Pressure Test less than 8", and 6.2.3 Internal Housing Pressure Test 8" and Larger, were developed for pitless units. Sanitary Well Cap Tests are now Section 6.3 and Lead Free Test is Section 6.4. The 2012 standard required users to perform a submersed watertight leak test. Sanitary well caps are installed with vents to allow circulation of air through the well. These vents will allow floodwater to enter the well in the event the sanitary well cap becomes submerged in flood water. Therefore, the requirement of a submerged leak test does not represent an actual capability of the sanitary watertight well cap. The 2017 standard clarifies the actual watertight capability of the sanitary well cap to only protect a well against falling rain, sleet, snow, or the entrance of vermin, contaminants, or pollutants.

The working group that developed this standard was set up within the framework of the Product Standards Committee of ASSE International.

Recognition is made of the time volunteered by members of this working group and of the support of manufacturers who also participated in meetings for this standard.

This standard does not imply ASSE International's nor the Water System Council's endorsement of a product which conforms to these requirements.

Compliance with this standard does not imply acceptance by any code body.

It is recommended that these devices be installed consistent with local codes by qualified and trained professionals.

This standard was promulgated in accordance with the ASSE Procedures for Standards Development, as approved by the American National Standards Institute (ANSI).

2019 Product Standards Committee

Tsan-Liang Su, PhD, Chairperson

*Stevens Institute of Technology
Hoboken, NJ*

Conrad L. Jahrling (non-voting)

*ASSE International
Chicago, IL*

William Briggs, Jr.

*JB&B
New York, NY*

Jim Kendzel

*American Supply Association
Chicago, IL*

Terry Burger

*NSF International
Ypsilanti, MI*

Peter Marzec

*United Association of Plumbers
and Pipefitters
Pearl River, NY*

William Chapin

*Professional Code Consulting, LLC
Cullman, AL*

Ramiro Mata

*American Society of Plumbing
Engineers (ASPE)
Mentor, OH*

Mark E. Fish

*Zurn Industries, LLC
Cary, NC*

Thomas Pitcherello

*State of New Jersey
Bordentown, NJ*

Ron George

*Plumb-Tech Design & Consulting
Services, LLC
Newport, MI*

Daniel Rademacher

*Plumbing Code and Design Consulting
Butte, MT*

Daniel Gleiberman

*Sloan
Los Angeles, CA*

Shabbir Rawalpindiwala

*Kohler Company
Kohler, WI*

Chris Haldiman

*Watts Water Technologies
Springfield, MO*

Billy Smith

*American Society of Plumbing
Engineers (ASPE)
Montgomery, AL*

John F. Higdon, P.E.

*Apollo Valves / Conbraco Industries, Inc.
Matthews, NC*

ASSE 1093 / PAS-97 Working Group

John Surinak, Chairperson

*Maass Midwest Mfg, Inc.
Huntley, IL*

Rob Evans, PE

*Element Materials Technology
New Berlin, WI*

Stephen Anderson

*Merrill Manufacturing
Storm Lake, IA*

Herb Hoeptner

*Hoeptner Preferred Products
Gilroy, CA*

Erin Coffman (non-voting)

*Water Systems Council
Washington, DC*

Conrad L. Jahrling (non-voting)

*ASSE International
Chicago, IL*

Paul Erb

*Boshart Industries
Milverton, ON
Canada*

Michael Zeamer

*Baker/Campbell Manufacturing, LLC
Evansville, WI*

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Performance Requirements for Pitless Adapters, Pitless Units, and Well Caps

Section I

1.0 General

1.1 Application

This standard covers three interrelated devices for creating connections to wells and aquifers: pitless units, pitless adapters, and well caps. The purpose of these devices is to allow for the flow and environmental protection of underground water into the cold water supply to a single or multiple premises.

1.2 Scope

This standard covers pitless adapters, pitless units, and sanitary well caps.

A pitless adapter shall consist of an inlet connection from a pump, an outlet connection, and a means of sealing against a well casing.

A pitless unit shall consist of a section of well casing and either a pitless adapter or the internal and external components to perform the function of a pitless adapter.

A well cap shall consist of a means to seal a well casing from the environment, a tamper-resistant means to secure itself to the well casing, and a path for electrical wiring to pass through to the pump.

1.2.1 Connections

Connections shall be in compliance with the standards referred to in the local plumbing codes.

1.2.2 Size Range

Well caps that are installed on 3 - 36 in (7.6 - 91 cm) well casings.

Pitless units of discharge sizes of 1 - 14 in (2.54 - 36 cm) of nominal diameter.

Pitless adapters that are installed on case sizes of 2 - 36 in (5.08 - 91.4 cm).

1.3 Reference Documents

Referenced industry standards shall be to the revision stated below.

- ASTM A53 / A53M-18, *Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless*
- ASTM F-480-14, *Standard Specification for Thermoplastic Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), SCH 40 and SCH 80*
- ASTM D2241-15, *Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)*
- ASTM E11-17, *Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves*
- UL 969-2017, *Marking and Labeling Systems*