

AS 4310:2024



# DN 80 piston type vacuum interface valves for municipal sewer systems



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- Australian Industry Group
- Australian Stainless Steel Development Association
- Australian Water Association
- Engineers Australia
- Institute of Instrumentation, Control & Automation Australia
- Master Plumbers Australia and New Zealand
- Plastics Industry Pipe Association of Australia
- Plumbing Products Industry Group
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# **DN 80 piston type vacuum interface valves for municipal sewer systems**

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## Preface

This Standard was prepared by the Standards Australia Committee WS-022, Valves for Waterworks Purposes, to supersede AS 4310:2004.

The objective of this document is to provide uniform minimum requirements for DN 80 piston-type vacuum interface valves for municipal sewer systems operating up to a maximum temperature of 45 °C and 100 % relative humidity.

The terms “normative” and “informative” are used in Standards to define the application of the appendices to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

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# Australian Standard®

## DN 80 piston type vacuum interface valves for municipal sewer systems

### 1 Scope and general

#### 1.1 Scope

This document specifies requirements for DN 80 piston-type vacuum interface valves for municipal sewer systems operating up to a maximum temperature of 45 °C and 100 % relative humidity.

The valves provide an interface between the vacuum in the sewerage reticulation system and atmospheric pressure in the collection chamber. The valve is designed to activate at a pre-set sewage level in the collection chamber to facilitate transfer of the sewage into the vacuum sewer.

This document is not intended for valves used in vacuum sewage applications for general industry, e.g. ships, commercial premises, industry, aircraft, etc.

NOTE [Appendix A](#) provides means for demonstrating conformance with this document.

#### 1.2 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.

NOTE Documents for informative purposes are listed in the Bibliography.

AS 1646, *Elastomeric seals for waterworks purposes*

AS ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

ISO 8044, *Corrosion of materials and alloys — Vocabulary*

ISO 16365-1, *Plastics — Thermoplastic polyurethanes for moulding and extrusion — Part 1: Designation system and basis for specifications*

ISO 16396-1, *Plastics — Polyamide (PA) moulding and extrusion materials — Part 1: Designation system and basis for specifications*

ISO 19069-1, *Plastics — Polypropylene (PP) moulding and extrusion materials — Part 1: Designation system and basis for specifications*

ASTM A276, *Standard specification for stainless steel bars and shapes*

ASTM A313, *Standard specification for stainless steel spring wire*

#### 1.3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

- (a) IEC Electropedia: available at <https://www.electropedia.org/>
- (b) ISO Online browsing platform: available at <https://www.iso.org/obp>

##### 1.3.1

##### **batch volume**

volume of sewage in the sump corresponding to a level at which the controller level sensor setting activates the vacuum interface valve

**1.3.2****breather**

device employed by the controller to facilitate transfer of atmospheric air into the valve housing to allow closure of the vacuum interface valve

**1.3.3****collection chamber**

sump and vacuum interface valve pit connected to the vacuum sewer and into which sewage gravitates from the property(s) through the sanitary drain(s)

**1.3.4****collection sump**

pit formed in the floor of the collection chamber to store flows of sewage until sufficient has been accumulated to activate the interface valve

**1.3.5****controller**

device that incorporates a mechanism that detects a preset sewage level in the collection chamber, causing the valve to activate and a timer mechanism that activates valve closure

**1.3.6****lower housing**

component of the valve that houses the shaft, seal, shaft bearing and micro positioning switch. It also acts to centre the shaft and incorporates condensation ports that allows air to be admitted to purge the lower housing when the valve opens

**1.3.7****level sensor**

detects the level of sewage in the collection chamber via pressure developed in the sensor tube. The level sensor setting, which corresponds with the upper surface of the batch volume, causes the valve to activate via the controller

**1.3.8****maximum operating temperature**

maximum permitted temperature of the sewage flowing through the valve

**1.3.9****may**

indicates an option

**1.3.10****nominal size****DN**

alphanumeric designation of size for components of a pipework system used for reference purposes

Note 1 to entry: It comprises the letters "DN" followed by a dimensionless whole number, related to the approximate size, in millimetres of the diameter of the valve.

**1.3.11****PREN**

indication of the resistance of stainless steels and nickel-based alloys to pitting in the presence of chloride-containing water

Note 1 to entry: [SOURCE: ISO 8044:2020, 3.3.4]

**1.3.12****service connection**

section of the vacuum pipeline that connects the collection chamber to the vacuum sewer

**1.3.13****shall**

indicates that a statement is mandatory

**1.3.14****should**

indicates a recommendation

**1.3.15****shrouded coupling**

flexible non-axial restraint mechanical coupling

Note 1 to entry: Shrouded couplings are also known as “no hub” couplings.

**1.3.16****suction pipe**

pipe connecting the vacuum interface valve to the collection chamber sump, to facilitate transfer of the batch volume of sewage

**1.3.17****type test**

test or series of tests performed to demonstrate that a product meets all relevant requirements of this document

Note 1 to entry: The test is done once and repeated only after a change in design, materials, method or place of manufacture or as otherwise nominated in the product Standard.

**1.3.18****vacuum interface valve**

valve that provides an interface between the vacuum in the sewer and atmospheric pressure in the collection chamber. When activated, the valve facilitates transfer of sewage and air from the collection chamber via a suction pipe and into the service connection and vacuum sewer

**1.3.19****vacuum sewer**

pipeline, operating under vacuum, that is connected to a series of collection chambers via service connections, in order to facilitate the transportation of sewage

**1.4 Freedom from defects**

The valves shall be clean, smooth, and free from burrs, fins, irregularities, and sharp edges that may affect the performance of the valve in service. Internal joints shall be smooth to allow unhindered passage of sewage.

**2 Materials and components****2.1 Materials**

The basic materials for the manufacture of the valve components shall be as given in [Table 2.1](#). The materials listed are the minimum acceptable standard materials.

Alternative materials may be used, provided they are equivalent or superior in performance, particularly with respect to strength, corrosion-resistance, valve operation and durability.

NOTE Information on material equivalence may be obtained from the Water Services Association of Australia (WSAA).