



WMTS-537:2022

Sanitary plumbing products -
Automatic concealed urinal

WaterMark Technical Specification

2022



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Publication History:-

First published as WMTS-537:2022

2022

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PREFACE

This WaterMark Technical Specification (WMTS) was prepared in accordance with the Manual for the WaterMark Certification Scheme, Appendix 4, Protocol for Developing Product Specifications.

The objective of this WaterMark Technical Specification is to enable product certification in accordance with the requirements of the Plumbing Code of Australia (PCA).

The word 'VOID' set against a clause indicates that the clause is not used in this WaterMark Technical Specification. The inclusion of this word allows a common use clause numbering system for the WaterMark Technical Specifications.

The term 'normative' has been used in this WaterMark Technical Specification to define the application of the appendices to which they apply. A 'normative' appendix is an integral part of a WaterMark Technical Specification.

The test protocol and information in this WaterMark Technical Specification was arranged to meet the authorisation requirements given in the PCA.

The WaterMark Schedule of Products and the WaterMark Schedule of Excluded Products are dynamic lists and change on a regular basis. Based on this function, these schedules are now located on the ABCB website (www.abcb.gov.au). These lists will be version controlled with appropriate historic references.



ACKNOWLEDGEMENTS

WaterMark Technical Specification WMTS-537:2022 was prepared by industry and was approved by the Administering Body on 11 July 2022.

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1 SCOPE

This Specification sets out requirements for a plastic bodied in-wall mounted urinal that is concealed when not in use and opens when user enabled by automatic non-contact sensor operation. After the user departs the urinal closes and the *serviceable area* is washed with water in readiness for the next use. The urinal is integrated with components enabling direct connection to the mains water supply and sanitary plumbing system.

2 APPLICATION

Appendix A sets out the means by which compliance with this WaterMark Technical Specification shall be demonstrated by a manufacturer for the purpose of product certification.

3 REFERENCED DOCUMENTS

The following documents are referred to in this Specification.

AS

- | | |
|--------|---|
| 1589 | Copper and copper alloy waste fittings |
| 2887 | Plastic waste fittings |
| 3558.2 | Methods of testing plastics and composite materials sanitary plumbing fixtures, Part 2: Determination of chemical and stain resistance |
| 3558.3 | Methods of testing plastics and composite materials sanitary plumbing fixtures, Part 3: Determination of colour fastness |
| 3558.4 | Methods of testing plastics and composite materials sanitary plumbing fixtures, Part 4: Determination of resistance to surface scratching |
| 3558.6 | Methods of testing plastics and composite materials sanitary plumbing fixtures, Part 6: Visual examination of surface finish for defects |
| 3688 | Water supply and gas systems—Metallic fittings and end connectors |

AS/NZS

- | | |
|--------|---|
| 3500.0 | Plumbing and drainage, Part 0: Glossary of terms |
| 3500.1 | Plumbing and drainage, Part 1: Water Services |
| 3500.2 | Plumbing and drainage, Part 2: Sanitary plumbing and drainage |

NCC

PCA Plumbing Code of Australia

WMTS

040 Waste pipe connection outlets and gratings, separate or integral

4 DEFINITIONS

For the purpose of this WaterMark Technical Specification, the definitions given in the WaterMark Scheme Rules, AS/NZS 3500.0 and the below apply.

4.1 Servicable area

The serviceable area is the area intended to be covered by urine.

5 MATERIALS

The base material of the urinal shall be manufactured from a plastics material that is recommended by the material supplier as being suitable for the application, being able to support the loads applied, and being resistant to urine and cleaning agents.

6 MARKING

Markings to be placed on products or packaging shall be in accordance with the [Manual for the WaterMark Certification Scheme](#).

In addition, each urinal shall be legibly marked with the following:

- a) Model identification.
- b) Batch Identification or Serial Number.

7 PACKAGING

The urinal shall be packaged in such a manner so as to avoid damage during transportation and handling.

8 DESIGN

8.1 End connections

8.1.1 Inlet connection

Where threaded, the connection end shall comply with AS 3688. Other connection ends shall comply with the requirements of the relevant Specification, as listed on the WaterMark Schedule of Products, as applicable to the piping system.

8.1.2 Outlet connection

The outlet connection design shall enable connection to the sanitary drainage system pipe work.

8.2 Water supply system

The urinal shall include an integral system of supplying water for washing the *serviceable area* of the urinal. The system shall be watertight and able to withstand the pressures applied in normal operation. The system shall only operate on demand, in the closed position and deliver sufficient water to wash the *serviceable area*.

8.3 Integral plumbing components, accessories or fittings

Where the urinal includes integral plumbing components, accessories or fittings that require certification as specified in the PCA, these shall comply with the applicable requirements of the specification for that product, as listed on the WaterMark Schedule of Products.

8.4 Waste outlet and grating

The urinal shall incorporate an integral waste and grating that provides free flow of urine and wash water into waste pipework. The grating shall be designed to protect from blockage of foreign articles, i.e. deodorizing tablets. Waste outlets and gratings shall comply with the requirements of AS 2887 or AS 1589 or WMTS 040.

8.5 Traps

The urinal shall include an integral trap with a water seal of 75 + 35, -5mm.

8.6 Surface cleaning

The urinal shall include a water supply system that effectively washes the *serviceable area* of the urinal after each user operation.

8.7 Opening/closing mechanism

The urinal shall include a mechanism to open the urinal on user presence and close when the user has departed. The opening and closing mechanism shall be designed to avoid damage to the urinal, or injury to the user, in the event of obstruction in the action of opening or closing.

8.8 Sensor activation

The urinal is designed to be activated by a mechanism that senses user presence and opens for use. Once the user has departed after urinating, the urinal closes and a washing function is performed in readiness for the next user. The sensitivity is such that the urinal does not inadvertently close while the user is present.

9 PERFORMANCE CRITERIA AND TEST METHODS

9.1 Products in contact with drinking water

Products in contact with drinking water shall comply with AS/NZS 4020.

9.2 Material tests

9.2.1 Chemical and stain resistance test

When sample specimens are tested in accordance with AS 3558.2, the material shall be unaffected by the following reagents:

- a) Household detergent 'Teepol' Gold D6515 (5% solution/deionized water) or equivalent..
- b) Urea 6% (urine) analar grade.

9.2.2 Colourfastness test – Pigmented plastics

When a sample specimen is tested in accordance with AS 3558.3, the material shall not exhibit any visible change in colour.

9.2.3 Surface scratching test

When tested in accordance with AS 3558.4, there shall be no scratches classified as severe.

9.3 Surface finish

When tested in accordance with AS 3558.6, the surface of the urinal shall not exhibit any cracks crazing or other surface defects.

9.4 Backflow prevention/Air gap test

When tested in accordance with Appendix B, with the urinal in the closed position, the water level shall not rise to within 25mm of the lowest water inlet.

9.5 Strength of assembly test

When tested in accordance with Appendix C, the inlet pressurised assembly shall not leak.

9.6 Vertical load test

When tested in accordance with Appendix D with the load across the center of the urinal lid in the open position, there shall be no cracking or other structural failure. After loading, the urinal shall be able to function in a normal manner.

9.7 Urinal capacity test

When tested in accordance with Appendix E, there shall be no signs of leakage of water outside of the urinal in the open or closed position.

9.8 Urinal functional test

When tested in accordance with Appendix F:

- a) The urinal operating mechanism shall function as described by the manufacturer's specification.
- b) If obstructed during opening or closing the urinal shall auto reverse so as not to cause damage to the urinal or injury to the user. The closing force shall not be more than 40N and speed not be greater than 0.25 meters/second.
- c) The water supply system shall sufficiently wash the *serviceable area*.
- d) The water consumption shall not be more than specified by the manufacturer.

NOTE: If the flush volume is more than required by the PCA, the product may be considered for installation by a performance solution.

- e) There shall be no visible leakage.

10 TEST SEQUENCE AND TEST SAMPLE PLAN

A single sample or independent samples may be used for testing of the performance requirements of Clauses 9.2 to 9.8.

11 PRODUCT DOCUMENTATION

11.1 Product data

Product data shall be available that identifies the following critical product characteristics as a minimum:

- a) Minimum and maximum allowable water supply operating pressure.
- b) Jointing methods and adaptation to other piping systems.
- c) Product range and model identification.
- d) Water consumption per cycle.

11.2 Instructions

11.2.1 Installation instructions

Instructions shall be provided that give full details of installation procedures for the urinal including:

- a) Reference to installation in accordance with the PCA, including the installation of any non-integral backflow prevention device and any limitations on the product.

Note: A material or product that is listed on the WaterMark Product Database and is marked in accordance with the WaterMark Certification Scheme is recognised by authorities having jurisdiction as being authorised for use in a plumbing or drainage installation. This is because the material or product complies with the applicable product specification. The installation of an authorised material or product must meet the requirements of the PCA.

- b) The need for additional control equipment.
- c) Detailed step by step instructions.
- d) The need for special tools or training.
- e) Commissioning procedures and adjustments required.
- f) Troubleshooting guide.
- g) Contact details for after sales service.

11.2.2 Operating and maintenance instructions

Operating and maintenance instructions shall be provided that include:

- a) Any regular maintenance requirements.
- b) Spare parts information.

- c) Troubleshooting guide.
- d) Contact details for after-sales service.

APPENDIX A MEANS FOR DEMONSTRATING COMPLIANCE WITH THIS SPECIFICATION

(Normative)

A.1 SCOPE

This appendix sets out the means by which compliance with this WaterMark Technical Specification shall be demonstrated by a manufacturer under the WaterMark Certification Scheme.

A.2 RELEVANCE

The long-term performance of plumbing systems is critical to the durability of building infrastructure, protection of public health and safety, and protection of the environment.

A.3 PRODUCT CERTIFICATION

The purpose of product certification is to provide independent assurance of the claim by the manufacturer that products comply with this WaterMark Technical Specification.

The WaterMark Certification Scheme serves to indicate that the products consistently conform to the requirements of this WaterMark Technical Specification.

The sampling and testing plan, as detailed in Paragraph A5 and Table A1, shall be used by the WaterMark Conformity Assessment Body. Where a batch release testing program is required, it shall be carried out by the manufacturer as detailed in Paragraph A5 and Table A2.

A.4 DEFINITIONS

A.4.1 Test

Determination of one or more requirements according to the test method identified in the WaterMark Technical Specification

A.4.2 Type test

A test performed on samples representing a type of product to determine that the product is capable of conforming to the requirement/s given in the WaterMark Technical Specification

A.4.3 Inspection

Conformity evaluation by observation and judgement accompanied as appropriate by measuring, testing or gauging

A.4.4 Batch release test

A test performed on sample/s of a product type, which has to be satisfactorily completed before the production batch can be released.

A.4.5 Production batch

A clearly identifiable collection of a product type, manufactured consecutively or continuously under the same conditions.

A.4.6 Sample

One or more product/s drawn from a production batch, selected at random without regard to quality.

NOTE: The number of products in the sample is the sample size.

A.4.6.1 Sampling plan

A specific plan that indicates the number of samples of a product type to be inspected or tested.

A.5 TESTING

A.5.1 Type testing

Table A1 sets out the requirements for type testing and frequency of re-verification.

A.5.2 Batch release testing

Table A2 sets out the minimum sampling and testing frequency plan for a manufacturer to demonstrate compliance of product(s) to this WaterMark Technical Specification on an ongoing basis. However, where the manufacturer can demonstrate adequate process control, the frequency of the sampling and testing nominated by the manufacturer's quality plan shall take precedence.

A.5.3 Retesting

In the event of a batch release test failure, the products within the batch may be retested and only those products found to comply may be marked as complying with this WaterMark Technical Specification.

A.5.4 Minimum annual inspection requirements

Table A3 sets out the minimum annual inspection requirements to be undertaken by the WaterMark Conformity Assessment Body,



A.5.5 Re-evaluation testing

Table A4 sets out the requirements for re-evaluation testing.

TABLE A1
TYPE TESTS

Characteristic	Clause	Requirement	Test method	Frequency
Design	8.1	End connections	AS 3688, listed specification	At any change in the design
	8.4	Waste outlet and grating	AS 2887, AS 1589 or WMTS 040	
	8.5	Traps	Clause 8.5	
Performance	9.1	Products in contact with drinking water	AS/NZS 4020	At any change in design or manufacturing process
	9.2	Material tests	AS 3558.2/.3/.4/.6	
	9.3	Surface finish	AS 3558.6	
	9.4	Backflow prevention/Air gap test	Appendix B	
	9.5	Strength of assembly test	Appendix C	
	9.6	Vertical load test	Appendix D	
	9.7	Urinal capacity test	Appendix E	
	9.8	Urinal function test	Appendix F	

TABLE A2
BATCH RELEASE TESTS

Characteristic	Clause	Requirement	Test method	Frequency
Performance	9.8a)	Urinal functional test	Appendix F	Each urinal

TABLE A3
MINIMUM INSPECTION REQUIREMENTS

Characteristic	Clause	Requirement	Evaluation method
Design	8.1-8.8	General design/construction	Visual observation
Marking	6	Clause 6	Visual observation of marked product, packaging and documentation
Product documentation	11	Clause 11	Visual observation of product documentation accompanying product or available electronically

TABLE A4
RE-EVALUATION TESTING

Characteristic	Clause	Requirement	Test method
Performance	9.8	Urinal functional test	Appendix F

APPENDIX B BACKFLOW PREVENTION/AIR GAP TEST

(Normative)

B.1 SCOPE

This Appendix sets out the method for determining the inclusion of an air gap for backflow prevention in the urinal design.

B.2 PRINCIPLE

The water supply is fouled open to allow a dynamic flow pressure of 700kPa to the urinal in the closed position. The distance between the highest water level and lowest water supply outlet is measured.

B.3 APPARATUS

The following apparatus is required:

- a) Water supply sufficient to maintain a dynamic pressure of 700+10-0kPa at a temperature of $20 \pm 5^{\circ}\text{C}$.
- b) A pressure gauge (digital or analogue) accurate to $\pm 1\%$ of the true value.
- c) Measuring equipment accurate to $\pm 1\text{mm}$.
- d) Temperature measuring equipment capable of measuring $\pm 2\%$ of true value.

B.4 PROCEDURE

The procedure shall be as follows:

- a) Connect the water supply to the assembly.
- b) Foul the waste outlet closed.
- c) With the urinal in the closed position open, the inlet water supply and maintain 700+10-0kPa dynamic flow pressure.
- d) When the water rise in the urinal stabilises, measure the distance from the highest water level to the lowest water supply outlet (Air Gap).

B.5 REPORT

The following shall be reported:

- a) Manufacturer, model and description of bathroom appliance, pipework and components.
- b) Water supply dynamic flow pressure and temperature.
- c) Water rise level.
- d) Lowest water supply outlet level.



- e) Air Gap (mm).
- f) Reference to this test method, i.e. WMTS 537, Appendix B.

APPENDIX C STRENGTH OF ASSEMBLY TEST

(Normative)

C.1 SCOPE

This Appendix sets out the method for determining the ability of components and joints of the water supply assembly to withstand hydrostatic pressure without leakage or permanent distortion.

C.2 PRINCIPLE

The components and joints subject to permanent hydrostatic pressure within the assembly are subjected to a hydrostatic pressure at a temperature of $20 \pm 5^{\circ}\text{C}$ for a period of time and inspected for leakage and permanent distortion.

C.3 APPARATUS

The following apparatus is required:

- a) Water supply sufficient to maintain the required pressure and at a temperature of $20 \pm 5^{\circ}\text{C}$.
- b) Pressure gauge.
- c) Temperature measuring equipment capable of measuring $\pm 2\%$ of true value.

C.4 PROCEDURE

The procedure shall be as follows:

- a) Connect the water supply to the assembly.
- b) Open the shut off valve to bleed the assembly of air.
- c) Slowly increase the pressure until it reaches the test pressure of twice the maximum working pressure.
- d) Maintain this pressure for $60 +5, -0$ min.
- e) Release the pressure.
- f) Record the test pressure, and duration at this pressure.
- g) Inspect the assembly for any leaks or permanent distortion.

C.5 REPORT

The following shall be reported:

- a) Manufacturer, model and description of urinal, pipework and components.
- b) Test pressure, temperature and time at this pressure.



- c) Any leakage or structural damage.
- d) Reference to this test method, i.e. WMTS 537, Appendix C.

APPENDIX D VERTICAL LOAD TEST

(Normative)

D.1 SCOPE

This Appendix sets out the method for determining the ability of a urinal, and its fixing supports, to support a load without structural damage and, after loading, be able to function in the normal manner.

D.2 PRINCIPLE

The urinal is installed as per manufacturer's instructions and, with the urinal in the open position, a load is applied. After a specified time, the urinal and fixing supports are inspected for any structural damage and the ability to function in a normal manner.

D.3 APPARATUS

The following apparatus is required:

- a) Equipment to apply the load of 0.3kN minimum.
- b) A timing device capable of reading 1s.

D.4 PROCEDURE

The procedure shall be as follows:

- a) Install the urinal in accordance with the manufacturer's instructions.
- b) Operate the urinal so that it is in the open position.
- c) Apply a load of 0.3kN across the centre of the lid.
- d) Remove the load after 10+1 -0 mins.
- e) Inspect the urinal and lid for any structural damage.
- f) Operate the urinal in the normal manner. Inspect for any misalignment and correct functioning in accordance with the manufacturer's specification.

D.5 REPORT

The following shall be reported:

- a) Manufacturer, model and description of urinal.
- b) Load applied, duration and position of application.
- c) Any structural damage.
- d) Ability of urinal to operate in the normal manner after application of the load.



- e) Reference to this test method, i.e. WMTS 537, Appendix D.

APPENDIX E URINAL CAPACITY AND LEAKAGE TEST

(Normative)

E.1 SCOPE

This Appendix sets out the method for determining the design of the urinal bowl to have internal capacity, sufficient to not leak, and not overflow, in the event of a waste blockage.

E.2 PRINCIPLE

The urinal is installed as recommended by the manufacturer and operated by activating the sensor for a number of cycles. The outlet is blocked, then the urinal cleaning cycle is activated and an additional volume added to compensate for urine. The urinal is then inspected for any overflow or leakage.

E.3 APPARATUS

The following apparatus is required:

- a) Water supply capable of delivering water at—
 - i. a flow rate of more than 20 L/min;
 - ii. a dynamic flow pressure of at least 500 kPa; and
 - iii. a temperature of $20 \pm 5^{\circ}\text{C}$.
- b) Water volume measuring instrument with a resolution of 0.1 L or better and with an accuracy of measurement of 2% or better.
- c) Temperature measuring equipment capable of measuring $\pm 2\%$ of true value.

E.4 PROCEDURE

The procedure shall be as follows:

- a) Install the urinal as recommended by the manufacturer.
- b) Activate the urinal 3 times and inspect the urinal for any leakage.
- c) Block the waste outlet then activate a cycle.
- d) Note the water consumption.
- e) Visually check for any leakage.
- f) Open the urinal and observe the level of water in the urinal bowl.



- g) Add 300ml of water to compensate for urine charge and visually check for any leakage and observe the level of water in the urinal.

E.5 REPORT

The following shall be reported:

- a) Manufacturer, model and description of urinal.
- b) Water consumption of washing cycle, in litres.
- c) Water volume added and level to overflow.
- d) Any observed leakage.
- e) Reference to this test method, i.e. WMTS 537, Appendix E.

APPENDIX F URINAL FUNCTIONAL TEST

(Normative)

F.1 SCOPE

This Appendix sets out the method for determining the general function of the urinal as specified by the manufacturer, the ability to wash the *serviceable area*, water consumption and leakage to the outside area/floor.

F.2 PRINCIPLE

The urinal is to be installed as recommended by the manufacturer and operated by activating the sensor. General function, water consumption, leakage and washing of the *serviceable area* is determined.

F.3 APPARATUS

The following apparatus is required:

- a) Water supply capable of delivering water at—
 - i a flow rate of more than 20 L/min;
 - ii a dynamic flow pressure of at least 500 kPa; and
 - iii. a temperature of $20 \pm 5^{\circ}\text{C}$.
- b) Water volume measuring instrument with a resolution of 0.1 L or better and with an accuracy of measurement of 2% or better.
- c) Temperature measuring equipment capable of measuring $\pm 2\%$ of true value.
- d) Load measuring equipment capable of measuring $\pm 2\%$ of true value.

F.4 PROCEDURE

The procedure shall be as follows:

- a) Install the urinal as recommended by the manufacturer.
- b) Activate the urinal at least 5 times without water supply prior to formal testing, and compare function to the manufacturer's specification
- c) With the urinal functions as specified in normal operation mode, activate the urinal and observe the function of auto reversing when obstructed in either opening or closing then insert a load measuring device at the closing position of the urinal (see Figure 1) and measure the closing force and speed of closing.

- d) Open the water supply and in normal operation mode activate the urinal at the manufacturer's maximum operating pressure. When finished:
 - i. Note the water consumption.
 - ii. Visually check for any leakage.
- e) Repeat d) for a further 3 cycles and calculate the average water consumption per cycle in litres.
- f) Repeat d) and e) at manufacturer's minimum operating pressure.
- g) Dry the *serviceable area*.
- h) Activate the urinal then when the cycle has finished, turn the water supply off and open the lid of the urinal. Visually inspect the effectiveness in washing of the *serviceable area*.



FIGURE 1

CONCEALED URINAL - LOAD MEASURING DEVICE PLACEMENT

F.5 REPORT

The following shall be reported:

- a) Manufacturer, model and description of urinal.
- b) Any deviations of function from manufacturer's specification.

- c) Function of the opening/closing mechanism in auto reversing
- d) Closing force and speed..
- e) Tested pressures and temperature.
- f) Average water consumption, in litres at maximum and minimum water pressures.
- g) Any leakage.
- h) If the *serviceable area* is sufficiently washed.
- i) Reference to this test method, i.e. WMTS-537, Appendix F.

