



Ant Infrastructure Technologies Pty Ltd

PRODUCT APPRAISAL REPORT 1615 Issue 2

Valve Spindle Extensions

AS/NZS 2638.1:2011 Gate valves for waterworks purposes - Metal seated

AS/NZS 2638.2:2011 Gate valves for waterworks purposes - Resilient seated

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Overview of WSAA

The Water Services Association of Australia (WSAA) is the peak industry body representing the urban water industry. Our members provide water and sewerage services to over 20 million customers in Australia and New Zealand and many of Australia's largest industrial and commercial enterprises.

Based around our vision of 'customer driven, enriching life', WSAA facilitates collaboration, knowledge sharing, networking and cooperation within the urban water industry. We are proud of the collegiate attitude of our members which has led to industry-wide approaches to national water issues.

WSAA can demonstrate success in the standardisation of industry performance monitoring and benchmarking, as well as many research outcomes of national significance. The WSAA Executive retains strong links with policy makers and legislative bodies and their influencers, to monitor emerging issues of importance to the urban water industry.

WSAA was formed in 1995 as a non-profit organisation to foster the exchange of information between industry, government and the community, and to promote sustainable water resource management.

The urban water industry is committed to anchoring its services to customers' values, and to enrich communities where water services have broad economic, environmental and social values. In line with this our main activities focus on four areas:

1. influencing national and state policies on the provision of urban water services and sustainable water resource management
2. promoting debate on environmentally sustainable development and management of water resources and the community health requirements of public water supplies
3. improving industry performance and establishing benchmarks and industry leading practices for water service processes; and
4. fostering the exchange of information on education, training, research, water and wastewater management and treatment and other matters of common interest.

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1 EXECUTIVE SUMMARY

Ant Infrastructure Technologies Pty Ltd (ANT) is a privately owned Australian business established in December 2015 to engage in the design, sourcing and distribution of innovative products, specifically for the water industry.

This appraisal is for a range of valve spindle extensions in lengths of 150, 225 and 300mm, suitable for operation on gate valves up to and including DN 300.

This Issue 2 is a replacement for the previous version of the appraisal which had reached its 5-year expiry date.

The black coloured valve spindle extensions are injection moulded from a high strength composite material, which provides for a single piece homogenous product.

Each spindle extension is fitted with a M12 Grade 316 stainless steel bolt to allow retention on to the spindle cap.

The extension spindles are lightweight and inherently corrosion resistant with a high level of dimensional accuracy.

Whilst the applicant and manufacturer do not currently have ISO 9001 Quality Management System licences, ANT has provided a copy of the Quality Management document relative to the manufacture of valve spindle extensions and it is deemed to be adequate for these products.

The extension spindles have been witness tested in accordance with the Type Test requirements of AS/NZS 2638.1:2011 *Gate valves for waterworks purposes – Metal seated* and AS/NZS 2638.1:2011 *Gate valves for waterworks purposes – Resilient Seated*.

This Appraisal has determined that ANT Valve Spindle Extensions as detailed in this report, meet the requirements of WSA PS-262 *Extension Spindles for Gate Valves* and are considered as 'fit-for-purpose'.

1.1 Recommendations

It is recommended that WSAA members, subject to any specific requirements of the member, accept or authorise the ANT Valve Spindle Extensions, as detailed in this report, for use in waterworks applications provided they are installed in accordance with WSAA Codes and the manufacturer's requirements, where specified.

2 THE APPLICANT

2.1 The Supplier

Ant Infrastructure Technologies Pty Ltd (ANT) is a privately owned Australian business established in December 2015 to engage in the design, sourcing and distribution of innovative products, specifically for the water industry.

ANT, based in Melbourne, has product design, engineering and product testing capability. The company maintains intellectual property rights associated with the product designs whilst outsourcing manufacturing and assembly facilities.

ANT products will be offered to the market through established resellers or directly to Water Agencies.

2.2 The Manufacturer

Complete details of the manufacturer have been provided for the purposes of this Appraisal, however this information has been requested to remain "commercial-in-confidence". The Australian based company has a long history of providing injection moulded products to a variety of industries and the capability, experience and reputation of the manufacturer is considered to be satisfactory.

3 THE PRODUCT

The ANT range of valve spindle extensions incorporating lengths of 150, 225 and 300mm are suitable for operation on gate valves up to and including DN300. The black coloured valve spindle extensions are manufactured from a high strength composite material using an injection moulding process.

Traditionally valve extension spindles are manufactured by welding or pinning forged or cast end-pieces onto a tube or shaft. Where the components are not corrosion resistant to soil and ground water, they are required to be protected with a suitable coating. The integrity of any welding is considered to be critical in allaying any operator safety concerns.

The ANT range of injection moulded spindle extensions provides the benefit of a single piece homogenous product with no joins or welds. It is lightweight with a high degree of dimensional accuracy and is impervious to soil and ground water corrosion.

Each spindle extension is fitted with a M12 Grade 316 stainless steel bolt to allow retention on to the spindle cap.



FIGURE 1 ANT VALVE EXTENSION SPINDLE

The material utilised for this product is a high strength, high stiffness glass fibre reinforced engineering thermoplastic material with exceptional dimensional stability and low warpage.

The products are covered by Registered Design No 201613183.

4 SCOPE OF THE APPRAISAL

This Appraisal considers 150, 225 and 300mm long ANT Valve Spindle Extensions for gate valves up to and including DN 300, manufactured from a high strength composite material.

5 APPRAISAL CRITERIA

5.1 Quality Assurance Requirements

The WSAA product appraisal network accepts Valve Spindle Extensions manufactured to meet the performance requirements of AS/NZS 2638.1:2011 *Gate valves for waterworks purposes-Metal seated* and AS/NZS 2638.2 *Gate valves for waterworks purposes-Resilient seated*. The requirements relating to valve spindle extensions is identical in both standards

and reference within this appraisal to AS/NZS 2638 is intended to refer to both Part 1 and Part 2.

The manufacturer is generally expected to have a production management and control system that has been duly accredited in accordance with AS/NZS ISO 9001.

5.2 Performance Requirements

ANT Valve Spindle Extensions have been appraised for compliance with AS/NZS 2638 *Gate valves for waterworks purposes*.

Appraisal criteria are also determined by the WSAA Infrastructure Products and Materials Network and regularly reviewed to ensure that the criteria reflect the requirements of WSAA members.

The following Product Specification is relevant to this application:

WSA PS-262 *Extension Spindles for Gate Valves*

A copy of the Product Specification is available at the following link:

<https://www.wsaa.asn.au/shop/product/35716>

6 COMPLIANCE WITH APPRAISAL CRITERIA

6.1 Compliance with Quality Assurance Requirements

The applicant and manufacturer do not currently have ISO 9001 Quality Management System licences. ANT has provided a copy of the Quality Management document relative to the manufacture of valve spindle extensions and it is deemed to be adequate for these products.

A Type Test report has been submitted by ANT to demonstrate compliance with the requirements of AS/NZS 2638 *Gate valves for waterworks purposes*. See Section 6.2.3.

6.2 Compliance with Performance Requirements

6.2.1 Materials

The valve spindle extensions are manufactured from a glass fibre reinforced engineering thermoplastic material using an injection moulding process. Full specifications of the compound have been provided for this Appraisal on a “commercial-in-confidence” basis. Such information can only be provided to WSAA members with the express agreement of the applicant.

The characteristics of the composite material include high stiffness and strength with exceptional dimensional stability and low warpage. Its long-term usage temperature is 100 deg C. The end product is solid coloured, which means any scratches or marks will not affect the visible colour.

The material is resistant to soil and ground water corrosion.

6.2.2 Dimensions

AS/NZS 2638 specifies critical mating dimensions of the caps and keys to ensure compatibility of all components in the field.

ANT has detailed the critical dimensions of their spindle extensions, in the type test report, to verify compliance.

6.2.3 Type Tests

A strength test is specified in AS/NZS 2638 to ensure safe performance of valve spindle extensions in the field. The test requires the spindle extension to be fitted to a spindle cap and a torque applied until it reaches 1.25 times the minimum strength test torque of the maximum size valve for which it has been designed to operate.

AS 2638.1 and AS/NZS 2638.2 both specify a minimum strength test torque for a DN 300 gate valve as 900Nm, which equates to an applied test torque to the spindle extension of 1125Nm.

ANT has provided a copy of a report describing the test carried out on a 300mm long spindle extension at 1130Nm. The test was conducted in-house by ANT and witnessed by Colin Paxman, Standards and Design Auditing Manager for South East Water. There were no visible signs of cracking, stress whitening, splitting or any damage or defect to the spindle extension.

7 FITTING INSTRUCTIONS, TRAINING AND INSTALLATION

Valve Spindle Extensions are commonly used in the industry and it is not considered necessary to provide additional training or installation instructions.

8 PRODUCT MARKING

The ANT Valve Spindle Extensions are marked in accordance with the requirements of the AS/NZS2638.1 and AS/NZS 2638.2, as below and shown in Figure 2.

- Manufacturers Name: ANT
- Date of manufacture: moulded date stamp
- The standard number: AS/NZS 2638.2
- Allowable size range: Max valve size DN 300
- Length of Spindle: 150mm, 225mm, 300mm



FIGURE 2 PRODUCT MARKING

9 PACKAGING AND TRANSPORTATION

Each size spindle extension is packed separately into a cardboard box with 20 per carton. Layers are separated by cardboard to prevent scuffing and marking.

10 PRODUCT WARRANTY

The products are covered by the normal commercial and legal requirements of the *Competition and Consumer Act 2010 (Cth)*, which covers manufacture to the relevant standard, and details of ANT Infrastructure Technologies Pty Ltd's warranty is included in their terms and conditions of sale.

11 WATER AGENCY EXPERIENCE WITH THE PRODUCT OR FIELD TESTING REPORT

Valve spindle extensions are considered standard products and installation trials were not required as part of this Appraisal.

12 OUTCOMES OF EXPERT PANEL PRODUCT REVIEW

Q1. Is the material UV resistant?

A1. In normal applications the valve spindle extensions are located in an air cavity below ground level, covered by a valve cover, with negligible exposure to UV radiation. Testing to ISO4892-2 Methods of exposure to laboratory light sources – Xenon-arc lamps indicates no change to tensile strength over 10 years with an exposure of 4.8 GJ/m². Considering the thickness of the component, even if the surface was effected by constant UV radiation over many years, the physical properties would remain intact.

Q2. The valve spindle extensions seem capable of stacking to provide additional extension lengths such as 375mm, 450mm, 525mm, 600mm, 750mm, 825mm, 900mm and so on. Is such stacking permitted? Is there any limit to the stacking? Has torque testing been carried out with stacked extensions?

A2. The valve spindle extensions could be stacked to achieve additional heights. It has not been considered necessary to conduct torque tests for stacked extensions as each piece is able to withstand the necessary maximum applied torque. There is theoretically no limit to the stacking height, as the retention screws ensure the assembly does not vertically separate. The resistance to torque is provided by the cap to key fitment.

13 FUTURE WORKS

No future works has been identified for this Appraisal.

14 DISCLAIMER

This Product Appraisal Report (Report) is issued by the Water Services Association of Australia Limited on the understanding that:

This Report applies to the product(s) as submitted. Any changes to the product(s) either minor or major shall void this Report.

To maintain the recommendations of this Report any such changes shall be detailed and notified to the Product Appraisal Manager for consideration and review of the Report and appropriate action. Appraisals and their recommendations will be the subject of continuous review dependent upon the satisfactory performance of products.

WSAA reserves the right to undertake random audits of product manufacture and installation. Where products fail to maintain appraised performance requirements the appraisal and its recommendations may be modified and reissued. Appraisal reports will be reviewed and reissued at regular intervals not exceeding five (5) years.

The following information explains a number of very important limits on your ability to rely on the information in this Report. Please read it carefully and take it into account when considering the contents of this Report.

Any enquiries regarding this report should be directed to the Program Manager, Carl Radford, Phone: 03 8605 7601 email carl.radford@wsaa.asn.au.

14.1 Issue of Report

This Report has been published and/or prepared by the Water Services Association of Australia Limited and nominated Project Manager and peer group of technical specialists (the Publishers).

The Report has been prepared for use within Australia only by technical specialists that have expertise in the function of products such as those appraised in the Report (the Recipients).

By accepting this Report, the Recipient acknowledges and represents to the Publisher(s) and each person involved in the preparation of the Report that the Recipient has understood and accepted the terms of this Disclaimer.

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Recipients should seek independent evidence of any matter which is material to their decisions in connection with an assessment of the Product and consult their own advisers for any technical information required. Any decision to use the Product should take into account the reliability of that independent evidence obtained by the Recipient regarding the Product.

Recipients should also independently verify and assess the appropriateness of any recommendation in the Report, especially given that any recommendation will not take into account a Recipient's particular needs or circumstances.

WSAA has not evaluated the extent of the product liability and professional indemnity insurance that the provider of the product maintains. Recipients should ensure that they

evaluate the allocation of liability for product defects and any professional advice obtained in relation to the product or its specification including the requirements for product liability and professional indemnity insurance.

14.3 No Updating

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14.4 No Warranty

The Publisher(s) do[es] not, in any way, warrant that steps have been taken to verify or audit the accuracy or completeness of the information in this Report, or the accuracy, completeness or reasonableness of any recommendation in this Report.

APPENDIX A – PRODUCT LITERATURE



300mm EXTENSION SPINDLE TECHNICAL DATA

SPINDLE	300	225	150
Ⓐ LENGTH (mm)	368	293	218
Ⓒ DIAMETER (mm)	60	60	60
Ⓑ EFFECTIVE (mm)	300	225	150
WEIGHT (g)	845	650	451

VALVE SIZE DN80 - DN300

STANDARDS AS/NZS 2638.1:2011,
AS/NZS 2639.2:2011,
WSA PS 262

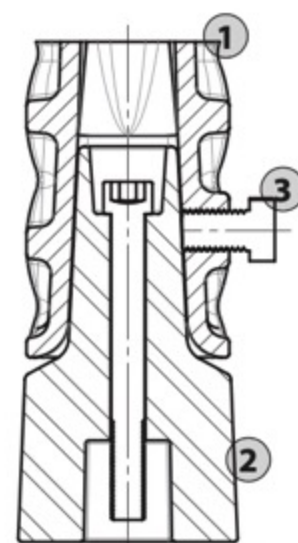
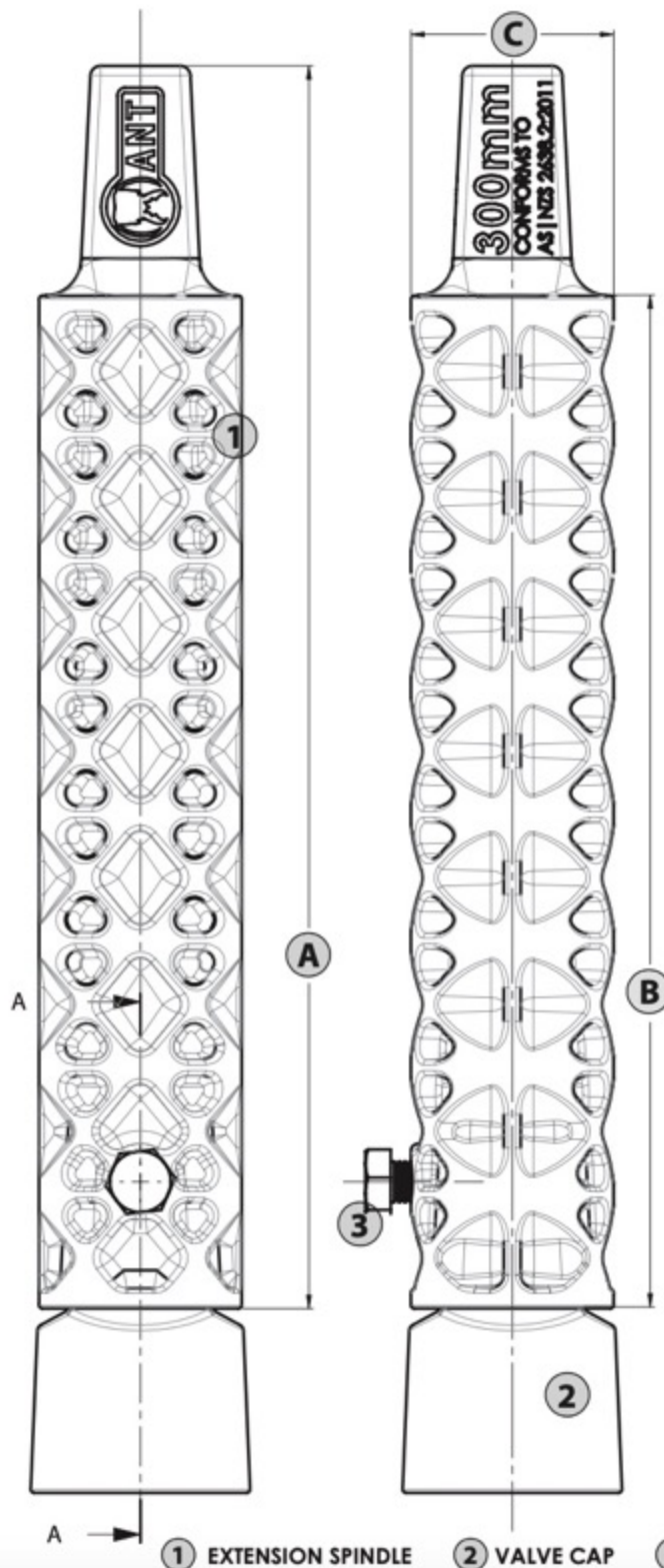
MANUFACTURING
PROCESS INJECTION MOULDING

MATERIAL COMPOSITE,
GLASS FILLED
THERMOPLASTIC

STRUCTURE SINGLE PIECE
HOMOGENOUS

MAXIMUM
OPERATING
TEMPERATURE 100 deg C

COLOUR SOLID BLACK
OTHERS AVAILABLE



SECTION A-A

Ⓐ → ① EXTENSION SPINDLE ② VALVE CAP ③ M12X20 SS316 BOLT

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APPENDIX B - SUPPLIER CONTACTS

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