

AAP Industries Pty Ltd

PRODUCT APPRAISAL REPORT 11/26 Issue 2

MAXIFLO™ – Resilient Seated Gate Valve

AS/NZS: 2638:2011 Gate valves for waterworks purposes – Resilient seated

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Overview of WSAA

The Water Services Association of Australia (WSAA) is the peak body of the Australian urban water industry. Its members and associate members provide water and wastewater services to approximately 16 million Australians and to many of our largest industrial and commercial enterprises.

Urban water service providers have a critical role in ensuring that Australians have access to adequate and high quality water services. As Australia's population continues to grow, with most of this growth occurring in cities, that role becomes increasingly important.

WSAA's vision is for Australian urban water utilities to be valued as leaders in the innovative, sustainable and cost effective delivery of water services. WSAA strives to achieve this vision by promoting knowledge sharing, networking and cooperation amongst members. WSAA identifies emerging issues and develops industry-wide responses. WSAA is the national voice of the urban water industry, speaking to government, the broader water sector and the Australian community.

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1 EXECUTIVE SUMMARY

This appraisal replaces and updates the lapsed AAP Industries Pty Ltd SUFA resilient seated gate valves (RSVs) appraisal PA 05/02 which was based on AS 2638.2 – 2002 *Gate Valves for waterworks purposes, Part 2: Resilient-seated*. The second issue of Product Appraisal Report No 11/26 addresses outstanding future work items identified in PA Report No 11/26.

AAP Industries Pty Ltd has recently changed the brand name from SUFA to MAXIFLO™. The manufacturing drawings and material specifications of components for the range of MAXIFLO™ RSV's remain unchanged since the original type testing was conducted in 2004.

AAP Industries Pty Ltd is the licensee of product certification (ISO Type 5) for resilient seated gate valves, manufactured to AS/NZS 2638.2:2011 *Gate valves for waterworks purposes, Part 2: Resilient-seated* by Sufa Technology Industry Co. (China). AAP Industries Pty Ltd markets the RSV's under the trademark 'MAXIFLO™' for use in water supply, recycled water and pressure sewerage applications. Sufa Technology Industry Co. is located at 55 Xuyang Rd, Xuguan Industry Zone, Suzhou, China.

MAXIFLO™ RSV's are manufactured to comply with AS/NZS 2638.2:2011. MAXIFLO™ RSV's are StandardsMark product certified (Lic SMKP20171) to AS/NZS 2638.2:2011. The StandardsMark Certificate and Schedule describing the AAP Industries full product range are shown in Appendix 'B'

MAXIFLO™ RSVs are available in nominal diameters from DN 80, 100, 150, 200, 225, 250 and 300 and manufactured with either flange / flange or soc / soc or flange / soc end connections and with clockwise and anti-clockwise closure directions. The socket depth of entry exceeds the AS/NZS 2280:2004/Amdt 1:2006 requirement by an average of 10 mm for all the above sizes.

Flanges comply with Figure B5 of AS/NZS 4087:2011 and AS 2129 Table D/E.

The elastomeric seals are manufactured to AS 1646:2007, product certified with StandardsMark Licence and Schedule No. SMKP 20133 issued to Thong Nhat Rubber and Gulf Rubber Australia.

MAXIFLO™ RSVs are supplied with EPDM elastomeric ring seals for Series 2 PVC & CIOD pipe. For Series 1 PVC pipe AAP Industries recommend the EPDM transition lip seals.

MAXIFLO™ RSVs are fully coated and lined with the Jotun EP-F 5001 Corro-coat thermosetting fusion bonded epoxy coatings using automated air induced fluidized bed coating process to comply with AS/NZS 4158.

MAXIFLO™ RSVs are supplied in Australia by AAP Industries Pty Ltd, whose contact details and a list of agents and distributors are shown in Appendix D.

The product range as described by this appraisal report meets the requirements of WSA PS 260 - *Gate Valves, Resilient Seated for Pressure Applications – Water Supply and Sewerage*. As the MAXIFLO™ RSVs have been deemed to comply with WSAA Product Specification these RSVs are considered 'fit-for-purpose'.

1.1.1 Recommendations

It is recommended that WSAA members and associates, consider interim acceptance /authorisation of MAXIFLO™ RSV for water supply, recycled water supply and pressure sewerage, subject to the design, installation, acceptance testing and commissioning being in accordance with the manufacturer's requirements and relevant WSAA Codes, WSAA Member Integrated Codes and subject to AAP Industries Pty Ltd making satisfactory progress in addressing future work items within the timetable set.

2 THE APPLICANT

2.1 The Supplier

AAP Industries Pty Ltd is a privately owned company established in 1957 primarily manufacturing steel pipe fittings and now employs over 120 people and claims to be the largest producer of black steel fittings in the southern hemisphere. AAP Industries has a manufacturing plant in Sydney producing precision steel products and brass and bronze products for the Australian market. AAP Industries is a major importer of brass, bronze, cast iron, cast steel, forged steel and stainless steel valves and fittings, importing from France, Italy, China, India, Korea, Taiwan and Thailand. Until recently AAP Industries was regarded as a wholesaler and manufacturer and had a small advertising profile.

AAP Industries has warehouses in every major state and provide a national distribution network to a number of agents and distributors (retail outlets). The AAP Industries administration head office is in Sydney and the bulk warehouse is in Brisbane. AAP Contact details and a list of agents and distributors are shown in Appendix D.

For more information see www.aapindustries.com.au.

2.2 The Manufacturer and Sub-suppliers

2.2.1 Sufa Technology Industry Co

Sufa Technology Industry Co. Ltd is a joint venture established by CNNC Suzhou Valve Co Ltd (SUFA) and DA Company of Germany in August 2000 forming the first public share company in the domestic valve industry in the Peoples Republic of China (PRC). The company is located at 55 Xuyang Road, Xuguan Industry Zone Suzhou 215151, PRC.

Sufa Technology Industry Co. Ltd has introduced advanced technology and equipment from Germany and is specializing in manufacturing ductile iron resilient seated valves with electrostatic epoxy resin powder coating. As well as general supply to major cities in PRC the SUFADA and MAXIFLO™ products are exported to more than 10 countries in Europe, North America, South Africa and the Middle East.

For more information see www.aapindustries.com.au.

2.2.2 Sub-suppliers

Sufa Technology Industry Co. sources its supply of raw castings for the MAXIFLO™ RSV body, bonnet and top bonnet from Wujiang Meiyuan Union Casting Co.

The supply of castings is to Sufa Technology Industry Co. drawings and specifications.

Raw castings sourced from the Wujiang Meiyuan Union Casting Co. are inspected and tested for compliance in accordance with AS/NZS 2638.2 and Sufa Technology Industry Co. quality production procedures.

Raw material certificates/details are filed for referencing and matched to batch release documentation presented to AAP on delivery. The process is audited annually by SAI Global at its manufacturing facilities located at 55 Xuyang Road, Xuguan Industry Zone Suzhou 215151, PRC.

This will involve some duplication of testing as Wujiang Meiyuan Union Casting Co will still required to undertake testing during their quality control processes.

All measurements, testing, assessment, finishing and inspection is carried out by Sufa Technology Industry Co. and is covered under their existing StandardsMark Licence.

3 THE PRODUCT

MAXIFLO™ RSVs are manufactured in sizes DN 80, 100, 150, 200, 225, 250 and 300 by Sufa Technology Industry Co. to comply with the requirements of AS/NZS 2638.2:2011 *Gate valves for waterworks purposes, Part 2: Resilient-seated*.

MAXIFLO™ RSVs are rated to PN 16 with an allowable operating pressure (AOP) of 1600 kPa, a maximum allowable operating pressure (MAOP) of 1920 kPa and an allowable site test pressure (ASTP) of 2000 kPa. The RSVs are available in flange / flange or soc / soc or flange / soc end connections and with clockwise and anti-clockwise closure directions. Flanges comply with Figure B5 of AS/NZS 4087:2011 and AS 2129 Table C/D/E.

The socket depth of entry exceeds the AS/NZS 2280:2004/Amdt 1:2006 requirement by an average of 10 mm for the nominated sizes in this appraisal. The socketed valves are supplied with EPDM, 'Tyton' type elastomeric seals and transition seals for use with metric sized pipe (Type 1 PVC) are also available.

NOTE: Transition seals for connection to metric sized pipe (Type 1 PVC) are available in EPDM manufactured by Gulf Rubber and Product Certified for compliance with AS 1646.

MAXIFLO™ RSVs are suitable for use with water and neutral liquids to a maximum operating temperature of 40°C.

4 SCOPE OF THE APPRAISAL

The scope of the appraisal covers PN 16 MAXIFLO™ RSV in various sizes and end configurations as set out in Table 1.

TABLE 1 RANGE OF MAXIFLO™ RSV AND END CONFIGURATIONS

DN	Flange-Flange to AS 4087 Figure B5	Socket-Socket	FI-Socket*
80	✓		
100	✓	✓	✓
150	✓	✓	✓
200	✓	✓	
225	✓	✓	
250	✓	✓	
300	✓	✓	

For a more detailed description of the MAXIFLO™ RSV range, refer to Section 3 and the StandardsMark Licence Schedule (see Appendix B).

5 APPRAISAL CRITERIA

5.1 General

Appraisal criteria is determined by the WSAA Infrastructure and Materials (IPAM) Network and regularly reviewed to ensure that the criteria reflect the requirements of WSAA members.

5.2 Quality Assurance Requirements

The WSAA Network accepts resilient seated gate valves manufactured under cover of a third party certified management system complying with AS/NZS ISO 9001 and having ISO Type 5 product certification in accordance with AS 2638.2 by a JAS-ANZ accredited Certification Assessment Body (CAB) or by a CAB accredited by international accreditation system recognised by JAS-ANZ.

5.3. Performance Requirements

The MAXIFLO™ RSVs have been appraised for compliance with the requirements of AS/NZS 2638.2:2011 - *Gate valves for waterworks purposes – Resilient seated*.

The following Product Specifications are also relevant to this application:

WSA PS 260 - Gate Valves, Resilient Seated for Pressure Applications – Water Supply and Sewerage.

Copies of the above Product Specifications can be found in Appendix C or downloaded from the WSAA website.

6 COMPLIANCE WITH APPRAISAL CRITERIA

6.1 Compliance with Quality Assurance Requirements

The following certificates and statements have been submitted by AAP Industries Pty Ltd:

- (a) The manufacturer, Sufa Technology Industry Co. has a Quality Management System in compliance with ISO 9001:2008 certified by Det Norske Veritas and issued with Certificate No. 5130-1993-AQ-RGC-RvA that is valid until 26 May 2014.
- (b) Det Norske Veritas is a Conformity Assessment Body (CAB) accredited by a member of the International Accreditation Forum (IAF) Multilateral Recognition Agreement (MLA) recognised by JAS-NZS, which is also a signatory IAF MLA.
- (c) Wujiang Meiyuan Union Casting Co. the foundry that produces the raw casting for the Suzhou Sufada Valve Co Ltd MAXIFLO™ RSV has a Quality Management System in compliance with ISO 9001:2008 certified by Orion Registrar Inc USA.
- (d) AAP Industries Pty Ltd is the licensee of product certification (ISO Type 5) for resilient seated gate valves, manufactured to AS/NZS 2638.2:2011 by Sufa Technology Industry Co. (China). The StandardsMark Certificates and Schedules (Licence No SMKP20171) describing the full product range of MAXIFLO™ RSV are shown in Appendix 'B'.

AAP Industries Pty Ltd markets the RSV's under the trademark 'MAXIFLO™' for use in water supply, recycled water and pressure sewerage applications. Sufa Technology Industry Co. is located at 55 Xuyang Rd, Xuguan Industry Zone, Suzhou, China.

The supplier, AAP Industries Pty Ltd does not have a certified Quality Management System in compliance with AS/NZS ISO 9001:2008. AAP has advised that it does have its own non-certified quality management system that functions effectively and is constantly monitored by management. AAP is planning to upgrade their quality system to accommodate overseas restructuring. AAP is an importer and wholesaler and does not deliver products to site as this is a function normally carried out by AAP's agents and distributors.

AAP Industries Pty Ltd has also submitted copies of other relevant Quality Assurance licenses appropriate to the manufacture and supply of the foundries producing their raw DI casting for the MAXIFLO™ valve bonnet and body.

Refer Appendix 'B' for copies of quality management certification certificate demonstrating compliance with their quality management systems.

6.2 Compliance with Performance Requirements

6.2.1 General

A StandardsMark Licence for compliance with AS/NZS 2638.2 has been issued by SAI Global on the basis of production and type tests performed on each nominal size of valve, as listed in Section 4 and the StandardsMark Licence Schedule (see Appendix B).

The StandardsMark licence offers some assurance that the product is manufactured with adequate process and quality controls to ensure compliance with the nominated Standard.

6.2.2 Material properties of the ductile iron

AS/NZS 2638.2 Table 2.1 requires RSV's manufactured from ductile iron to conform to minimum Grade 400-15. Higher strength ductile irons in accordance with AS 1831 are acceptable. The MAXIFLO™ RSV's are manufactured using the higher grade BS500-7 in compliance with AS 1831.

6.2.3 Elastomeric seals

The elastomeric seals provided by Thong Nhat Rubber and Gulf Rubber Australia are dual hardness EPDM compound 5514S for Series 2 PVC and CIOD pipes. For Series 1 PVC pipes AAP Industries Pty Ltd recommends transition lip seals in dual hardness EPDM compound 5410S. These seal types have a long history of satisfactory performance.

The elastomeric seals are manufactured to AS 1646:2007, product certified with StandardsMark Licence and Schedule No. SMKP 20133 issued to Thong Nhat Rubber and Gulf Rubber Australia.

6.2.4 Components Material List

The MAXIFLO™ RSV material requirements comply with Table 2.1 in AS/NZS 2638.2.

TABLE 2 MAXIFLO™ RSV COMPONENT MATERIAL LIST

Item	Material	Standard	Grade
Body	Ductile Iron	AS 1831	BS500/7
Bonnet	Ductile Iron	AS 1831	BS500/7
Gate Wedge	Ductile Iron	AS 1831	BS500/7
Spindle (Stem)	Stainless Steel	ASTM A276	431
Gate Nut	Copper Alloy	AS 1565	C83600
Screws	Stainless Steel	ASTM A276	316
Body Gaskets	Synthetic Rubber	AS 1646	EPDM
Seal bushing	Copper Alloy	AS 1565	C83600
O-rings	Synthetic Rubber	AS 1646	65-75 IRHD NBR
Bonnet Gasket	Synthetic Rubber	AS 1646	EPDM
Top Bonnet	Ductile Iron	AS 1831	BS500/7
Dust proof cover	Synthetic Rubber	AS 1646	EPDM
Plastic cap	PE		
Spindle Cap	Ductile Iron	AS 1831	BS500/7
Seal rings	Synthetic Rubber	AS 1646	EPDM

The drawings specify an outdated material designation GGG-50 which is equivalent to grade BS 500-7.

Component and assembly drawings for the MAXIFLO™ design listing all materials specifications (See Appendix 'A').

6.2.5 Flanges and flange gaskets

Flange dimensions conform to AS/NZS 4087.2011 Figure B5 and AS 2129 Table D/E.

The flange gasket materials are not supplied by AAP Industries Pty Ltd.

The flange gasket materials shall comply with industry standard WSA-109:2011.

6.3 Compliance with performance requirements

AAP Industries Pty Ltd submitted the following report including the results of type testing and examination of the DN 80, DN 100, DN 200, DN 250, and DN 300 RSV's to demonstrate compliance with the performance requirements of AS/NZS 2638.2.2011.

SAI Global Surveillance Audit Report dated 23/3/2011 complete with action items and audit report on production processes. Type Test (TT) Reports

Clause No. 5.1.2, (Test A), Strength test (Thrust collar, spindle, nut & cap)

Clause No. 5.1.3, (Test B), Body pressure test
Clause No. 5.1.4, (Test C), Gate strength test
Clause No. 5.1.5, (Test D), Torque test
Clause No. 5.1.6, (Test E), Valve seat test
Clause No. 5.1.7, (Test F), Sensitivity test
Clause No. 5.1.8, (Test G), Functional test
Clause No. 5.1.9, (Test H), Spindle seal replacement or repair test
Clause No. 5.1.10, Final Inspection
Clause No. 5.1.11 (Test I) Cyclic flow test
Clause No. 5.1.12, (Test J) Endurance cyclic flow test
Clause No. 5.1.13 Gate rubber adhesive test
Clause No. 5.1.14 – (Test L) Strength test (valve key)
Clause No. 5.1.15 – (Test M) Strength test (spindle extension)

Under the above testing the valves displayed no leakage, damage or other failure.

A summary of the above test results are provided in Appendix E.

6.3.1 Contact with drinking water

Clause 2.3 of AS/NZS 2638.2 requires compliance with AS/NZS 4158 and including AS/NZS 4020 with a scaling factor of 0.01.

AMS Laboratories Pty Ltd Certificate of Analysis demonstrating compliance with AS/NZS 4020:2005. The report is stated as recognised by SAI Global for Product Certification to AS/NZS 4020 compliance testing. Testing was carried out on a DN 80 SUFA RSV as this size represents the 'worst case' scenario (i.e. highest surface-to-volume ratio for the entire range).

6.3.2 Coatings and lining for valves

AS/NZS 2638.2 requires thermal bonded polymeric coating on fittings to comply with AS/NZS 4158 - *Thermal-bonded polymeric coatings on valves and fittings for water industry purposes*.

In the past the epoxy coating has been applied using a manual electrostatic spray application and has been subject to inconsistencies in the coating process. In March 2011 Sufa Technology Industry Co upgraded to an automated air induced fluidised bed coating process, using the Jotun EP-F 5001 Corro-coat thermosetting fusion bonded epoxy powder, manufactured and product certified to AS/NZS 4158.

The thermal-bonded polymeric coatings comply with AS/NZS 4020:2005. The material supply requirements comply with AS/NZS 4158.

Sufa Technology Industry Co applies thermal-bonded polymeric coatings as part of its manufacturing process. Sufa Technology Industry Co has submitted documentary evidence that BRT (Batch Release Testing) is being carried out to comply with AS/NZS 2638.2 (inclusive of AS/NZS 4158 BRT's).

Sufa Technology Industry Co has submitted the following Operating procedures for the application of thermal-bonded polymeric coatings.

The FBE Coating Processing Quality Inspection Provision OGD-S(G)Q13A.

Batch Release Test Requirements Provision OGD-S(G)Q15A.

Coating Rejection Process Provision OGD-S(G)Q16A.

The above Operating procedures includes the process stages, TT, BRT and inspection, repair limitations, handling, storage and loading requirements.

Sufa Technology Industry Co has submitted a letter from JOTUN Coatings Co. Ltd Shanghai China, certifying Sufa Technology Industry Co as having the capability to coat Corro-Coat EP-F5001 from Jotun Powder Coatings, including pre-treatment, necessary equipment, process controls and technical knowledge.

The standard AS/NZS 2368.2:2011 specifies the frequency of type testing. The standard requires additional type testing at any change in design or coating material or coating application technique. Sufa Technology Industry Co. has been requested to submit additional type testing, in particular to satisfy the requirements of Clause 5.1.11 and 5.1.12.

In response to a future work item detailed in WSAA Product Appraisal Report No 05/02 Issue 1, Sufa Technology Industry Co was required to advise the WSAA National Codes Manager on progress of the upgrade of the SUFA (now MAXIFLO™) RSV coating line to a fully automated coating line and statistically demonstrated the elimination of all coating problems that had been identified and reported.

In response to the above outstanding future work item AAP Industries Pty Ltd has submitted a comprehensive statistical analysis demonstrating the improvement and constancy in coating thickness, since upgrading to an automated air induced fluidised bed coating process.

Refer to Appendix A for a copy of Sufa Technology Industry Co statistical analysis of coating thickness measurements recorded prior to and after the transition to a automated air induced fluidised bed coating process, using the Jotun EP-F 5001 Corro-coat thermosetting fusion bonded epoxy powder.

6.3.2.1 Coatings Repair Kit for valves

Jotun Coatings recommends “Jotacote 605” as a coating repair material. Jotacote 605 is a high build two pack epoxy coating, suitable for repair of minor damage to coated surface of RSV’s. Refer to Appendix A.

6.4 Spindle caps

AAP Industries Pty Ltd valves are fitted with spindle caps conforming to the dimension shown in Figure 3.4 of AS/NZS 2638.2:2011, coloured either white for anticlockwise closing or red for clockwise closing. Optional colours include blue for water supply for drinking water or purple for recycled water.

7 FITTING INSTRUCTIONS, TRAINING AND INSTALLATION

RSVs are commonly installed throughout water supply networks and have become the standard isolation valve of the urban water industry worldwide. Installation, operation and maintenance are well understood by experienced installers and operators.

8 PRODUCT MARKING

The valves have the following markings conforming to AS/NZS 2638.2:2011:

- (a) Name of Manufacturer – MAXIFLO™
- (b) Nominal size – DNXX
- (c) Year of manufacture – XXXX
- (d) Pressure rating – PN 16
- (e) Australian New Zealand Standard – AS/NZS 2638.2
- (f) Material Designation GGG-50 which is equivalent to grade BS 500-7

(g) StandardsMark Product Certification.



FIGURE 1 MAXIFLO™ VALVE MARKING

9 PACKAGING AND TRANSPORTATION

In general the valves are separated and packaged in a plywood box in numbers detailed in the schedule provided depending on valve size.



FIGURE 2 PACKAGING AND TRANSPORTATION

10 PRODUCT WARRANTY

The products are covered by the normal commercial and legal requirements of Competition and Consumer Act 2010, which covers manufacture to the relevant standard, and details of AAP Industries Pty Ltd warranty, is included in their terms and conditions of sale.

11 WATER AGENCY EXPERIENCE WITH THE PRODUCT OR FIELD TESTING REPORT

A supervised and inspected installation field trial of a FL-FL DN 100 MAXIFLO™ PN 16 RSV has been successfully completed. A copy Yarra valley Water's field trial report is attached to Appendix F.

12 DISCUSSION

Examination of all the submitted documented material provides an expectation that the MAXIFLO™ PN 16 RSV range described in this report are 'fit for purpose' for use in water supply and sewerage infrastructure.

AAP Industries Pty Ltd has now addressed all outstanding items referred to issue 1 of this PA Report.

13 LIFE EXPECTANCY

When used in water supply and recycled water installations; subject to design and installation compliance with both the manufacturers and the Water Supply Code of Australia (WSA 03-2002 as amended) the MAXIFLO™ RSVs range has a life expectancy in excess of 30 years before replacement.

When used in sewer pressure main installations conveying “typical” sewage; subject to design and installation compliance with both the manufacturers and the Sewerage Code of Australia (WSA 02-2002) and Pressure Sewerage Codes of Australia (WSA 07-2007) as amended the MAXIFLO™ RSV range has a life expectancy in excess of 30 years before replacement. Typical sewage is considered to be non-saline, with pH >6.0 and a magnesium content <300mg/L. Specialist materials advice should be sought for sewage compositions outside this “typical” guideline composition limits

This rating is only a general guide to life expectancy and may increase or decrease as a result of the quality of installation, system maintenance and operating conditions, operating environment and other geographical and site specific factors.

14 FUTURE WORKS

There are no outstanding future work items.

Before December 2012, AAP Industries Pty Ltd are required to submit additional type testing, in particular to satisfy the requirements of Clause 5.1.11 and 5.1.12 in AS/NZS 2368.2:2011.

15 REPORT RECOMMENDATION

It is recommended that WSAA members and associates, consider acceptance /authorisation of MAXIFLO™ RSV for water supply, recycled water supply and pressure sewerage, subject to the design, installation, acceptance testing and commissioning being in accordance with the manufacturer’s requirements and relevant WSAA Codes, WSAA Member Integrated Codes.

16 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.

16.1 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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The information and any recommendation contained (expressly or by implication) in this Report are provided in good faith. However, you should treat the information as indicative only. You should not rely on that information or any such recommendation except to the extent that you reach an agreement to the contrary with the Publisher(s).

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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 indemnify 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.

16.3 No Updating

Neither the Publisher(s) nor any person involved in the preparation of this Report [has] [have] any obligation to notify you of any change in the information contained in this Report or of any new information concerning the Publisher(s) or the Product or any other matter.

16.4 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 TECHNICAL MANUAL/BROCHURES

Includes:

MAXIFLO™ RSV DN 100 FL-FL Assembly Drawing.

Jotun – Jotacote 605 (Fast cure) Coating Repair User Kit. (1 Page)

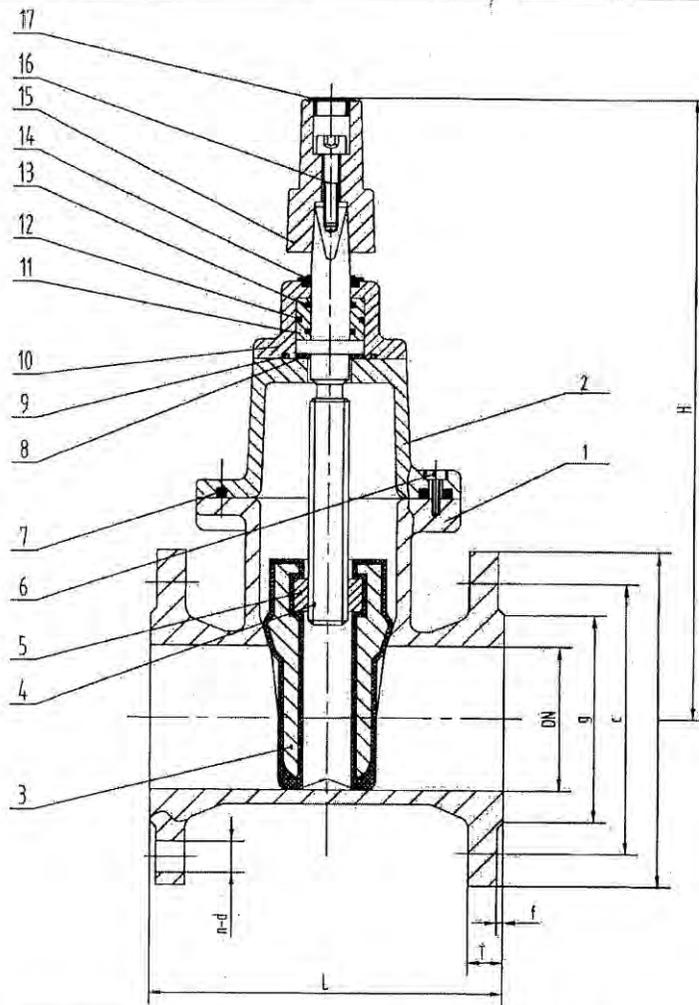
AAP Industries Pty Ltd MAXIFLO™ RSV Technical Brochures (4 Pages)

AAP Industries Pty Ltd RSV Components (WSAA IPAM Portal – WSAA Members Only)

AAP Industries Pty Ltd Mean (Thickness) graph (1 Page)

AAP Industries Pty Ltd Standard Deviation graph (1 Page)

Technical Comment from Jotun Coating Co.Ltd letter certifying Sufa Technology Industry Co., Ltd capability to coat Corro-Coat EP-EF5001 from Jotun Powder Coatings.



TECHNICAL PARAMETER	
NOMINAL SIZE	DN100
NOMINAL PRESSURE	1.6MPa
STRENGTH TESTING	2.4MPa
FUNCTIONAL TESTING	1.92MPa
RUBBER MATERIAL	EPDM
APPLICATION	WATER
MAIN MATERIALS	GGG50

TECHNICAL REQUIREMENT
 1.DESIGN ACCORDING TO AS2638.2-2002;
 2.FACE TO FACE DIMENSIONS ACCORDING TO BS5163;
 3.FLANGE ACCORDING TO AS 4087;

17	GM-A/GM-N	CASING CAP	1	PLASIC		PE
16	GB70-85	BOLT	1	S.S	ASTM A276	316
15	100Z-FGM-AS	STEM CAP	1	QT500-7	AS1831	BS500/7
14	100Z10	Dustproof Cover	1	EPDM	AS1646	EPDM
13	GB3452.1-82	"O" RING	1	NBR	AS1646	NBR
12	GB3452.1-82	"O" RING	1	NBR	AS1646	NBR
11	100Z18	SEAL BUSHING	1	ZCuSn5Pb5Zn5	AS1565	C83600
10	100Z12	TOP BONNET	1	QT500-7	AS1831	NBR
9	GB3452.1-82	"O" RING	1	NBR	AS1646	NBR
8	100Z17	BUSHING	1	ZCuSn5Pb5Zn5	AS1565	C83600
7	100Z6	MIDDLE FLANGE WASHER	1	EPDM	AS1646	EPDM
6	GB70-85	BOLT	4+2	S.S	ASTM A276	316
5	100Z5-2	STEM NUT	1	ZCuSn5Pb5Zn5	AS1565	C83600
4	100Z4	STEM	1	S.S	ASTM A276	431
3	100Z3	WEDGE	1	QT500-7	AS1831	BS500/7
2	100AZ2	BONNET	1	QT500-7	AS1831	BS500/7
1	100Z1Q16	BODY	1	QT500-7	AS1831	BS500/7
NO.	CODE	NAME	QTY.	MATERIAL	STANDARD	MINIMUM GRADE

DN	L	H	Flange dimensions to AS4087 (mm)					
			D	c	g	f	T	n-d
100	229	386	215	178	154	3	20	4/8-18

RESILIENT SEATED
 GATE VALVE
 100 AS2642X1-16Q
 ASSEMBLING DRAWING
 SUZHOU SUFADA CO., LTD.

Maxiflo

Resilient Seated Gate Valves

DN50 ~ DN300 PN16

Designed and certified to AS 2638.2

Flange drilling to AS 4087 Figure B5
AS 2129 Table D/E

Socket to AS/NZS 2280

Coating to AS 4158



www.aapindustries.com.au



Certificate No.
5130-1993-AQ-RGC-RvA



License No.
SMKP 20171



License No.
SMKP 20551



License No.
SMKP 20133

General Application:

Ductile iron resilient seated gate valves for waterworks purposes, used to convey potable, waste and recycled water, typical sewage for below ground or above ground applications. Designed as isolation valves for sections and branches in pipelines.

Features:

- Ductile iron body and bonnet for high strength and impact resistance.
- Ductile iron gate fully encapsulated in EPDM rubber to ensure a drip tight seal.
- Grade 431 stainless steel spindle for strength and corrosion resistance.
- Back seal facility to allow for replacements of stem seals under operating pressure.
- All bolts & fasteners stainless steel grade 316 for corrosion protection.
- Available in flanged (AS4087) or Socket ends.
- Full flow for minimal pressure drop.
- Stem nut is separated from the gate, for easy open & close.
- Cast integral feet for safe and easy storage.
- Lifting eyes for easy safe installation. (Sizes 150mm & over)
- White cap anti clockwise closing and red cap clockwise closing available.
- Optional: Blue color - Water supply; Purple color - Recycled water.
- Key or hand wheel operation available. (Gearbox optional)

Technical Data:

- Size Range: DN50~DN300.
- Allowable Operating Pressure: 1600KPa.
- Maximum Temperature: 40°C.
- End Connections:
 - Flanged to AS 4087 Fig. B5 or AS 2129 Table D/E.
 - Sockets to AS/NZS 2280
- Fluidized bed Coating to AS 4158 - Jotun blue corro coat EPF-5001. LIC: SMKP 20551
- Approvals:
 - WSAA appraisal No.
 - AS 2638.2 Product Mark
 - Registration No. SMKP 20171

Hydraulic Tests:

- Seat test to AS 2638.2: 1760KPa
- Body test to AS 2638.2: 2400KPa
- Operating torque test comply with AS 2638.2 Table 5.1

Warranty:

The products are covered by normal commercial and legal requirements of the trade practices Act 1974, which covers manufacture to the relevant standard.



Flange



Socket End



Flange & Socket End

Maxiflo

Resilient Seated Gate Valves - Flange end DN50 ~ DN300 PN16



Designed and certified to AS 2638.2

Flange drilling to AS 4087 Figure B5
AS 2129 Table D/E

Socket to AS/NZS 2280

Coating to AS 4158



Certificate No.
5130-1993-AQ-RGC-RvA



License No.
SMKP 20171



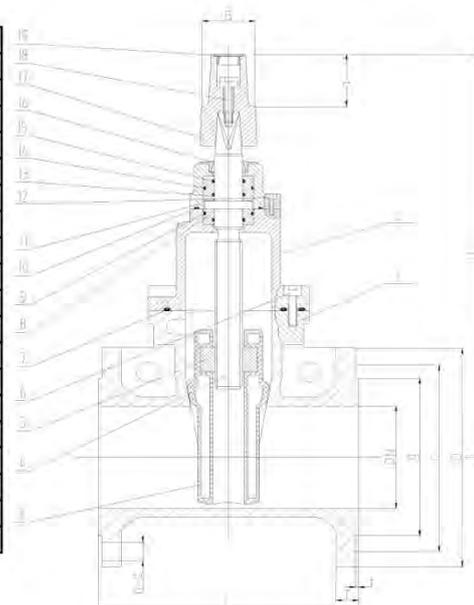
License No.
SMKP 20551



License No.
SMKP 20133

Component List:

No.	Description	Material	Standard
1	Body	Ductile Iron	AS 1831
2	Bonnet	Ductile Iron	AS 1831
3	Gate Wedge	Ductile Iron	AS 1831
4	Spindle Stem	Stainless Steel	ASTM A 276 431
5	Gate Nut	Gunmetal	AS 1565 C83600
6	Screws	Stainless Steel	ASTM A 276 316
7	Body Gasket	EPDM	AS 1646
8	Seal Bushing	Gunmetal	AS 1565 C83600
9	O Ring	NBR	AS 1646
10	Bonnet Gasket	EPDM	AS 1646
11	Top Bonnet	Ductile Iron	AS 1831
12	Screws	Stainless Steel	ASTM A 276 316
13	Seal Bushing	Gunmetal	AS 1565 C83600
14	O Ring	NBR	AS 1646
15	O Ring	NBR	AS 1646
16	Dustproof Cover	EPDM	AS 1646
17	Spindle Cap	Ductile Iron	AS 1831
18	Screw	Stainless Steel	ASTM A 276 316
19	Plastic Cap	PE	-



Dimensions (mm):

Ref. Code Clockwise	Ref. Code Anti Clockwise	DN	L	H	g	c	o	T	n-d	f	Spindle cap		Weight (KG)
											A	B	
VRSCC80C	VRSACC80C	80	203	362	122	146	185	18	4-18	3	50	35	20
VRSCC100C	VRSACC100C	100	229	386	154	178	215	20	4-18	3	50	35	25
VRSCC150C	VRSACC150C	150	267	506	211	235	280	23	8-18	3	50	35	50
VRSCC200C	VRSACC200C	200	292	622	268	292	335	23	8-18	3	57	35	85
VRSCC225C	VRSACC225C	225	305	726	300	324	370	24	8-18	3	57	35	105
VRSCC250C	VRSACC250C	250	330	726	328	356	405	24	8-22	3	57	35	125
VRSCC300C	VRSACC300C	300	356	825	378	406	455	30	12-22	4	57	35	170

Maxiflo

Resilient Seated Gate Valves - Socket end

DN50 ~ DN300 PN16



Designed and certified to AS 2638.2
 Flange drilling to AS 4087 Figure B5
 AS 2129 Table D/E
 Socket to AS/NZS 2280
 Coating to AS 4158



Certificate No.
5130-1993-AQ-RGC-RvA



License No.
SMKP 20171



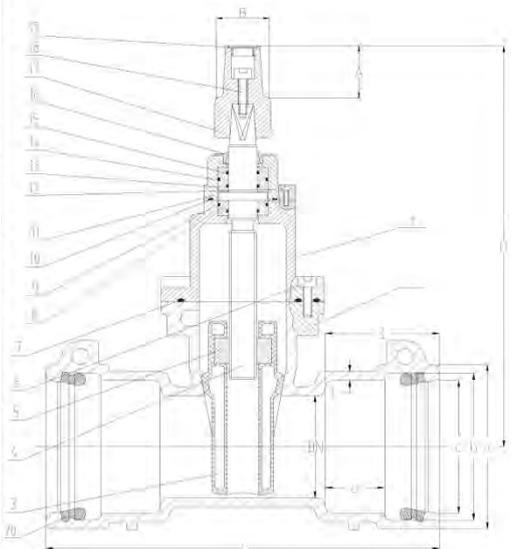
License No.
SMKP 20551



License No.
SMKP 20133

Component List:

No.	Description	Material	Standard
1	Body	Ductile Iron	AS 1831
2	Bonnet	Ductile Iron	AS 1831
3	Gate Wedge	Ductile Iron	AS 1831
4	Spindle Stem	Stainless Steel	ASTM A 276 431
5	Gate Nut	Gunmetal	AS 1565 C83600
6	Screws	Stainless Steel	ASTM A 276 316
7	Body Gasket	EPDM	AS 1646
8	Seal Bushing	Gunmetal	AS 1565 C83600
9	O Ring	NBR	AS 1646
10	Bonnet Gasket	EPDM	AS 1646
11	Top Bonnet	Ductile Iron	AS 1831
12	Screws	Stainless Steel	ASTM A 276 316
13	Seal Bushing	Gunmetal	AS 1565 C83600
14	O Ring	NBR	AS 1646
15	O Ring	NBR	AS 1646
16	Dustproof Cover	EPDM	AS 1646
17	Spindle Cap	Ductile Iron	AS 1831
18	Screw	Stainless Steel	ASTM A 276 316
19	Plastic Cap	PE	-
20	Seal Ring	EPDM	AS 1646



Dimensions (mm):

Ref. Code Clockwise	Ref. Code Anti Clockwise	DN	L	H	a	b	c	l	e	t	Spindle cap		Weight (KG)
											A	B	
VRSCC100SOC	VRSACC100SOC	100	340	391	161	144	126	100	52	9	50	35	25
VRSCC150SOC	VRSACC150SOC	150	373	506	220	200	180	103	53	11	50	35	49.5
VRSCC200SOC	VRSACC200SOC	200	460	622	281	257.5	237	122	59	12	57	35	88
VRSCC225SOC	VRSACC225SOC	225	477	726	312	284	264	135	72	14	57	35	113
VRSCC250SOC	VRSACC250SOC	250	482	726	339	311	291	144	81	14	57	35	114.5
VRSCC300SOC	VRSACC300SOC	300	520	825	401	370	350	144	81	15	57	35	156

Maxiflo

Resilient Seated Gate Valves

Coating Repair User Kit



Product: Jotun – Jotacote 605 (Fast cure)

Color: Tinted (Valve blue/Tyco blue 1999)

Product description: Jotacote 605 is a high build two pack epoxy coating, suitable for repair of minor damage to the coated surface of resilient seated gate valves.

Safety: Always refer to MSDS before using any chemical products.

Instructions for use:

1. Surface preparation.

Using 80grit sand paper, remove any surface contaminants around the area of repair.



2. Mixing of the Jotacote 605 epoxy.

Dispense equal parts of Jotacote 605 A and Jotacote 605 B, into small container for mixing, completely mix both A and B compounds together to even consistency. Pot life can vary up or down depending on mix ratio and temperature, as a guide will be maximum 1.5 hours at 23 deg.



3. Application.

Apply the epoxy to the repair area and spread out evenly using brush or spatula. The repair area should be filled to about 10% thicker than the original coating. Try to avoid making any large lumps or blobs



4. Drying and cure.

Leave the repaired item to dry. 3 hours the surface will be dry and after 8 hours will be thoroughly dry, for handling assembly etc.
Full cure of the epoxy is 4 days.
All times are general at 23deg.C and may vary.

Maxiflo

Resilient Seated Gate Valves - Socket end

DN50 ~ DN300 PN16



Designed and certified to AS 2638.2
 Flange drilling to AS 4087 Figure B5
 AS 2129 Table D/E
 Socket to AS/NZS 2280
 Coating to AS 4158



Certificate No.
5130-1993-AQ-RGC-RvA



License No.
SMKP 20171



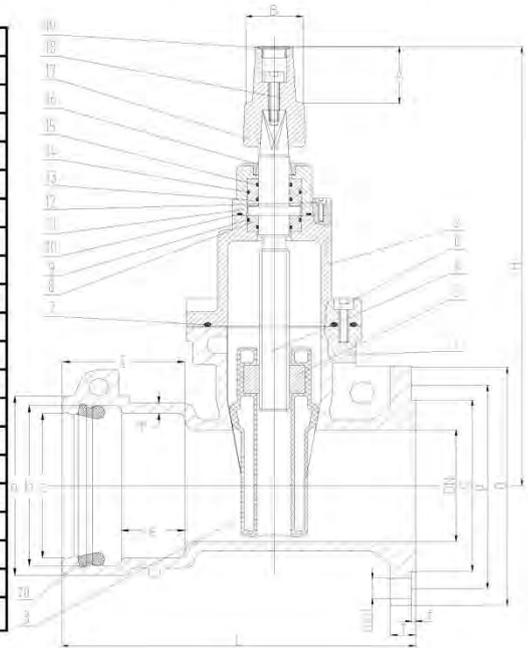
License No.
SMKP 20551



License No.
SMKP 20133

Component List:

No.	Description	Material	Standard
1	Body	Ductile Iron	AS 1831
2	Bonnet	Ductile Iron	AS 1831
3	Gate Wedge	Ductile Iron	AS 1831
4	Spindle Stem	Stainless Steel	ASTM A 276 431
5	Gate Nut	Gunmetal	AS 1565 C83600
6	Screws	Stainless Steel	ASTM A 276 316
7	Body Gasket	EPDM	AS 1646
8	Seal Bushing	Gunmetal	AS 1565 C83600
9	O Ring	NBR	AS 1646
10	Bonnet Gasket	EPDM	AS 1646
11	Top Bonnet	Ductile Iron	AS 1831
12	Screws	Stainless Steel	ASTM A 276 316
13	Seal Bushing	Gunmetal	AS 1565 C83600
14	O Ring	NBR	AS 1646
15	O Ring	NBR	AS 1646
16	Dustproof Cover	EPDM	AS 1646
17	Spindle Cap	Ductile Iron	AS 1831
18	Screw	Stainless Steel	ASTM A 276 316
19	Plastic Cap	PE	-
20	Seal Ring	EPDM	AS 1646



Dimensions (mm):

Ref. Code Anti Clockwise	DN	L	H	Flange dimensions						Spindle cap	
				g	p	o	T	n-d	f	A	B
VRSACC100C/S	100	284.5	391	154	178	215	20	4-18	3	50	35
VRSACC150C/S	150	323	506	211	235	280	23	8-18	3	50	35

Ref. Code Anti Clockwise	DN	Socket dimensions						Weight (KG)
		a	b	c	d	e	t	
VRSACC100C/S	100	161	144	126	100	52	9	25
VRSACC150C/S	150	220	200	180	103	53	11	51.5

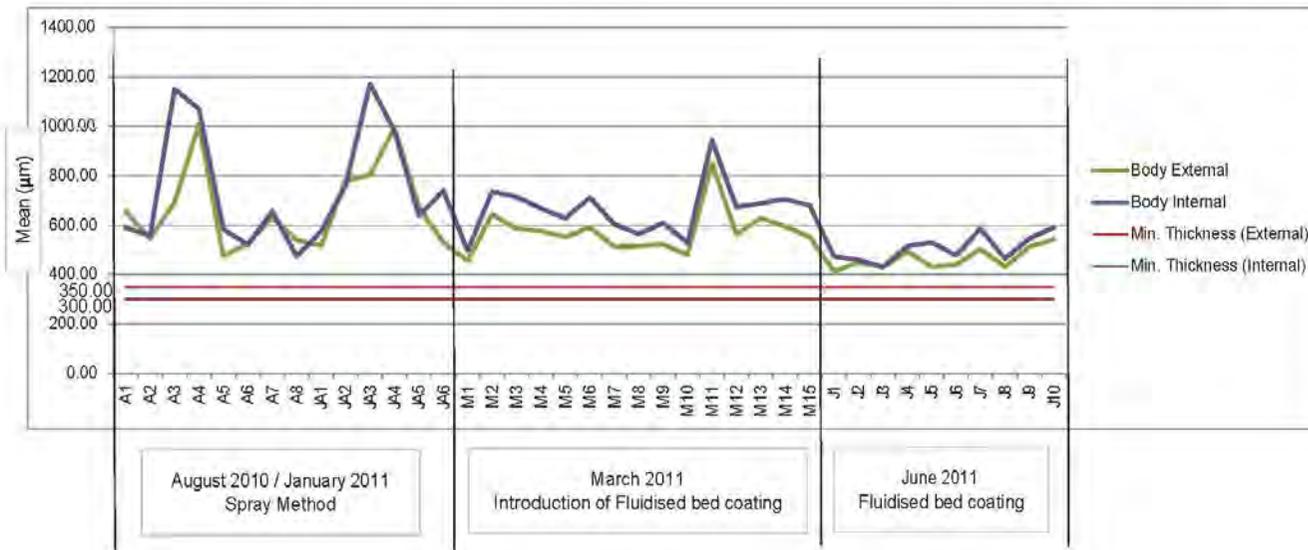
AAP Industries Pty Ltd

Mean (Thickness) graph- Valve Body

Standard: AS 4158

Inspection Equipment used: MikroTest 7 F (Coating thickness gauge)

Inspected by: AAP Representative



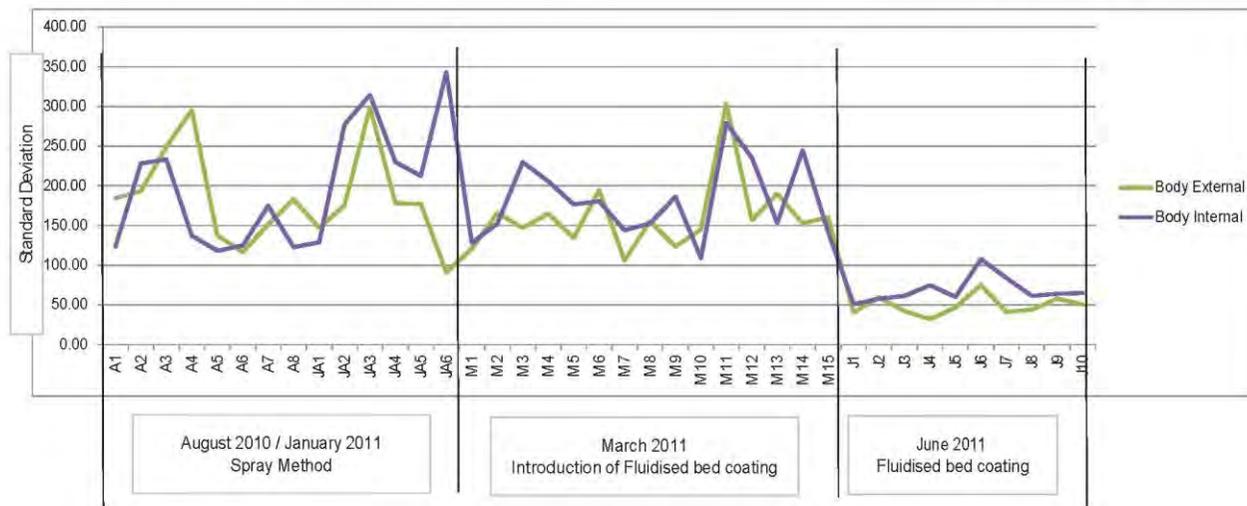
AAP Industries Pty Ltd

Standard Deviation graph - Valve Body

Standard: AS 4158

Inspection Equipment used: MikroTest 7 F (Coating thickness gauge)

Inspected by: AAP Representative



APPENDIX B - QUALITY CERTIFICATIONS

Copies of the following Quality Certificate Certificates are available for downloading from the WSAA 'Members Only' IPAM Portal Website.

TABLE B1 SUFA TECHNOLOGY INDUSTRY CO LTD CNNC – MANAGEMENT SYSTEMS

Head Office Address No 501 Zhujiang Road, SND, Suzhou 215129, P.R China (Attach all QA system certificates)	
Quality Systems Standard	ISO 9001:2008
Certification licence no.	5130-1993-AQ-RGC-RvA
Certifying agency	DET NORKE VERITAS
Initial Certification Date	26 May 1993
Expiry date of certification	26 May 2014

TABLE B2 A.A.P INDUSTRIES PTY LTD – PRODUCT CERTIFICATION

Manufacturing Plant: Sufa Technologies Co 55 Xuyang Rd Xugan Industry Zone SUZHOU China (Attach all QA system certificates in full including schedules)	
Product Standard/Spec.	AS/NZS 2638.2:2011
Certificate No.	SMKP20171
Certifying agency	SAI Global Certification Services Pty Ltd
Issued	6 March 2012
Originally Certified	10 December 2004
Expires	9 December 2014
Current Certification	6 March 2012

TABLE B3 WUJIANG MEIYAN UNION CASTING CO – MANAGEMENT SYSTEMS

Applicants Business (Attach all QA system certificates)	
Quality Systems Standard	ISO9001:2008
Client ID / Certificate.ID	06026-0001 / 0006373-3
Certifying agency	Orion Registrar Inc USA
Registration Period	16 February 2012 to 15 February 2015

NOTE:1 The registration covers the Quality Management System applicable to Casting and Services of Mexican Ball and Grey Iron.

TABLE B4 JOTUN POWDER COATINGS (THAILAND) LTD – PRODUCT CERTIFICATION

Product Certification Licence	AS/NZS 4158:2003
Licence No	SMKP20551
Certifying agency	SAI Global Certification Services Pty Ltd
Issued	4 January 2012
Expired	12 September 2016
Originally Certified:	13 September 2006
Current Certification:	4 January 2012

TABLE B5 THONG NHAT RUBBER COMPANY RUTHIMEX – PRODUCT CERTIFICATION

Manufacturing Plant (Attach all QA system certificates in full including schedules and last audit report)	
Product Certification Licence	AS 1646:2007
Licence No	SMKP20133
Certifying agency	SAI Global Certification Services Pty Ltd
Issued	6 July 2011
Expired	9 December 2013
Originally Certified:	10 December 2003
Current Certification:	6 July 2011



STANDARDSMARK LICENCE

SAI Global hereby grants:

A.A.P Industries Pty Ltd

ABN 36000402826

31 Munroe Avenue, SUTHERLAND, NSW 2232, Australia

Sufa Technology Industries Co., 55 Xuyang Rd, Xuguan Industry Zone, SUZHOU, China

StandardsMark Licence

Manufactured to:

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

"the StandardsMark Licensee" the right to use the STANDARDSMARK as shown below only in respect of the goods described and detailed in the Schedule which are produced by the Licensee or on behalf of the Licensee* and which comply with the appropriate Standard referred to above as from time to time amended. The Licence is granted subject to the rules governing the use of the STANDARDSMARK and the Terms and Conditions for certification and licence. The Licensee covenants to comply with all the Rules and Terms and Conditions.

Certificate No:SMKP20171

Issued: 6 March 2012

Originally Certified: 10 December 2004

Expires: 9 December 2014

Current Certification: 6 March 2012

Duncan Lilley
Global Head – Assurance Services

William Smith
Certification Manager



* For details of manufacture, refer to the licensee

The STANDARDSMARK is a registered certification trademark of SAI Global Limited (A.C.N. 050 644 642) and is issued under licence by SAI Global Certification Services Pty Limited (ACN 108 716 669) ("SAI Global") 286 Sussex Street, Sydney NSW 2000, GPO Box 5420 Sydney NSW 2001. This certificate remains the property of SAI Global and must be returned to SAI Global upon its request. Refer to www.saiglobal.com, for the list of product models.



SCHEDULE TO STANDARDSMARK LICENCE

SAI Global hereby grants:

A.A.P Industries Pty Ltd

31 Munroe Avenue, SUTHERLAND, NSW 2232, Australia

Sufa Technology Industries Co., 55 Xuyang Rd, Xuguan Industry Zone, SUZHOU, China

StandardsMark Licence

Manufactured to:

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

Model identification of the goods on which the STANDARDSMARK may be used:

Model Identification	Model Name	Brand Name	Product Description	Date Endorsed
VRS AAC150C/S	RSGV	Maxiflo	Left hand close, flanged and socketed Resilient seated gate	6 Mar 2012
VRS ACC100C	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRS ACC100C	RSGV	Maxiflo	Left hand close, flanged Resilient seated gate	6 Mar 2012
VRS ACC100C/S	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRS ACC100C/S	RSGV	Maxiflo	Left hand close, flanged and socketed Resilient seated gate	6 Mar 2012
VRS ACC100S	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRS ACC100S	RSGV	Maxiflo	Left hand close, flanged Resilient seated gate	6 Mar 2012
VRS ACC150C	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRS ACC150C	RSGV	Maxiflo	Left hand close, flanged Resilient seated gate	6 Mar 2012
VRS ACC150C/S	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRS ACC150S	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRS ACC150S	RSGV	Maxiflo	Left hand close, flanged Resilient seated gate	6 Mar 2012
VRS ACC200C	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRS ACC200C	RSGV	Maxiflo	Left hand close, flanged Resilient seated gate	6 Mar 2012
VRS ACC200S	RSGV	Maxiflo	resilient seat gate	6 Mar 2012

Certificate No: SMKP20171

Issued Date: 6 March 2012

This schedule supersedes all previously issued schedules

* For details of manufacture, refer to the licensee

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SCHEDULE TO STANDARDSMARK LICENCE

Model Identification	Model Name	Brand Name	Product Description	Date Endorsed
VRSACC200S	RSGV	Maxiflo	Left hand close, flanged Resilient seated gate	6 Mar 2012
VRSACC225C	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSACC225C	RSGV	Maxiflo	Left hand close, flanged Resilient seated gate	6 Mar 2012
VRSACC225S	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSACC225S	RSGV	Maxiflo	Left hand close, flanged Resilient seated gate	6 Mar 2012
VRSACC250C	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSACC250C	RSGV	Maxiflo	Left hand close, flanged Resilient seated gate	6 Mar 2012
VRSACC250S	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSACC250S	RSGV	Maxiflo	Left hand close, flanged Resilient seated gate	6 Mar 2012
VRSACC300C	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSACC300C	RSGV	Maxiflo	Left hand close, flanged Resilient seated gate	6 Mar 2012
VRSACC300S	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSACC300S	RSGV	Maxiflo	Left hand close, flanged Resilient seated gate	6 Mar 2012
VRSACC80C	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSACC80C	RSGV	Maxiflo	Left hand close, flanged Resilient seated gate	6 Mar 2012
VRSACC80S	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSACC80S	RSGV	Maxiflo	Left hand close, flanged Resilient seated gate	6 Mar 2012
VRSCC100C	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSCC100C	RSGV	Maxiflo	Right hand close, flanged Resilient seated gate	6 Mar 2012
VRSCC100S	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSCC100S	RSGV	Maxiflo	Right hand close, flanged Resilient seated gate	6 Mar 2012
VRSCC150C	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSCC150C	RSGV	Maxiflo	Right hand close, flanged Resilient seated gate	6 Mar 2012

Certificate No: SMKP20171

Issued Date: 6 March 2012

This schedule supersedes all previously issued schedules

* For details of manufacture, refer to the licensee

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SCHEDULE TO STANDARDSMARK LICENCE

Model Identification	Model Name	Brand Name	Product Description	Date Endorsed
VRSCC150S	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSCC150S	RSGV	Maxiflo	Right hand close, flanged Resilient seated gate	6 Mar 2012
VRSCC200C	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSCC200C	RSGV	Maxiflo	Right hand close, flanged Resilient seated gate	6 Mar 2012
VRSCC200S	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSCC200S	RSGV	Maxiflo	Right hand close, flanged Resilient seated gate	6 Mar 2012
VRSCC225C	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSCC225C	RSGV	Maxiflo	Right hand close, flanged Resilient seated gate	6 Mar 2012
VRSCC225S	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSCC225S	RSGV	Maxiflo	Right hand close, flanged Resilient seated gate	6 Mar 2012
VRSCC250C	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSCC250C	RSGV	Maxiflo	Right hand close, flanged Resilient seated gate	6 Mar 2012
VRSCC250S	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSCC250S	RSGV	Maxiflo	Right hand close, flanged Resilient seated gate	6 Mar 2012
VRSCC300C	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSCC300C	RSGV	Maxiflo	Right hand close, flanged Resilient seated gate	6 Mar 2012
VRSCC300S	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSCC300S	RSGV	Maxiflo	Right hand close, flanged Resilient seated gate	6 Mar 2012
VRSCC80C	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSCC80C	RSGV	Maxiflo	Right hand close, flanged Resilient seated gate	6 Mar 2012
VRSCC80S	RSGV	Maxiflo	resilient seat gate	6 Mar 2012
VRSCC80S	RSGV	Maxiflo	Right hand close, flanged Resilient seated gate	6 Mar 2012

End of Record

Certificate No: SMKP20171

Issued Date: 6 March 2012

This schedule supersedes all previously issued schedules

* For details of manufacture, refer to the licensee

The STANDARDSMARK is a registered certification trademark of SAI Global Limited (A.C.N. 050 644 642) and is issued under licence by SAI Global Certification Services Pty Limited (ACN 109 716 669) ("SAI Global") 286 Sussex Street, Sydney NSW 2000, GPO Box 5420 Sydney NSW 2001. This certificate remains the property of SAI Global and must be returned to SAI Global upon its request. Refer to www.saiglobal.com, for the list of product models.





**Orion Registrar, Inc., USA
Certificate of Registration**

This is to certify the Quality Management System of:

**Wujiang Meiyang Union Casting Co., Ltd.
(Near 318 National Road only
103.4km) Meiyang Town,
Wujiang City, Jiangsu Province
China**

*Has been assessed by Orion Registrar and found to be in compliance with
the following Quality Standard:*

ISO 9001:2008

The Quality Management System is Applicable to:

**Casting and Services of Mexican Iron Ball
and Gray Iron.**

The Registration period is from February 16, 2012 to February 15, 2015.

*This registration is subject to the company maintaining its system to the
required standard, and applicable exceptions, which will be monitored by Orion.*

Client ID 06026-00001. Certificate ID N0006373-3.

EAC Code(s): 17



Carl M. [Signature]
President

02/16/2012
Date



Orion Registrar, Inc. ★ Arvada, Colorado ★ PO Box 745070 ★ 303-456-6010 ★ FAX 303-456-6681

To authenticate this certificate please visit www.orionvalue.com



DET NORSKE VERITAS
MANAGEMENT SYSTEM CERTIFICATE

Certificate No. 5130-1993-AQ-RQC-RvA

This is to certify that

SUFA Technology Industry Co., Ltd. CNNC

No. 501 Zhujisag Road, SND, Suzhou 215129, P.R. China

has been found to conform to the Management System Standard:

ISO 9001:2008

This Certificate is valid for the following product or service ranges:

Design and Manufacture of Non-Nuclear Industrial Valves

Initial Certification date:
 May 26th, 1993

Place and date:
 Shanghai, June 9th, 2011

This Certificate is valid until:
 May 26th, 2014

for the accredited Unit:
 DNV CERTIFICATION B.V.,
 THE NETHERLANDS



The audit has been performed under the supervision of:
 Yu Da
 Lead Auditor

Signature:
 Chen Yi
 Management Representative

Lack of fulfillment of conditions as set out in the Certification Agreement may render this Certificate invalid.

DET NORSKE VERITAS CERTIFIKASJON B.V., Zandvoort 3, 2994 LJ Noordwijk, The Netherlands, TEL: +31 (0)202 488 1111 www.dnv.com / www.dnv.nl

APPENDIX C – WSA PRODUCT SPECIFICATION

WSA PS - 260 GATE VALVES, RESILIENT SEATED FOR PRESSURE APPLICATIONS – WATER SUPPLY AND SEWERAGE

260.1 SCOPE

This specification covers resilient seated gate valves¹ for pressure applications in water supply^{2,3} and sewerage.

260.2 REQUIREMENTS

- (a) Resilient seated valves shall comply with AS 2638.2:2011.
- (b) The direction of rotation of input shaft shall be anti-clockwise to close the valve.
- (c) Valves shall be supplied with a spindle cap, which, for water supply applications, shall be coated blue⁴ or purple⁵ with fusion bonded polymer complying with AS/NZS 4158:2003.
- (d) For socket joint configurations, elastomeric joint seals shall be EPDM complying with AS 1646:2007 and AS 681.1:2008 (EN 681-1:1996).
- (e) For flanged joint configurations, gaskets shall comply with WSA 109:2011.

260.3 QUALITY ASSURANCE

- (a) Resilient seated gate valves shall have product certification (ISO Type 5) to AS 2638.2:2011.
- (b) Polymeric coatings shall have product certification (ISO Type 5) to AS/NZS 4158:2003.
- (c) Elastomeric joint seals shall have product certification (ISO Type 5) to AS 1646:2007 and AS 681.1:2008 (EN 681-1:1996).
- (d) Flange gaskets shall have certificates of compliance to WSA 109:2011.
- (e) All products shall be marked in accordance with the conformity assessment body's requirements.

260.4 AGENCY OR PROJECT SPECIFIC REQUIREMENTS

(a) Pressure Class ⁷ , PN	(b)
(c) End configuration ⁸ (e.g. flange/flange, socket/socket)	(d)
(e) Integral by-pass	(f)
(g) Gearbox depending on the size of the valve and the differential head on the valve	(h)
(i) Opposite direction of closing i.e. clockwise to close the valve	(j)
(k) Spindle cap colour	(l)
(m) Extension spindle ⁹	(n)
(o) Handwheel in lieu of spindle cap	(p)
(q) Alternative elastomeric materials for joint seals	(r)

NOTES:

- 1 Resilient seated gate valves are not designed for throttling purposes.

- 2 Includes drinking water and recycled water supply. Colour differentiation of valve bodies is not required.
- 3 All gate valves to AS 2638.2:2011 are required to comply with AS/NZS 4020:2005.
- 4 Blue shall be defined in accordance with RAL⁴DESIGN colour numbers as being no darker than 200 80 25 or 210 80 25 and no lighter than 200 90 10 or 210 90 10, respectively.
- 5 Purple is defined in accordance with RAL⁴DESIGN colour numbers as being no darker than 330 40 40 or 310 50 30 and no lighter than 310 70 15, respectively. It is equivalent to being no darker than P24 Jacaranda or P12 Purple and no lighter than P23 Lilac in accordance with AS 2700:1996 (NZS 7702:1989AA).
- 6 RAL Deutsches Institut für Gütesicherung und Kennzeichnung e.V. (RAL German Institute for Quality Assurance and Certification)
Siegburger Straße 39
D-53757 Sankt Augustin
<http://www.ral.de/farben/en/farbvorlagen/index.html?content1.shtml>
- 7 Pressure Class shall be as specified in the Project Specification or on the Design Drawings.
- 8 End configurations and extension spindles shall be as specified in the Project Specification or on the Design Drawings.
- 9 WSA PS-262 covers extension spindles.

APPENDIX D - SUPPLIER CONTACTS

NSW - AAP Industries Head office

Sydney , Head office, Factory and Warehouse
31 Monro Ave, Sutherland, NSW 2232

Brisbane, Warehouse

125 Crockford Street,
Northgate, QLD 4013

Melbourne, Warehouse

8 Lakewood Boulevard,
Braeside, VIC 3195

Adelaide, Warehouse

1/49 Naweena Road,
Regency Park, SA 5010

Perth, Warehouse

16 Aitken Way,
Kewdale, WA 6105

Townsville, Warehouse

16 Leyland Street,
Garbutt, QLD 4814

Also see AAP Industries web site:

www.aapindustries.com.au

AAP Industries agents and distributors:

Reece Pty Ltd

Promains

Allmains

Tradelink

Blackwoods

Plumbers Supply Co-op

Vinidex

Icon Septeck

APPENDIX D - NATA LABORATORY TEST RESULTS

AAP Industries Pty Ltd has submitted the following documents in support of the performance of the MAXIFLO™ RSV range and its compliance with the requirements of AS/NZS 2638.2:

- SAI Global Surveillance Audit Report dated 10/2/2011 complete with action items and audit report on production processes.
- A CSIRO Manufacturing & Infrastructure Technology in North Ryde, NSW, Australia report (November 2004) on the rubber-to-metal bond strength for the wedge demonstrating compliance with Clause 5.1.13 of AS/NZS 2638.2. This report showed the average bond strength of the 6 samples as 12.7 N/mm. The requirement is 7 N/mm minimum.
- Type Testing Reports for the full range of MAXIFLO™ RSV from the Machinery Industry Valve Product Quality Supervision and Inspection Center Machinery Industry General Machinery product Inspection Institute (China) to demonstrate type test compliance with AS/NZS 2638.2-2011. (Refer to Appendix F Table F1 for Further information)

Sufa Technology Industry Co. Ltd type tests were performed by the Machinery Industry Valve Product Quality Supervision and Inspection Center Machinery Industry General Machinery product Inspection Institute and at the time the SUFA valves were type tested the Laboratory was accredited (CNAL No L0610) by the Chinese National Accreditation Board of laboratories (CNAL) for conformity Assessment (CNAS) in accordance with ISO/IEC 17025 – *General requirements for the competence of testing and calibration laboratories*..

Hefei General Machinery Products Inspection Institute located at No.888 Changjiang West Road, Hefei, Anhui, China

According to the Laboratory, in 2006 CNAL combined with CNAS so now the above testing facility carries CNAS No. L1598

This laboratory is accredited by China National Accreditation Service for conformity Assessment (CNAS) in accordance with ISO/IEC 17025. The CNAS is a signatory to the International Laboratory Accreditation Co-operation (ILAC) with mutual recognition arrangements (MRA) within the Asia Pacific Laboratory Accreditation Cooperation (APLAC).

WSAA accepts the results from testing and calibration laboratories that are accredited by accreditation bodies that are signatories to the ILAC Arrangement, provided all tests are performed in accordance with the laboratories items of accreditations.

The test reports are Commercial in Confidence, however will be made available to the IPAM network with the approval of the applicant

TABLE F1 Summary of type tests results

Characteristics	Clause	Requirement	Test Method	Frequency	Results	Valve Size	Doc Id	
Protective Coatings	4.1. and 4.2	Coating effective for all internally wetted surfaces external surfaces and non-corrosion-resistant material	AS/NZS 4158	At any change in material or coating process	Complies		Jotun Powder Coating (Thailand) has StandardsMark certification to AS/NZS 4158. Jotun CORROCOAT 9188-A 50941-R	
Performance	5.1.2	(Test A), Strength test (Thrust collar, spindle, nut & cap) ¹	Clause 5.1.2	At any change in design	Complies	DN 80	Report No 2003FM333	
						DN 100	Report No 2006FM216	
						DN 150	Report No 2004FM218	
						DN 200	Report No 2004FM219	
						DN 225 ³	Report No 2004FM220	
						DN 250	Report No 2004FM220	
	5.1.3	(Test B), Body pressure test ¹	Clause 5.1.3			Complies	DN 80	Report No 2003FM333
							DN 100	Report No 2006FM216
							DN 150	Report No 2004FM218
							DN 200	Report No 2004FM219
							DN 225 ³	Report No 2004FM220
							DN 250	Report No 2004FM220

Characteristics	Clause	Requirement	Test Method	Frequency	Results	Valve Size	Doc Id
						DN 300	Report No 2004FM221
	5.1.4	(Test C), Gate strength test ¹	Clause 5.1.4		Complies	DN 80	Report No 2003FM333
				DN 100		Report No 2006FM216	
				DN 150		Report No 2004FM218	
				DN 200		Report No 2004FM219	
				DN 225 ³		Report No 2004FM220	
				DN 250		Report No 2004FM220	
				DN 300		Report No 2004FM221	
	5.1.5	(Test D), Torque test ¹	Clause 5.1.5		Complies	DN 80	Report No 2003FM333
				DN 100		Report No 2006FM216	
				DN 150		Report No 2004FM218	
				DN 200		Report No 2004FM219	
				DN 225 ³		Report No 2004FM220	
				DN 250		Report No 2004FM220	
				DN 300		Report No 2004FM221	
	5.1.6	(Test E), Valve seat test ¹	Clause 5.1.6		Complies	DN 80	Report No 2003FM333
				DN 100		Report No 2006FM216	
				DN 150		Report No 2004FM218	
				DN 200		Report No 2004FM219	

Characteristics	Clause	Requirement	Test Method	Frequency	Results	Valve Size	Doc Id
						DN 225 ³	Report No 2004FM220
						DN 250	Report No 2004FM220
						DN 300	Report No 2004FM221
						DN 100	Report No. 122436 3037
	5.1.7	(Test F), Sensitivity test ¹	Clause 5.1.7		Complies	DN 80	Report No 2003FM333
						DN 100	Report No 2006FM216
						DN 150	Report No 2004FM218
						DN 200	Report No 2004FM219
						DN 225 ³	Report No 2004FM220
						DN 250	Report No 2004FM220
						DN 300	Report No 2004FM221
	5.1.8	(Test G), Functional test ¹	Clause 5.1.8		Complies	DN 80	Report No 2003FM333
						DN 100	Report No 2006FM216
						DN 150	Report No 2004FM218
						DN 200	Report No 2004FM219
						DN 225 ³	Report No 2004FM220
						DN 250	Report No 2004FM220
						DN 300	Report No 2004FM221
	5.1.9	(Test H), Spindle seal	Clause 5.1.9	At any change	Complies	DN 80	Report No 2003FM333

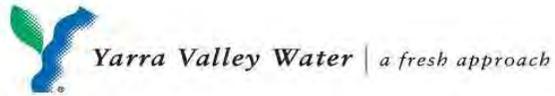
Characteristics	Clause	Requirement	Test Method	Frequency	Results	Valve Size	Doc Id	
		replacement or repair test ¹		in design		DN 100	Report No 2006FM216	
						DN 150	Report No 2004FM218	
						DN 200	Report No 2004FM219	
						DN 225 ³	Report No 2004FM220	
						DN 250	Report No 2004FM220	
						DN 300	Report No 2004FM221	
	5.1.10	Final Inspection ¹	Visual inspection			Complies	DN 80	Report No 2003FM333
							DN 100	Report No 2006FM216
							DN 150	Report No 2004FM218
							DN 200	Report No 2004FM219
							DN 225 ³	Report No 2004FM220
							DN 250	Report No 2004FM220
	5.1.11	(Test I) Cyclic flow test ^{1,4}	Clause 5.1.11 using flow test rig	At any change in design or coating material or coating material application		Complies	DN 80	Report No 2003FM333
							DN 100	Report No 2006FM216
							DN 150	Report No 2004FM218
							DN 200	Report No 2004FM219
							DN 225 ³	Report No 2004FM220
							DN 250	Report No 2004FM220

Characteristics	Clause	Requirement	Test Method	Frequency	Results	Valve Size	Doc Id
						DN 300	Report No 2004FM221
						DN 100	Report No. 122436 3037
	5.1.12	(Test J) Endurance cyclic flow test ^{1,4}	Clause 5.1.12 using flow test rig		Complies	DN 80	Report No 2003FM333
						DN 100	Report No 2006FM216
						DN 150	Report No 2004FM218
						DN 200	Report No 2004FM219
						DN 225 ³	Report No 2004FM220
						DN 250	Report No 2004FM220
						DN 300	Report No 2004FM221
						DN 100	Report No. 122436 3037
	5.1.13	Gate rubber adhesive test ² .	ASTM D249 Method B	At any change in design or elastomeric compound or moulding technique	Complies	DN 100	Report No FT81ATS3448
	5.1.14	Valve key Test (Test L)	Clause 5.1.14	At any change in design	Complies		
	5.1.15	Spindle extension Test (Test M) ¹	Clause 5.1.15		Complies	DN 80	Report No 2003FM333
						DN 100	Report No 2006FM216
						DN 150	Report No 2004FM218
						DN 200	Report No 2004FM219

Characteristics	Clause	Requirement	Test Method	Frequency	Results	Valve Size	Doc Id
						DN 225 ³	Report No 2004FM220
						DN 250	Report No 2004FM220
						DN 300	Report No 2004FM221

- (1) The Machinery Industry Valve Product Quality Supervision & Inspection Center – Machinery Industry General Machinery product Inspection Institute.
- (a) Report No 2003FM333 Issued dated 09/01/2004 Model tested 80AZ042X1-16Q (2)
- (b) Report No 2006FM216 Issued dated 09/01/2004 Model tested 100ASZ642X1-16Q (2)
- (c) Report No 2004FM218 Issued dated 10/8/2004 Model tested 150AZ042X1-16Q (2)
- (d) Report No 2004FM219 Issued dated 10/8/2004 Model tested 200AZ042X1-16Q (2)
- (e) Report No 2004FM220 Issued dated 10/8/2004 Model tested 250AZ042X1-16Q (2)
- (f) Report No 2004FM221 Issued dated 10/8/2004 Model tested 300AZ042X1-16Q (2)
- (2) Tests conducted by the CSIRO Manufacturing & Infrastructure Technology. Report No FT81ATS3448 for the rubber-to-metal bond strength for the wedge in compliance with Clause 5.1.13 of AS/NZS 2638.2. This report showed the average bond strength of the 6 samples as 12.7 N/mm. The requirement is 7 N/mm minimum.
- (3) The DN225 valve explanation for absence of type testing. To explain the DN225 valve is actually a DN250 valve with reduced end connections to convert it to DN225. Based on the above type testing conducted on the DN250 valve would cover the DN225 valve being it is only an end connection change similar to flange or socket.
- (4) As part of the future work item in Issue 1 of PA 11/26 APP Industries Pty Ltd were required to subject their valve(s) to a Cyclic flow test (Test I) in accordance Clause 5.1.11 and an Endurance Cyclic flow test (Test J) in accordance Clause 5.1.12 of AS/NZS 2638.2 due to a change in design or coating material or coating material application. These test reports have been included in the above table. A Valve Seat Test (Test E) in accordance Clause 5.1.6 of AS/NZS 2638.2 has also been submitted. Tests were conducted by the Queensland Testing Laboratory Technology Test report No 122436 3037.

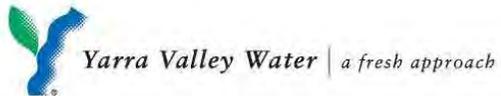
APPENDIX G FIELD TRIAL REPORT



WSAA PRODUCT APPRAISAL

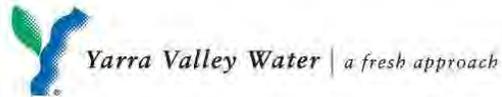
FIELD TRIAL REPORTING

Date(s) of installation:	Observations	Photos (Required)
<p>Condition of product at delivery with photos</p>	<p>Packaging: Single valve delivered by courier for field trial. Wrapped in cardboard and shrink wrapped on a pallet.</p>	<p>Sufada Valve 002 & 004</p> 
	<p>Support timbers: NA.</p>	
	<p>Strapping: NA</p>	



Surface damage	Contractor was comfortable with the condition, no damage present	
Product marking details	Valve marked as Maxiflow valve (Supplier advised the Maxiflow valve is the same as the Sufada valve and branding is optional.)	
Describe jointing type or seal	Flange jointed	

Sufada Valve 007



Were there any signs of failure or concern for the installation?	No	
What was learned about the product that could make it better or worse than other brands?	Suggest: Standard AS 2638.2 product.	
Summary and any other comments.	<p>It became evident that the valve was branded 'Maxiflow' and not Sufa or Sufada. The supplier (AAP) was contacted and advised that the branding was optional and product certification was for both brand names.</p> <p>The installation was normal and without problem. The pressure test was carried out satisfactorily against the shut valve.</p>	

Contractor: Berry Pipelines Pty Ltd ; **Site Supervisor:** Ian Berry
YVW Compliance Officer: Martin Cooper
Test Witnessed by: Scott McJannet, Leith Forbes

Melbourne Office

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401 Docklands Drive,
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Phone: (03) 8605 7601
Fax: (03) 9605 7612

Sydney Office

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Sydney NSW 2000
GPO Box 915
Sydney NSW 2001
Phone: (02) 9221 5966
Fax: (02) 9221 5977

<https://www.wsaasn.au>



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