

Betta Fluid Machinery Manufacturing Co. Ltd

PRODUCT APPRAISAL REPORT PA 1817

BETTA HYDRANT AND AIR VALVE ISOLATOR VALVES

NZS 4522:2010 Underground fire hydrants

Publication Date: 17 July 2018



WATER SERVICES
ASSOCIATION OF AUSTRALIA

Document History

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Name/Title	Organisation	Date
Product Appraisal Technical Advisory Group	WSAA	29 June 2018
WSAA Expert Panel	WSAA	29 June 2018
Peter Pittard, WSAA Consultant	WSAA	30 May 2018
Carl Radford, Product Appraisal Manager	WSAA	17 July 2018

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

Betta Fluid Machinery Manufacturing Co. Ltd (Betta) is a privately owned joint venture, incorporated in 2007, with four Chinese and two Australian partners. Appointed stocking agents distribute the Betta range of products within Australia.

This appraisal is for BETTA resilient seated PN 16 Hydrant and Air Valve Isolator Valves. The function of the isolator valves is to provide screw down isolation for outlet devices including spring hydrant valves, air valves and threaded outlets.

Betta in Wuxi, Jiangsu Province, Peoples Republic of China, manufactures the BETTA Hydrant and Air Valve Isolator Valves to NZS 4522:2010 *Underground fire hydrants*.

The isolator valves are manufactured from polymeric coated ductile iron with a flanged inlet incorporating slotted holes to accommodate both DN 80 and DN 100 PN16 flange connections to AS/NZS 4087 Figure B5. The outlet is supplied with stud bolts compatible with either a DN 80 or DN 100 PN 16 Figure B5 flange connection to accommodate a spring hydrant valve, air valve or screwed outlet.

BETTA hydrant and air valve isolator valves have ISO Type 5 product certification, OceanaMark Licence No OMK30048 to NZS 4522:2010 *Underground fire hydrants*, issued by IAPMO R&T Oceana.

Betta has a certified Quality Management System in compliance with ISO 9001:2008 and has been issued with TUV SUD Licence No 12 100 38509TMS.

The BETTA hydrant and air valve isolator valves included in this appraisal report have been deemed to comply with the requirements of WSA PS 282 – *Hydrant and Air Valve Isolator Valves – Water Supply* and are therefore considered ‘fit-for-purpose’.

1.1 Recommendations

It is recommended that WSAA members and associates, accept/authorise the BETTA Hydrant and Air Valve Isolator Valves, as described in Section 4, for use in water supply pressure pipelines provided they are installed in accordance with applicable WSAA codes and manufacturers requirements, where specified.

2 THE APPLICANT

2.1 The Supplier

Betta Fluid Machinery Manufacturing Co. Ltd does not hold stocks of BETTA products in Australia. Appointed stocking agents purchase the products directly from the Betta factory in Wuxi and distribute the range of products within Australia. Contact numbers for the stocking agents are listed in Appendix D.

2.2 The Manufacturer

Betta Fluid Machinery Manufacturing Co. Ltd is located at Beigongwu Road, Yuqi Industry Park, Huishan District, Wuxi, Jiangsu Province, China.

Betta is a privately owned joint venture, incorporated in 2007, with four Chinese and two Australian partners. Betta currently employs 45 people that include qualified technical engineers, design engineers and mechanical engineers. Wuxi Betta occupies 3000 square metres of factory with the possibility of adding another 2000 square metres for future expansion.

Betta's current annual capacity is 150,000 units with the possibility to expand, as their product range increases. Betta currently manufactures spring hydrants, fire hydrants, swing check valves, resilient seated gate valves and air release valves.

Betta sources its components locally from ISO 9001 certified suppliers.

The components are inspected and tested for compliance to Betta drawings and specifications in accordance with their quality procedures.

Material certification is documented and receipted with each shipment received from the suppliers.

3 THE PRODUCT

This Appraisal is for BETTA hydrant and air valve isolator valves. The isolator valves are manufactured to NZS 4522:2010 *Underground fire hydrants*.

The function of the isolator valves is to provide a screw down isolation for outlet devices including spring hydrant valves, air valves and threaded outlets.

The isolator valves are manufactured from polymeric coated ductile iron with a flanged inlet incorporating slotted holes to accommodate both DN 80 and DN 100 PN16 flange connections to AS/NZS 4087 Figure B5. The outlet is supplied with stud bolts compatible with either a DN 80 or DN 100 PN 16 Figure B5 flange connection to accommodate a spring hydrant valve, air valve or screwed outlet.

The isolator valves are rated as PN 16 and are available with either clockwise or anti-clockwise closure directions. A stem cap is fitted complying with AS/NZS 2638.2 *Gate valves for waterworks applications-Part 2: Resilient seated* for key operation.

Flanges comply with Figure B5 of AS/NZS 4087 *Metallic flanges for waterworks purposes*.

Polymeric coatings comply with AS/NZS 4158 *Thermal bonded polymeric coating on valves and fittings for water industry purposes*.



FIGURE 1 HYDRANT AND AIR VALVE ISOLATOR VALVE

4 SCOPE OF THE APPRAISAL

The scope of this appraisal covers PN 16 hydrant and air valve isolator valves with DN 80 / DN 100 flanged inlet and a studded outlet for compatibility with DN 80 or DN 100 flanges. Betta offers a PN 35 variant of this product that has not been considered in the scope of this Appraisal.

5 APPRAISAL CRITERIA

5.1 Quality Assurance Requirements

The WSAA product appraisal network accepts resilient seated gate valves manufactured in compliance with NZS 4522:2010 *Underground fire hydrants* and duly certified by means of an ISO Type 5 product certification scheme undertaken by a JAS-ANZ accredited Conformity Assessment Body (CAB) or by an international accreditation system recognised by JAS-ANZ.

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 as a prerequisite to undergoing a product certification audit.

5.2 Performance Requirements

BETTA Hydrant and Air Valve Isolators have been appraised for compliance with NZS 4522:2010 *Underground fire hydrants*.

Appraisal criteria are also determined by the WSAA Product Appraisal Technical Advisory Group and regularly reviewed to ensure that the criteria reflect the requirements of WSAA members.

The following Product Specification is also relevant to this application:

WSA PS-282 –*Hydrant and Air Valve Isolator Valves – Water Supply*

A copy of the above Product Specification can be found in Appendix C or downloaded from the WSAA members' website.

6 COMPLIANCE WITH APPRAISAL CRITERIA

6.1 Compliance with Quality Assurance Requirements

Betta has submitted the following certificates and statements.

- (a) Betta Fluid Machinery Manufacturing Co. Ltd has Quality Management System Certification to ISO 9001:2008 issued by TÜV SÜD Management Service GmbH, License No 12 100 38509 TMS.
- (b) BETTA hydrant and air valve isolator valves have ISO Type 5 product certification, OceanaMark Licence No 30048 to NZS 4522:2010 *Underground fire hydrants*, issued by IAPMO R&T Oceana.

Betta has also submitted copies of relevant ISO 9001 Quality Assurance licenses appropriate to their component suppliers. These certifications have not been included in this report due to "commercial in confidence" reasons.

Copies of the Quality Assurance and Product Certification licence have been included in Appendix B and are also available for downloading from the WSAA members' website.

6.2 Compliance with Performance Requirements

6.2.1 Components material list

BETTA valve component materials are detailed in Table 1. Betta has submitted copies of typical material test reports to demonstrate conformance with the minimum requirements of NZS 4522.

TABLE 1
BETTA HYDRANT AND AIR VALVE ISOLATOR COMPONENT MATERIALS

Item	Material	Standard	Grade
Body	Ductile Iron	AS 1831	GJS/500-7
Bonnet	Ductile Iron	AS 1831	GJS/500-7
Spindle Seal Retainer	Copper Alloy	AS 1568	C48600
Seal Retainer Housing	Stainless Steel	ASTM A251	316
Stopper Core	Cast Carbon Steel ¹	ASTM A216	WCB
Stopper Encapsulation	Synthetic Rubber	AS 1646	EPDM
Stem Nut	Copper Alloy	AS 1568	C48600
Spindle Stem	Stainless Steel	ASTM A276	431
Spindle Cap	Ductile Iron	AS 1831	GJS/500-7
Fasteners	Stainless Steel	ASTM A276	316
Sealing O-rings	Synthetic Rubber	AS 1646	65-75 IRHD NBR
Threaded outlet	Stainless Steel	ASTM A251	316

Note 1: The cast steel stopper core is fully encapsulated in EPDM and is therefore deemed acceptable.

6.2.2 Flanges

The inlet flange complies with the dimensions of AS/NZS 4087 Figure B5 except that it incorporates slotted holes to accommodate both DN 80 and DN 100 flange compatibility.

The outlet is supplied with stud bolts compatible with either a DN 80 or DN 100 PN 16 Figure B5 flange connection to accommodate a spring hydrant valve, air valve or screwed outlet.

Recommended installation is in accordance with the requirements of AS/NZS 4087.

Note: WSAA recommend flanged joints to be assembled in accordance with Drawing Number WAT-1313 included in the Water Supply Code of Australia – WSA 03 (as amended) and that gasket materials comply with industry standard WSA-109.

6.2.3 Polymeric thermal bonded coatings

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

BETTA hydrant and air valve isolators ductile iron components are coated at their Wuxi factory using Jotaguard VA 5001 fusion bonded epoxy powder coloured blue (internally and externally).

Jotaguard VA 5001 has AS/NZS 4158:2003 *Thermal-bonded polymeric coatings on valves and fittings for water industry purposes* product certification, StandardsMark Licence No. SMKP20551, issued by SAI Global.

Jotaguard VA 5001 FBE is applied using the fluidised bed process and testing is carried out in accordance with the requirements of AS/NZS 4158. IAPMO R&T Oceana audits application procedures and testing in conjunction with regular OceanaMark certification audits.

6.2.4 Type tests

Betta has submitted copies of Type Test reports for the hydrant and air valve isolator valve to demonstrate compliance with the performance requirements of NZS 4522.

Plumbing Testing Laboratory (NATA Accreditation No.19549) in Malaga WA carried out the testing.

The report includes tests for minimum required strength of components, body pressure test, maximum closing and operating torques, spindle seal replacement, minimum flow and maximum head loss.

6.2.5 Contact with drinking water

Betta has submitted a test report to demonstrate that the isolator valves comply with AS/NZS 4020: 2005 – *Product for use in contact with drinking water*. Tests were completed by Beijing Building Materials Testing Academy Co., Ltd. which is registered by China National Accreditation Service for Conformity Assessment (CNAS), Registration Number L1449.

7 FITTING INSTRUCTIONS, TRAINING AND INSTALLATION

Installation, operation and maintenance are well understood by experienced installers and operators.

8 PRODUCT MARKING

The valves have the following markings conforming to NZS 4522:

- (a) Name of Manufacturer: BETTA
- (b) Nominal size: DN 80/100
- (c) Year of manufacture: XXXX
- (d) Pressure rating: PN 16
- (e) Standard No: NZS 4522
- (f) Product Certification Mark: OceanaMark

See Figure 1 for an example of marking details.



FIGURE 1 MARKING DETAILS

9 PACKAGING AND TRANSPORTATION

Products are bubble wrapped, placed in individual cardboard cartons and packed in pallet sized 5 ply wooden boxes.

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 Betta's warranty is included in their terms and conditions of sale.

11 WATER AGENCY EXPERIENCE WITH THE PRODUCT OR FIELD TESTING REPORT

It is considered that nothing would be learned from a field test report.

12 OUTCOMES OF EXPERT PANEL PRODUCT REVIEW

There are no outstanding requests.

13 FUTURE WORKS

There are no future works identified.

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.

14.2 Limits on Reliance on Information and Recommendations

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This Report does not contain all information that a person might require for the purposes of assessing any product discussed or appraised within it (Product). The product appraisal criteria used in preparing this Report may not address all relevant aspects of the Product.

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

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.

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 B - QUALITY CERTIFICATIONS

Copies of the following Quality Certification Certificates are available for downloading from the WSAA members Website.

TABLE B1

BETTA FLUID MACHINERY MANUFACTURING CO LTD– MANAGEMENT SYSTEMS

Business Address: Beigongwu Road, Yuqi Industry Park, Huishan District, Wuxi, Jiangsu Province, China	
Quality Systems Standard	ISO 9001:2008
Certification licence no.	12 100 38509 TMS
Certifying agency	TUV SUD Management Services GmbH
Current date of certification	18 June 2016
Expiry date of certification	14 September 2018

TABLE B2

BETTA FLUID MACHINERY MANUFACTURING CO LTD* – PRODUCT CERTIFICATION

Business Address: Beigongwu Road, Yuqi Industry Park, Huishan District, Wuxi, Jiangsu Province, China	
Product Standard/Spec.	NZS 4522:2010
Certificate No.	OMK30048
Certifying agency	IAPMO R&T Oceana
First date of certification	16 February 2016
Current date of certification	16 February 2016
Expiry date of certification	15 February 2021

* Held jointly with Promains NZ



Management Service

CERTIFICATE

**The Certification Body
of TÜV SÜD Management Service GmbH**

certifies that

Wuxi Betta Fluid Machinery Manufacturing Co., Ltd.

Beigong Wu Road, Yuqi Area, Economic Development Huishan
District, Wuxi City, Jiangsu Province, P. R. China

Post Code: 214183

Organisation code: 69452924-X

has established and applies
a Quality Management System for

Design, Manufacture and Sales of Water Supply Gate Valves, Hydrant Valve, Check Valve, Butterfly Valve and Fittings Used for Water Pipes.

An audit was performed. Report No. 70765880.

Proof has been furnished that the requirements according to

ISO 9001:2008

are fulfilled.

The certificate is valid from **2016-06-18** until **2018-09-14**.

Certificate Registration No.: 12 100 38509 TMS.

Information about this certificate can be inquired at the official website of Certification and Accreditation Administration of the People's Republic of China (www.cnca.gov.cn).

Mr. Wege

Product Compliance Management
Munich, 2016-06-12



2010-07-20

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IAPMO R&T Oceana is a product certification body which inspects and arranges for the independent laboratory testing of samples taken from the manufacturer's stock or from the market or a combination of both, to verify compliance of the requirements of applicable Standards and Specifications. This activity is coupled with periodic surveillance of the certified product taken from the market place or the manufacturer's factory. This certification is subject to the conditions set forth in the characteristics below and is not to be construed as any recommendation, assurance or guarantee by IAPMO R&T Oceana of the product acceptance by Authorities Having Jurisdiction. The IAPMO R&T Oceana "OceanaMark" Product Certification Scheme is a JAS-ANZ accredited ISO Guide 67 Type 5 Product Certification Scheme.

OCEANAMARK CERTIFICATE

IAPMO R&T Oceana hereby grants to:

Promains 2013 NZ Ltd
held jointly with
WuXi Betta Fluid Machinery Manufacturing Co., Ltd

5 Piermark Drive, Albany North Shore City, Auckland, New Zealand, 0751

the right to use the OceanaMark in accordance with IAPMO Oceana Pty Ltd 'Mark Rules' on the product as described in the attached OceanaMark Schedule. The Certificate is granted subject to IAPMO Oceana Pty Ltd 'Governance Rules'.

*Evaluated to:***NZS 4522 Underground Fire Hydrants***Manufacturer:***WuXi Betta Fluid Machinery Manufacturing Co., Ltd.**

Certificate No.: OMK30048

Certified Date: 16 February 2016

Issue Date: 16 February 2016

Expiry Date: 15 February 2021

Chief Executive Officer of the IAPMO Group

This OceanaMark certification is for the period indicated herein and is void after the date shown above. Any change in material, manufacturing process, marking or design without having first obtained the approval of IAPMO R&T Oceana, or any evidence of non-compliance with applicable Standards, Specifications or of inferior workmanship, may be deemed sufficient cause for revocation of this certification. Reproduction of or reference to this certificate for advertising purposes may be made only by specific written permission of IAPMO R&T Oceana. Any alteration of this certificate could be grounds for revocation of this certification.



OCEANAMARK SCHEDULE



Certificate Holder: Promains 2013 NZ Ltd held jointly with WuXi Betta Fluid Machinery Manufacturing Co., Ltd. Address: 5 Piermark Drive Albany, North Shore City, Auckland New Zealand 0751	Certificate No.: OMK30048 Issue Date: 16-Feb-16 Expiry Date: 15-Feb-21 First Certified: 16-Feb-16 Standards: NZS 4522:2010 (inc Amdt 1) Underground fire hydrants
Manufacturer: WuXi Betta Fluid Machinery Manufacturing Co., Ltd.	

Std/Spec: NZS 4522:2010 (inc. Amdt. 1)				Certificate No.: OMK30048				
Brand Name	Model Name	Model ID	Product Type	Product Description	Application	Nominal Size	Classification	Material
Promains	N/A	80BFH41X1-16Q-1	Hydrant	Underground Fire Hydrant	Underground Fire Hydrant	DN80	PN16	Ductile iron
Promains	N/A	80BFH41X1-16Q-2	Hydrant	Underground Fire Hydrant	Underground Fire Hydrant	DN80	PN16	Ductile iron

END RECORD

END RECORD

Russ Chaney

Chief Executive Officer of the IAPMO Group

APPENDIX C – WSA PRODUCT SPECIFICATION

WATER SERVICES ASSOCIATION of Australia

PRODUCT SPECIFICATION

WSA PS - 282 HYDRANT AND AIR VALVE ISOLATOR VALVES – WATER SUPPLY

282.1 SCOPE

This specification covers PN16 DN 80 and DN 100 hydrant and air valve isolator valves for pressure applications in water supply¹.

282.2 REQUIREMENTS

- (a) The isolator valves shall comply with NZS 4522:2010 and AS/NZS 4020:2005.
- (b) Inlet and outlet flanges shall be compatible with AS/NZS 4087:2011 Fig B5.
- (c) Outlets for use with recycled water shall be coloured purple.

282.3 QUALITY ASSURANCE

- (a) The isolator valves shall have product certification (ISO Type 5) to NZS 4522:2010.
- (b) All products shall be marked in accordance with the conformity assessment body's requirements.

282.4 AGENCY OR PROJECT SPECIFIC REQUIREMENTS

Flange inlet size (DN 80 or DN 100)	
Outlet dimensions (DN 80 or DN 100)	
Outlet type, hydrant, air valve, hydrant screw	

NOTES:

- 1 Includes drinking water and recycled water supply. Colour differentiation is not required.

UNCONTROLLED IF PRINTED

APPENDIX D – SUPPLIER CONTACTS

Australian Office

Betta Fluid Machinery Manufacturing Co. Ltd
45 Cyperus Crescent Carseldine, QLD 4034
Tony Iskra Mobile: 0417 500132
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Website: www.bettaindustries.com

China Factory and Head Office

Betta Fluid Machinery Manufacturing Co. Ltd
BeiGongwu Road, YuQi Industry Park,
HuiShan District, WuXi, China. P.C. 214183

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Fax: +86-510-83881217

Stocking Agents

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VIC: 03 8373 8000
QLD: 07 3073 7000
NSW: 02 8279 8000
TAS: 03 6111 9500
WA: 08 6166 6800
NT: 08 7999 8400
SA: 08 8120 4600

Civil Pipe Supplies

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Dobbie Dico

WA: 08 9249 7000

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