Bermad Water Technologies

PRODUCT APPRAISAL REPORT PA 1907

CSA Fox 3F-RFP Combination Air Valves
DN 25 to DN 250

AS/NZS 4956:2008 Air valves for water supply

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Document History

The following information indicates the changes made to this document.

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Peer Reviewers

Name/Title	Organisation	Date
Product Appraisal Technical Advisory Group	WSAA	21 August 2019
WSAA Expert Panel	WSAA	21 August 2019
Peter Pittard, WSAA Consultant	WSAA	30 July 2019
Carl Radford, Product Appraisal Manager	WSAA	22 August 2019

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.

Copyright

CONTENTS

1 EXECUTIVE SUMMARY

Bermad Australia Pty Ltd trading as Bermad Water Technologies is an Australian company originally established in 1989 as the sole distributor of Bermad valves. The company has grown to become a leading supplier of a wide range of specialist valves that control, protect or measure.

CSA Srl is a privately-owned manufacturing company located in Italy whose core business is the production of valves and customized solutions for the pressure control, regulation and surge prevention of pressurized systems predominantly for waterworks, sewage and special applications such as sea water and industrial applications.

This Appraisal is for a range of CSA Fox 3F-RFP ductile iron bodied combination (double orifice) air valves in sizes from DN 25 to DN 250 manufactured to AS 4956:2008 *Air valves for water supply*.

The CSA Fox 3F-RFP air valves are manufactured by CSA Srl in Italy and distributed in Australia by Bermad Water Technologies.

The valves, suitable for water applications in pump stations and pipelines, evacuate air during pipeline filling, allow release of air pockets from pressurized pipes and enable large volumes of air intake in the event of network draining.

The CSA Fox 3F-RFP air valve version incorporates an anti-slam device for surge protection known as Rapid Filling Protection (RFP).

The flanged valves are available in sizes DN 50 to DN 250 with PN16 or PN35 flanges to AS/NZS 4087 Figure B5 and B6 respectively. DN 25 and DN 50 valves are also available with a BSP threaded connection rated as PN 16 or PN35.

The CSA Fox 3F-RFP air valve range has StandardsMark product certification to AS 4956:2008 and CSA has ISO 9001 Quality Management System certification.

WSA PS 265 *Air Valves for Pressure Applications – Water Supply* calls up the 2017 version of AS 4956. The 2008 version required static type tests for one valve of a size not less than DN 50 for each PN. The 2017 version requires static testing for each PN and DN valve. This additional test requirement had not been completed prior to the last CAB product certification audit. Accordingly, a future work requirement has been included in this Appraisal to require the products to attain product certification to AS4956:2017 within 6 months.

The range of air valves is detailed in Section 3.

This Appraisal has determined that CSA Fox 3F-RFP air valves, as detailed in Section 3, are considered as ‘fit for purpose’.

1.1 Recommendations

It is recommended that WSAA members, subject to any specific requirements of the member accept/authorise the CSA range of Fox 3F-RFP air valves, as detailed in this report, for use in water supply, provided they are installed in accordance with applicable WSAA codes and manufacturers’ requirements, where specified.

2 THE APPLICANT

2.1 The Supplier

Bermad Australia Pty Ltd, trading as Bermad Water Technologies, is an Australian company originally established in 1989 as the sole distributor of Bermad valves. The company has grown to become a leading supplier of a wide range of specialist valves that control, protect or measure. Products include control valves, pressure regulators, solenoid valves, diaphragm valves, pressure reducing valves, flow meters, and air release valves servicing the waterworks, mining, irrigation, fire protection and building markets. Many of the products are designed, engineered and assembled in Australia.

For more information see: http://www.bermad.com.au/.

2.2 The Manufacturer

CSA Srl, established in 1987, is a privately-owned manufacturing company located in Italy whose core business is the production of valves and customized solutions for the pressure control, regulation and surge prevention of pressurized systems predominantly for waterworks, sewage and special applications such as sea water and industrial applications.

For more information see: https://www.csasrl.it/

3 THE PRODUCT

CSA Fox 3F-RFP combination (double orifice) air valves are manufactured to AS 4956:2008 *Air valves for water supply.*

The ductile iron bodied range of automatic air valves submitted for appraisal includes flanged valves in sizes DN 50, DN 80, DN 100, DN 150, DN 200 and DN 250 with pressure classifications of PN 16 or PN35. Flanges comply with AS/NZS 4087 Figure B5 (PN16) and Figure B6 (PN35) respectively. DN 25 and DN 50 valves are also available with a 1" and 2" BSP threaded connection, rated as PN 16 or PN35.

The CSA Fox 3F-RFP air valve range incorporates an anti-slam device for surge protection designated a Rapid Filling Prevention (RFP).

FIGURE 1 CSA FOX 3F-RFP COMBINATION AIR VALVE

A summary of the CSA Fox3F-RFP air valve range is provided in Table 1 and additional information is provided in the product brochure attached in Appendix A.

TABLE 1

CSA FOX 3F-RFP AIR VALVE RANGE

DN	End Connection	Pressure Classification
25	BSP	PN 16 or PN35
50	BSP	PN 16 or PN35
50	Flange	PN 16 or PN35
80	Flange	PN 16 or PN35

100	Flange	PN 16 or PN35
150	Flange	PN 16 or PN35
200	Flange	PN 16 or PN35
250	Flange	PN 16 or PN35

Other features of the valve include:

- straight through body with equal inlet and outlet nominal sizes;
- ductile iron body coated with fusion bonded epoxy;
- designed to seal at low pressures (10 kPa);
- optional sub kit for submerged applications. See Figure 2.

FIGURE 2 AIR VALVE SHOWING OPTIONAL SUB KIT

The air valves, suitable for water applications in pump stations and pipelines, evacuate air during pipeline filling, allow release of air pockets from pressurized pipes and enable large volumes of air intake in the event of network draining or burst.

The sub kit allows the air valve to perform in flood situations to avoid the risk of contaminated water entering the pipeline. This kit also has the benefit that it avoids the spray effect, reducing noise and spurts as a result of potential rapid closure of the air valve.

4 SCOPE OF THE APPRAISAL

The scope of this appraisal includes CSA Fox3F-RFP PN16 and PN35 combination air valves in sizes DN 25 to DN 250, as detailed in Section 3 and included in the ISO Type 5 Product Certification Schedule in Appendix B.

5 APPRAISAL CRITERIA

5.1 Quality Assurance Requirements

The WSAA Product Appraisal Technical Advisory Group accepts air valves manufactured in compliance with AS 4956:2017 *Air valves for water supply* 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.

The ISO Type 5 Product Certification Scheme shall meet the criteria described in WSA TN-08.

5.2 Performance Requirements

The CSA Fox3F-RFP air valves have been appraised for compliance with the material and performance requirements of AS 4956:2008 *Air valves for water supply.*

WSA PS 265 calls up the 2017 version of AS 4956. The 2008 version required static type tests for one valve of a size not less than DN 50 for each PN. The 2017 version requires static testing for each PN and DN valve. This additional test requirement had not been completed prior to the last CAB audit at CSA. Accordingly, a future work requirement has been included in this Appraisal to require the products to attain product certification to AS4956:2017 within 12 months.

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-265 – *Air Valves for Pressure Applications – Water Supply.*

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

6 COMPLIANCE WITH APPRAISAL CRITERIA

6.1 Compliance with Quality Assurance Requirements

Bermad has submitted the following quality certificates:

- ISO 9001:2015 Certificate of Registration No.951/98/S issued to CSA S.R.L. by CISQ/RINA.
- AS 4956:2008 StandardsMark ISO Type 5 product certification licence No. SMK40516 issued to Bermad Water Technologies by SAI-Global.

Copies of the primary Quality Assurance and Product Certification licences have been included in Appendix B and are also available for downloading from the WSAA Members Website.

Copies of Quality Assurance certificates have also been submitted for the major component suppliers and are available on request from WSAA.

6.2 Compliance with Performance Requirements

6.2.1 Components material list

The CSA Fox3F-RFP air valves material specifications for the components are detailed below and are deemed to meet the minimum requirements specified in AS 4956. Material test certificates have been submitted for the critical components to demonstrate compliance.

TABLE 2

CSA FOX3F-RFP AIR VALVES COMPONENT MATERIAL LIST

Component	Material	Standard	Grade	Fox-RFP Air Valves
Body and cover	Ductile iron	AS 1831	500-7 or 400-12	450-10[1]
Float	Plastics	-	-	Polypropylene
Resilient seal	Elastomer	AS1646	EPDM or NBR	EPDM
Seat	Stainless steel	ASTM A240	316	316
Levers, linkages and pins	Stainless steel	ASTM A276	316	316
Spring	Stainless steel	ASTM A313M	302, 316	NA

O-rings	Elastomer	AS 1646	EPDM or NBR	NBR
Fasteners	Stainless steel	ASTM A276	316	316
Drain valve	Stainless steel	ASTM A276	316	316
Insect screen	Stainless steel	ASTM A240M	304	304

[1]Deemed acceptable

6.2.2 Flanges

The flange outlet on the valves comply with AS/NZS 4087 Figure B5 (PN 16) or Figure B6 (PN35).

WSAA recommends flanged joints to be assembled in accordance with Drawing 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

The ductile iron valve bodies and covers are coated with Akzo Nobel Resicoat R4 Fusion Bonded Epoxy. The coating is applied in-house by CSA using the fluidised bed technique.

A copy of CSA coating application and quality control procedures have been submitted to demonstrate compliance to AS/NZS 4158. The process is also audited by SAI-Global in conjunction with periodic StandardsMark certification audits.

6.2.4 Type tests

AS 4956:2008 specifies a comprehensive suite of performance tests to be undertaken on a representative valve no smaller than DN 50, in order to demonstrate compliance with the standard.

Tests specified are:

- Static
- Body strength
- Seat leakage at high pressure
- Seat sensitivity at low pressure
- Endurance
- Long term unseating capability
- Dynamic
- Air discharge capacity
- Air intake capacity

The equipment required to conduct these tests is specialised and not generally available in commercial testing laboratories. The CSA Testing Laboratory in Italy has been formally recognised by SAI-Global (Document Reference Number LAB40124) as a competent testing laboratory for air valves to AS 4956. A copy of the SAI-Global Laboratory Recognition Statement No. RECLAB40001 has been submitted.

A test report has been submitted by Bermad to demonstrate compliance of the DN 80 PN16 and DN 80 PN35 air valves with the type test requirements of AS 4956:2007.

6.2.5 Contact with drinking water

AS 4956 requires compliance with AS/NZS 4020 *Testing of products for use in contact with drinking water*. Bermad has submitted Test Report Number 247742 from the Australian Water Quality Centre for a DN 25 CSA Fox3F-RFP air valve to demonstrate compliance with this requirement.

7 FITTING INSTRUCTIONS, TRAINING AND INSTALLATION

Comprehensive technical information is available on the Bermad website at https://www.bermad.com.au/products/fox-3-rfp-rapid-filling-preventer-with-mesh/

Documents include an Installation, Operation and Maintenance Manual, Guides on Selection, Sizing and Location as well as other technical information. Training videos may also be accessed at https://www.bermad.com.au/videos/

In addition, Bermad offers full technical assistance to water agencies and designers for specific pipeline and pump station designs and can assist with Auto-Cad drawings for a specific valve build. Customised seminars can be arranged to assist in design, operation and selection of air valves. They also offer operator training and assistance with the commissioning of valves in the field.

8 PRODUCT MARKING

CSA Fox3F-RFP air valves are marked in accordance with AS 4956:2017 as described below. The manufacturers name and nominal size are cast on the body whilst the remaining information is marked on name plates attached to the valve.

Manufacturers Name: CSA

Serial Number:

Nominal Size: e.g. DN80

Year of manufacture:

DI Grade: GJS450

Pressure class: PN 16, PN35

Standard number: AS 4956

Standards Mark logo: √√√√

9 PACKAGING AND TRANSPORTATION

The air valves are suitably packed to prevent damage to components, including protective coatings, during handling, transportation and storage. Valves are fitted with covers to protect the face of the flanges during transportation and storage.

10 PRODUCT WARRANTY

The products are covered by the normal commercial and legal requirements of the *Competition and Consumer Act 2010 (Cth)* and details of Bermad's warranty is included in their Standard Conditions of Sale.

11 WATER AGENCY EXPERIENCE WITH THE PRODUCT OR FIELD TESTING REPORT

The products are commonly utilised throughout Europe and other parts of the world. It is considered unnecessary to request further field trials for the purpose of this Appraisal.

12 OUTCOMES OF EXPERT PANEL PRODUCT REVIEW

No queries have been raised.

13 FUTURE WORKS

Bermad is required to have the ISO Type 5 product certification for the CSA Fox 3F-RFP Combination Air Valves upgraded to the 2017 version of AS 4956 within 6 months of the publication of this report.

14 DISCLAIMER

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

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

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

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

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

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

14.1 Issue of Report

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

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

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

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This Report does not contain all information that a person might require for the purposes of assessing any product discussed or appraised within it. 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 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.

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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 A - PRODUCT BROCHURES

Anti surge combination air valve
Mod. FOX 3F - RFP

The CSA air valve Mod. FOX 3F RFP has been designed to allow the release of air pockets accumulated in working conditions, the entrance of large volumes of air in case of pipe draining or bursts and to prevent pipeline damages coming from pressure transients, associated with high air outflow velocities.

Technical features and benefits

- Uncontrolled pipeline filling operations and transient events will inevitably generate the rapid closure of the air valves installed along the system, with consequent damages. The CSA air valve FOX 3F RFP will automatically adjust the outflow capacity, thus reducing the velocity of the incoming water column minimizing the risk of water hammer.
- Aerodynamic deflector in stainless steel to avoid premature closures.
- Single chamber full bore body in ductile cast iron, PN 40 bar rated, provided with internal ribs for consistent and accurate guiding of the mobile block.
- Mobile block composed of the main float and upper disk, joined together by the CSA air release system in AISI 316 (patent pending), and an additional anti surge obturator.
- Nozzle and gasket holder, part of CSA air release system, entirely made in AISI 316.
- Cover in ductile and scree in stainless steel as a standard execution, to prevent the entrance of insects, with optional outlet for submerged applications.

Applications

- Main transmission lines.
- Water distribution networks.
- Irrigation systems.
- In general this model is used, in combination with CSA AS technology, on changes in slope and high points of the profile to provide the best air control and safety of the pipeline.

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Operating principle

Discharge of large volumes of air

During the pipe filling it is necessary to discharge air as water flows in. The FOX 3F RFP, thanks to an aerodynamic full port body and deflector, will make sure to avoid premature closures of the mobile block during this phase.

Controlled outflow

If the differential pressure of air, during pipe filling, increases above a certain value without control there is the risk of water hammer and damages to the system. Should that happen the RFP upper float will rise automatically, reducing the outflow and consequently the velocity of the approaching water column.

Air release during working conditions

During operation the air produced by the pipeline is accumulated in the upper part of the air valve. Little by little it is compressed and the pressure arrives to water pressure, therefore its volume increases pushing the water level downwards allowing the air release through the nozzle.

Entrance of large volumes of air

During pipeline draining, or pipe bursts, it is necessary to bring in as much air as the quantity of outflowing water to avoid negative pressure and serious damages of the pipeline, and to the entire system.

Optional

■ **Vacuum breaker version Mod. FOX 2F RFP**, to allow the entrance of large volumes of air and the controlled outflow only. This model is normally recommended in changes in slope ascending, long ascending segments, dry fire systems, and wherever the water hammer effect has to be reduced without the necessity of air release.

■ **Version for submerged applications, SUB series,** available both for FOX 3F RFP and 2F RFP Models, with elbow for air conveyance. The design sprang from the necessity of having an air valve performing also in case of flood, without the risk of contaminated water entering the pipeline. Another benefit of SUB is the possibility of conveying spurts coming from the closure away from the air valve.

■ **Version for air discharge only EO series**, available both for FOX 3F RFP and 2F RFP models. The most important application of EO is to allow the air valve installation in those locations of the system where HGL may drop below the pipe profile, and to any other node where for project requirements air entrance must be avoided, such as in pump suction lines or siphons pipelines.

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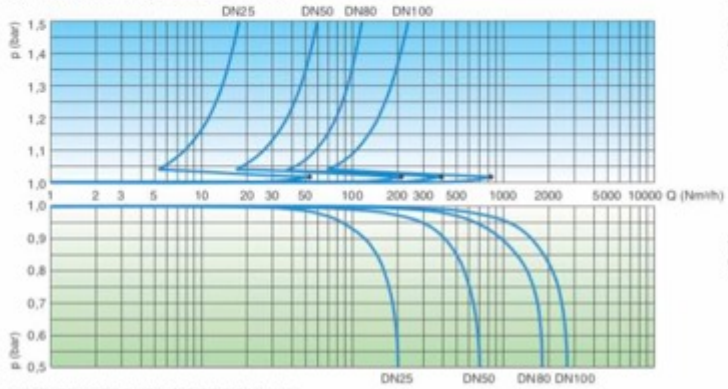
Technical data

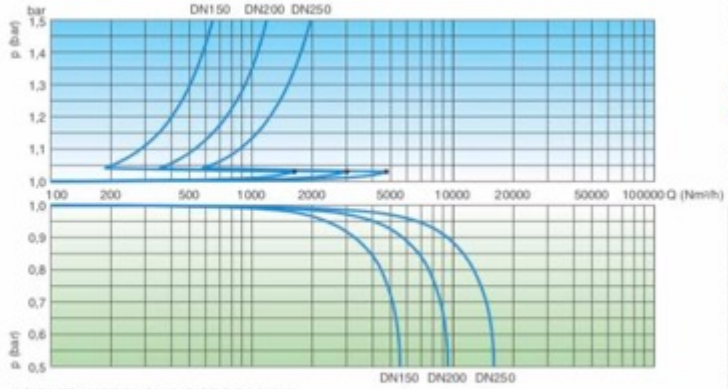
Air flow performance charts

AIR DISCHARGE DURING PIPE FILLING



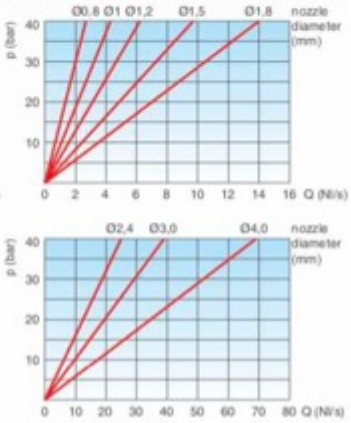
AIR ENTRANCE DURING PIPE DRAINING

AIR DISCHARGE DURING PIPE FILLING



AIR ENTRANCE DURING PIPE DRAINING

AIR RELEASE DURING WORKING CONDITIONS



The air flow charts were created in Kg/s from laboratory tests and numerical analysis, then converted using a safety factor.

Surge protection nozzle specification

Diameter and area of the surge protection nozzle (different values on request).

	orifice diameter (mm)	orifice area (mm²)
DN 25	5,5	23,5
DN 50	10	78,5
DN 80	15	176,5
DN 100	20	314
DN 150	33	855
DN 200	45	1590
DN 250	58	2642

Working conditions

Pressure ratings:
- PN 16: 0.1 - 16 bar
- PN 35: 0.2 - 35 bar
- PN 40: 0.2 - 40 bar.

Temperature max. 60°C.

Coating FBE - RAL 5005.

Standard

Designed in compliance with:
- EN-1074/4
- AS 4956
- AS 4020
- AWWA C-512.

Connections

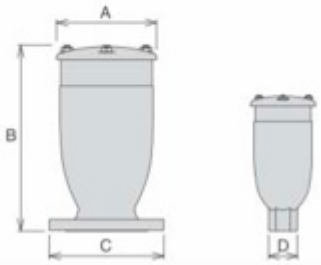
Threaded:
- BSP - F
- NPT on request.

Flanges:
- AS 4087 PN 16
- AS 4087 PN 35
- ANSI on request.

Weights and dimensions

CONNECTION inch/mm	A mm	B mm	C mm		D mm	Weight Kg
Threaded 1"	117	240	-	-	CH 45	4,0
Threaded 2"	141	295	-	-	CH 70	7,5
Flanged 50	141	305	165	-	-	9,5
Flanged 80	172	315	210	205	-	13,8
Flanged 100	206	370	235	220	-	21,7
Flanged 150	285	515	305	285	-	44,5
Flanged 200	380	625	375	340	-	85,0
Flanged 250	440	785	450	-	-	134,0

All values are approximate, consult CSA service for more details.



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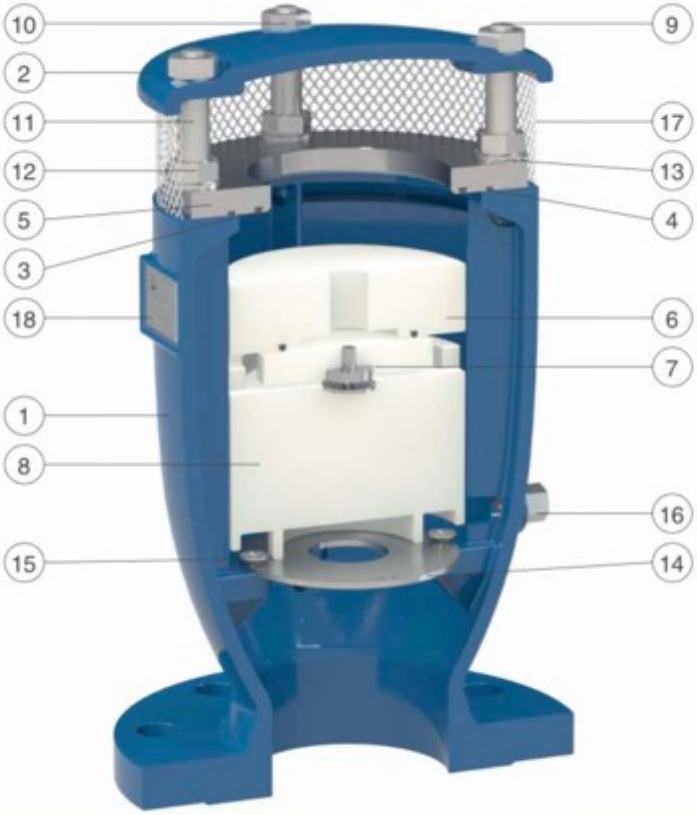
Technical details



SUB version kit in plastic, or stainless steel on request.

N.	Component	Standard material	Optional
1	Body	ductile cast iron GJS 500-7 o GJS 450-10	
2	Cap	ductile cast iron GJS 500-7 or GJS 450-10	
3	O-ring	NBR	EPDM/Viton/silicone
4	O-ring	NBR	EPDM/Viton/silicone
5	Seat	stainless steel AISI 316	
6	RFP flat with o-ring	polypropylene and NBR	EPDM/Viton/silicone
7	Upper flat with nozzle subset	polypropylene and stainless steel AISI 316	
8	Float	polypropylene	
9	Studs	stainless steel AISI 304	stainless steel AISI 316
10	Nuts	stainless steel AISI 304	stainless steel AISI 316
11	Spacers	stainless steel AISI 304	stainless steel AISI 316
12	Nuts	stainless steel AISI 304	stainless steel AISI 316
13	Washers	stainless steel AISI 304	stainless steel AISI 316
14	Deflector	stainless steel AISI 316	
15	Screws	stainless steel AISI 316	
16	Drain valve	stainless steel AISI 316	
17	Screen	stainless steel AISI 304	
18	Tag	stainless steel AISI 304	

Rev. 9 - 6/2017

The list of materials and components is subject to changes without notice.

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APPENDIX B - QUALITY CERTIFICATIONS

Copies of the Quality Certification Certificates not included in this Appendix are available from WSAA.

TABLE B1 CSA SRL – MANAGEMENT SYSTEMS

Strada San Giuseppe 15, Località Ponteghiara - 43039 Salsomaggiore Terme (PR) Italy	
Quality Systems Standard	ISO 9001:2015
Certification licence no.	5591/98/S
Certifying agency	CISQ/RINA
First date of certification	9 February 1998
Current date of certification	12 December 2018
Expiry date of certification	16 December 2021

TABLE B2 BERMAD WATER TECHNOLOGIES – PRODUCT CERTIFICATION

26 Brand Drive, Thomastown, VIC. 3074	
Product Standard	AS 4956:2008
Certification licence no.	SMK40516
Issuing certification body	SAI-Global
First date of certification	17 April 2018
Current date of certification	2 May 2019
Expiry date of certification	16 April 2023

CISQ is a member of IQNet
THE INTERNATIONAL CERTIFICATION NETWORK
www.iqnet-certification.com

IQNet, the association of the world's first class certification bodies, is the largest provider of management System Certification in the world. IQNet is composed of more than 30 bodies and counts over 150 subsidiaries all over the globe.

CERTIFICATO N. 951/98/S
CERTIFICATE No.

SI CERTIFICA CHE IL SISTEMA DI GESTIONE PER LA QUALITÀ DI
IT IS HEREBY CERTIFIED THAT THE QUALITY MANAGEMENT SYSTEM OF

CSA S.R.L.

STR. SAN GIUSEPPE 15 - LOC. PONTEGHIARA 43039 SALSOMAGGIORE TERME (PR) ITALIA

NELLE SEGUENTI UNITÀ OPERATIVE */ IN THE FOLLOWING OPERATIONAL UNITS*

STR. SAN GIUSEPPE 15 - LOC. PONTEGHIARA 43039 SALSOMAGGIORE TERME (PR) ITALIA

Per informazioni sulla validità del certificato, visitare il sito www.rina.org

For information concerning validity of the certificate, you can visit the site www.rina.org

Per i requisiti della norma non applicabili al campo di applicazione del sistema di gestione dell'organizzazione, riferirsi alle informazioni documentate relative.

Reference is to be made to the relevant documented information for the requirements of the standard that cannot be applied to the Organization's management system scope

È CONFORME ALLA NORMA */ IS IN COMPLIANCE WITH THE STANDARD*

ISO 9001:2015

PER I SEGUENTI CAMPI DI ATTIVITÀ / *FOR THE FOLLOWING FIELD(S) OF ACTIVITIES*

IAF:18
IAF:29

PROGETTAZIONE E PRODUZIONE DI MATERIALE PER SISTEMI IN PRESSIONE AD USO ACQUEDOTTISTICO , FOGNARIO ED INDUSTRIALE, FRA CUI VALVOLE AUTOMATICHE PILOTATE, VALVOLE DI RIDUZIONE E SFIORO DELLA PRESSIONE, VALVOLE DI CONTROLLO DEL LIVELLO, SFIATI MULTIFUNZIONE, SERBATOI E DISPOSITIVI ANTICOLPO D'ARIETE. COMMERCIALIZZAZIONE DI OGNI TIPO DI VALVOLA E SOLUZIONI PER LA REGOLAZIONE DEI SISTEMI IN PRESSIONE IN AMBITO ACQUEDOTTISTICO, FOGNARIO ED INDUSTRIALE

DESIGN, MANUFACTURE OF VALVES AND ACCESORIES FOR WATER, INDUSTRIAL AND SEWAGE PRESSURE SYSTEMS, INCLUDING PILOT OPERATED AUTOMATIC CONTROL VALVES, DIRECT ACTING PRESSURE REDUCING, SUSTAINING AND RELIEF VALVES, EQULIBRIUM BALL FLOAT VALVES, AIR VALVES, ANTI-SURGE TANKS AND SURGE PREVENTION SOLUTIONS. MARKETING AND SALES OF VALVES AND VALVE ACCESSORIES FOR WATER , INDUSTRIAL AND SEWAGE PRESSURE SYSTEMS

La validità del presente certificato è subordinata a sorveglianza periodica annuale / semestrale ed al riesame completo del sistema di gestione con periodicità triennale
The validity of this certificate is dependent on an annual / six monthly audit and on a complete review, every three years, of the management system
L'uso e la validità del presente certificato sono soggetti al rispetto del documento RINA: Regolamento per la Certificazione di Sistemi di Gestione per la Qualità
The use and validity of this certificate are subject to compliance with the RINA document : Rules for the certification of Quality Management Systems

Prima emissione *First Issue*	09.02.1998	Data decisione di rinnovo *Renewal decision date*	12.12.2018
Data scadenza *Expiry Date*	16.12.2021	Data revisione *Revision date*	12.12.2018

Rocco Amendola
Bologna Management System Certification, Head

RINA Services S.p.A.
Via Corsica 12 - 16128 Genova Italy

ACCREDIA
SGQ N° 002 A
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreements

IAF MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT

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CISQ is the Italian Federation of management system Certification Bodies

STANDARDSMARK LICENCE

SAI Global hereby grants:

Bermad Water Technologies

ABN 62 093 801 220

26 Brand Drive, Thomastown, VIC 3074, Australia

StandardsMark Licence

Manufactured to:

AS 4956-2008 - Air valves for water supply

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Certificate No:SMK40516

Issued: 3 May 2019
Expires: 16 April 2023

Originally Certified: 17 April 2018
Current Certification: 2 May 2019

Kevin Goodwin
General Manager Technical Services
SAI Global Assurance

Certified Product™ Australian Standard

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*** For details of manufacture, refer to the licensee**

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Model Name	Brand Name	Product Description	Product Type	Nominal Size (DN)	Pressure Classification (PN)	End Connection Designation	Material Designation	Comments	Date Endorsed
C-10-ARC-RFP-BD-PN16	CSA	Combination ful port Air release valve with rapid filling prevention	Air release valve	250	16	AS 4087	Ductile iron		28 Feb 2018
C-10-ARC-RFP-BH-PN35	CSA	Combination ful port Air release valve with rapid filling prevention	Air release valve	250	35	AS 4087	Ductile iron		28 Feb 2018
C-1-ARC-RFP-BP-PN16	CSA	Combination full port air release valve with rapid filling prevention	Air Release Valve	25	16	BSP female threaded	Ductile Iron / 316SS / PP		10 Apr 2019
C-1-ARC-RFP-BP-PN35	CSA	Combination full port air release valve with rapid filling prevention	Air Release Valve	25	35	BSP female threaded	Ductile Iron / 316SS / PP		10 Apr 2019
C-1-ARC-RFP-HR-BP-PN16	CSA	Combination full port air release valve with rapid filling prevention	Air Release Valve	25	16	BSP female threaded	Ductile Iron / 316SS / PP		10 Apr 2019
C-1-ARC-RFP-HR-BP-PN35	CSA	Combination full port air release valve with rapid filling prevention	Air Release Valve	25	35	BSP female threaded	Ductile Iron / 316SS / PP		10 Apr 2019
C-2-ARC-RFP-BD-PN16	CSA	Combination full port air release valve with rapid filling prevention	Air Release Valve	50	16	AS4087	Ductile Iron / 316SS / PP		10 Apr 2019
C-2-ARC-RFP-BH-PN35	CSA	Combination full port air release valve with rapid filling prevention	Air Release Valve	50	35	AS4087	Ductile Iron / 316SS / PP		10 Apr 2019
C-2-ARC-RFP-BP-PN16	CSA	Combination full port air release valve with rapid filling prevention	Air Release Valve	50	16	BSP female threaded	Ductile Iron / 316SS / PP		10 Apr 2019
C-2-ARC-RFP-BP-PN35	CSA	Combination full port air release valve with rapid filling prevention	Air Release Valve	50	35	BSP female threaded	Ductile Iron / 316SS / PP		10 Apr 2019
C-3-ARC-RFP-BD-PN16	CSA	Combination full port air release valve with rapid filling prevention	Air Release Valve	80	16	AS4087	Ductile Iron / 316SS / PP		10 Apr 2019
C-3-ARC-RFP-BD-PN35	CSA	Combination full port air release valve with rapid filling prevention	Air Release Valve	80	35	AS4087	Ductile Iron / 316SS / PP		1 May 2019
C-4-ARC-RFP-BD-PN16	CSA	Combination ful port Air release valve with rapid filling prevention	Air release valve	100	16	AS 4087	Ductile iron		28 Feb 2018
C-4-ARC-RFP-BH-PN35	CSA	Combination ful port Air release valve with rapid filling prevention	Air release valve	100	35	AS 4087	Ductile iron		28 Feb 2018
C-6-ARC-RFP-BD-PN16	CSA	Combination ful port Air release valve with rapid filling prevention	Air release valve	150	16	AS 4087	Ductile iron		28 Feb 2018
C-6-ARC-RFP-BH-PN35	CSA	Combination ful port Air release valve with rapid filling prevention	Air release valve	150	35	AS 4087	Ductile iron		28 Feb 2018
C-8-ARC-RFP-BD-PN16	CSA	Combination ful port Air release valve with rapid filling prevention	Air release valve	200	16	AS 4087	Ductile iron		28 Feb 2018
C-8-ARC-RFP-BH-PN35	CSA	Combination ful port Air release valve with rapid filling prevention	Air release valve	200	35	AS 4087	Ductile iron		28 Feb 201

APPENDIX C - WSA PRODUCT SPECIFICATION

PRODUCT SPECIFICATION

WSA PS – 265 AIR VALVES FOR PRESSURE APPLICATIONS - WATER SUPPLY

265.1 SCOPE

This specification covers air valves of the following types for pressure applications in water supply[1].

(a) Small orifice valves with nominal inlet size of DN 15, 20 and 25.

(b) Large orifice valves with nominal inlet size of DN 50, 80, 100, 150 and 200.

(c) Combination (double) air valves.

265.2 REQUIREMENTS

(a) Air valves shall comply with AS 4956:2017.

(b) For flanged end connections, full face and integral gaskets and O-rings shall comply with WSA 109:2011.

265.3 QUALITY ASSURANCE

(a) Air valves shall have product certification (ISO Type 5) to AS 4956:2017. The ISO Type 5 Product Certification Scheme shall meet the criteria described in WSA TN-08[2].

(b) Full face and integral gaskets and O-rings shall have a certificate of compliance to WSA 109:2011.

(c) All products shall be marked in accordance with the conformity assessment body's requirements.

265.4 AGENCY OR PROJECT SPECIFIC REQUIREMENTS

See Appendix B of AS 4956:2017.

NOTES:

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

2 Water Services Association of Australia Technical Note (WSA TN-08) sets out additional product conformity assessment requirements that are associated with demonstration of conformity to AS/NZS 4956:2017.

APPENDIX D - SUPPLIER CONTACTS

Bermad Water Technologies

26 Brand Drive

Thomastown VIC 3074

Telephone: 03 9464 2374

Email: info@bermad.com.au

Melbourne Office
Level 8, Suite 8.02
401 Docklands Drive
Docklands VIC 3008

Sydney Office
Level 9 420 George Street
Sydney NSW 2000
GPO Box 915
Sydney NSW 2001

P +61 (0) 3 8605 7666
email: info@wsaa.asn.au

www.wsaa.asn.au