WATER SERVICES ASSOCIATION OF AUSTRALIA

Bermad Water Technologies

PRODUCT APPRAISAL REPORT 2203

Bermad C50/C80 Combination Air Valves for Sewer

AS 4883:2017 Air valves for sewerage

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Document History

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Peer Reviewers

Name/Title	Organisation	Date
Product Appraisal Technical Advisory Group	WSAA	12 August 2022
WSAA Expert Panel	WSAA	12 August 2022
Peter Pittard, WSAA Consultant	WSAA	21 September 2022
Carl Radford, Product Appraisal Manager	WSAA	21 September 2022

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.

Bermad CS Ltd is a private company established in 1965 in Evron, Israel to manufacture valves for the irrigation market. The company is a well-respected global leader in the manufacture and supply of valves for control solutions for water supply, irrigation and fire protection.

This Appraisal is for a range of Bermad C50 and C80 metallic bodied combination (double orifice) air valves, in sizes DN 50 to DN 100, manufactured in conformance with AS 4883:2017 *Air valves for sewerage*.

The C50 air valves are available with ductile iron or Grade 316 stainless steel bodies and are generally utilised on pipelines up to DN 450, depending on pipeline topography and hydraulic characteristics. The ductile iron bodied C80 air valves offer a significantly higher air flow capacity than the C50 design and are well suited for sizes up to DN 600.

The air valves are suitable for sewer and wastewater applications in pump stations, pipelines and treatment plants. The valve evacuates air during pipeline filling, allows release of air pockets from pressurized pipes and enables large volumes of air intake in the event of network draining. The elongated body and lower float are designed to reduce contact between the fluid and the upper mechanism

The valves are available with an optional anti-slam device for surge protection or inflow prevention device to prevent intake of atmospheric air in cases where damage to pumps or disruption of siphon is possible.

The PN 16 valves are available with flanges to AS/NZS 4087 Figure B5 (AS 2129 Table D for DN50) or with a BSP threaded connection.

The range of air valves is detailed in Section 3.

Bermad CS Ltd has an ISO 9001 Quality Management System certification.

The Bermad C50 and C80 air valves have ISO Type 5 StandardsMark Product Certification to AS 4883:2017.

This Appraisal has determined that the Bermad C50 and C80 air valves, as detailed in this report, meet the requirements of WSA PS-275 *Air Valves for Pressure Applications – Sewerage* and are considered as ‘fit-for-purpose’.

1.1 Recommendations

It is recommended that WSAA members, subject to any specific requirements of the member accept or authorise the Bermad C50 and C80 combination air valves, as detailed in this report, for use in sewerage applications, provided they are installed in accordance with applicable WSAA codes and manufacturers’ requirements, where specified.

2 THE APPLICANT

The Applicant is Bermad Australia Pty Ltd trading as Bermad Water Technologies.

2.1 The Supplier

Bermad Australia Pty Ltd 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

Bermad CS Ltd is a private company established in 1965 in Evron, Israel to manufacture valves for the irrigation market. It has grown to become a well-respected global leader in the manufacture and supply of valves for control solutions for water supply, irrigation and fire protection. The company has approximately 550 employees and is active in more than 80 countries around the world. The company specialises in supply of Automatic Hydraulic Control Valves and Air Control Valves.

Bermad has a strong commitment to Research and Development and is well known as an innovator in the control valve and instrumentation field.

3 THE PRODUCT

This Appraisal is for a range of Bermad C50 and C80 metallic bodied combination (double orifice) air valves manufactured in conformance with AS 4883:2017 *Air valves for sewerage*.

The valves submitted for appraisal includes C50-C ductile iron bodied air valves in sizes DN 50, DN 80 and DN 100, C50-N Grade 316 stainless steel bodied air valves in sizes DN 50, DN 80 and DN 100 and C80 ductile iron bodied air valves in sizes DN 80 and DN 100.

The air valves are suitable for sewer and wastewater applications in pump stations, pipelines and treatment plants. The valve evacuates air during pipeline filling, allows release of air pockets from pressurized pipes and enables large volumes of air intake in the event of network draining.

The PN 16 valves are available with flanges to AS/NZS 4087 Figure B5 (AS 2129 Table D for DN50) or with a BSP threaded connection.

C50-C C50-N C80

FIGURE 1 BERMAD COMBINATION AIR VALVES FOR SEWER

The valves incorporate a 3” female BSP threaded outlet that allows the following options to be fitted:

(a) anti-slam device for surge protection

(b) inflow prevention device to prevent intake of atmospheric air in cases where damage to pumps or disruption of siphon is possible

(c) extension with downwards outlet

FIGURE 2 OPTIONAL ACCESSORIES FOR AIR VALVES

A summary of the Bermad C50 and C80 air valve range is provided in Table 1.

TABLE 1 BERMAD C50 AND C80 AIR VALVE RANGE

DN	End Connection	C50-C DI Body	C50-N SS Body	C80 DI Body
50	Flanged	✓	✓	
	Threaded	✓	✓	
80	Flanged	✓	✓	✓
	Threaded		✓	
100	Flanged	✓	✓	✓

The ductile iron components are coated with a polymeric coating in compliance with AS/NZS 4158.

Other features of the valve include:

- straight flow body with large diameter automatic orifice: higher than usual air flow
- aerodynamic full body kinetic shield: prevents premature closing without disturbing air intake or discharge
- dynamic sealing: prevents leakage under low pressure conditions (5kPa)
- elongated body design: prevents solids from making contact with the valves operating parts
- two service ports: enables back flushing and drainage

Additional information is included in the product brochures attached in Appendix A.

4 SCOPE OF THE APPRAISAL

The scope of this appraisal includes Bermad C50 and C80 metallic bodied combination (double orifice) air valves for sewer applications, as detailed in Section 3 and included in the ISO Type 5 StandardsMark product certification included 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 4883:2017 *Air valves for sewerage* 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 Bermad C50 and C80 air valves have been appraised for compliance with the material and performance requirements of AS 4883:2017 *Air valves for sewerage.*

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-275 *Air Valves for Pressure Applications – Sewerage*

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

https://www.wsaa.asn.au/shop/product/53481

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. IL-86237 issued to Bermad Cs Ltd by The Standards Institution of Israel.
- AS 4883:2017 ISO Type 5 StandardsMark Product Certification Licence No. SMKP 41217 issued to Bermad CS Ltd by SAI-Global.

Copies of the Quality Assurance licences have been included in Appendix B and are also available from WSAA.

Copies of Quality Assurance certificates have also been submitted for the major component suppliers and are held on file by WSAA.

6.2 Compliance with Performance Requirements

6.2.1 Components material list

The Bermad C50 and C80 air valve material specifications for the components are detailed below and are deemed to meet the minimum requirements specified in AS 4883. Material test certificates have been submitted for the critical components to demonstrate compliance.

TABLE 2 BERMAD C50 AND C80 AIR VALVES COMPONENT MATERIAL LIST

Component	Material	Standard	Grade	C50 and C80 Air Valves
Body and cover	Ductile iron	AS 1831	500-7 or 400-15	DI 450-12 or Grade 316 SS
Obturator	Stainless steel or plastics	Relevant standard	PREN≥22	GRP
Resilient seal	Elastomer	AS1646	EPDM or NBR	EPDM
Seat	Stainless steel or plastics	Relevant standard	PREN≥22	Grade 316 SS
Levers, linkages and pins	Stainless steel or plastics	Relevant standard	PREN≥22	Grade 316 SS
Spring	Stainless steel	Relevant standard	PREN≥22	Grade 316 SS
O-rings	Elastomer	AS 1646, AS 681.1	EPDM or NBR	EPDM
Fasteners	Stainless steel	Relevant standard	PREN≥22	Grade 316 SS
Drain valve	Stainless steel	Relevant standard	PREN≥22	Grade 316 SS
Insect screen	Stainless steel	ASTM A240M	304	Grade 316 SS or GRP

6.2.2 Inlet connections

The flange inlets on the valves comply with AS/NZS 4087 Figure B5 (PN 16) for sizes ≥ DN 80 and AS 2129 Table D for DN 50.

WSAA recommends flanged joints to be assembled in accordance with the Water Supply Code of Australia – WSA 03 (as amended) and that gasket materials comply with Industry Standard WSA-109.

The BSP tapered male threaded inlets comply with AS ISO 7.1 Series R.

6.2.3 Polymeric thermal bonded coatings

Bermad air valve ductile iron components are coated with Akzo Nobel Resicoat R4, a thermosetting fusion bonded epoxy powder coating.

Resicoat R4 has ISO Type 5 StandardsMark Product Certification to AS/NZS 4158. A copy of the current certification is held on file by WSAA.

A copy of Bermad's coating application procedures and typical production records have been submitted to demonstrate compliance to AS/NZS 4158.

A test report has also been submitted to demonstrate compliance with the process verification requirements of AS/NZS 4158.

The process is also audited by SAI-Global in conjunction with periodic StandardsMark certification audits.

6.2.4 Type tests

AS 4883 specifies a comprehensive suite of performance type tests to be undertaken for each DN and PN valve 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
  - Unseating
- Dynamic
  - Air discharge
  - Air intake

Test reports undertaken by Flow Meters Calibration Laboratory - Bermad (Israel Laboratory Accreditation Authority Certificate No. 201) have been submitted to demonstrate compliance of the C50 and C80 air valves with the type test requirements of AS 4883:2017.

The Bermad testing laboratory has also been recognised by SAI-Global as a competent testing laboratory.

7 FITTING INSTRUCTIONS, TRAINING AND INSTALLATION

A comprehensive suite of literature and product training videos including Installation, Operation and Maintenance Manuals are available from the Bermad website at https://www.bermad.com.au/category/wastewater/

In addition, Bermad offers full technical assistance to water agencies and designers in regard to the location and sizing of valves 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. Operator training and assistance with the commissioning of valves in the field is also offered.

8 PRODUCT MARKING

Bermad air valves are marked in accordance with AS 4883:2017 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: Bermad

Serial Number:

Nominal Size: e.g., DN 100

Year of manufacture: XXXX

Pressure class: PN 16

Standard number: AS 4883

Standards Mark logo: √√√√

9 PACKAGING AND TRANSPORTATION

Bermad 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

Bermad C50 air valves have been utilised by Australian Water Agencies for many years. The C80 air valves have only recently been introduced to Australia, however these valves have been used extensively overseas.

It is considered unnecessary to request further field trials for the purpose of this Appraisal.

12 OUTCOMES OF EXPERT PANEL PRODUCT REVIEW

No issues were raised.

13 FUTURE WORKS

No future works have been 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.

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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.

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

APPENDIX A - PRODUCT LITERATURE

BERMAD | Waterworks

Air Valve Series

NON CLEAN, SEWAGE & WASTEWATER COMBINATION AIR VALVE

Model C50

BERMAD C50 is a high quality combination air valve for a variety of sewage and wastewater networks and operating conditions. It evacuates air during pipeline filling, allows efficient release of air and gas pockets from pressurized pipes, and enables large volume air intake in the event of network draining.

The elongated body and lower float prevent the fluid to be in contact with the upper mechanism.

With its advanced aerodynamic design, double orifice and Surge Protection device (optional), this valve provides excellent protection against air and gas accumulation and vacuum formation with improved sealing under low pressure conditions.

C50-P

Features & Benefits

- Straight flow body with large diameter automatic orifice: Higher than usual air flow.
- Aerodynamic, full-body kinetic shield: Prevents premature closing without disturbing air intake or discharge.
- Dynamic Sealing: Prevents leakage under low pressure conditions (0.8 psi; 0.05 bar).
- Elongated body design: Prevents solids from making contact with valve's operating parts.
- Compact, simple and reliable structure with fully corrosion-resistant internal parts: Lower maintenance and increased life span.
- Two service ports: Enabling back flushing and drainage.
- Threaded Side outlet (2"; DN50) for connection of Surge Protection (SP) or Inflow prevention (IP) devices.
- Factory approval and Quality Control: Performance and specification tested and measured with specialized test bench, including vacuum pressure conditions.

C50-J

C50-C

Additional Features & Accessories

- Surge Protection (code SP): Smoother operation, preventing damage to the valve and the system.
- Inflow Prevention (code IP): Prevents intake of atmospheric air in cases where this could lead to damaged pumps, required re-priming, or disruption of siphon.
- Drainage Valve (code Z).

C50-G

C50-N

Typical Applications

- Pumping stations: Air relief and vacuum prevention.
- Non Clean Water pipelines: Protection against air and gas accumulation and vacuum formation at elevations, slope change points and at road/river crossings.
- Wastewater Treatment plants: Air relief, protection against air and gas accumulation and vacuum formation.

All images in this catalog are for illustration only

BERMAD | Waterworks

Air Valve Series

Model C50

Inlet and Outlet Connections

- Inlets:
  - Glass-reinforced Nylon Body (C50-P): male threaded 2-3"; DN50-80, flanged 2-4"; DN50-100
  - Ductile Iron Body (C50-C, C50-J): male threaded 2"; DN50, flanged 2-3"; DN50-80
  - Stainless Steel Body (C50-G, C50-N): male threaded 2-3"; DN50-80, flanged 2-3"; DN50-80
- Outlets: Sideways, female threaded 2"; DN50

Operational Data

- Pressure Rating: 150 psi; ISO PN10 (C50-P), 230 psi; ISO PN16 (C50-C, C50-J, C50-G, C50-N)
- Minimum operating pressure: 0.8 psi; 0.05 bar
- Maximum operating pressure: 150 psi; 10 bar (C50-P), 230 psi; 16 bar (C50-C, C50-J, C50-G, C50-N)
- Media and operating temperature: Water, 33-140°F; 1-60°C

Materials

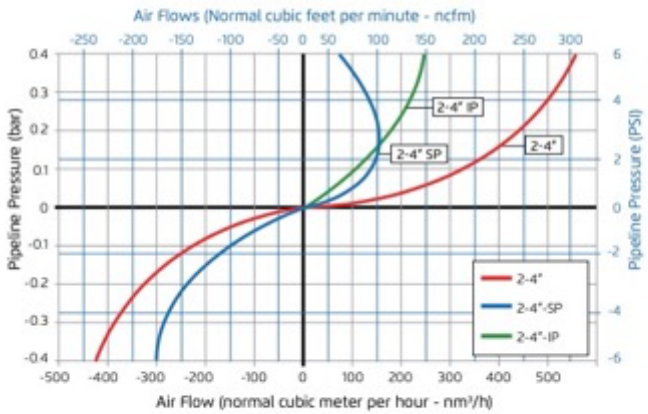
- Body, Neck and Cover:
  - Glass-Reinforced Nylon (C50-P)
  - Ductile Iron (C50-C)
  - Stainless Steel 316 (C50-N)
- Ductile Iron body with Glass-reinforced Nylon neck and cover (C50-J)
- Stainless Steel 316 body with Glass-reinforced Nylon neck and cover (C50-G)
- Upper Float Assembly: Polypropylene, Glass-Reinforced Nylon.
- Lower Float Assembly: Polypropylene, Optional – Stainless Steel 316.
- Float Rod: Stainless Steel 316
- Elastomers: EPDM, NBR. Optional – Viton.
- Coating of Ductile Iron: Fusion Bonded Epoxy

Orifice Specifications

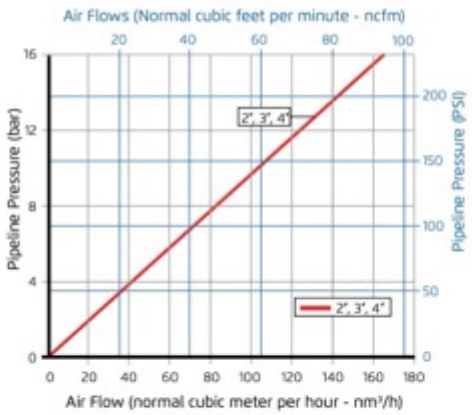
Inlet Sizes	Automatic Orifice	Kinetic Orifice		Surge Protection		
	Area	Diameter	Area	Number of holes	Hole Diameter	Total Area
Inch	Sq inch	inch	Sq inch	--	inch	Sq inch
mm	Sq mm	mm	Sq mm		mm	Sq mm
2"-4"	0.019	1.772	2.465	4	0.157	0.078
DN50-DN100	12.2	45.0	1,590		4	50

Air Flow Performance Charts

Air Relief and Intake (Pipeline Filling, Draining and Vacuum Conditions)



Air Release (Pressurized Operation)



Air relief and intake charts are based on actual measurements, measured in Bermad Air Flow test bench, according to EN-1074/4 standard and refer to Side outlet. Use Bermad Air software for optimized Sizing & Positioning of Air Valves.

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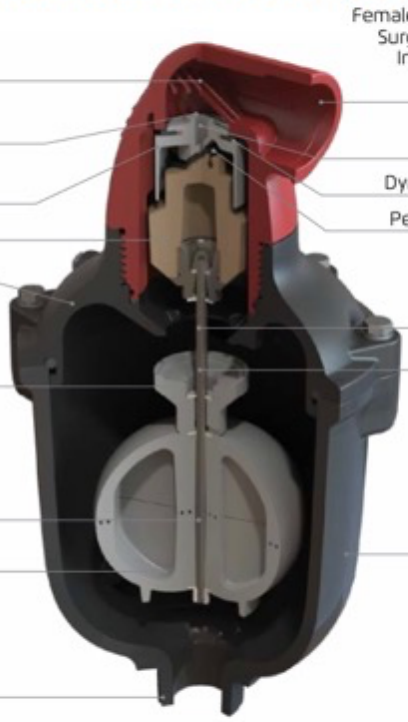
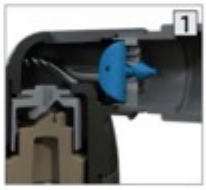
BERMAD | Waterworks

Air Valve Series

Model C50

Cutaway - Glass-reinforced Nylon Body (C50-P)



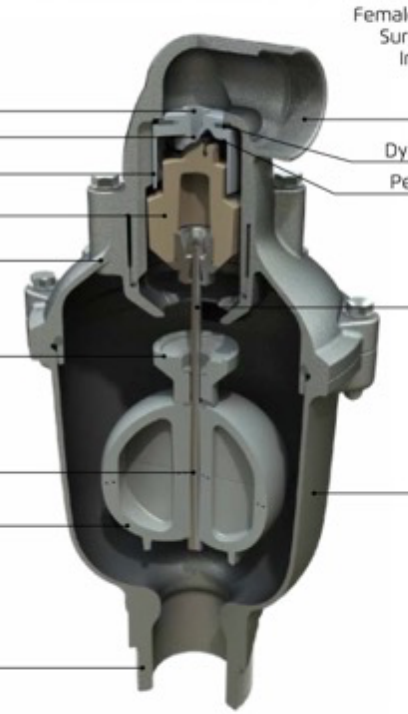


Surge Protection (code C50-SP)

Inflow Prevention (code C50-IP)

Extension with downwards outlet

Cutaway - Stainless Steel Body (C50-N)



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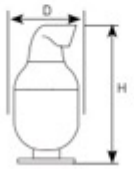
BERMAD | Waterworks

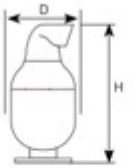
Air Valve Series

Model C50

Dimensions & Weights



		Glass Reinforced Nylon (C50-P)			Ductile Iron (C50-C)			Ductile Iron& Glass Reinforced Nylon (C50-J)		
Inlet Size	Connection	Width (D)	Height (H)	Weight	Width (D)	Height (H)	Weight	Width (D)	Height (H)	Weight
inch		inch	inch	lbs	inch	inch	lbs	inch	inch	lbs
mm		mm	mm	Kg	mm	mm	Kg	mm	mm	Kg
2"	Threaded	13.740	17.638	12.78	9.449	19.291	45.2	9.449	19.094	26.4
DN50		349	448	5.8	240	490	20.5	240	485	12.0
2"	Flanged	13.740	19.134	14.11	9.449	19.035	49.1	9.449	18.937	30.2
DN50		349	486	6.4	240	484	22.3	240	481	13.7
3"	Threaded	13.740	20.157	13.00	---	---	---	---	---	---
DN80		349	512	5.9	---	---	---	---	---	---
3"	Flanged	13.740	19.409	14.83	9.449	19.291	52.5	9.449	19.291	33.5
DN80		349	493	6.7	240	490	23.8	240	490	15.2
4"	Flanged	13.740	19.409	15.32	---	---	---	---	---	---
DN100		349	493	7.0	---	---	---	---	---	---



		Stainless Steel & Glass Reinforced Nylon (C50-G)			Stainless Steel (C50-N)		
Inlet Size	Connection	Width (D)	Height (H)	Weight	Width (D)	Height (H)	Weight
inch		inch	inch	lbs	inch	inch	lbs
mm		mm	mm	Kg	mm	mm	Kg
2"	Threaded	13.740	19.134	23.36	11.654	19.252	37.03
DN50		349	486	10.6	296	489	16.8
2"	Flanged	13.740	19.134	29.09	11.654	19.370	41.66
DN50		349	486	13.2	296	492	18.9
3"	Threaded	13.740	20.197	28.65	11.654	20.197	41.88
DN80		349	513	13.0	296	513	19.0
3"	Flanged	13.740	19.409	35.70	11.654	19.843	48.27
DN80		349	493	16.2	296	504	21.9
4"	Flanged	---	---	---	---	---	---
DN100		---	---	---	---	---	---

www.bermad.com

PCASE11-C50 | October 2018

BERMAD | Waterworks

Air Valve Series

NON CLEAN, SEWAGE & WASTEWATER COMBINATION AIR VALVE

Model C80

BERMAD C80 is a high quality combination air valve for a variety of sewage and wastewater networks and operating conditions. It evacuates air during pipeline filling, allows efficient release of air and gas pockets from pressurized pipes, and enables the intake of large volumes of air in the event of network draining.

The elongated - body and lower float - is designed to reduce the contact between the fluid and the upper mechanism.

With its advanced aerodynamic design, double orifice and Surge Protection device (optional), this valve provides excellent protection against air and gas accumulation and vacuum formation with improved sealing under low pressure conditions.

C80 is designed to facilitate longer periods of operation without maintenance and it is easy to maintain.

Features & Benefits

- Straight flow body with large diameter automatic orifice: Higher than usual air flow.
- Aerodynamic, full-body kinetic shield: Prevents premature closing without disturbing air intake or discharge.
- Dynamic Sealing: Prevents leakage under low pressure conditions (0.8 psi; 0.05 bar).
- Elongated body design: Prevents solids from making contact with valve's operating parts.
- Compact, simple and reliable structure with fully corrosion-resistant internal parts: Lower maintenance and increased life span.
- Two service ports: Enabling back flushing and drainage.
- Threaded Side outlet (3"; DN80) for connection of Surge Protection (SP) or Inflow prevention (IP) devices.
- Factory approval and Quality Control: Performance and specification tested and measured with specialized test bench, including vacuum pressure conditions.

Additional Features & Accessories

- Surge Protection (code SP): Smoother operation, preventing damage to the valve and the system.
- Inflow Prevention (code IP): Prevents intake of atmospheric air in cases where this could lead to damaged pumps, required re-priming, or disruption of siphon.
- Drainage Valve (code Z).

Typical Applications

- Pumping stations: Air relief and vacuum prevention.
- Non Clean Water pipelines: Protection against air and gas accumulation and vacuum formation at elevations, slope change points and road/river crossings.
- Wastewater Treatment plants: Air relief, protection against air and gas accumulation and vacuum formation.

Maintenance

- The air valve can be opened from the top and the internal assembly can be pulled up, for a quick service or replacement.
- 2 Service ports and the addition of an optional drainage valve enable back-flushing, testing and draining in the workshop as well as in the field.

Inlet and Outlet Connections

- Inlets: flanged 3-4"; DN80-100
- Outlets: Sideways or down, female threaded 3"; DN80

Operational Data

- Pressure Rating: 230 psi; ISO PN16, 360 psi; ISO PN25
- Minimum operating pressure: 0.8 psi; 0.05 bar
- Maximum operating pressure: 230 psi; 16 bar, 360 psi; 25 bar
- Media and operating temperature: Water, 33-140°F; 1-60°C

All images in this catalog are for illustration only

BERMAD | Waterworks

Air Valve Series

Model C80

Materials

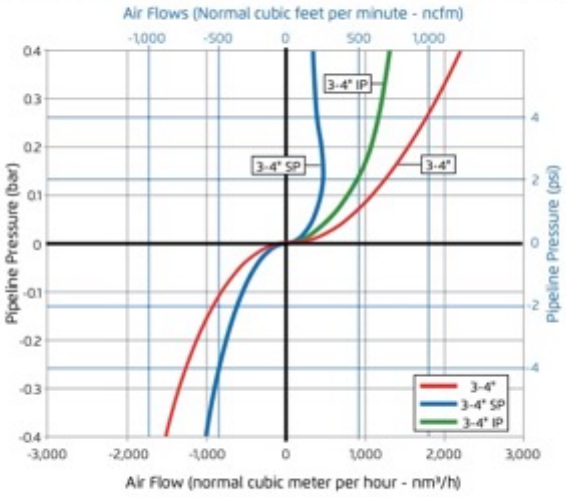
- Body and Cover: Ductile Iron
- Top Plate: Stainless Steel 316
- Upper Float Assembly: Polypropylene, Glass-Reinforced Nylon
- Main Float: Stainless Steel 316, tested to 800 psi; 55 bar
- Float Rod: Stainless Steel 316
- Elastomers: NBR, Neoprene
- Coating of Ductile Iron: Fusion Bonded Epoxy

Orifice Specifications

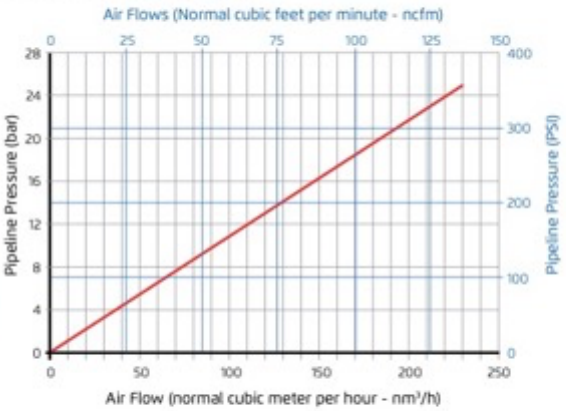
Inlet Sizes	Automatic Orifice	Kinetic Orifice		Surge Protection		
	Area	Diameter	Area	Number of holes	Hole Diameter	Total Area
Inch	Sq inch	Inch	Sq inch	--	inch	Sq inch
mm	Sq mm	mm	Sq mm		mm	Sq mm
3"	0.029	3	7.069	5	0.236	0.219
DN80	18.5	80	5,027		6	141
4"	0.029	3	7.069	5	0.236	0.219
DN100	18.5	80	5,027		6	141

Air Flow Performance Charts

Air Relief and Intake (Pipeline Filling, Draining and Vacuum Conditions)



Air Release (Pressurized Operation)



Data for C80 with Surge Protection Feature

Inlet Size	Switching Value	Air relief at 6 psi; 0.4 bar
Inch	psi	ncfm
mm	bar	nm³/h
3" - 4"	1.8	171
DN80 - 100	0.125	300

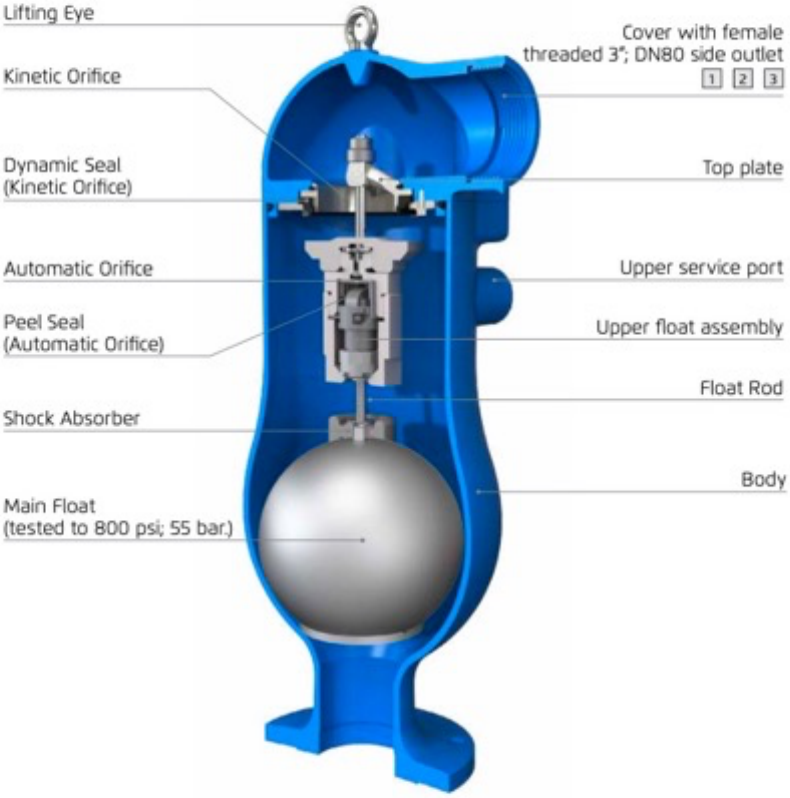
Air relief and intake charts are based on actual measurements, carried out in Bermad Air Flow test bench, according to EN-1074/4 and AS4883 standard and refer to Side outlet. Use Bermad Air software for optimized Sizing & Positioning of Air Valves.

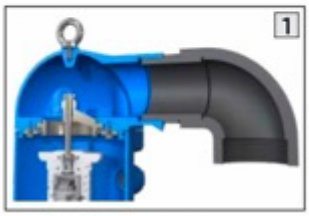
BERMAD | Waterworks

Air Valve Series

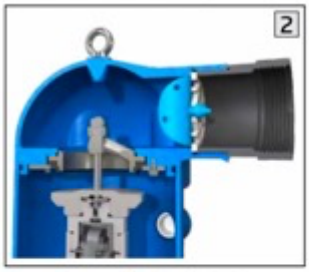
Model C80

Cutaway

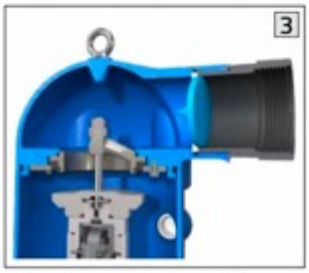




With 90 degree elbow (code with down outlet)

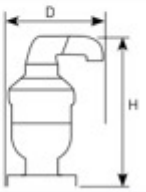


Surge Protection (code SP)



Inflow Prevention (code IP)

Dimensions & Weights



		With 90 degree elbow (down outlet)			With SP or IP device (side outlet)		
Inlet Size	Connection	Width (D)	Height (H)*	Weight	Width (D)	Height (H)*	Weight
inch		inch	inch	lbs	inch	inch	lbs
mm		mm	mm	Kg	mm	mm	Kg
3"	Flanged	17.480	24.213	61.8	13.189	24.213	60.4
DN80		444	615	28.1	335	615	27.4
4"	Flanged	17.480	24.331	65.1	13.189	24.331	63.7
DN100		444	618	29.6	335	618	28.9

* For a hight including lifting eye add 1.06"; 37 mm.

Easy maintenance

1. Open the bolts and pull out the cover and internal assembly.

2. Release the screw

3. Disassemble the upper part from the lower part by opening the thread.

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PCASE11-C80 | March 2021

APPENDIX B - QUALITY CERTIFICATIONS

Copies of the following Quality Certificates are available from WSAA.

TABLE B1 BERMAD CS LTD – MANAGEMENT SYSTEMS

Kibbutz Evron Israel	
Quality Systems Standard	ISO 9001:2015
Certification Licence No.	IL 86237
Certifying Agency	The Standards Institution of Israel
First Date of Certification	16 July 1995
Current Date of Certification	1 July 2021
Expiry Date of Certification	1 July 2024

TABLE B2 BERMAD WATER TECHNOLOGIES – PRODUCT CERTIFICATION

7 Inglewood Drive Thomastown VIC	
Product Standard/Spec.	AS 4883:2017
Certificate No.	SMKP41217
Issuing Certification Body	SAI-Global
First Date of Certification	7 March 2022
Current Date of Certification	7 March 2022
Expiry Date of Certification	6 March 2027

THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

THE STANDARDS INSTITUTION OF ISRAEL

has issued an IQNet recognized certificate that the organization:

Bermad Cs Ltd

Kibbutz Evron, Israel

Has implemented and maintains a Quality Management System

For the following scope:

Design, production and testing of control valves, metering valves, Water meters, valves for fire protection and air valves.

which fulfils the requirement of the following standard:

ISO 9001:2015

Issued on:	01/07/2021
Date of initial approval:	16/07/1995
Date of expiration:	01/07/2024

This attestation is directly linked to the IQNet Partner's original certificate and shall not be used as a stand-alone document

Registration number: IL - 86237

Alex Stoichitoiu
President of IQNet

Avital Weinberg
Director, Quality & Certification Division

IQNet Partners*:
AENOR *Spain* AFNOR Certification *France* APCER *Portugal* CCC *Cyprus* CISQ *Italy*
CQC *China* CQM *China* CQS *Czech Republic* Cro Cert *Croatia* DQS Holding GmbH *Germany* *EAGLE Certification Group USA*
FCAV *Brazil* FONDONORMA *Venezuela* ICONTEC *Colombia* Inspecta Sertifiointi *Oy Finland* INTECO *Costa Rica*
IRAM *Argentina* JQA *Japan* KFQ *Korea* MIRTEC *Greece* MSZT *Hungary* Nemko AS *Norway* NSAI *Ireland*
NYCE-SIGE México PCBC *Poland* Quality Austria *Austria* RR *Russia* SII *Israel* SIQ *Slovenia*
SIRIM QAS International *Malaysia* SQS *Switzerland* SRAC *Romania* TEST St Petersburg *Russia* TSE *Turkey* YUQS *Serbia*

* The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com

www.sii.org.il

STANDARDSMARK LICENCE

SAI Global hereby grants:

Bermad CS Ltd

680 Kibbutz, Everon, Israel

StandardsMark Licence

Manufactured to:

AS 4883:2017 - Air valves for sewerage

"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.

Licence No: SMK41217

Issued : 9 March 2022
Expires : 6 March 2027

Originally Certified : 7 March 2022
Current Certification : 7 March 2022

Calin Moldovean
President, Business Assurance
SAI Global Assurance

Certified Product™
Australian Standard

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

SAI GLOBAL
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SCHEDULE TO
STANDARDSMARK LICENCE

SAI Global hereby grants:

Bermad CS Ltd

680 Kibbutz, Everon, Israel

StandardsMark Licence

Manufactured to:

AS 4883:2017 - Air valves for sewerage

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

Model ID	Brand Name	Product Description	Product Type	Nominal Size (DN)	Pressure Classification	End Connection Designation	Date Endorsed
C50-C	BERMAD	Coated ductile iron Sewage and Wastewater Air valve available with the following options -SP = Surge Protection -IP = Inflow Protection	DOUBLE ORIFICE	DN50	PN16	2" FLANGED /2" THREADED	7 Mar 2022
C50-C	BERMAD	Coated ductile iron Sewage and Wastewater Air valve available with the following options -SP = Surge Protection -IP = Inflow Protection	DOUBLE ORIFICE	DN100	PN16	4" FLANGED	7 Mar 2022
C50-C	BERMAD	Coated ductile iron Sewage and Wastewater Air valve available with the following options -SP = Surge Protection -IP = Inflow Protection	DOUBLE ORIFICE	DN80	PN16	3" FLANGED	7 Mar 2022
C50-N	BERMAD	Stainless Steel 316 Sewage and Wastewater Air valve available with the following options -SP = Surge Protection -IP = Inflow Protection	DOUBLE ORIFICE	DN80	PN16	3" FLANGED /3" THREADED	7 Mar 2022
C50-N	BERMAD	Stainless Steel 316 Sewage and Wastewater Air valve available with the following options -SP = Surge Protection -IP = Inflow Protection	DOUBLE ORIFICE	DN50	PN16	2" FLANGED /2" THREADED	7 Mar 2022

Licence No: SMK41217 **Issued Date:** 9 March 2022

This schedule supersedes all previously issued schedules

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SCHEDULE TO
STANDARDSMARK LICENCE

Model ID	Brand Name	Product Description	Product Type	Nominal Size (DN)	Pressure Classification	End Connection Designation	Date Endorsed
C50-N	BERMAD	Stainless Steel 316 Sewage and Wastewater Air valve available with the followirg options -SP = Surge Protection -IP = Inflow Protection	DOUBLE ORIFICE	DN100	PN16	4" FLANGED	7 Mar 2022
C80	BERMAD	Coated ductile iron Sewage and Wastewater Air valve available with the followirg options -SP = Surge Protection -IP = Inflow Protection	DOUBLE ORIFICE	DN80	PN16	3" FLANGED	7 Mar 2022
C80	BERMAD	Coated ductile iron Sewage and Wastewater Air valve available with the followirg options -SP = Surge Protection -IP = Inflow Protection	DOUBLE ORIFICE	DN100	PN16	4" FLANGED	7 Mar 2022

End of Record

Licence No: SMK41217 **Issued Date:** 9 March 2022

This schedule supersedes all previously issued schedules

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APPENDIX C - SUPPLIER CONTACTS

Bermad Water Technologies

26 Brand Drive Thomastown VIC 3074

Telephone: 03 9464 2374

Email: info@bermad.com.au

Website: https://www.bermad.com.au/

Details of branch locations can be accessed at the following link:

https://www.bermad.com.au/contact-us/

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