

VENT-O-MAT[®]

Series RBX

Air Release and Vacuum Break Valves

Operations and Maintenance Manual

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MAINTENANCE

The Vent-O-Mat Series RBX valve is virtually maintenance free. There may however, on rare occasions, be the need to carry out maintenance on the valve. Enclosed is a guide providing possible reasons for maintenance requirements.

Problem	Reason	Course of Action
Valve Leaking through large orifice	Construction debris stuck in valve due to commissioning of new pipeline.	Follow enclosed Maintenance Instructions.
Valve Leaking around barrel seals.	Surge & Water Hammer problems in pipeline/ Severe under sizing of air valves	Notify manufacturer & Consulting Engineer/ Follow enclosed Maintenance Instructions.
Valve leaking through the large orifice despite no debris entrapped in valve.	Valve above the hydraulic gradeline.	Reposition valve 5 metres below hydraulic gradeline.
Small volumes of water evident on top flange during initial filling.	Normal operation of valve.	No course of action required

The RBX design facilitates ease of service and maintenance and all maintenance spares are replaceable without special tools or skills. A complete list of tools and spares required, as well as the maintenance procedures are enclosed below.

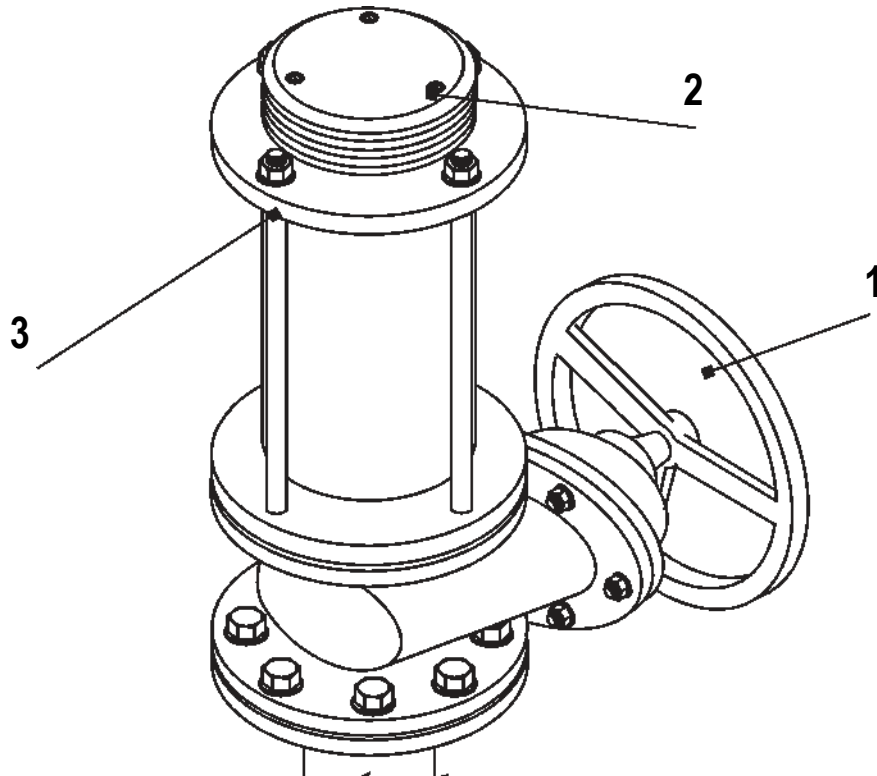
Tool & Spare Requirements

Valve Size	Tools Required	Spares Required
DN25	M8 Spanner & Flat Screwdriver	2 x Barrel Seals, 1 x Small Orifice Nozzle, 1 x O-Ring Seal, 2 x O-Ring Seats, 1 x Nozzle Seat
DN50	M8 & M12 Spanner & Flat Screwdriver	2 x Barrel Seals, 1 x Small Orifice Nozzle, 1 x O-Ring Seal, 2 x O-Ring Seats, 1 x Nozzle Seat
DN80	M8 & M16 Spanner & Flat Screwdriver	2 x Barrel Seals, 1 x Small Orifice Nozzle, 1 x O-Ring Seal, 2 x O-Ring Seats, 1 x Nozzle Seat
DN100	M8 & M16 Spanner & Flat Screwdriver	2 x Barrel Seals, 1 x Small Orifice Nozzle, 1 x O-Ring Seal, 2 x O-Ring Seats, 1 x Nozzle Seat
DN150	M8 & M20 Spanner & Flat Screwdriver	2 x Barrel Seals, 1 x Small Orifice Nozzle, 1 x O-Ring Seal, 2 x O-Ring Seats, 1 x Nozzle Seat
DN200	M8 & M20 Spanner & Flat Screwdriver	2 x Barrel Seals, 1 x Small Orifice Nozzle, 1 x O-Ring Seal, 2 x O-Ring Seats, 1 x Nozzle Seat

Maintenance Procedures

Step 1

Close the Isolator Valve (1). Remove Top Cover (2) utilising a flat screwdriver. Loosen Nuts (3) in a circular fashion.



Step 2

Remove the Top Flange Assembly (4) and inspect the O-Ring Seal (5) for damage. Remove the barrel Assembly (6).

Step 3

Remove all Floats (7,8 & 9) and check for any entrapped debris. Rinse Floats in clear water.

Step 4

Replace Lower Float (9) with Nozzle Seat (10) facing upwards as indicated. Inspect the Nozzle Seat (10) for damage. Use a flat screwdriver to remove the Seat Retainer Plate (11), should the Seat Retainer Plate (11) need replacing (for DN80, 100, 150 and 200 only).

Step 5

Inspect the Small Orifice Nozzle (12) for any blockages or damage. Use a M8 spanner to remove the Small Orifice Nozzle (12) if necessary. Replace Upper Float (8) in the manner indicated.

Ensure that the Small Orifice Nozzle (12) makes contact with the Nozzle Seat (10).

Step 6

Inspect the O-Ring Seat (13) for damage. Replace the "Anti-Shock" Float (7) in the manner indicated. Ensure that the O-Ring Seat (13) is facing down.

Step 7

Inspect Upper and Lower Barrel Seals (14 & 15) for damage.

Step 8

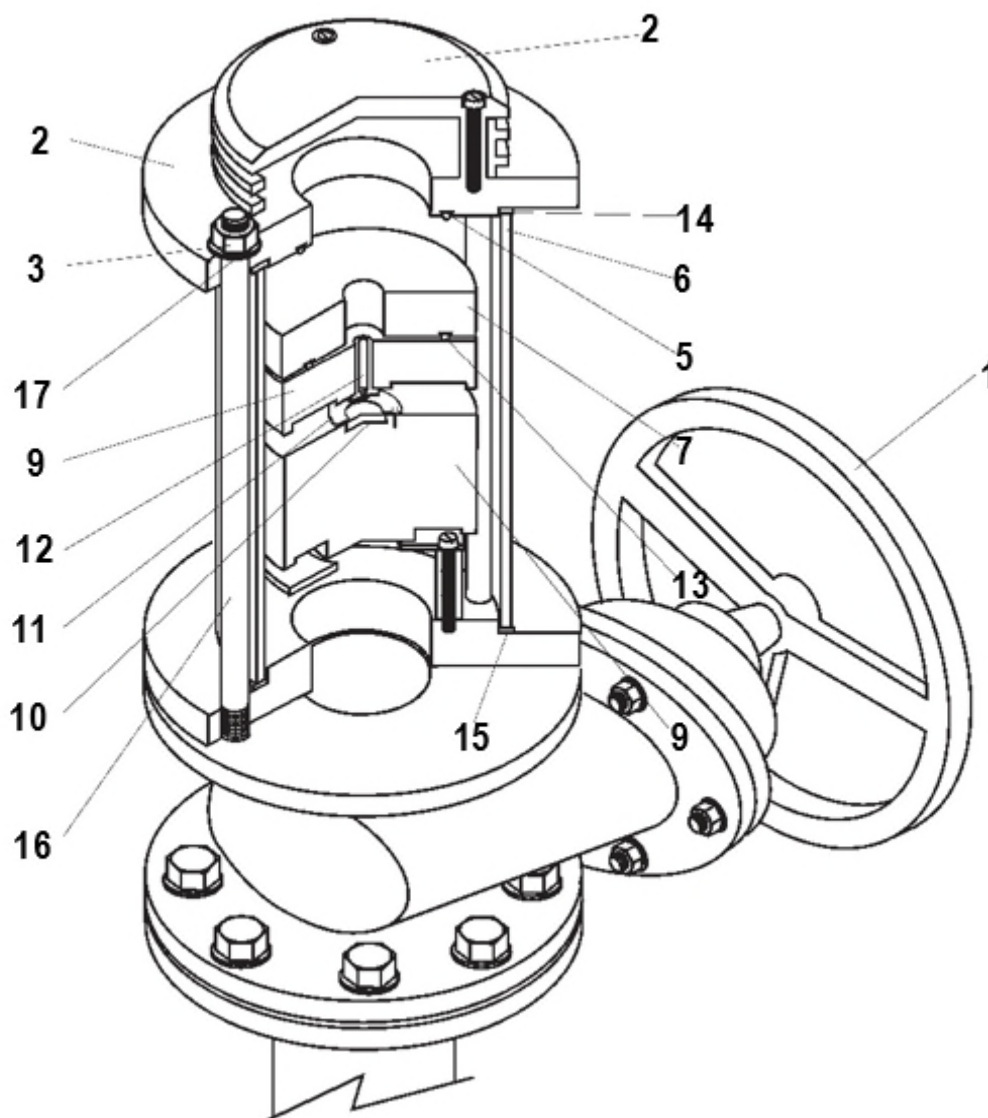
Replace the Barrel Assembly (6) ensuring that the Lower Barrel Seal (15) is in place.

Step 9

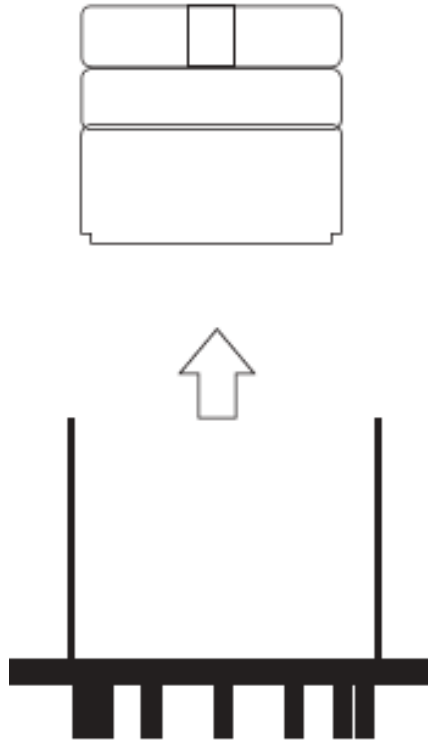
Replace the Top Flange Assembly (4), ensuring that the Upper Barrel Seal (14) is in place.

Step 10

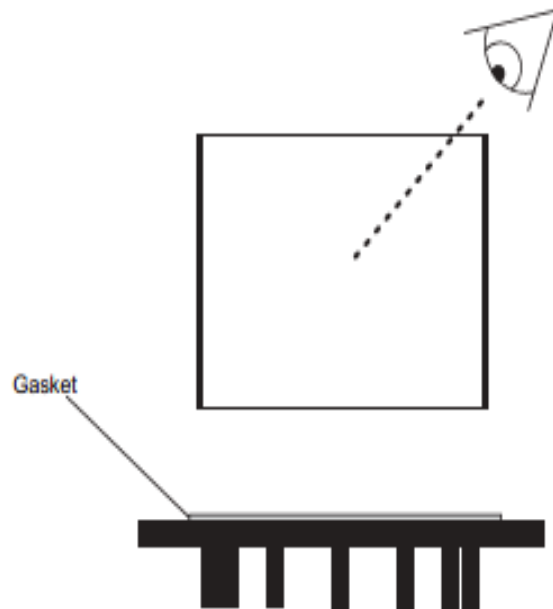
Replace the Nuts (3) and Washers (17) ensuring that each Tie Road (16) has a Washer (17) and that the Upper Barrel Seal (14) is correctly positioned. First hand tighten Nuts (3), then "cross" tighten. Replace Top Cover (2). Reopen Isolator (1).



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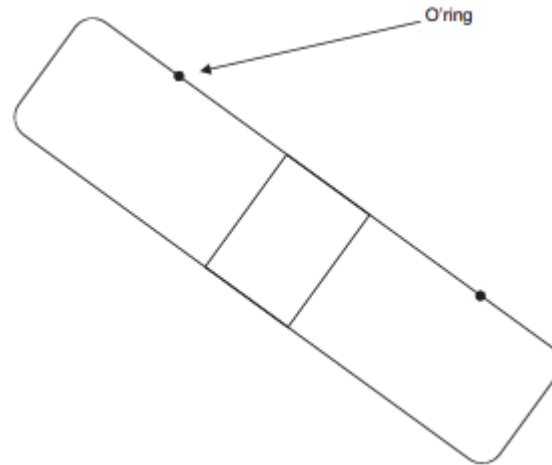


Remove floats from valve body

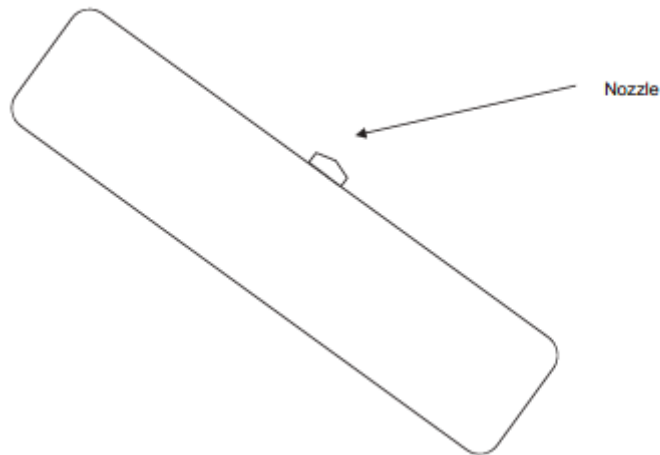


Check that the internals of the valve body are free from debris. Replace lower gasket.

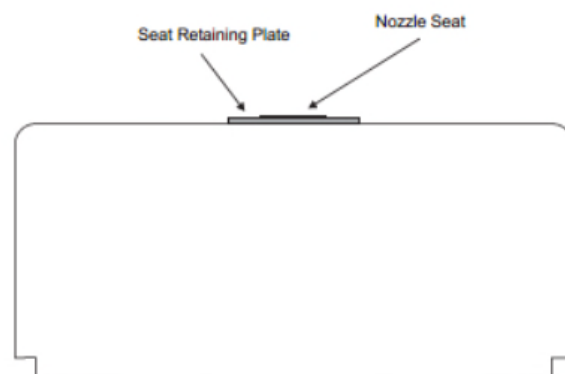
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Check the o-ring on the “Anti-Shock” float and replace o-ring if necessary.

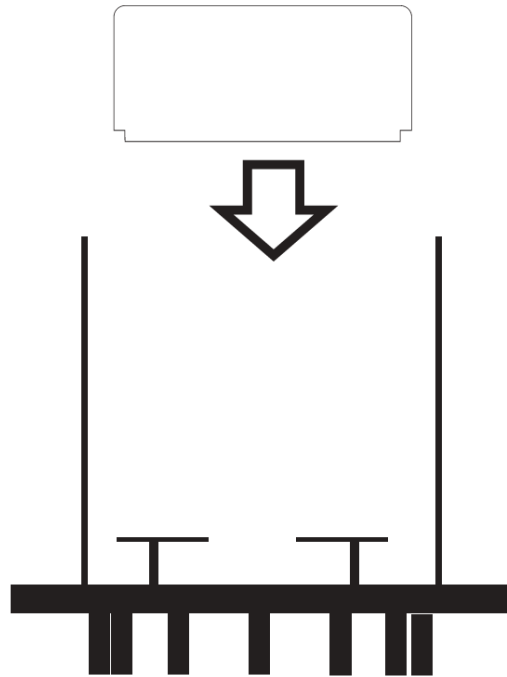


Check the nozzle for damage and blockages. Clear blockages with a piece of wire or replace nozzle if necessary.

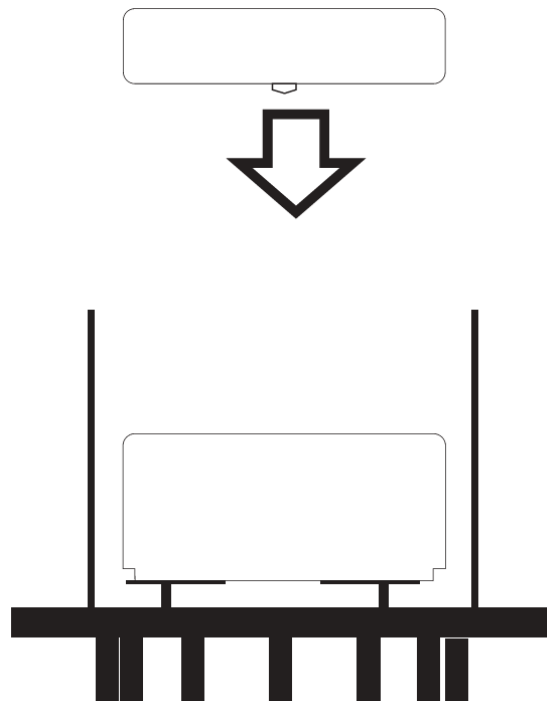


Check nozzle seat for damage. Replace with seat from spare parts kit (remove nozzle retainer plate on sizes 80mm and above).

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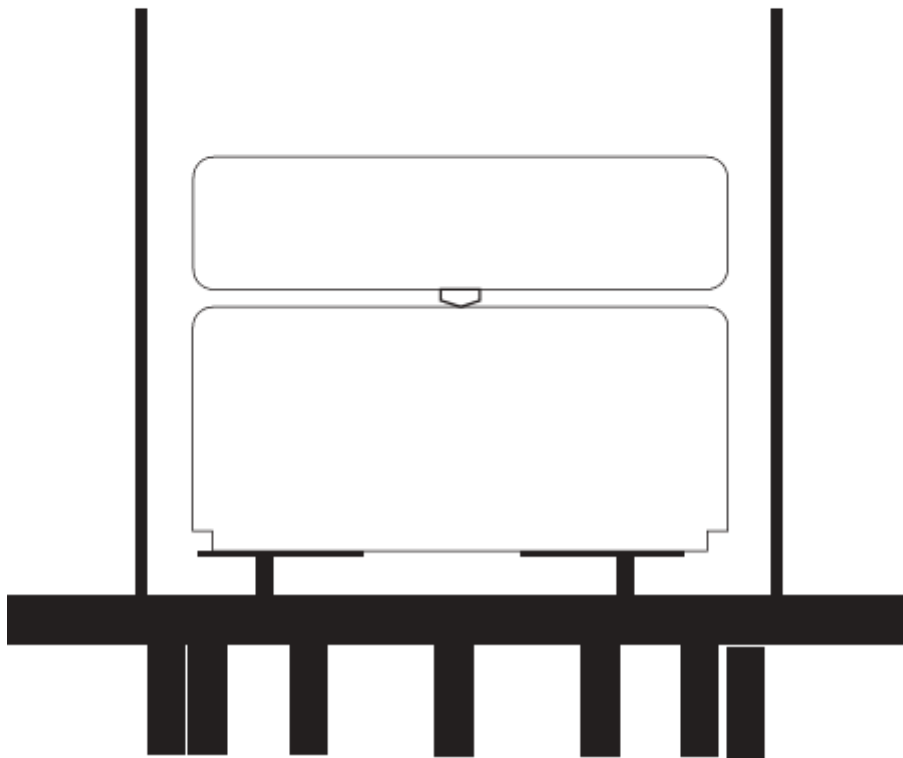


Replace barrel and place the lower float into the barrel making sure the lip on the float touches the baffle plate at the bottom of the valve and the nozzle seat is facing upwards.



Replace the small orifice float making sure the nozzle is facing down and the flat face is facing up.

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Replace the “Anti-Shock” float ensuring the O-ring faces downwards and the flat face faces upwards.

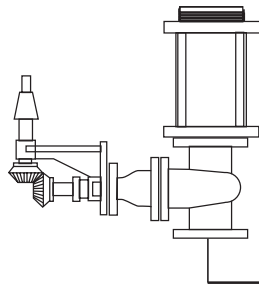


Ventomat RBX Torque Values

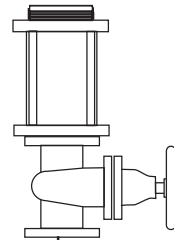
VALVE MODEL NUMBER	N/m	LBF/ft
025 RBX 2511	40	29.50
025 RBX 4001	40	29.50
025 RBX 6401	40	29.50
025 RBX 10001	40	29.50
050 RBX 2511	55	40.57
050 RBX 4001	55	40.57
050 RBX 6401	100	73.76
050 RBX 10001	100	73.76
080 RBX 2501	100	73.76
080 RBX 4001	110	81.13
080 RBX 6401	110	81.13
100 RBX 2501	100	73.76
100 RBX 4001	110	81.13
100 RBX 6401	110	81.13
150 RBX 2501	500	368.78
150 RBX 4001	500	368.78
200 RBX 2501	500	368.78
200 RBX 4001	500	368.78

RECOMMENDED INSTALLATION ARRANGEMENTS

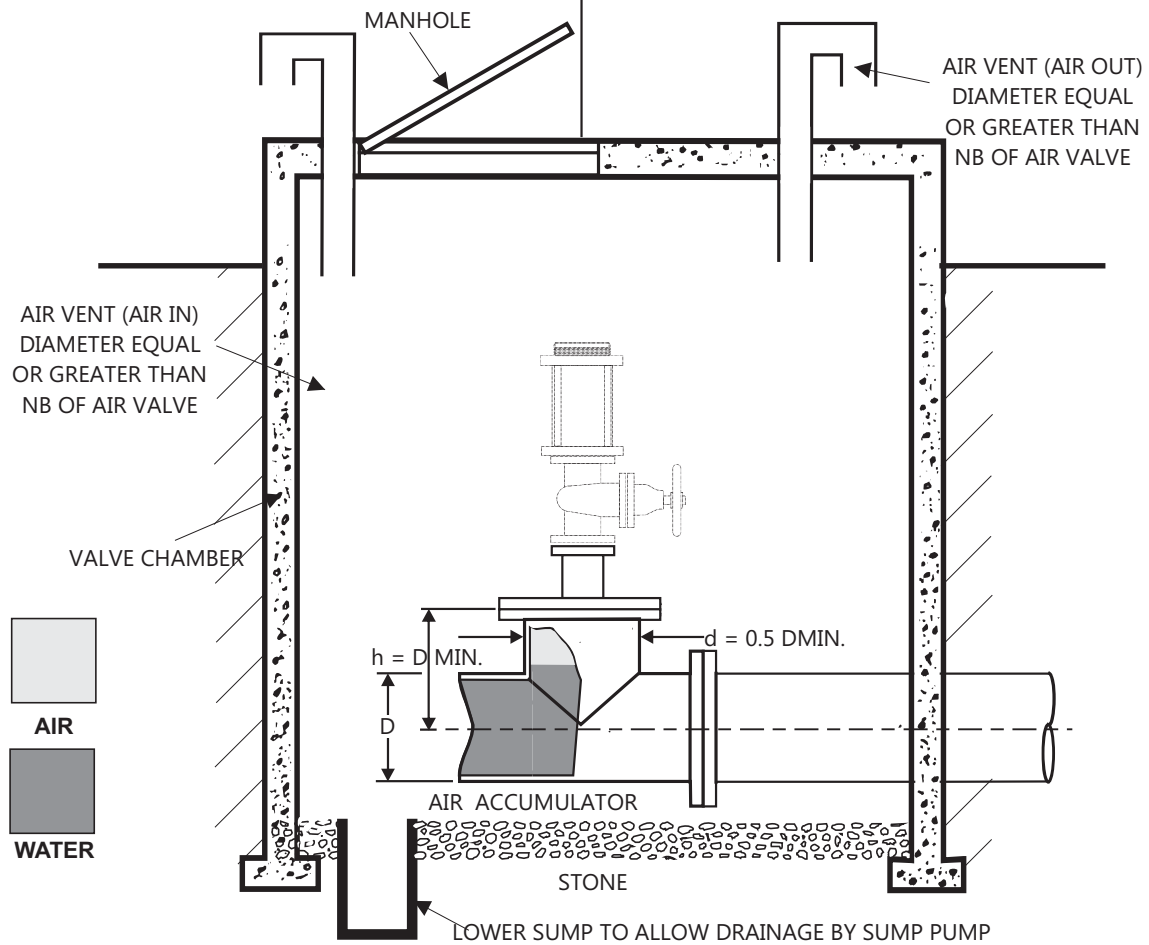
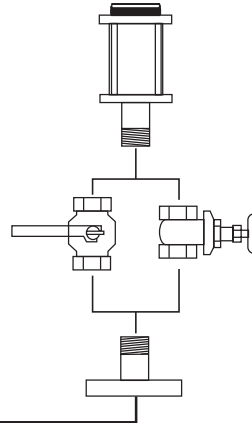
TYPE 1



TYPE 2



TYPE 3
(Screwed)



COMPONENT DESCRIPTION & MATERIAL SPECIFICATION SCREWED - DN25(1") & DN50(2")

Type:

Series RBX - Double Orifice (Small & Large Orifice)
with Anti Shock Orifice Mechanism.

End Connection:

Screwed BSP(ISO R7) / NPT Male (ASME B1.20.1)

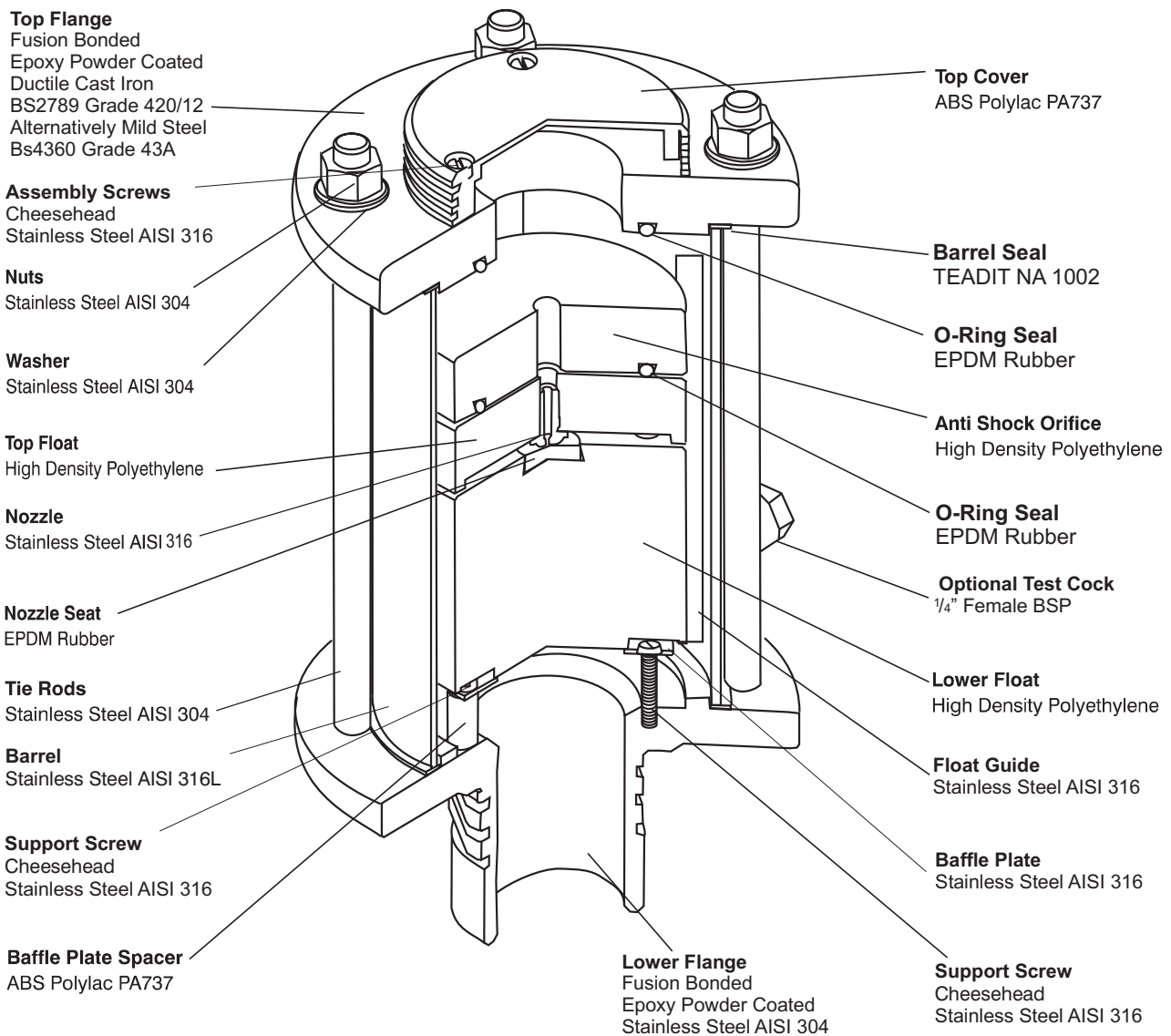
Nominal Sizes:

DN25 (1")
DN50 (2")

Model No's:

RBX 2511 & 2521 _____ PN25
RBX 4011 & 4021 _____ PN40

Pressure Ratings:



Valves are available in AISI 316L on request.

COMPONENT DESCRIPTION & MATERIAL SPECIFICATION FLANGED - DN80(3") & DN100(4")

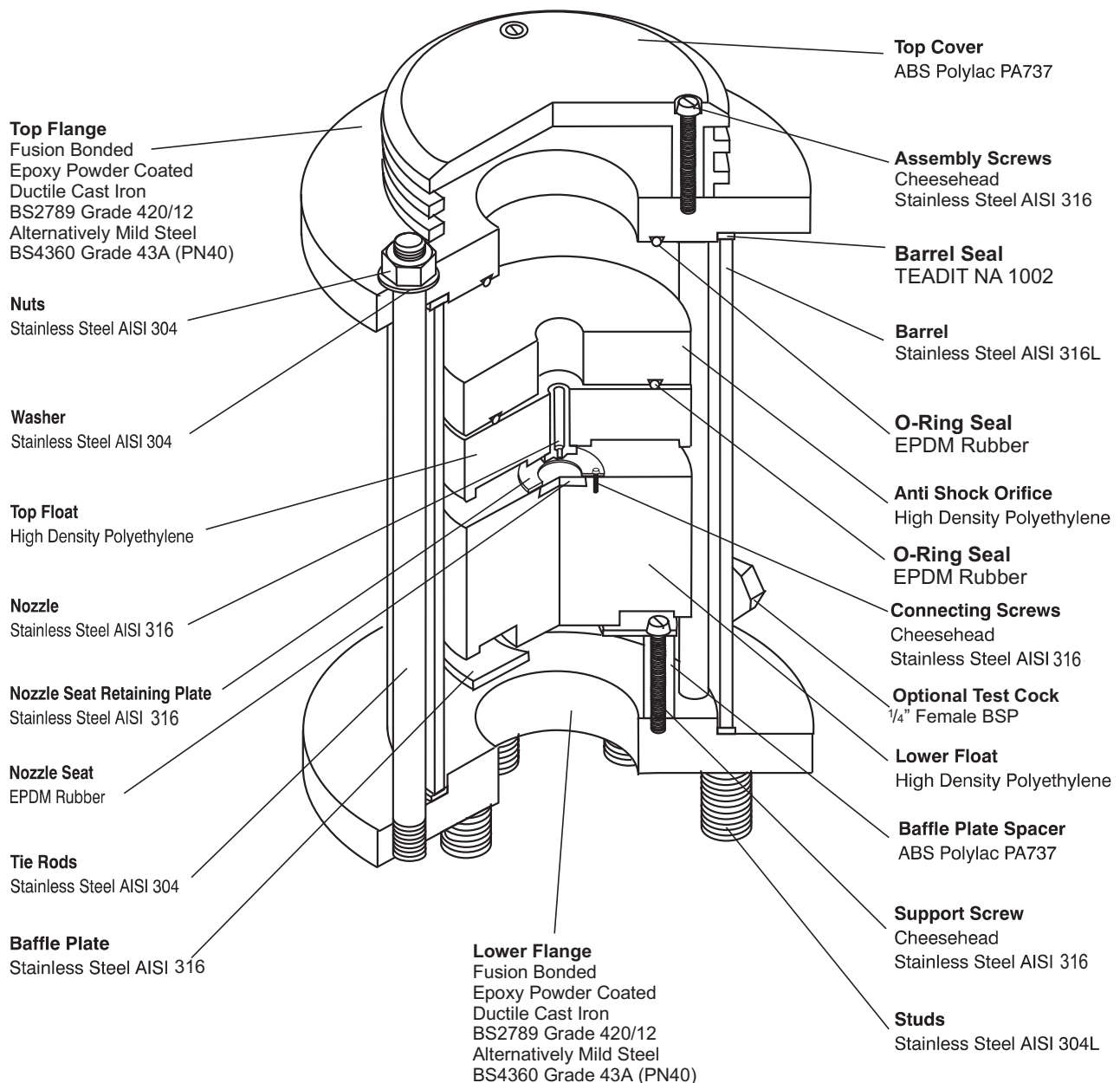
Type:
Series RBX - Double Orifice (Small & Large Orifice)
with Anti Shock Orifice Mechanism.

End Connection:
Flange with screwed studs.

**Nominal Sizes:
Ratings:**

DN080 (3")
DN100 (4")

Model No's:	Pressure
RBX 16Y1 _____	PN16
RBX 25Y1 _____	PN25
RBX 40Y1 _____	PN40



Valves available in AISI 316L on request
information subject to change without prior notice

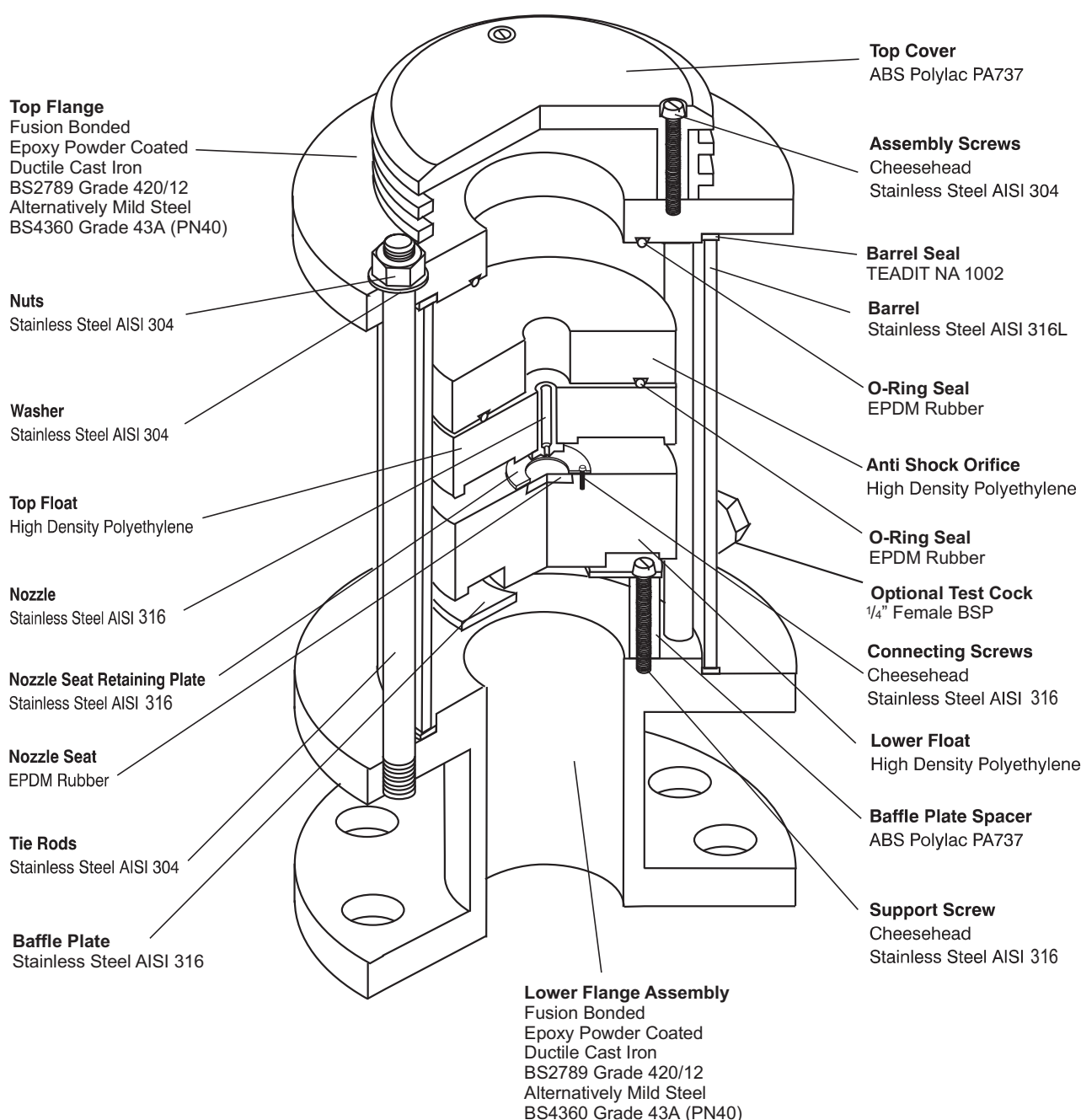
COMPONENT DESCRIPTION & MATERIAL SPECIFICATION FLANGED - DN150(6") & DN200(8")

Type:
Series RBX - Double Orifice (Small & Large Orifice)
with Anti Shock Orifice Mechanism.

End Connection:
Flanged

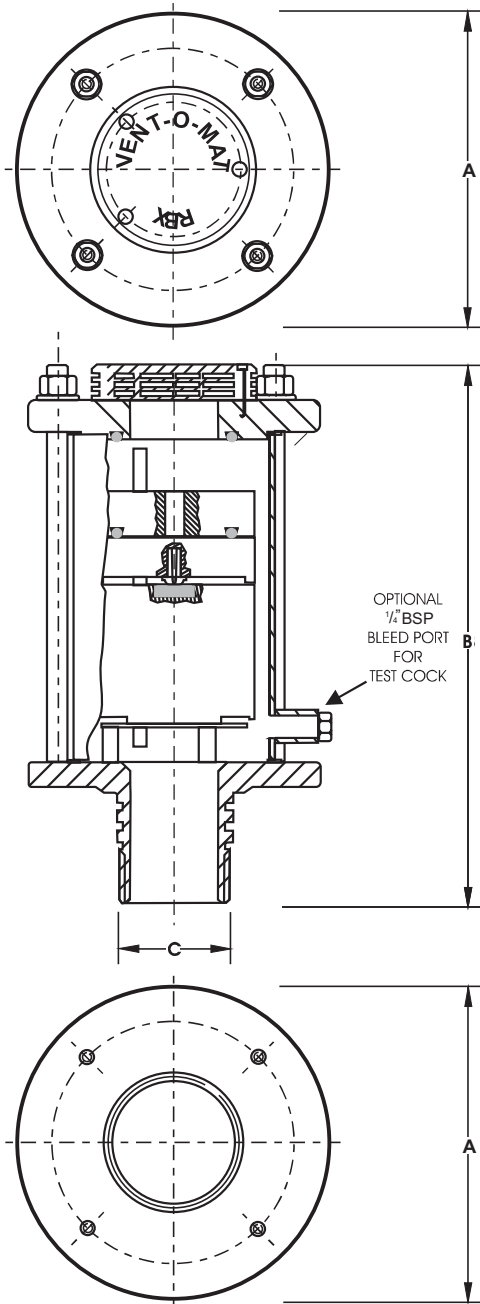
Nominal Sizes:
Ratings:
DN150 (6")
DN200 (8")

Model No's:	Pressure
RBX 16Y1 _____	PN16
RBX 25Y1 _____	PN25
RBX 40Y1 _____	PN40



Valves available in AISI 316L on request
information subject to change without prior notice

GENERAL SPECIFICATIONS SCREWED - DN25(1") & DN50(2")



Type:

Double Orifice (Small & Large Orifice) with Anti-Shock Orifice Mechanism.

End Connection:

Screwed BSP/ NPT Male

Nominal Sizes:

DN25 (1") & DN50 (2")

Model No's:

RBX 25Y1* _____
RBX 40Y1* _____

Pressure Ratings bar:

PN 25
PN 40

Operating Pressure Range - bar:

	Min.	Max.
PN 25	0.5	25
PN 40	0.5	40

Operating Temperature Range:

4°C (40°F) to 80°C (176°F)

Acceptable Media:

Potable or strained raw water.

Function:

- i) High volume air discharge - pipeline filling.
- ii) High volume air intake - pipeline draining
- iii) Pressurized air discharge - pipeline filled.
- iv) Surge dampening - high velocity air discharge, water column separation & liquid oscillation.

Materials of Construction: - see page 4

Installation:- see page 3

Standard Factory Tests:

- i) Hydrostatic - 1.5 x max. rated working pressure
- ii) Low head leak - 0.5 bar
- iii) Small orifice function at max. rated working pressure (minimum 1 valve in 10).

OVERALL DIMENSIONS & WEIGHTS

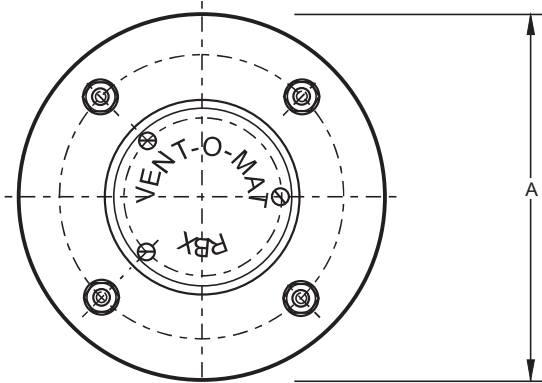
DN	MODEL No.	PRESSURE RATING	A	B	C	WEIGHT
mm in.			mm	mm		kg.
25 1	025 RBX 25Y1	PN25	120	265	1" BSP/NPT	5
25 1	025 RBX 40Y1	PN40	120	317	1" BSP/NPT	5.5
50 2	050 RBX 25Y1	PN25	165	325	2" BSP/NPT	9.5
50 2	050 RBX 40Y1	PN40	165	340	2" BSP/NPT	10

*Y:1 = Screwed BSP
2 = Screwed NPT

FLANGED AVAILABLE ON REQUEST

information subject to change without prior notice

GENERAL SPECIFICATIONS FLANGED - DN80(3") & DN100(4")



Type:

Double Orifice (Small & Large Orifice) with Anti-Shock Orifice Mechanism.

End Connection:

Flange with Screwed Studs for Alignment to;
BS EN 1092 PN10, PN16, PN25 & PN40
ANSI B16.5 Class 150 & 300
AS 4087 FIG. B5-B6 (Ductile Iron)
AS 4087 FIG. B7-B9 (Mild Steel)
AS 2129 Table D/E/F

Nominal Sizes:

DN80 (3") & DN100 (4")

Model No's:

RBX 16Y1* _____
RBX 25Y1* _____
RBX 40Y1* _____

Pressure Ratings bar:

PN 16
PN 25
PN 40

Operating Pressure Range - bar:

	Min.	Max.
PN 16	0.5	16
PN 25	0.5	25
PN 40	0.5	40

Operating Temperature Range:

4°C (40°F) to 80°C (176°F)

Acceptable Media:

Potable or strained raw water.

Function:

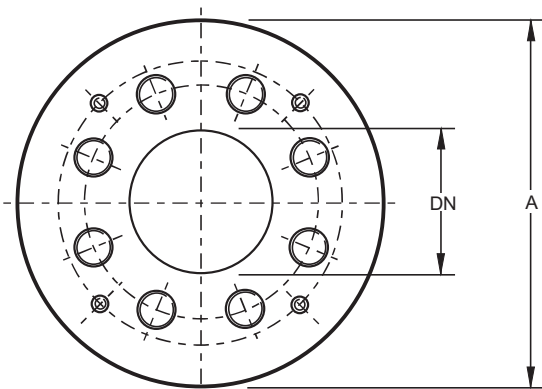
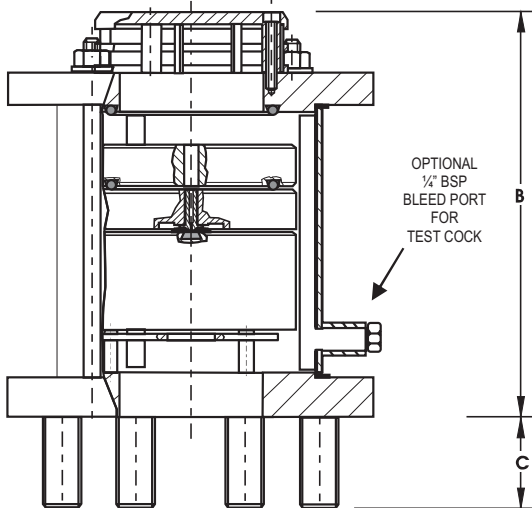
- i) High volume air discharge - pipeline filling.
- ii) High volume air intake - pipeline draining
- iii) Pressurized air discharge - pipeline filled.
- iv) Surge dampening - high velocity air discharge, water column separation & liquid oscillation.

Materials of Construction: - see page 5

Installation: - see page 3

Standard Factory Tests:

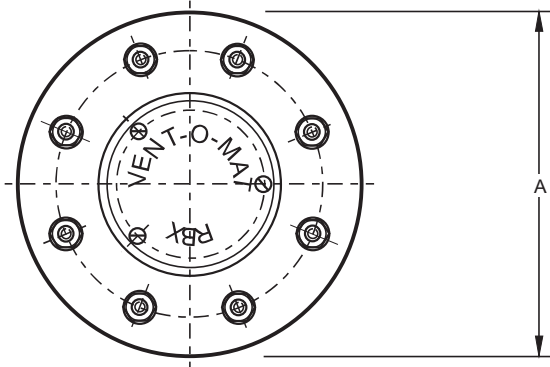
- i) Hydrostatic - 1.5 x max. rated working pressure
- ii) Low head leak - 0.5 bar
- iii) Small orifice function at max. rated working pressure (minimum 1 valve in 10).



DN	MODEL No.	PRESSURE RATING	A	B	C	WEIGHT	
mm	in		mm	mm	mm	kg.	
80	3	080 RBX 16Y1	PN16	235	354	50	23
80	3	080 RBX 25Y1	PN25	235	354	50	23
80	3	080 RBX 40Y1	PN40	235	369	50	24.5
100	4	100 RBX 16Y1	PN16	235	369	50	22.5
100	4	100 RBX 25Y1	PN25	235	374	60	22.5
100	4	100 RBX 40Y1	PN40	235	407	60	24

* Y: 3 = ANSI #150/300; 4 = AS4087 Fig B7-B9; 5 = AS4087 Fig B6/B9; 6 = AS2129 Table E

GENERAL SPECIFICATIONS FLANGED - DN150(6") & DN200(8")



Type:

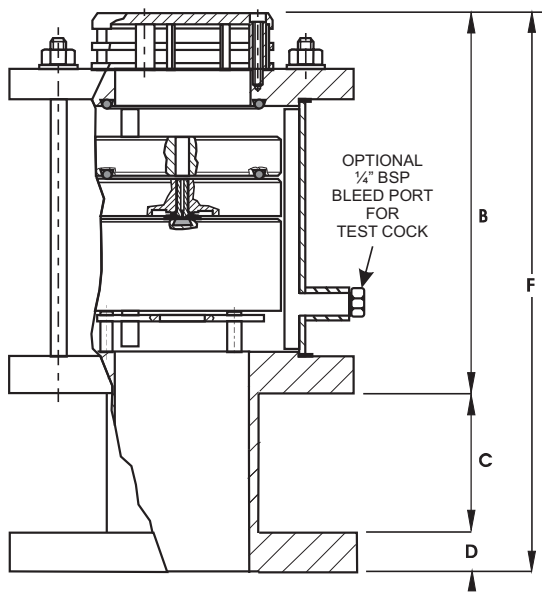
Double Orifice (Small & Large Orifice) with Anti-Shock Orifice Mechanism.

End Connection:

Flange for Alignment to;
BS EN 1092 PN10, PN16, PN25 & PN40
ANSI B16.5 Class 150 & 300
AS 4087 FIG. B5-B6 (Ductile Iron)
AS 4087 FIG. B7-B9 (Mild Steel)
AS 2129 Table D/E/F

Nominal Sizes:

DN150 (6") & DN200 (8")



Model No's:

Pressure Ratings bar:

RBX 16Y1* ————— PN 16
RBX 25Y1* ————— PN 25
RBX 40Y1* ————— PN 40

Operating Pressure Range - bar:

	Min.	Max.
PN 16	0.5	16
PN 25	0.5	25
PN 40	0.5	40

Operating Temperature Range:

4°C (40°F) to 80°C (176°F)

Acceptable Media:

Potable or strained raw water.

Function:

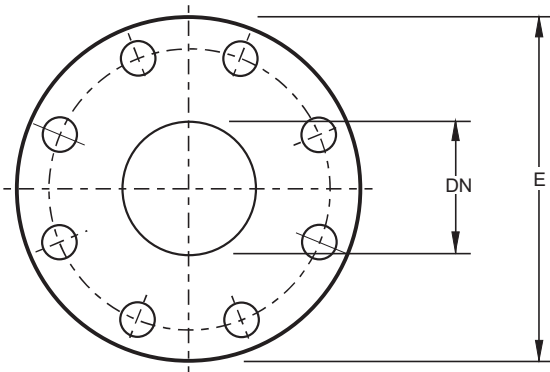
- i) High volume air discharge - pipeline filling.
- ii) High volume air intake - pipeline draining
- iii) Pressurized air discharge - pipeline filled.
- iv) Surge dampening - high velocity air discharge, water column separation & liquid oscillation.

Materials of Construction: - see page 6

Installation: - see page 3

Standard Factory Tests:

- i) Hydrostatic - 1.5 x max. rated working pressure
- ii) Low head leak - 0.5 bar
- iii) Small orifice function at max. rated working pressure (minimum 1 valve in 10).

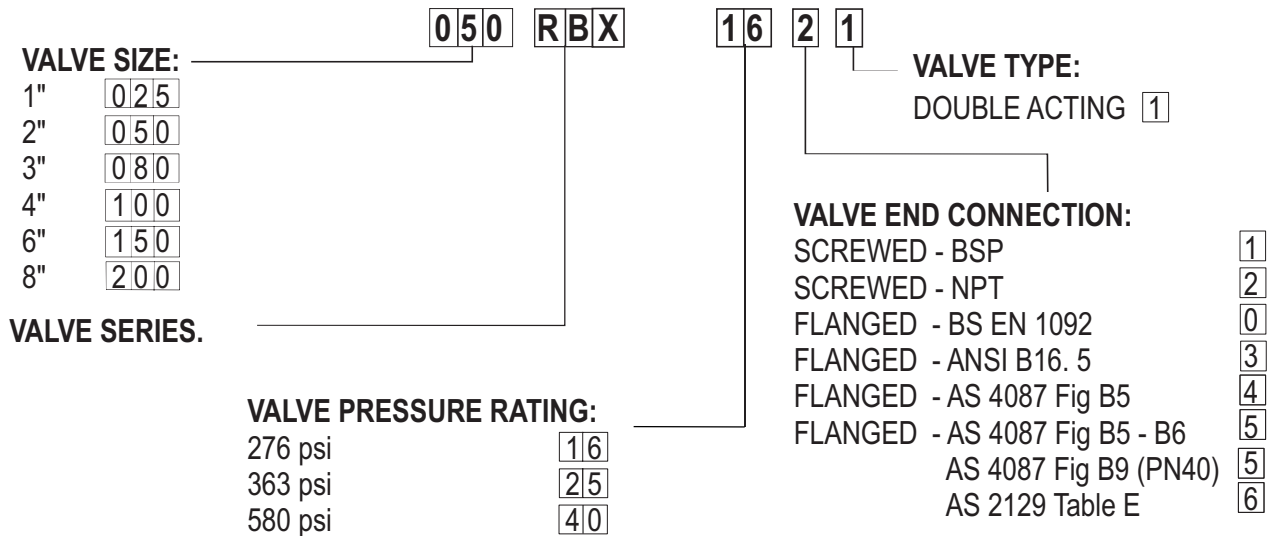


OVERALL DIMENSIONS & WEIGHTS

DN mm in	MODEL No.	PRESSURE RATING	A mm	B mm	C mm	D mm	E mm	F mm	WEIGHT kg
150 6	150 RBX16Y1	PN16	355	457	133	22	285	612	69
150 6	150 RBX25Y1	PN25	355	457	127	28	300	612	69
150 6	150 RBX40Y1	PN40	355	457	127	28	300	612	75
200 8	200 RBX16Y1	PN16	405	497	151	24	340	672	97
200 8	200 RBX25Y1	PN25	405	497	145	30	360	672	97
200 8	200 RBX40Y1	PN40	405	497	141	34	370	672	108

* Y; 4 = AS4087 Fig B7-B9, 5 = AS4087 Fig B6/B9, 6 = AS2129 Table E

ORDERING GUIDE



Note:

- 10" and 12" valves are available on request.
- Valves for pressure ratings of 928 psi and 1450 psi are available on request.
- Valves are available with AISI 304 or AISI 316 Stainless Steel Flanged ends, please specify when ordering.

TEST SPECIFICATIONS

All air release valves supplied shall be subjected to the following testing procedures in the order laid down:

- A high pressure strength and leak test whereby the valve is filled with water and pressurized to 1.5 times the rated working pressure which shall be held for a period of 2 minutes. Any leaking, weeping or sweating shall be reason for rejection.
- A low head leak test whereby the valve is filled with water and pressurized to a maximum of 7.25 psi using a visible water column connected to the test rig. The valve shall be rejected if leak tightness is not maintained for 2 minutes
- Every tenth air release valve of the same size and pressure rating must be subjected to a small orifice function test - **"DROP TEST"** - whereby the valve is filled with water, pressurized to above rated working pressure and isolated from the test rig by closure of an isolating valve. A chamber in the test rig immediately prior to the isolating valve must be filled with compressed air at a pressure equal to that being maintained in the air release valve. The isolating valve is then opened so as to allow the air to rise in the air release valve without the pressure dropping lower than 29 - 44 psi above rated working pressure of the air release valve. The **"DROP TEST"** is then carried out by slowly bleeding off the pressure through a suitable cock until rated working pressure is reached and the float drops away from the orifice to allow discharge. Failure of the air release valve to function in the manner described will be reason for rejection.

On request the manufacturer shall provide batch certificates of test compliance which shall be cross referenced to serial numbers indelibly marked onto the identity label of each valve.

IMPORTANT NOTE: It is impossible to inject air into an incompressible liquid, air injection can only be achieved if the liquid can be displaced which implies that the pressure in the test rig must be reduced to atmospheric, and absolutely nothing is proven by discharge through the small orifice of the air release valve at atmospheric pressure. **"DROP TESTING"** in this manner is not acceptable.