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</table>
PRE NOTES:

1. VENTING OF A FILLING PIPELINE:
   The operation of a conventional air release valve is such that fast approaching water is almost
   instantaneously halted by the valve's closure without the shock cushioning benefit of any retained air in
   the pipeline. Consequently a transient pressure rise or shock of potentially damaging proportions can be
   generated in a pipeline system, even at normal filling rates.

   In addition to venting through the Large Orifice (1) when water approach velocities are sub critical, the
   Vent-O-Mat series RBX air release valves feature an automatic "Anti-Shock" Orifice (8) device that
   serves to decelerate water approaching at excessive speed, thereby limiting pressure rise to a maximum
   of 1.5 x rated working pressure of the valve.

2. SURGE ALLEVIATION - PIPELINE PRESSURIZED:
   In instances where a pipeline experiences water column separation due to pump stoppage, high shock
   pressures can be generated when the separated water column rejoins.

   The Vent-O-Mat series RBX takes in air through the unobstructed large orifice when water column
   separation occurs, but controls the discharge of air through the "Anti-Shock" Orifice as the separated
   column commences to rejoin. The rejoining impact velocity is thereby sufficiently reduced to prevent an
   unacceptably high surge pressure in the system. In the same way the series RBX valve prevents high
   surge pressures resulting from liquid oscillation in a pipeline.

3. PRESSURIZED AIR RELEASE FROM A FULL PIPELINE:
   Effective discharge by the valve of pressurized air depends on the existence of a 'CRITICAL
   RELATIONSHIP' between the area of the Small Orifice (7) and the mass of Control Float (4), i.e., the
   mass of the float must be greater than the force created by the working pressure acting on the orifice area.
   If the float is relatively too light or the orifice area relatively too great, the float will be held against the
   orifice, even when not buoyed, and air discharge will not be effected.

   To ensure that the correct 'CRITICAL RELATIONSHIP' exists the requisite 'DROP TEST' described
   under TEST SPECIFICATION on page 17 must be applied to any air release valve which is intended for
   discharge of pressurized air.

VENTING OF A FILLING PIPELINE (SUB CRITICAL WATER APPROACH VELOCITY)

Air enters Orifice (3), travels through the annular space between the cylindrical floats (4), (5), and (6) and the
valve Chamber Barrel (2) and discharges from the Large Orifice (1) into atmosphere.
VENTING OF A FILLING PIPELINE (EXCESSIVE WATER APPROACH VELOCITY)

In reaction to increased air flow, Float (6) closes Large Orifice (1) and air is forced through the “Anti-Shock” Orifice (8) resulting in deceleration of the approaching water due to the resistance of rising air pressure in the valve.

Attention is drawn to Pre Note 1 and 2 on page 1.

PRESSURIZED AIR RELEASE FROM A FULL PIPELINE

Subsequent to the filling of a pipeline, liquid enters the valve Barrel Chamber (2) and the Floats (4), (5) and (6) are buoyed so that the Large Orifice (1) is closed by Float (6), the valve will then become internally pressurized. A minimal working pressure of < 0.5 bar (7.3 psi) acting on the relatively large area of the Orifice (1) will lock Float (6) into the closed position across the Large Orifice (1).

Disentrained air rises through the liquid and accumulates in the valve chamber, when the volume of air is sufficient to displace the liquid, Float (4) will no longer be buoyant and will gravitate downwards thereby opening the Small Orifice (7) and allowing accumulated air to be discharged into atmosphere, as air is discharged the liquid raises Float (4) and re-seals the Small Orifice (7) and prevents escape of liquid.

Specific attention is drawn to pre note 3 on page 1.

VACUUM RELIEF (AIR INTAKE) OF A DRAINING PIPELINE

Simultaneous drainage of liquid from Valve Chamber (2) causes Floats (4), (5) and (6) to gravitate downwards onto the Baffle Plate (9), thereby allowing atmospheric air through the valve to rapidly displace draining liquid in the pipeline and prevent potentially damaging internal negative pressure.
RECOMMENDED INSTALLATION ARRANGEMENTS

**Series RBX**

**TYPE 1**

**TYPE 2**

**TYPE 3** (Screwed)

**AIR VENT (AIR IN)**
- Diameter equal or greater than NB of AIR VALVE

**AIR VENT (AIR OUT)**
- Diameter equal or greater than NB of AIR VALVE

**MANHOLE**

**STONE**

**AIR ACCUMULATOR**

**LOWER SUMP TO ALLOW DRAINAGE BY SUMP PUMP**

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Page: 3
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Series RBX

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

Nominal Sizes:
DN25 (1")
DN50 (2")

Model No’s:
RBX 2511 & 2521
RBX 4011 & 4021

Pressure Ratings:
PN25 (363 psi)
PN40 (580 psi)

Top Flange
Mild Steel BS 4360 Grade 43A
Fusion Bonded Epoxy Powder Coated alternatively Stainless Steel AISI 304

Screen Mesh
Stainless Steel AISI 304

Nuts
Stainless Steel AISI 304

Washer
Stainless Steel AISI 304

Top Float
High Density Polyethylene

Nozzle
Stainless Steel AISI 304

Nozzle Seat
EPDM Rubber

Tie Rods
Stainless Steel AISI 304

Baffle Plate
Stainless Steel AISI 304

Optional Test Cock Connection
½“ BSP/ NPT Female

Valves are available in AISI 316L on request.

information subject to change without prior notice
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:
DN80 (3”)
DN100 (4”)

Model No’s:
RBX 1601 & 1631 PN16 (232 psi)
RBX 2501 & 2531 PN25 (363 psi)
RBX 4001 & 4031 PN40 (580 psi)

Pressure Ratings:

Top Flange
Mild Steel BS 4360 Grade 43A
Fusion Bonded Epoxy Powder Coated alternatively Stainless Steel AISI 304

Nuts
Stainless Steel AISI 304

Washer
Stainless Steel AISI 304

Top Float
High Density Polyethylene

Nozzle
Stainless Steel AISI 304

Nozzle Seat Retaining Plate
Stainless Steel AISI 304

Nozzle Seat
EPDM Rubber

Tie Rods
Stainless Steel AISI 304

Baffle Plate
Stainless Steel AISI 304

Optional Test Cock Connection
¼” BSP/ NPT Female

Valves are available in AISI 316L on request.

information subject to change without prior notice
Series RBX

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

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

End Connection:
Flange with screwed studs.

Nominal Sizes:
DN150 (6")
DN200 (8”)

Model No’s:
RBX 1601 & 1631  PN16 (232 psi)
RBX 2501 & 2531  PN25 (363 psi)
RBX 4001 & 4031  PN40 (580 psi)

Pressure Ratings:

Top Cover
ABS Polylac PA737

Assembly Screws
Cheesehead
Stainless Steel AISI 304

Barrel Seal
Klingersil C4430
Gasket

Barrel
Stainless Steel AISI 304L

O - Ring Seal
EPDM Rubber

Anti Shock Orifice
High Density Polyethylene

O - Ring Seat
EPDM Rubber

Connecting Screws
Cheesehead
Stainless Steel AISI 304

Nozzle Seat Retaining Plate
Stainless Steel AISI 304

Nozzle Seat
EPDM Rubber

Tie Rods
Stainless Steel AISI 304

Baffle Plate Spacer
ABS Polylac PA737

Support Screw
Cheesehead
Stainless Steel AISI 304

Optional Test Cock Connection
¼” BSP/ NPT Female

Valves are available in AISI 316L on request.

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Series RBX

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: Pressure Ratings bar (psi):
RBX 2511 PN 25 (363 psi)
RBX 4011 PN 40 (580 psi)

Operating Pressure Range - bar (psi):
Min. Max.
PN25 (363 psi) 0.5 (7.25) 25 (363)
PN40 (580 psi) 0.5 (7.25) 40 (580)

Operating Temperature Range:
4°C (40°F) to 80°C (176°F)

Acceptable Media:
Potable or strained raw water.

Function:
- High volume air discharge - pipeline filling.
- High volume air intake - pipeline draining
- Pressurized air discharge - pipeline filled.
- Surge dampening - high velocity air discharge, water
  column separation & liquid oscillation.

Materials of Construction: - see page 4

Installation:- see page 3

Standard Factory Tests:
- Hydrostatic - 1.5 x max. rated working pressure
- Low head leak - 0.5 bar (7.25 psi)
- Small orifice function at max. rated working pressure
  (minimum 1 valve in 10).

OVERALL DIMENSIONS & WEIGHTS

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<thead>
<tr>
<th>DN mm</th>
<th>MODEL No. &amp;</th>
<th>PRESSURE RATING</th>
<th>A (A) mm</th>
<th>B (B) mm</th>
<th>C (C) in</th>
<th>D</th>
<th>WEIGHT kg</th>
<th>WEIGHT lbs</th>
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<td>PN25 (363 psi)</td>
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<td>PN40 (580 psi)</td>
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<td>12.2</td>
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Series RBX

GENERAL SPECIFICATIONS

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

**End Connection:**
Flange with Screwed Studs for Alignment to;
BS 4504 PN10, PN16, PN25 & PN40
SABS 1123 - Tables 1000/3, 1600/3, 2500/3 & 4000/3
ANSI B16.5 Class 150 & 300

**Nominal Sizes:**
DN80 (3") & DN100 (4")

**Model No’s:**

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<td>RBX 2501 &amp; 2531</td>
<td>PN 25 (363 psi)</td>
</tr>
<tr>
<td>RBX 4001 &amp; 4031</td>
<td>PN 40 (580 psi)</td>
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<tr>
<td>PN40 (580 psi)</td>
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<td>40 (580)</td>
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**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 (7.25 psi)
iii) Small orifice function at max. rated working pressure (minimum 1 valve in 10).

### OVERALL DIMENSIONS & WEIGHTS

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<tr>
<th>DN</th>
<th>MODEL No.</th>
<th>PRESSURE RATING</th>
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<th>C mm</th>
<th>D mm</th>
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<td>354</td>
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<td>16</td>
<td>29 66</td>
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**Series RBX**

**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 4504 PN10, PN16, PN25 & PN40
- SABS 1123 - Tables 1000/3, 1600/3, 2500/3 & 4000/3
- ANSI B16.5 Class 150 & 300

**Nominal Sizes:**
DN150 (6") & DN200 (8")

**Model No’s:**
- RBX 1601 & 1631 PN 16 (232 psi)
- RBX 2501 & 2531 PN 25 (363 psi)
- RBX 4001 & 4031 PN 40 (580 psi)

**Operating Pressure Range - bar (psi):**
- PN16 (232 psi) Min. 0.5 (7.25) Max. 16 (232)
- PN25 (363 psi) Min. 0.5 (7.25) Max. 25 (363)
- PN40 (580 psi) Min. 0.5 (7.25) Max. 40 (580)

**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 (7.25 psi)
- iii) Small orifice function at max. rated working pressure (minimum 1 valve in 10).

**OVERALL DIMENSIONS & WEIGHTS**

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<tr>
<th>DN</th>
<th>MODEL No.</th>
<th>PRESSURE RATING</th>
<th>A</th>
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<th>C</th>
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<td>8 200 RBX2501 &amp; 2531</td>
<td>PN25 (363 psi)</td>
<td>405</td>
<td>497</td>
<td>19/&quot;</td>
<td>133</td>
<td>6/&quot;</td>
<td>622</td>
<td>28</td>
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<tr>
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<td>PN40 (580 psi)</td>
<td>405</td>
<td>497</td>
<td>19/&quot;</td>
<td>127</td>
<td>7/&quot;</td>
<td>622</td>
<td>28</td>
</tr>
</tbody>
</table>

*information subject to change without prior notice*
VENT-O-MAT®

Series RBX

SELECTION & POSITIONING

PRE-NOTES

The functional limits of an air valve are governed by three physical laws namely: Joukowski's Equation Boyle's Law and Pascal's Law. Air valve operation however is also dependent on design and internal configuration, and can vary dramatically from manufacturer's product to manufacturer's product, within the parameters of what is physically possible. The basis of the Vent-O-Mat design is in the understanding of these laws, which have been used to design an air release and vacuum break valve that provides the optimum usable safe performance relative to all functions. The following summary is a general guideline of factors to consider when sizing air valves.

Sizing for Vacuum
Calculate necessary valve orifice sizes independently for each apex point.

Determine the smallest air release and vacuum break valve capable of admitting air into the pipeline equal to the potential water flow out of the pipeline whilst not exceeding a differential pressure that would put the pipeline and gasket joints at risk due to negative internal pressure. We recommend 0.35 bar (5 psi) Dp or lower. This exercise is simplified on pages 11 and 12 of this catalogue. Be cautious of air valve designs with spherical floats as a low pressure zone is created above the float which causes it to partially close off the large orifice during air intake.

Note that vacuum protection is dependent on valve size selection and orifice size relative to the nominal size of the valve. In sizing air valves be cautious of designs with restricted orifice diameters, i.e., orifice diameters that are smaller than the nominal size of the valve, as this could lead to insufficient vacuum protection and pipe collapse if not accommodated for. Vent-O-Mat large orifice diameters and flow path through the valve is equal to the nominal size of the valve e.g. a DN100 (4") valve has a 100mm (4") orifice. This ensures the least possible resistance to the intake of air and consequently the least possible negative pressure within a draining pipeline.

Sizing for Discharge
If a Vent-O-Mat air valve is sized correctly for air intake, discharge should not be a factor in sizing as all air will be discharged through the large orifice or "Anti-Shock" orifice (refer to RBX operation on pages 1 and 2 of this catalogue). If this information is used for the sizing of air valves other than Vent-O-Mat, we recommend that a valve be selected that is capable of discharging air equal to the filling rate, whilst not exceeding a differential of 0.05 bar (0.725 psi) across the large orifice in order to prevent pressure surge and water hammer.

Pressurized Air Discharge
Effective discharge by an air release and vacuum break valve of pressurised air depends on the existence of a "Critical Relationship" between the area of the small orifice and the mass of the control float, i.e., the mass of the float must be greater than the force created by the working pressure acting on the orifice area. If the float is relatively too light or the orifice area relatively too great, the float will be held against the orifice even when not buoyed, and air discharge will not take place.

Surge Alleviation
It is imperative, due to the unpredictable nature of pipeline operation, that every air release and vacuum break valve should as standard, incorporate a surge and water hammer alleviation mechanism. This mechanism should only be activated in the instance of high velocity air discharge or pump trip (where the separated liquid columns rejoin at excessive velocities). The alleviation of surge and/or water hammer must be achieved by deceleration of the approaching liquid prior to valve closure (see operation of RBX on pages 1 and 2 of this catalogue). Relief mechanisms that act subsequent to valve closure cannot react in the low millisecond time span required and are therefore unacceptable.

Kindly contact the manufacturer for free copies of the Vent-O-Mat publications; "Points to Consider when Sizing and Position Air Release and Vacuum Break Valves" and "Air Valve Technology Reviewed", should you require more information on the phenomena of surge and water hammer as a result of air release, as well as the functional limits of all available air valve designs and configurations.

Vent-O-Mat has an interactive sizing programme available on the Internet. The website address is: http://www.ventomat.com. You can, should you experience any problems, or need additional assistance, contact us at our E Mail address: ventomat@dfc.co.za

information subject to change without prior notice
### Conversion Table (l/sec. to m/sec. of Pipeline Velocity)

<table>
<thead>
<tr>
<th>Pipe Dia (mm)</th>
<th>DN20 (1&quot;)</th>
<th>DN25 (1.5&quot;)</th>
<th>DN32 (1.25&quot;)</th>
<th>DN40 (1.5&quot;)</th>
<th>DN50 (2&quot;)</th>
<th>DN65 (2.5&quot;)</th>
<th>DN80 (3&quot;)</th>
<th>DN100 (4&quot;)</th>
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<td>3.804</td>
<td>3.784</td>
<td>3.767</td>
<td>3.738</td>
</tr>
</tbody>
</table>

Pipeline flow in ft/sec.

Pipe Dia in inches

Conversion information subject to change without prior notice

Page: 11  Revision date: Nov '06
VALVE SELECTION FROM GRAPH

All the relevant information has been condensed into one graph to enable valve selection to be simple and easy and at the same time to allow flexibility to the designer to move within certain parameters which eventually allows the most suited and economically viable valve to be selected.

IMPORTANT NOTE: The graph is based on vacuum breaking and limiting vacuum to 0.34 bar (5 psi) below atmospheric. It is not good practice to go below 0.69 bar (10 psi) absolute (0.303 bar (4.4 psi) differential in pipeline at sea level). The graph allows for change in altitude and hence change in atmospheric pressure and is based on the assumption that more than one valve per section is used for vacuum protection and venting.

ACTUAL SELECTION
( GRAVITY OR PUMPED PIPELINES)

Selection is based on the premise that pipelines are generally filled at a slower rate than they are drained, scoured or at which separation occurs (a maximum fill/drain ratio of 1:1).

1. Determine the maximum drainage rate in m/s (ft/s) either for scouring, pipe rupture or column separation for a particular pipeline section. Conversion from l/sec to m/sec can be done fairly quickly; using the conversion table on page 11.

2. Move vertically on the selection graph (top of page 11) from the m/s (ft/s) point and move horizontally from the pipe size finding the intersecting point.

3. This point should fall within the operating band of a particular valve size. Consideration must be given to the fact that the upper portion of the band approaches 0.34 bar (5 psi) and the lower portion - 0.1 bar (1.45 psi) for each valve size, this allows the designer to see at a glance if the valve is too close to its operating limits and to select the next valve size.

EXAMPLE OF VALVE SIZING
(ASSUMING AN INDIVIDUAL SECTION)

A Ø 400mm (16") pipeline draining at 377l/sec (99.6 gal/sec) which equates to 3m/sec (9.85 ft/s), what valve size should be selected?

From the 3m/sec. (9.85 ft/s) point, on the graph on page 11, move vertically until the Ø400 mm (16") pipe size horizontal line is intersected. This places the intersection point in the operating band of a DN80 (3") Vent-O-Mat RBX valve. But, if for example, the drainage rate is 503 l/sec. (132.8 gal/sec) which equates to 4m/sec. (13.1 ft/s), the valve would be operating close to it's limit and it may be prudent to change to a DN100 (4") Vent-O-Mat RBX.

VALVE POSITIONING

1. ON APEX POINTS (relative to hydraulic gradient).
2. 5 METRES (16 FEET) BELOW APEX POINTS FORMED BY INTERSECTION OF PIPELINE AND HYDRAULIC GRADIENT - i.e. where pipeline siphoning over gradient an air release valve positioned on the apex would break the siphon. If positioned on apex is required a modified VENT-O-MAT Series RBX can be supplied.
3. NEGATIVE BREAKS (increase in downward slope or decrease in upward slope).
4. LONG HORIZONTAL SECTIONS - every 600 metres (1/3 of a mile) maximum.
5. LONG ASCENDING SECTIONS - every 600 metres (1/3 of a mile) maximum.
6. LONG DESCENDING SECTIONS - every 600 metres (1/3 of a mile) maximum.
7. PUMP DISCHARGE (not shown in diagram) - just subsequent to non return valve.
8. BLANK ENDS (not shown in diagram) - where a pipeline is terminated by a blind flange or a valve.

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Series RBX

SURGE & WATERHAMMER PROTECTION

Introduction
The Vent-O-Mat Series RBX "Anti-Shock" air release and vacuum break valve, is the product of extensive research into the development of an efficient, but cost effective solution to surge problems (both mass liquid oscillation and elastic transient phenomena) associated with any operating pipeline. Automatic dampening, relevant to the pipeline's needs is provided by either one of three design features. These special features are unique in a pipeline component of such compact and economic design.

Surge Protection - Initial Filling
The RBX incorporates the additional floating "Anti-Shock" Orifice which is aerodynamically engineered to throttle air discharge when water approach velocity would otherwise become too great and induce an unacceptable pressure rise. The air throttling action increases resistance to the flow of the approaching water which consequently decelerates to a velocity which reduces the pressure rise when the valve closes (see operation of valve on pages 1 & 2). Vent-O-Mat series RBX is an essential precaution for pipeline priming.

Surge Protection - Pump Trip Conditions
In instances where a pipeline experiences water column separation due to pump stoppage, high shock pressures can be generated when the separated water column rejoins.

The Vent-O-Mat series RBX takes in air through the unobstructed large orifice when water column separation occurs, but controls the discharge of air through the "Anti-Shock" Orifice as the separated column commences to rejoin. The rejoining impact velocity is thereby considerably reduced to alleviate high surge pressures in the system (see operation of valve on pages 1 & 2).

Other surge control measures may, dependant on pipeline profile, diameter and operating conditions, be needed to provide the primary surge alleviation function with the Vent-O-Mat air-valves forming an integral and valuable addition in a combined strategy for further reducing surge pressures. The benefit of the "Anti-Shock" Orifice can be readily demonstrated by suitable surge modelling software.

Surge Protection - Pipeline Operating
The operation of valves and similar flow control devices can cause high-pressure transients in an operating pipeline.

The unique, single chamber design of the Vent-O-Mat series RBX valve enables a pocket of air to be trapped in the valve chamber. Automatic operation of the small orifice control float regulates the volume of air entrapped.

The volume maintained in the valve will provide a cushioning benefit to the pipeline for short duration transient pressure "spikes". This effect can be modelled by the design engineer using suitable surge software.

Surge Protection - Primary Pipeline Surge Protection Failure
In instances where air vessels or other alleviation measures are utilised as primary surge protection and these devices fail, excessively high surge pressures will be generated. The same is true if pipeline demands are increased with time without the upgrading of initial surge protection equipment.
Protection by Vent-O-Mat Series RBX will provide the benefits already described. The valve in addition, has a pipeline over pressure safety feature which acts as a "rupture-disc". Operation of this feature will be without an explosive effect and without damage to valve. This feature consists of easily replaceable components such as gaskets and seals.

This feature will thus provide surge alleviation in instances where surge pressures are abnormally high. The net alleviation effect can be taken into account by the design engineer using surge modelling software.

**Computer Modelling**
The effectiveness of Vent-O-Mat series RBX has been substantiated by independent third party testing and by thousands of applications globally. Effective computer modelling, based on practical tests, has been ensured in the well-known and respected commercially available SURGE 2000 surge analysis software programme. Accurate results are also obtained by other commercially available surge analysis software programmes such as FLOWMASTER and TRANSAM.

**Holistic Surge & Water Hammer Protection**
Vent-O-Mat forms an integral part of a well planned, holistic surge protection strategy that should, according to application needs and financial constraints, include surge vessels, check valves, control valves and/or any other equipment needed to alleviate unacceptable surge behaviour.

**Technical and Financial Benefits**
The Vent-O-Mat series RBX valve offers definite financial and technical advantages when incorporated as part of a holistic surge protection strategy. This includes:

1. Improved alleviation of surge behaviour including reduction of:
   - Surge pressure magnitudes by slowing surge velocities
   - Duration of oscillation following a pump trip, as the air-valve continuously absorbs and dissipates the energies of the surge.
2. Potential for reduction in size and/or quantity of conventional surge protection devices such as surge vessels etc.
3. Automatic protection during initial filling when most surge protection devices are not operational.
4. Holistic protection as each air valve installed has design features to automatically damp surges.
5. The valve is virtually maintenance free.

**Service**
Vent-O-Mat is committed to finding the most cost effective and efficient solution to pipeline complexities. Services include air valve sizing and positioning and assistance to consulting engineers on defining appropriate surge and water hammer protection strategies. Vent-O-Mat has built a sound relationship with many international consulting firms and has gained global recognition for selling solutions!
Series RBX

SMALL ORIFICE DISCHARGE PERFORMANCE

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

Model No’s:
RBX 1601/ 1631
RBX 2511/ 2521/ 2501/ 2531
RBX 4011/ 4021/ 4001/ 4031

- 1.2 mm (" 0.047") small orifice - DN25 (1") & DN50 (2") Valves
- 1.5 mm (" 0.059") small orifice - DN80 (3") & DN100 (4") Valves
- 2.4 mm (" 0.094") small orifice - DN150 (6") & DN200 (8") Valves

FOR HIGHER Δp OR DISCHARGE RATES CONSULT MANUFACTURER

CONVERSION EQUIVALENTS

\[ Q = \text{Normal Litres per second (Free Air)} \]
\[ @ 1.01325 \text{ bar Abs. and 20 deg. C} \]
\[ Q_1 = \text{Standard Cubic Feet per minute (Free Air)} \]
\[ @ 14.7 \text{ psi Abs. 70 deg. F} \]

\[ 1 \text{ l/sec.} = 2.1189 \text{ scf/min.} \]
\[ 1 \text{ scf/min} = 0.472 \text{ l/sec.} \]

\[ 1 \text{ bar} = 14.5 \text{ psi} \]
\[ 1 \text{ psi} = 0.069 \text{ bar} \]

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Series RBX

Why?

- **"ANTI-SHOCK" - "ANTI-SURGE"** - The RBX is the only air release valve available that is supplied as standard with a mechanism which operates automatically to prevent pipeline damage from the high induced pressure transients associated with high velocity air discharge. Surge resulting from liquid column separation and liquid oscillation is dramatically reduced as an automatic function of this mechanism.

- **PERFORMANCE** - The RBX has been designed and developed to provide the optimum usable and safe performance relative to all functions. Selection data has been substantiated through CSIR and other testing and can therefore, be confidently referenced.

- **QUALITY** - The RBX economically offers the highest quality construction and materials available in an air release and vacuum break valve. Stringent manufacturing and test procedures are maintained to ensure the best possible service and reliability is given by every valve produced.

- **SERVICEABILITY** - The RBX design facilitates extreme ease of service and maintenance. Components are in corrosion free materials to allow problem free disassembly and reassembly even after many years of operation. All maintenance spares are replaceable without special tools or skills.

- **VACUUM BREAK** - The RBX series large orifice diameters equal the nominal size of the valve, i.e., a DN200 (8") valve has a DN200 (8") orifice. This ensures the least possible resistance to the intake of air and consequently the least possible negative pressure within a draining pipeline.

- **COMPACTNESS** - Although extremely robust the RBX valve's lightweight and compact construction offers handling transport and installation advantages.

- **BACK UP** - Vent-O-Mat provides highly committed customer orientated sales, service, spares and technical back up - TRY US!!!
VENT-O-MAT®

Series RBX

PURCHASE SPECIFICATION

VENT-O-MAT MODEL NO.
Page 7 - Series RBX - DN25 (1") or DN50 (2") with BSP (ISO R7) or NPT, Screwed Male Connection.
Page 8 - Series RBX - DN80 (3") or DN100 (4") Flanged Connection.
Page 9 - Series RBX - DN150 (6") or DN200 (8") Flanged Connection.

CONSTRUCTION & DESIGN
The air release & vacuum break valve shall be of the compact single chamber design with solid cylindrical H.D.P.E. control Floats housed in a tubular Stainless Steel Body with epoxy powder coated Mild Steel or Stainless Steel ends secured by means of Stainless Steel Tie Rods.
The valve shall have an integral ‘Anti-Shock’ Orifice mechanism which shall operate automatically to limit transient pressure rise or shock induced by closure to 1.5 x valve rated working pressure.
The intake orifice area shall be equal to the nominal size of the valve i.e., a 150mm (6") valve shall have a 150mm (6") intake orifice.
Large orifice sealing shall be effected by the flat face of the control float seating against a EPDM rubber 'O' ring housed in a dovetail groove circumferentially surrounding the orifice.
Discharge of pressurized air shall be controlled by the seating & unseating of a Small Orifice Nozzle on a EPDM rubber seal affixed into the control float. The Nozzle shall have a flat seating land surrounding the orifice so that the damage to the rubber seal is prevented.
The valve construction shall be proportioned with regard to material strength characteristics, so that deformation, leaking or damage of any kind does not occur by submission to one and half times the designed working pressure.
The valve design shall incorporate an over pressure safety feature that will fail without an explosive effect, such as is normally the case when highly compressed air is released suddenly. The feature shall consist of easily replaceable components such as Gaskets, Seals or the like.
Connection to the valve inlet shall be facilitated by a screwed BSP (ISO R7) or NPT male end (DN25 (1") & DN50 (2") only) or a flanged end conforming to PN10, 16, 25 or 40 ratings of BS4504 or SABS 1123 Standards and ANSI B16.5 Class 150 or Class 300 Standards.
Flanged ends for DN80 and DN100 shall be supplied with the requisite number of Stainless Steel screwed studs inserted for alignment to the specified standard. Nuts, washers, or jointing gaskets shall be excluded.

Optional: Provision of a ¼" BSP/ NPT Test/ Bleed Cock.

OPERATION
1. Prior to the ingress of liquid into the valve chamber, as when the pipeline is being filled, valves shall vent through the large orifice when water approach velocities are relative to a transient pressure rise, on valve closure, of < 1.5 x valve rated pressure.
At higher water approach velocities, which have a potential to induce transient pressure rises > 1.5 x valve rated pressure on valve closure, the valve shall automatically discharge air through the Anti Shock Orifice and reduce water approach velocity, so that on closure a maximum transient pressure rise of < 1.5 x valve rated pressure is realised.
2. Valves shall not exhibit leaks or weeping of liquid past the large orifice seal at operating pressures of 0.5 bar (7.25 psi) to one and a half times the rated working pressure.
3. Valves shall respond to the presence of air by discharging it through the small orifice at pressures within a specified design range, i.e. 0.5 bar (7.25 psi) to 16 bar (232 psi), 25 bar (363 psi) or 40 bar (580 psi), and shall remain leak tight in the absence of air.
4. Valves shall react immediately to pipeline drainage or water column separation by the full opening of the large orifice so as to allow unobstructed air intake at the lowest possible negative internal pipeline pressure.
**Series RBX**

**ORDERING GUIDE**

**VALVE SIZE:**
- DN25 (1") - 0.25
- DN50 (2") - 0.5
- DN80 (3") - 0.8
- DN100 (4") - 1.0
- DN150 (6") - 1.5
- DN200 (8") - 2.0

**ANTI SHOCK ORIFICE:**
- PN16 (232 psi) - \[16\]
- PN25 (363 psi) - \[25\]
- PN40 (580 psi) - \[40\]

**Valve Pressure Rating:**
- PN16 (232 psi)
- PN25 (363 psi)
- PN40 (580 psi)

**Valve Pressure Rating:**
- PN16 (232 psi) - \[16\]
- PN25 (363 psi) - \[25\]
- PN40 (580 psi) - \[40\]

**Valve End Connection:**
- SCREWED - BSP - 1
- SCREWED - NPT - 2
- FLANGED - BS 4504 OR SABS 1123 - 0
- FLANGED - ANSI B16.5 - 3

**Valve Type:**
- DOUBLE ACTING - 1

**Note:**
1. DN250 (10") and DN300 (12") valves are available on request.
2. Valves for pressure ratings of PN64 (928 psi) and PN100 (1450 psi) are available on request.
3. Valves are available with AISI 304 or AISI 316 Stainless Steel Flanged ends, please specify when ordering.

**TEST SPECIFICATION**

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

(A) 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.

(B) A low head leak test whereby the valve is filled with water and pressurized to a maximum of 0.5 bar (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.

(C) 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 2 - 3 bar (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.
PRE NOTES:

It is good engineering practice, for vertical turbine pumps and deepwell, submersible pump applications, to install air valves prior to the pump discharge check valve. The purpose of these valves is to prevent air entry into the pipeline and to break vacuum in the vertical riser upon pump shutoff.

Operation of conventional air valves in this application is such that the air in the vertical riser is released very rapidly upon pump startup, resulting in very high pressure transients when the water column slams the air valve shut and/or slams into the closed discharge check valve.

The Vent-O-Mat Series RBXb valve has specifically been developed for use on deep well submersible pump and vertical turbine pump applications where they are installed prior to the pump discharge check valve to fulfill the following functions:

- Provide effective and controlled release of air in the vertical riser upon pump startup.
- Dampen surge pressures upon pump startup.
- Provide vacuum protection when the pump stops and the vertical column drains.

VACUUM RELIEF (AIR INTAKE)

Upon pump stop, the pump discharge check valve closes. Liquid drains from the air valve and the pump's vertical column. The negative differential created by the draining liquid causes atmospheric air to push the "Anti-Shock" Float (6) down, opening the Large Orifice (3) and rapidly displaces the draining liquid to prevent potentially damaging internal negative pressure*.

*Note: A differential pressure of less than 0.05 bar (0.725 psi) across the Large Orifice (3) is required to open the valve fully under vacuum conditions.
VENTING (PUMP START UP)

Air is forced through the "Anti-Shock" Orifice (8) resulting in the deceleration of the approaching water column due to the resistance of rising air pressure in the valve. This dampens transients when the air valve closes and the water column opens the pump, discharge check valve.

PRESSURIZED AIR RELEASE (PUMP OPERATING)

Liquid enters the valve Barrel Chamber (2) and the Floats (4), (5) are buoyed so that the "Anti-Shock" Orifice (8) is closed by the Floats (4), (5) the valve will then become internally pressurized.

Disentrained air rises through the liquid and accumulates in the valve chamber when the volume of air is sufficient to displace the liquid, Float (4) will no longer be buoyant and will gravitate downwards thereby opening the Small Orifice (7) and allowing accumulated air to be discharged into atmosphere, as the air is discharged the liquid rises the Float (4) and reseals the Small Orifice (7) and prevents escape of liquid.
RECOMMENDED INSTALLATION ARRANGEMENTS

VERTICAL TURBINE PUMP APPLICATION

For Recommended Accumulator Dimensions
See Page 3

SUBMERSIBLE/DEEP WELL APPLICATION

For Recommended Accumulator Dimensions
See Page 3
Series RBXb

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

Type:
Series RBXb - Double Orifice (Small & Large Orifice) with Bias Mechanism.

Nominal Sizes:
DN25 (1")
DN50 (2")

End Connection:
Screwed BSP (ISO R7)/ NPT Male

Model No's:
RBXb 2511 & 2521
RBXb 4011 & 4021

Pressure Ratings:
PN25 (363 psi)
PN40 (580 psi)

Valves are available in AISI 316L on request.

information subject to change without prior notice
Series RBXb

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

Type: Series RBXb - Double Orifice (Small & Large Orifice) with Bias Mechanism.

Nominal Sizes:
- DN80 (3")
- DN100 (4")

End Connection: Flange with screwed studs.

Pressure Ratings:
- PN16 (232 psi)
- PN25 (363 psi)
- PN40 (580 psi)

Model No's:
- RBXb 1601 & 1631
- RBXb 2501 & 2531
- RBXb 4001 & 4031

Locking Nuts
- Stainless Steel AISI 304

Bias Spring
- Stainless Steel AISI 304

Top Flange
- Mild Steel BS 4360 Grade 43A
- Fusion Bonded Epoxy Powder Coated alternatively Stainless Steel AISI 304

Top Float
- High Density Polyethylene

Nozzle Seal Retaining Plate
- Stainless Steel AISI 304

Nozzle Seat
- EPDM Rubber

Tie Rods
- Stainless Steel AISI 304

Baffle Plate
- Stainless Steel AISI 304

Optional Test Cock Connection
- ¼" BSP/ NPT Female

Lower Flange
- Mild Steel BS 4360 Grade 43A
- Fusion Bonded Epoxy Powder Coated alternatively Stainless Steel AISI 304

Locating Lugs
- Stainless Steel AISI 304

Top Cover
- ABS Polylac PA737

Assembly Screws
- Cheesehead Stainless Steel AISI 304

Barrel Seal
- Klingerseal C4430 Gasket

Barrel
- Stainless Steel 304L

O - Ring Seal
- EPDM Rubber

Anti Shock Orifice
- High Density Polyethylene

O - Ring Seat
- EPDM Rubber

Connecting Screws
- Cheesehead Stainless Steel 304

Lower Float
- High Density Polyethylene

Baffle Plate Spacers
- ABS Polylac PA737

Support Screw
- Cheesehead Stainless Steel AISI 304

Studs
- Stainless Steel AISI 304L

Valves are available in AISI 316L on request.

Information subject to change without prior notice
Series RBXb

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

Type:
Series RBXb - Double Orifice (Small & Large Orifice) with Bias Mechanism.

End Connection:
Flange.

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

Model No's:
RBXb 1601 & 1631
RBXb 2501 & 2531
RBXb 4001 & 4031

Pressure Ratings:
PN16 (232 psi)
PN25 (363 psi)
PN40 (580 psi)

Valves are available in AISI 316L on request.

information subject to change without prior notice

page: 24
revision date: Nov '06
Series RBXb
GENERAL SPECIFICATIONS
SCREWED - DN25(1") & DN50(2")

Type:
Double Orifice (Small & Large Orifice) with Bias mechanism for large volume air intake and controlled air discharge.

End Connection:
Screwed BSP/ NPT male

Nominal Sizes:
DN25 (1") & DN50 (2")

Model No's:                  Pressure Ratings bar (psi):
RBXb  2511 & 2521              PN 25 (363 psi)
RBXb  4011 & 4021              PN 40 (580 psi)

Operating Pressure Range - bar (psi):
Min.          Max.
PN25 (363 psi)            0.5 (7.25)        25 (363)
PN40 (580 psi)            0.5 (7.25)        40 (580)

Operating Temperature Range:
4°C (40°F) to 80°C (176°F)

Acceptable Media:
Potable or strained raw water.

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

Materials of Construction: - see page 22

Installation: - see page 21

Standard Factory Tests:
i) Hydrostatic - 1.5 x max. rated working pressure
ii) Low head leak - 0.5 bar (7.25 psi)
iii) Small orifice function at max. rated working pressure (minimum 1 valve in 10).

OVERALL DIMENSIONS & WEIGHTS

<table>
<thead>
<tr>
<th>DN</th>
<th>MODEL No.</th>
<th>PRESSURE RATING</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>025RBXb 2511 &amp; 2521</td>
<td>PN25 (363 psi)</td>
<td>120</td>
<td>335</td>
<td>15 1/2</td>
<td>1 1/2</td>
<td>5</td>
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<tr>
<td>25</td>
<td>025RBXb 4011 &amp; 4021</td>
<td>PN40 (580 psi)</td>
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<td>387</td>
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<td>1 1/4</td>
<td>5.5</td>
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<tr>
<td>50</td>
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<td>PN25 (363 psi)</td>
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<td>395</td>
<td>16 1/2</td>
<td>2</td>
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<tr>
<td>50</td>
<td>050RBXb 4011 &amp; 4021</td>
<td>PN40 (580 psi)</td>
<td>165</td>
<td>410</td>
<td>16 1/2</td>
<td>2</td>
<td>10</td>
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OPTIONAL 1/4" BSP/NPT BLEED PORT FOR TEST COCK

information subject to change without prior notice

page: 25  revision date: Nov ‘06
Series RBXb
GENERAL SPECIFICATIONS
FLANGED - DN80(3") & DN100(4")

Type:
Double Orifice (Small & Large Orifice) with Bias mechanism for large volume air intake and controlled air discharge.

End Connection:
Flange with Screwed Studs for Alignment to:
BS 4504 PN10, PN16, PN25 & PN40
SABS 1123 - Tables 1000/3, 1600/3, 2500/3 & 4000/3
ANSI B16.5 Class 150 & Class 300

Nominal Sizes:
DN80 (3") & DN100 (4")

Model No's:  Pressure Ratings bar (psi):
RBXb 1601 & 1631  PN 16 (232 psi)
RBXb 2501 & 2531  PN 25 (363 psi)
RBXb 4001 & 4031  PN 40 (580 psi)

Operating Pressure Range - bar (psi):

<table>
<thead>
<tr>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PN16 (232 psi)</td>
<td>0.5 (7.25)</td>
</tr>
<tr>
<td>PN25 (363 psi)</td>
<td>0.5 (7.25)</td>
</tr>
<tr>
<td>PN40 (580 psi)</td>
<td>0.5 (7.25)</td>
</tr>
</tbody>
</table>

Operating Temperature Range:
4°C (40°F) to 80°C (176°F)

Acceptable Media:
Potable or strained raw water.

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

Materials of Construction:  - see page 23

Installation:  - see page 21

Standard Factory Tests:
i) Hydrostatic - 1.5 x max. rated working pressure
ii) Low head leak - 0.5 bar (7.25 psi)
iii) Small orifice function at max. rated working pressure (minimum 1 valve in 10).

OVERALL DIMENSIONS & WEIGHTS

<table>
<thead>
<tr>
<th>DN</th>
<th>MODEL No.</th>
<th>PRESSURE RATING</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>3</td>
<td>080 RBXb 1601 &amp; 1631</td>
<td>PN16 (232 psi)</td>
<td>235</td>
<td>91/4</td>
<td>460</td>
<td>181/4</td>
</tr>
<tr>
<td>80</td>
<td>3</td>
<td>080 RBXb 2501 &amp; 2531</td>
<td>PN25 (363 psi)</td>
<td>235</td>
<td>91/4</td>
<td>460</td>
<td>181/4</td>
</tr>
<tr>
<td>80</td>
<td>3</td>
<td>080 RBXb 4001 &amp; 4031</td>
<td>PN40 (580 psi)</td>
<td>235</td>
<td>91/4</td>
<td>475</td>
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<td>4</td>
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<td>PN16 (232 psi)</td>
<td>235</td>
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<td>100</td>
<td>4</td>
<td>100 RBXb 2501 &amp; 2531</td>
<td>PN25 (363 psi)</td>
<td>235</td>
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<td>100</td>
<td>4</td>
<td>100 RBXb 4001 &amp; 4031</td>
<td>PN40 (580 psi)</td>
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<td>91/4</td>
<td>513</td>
<td>201/2</td>
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OPTIONAL ¼" BSPP NPT BLEED PORT FOR TEST COCK

page: 26
revision date: Nov ‘06
Series RBXb
GENERAL SPECIFICATIONS
FLANGED - DN150(6") & DN200(8")

Type:
Double Orifice (Small & Large Orifice) with Bias mechanism for large volume air intake and controlled air discharge.

End Connection:
Flange for Alignment to:
BS 4504 PN10, PN16, PN25 & PN40
SABS 1123 - Tables 1000/3, 1600/3, 2500/3 & 4000/3
ANSI B16.5 Class 150 & Class 300

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

Model No's:
- RBXb 1601 & 1631  PN 16 (232 psi)
- RBXb 2501 & 2531  PN 25 (363 psi)
- RBXb 4001 & 4031  PN 40 (580 psi)

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

Operating Pressure Range - bar (psi):
- PN16 (232 psi)  Min. 0.5  (7.25)  Max. 16 (232)
- PN25 (363 psi)  Min. 0.5  (7.25)  Max. 25 (363)
- PN40 (580 psi)  Min. 0.5  (7.25)  Max. 40 (580)

Operating Temperature Range:
4°C (40°F) to 80°C (176°F)

Acceptable Media:
Potable or strained raw water.

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

Materials of Construction:
- see page 24

Installation:
- see page 21

Standard Factory Tests:
- i) Hydrostatic - 1.5 x max. rated working pressure
- ii) Low head leak - 0.5 bar (7.25 psi)
- iii) Small orifice function at max. rated working pressure (minimum 1 valve in 10).

OVERALL DIMENSIONS & WEIGHTS

<table>
<thead>
<tr>
<th>DN</th>
<th>MODEL No.</th>
<th>PRESSURE RATING</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>F (mm)</th>
<th>WEIGHT (kg)</th>
</tr>
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<tbody>
<tr>
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<td>6 150 RBXb 1601 &amp; 1631</td>
<td>PN16 (232 psi)</td>
<td>355</td>
<td>133/8</td>
<td>330</td>
<td>24/8</td>
<td>135</td>
<td>135/8</td>
<td>285</td>
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<tr>
<td>150</td>
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<td>PN25 (363 psi)</td>
<td>355</td>
<td>133/8</td>
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<td>135</td>
<td>135/8</td>
<td>300</td>
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<td>150</td>
<td>6 150 RBXb 4001 &amp; 4031</td>
<td>PN40 (580 psi)</td>
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<td>330</td>
<td>24/8</td>
<td>135</td>
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<td>670</td>
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<td>PN25 (363 psi)</td>
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<td>15 1/4</td>
<td>670</td>
<td>26 1/4</td>
<td>151</td>
<td>16 1/2</td>
<td>360</td>
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<tr>
<td>200</td>
<td>8 200 RBXb 4001 &amp; 4031</td>
<td>PN40 (580 psi)</td>
<td>405</td>
<td>15 1/4</td>
<td>670</td>
<td>26 1/4</td>
<td>151</td>
<td>16 1/2</td>
<td>370</td>
</tr>
</tbody>
</table>

information subject to change without prior notice
Series RBXb

PURCHASE SPECIFICATION

VENT-O-MAT MODEL NO.
Page 25 - Series RBXb - DN25 (1") or DN50 (2") with BSP (ISO R7) or NPT, Screwed Male Connection.
Page 26 - Series RBXb - DN80 (3") or DN100 (4") Flanged Connection.
Page 27 - Series RBXb - DN150 (6") or DN200 (8") Flanged Connection.

CONSTRUCTION & DESIGN

The air release & vacuum break valve shall be of the compact single chamber design with solid cylindrical
H.D.P.E. control floats housed in a tubular Stainless Steel body with epoxy powder coated Mild Steel or Stainless
Steel ends secured by means of Stainless Steel Tie Rods.

The valve shall have an integral 'Anti-Shock' Orifice mechanism which shall operate automatically to limit
transient pressure rise or shock induced by closure to 1.5 x valve rated working pressure.

The intake orifice area shall be equal to the nominal size of the valve i.e., a 150mm (6") valve shall have a 150mm
(6") intake orifice.

Large orifice sealing shall be effected by the flat face of the control float seating against a EPDM rubber ‘O’ ring
housed in a dovetail groove circumferentially surrounding the orifice.

Discharge of pressurized air shall be controlled by the seating & unseating of a Small Orifice Nozzle on an EPDM
rubber seal affixed into the control float. The Nozzle shall have a flat seating land surrounding the orifice so that
the damage to the rubber seal is prevented.

The valve construction shall be proportioned with regard to material strength characteristics, so that
deformation, leaking or damage of any kind does not occur by submission to one and a half times the designed
working pressure.

The valve design shall incorporate an over pressure safety feature that will fail without an explosive effect, such
as is normally the case when highly compressed air is released suddenly. The feature shall consist of easily
replaceable components such as gaskets, seals or the like.

Connection to the valve inlet shall be facilitated by a screwed BSP (ISO R7) or NPT male end (DN25 (1") & DN50
(2") only) or a flanged end conforming to PN10, 16, 25 or 40 ratings of BS4504 or SABS 1123 Standards or, ANSI
B16.5 Class 150 & Class 300 Standards.

Flanged ends for DN80 and DN100 shall be supplied with the requisite number of Stainless Steel screwed studs
inserted for alignment to the specified standard. Nuts, washers, or jointing gaskets shall be excluded.

Optional: Provision of a ¼” BSP/ NPT Test/ Bleed Cock.

OPERATION

1. Prior to the ingress of liquid into the valve chamber, as when the pipeline is being filled, valves shall vent
through the "Anti-Shock" Orifice and reduce water approach velocity, so that on closure a maximum transient
pressure rise of < 1.5 x valve rated pressure is realised.

2. Valves shall not exhibit leaks or weeping of liquid past the large orifice seal at operating pressures of 0.5 bar
(7.25 psi) to one and half times the rated working pressure.

3. Valves shall respond to the presence of air by discharging it through the small orifice at any pressures within
a specified design range, i.e. 0.5 bar (7.25 psi) to 16 bar (232 psi), 25 bar (363 psi) or 40 bar (580 psi), and
shall remain leak tight in the absence of air.

4. Valves shall react immediately to pipeline drainage or water column separation by the full opening of the
large orifice so as to allow unobstructed air intake at the lowest possible negative internal pipeline pressure.
PRE NOTES:

There are instances where the hydraulic gradeline falls below a peak point during normal operation and where air inflow would adversely affect the normal operation and surge characteristic of the pipeline. Air intake may also be undesirable under pump trip conditions for pipelines running through a marsh (surge protection in these instances would be in the form of surge vessels and/or the pipeline will be designed for full vacuum).

Vent-O-Mat offers the Series RBXv valve which has specifically been developed to ensure effective air release under all pipeline conditions but will not allow air entry under any operating condition.

VENTING OF A FILLING PIPELINE (SUB CRITICAL WATER APPROACH VELOCITY)

Air enters Orifice (1), travels through the annular space between the cylindrical floats (4), (5), (6) and discharges through the Large Orifice (3) into atmosphere.*

*Note: A relatively low flow discharge rate is required to lift float and ensure air release. Float will seat on the Middle Flange (9) under vacuum conditions, effectively preventing air Entry.
VENTING OF A FILLING PIPELINE (EXCESSIVE WATER APPROACH VELOCITY)

In reaction to increased air flow, Float (6) closes Large Orifice and air is forced through the "Anti-Shock" Orifice resulting in deceleration of the approaching water due to the resistance of rising air pressure in the valve.

PRESSURIZED AIR RELEASE FROM A FULL PIPELINE

Subsequent to the filling of a pipeline, liquid enters the valve Barrel Chamber (2) and the Floats (4), (5) and (6) are buoyed so that the "Anti-Shock" Orifice (8) is closed by the Float (5) and the valve will then become pressurized. A minimal working pressure of <0.5 bar (7.3 psi) acting on a relatively large area of the Orifice (1) will lock Floats (5) and (6) into the closed position across the Large Orifice (3).

Disentrained air rises through the liquid and accumulates in the valve chamber, when the volume of air is sufficient to displace the liquid, Float (4) will no longer be buoyant and will gravitate downwards thereby opening the Small Orifice (7) and allowing accumulated air to be discharged into atmosphere, as air is discharged the liquid raises Float (4) and reseals the Small Orifice (7) and prevents escape of liquid.
Series RBXv

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

Type: Series RBXv - Triple Orifice with Bias Mechanism
End Connection: Screwed BSP (ISO R7)/ NPT Male

Nominal Sizes:
DN25 (1")
DN50 (2")

Model No's:
RBXv 2511 & 2521
RBXv 4011 & 4021

Pressure Ratings:
PN25 (363 psi)
PN40 (580 psi)

Valves are available in AISI 316L on request.

Information subject to change without prior notice

Page: 31
Revision Date: Nov ‘06
**Series RBXv**

**COMPONENT DESCRIPTION & MATERIAL SPECIFICATION**

**FLANGED - DN80(3") & DN100(4")**

**Type:**
Series RBXv - Triple Orifice with *Bias* Mechanism

**Nominal Sizes:**
- DN80 (3")
- DN100 (4")

**End Connection:**
Flange

**Model No's:**
- RBXv 1601 & 1631
- RBXv 2501 & 2531
- RBXv 4001 & 4031

**Pressure Ratings:**
- PN16 (232 psi)
- PN25 (363 psi)
- PN40 (580 psi)

---

**Top Cover**
ABS Polyac PA737

**Top Flange**
Mild Steel BS 4360 Grade 43A
Fusion Bonded Epoxy Powder Coated
alternatively Stainless Steel AISI 304

**Nuts**
Stainless Steel AISI 304

**Washer**
Stainless Steel AISI 304

**Baffle Plate**
Stainless Steel AISI 304

**Top Float**
High Density Polyethylene

**Nozzle**
Stainless Steel AISI 304

**Nozzle Seat**
EPDM Rubber

**Nozzle Seat Retainer Plate**
Stainless Steel AISI 304

**Tie Rods**
Stainless Steel AISI 304

**Baffle Plate**
Stainless Steel AISI 304

**Optional Test Cock Connection**
¼" BSP/ NPT Female

---

**Middle Flange**
Mild Steel BS 4360 Grade 43A
Fusion Bonded Epoxy Powder Coated
alternatively Stainless Steel AISI 304

**Barrel**
Stainless Steel AISI 304L

**Float**
High Density Polyethylene

**O - Ring Seal**
EPDM Rubber

**Anti Shock Orifice**
High Density Polyethylene

**0 - Ring Seat**
EPDM Rubber

**Barrel Seal**
Klingersil C4430
Gasket

**Baffle Plate Spacer**
ABS Polyac PA737

**Baffle Plate**
Stainless Steel AISI 304

**Lower Float**
High Density Polyethylene

**Lower Flange**
Mild Steel BS 4360 Grade 43A
Fusion Bonded Epoxy Powder Coated
alternatively Stainless Steel AISI 304

**Support Screw**
Cheesehead
Stainless Steel AISI 304

**Studs**
Stainless Steel AISI 304L

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Valves are available in AISI 316L on request.

Information subject to change without prior notice.

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*page: 32  
revision date: Nov ‘06*
Series RBXv

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

Type: Series RBXv - Triple Orifice with Bias Mechanism
End Connection: Flange

Nominal Sizes:
DN150 (3")
DN200 (4")

Model No's:
RBXv 1601 & 1631
RBXv 2501 & 2531
RBXv 4001 & 4031

Pressure Ratings:
PN16 (232 psi)
PN25 (363 psi)
PN40 (580 psi)

Top Flange
Mild Steel BS 4360 Grade 43A
Fusion Bonded Epoxy Powder Coated alternatively Stainless Steel AISI 304

Top Float
High Density Polyethylene

Nozzle
Stainless Steel AISI 304

Nozzle Seat
EPDM Rubber

Nozzle Seat Retainer Plate
Stainless Steel AISI 304

Tie Rods
Stainless Steel AISI 304

Baffle Plate
Mild Steel BS 4360 Grade 43A
Fusion Bonded Epoxy Powder Coated

Optional Test Cock Connection
¼" BSP/ NPT Female

Lower Flange Assembly
Mild Steel BS 4360 Grade 43A
Fusion Bonded Epoxy Powder Coated alternatively Stainless Steel AISI 304

Float Guides
Stainless Steel AISI 304

Barrel
Stainless Steel AISI 304L

Float
High Density Polyethylene

Middle Flange
Mild Steel BS 4360 Grade 43A
Fusion Bonded Epoxy Powder Coated alternatively Stainless Steel AISI 304

Barrel Seal
Klingersil C4430
Gasket

0 - Ring Seal
EPDM Rubber

Anti Shock Orifice
High Density Polyethylene

0 - Ring Seat
EPDM Rubber

Barrel
Stainless Steel AISI 304L

Lower Float
High Density Polyethylene

Float Guide
Stainless Steel AISI 304

Baffle Plate Spacer
ABS Polylac PA737

Support Screw
Cheesehead Stainless Steel AISI 304

Valves are available in AISI 316L on request.

information subject to change without prior notice
Series RBXv
GENERAL SPECIFICATIONS
SCREWED - DN25(1") & DN50(2")

Type:
Triple Orifice Air Vent Valve with Bias mechanism for air discharge but not air re-entry.

End Connection:
Screwed BSP/ NPT male

Nominal Sizes:
DN25 (1") & DN50 (2")

Model No's:                  Pressure Ratings - bar (psi):
RBXv 2511 & 2521                   PN 25 (363 psi)
RBXv 4011 & 4021                   PN 40 (580 psi)

Operating Pressure Range - bar (psi):

\[
\begin{array}{ccc}
\text{Min.} & \text{Max.} \\
PN25 (363 psi) & 0.5 (7.25) & 25 (363) \\
PN40 (580 psi) & 0.5 (7.25) & 40 (580)
\end{array}
\]

Operating Temperature Range:
4°C (40°F) to 80°C (179°F)

Acceptable Media:
Potable or strained raw water.

Function:
i) High volume air discharge - pipeline filling
ii) Pressurized air discharge - pipeline filled.
iii) Surge dampening - high velocity air discharge.

Materials of Construction: - see page 31

Installation: see page 3

Standard Factory Tests:
i) Hydrostatic - 1.5 x max. rated working pressure
ii) Low head leak - 0.5 bar (7.25 psi)
iii) Small orifice function at max. rated working pressure (minimum 1 valve in 10).

OVERALL DIMENSIONS & WEIGHTS

<table>
<thead>
<tr>
<th>DN mm in.</th>
<th>MODEL No.</th>
<th>PRESSURE RATING</th>
<th>A mm in.</th>
<th>B mm in.</th>
<th>C mm in.</th>
<th>D</th>
<th>WEIGHT kg. lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 1&quot;</td>
<td>025RBXv 2511 &amp; 2521</td>
<td>PN25 (363 psi)</td>
<td>120 4(\frac{1}{4})</td>
<td>328 12(\frac{1}{10})</td>
<td>1&quot;BSP/ NPT</td>
<td>6.5</td>
<td>14.3</td>
</tr>
<tr>
<td>25 1&quot;</td>
<td>025RBXv 4011 &amp; 4021</td>
<td>PN40 (580 psi)</td>
<td>120 4(\frac{1}{4})</td>
<td>380 14(\frac{1}{16})</td>
<td>1&quot;BSP/ NPT</td>
<td>7.0</td>
<td>15.4</td>
</tr>
<tr>
<td>50 2&quot;</td>
<td>050RBXv 2511 &amp; 2521</td>
<td>PN25 (363 psi)</td>
<td>165 6(\frac{1}{2})</td>
<td>432 17</td>
<td>2&quot;BSP/ NPT</td>
<td>13.0</td>
<td>28.6</td>
</tr>
<tr>
<td>50 2&quot;</td>
<td>050RBXv 4011 &amp; 4021</td>
<td>PN40 (580 psi)</td>
<td>165 6(\frac{1}{2})</td>
<td>447 17(\frac{1}{10})</td>
<td>2&quot;BSP/ NPT</td>
<td>13.5</td>
<td>29.8</td>
</tr>
</tbody>
</table>

OPTIONAL

1/4" BSP/NPT BLEED PORT
FOR TEST COCK

Omission Policy

information subject to change without prior notice

page: 34
revision date: Nov '06
Series RBXv

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

Type:
Triple Orifice Air Vent Valve with Bias mechanism for air discharge but not air re-entry.

End Connection:
Flange with Screwed Studs for Alignment to;
BS4504 PN10, PN16, PN25 & PN40
SABS 1123 - Tables 1000/3, 1600/3, 2500/3 & 4000/3
ANSI B16.5 Class 150 & Class 300

Nominal Sizes:
DN80(3") & DN100(4")

Model No's:  
- RBXv 1601 & 1631  - PN 16 (232 psi)
- RBXv 2501 & 2531  - PN 25 (363 psi)
- RBXv 4001 & 4031  - PN 40 (580 psi)

Pressure Ratings - bar (psi):
<table>
<thead>
<tr>
<th>Type</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PN 16 (232 psi)</td>
<td>0.5 (7.25)</td>
<td>16 (232)</td>
</tr>
<tr>
<td>PN 25 (363 psi)</td>
<td>0.5 (7.25)</td>
<td>25 (363)</td>
</tr>
<tr>
<td>PN 40 (580 psi)</td>
<td>0.5 (7.25)</td>
<td>40 (580)</td>
</tr>
</tbody>
</table>

Operating Temperature Range:
4°C (40°F) to 80°C (179°F)

Acceptable Media:
Potable or strained raw water.

Function:
- High volume air discharge - pipeline filling.
- Pressurized air discharge - pipeline filled.
- Surge dampening - high velocity air discharge.

Materials of Construction: - see page 32

Installation: - see page 3

Standard Factory Tests:
- Hydrostatic - 1.5 x max. rated working pressure
- Low head leak - 0.5 bar (7.25 psi)
- Small orifice function at max. rated working pressure (minimum 1 valve in 10).

OVERALL DIMENSIONS & WEIGHTS

<table>
<thead>
<tr>
<th>DN (mm)</th>
<th>MODEL No.</th>
<th>PRESSURE RATING</th>
<th>A (mm)</th>
<th>B (in)</th>
<th>C (mm)</th>
<th>D (in)</th>
<th>WEIGHT (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>080 RBXv 1601 &amp; 1631</td>
<td>PN16 (232 psi)</td>
<td>235</td>
<td>9 1/4</td>
<td>484</td>
<td>19</td>
<td>50</td>
</tr>
<tr>
<td>80</td>
<td>080 RBXv 2501 &amp; 2531</td>
<td>PN25 (363 psi)</td>
<td>235</td>
<td>9 1/4</td>
<td>484</td>
<td>19</td>
<td>50</td>
</tr>
<tr>
<td>80</td>
<td>080 RBXv 4001 &amp; 4031</td>
<td>PN40 (580 psi)</td>
<td>235</td>
<td>9 1/4</td>
<td>499</td>
<td>19 11/16</td>
<td>50</td>
</tr>
<tr>
<td>100</td>
<td>100 RBXv 1601 &amp; 1631</td>
<td>PN16 (232 psi)</td>
<td>235</td>
<td>9 1/4</td>
<td>504</td>
<td>18 7/8</td>
<td>60</td>
</tr>
<tr>
<td>100</td>
<td>100 RBXv 2501 &amp; 2531</td>
<td>PN25 (363 psi)</td>
<td>235</td>
<td>9 1/4</td>
<td>504</td>
<td>18 7/8</td>
<td>60</td>
</tr>
<tr>
<td>100</td>
<td>100 RBXv 4001 &amp; 4031</td>
<td>PN40 (580 psi)</td>
<td>235</td>
<td>9 1/4</td>
<td>537</td>
<td>21 1/6</td>
<td>60</td>
</tr>
</tbody>
</table>

OPTIONAL 1/2" BSP/NPT BLEED PORT FOR TEST COCK

Revision date: Nov '06

Page: 35

Information subject to change without prior notice
Series RBXv

GENERAL SPECIFICATIONS

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

Type:
Triple Orifice Air Vent Valve with Bias mechanism for air discharge but not air re-entry.

End Connection:
Flange for Alignment to:
BS4504 PN10, PN16, PN25 & PN40
SABS 1123 - Tables 1000/3, 1600/3, 2500/3 & 4000/3
ANSI B16.5 Class 150 & Class 300

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

Model No's:
RBXv 1601 & 1631
RBXv 2501 & 2531
RBXv 4001 & 4031

Pressure Ratings - bar (psi):

<table>
<thead>
<tr>
<th>Pressure Rating</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PN16 (232 psi)</td>
<td>0.5</td>
<td>16 (232)</td>
</tr>
<tr>
<td>PN25 (363 psi)</td>
<td>0.5</td>
<td>25 (363)</td>
</tr>
<tr>
<td>PN40 (580 psi)</td>
<td>0.5</td>
<td>40 (580)</td>
</tr>
</tbody>
</table>

Operating Pressure Range - bar (psi):

<table>
<thead>
<tr>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>16 (232)</td>
</tr>
<tr>
<td>0.5</td>
<td>25 (363)</td>
</tr>
<tr>
<td>0.5</td>
<td>40 (580)</td>
</tr>
</tbody>
</table>

Operating Temperature Range:
4°C (40°F) to 80°C (179°F)

Acceptable Media:
Potable or strained raw water.

Function:
i) High volume air discharge - pipeline filling.
ii) Pressurized air discharge - pipeline filled.
iii) Surge dampening - high velocity air discharge.

Materials of Construction: - see page 33

Installation: - see page 3

Standard Factory Tests:
i) Hydrostatic - 1.5 x max. rated working pressure
ii) Low head leak - 0.5 bar (7.25 psi)
iii) Small orifice function at max. rated working pressure (minimum 1 valve in 10).

OVERALL DIMENSIONS & WEIGHTS

<table>
<thead>
<tr>
<th>DN</th>
<th>MODEL No.</th>
<th>PRESSURE RATING</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>6</td>
<td>150 RBXv 1601 &amp; 1631</td>
<td>PN16 (232 psi)</td>
<td>355</td>
<td>15/16</td>
<td>640</td>
<td>25/16</td>
<td>133</td>
<td>5/16</td>
</tr>
<tr>
<td>150</td>
<td>6</td>
<td>150 RBXv 2501 &amp; 2531</td>
<td>PN25 (363 psi)</td>
<td>355</td>
<td>15/16</td>
<td>640</td>
<td>25/16</td>
<td>127</td>
<td>5</td>
</tr>
<tr>
<td>150</td>
<td>6</td>
<td>150 RBXv 4001 &amp; 4031</td>
<td>PN40 (580 psi)</td>
<td>355</td>
<td>15/16</td>
<td>640</td>
<td>25/16</td>
<td>127</td>
<td>5</td>
</tr>
<tr>
<td>150</td>
<td>6</td>
<td>150 RBXv 1601 &amp; 1631</td>
<td>PN16 (232 psi)</td>
<td>405</td>
<td>15/16</td>
<td>700</td>
<td>27/16</td>
<td>145</td>
<td>5/16</td>
</tr>
<tr>
<td>150</td>
<td>6</td>
<td>150 RBXv 2501 &amp; 2531</td>
<td>PN25 (363 psi)</td>
<td>405</td>
<td>15/16</td>
<td>700</td>
<td>27/16</td>
<td>145</td>
<td>5/16</td>
</tr>
<tr>
<td>150</td>
<td>6</td>
<td>150 RBXv 4001 &amp; 4031</td>
<td>PN40 (580 psi)</td>
<td>405</td>
<td>15/16</td>
<td>700</td>
<td>27/16</td>
<td>145</td>
<td>5/16</td>
</tr>
</tbody>
</table>

Information subject to change without prior notice
VENT-O-MAT®

Series RBXv

PURCHASE SPECIFICATION

VENT-O-MAT MODEL NO.
Page 35 - Series RBXv - DN25 (1") or DN50 (2") with BSP (ISO R7) or NPT, Screwed Male Connection.
Page 36 - Series RBXv - DN80 (3") or DN100 (4") Flanged Connection.
Page 37 - Series RBXv - DN150 (6") or DN200 (8") Flanged Connection.

CONSTRUCTION & DESIGN
The air vent valve shall be of the compact single chamber design with solid cylindrical H.D.P.E. control floats housed in a tubular Stainless Steel Body with epoxy powder coated Mild Steel ends or Stainless Steel ends secured by means of Stainless Steel Tie Rods.
The valve shall have an integral ‘Anti-Shock’ Orifice mechanism which shall operate automatically to limit transient pressure rise or shock induced by closure to 1.5 x valve rated working pressure.
The discharge orifice area shall be equal to the nominal size of the valve i.e., a 150mm (6") valve shall have a 150mm (6") intake orifice.
Large orifice sealing shall be effected by the flat face of the control float seating against a EPDM rubber 'O' ring housed in a dovetail groove circumferentially surrounding the orifice.
Discharge of pressurized air shall be controlled by the seating & unseating of a Small Orifice Nozzle on a EPDM rubber seal affixed into the control float. The Nozzle shall have a flat seating land surrounding the orifice so that the damage to the rubber seal is prevented.
The valve construction shall be proportioned with regard to material strength characteristics, so that deformation, leaking or damage of any kind does not occur by submission to twice the designed working pressure.
The valve design shall incorporate an over pressure safety feature that will fail without an explosive effect, such as is normally the case when highly compressed air is released suddenly. The feature shall consist of easily replaceable components such as gaskets, seals or the like.
Connection to the valve inlet shall be facilitated by a screwed BSP (ISO R7) or NPT Male end (DN25 (1") & DN50 (2") only) or a flanged end conforming to PN10, 16, 25 or 40 ratings of BS 4504 or SABS 1123 Standards or, ANSI B16.5 Class 150 & Class 300 Standards.
Flanged ends for DN80 and DN100 valves shall be supplied with the requisite number of Stainless Steel screwed studs inserted for alignment to the specified standard. Nuts, washers, or jointing gaskets shall be excluded.

Optional: Provision of a ¼" BSP/ NPT Test/ Bleed Cock.

OPERATION
1. Prior to the ingress of liquid into the valve chamber, as when the pipeline is being filled, valves shall vent through the large orifice when water approach velocities are relative to a transient pressure rise on valve closure of 1.5 x valve rated pressure.
   At higher water approach velocities, which have a potential to induce transient pressure rises >1.5 times valve rated pressure on closure, the valve shall automatically discharge through the "Anti-Shock" Orifice and reduce water approach velocity, so that on closure a maximum transient pressure rise of <1.5 x valve rated pressure is realised.

2. Valves shall not exhibit leaks or weeping of liquid past the large orifice seal at operating pressures of 0.5 bar (7.25 psi) to 1.5 times rated working pressure.

3. Valves shall respond to the presence of air by discharging it through the small orifice at any pressures within a specified design range, i.e. 0.5 bar (7.25 psi) to 16 bar (232 psi), 25 bar (363 psi) or 40 bar (580 psi), and shall remain leak tight in the absence of air.

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revision date: Nov ‘06
Series RBX

ORDERING GUIDE

VALVE PRESSURE RATING:
- PN16 (232 psi) 16
- PN25 (363 psi) 25
- PN40 (580 psi) 40

SPECIAL APPLICATION:
- BIAS AIR IN B
- BIAS AIR OUT V

VALVE END CONNECTION:
- SCREWED - BSP 1
- SCREWED - NPT 2
- FLANGED - BS4504 OR SABS 1123 0
- FLANGED - ANSI B16.5 3

VALVE SIZE:
- DN25 (1") 0.25
- DN50 (2") 0.50
- DN80 (3") 0.80
- DN100 (4") 1.00
- DN150 (6") 1.50
- DN200 (8") 2.00

VALVE SERIES No.
- 050 RB X V 25 01

Note:
1. DN250 (10") and DN300 (12") valves are available on request.
2. Valves for pressure ratings of PN64 (928 psi) and PN100 (1450 psi) are available on request.
3. Valves are available with AISI 304 Stainless Steel Flanged ends, please specify when ordering.

TEST SPECIFICATION

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

(A) 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.

(B) A low head leak test whereby the valve is filled with water and pressurized to a maximum of 0.5 bar (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.

(C) 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 2-3 bar (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.

information subject to change without prior notice

page: 38
revision date: Nov '06
VENT-O-MAT® Series RBX

Complete the form below for any additional information and fax/post to:

VENT-O-MAT
P. O. Box 5064
Benoni South
1502
South Africa

Tel: (+27 11) 748 0200 Fax: (+27 11) 421 2749

E Mail: ventomat@dfc.co.za www.ventomat.com

Company Name: ____________________________
Postal Address: ________________________________________________________________
Postal Code: _______________________ Country: __________________________
Tel: ______________________ Fax: ______________________
Contact Name: ____________________________ Title: __________________________

Comments:
______________________________________________________________

______________________________________________________________

Products you are interested in:

VENT-O-MAT® Series RBXc Air Release & Vacuum Break Valves
compact cast single chamber design with integral "Anti-Shock" surge dampening mechanism
in an economical cast ductile iron construction.

VENT-O-MAT® Series RGX Air Release & Vacuum Break Valves
compact Stainless Steel single chamber design with integral "Anti-Shock" surge dampening
mechanism.

VENT-O-MAT® Series RC Air Release & Vacuum Break Valves
cast air valve for irrigation and small reticulation systems.

VENT-O-MAT® Series RPS Air Release & Vacuum Break Valves
glass reinforced polypropylene CATT air valve for industrial, irrigation and small reticulation
systems.

LevelDex® High Performance Endline Level Control Valves
end line valve with cushioned closing characteristics for level control in tanks and reservoirs.