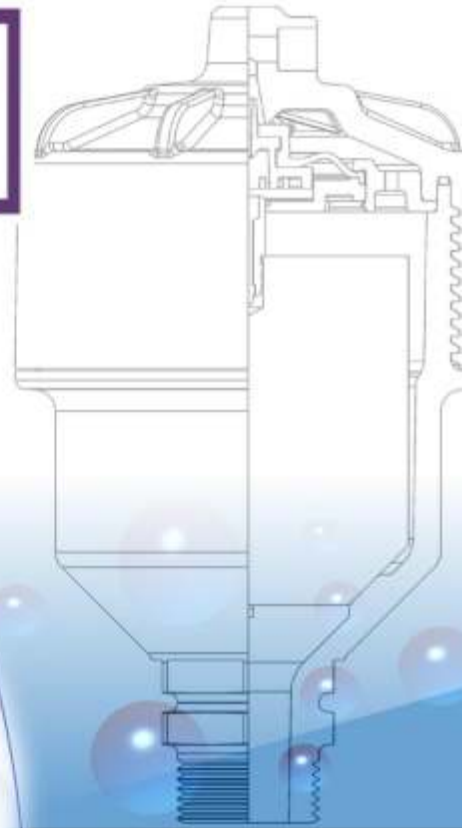


# **VENT-O-MAT<sup>®</sup>**

## **SERIES RPS**



**CATT AIR VALVES FOR  
INDUSTRIAL, IRRIGATION AND  
SMALL RETICULATION SYSTEMS**

# VENT-O-MAT®

## Series RPS Air Valves

### VALVE OPERATION

#### PRE NOTES

The Vent-O-Mat Series RPS was developed in response to a demand for a compact and lightweight, general purpose range of air valves for irrigation and small reticulation systems. Incorporated in this unique design is the Vent-O-Mat "Anti-Shock" technology, which provides automatic surge damping regardless of flow and discharge conditions. In addition, the valve utilises a unique diaphragm and direct acting float system to provide the largest capacity air discharge, air intake and pressurised air release capability of any general purpose, small reticulation air valve design.

#### Large Volume Air Discharge

Air enters the large orifice flows around the annular area between the floats and the valve chamber and discharges into atmosphere.

#### Surge Dampening

In reaction to an increase in air velocity, the "Anti-Shock" Cartridge (1) closes the large orifice and air is forced through the annular orifices and discharged from the central orifice, resulting in a deceleration of the approaching liquid due to the resistance of air pressure in the valve.

#### Pressurized Air Release

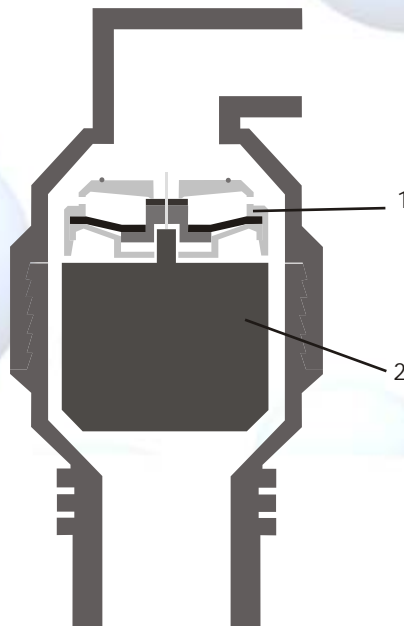
Subsequent to the filling of a pipeline, liquid enters the valve chamber and the "Anti-Shock" Cartridge (1), and Lower Float (2) are buoyed so that the large orifice is closed by the "Anti-Shock" Cartridge (1), the valve will then become internally pressurized.

Disentrained air rises through the liquid and accumulates in the valve chamber, when the volume of air is sufficient to displace the liquid, the Lower Float (2) will no longer be buoyant and will gravitate downwards thereby opening the small orifice and simultaneously relieve air in the lower float chamber, allowing accumulated air to force down the diaphragm and for air to be discharged into atmosphere. As air is discharged the liquid raises the Lower Float (2) and re-seals the small orifice and prevents escape of liquid.

It is important to note that the diaphragm action allows for the opening of a full 12mm<sup>2</sup> (½") orifice area under pressurized conditions.

#### Vacuum Relief (Air Intake) - Pipeline Draining

Drainage of liquid from the valve chamber causes the "Anti-Shock" Cartridge (1) and Lower Float (2) to gravitate downwards, thereby allowing atmospheric air through the valve to rapidly displace draining liquid in the pipeline and prevent potentially damaging internal negative pressure.



# VENT-O-MAT<sup>®</sup>

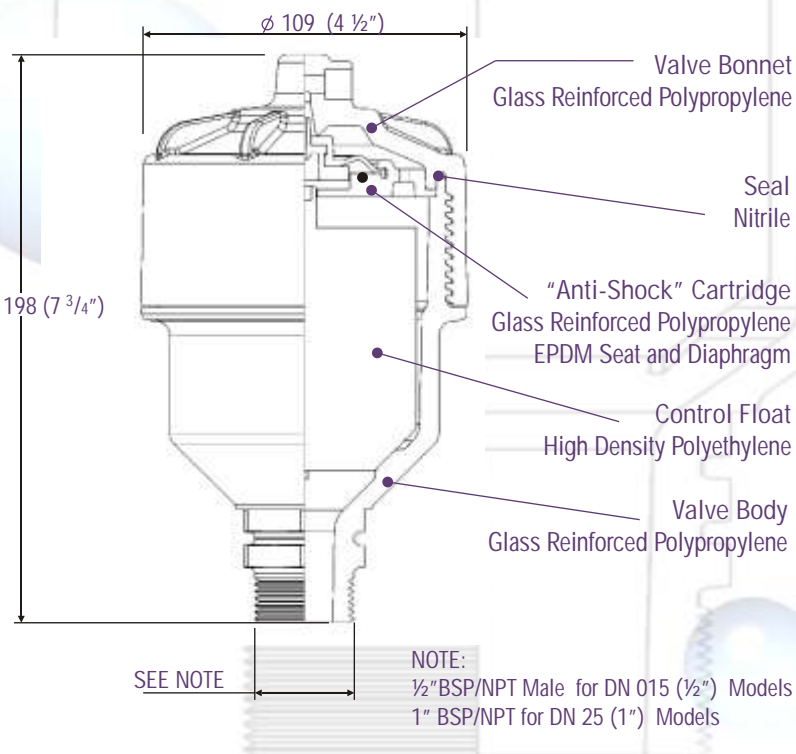
## Series RPS Air Valves

DN 015 (1/2") AND DN 25 (1")

### MATERIALS OF CONSTRUCTION & OVERALL DIMENSIONS

Vent-O-Mat Series RPS is a high performance, lightweight, general purpose air valve constructed from corrosion resistant materials. The globally patented diaphragm operating principle has the following features:

- Automatic Surge Protection
- Self Cleansing Action
- Large Capacity Air Discharge
- Controlled Air Discharge
- Full Opening of 12mm<sup>2</sup> (1/2") Orifice under Pressurized Discharge Conditions
- Available in sizes DN 25 (1") and DN 015 (1/2")



Valve Model No:  
015 RPS 1210 (BSP) 015 RPS 1220 (NPT)  
025 RPS 1210 (BSP) 025 RPS 1220 (NPT)

Valve Size:  
DN15 (1/2")  
DN25 (1")

Pressure Rating:  
PN12 (174 psi)

Operating Pressure Range:  
0.2 Bar to 12 Bar (3 psi to 174 psi)

Temperature Range:  
4 C (40 F) to 80 C (180 F)

Test Pressure:  
1.5 times working pressure

End Connection:  
1/2" BSP/NPT Male  
1" BSP/NPT Male

Weight:  
0.8 kg (1.8 lbs)

Operation:  
Controlled Air Discharge  
Pressurized Air Discharge  
Surge Dampening - Rapid Filling Column Separation

# VENT-O-MAT®

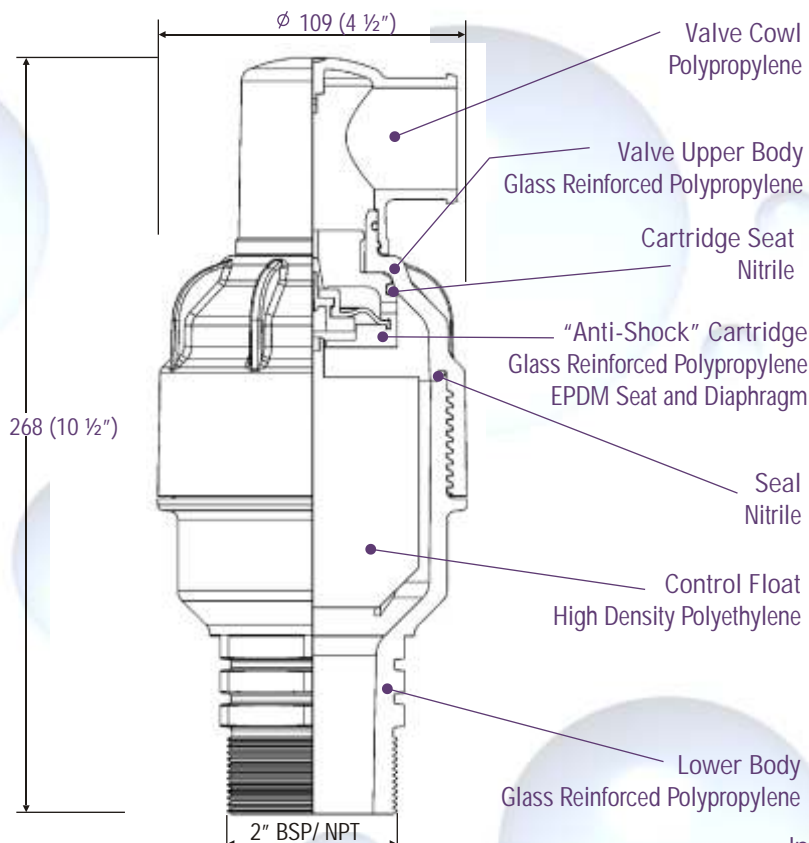
## Series RPS Air Valves

DN 50 (2")

### MATERIALS OF CONSTRUCTION & OVERALL DIMENSIONS

Vent-O-Mat Series RPS is a high performance, lightweight, general purpose air valve constructed from corrosion resistant materials. The globally patented diaphragm operating principle has the following features:

- Automatic Surge Protection
- Self Cleansing Action
- Large Capacity Air Discharge
- Controlled Air Discharge
- Full Opening of 12mm<sup>2</sup> (½") Orifice under Pressurized Air Discharge Conditions
- Large Volume Vacuum Break Function
- Easily Adaptable - Available in three design options to solve all air valve operational requirements.



Valve Model No:  
050 RPS 1211 (BSP)      050 RPS 1221 (NPT)

Valve Size:  
DN50 (2")

Pressure Rating:  
PN12 (174 psi)

Operating Pressure Range:  
0.2 Bar to 12 Bar (3 psi to 174 psi)

Temperature Range:  
4 C (40F) to 85C (180F)

Test Pressure:  
1.5 times working pressure

End Connection:  
2" BSP/NPT Male

Weight:  
1 kg (2.26 lbs)

Operation:  
Large Volume Air Discharge  
Large Volume Air Intake  
Pressurized Air Discharge  
Surge Dampening - Rapid Filling Column Separation

Information subject to change without prior notice

# VENT-O-MAT<sup>®</sup>

## Series RPS Air Valves

### VENT-O-MAT SERIES RPS DESIGN OPTIONS

The Vent-O-Mat range of Series RPS was developed for easy adaptability to all possible air valve operational requirements, the valve is available in three design options, namely:

#### Standard "Anti-Shock" Function

The Series RPS is supplied as standard with three discharge orifices to ensure the effective release of air under all operating conditions. Incorporated in the design is an automatic surge alleviation function to minimise surge and waterhammer under rapid filling and/or column separation conditions. In addition, the valve provides the most effective vacuum protection of any small reticulation air valve design.

#### Controlled Air Discharge

Air discharge needs to be controlled in instances where an air valve is placed just prior to or subsequent to a check valve on a pumping main or, where an air valve is three times or less the diameter of the main pipeline diameter or, where the pipeline length is relatively short.

The Series RPSb valve is an adaptation of the basic RPS design to ensure controlled air discharge, pressurized air release and large volume air intake.

#### Biased Air Out

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).

The Series RPSv is an adaptation of the basic RPS design to ensure effective air release under all pipeline conditions but will not allow air entry under any operating condition.

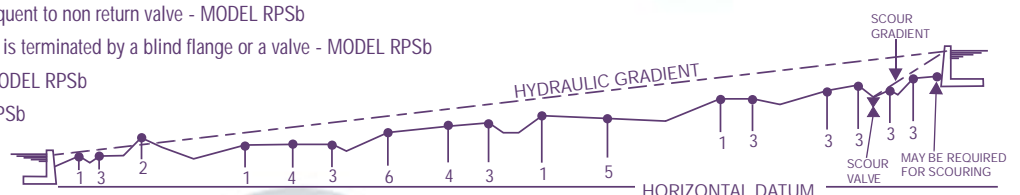
## AIR VALVE SIZING

Air valves are first and foremost sized for vacuum conditions (drainage) which may result from scouring of the pipeline, pipeline rupture or instantaneous pump stoppage causing column separation. The DN 50 (2") Series RPS valve provide an effective vacuum break function, dependant on drainage velocities to pipelines up to NB 450 (17") in diameter

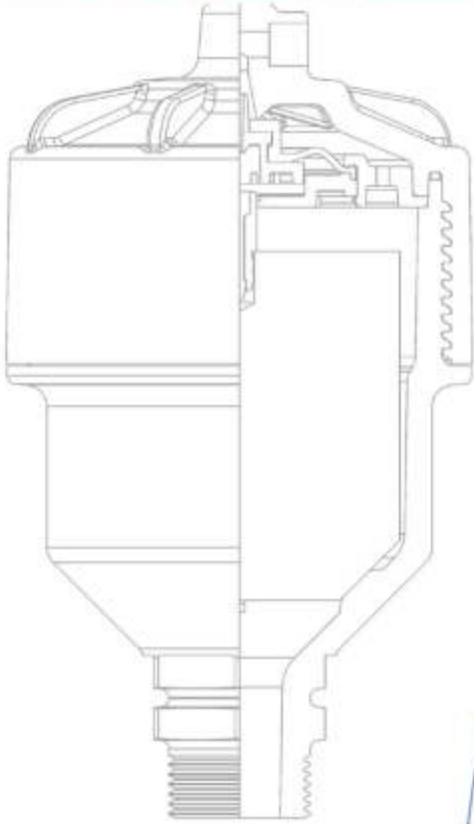
The unique 3 orifice design of the RPS valve ensures effective and efficient pipeline de-aeration regardless of initial filling velocities. This implies that sizing for discharge is only necessary if the pipeline is relatively flat and there are no defined peaks on the pipeline.

## AIR VALVE POSITIONING

1. ON APEX POINTS (relative to hydraulic gradient) - MODEL RPS
2. APEX POINTS ABOVE THE HYDRAULIC GRADIENT - MODEL RPSv
3. NEGATIVE BREAKS (increase in downward slope or decrease in upward slope) - MODEL RPS
4. LONG HORIZONTAL SECTIONS - every 600 metres (1/3 of a mile) maximum -MODEL RPS
5. LONG ASCENDING SECTIONS - every 600 metres (1/3 of a mile) maximum - MODEL RPS
6. LONG DESCENDING SECTIONS - every 600 metres (1/3 of a mile) maximum - MODEL RPS
7. PUMP DISCHARGE (not shown in diagram) - just subsequent to non return valve - MODEL RPSb
8. BLANK ENDS (not shown in diagram) - where a pipeline is terminated by a blind flange or a valve - MODEL RPSb
9. PRIOR TO WATER METERS (not shown in diagram) - MODEL RPSb
10. ON TOP OF TANKS (not shown in diagram) - MODEL RPSb



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